

Greeley City Council Agenda

Regular Meeting

Tuesday, September 7, 2021 at 6:00 p.m.

City Council Chambers at City Center South, 1001 11th Ave, Greeley, CO 80631

Zoom Webinar link: <https://greeleygov.zoom.us/j/98241485414>

NOTICE:

Regular meetings of the City Council are held on the 1st and 3rd Tuesdays of each month in the City Council Chambers. Meetings are conducted in a hybrid format, with a Zoom webinar in addition to the in person meeting in Council Chambers.

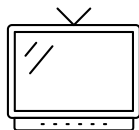
City Council members may participate in this meeting via electronic means pursuant to their adopted policies and protocol.

Members of the public are also invited to choose how to participate in Council meetings in the manner that works best for them.

Watch Meetings:



Meetings are open to the public and can be attended in person by anyone.



Meetings are televised live on GTV8 on cable television.

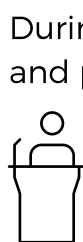


Meetings are livestreamed on the City's website, greeleygov.com as well as YouTube at youtube.com/CityofGreeley

For more information about this meeting or to request reasonable accommodations, contact the City Clerk's Office at 970-350-9740 or by email at cityclerk@greeleygov.com.

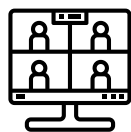
Meeting agendas, minutes, and archived videos are available on the City's meeting portal at greeley-co.municodemeetings.com/

Comment in real time:



During the public input portion of the meeting and public hearings:

In person attendees can address the Council in the Chambers.

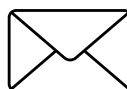


The public can join the Zoom webinar and comment from the remote meeting.

Submit written comments:



Email comments about any item on the agenda to cityclerk@greeleygov.com



Written comments can be mailed or dropped off at the City Clerk's Office at City Hall, at 1000 10th St, Greeley, CO 80631





Mayor

John Gates

Councilmembers

Tommy Butler
Ward I

Brett Payton
Ward II

Michael Fitzsimmons
Ward III

Dale Hall
Ward IV

Kristin Zasada
At-Large

Ed Clark
At-Large

A City Achieving Community Excellence

Greeley promotes a healthy, diverse economy and high quality of life responsive to all its residents and neighborhoods, thoughtfully managing its human and natural resources in a manner that creates and sustains a safe, unique, vibrant and rewarding community in which to live, work, and play.

City Council Agenda

September 07, 2021 at 6:00 PM

**City Council Chambers, City Center South, 1001 11th Ave &
via Zoom at <https://greeleygov.zoom.us/j/98241485414>**

1. Call to Order
2. Pledge of Allegiance
3. Roll Call
4. Approval of the Agenda
5. Recognitions and Proclamations
6. Citizen Input
7. Reports from Mayor and Councilmembers
8. Initiatives from Mayor and Councilmembers

Consent Agenda

The Consent Agenda is a meeting management tool to allow the City Council to handle several routine items with one action.

Council Members may request an item be pulled off the Consent Agenda and considered separately under the next agenda item in the order they were listed.

9. Acceptance of the Report of the City Council Work Session of August 24, 2021
10. Approval of the City Council Proceedings of August 17, 2021
11. Consideration of a Resolution authorizing a Second Amendment to the IGA for Treated Water Service with the Town of Windsor
12. Consideration of a resolution authorizing the Mayor to execute an agreement with the State Board of the Great Outdoors Colorado Trust Fund for the construction of improvements in the east Greeley natural area

- [13.](#) Consideration of a Resolution authorizing the City of Greeley to enter into a Grant Agreement between the City of Greeley and the State of Colorado, Division of Local Affairs, regarding receipt of Grant Funding Provided by the Gray and Black Market Marijuana Enforcement Grant Program
- [14.](#) Consideration of a resolution appointing Jerry Mazer as an Assistant Municipal Judge and Assistant Liquor Licensing Hearing Officer for the City of Greeley, Colorado
- [15.](#) Introduction and first reading of an Ordinance Amending Article VI, Chapter 3, Title 20 of the Greeley Municipal Code(Industrial Pretreatment Chapter)
- [16.](#) First reading of an ordinance appropriating additional sums to defray the expenses and liabilities of the City of Greeley for the balance of the fiscal year of 2021 and for funds held in reserve for encumbrances at December 31, 2020

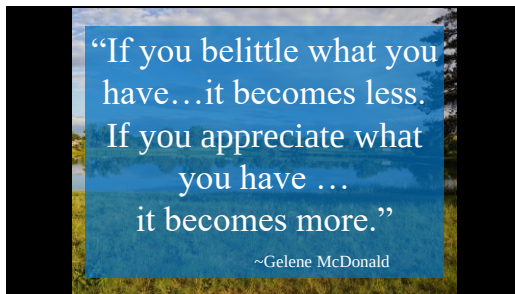
End of Consent Agenda

17. Pulled Consent Agenda Items
- [18.](#) Public hearing for an ordinance amending Title 24 of the Greeley Municipal Code relating to the Development Code by deleting the current Title in its entirety and adding a new Chapter 3 – Subdivision Standards, Chapter 4 – Zoning Districts and Uses, Chapter 5 – Residential Development Standards, Chapter 6 – Nonresidential Development Standards, and Chapter 13 – Definitions and Terms
- [19.](#) Public hearing to consider a resolution for approval of a Colorado Revised Statutes Title 32 Special District Consolidated Service Plan precedent to formation of five interrelated metropolitan districts known as Poudre Heights Metropolitan Districts Nos. 1-5 that would provide public facilities financing, operations, and maintenance
- [20.](#) Public hearing and final reading of an ordinance of appreciation and appointment of Mr. Robert A. Ruyle as a member emeritus of the Water and Sewer Board
- [21.](#) Public hearing and final reading of an ordinance adopting the 2021 Sanitary Sewer Master Plan and the 2021 Water Transmission and Distribution Master Plan and Amending the 2018 Comprehensive Plan to include the same by reference
- [22.](#) Public hearing and final reading of an ordinance repealing Sections 12-626 – 12-628 and amending portions of Chapter 10 of Title 12 and Chapter 5 of Title 18 of the City of Greeley Municipal Code, all regarding forestry requirements in the City of Greeley
- [23.](#) Public hearing and final reading of an ordinance amending portions of Chapter 1 of Title 16 of the city of Greeley Municipal Code, all regarding the traffic code in the city of Greeley relating to golf cars
- [24.](#) Scheduling of Meetings, Other Events
- [25.](#) Consideration of a motion authorizing the City Attorney to prepare any required resolutions, agreements, and ordinances to reflect action taken by the City Council at this meeting and at any previous meetings, and authorizing the Mayor and City Clerk to sign all such resolutions, agreements and ordinances
26. Adjournment

Slide 1



Slide 2



At each Council Meeting, we recognize the people, organizations and businesses that make Greeley Great.

Tonight it's my turn to announce the recognitions. I'll start with a quote, "If you belittle what you have, it becomes less. If you appreciate what you have, it becomes more." With these announcements we are appreciating the good work of our residents, showing support for their efforts, and encouraging everyone to share the word that Greeley is Great.

Slide 3



Greeley has been ranked #15 in the *Top 15 Cities Everyone Moved to During the Pandemic – And Which Ones they Vacated* list. According to a study by CoreLogic, a property data and analytics company, many people took advantage of 2020's record-low mortgage rates and bought homes in cities that offered buyers more living space for less, lower property tax, no state income tax, and a sunny, outdoorsy lifestyle. Way to go Greeley!

Slide 4



Ninety-seven Greeley-Evans School District 6 students have earned the prestigious AP Scholars award for their outstanding performance on 2021 Advanced Placement tests, with two students earning the AP Capstone Diploma. The College Board's Advanced Placement program offers students the opportunity to take challenging college-level courses and exams while in high school. Over the past 14 years, more than 1,200 District 6 students have been named as AP Scholars by the College Board.

Slide 5



The Colorado Department of Transportation has awarded a \$2 million *Revitalizing Main Street Grant* to the City of Greeley for its 16th Street Corridor Enhancement Project. The project, extending from 7th Avenue to 11th Avenue on 16th Street, will create a safer, more inviting atmosphere on a vital corridor that serves as the gateway between UNC and Downtown through improved streetscape elements and safety measures.

Slide 6



Greeley-Evans School District 6 is one of 6 winners of The Succeeds Prize for personalized learning, the most prestigious award for Colorado educators. The Succeeds Prize is a collaboration between Colorado Succeeds, 9NEWS, and the business community that seeks to recognize, and invest in, educators who are reimagining education to prepare students for jobs that don't yet exist, tools not yet created, and problems not yet identified.

Slide 7



The University of Northern Colorado one of seven colleges across the U.S. selected to win the 2021 Assessment and Impact Award for Housing and Residence Life. The award, given by Skyfactor Benchworks, recognizes UNC's efforts to improve community environment satisfaction, particularly for first-year residents in their transition to college, and for using data-driven programs to support on-campus living.

Slide 8



And that's What's Great about Greeley.

Council Agenda Summary

Title

Citizen Input

Summary

During this 15 minute portion of the meeting, anyone may address the Council on any item of City Business appropriate for Council consideration that is not already listed as a public hearing on this evening's agenda.

As this meeting is being conducted in a hybrid format, citizen input will be accepted first from those in the City Council Chambers, and then from the virtual meeting audience via the meeting's webinar.

Written comments submitted for any item on the agenda will be placed in the public record and provided to the Council for their review and should include the name and city of residence of the person submitting the comments for the record.

Council Agenda Summary

Title

Initiatives from Mayor and Councilmembers

Summary

During this portion of the meeting any Councilmember may bring before the Council any business that the member feels should be deliberated upon by the Council. These matters need not be specifically listed on the Agenda, but formal action on such matters shall be deferred until a subsequent Council meeting.

Initiatives will generally fall into three categories:

- 1) A policy item for Council deliberation and direction for a future Worksession, Committee meeting, or regular/special Council meeting;
- 2) A request to the City Manager for information or research;
- 3) A request involving administrative processes or procedures.

At the close of this portion of the meeting, the Mayor will confirm Council's consensus that the individual requests be pursued.

Attachments

Status Report of Council Initiatives and Related Information

Greeley City Council

Status Report of Council Initiatives

Initiative No.	Council Member Initiating	Council Request	Council Meeting or Work Session Date Requested	Status or Disposition (After completion, item is shown one time as completed and then removed.)	Assigned to:
03-2021	Hall	Request for formation of a committee, to be chaired by Council Member Hall, regarding the section of the Poudre River Trail known as the Narrows. This section is facing increasing risks of erosion, with some portions in danger of falling into the river, and no available alternative areas for trail placement in that vicinity. The School of Mines will do a project to work on some engineering solutions for the area, in addition to other engineering studies that have already been done. The committee will review and determine options to move forward in addressing this with the assistance of City staff. City Manager Otto added information about potential Capital Improvement Projects through this area, and Council Member Hall provided information about existing potential rough cost estimates.	February 2, 2021 Council Meeting	Update: 04/20/2021 Council Member Hall reported the committee had its first meeting and he is pleased with engagement from City staff and the community. A committee, chaired by Council Member and Poudre River Trail Corridor Chairman Hall, has been formed with representatives from the Poudre Trail Corridor Board, Culture, Parks and Recreation/Natural Areas and Trails, Public Works, Water and Sewer, the Poudre River Run Master HOA, a member of the Parks and Recreation Advisory Board, and a representative from the Ditch #3 Board. Committee Chairman Hall has also referenced initial communications with Otak Engineering, a consulting firm who produced a study of this area in 2018 for the City of Greeley, as well as the Colorado School of Mines engineering students who will conduct a capstone project this semester towards a suggested course of action and suggested funding mechanism(s). An initial assessment with design parameters, recommended	Andy McRoberts

Initiative No.	Council Member Initiating	Council Request	Council Meeting or Work Session Date Requested	Status or Disposition (After completion, item is shown one time as completed and then removed.)	Assigned to:
				course(s) of action including recommended funding sources, is expected in June, 2021 post consultation with the Mines student project and engineering consultants. Although this project will carry on in practicality through committee work	
10-2021	Butler	Request to restart the conversation about recycling, and for staff to research the cost and feasibility of doing a drop off facility for recycling, including potentially in partnership with other communities	July 20, 2021 Council Meeting	Scheduled to return for a presentation at the October 12, 2021, Work Session	Paul Trombino

Council Agenda Summary

Key Staff Contact: Anissa Hollingshead, City Clerk, 970-350-9742

Title:

Acceptance of the Report of the City Council Work Session of August 24, 2021

Summary:

A City Council Work Session was held in the City Council's Chambers on August 24, 2021. The draft report of that work session has been prepared for the Council's review and acceptance.

Decision Options:

1. To accept the Report as presented; or
2. Amend the Report if amendments or corrections are needed, and accept as amended.

Council's Recommended Action:

A motion to accept the Report as presented.

Attachments:

Draft Report of August 24, 2021

City of Greeley, Colorado
CITY COUNCIL WORK SESSION REPORT
August 24, 2021

1. Call to Order

Mayor John Gates called the meeting to order at 6:00 p.m. in the City Council Chambers at 1001 11th Ave, Greeley, Colorado.

2. Pledge of Allegiance

Mayor John Gates led the Pledge of Allegiance to the American Flag.

3. Roll Call

Anissa Hollingshead, City Clerk, called the roll.

PRESENT

Mayor John Gates
Council Member Tommy Butler
Council Member Dale Hall
Council Member Brett Payton
Council Member Ed Clark
Council Member Kristin Zasada

EXCUSED

Council Member Michael Fitzsimmons

4. Scheduling of Meetings, Other Events

Acting City Manager Raymond Lee advised Council of the need for a special meeting regarding setting the ballot titles for two questions following the certification of two citizen petitions to amend the City's Home Rule Charter. Mayor Gates noted he had a call for a special meeting to be held on Tuesday, August 31, 2021, at 6 p.m., that could be signed by other members of Council following the work session.

5. Reports from Mayor and Council Members

Council Member Hall advised of his most recent conversations with Baker Tilly regarding the city manager recruitment process. He noted the liaison at Baker Tilly will be requesting individual meetings with each member of Council as part of the process.

6. COVID-19 Update

Emergency Manager Dan Frazen reported on the three metrics the City is tracking regarding COVID-19. All numbers are up over one month ago, as tracked on the City's

dashboard. He also provided information about hospitalizations in the Greeley hospitals, as well as vaccination rates.

Council Member Butler requested more regular updates from Emergency Manager Frazen. Mayor Gates suggested updates at each work session at this point. There was consensus to make this shift. Manager Lee also noted he would be including the dashboard link in his weekly City Manager's email update.

7. 2022 – 2026 Capital Improvement Program

Finance Director John Karner introduced this item, and presented as set forth in the PowerPoint in the agenda packet. Also present to assist with project information was Public Works Director Paul Trombino, Water & Sewer Director Sean Chambers, and additional staff from Finance, Public Works, and Water & Sewer.

In response to a question from Council, Deputy Public Works Director Joel Hemeseth provided details about the work planned in 2022 for 10th St and 35th Ave.

Director Chambers responded to a question from Council with information about how non-potable water lines are being collocated with other work being done. He also provided information about the spending planned in 2022 for the Terry Ranch project in particular, including outlining the revenue associated with the deal for the project as well as the planned Water & Sewer outlays.

Director Karner provided a recap of the purpose of this presentation, and what the request to Council will be as part of the budget adoption process as it relates to the CIP program.

There was another question from Council about the timing associated with a fix for the storm sewer issues downtown. Deputy Director Hemeseth provided information about the 15 year total timeline for that work.

8. Adjournment

Prior to adjournment, Mayor Gates recognized Deputy City Clerk Cheryl Aragon, in attendance for her final meeting prior to leaving the City on August 27, 2021.

There being no further business before the Council, the meeting was adjourned at 6:24 p.m.

John D. Gates, Mayor

Anissa N. Hollingshead, City Clerk

Council Agenda Summary

Key Staff Contact: Anissa Hollingshead, City Clerk, 970-350-9742

Title:

Approval of the City Council Proceedings of August 17, 2021

Summary:

A meeting of the City Council was held in the City Council's Chambers on August 17, 2021. The draft proceedings have been prepared and are being presented for the Council's review and approval.

Decision Options:

1. To approve the proceedings as presented; or
2. Amend the proceedings if amendments or corrections are needed, and approve as amended.

Council's Recommended Action:

A motion to approve the City Council proceedings as presented.

Attachments:

Draft Proceedings of August 17, 2021

City of Greeley, Colorado
CITY COUNCIL PROCEEDINGS
August 17, 2021

1. Call to Order

Mayor John Gates called the meeting to order at 6:00 p.m. in the City Council Chambers at 1001 11th Ave, Greeley, Colorado.

2. Pledge of Allegiance

Mayor Gates led the Pledge of Allegiance to the American Flag.

3. Roll Call

Cheryl Aragon, Deputy City Clerk, called the roll.

PRESENT

Mayor Gates

Council Member Tommy Butler

Council Member Brett Payton (participating remotely)

Council Member Dale Hall

Council Member Michael Fitzsimmons

Council Member Kristin Zasada

EXCUSED

Council Member Ed Clark

4. Approval of the Agenda

The agenda was approved as presented.

5. Recognitions and Proclamations

Mayor Gates presented the *What's Great about Greeley* report.

Mayor Gates also presented outgoing City Manager Roy Otto with a street sign to commemorate his 22 years of service to the City as both Assistant City Manager and City Manager.

Mayor Gates noted that Interim City Manager Raymond Lee will be welcomed as Greeley's Acting City Manager at 5:00 p.m. on Wednesday, August 18, 2021.

6. Citizen Input

Steve Teets, Greeley resident, was present and thanked City Manager Otto for his hospitality at City Hall over the years and wished him well in his retirement.

He also expressed his concerns about the Terry Ranch project.

Mr. Teets was encouraged to visit the City's website where a lot of information can be obtained about this project.

7. Reports from Mayor and Councilmembers

Council Member Butler reminded the community that Monster Day will be held Downtown on Saturday, August 21, 2021.

8. Initiatives from Mayor and Councilmembers

There were no new Initiatives offered from Council Members.

Consent Agenda

Council Member Hall moved, seconded by Council Member Fitzsimmons to approve the items on the Consent Agenda and their recommended actions for Item Nos. 9 through 15.

The motion carried 6-0.

Excused: Council Member Clark.

9. Acceptance of the Report of the City Council Work Session of August 10, 2021

The Council action recommended and approved was to accept the Report of August 10, 2021.

10. Approval of the City Council Proceedings of August 3, 2021

The Council action recommended and approved was to approve the City Council Proceedings of August 3, 2021.

11. Introduction and first reading of an ordinance Adopting the 2021 Sanitary Sewer Master Plan and the 2021 Water Transmission and Distribution Master Plan and Amending the 2018 Comprehensive Plan to include the same by reference.

The Council action recommended and approved was to introduce the ordinance and schedule the public hearing and final reading for September 7, 2021.

12. Introduction and first reading of an Ordinance recognizing Robert Ruyle's service to the Greeley Community through decades of continuous service and appointment as an emeritus board member to the Greeley Water and Sewer Board

The Council action recommended and approved was to introduce the ordinance and schedule the public hearing and final reading for September 7, 2021.

13. Introduction and first reading of an ordinance amending Title 24 of the Greeley Municipal Code relating to the Development Code by deleting the current Title in its entirety and adding a new Chapter 3 – Subdivision Standards, Chapter 4 – Zoning

Districts and Uses, Chapter 5 – Residential Development Standards, Chapter 6 – Nonresidential Development Standards, and Chapter 13 – Definitions and Terms

The Council action recommended and approved was to introduce the ordinance and schedule a public hearing for September 7, 2021, and final reading for September 21, 2021.

14. Introduction and first reading of an ordinance repealing Sections 12-626 – 12-628 and amending portions of Chapter 10 of Title 12 and Chapter 5 of Title 18 of the City of Greeley Municipal Code, all regarding forestry requirements in the City of Greeley

The Council action recommended and approved was to introduce the ordinance and schedule the public hearing and final reading for September 7, 2021.

15. Introduction and first reading of an ordinance amending portions of Chapter 1 of Title 16 of the city of Greeley Municipal Code, all regarding the traffic code in the city of Greeley

The Council action recommended and approved was to introduce the ordinance and schedule the public hearing and final reading for September 7, 2021.

End of Consent Agenda

16. Pulled Consent Agenda Items

No items were pulled from the Consent Agenda.

17. Public hearing and final reading of an ordinance to consider a petition to annex to the City of Greeley, Colorado certain unincorporated territory located in Weld County, Colorado, known as The Cache Annexation, located at 12351 County Road 62 and 12644 County Road 62 ¼, including an unaddressed parcel (No. 080736400039) located east and west of 95th Avenue and north of County Road 62

Brittany Hathaway, Planner, provided one report for item nos. 17, 18, 19, and 20 as all relate to The Cache Annexation and Preliminary Planned Unit Development (PUD) Plan for this parcel. She noted that a total 450.477 acres of unincorporated property is proposed for annexation, and, subsequently, application has been made to establish PUD zoning. She provided a presentation on these requests as laid out in the materials published in the agenda packet.

Planner Hathaway reported that the Planning Commission has recommend approval of both the annexation and zoning requests to the City Council.

Mayor Gates opened the public hearing at 6:28 p.m.

Steve Teets, Greeley resident, recalled the Imagine Greeley meeting where infill and affordable housing was desired, and he expressed concern that this parcel is too far

west to be annexing and providing services to. He also inquired about the ponds in this area being in the flood plain, which Ms. Hathaway confirmed.

There being no further public comment offered, Mayor Gates closed the public hearing at 6:30 p.m.

Council Member Fitzsimmons moved, seconded by Council Member Zasada, to, based on the application received and accompanying analysis, find that the proposed annexation meets the required Development Code Criteria in Section 24-581(a)(1-5) and therefore approve the request.

The motion carried 6-0 by roll call vote.

Excused: Council Member Clark.

Council Member Fitzsimmons moved, seconded by Council Member Zasada, to adopt the ordinance and publish with reference to title only.

The motion carried 6-0 by roll call vote.

Excused: Council Member Clark.

Ord. No. 24, 2021, annexing property to the City of Greeley, was adopted.

18. Public hearing and final reading of an ordinance to consider changing the official zoning map of the City of Greeley, Colorado establishing PUD (Planned Unit Development) zoning for property located in Weld County, Colorado, located at 12351 County Road 62 and 12644 County Road 62 1/4, including an unaddressed parcel (no. 080736400039) located east and west of 95th Avenue and north of County Road 62, recently annexed and known as The Cache Annexation

Mayor Gates opened the public hearing at 6:34 p.m., and no comments were offered.

Council Member Fitzsimmons moved, seconded by Council Member Zasada, to, based on the application received and the accompanying analysis, find that the proposed PUD (Planned Unit Development) zone district is in compliance with Development Code Criteria in Section 24-625(c)(3)a, b, e, and g and Section 24-663(b) and therefore approve the request, contingent upon approval of the Cache Annexation petition (ANX2020-0002).

The motion carried 6-0 by roll call vote.

Excused: Council Member Clark.

Council Member Fitzsimmons moved, seconded by Council Member Zasada to adopt the ordinance and publish with reference to title only.

The motion carried 6-0 by roll call vote.

Excused: Council Member Clark.

Ord. No. 25, 2021, changing the official zoning map of the City of Greeley, was adopted.

19. Public hearing and second reading of an ordinance to consider a request to rezone from PUD (Planned Unit Development – Lake Bluff) to PUD (Planned Unit Development – The Cache) and from R-L (Residential Low Density) to PUD (Planned Unit Development) zoning, changing the underlying land use designations for approximately 332.199 acres of property located north of U.S. Highway 34 Business, east of 95th Avenue and west of 83rd Avenue, and final reading of an ordinance changing the official zoning map to reflect the same

Mayor Gates opened the public hearing at 6:36 p.m., and no comments were offered.

Council Member Fitzsimmons moved, seconded by Council Member Zasada, to, based on the application received and accompanying analysis, find that the proposed rezoning from Residential Low Density (R-L) and Planned Unit Development (PUD) to Planned Unit Development (PUD) is in compliance with Development Code Section 24-625(c)(3) a, b e, and g and therefore approve the request, contingent upon approval of the Cache Annexation petition (ANX2020-0002)

The motion carried 6-0 by roll call vote.

Excused: Council Member Clark.

Council Member Fitzsimmons moved, seconded by Council Member Zasada, to adopt the ordinance and publish with reference to title only.

The motion carried 6-0 by roll call vote.

Excused: Council Member Clark.

Ord. No. 26, 2021, changing the official zoning map of the City of Greeley, was adopted.

20. Public hearing to consider a request for a Preliminary PUD (Planned Unit Development) Plan for approximately 788 acres located north of U.S. Highway 34 Business, east of 95th Avenue and west of 83rd Avenue

Mayor Gates opened the public hearing at 6:39 p.m., and no comments were offered.

Councilmember Fitzsimmons moved, seconded by Council Member Zasada, to, based on the application received and the accompanying analysis, find that The Cache Preliminary PUD Plan meets Development Code Criteria found in Section 24-625(c)(3) a, b, e, and g and Section 24-663(b) and therefore approve the request, contingent upon approval of The Cache Annexation Petition (ANX2020-0002).

The motion carried 6-0 by roll call vote.

Excused: Council Member Clark.

21. Public hearing and second reading of an ordinance submitting to the registered electors of the City of Greeley, at the coordinated election to be held November 2, 2021, the question of authorizing the City Council to extend the .65% component of retail sales and use tax currently scheduled to expire on December 31, 2022 to

December 31, 2029, for to fund capital projects for street-related infrastructure improvements and repairs

Raymond Lee, Deputy City Manager, reported that in March, the City Council was presented with information regarding potential ballot measures related to the reauthorization of the existing Keep Greeley Moving (KGM) sales tax as a part of the November 2021 ballot. Council's recommendation was to move forward with the steps to place the KGM sales tax reauthorization on the 2021 general election ballot and to conduct polling on voter support of the reauthorization of the KGM sales tax at its current rate and at an increased rate.

Deputy Manager Lee went on to state that additional polling was done and presented to Council, and at that time, Council reached consensus to move forward with the steps toward placing the KGM renewal on the November 2021 ballot via ordinance at its current rate noting that this item is the final reading and public hearing to do so.

Council Member Butler expressed that it is important to spend these dollars equitably across the city, and he inquired about the roads that are proposed for expansion.

Deputy Public Works Director Joel Hemesath reported that they include the 23rd Avenue corridor and improvements; 83rd Avenue between 10th and 20th Streets; and 5th Street between 14th and 23rd Avenues.

Mayor Gates opened the public hearing at 6:50 p.m.

Steve Teets, Greeley resident, stated that occasionally once streets are redone they are not tempered right and do not hold up adding that the crack and seal process is not effective. He mentioned areas on 10th Street near the Boomerang Golf course where sidewalks are buckling even though the work is relatively new. He added that residential streets need repaving too.

There being no further public comment offered, Mayor Gates closed the public hearing at 7:53 p.m.

Council Member Fitzsimmons moved, seconded by Council Member Hall, to adopt the ordinance and publish with reference to title only.
The motion carried 6-0 by roll call vote.
Excused: Council Member Clark.

Ord. No. 27, 2021, submitting a question to the registered electors of the City of Greeley, was adopted.

22. Public hearing and second reading of an ordinance ratifying and adopting the Collective Bargaining Agreement between the Greeley Police Officers' Association and the City of Greeley, which agreement by its terms is for a period commencing January 1, 2022 through December 31, 2024

Maria Gonzales-Estevez, Human Resources Director, was present and reported that the City and the Greeley Police Officers Association have negotiated a tentative agreement for a three-year contract for the period of January 1, 2022, to December 31, 2024, and provided the highlights of the tentative agreement.

Mayor Gates opened the public hearing at 6:57 p.m., and no comments were offered.

Council Member Fitzsimmons moved, seconded by Council Member Hall, to adopt the ordinance and publish it with reference to title only.

The motion carried 6-0 by roll call vote.

Excused: Council Member Clark.

Ord. No. 28, 2021, ratifying and adopting the collective bargaining agreement, was adopted.

23. Appointment of applicants to the Construction Trades Advisory & Appeals Board, Judicial Review Board, Museum Board, Planning Commission, and Youth Commission.

Assistant City Clerk Jerry Harvey reported the following appointments were made by Council by written ballot:

- Construction Trades Advisory & Appeals Board – Brian Horning and Council directed staff to recruit for additional applicants.
- Judicial Review Board – Angie McDowell and Nicholas Nakamura.
- Museum Board – Gary Alexander, Joseph Lesko, and Adrian Sdano.
- Planning Commission – Jeff Carlson, Larry Modlin, and Christian Schulte.
- Youth Commission – Diana Calhoun, Mya Hollingshead, and Council directed staff to recruit for additional applicants.

24. Scheduling of Meetings, Other Events

No additional meetings or events were scheduled.

25. Consideration of a motion authorizing the City Attorney to prepare any required resolutions, agreements, and ordinances to reflect action taken by the City Council at this meeting and at any previous meetings, and authorizing the Mayor and City Clerk to sign all such resolutions, agreements and ordinances

Council Member Butler moved, seconded by Council Member Hall, to approve the above authorizations.

The motion carried 6-0.

Excused: Council Member Clark.

26. Adjournment

There being no further business to come before the City Council, Mayor Gates adjourned the meeting at 7:02 p.m.

John D. Gates, Mayor

Cheryl Aragon, Deputy City Clerk

Council Agenda Summary

September 7, 2021

Key Staff Contact: Sean Chambers, Water & Sewer Director, 970-350-9815

Title:

Consideration of a resolution to the Second Amendment to IGA for Treated Water Service with the Town of Windsor

Summary:

The City of Greeley entered into an Intergovernmental Agreement (IGA) with the Town of Windsor in January of 1996 to set the terms by which Greeley would treat and deliver potable water to Windsor sourced from Windsor owned water resources. That outside city water service IGA was subsequently amended in the fall of 2017. A copy of the existing 2017 First Amendment IGA is enclosed for reference.

The Second Amendment to the IGA will provide Greeley with an annual revenue in association with making up to 350 AF of drought supply municipal water available to Windsor in times of defined water shortage. The IGA terms provide Windsor access to drought response water, not to exceed 350 Acre Feet per year. Windsor's access is limited to times of shortage, which are defined for the narrow purpose of this IGA as a water year in which the Colorado-Big Thompson (CBT) quota < 65% (less than 0.65 acre feet per unit). City of Greeley may at its sole discretion curtail lease deliveries if drought or other conditions cause Greeley to impose mandatory city-wide water use restrictions. Since the year 2000, the shortage condition as defined above has occurred twice per decade, but could be more periodic going forward. If not leased to Windsor under the terms of this agreement, the water would otherwise likely be renting into the agricultural sector.

The Agreement establishes an annual payment to Greeley for making drought water available, which commences in 2022 at \$60,000.00. The annual payment for the Interim Water Lease availability shall increase by 3% per year. The initial Term of Sec. 22 is 10 years; maybe extended for one 5 year term. In addition to the annual availability payment required under terms of the IGA, the Agreement dictates the volumetric unit price per acre foot of water (325,851 gallons) of Interim drought protection lease water is based upon Greeley's Non-Agricultural Water Rental Policy (2021). The Non-Ag (municipal) CBT rental for non-augmentation municipal type uses is = \$500/AF.

Fiscal Impact:

Does this item create a fiscal impact on the City of Greeley?	Yes
If yes, what is the initial, or, onetime impact?	\$60,000 revenue
What is the annual impact?	Minimum of \$60,000.00 annually, increasing by 3% per year.

What fund of the City will provide Funding?	Water Operating
What is the source of revenue within the fund?	Water Rates
Is there grant funding for this item?	N/A
If yes, does this grant require a match?	
Is this grant onetime or ongoing?	
Additional Comments:	The IGA Amendment would produce additional revenue from water that is otherwise often leased as the lower agricultural rate, plus an annual revenue for availability.

Legal Issues:

Section 3-5 of the Greeley City Charter and Section 2-461 of the Greeley Municipal Code authorize the City to enter into contracts with other governmental entities for the performance of cooperative or joint activities. The City Attorney's Office has reviewed and approved the IGA as to form.

Other Issues and Considerations:**Strategic Work Program Item or Applicable Council Priority and Goal:**

Infrastructure & Growth: Establish the capital and human infrastructure to support and maintain a safe, competitive, appealing and successful community.

Decision Options:

- 1) Adopt the resolution as presented; or
- 2) Amend the resolution and adopt as amended; or
- 3) Deny the resolution; or
- 4) Continue consideration of the resolution to a date certain.

Council's Recommended Action:

A motion to adopt the Resolution.

Attachments:

Second Amendment to IGA for Treated Water Service
Resolution
Presentation

SECOND AMENDMENT TO
INTERGOVERNMENTAL AGREEMENT FOR
TREATED WATER SERVICE

BETWEEN THE CITY OF GREELEY, COLORADO
AND THE TOWN OF WINDSOR, COLORADO

This SECOND AMENDMENT TO INTERGOVERNMENTAL AGREEMENT FOR TREATED WATER SERVICE ("Second Amendment") is entered into this ____ day of _____ 2021, by and between THE CITY OF GREELEY, COLORADO, a home rule municipality ("Greeley") and THE TOWN OF WINDSOR, COLORADO, a home rule municipality acting as the governing board of the Windsor Water Utilities Enterprise ("Windsor"), to set forth the terms and conditions by which Greeley will use its supply and treatment facilities to provide the treatment of potable water and provision of leased water to Windsor.

WHEREAS, pursuant to C.R.S. § 29-1-203, governments may cooperate or contract with one another to provide any function, service or facility lawfully authorized to each of the following cooperating units of government; and

WHEREAS, Greeley and Windsor previously entered into that certain Intergovernmental Agreement for Treated Water Service dated January 4, 1996 ("1996 IGA"), which was amended by that certain First Amendment to Intergovernmental Agreement for Treated Water Service, dated November 13, 2017 and attached hereto as Exhibit A ("First Amendment"); and

WHEREAS, Greeley and Windsor have a continuing common interest in obtaining high-quality treated water in sufficient quantities to meet the present and future needs of their citizens and service areas; and

WHEREAS, Greeley and Windsor are agreeable to further amending the 1996 IGA under the terms and conditions of this Second Amendment; and

WHEREAS, Greeley and Windsor desire to reduce their understandings, and the terms and conditions of this Second Amendment, to writing;

NOW THEREFORE, for good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, and in further consideration of the mutual covenants, undertakings, terms, and conditions contained herein, Greeley and Windsor agree as follows:

1. OTHER TERMS IN FULL FORCE AND EFFECT. Except as explicitly modified in this Second Amendment, all terms and conditions of the 1996 IGA, as amended by the First Amendment, remain in full force and effect.

2. AMENDMENTS. The 1996 IGA, as amended, is hereby further amended as follows.

a. Section 6 of the 1996 IGA is amended and replaced in its entirety as follows.

6. WATER RIGHTS. Windsor shall make available to Greeley for treatment water attributable to water rights that are decreed or otherwise approved for municipal use under Colorado

law and usable in the Greeley water system. Windsor shall remain responsible for all assessments due on the water rights made available to Greeley for treatment pursuant to this agreement. Windsor shall remain responsible for compliance with all requirements of local, State, or Federal law associated with the water rights made available to Greeley for treatment pursuant to this agreement, including, without limitation, for meeting the return flow obligations associated with changed water rights.

Windsor shall make such water available to Greeley in sufficient quantities to meet the potable water use projections described in Section 5 above, including sufficient quantities beyond its projections to cover the shrinkage associated with the delivery of such water. Greeley and Windsor will cooperate in the calculation and assessment of shrinkage based on agreed shrinkage factors for the sources of supply provided by Windsor and the treatment plant at which the water is treated.

b. Section 12.1 of the 1996 IGA is amended and replaced in its entirety as follows.

12.1 Each year either Windsor or Greeley or both may register and record peak daily and peak hourly demands. Windsor's peak daily and peak hourly demand factors will either be flow-weighted averages of several master meters, or shall be derived from simultaneous readings from the several master meters, whichever method generates the highest demand factors.

To modulate variations in peaking factors from year to year, and to thereby modulate fluctuations in the cost-of-service rates, peaking factors will be calculated based upon the average of the previous five years' actual recorded peak flows. Notwithstanding the provisions regarding Peaking Error set forth in Sections 12.2, 12.3, and 12.4, in no case will past year's or current year's water bills be adjusted for changes in the current peak demand factors. If peak daily or peak hourly demands are not registered in any given year, then the measurements used in the prior year's rate study will be assumed constant in the next rate study.

c. Section 13.1 of the 1996 IGA is amended and replaced in its entirety as follows.

13.1 Windsor shall pay to Greeley a system development charge ("SDC") when the metered water delivered to Windsor in any year, excluding Interim Water delivered pursuant to Section 22 below, exceeds the acre-feet delivered in the base year. Payment of system development charges will create a new base year delivery. No system development charges will be due in subsequent years for metered delivery equal to or less than the new base year delivery. Payments of the system development charge will occur in twelve monthly increments following the calendar year in which the exceedance occurs. In no case shall system development charges be refunded. Windsor's current base year volume at the time this Second Amendment is executed is 651.33 acre-feet.

d. The 1996 IGA is amended by the addition of a new Section 22 as follows.

22. INTERIM WATER SUPPLY LEASE. In addition to the treated water service provided pursuant to the 1996 IGA, as amended, Greeley will also provide to Windsor an interim supplemental supply of raw water during certain times of water shortage more particularly

described in Paragraph 22.2 below that Windsor may (but shall not be required to) itself treat and deliver to its customers (“Interim Water”), pursuant to the terms of this Section 22 (“Interim Water Supply Lease”). Though this Section 22 may expire or be terminated independent of the 1996 IGA, as amended, in its entirety, all other terms and conditions of the 1996 IGA, as amended, not explicitly superseded in this Section 22 remain applicable to the conduct of the parties under the Interim Water Supply Lease.

22.1 Term. The initial term of the Interim Water Supply Lease commences on November 1, 2021 and expires after a period of ten (10) years. Upon the mutual agreement in writing of Greeley and Windsor, the Interim Water Supply Lease may be extended for one (1) subsequent term of five (5) years.

22.2 Amount of Interim Water and Projection Schedule. For purposes of this Interim Water Supply Lease, a Water Year shall run from November 1 through October 31 of the following calendar year. In the event that the Board of Directors for the Northern Colorado Water Conservancy District (“Northern Water”) sets a C-BT Quota of less than sixty-five percent (65%) in any Water Year during the term of this Interim Water Supply Lease, Greeley agrees to provide up to three hundred and fifty (350) acre-feet of Interim Water to Windsor for that Water Year. In such an event, Windsor shall provide to Greeley a projection schedule within thirty (30) days after the date that Northern Water sets a C-BT Quota of less than sixty-five percent (65%), detailing the amount of Interim Water in acre-feet needed per month for the remainder of that Water Year (“Projection Schedule”). Notwithstanding the total maximum amount of three hundred and fifty (350) acre-feet of Interim Water per Water Year set forth above, Greeley shall not be obligated under any circumstances to provide more than one hundred and twenty-five (125) acre-feet of Interim Water to Windsor in any calendar month, or more than one million, five hundred thousand (1,500,000) gallons of Interim Water to Windsor on any calendar day.

22.3 Payment for Interim Water. Windsor shall pay to Greeley an annual payment on or before March 1 of each Water Year during the term of this Interim Water Supply Lease, regardless of whether the obligation described in Paragraph 22.2 above is triggered, as consideration for making its water resources available (“Annual Payment”). The Annual Payment shall be sixty thousand dollars (\$60,000.00) for Water Year 2022. Each Water Year thereafter, the Annual Payment shall increase by three percent (3%). Windsor shall also pay to Greeley the Greeley non-agricultural water rental rate in effect on the first day of then-current Water Year, as established by the Greeley Water and Sewer Board according to its Non-Agricultural Water Rental Policy, per acre-foot of Interim Water provided to Windsor during each Water Year this Interim Water Supply Lease is triggered (“Lease Payment”). Windsor shall remit Lease Payments to Greeley within thirty (30) days of receiving an invoice from Greeley, and in no event shall Windsor be entitled to a refund of either Annual Payments or Lease Payments.

22.4 Sources of Interim Water Supply. Greeley may, in its sole discretion, allocate any of its sources of water supply that are available and decreed for municipal use to meet its

obligations under this Interim Water Supply Lease. Windsor shall be solely responsible for all accounting and administration of the Interim Water applicable to its use in the Windsor water system, after such water is made available by Greeley. Windsor shall be solely responsible for any transit losses assessed on the Interim Water. Greeley shall remain entitled to the use of any return flows attributable to Interim Water provided to Windsor under this Interim Water Supply Lease.

22.5 Limitations on Obligation to Provide Interim Water. Greeley may curtail deliveries of Interim Water to Windsor if Greeley imposes, in Greeley's sole discretion, mandatory city-wide water use restrictions to address drought conditions, infrastructure failure, or other catastrophic circumstance limiting the ability of Greeley to satisfy the indoor water usage needs of its citizens, so long as, and to the extent that, deliveries under this Agreement are prevented or delayed by such cause. Greeley also may curtail deliveries of Interim Water to Windsor if an accident, act of war, natural catastrophe, fire, explosion, or other cause beyond the reasonable control of Greeley prevents or delays its ability to deliver Interim Water, so long as, and to the extent that, deliveries under this Interim Water Supply Lease are prevented or delayed by such cause.

22.6 Restriction on Assignment. Windsor shall not rent, sublet, or otherwise convey in any manner the right to use the Interim Water. Neither Greeley nor Windsor shall assign any of their rights or delegate any of their obligations under this Interim Water Supply Lease.

22.7 Default and Termination of Interim Water Supply Lease. This Interim Water Supply Lease may expire, or be terminated in accordance with the provisions of this Section, without terminating the 1996 IGA, as amended, in its entirety. If either Greeley or Windsor fails to comply with a term or condition of this Section 22, including, without limitation, the obligation to timely make the Annual Payment, such failure constitutes a default of the Interim Water Supply Lease only. The non-defaulting party may declare the default by providing written notice to the Greeley Water Resources Operations Manager or the Windsor Community Development Director. Upon receipt of this notice of default, the defaulting party will have fifteen days within which to cure the default. If, in the sole discretion of the non-defaulting party, the default remains uncured after the aforementioned fifteen-day cure period, or after any written extension thereof mutually agreed upon by Greeley and Windsor, the non-defaulting party may declare the Interim Water Supply Lease terminated. The failure of either Greeley or Windsor to declare a default of this Section 22 does not establish a precedent nor constitute an implied waiver of any subsequent breach of the Interim Water Supply Lease. This Interim Water Supply Lease shall automatically terminate in the event either Greeley or Windsor terminates the 1996 IGA, as amended, in accordance with Section 18 above.

e. The 1996 IGA is amended by the addition of a new Section 23 as follows.

23. VESTED CONTRACTUAL RIGHTS. The contract rights created pursuant to the 1996 IGA, as amended, are intended by Greeley and Windsor to be presently vested and fully

enforceable according to their terms. The provisions of the 1996 IGA, as amended, were negotiated as, and constitute, parts of an integrated whole, and the inability of either party to enforce any of such provisions or to consummate any of the transactions contemplated hereby due to changes in law, whether by amendment of the State or federal constitutions, the respective charters or municipal codes of either municipality, or of any other applicable statute or regulation, or by other regulatory or judicial action, would result in substantial and irreparable harm to both parties and constitute an impairment of their vested contractual rights.

IN WITNESS WHEREOF, the City of Greeley and the Town of Windsor have authorized and executed this Second Amendment to Intergovernmental Agreement for Treated Water Service on the date first written above.

THE TOWN OF WINDSOR, COLORADO

ATTEST:

By: _____
Paul Rennemeyer, Mayor

By: _____
Karen Frawley, Town Clerk

[Seal]

THE CITY OF GREELEY, COLORADO

ATTEST:

By: _____
John Gates, Mayor

By: _____
Anissa Hollingshead, City Clerk

AS TO SUBSTANCE:

AS TO AVAILABILITY OF FUNDS:

By: _____
Raymond Lee, Acting City Manager

By: _____
John Karner, Director of Finance

AS TO LEGAL FORM:

By: _____
Doug Marek, City Attorney

**THE CITY OF GREELEY, COLORADO
RESOLUTION __, 2021**

**A RESOLUTION AUTHORIZING ENTRY INTO THE SECOND AMENDMENT TO INTERGOVERNMENTAL
AGREEMENT FOR TREATED WATER SERVICE BETWEEN THE CITY OF GREELEY, COLORADO AND THE
TOWN OF WINDSOR, COLORADO**

WHEREAS, the City of Greeley ("Greeley") is authorized by Section 3-5 of the Greeley City Charter and Section 2-461 of the Greeley Municipal Code to enter into contracts with other governmental entities for the performance of cooperative or joint activities; and

WHEREAS, Greeley and the Town of Windsor ("Windsor") entered into that certain intergovernmental agreement dated January 4, 1996, which was amended by that certain First Amendment to Intergovernmental Agreement for Treated Water Service dated November 13, 2017 ("Windsor Outside Service IGA") and set the terms and conditions by which Greeley uses its supply and treatment facilities to provide the treatment of potable water to Windsor; and

WHEREAS, Greeley and Windsor have a continuing common interest in obtaining high-quality treated water in sufficient quantities to meet the present and future needs of their citizens and service areas, and have reached an understanding regarding the further amendment of the Windsor Outside Service IGA, in the form of the agreement attached hereto and incorporated herein as Exhibit A ("Second Amendment to Intergovernmental Agreement for Treated Water Service"); and

WHEREAS, the Greeley Water and Sewer Board approved the Second Amendment to Intergovernmental Agreement for Treated Water Service at its August 18, 2021 meeting, and recommended that the City Council approve the same; and

WHEREAS, it is in the best interest of the citizens of the City of Greeley for the City to enter into the Second Amendment to Intergovernmental Agreement for Treated Water Service.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF GREELEY, COLORADO:

Section 1. The City of Greeley, Colorado is hereby authorized to enter into the Second Amendment to Intergovernmental Agreement for Treated Water Service with the Town of Windsor, in the form attached hereto and incorporated herein as Exhibit A.

Section 2. City staff and legal counsel are hereby authorized to make minor revisions to the Second Amendment to Intergovernmental Agreement for Treated Water Service with the Town of Windsor, provided that the material substance of the agreement remains unchanged.

Section 3. This resolution shall take effect immediately upon its passage.

PASSED AND ADOPTED, SIGNED AND APPROVED THIS _____ DAY OF _____ 2021.

ATTEST:

THE CITY OF GREELEY, COLORADO

City Clerk

Mayor

THE CITY OF GREELEY, COLORADO

RESOLUTION 95, 2017A RESOLUTION OF THE GREELEY CITY COUNCIL AUTHORIZING
ENTRY INTO THE FIRST AMENDMENT TO THE INTERGOVERNMENTAL
AGREEMENT FOR TREATED WATER SERVICE BETWEEN THE CITY OF GREELEY
AND THE TOWN OF WINDSOR

WHEREAS, pursuant to C.R.S. §29-1-203, governments may cooperate or contract with one another to provide any function, service or facility lawfully authorized to each of the following cooperating units of government; and

WHEREAS, Greeley and Windsor previously entered into that certain Intergovernmental Agreement for Treated Water Service on January 4, 1996 ("the 1996 IGA"); and

WHEREAS, authorized representatives of Greeley and Milliken have met on numerous occasions to review the 1996 IGA and discuss the possible modification of that agreement; and

WHEREAS, Greeley and Windsor have a continuing common interest in obtaining high-quality treated water in sufficient quantities to meet the present and future needs of their citizens and service areas; and

WHEREAS, Greeley and Windsor have reached agreement regarding the modification and continuation of the 1996 IGA, by the terms and conditions of the First Amendment to Intergovernmental Agreement for Treated Water Service, Between the City of Greeley, Colorado and the Town of Windsor attached hereto and incorporated herein as Exhibit A; and

WHEREAS, the Greeley Water and Sewer Board reviewed the First Amendment to Intergovernmental Agreement for Treated Water Service, Between the City of Greeley, Colorado and the Town of Windsor, Colorado at its October 18, 2017 meeting, approved the agreement, and recommended approval by City Council of the same; and

WHEREAS, it is in the best interests of the citizens of the City of Greeley that the City Council authorize entry into this agreement.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GREELEY, COLORADO:

Section 1. The City Council hereby authorizes the City to enter into the First Amendment to Intergovernmental Agreement for Treated Water Service, Between the City of Greeley, Colorado and the Town of Windsor, Colorado, attached hereto and incorporated herein

as Exhibit A.

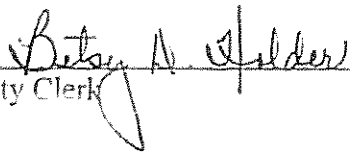
Section 2. City staff and legal counsel are hereby authorized to make minor changes and modifications to the First Amendment to Intergovernmental Agreement for Treated Water Service prior to final execution of the instrument, so long as the substance of the agreement remains substantially unchanged.

Section 3. This Resolution shall become effective immediately upon its passage.

PASSED AND ADOPTED, SIGNED AND APPROVED THIS 7th day of November, 2017.

ATTEST:

THE CITY OF GREELEY, COLORADO



City Clerk



Mayor

FIRST AMENDMENT TO
INTERGOVERNMENTAL AGREEMENT FOR
TREATED WATER SERVICE

BETWEEN THE CITY OF GREELEY, COLORADO
AND THE TOWN OF WINDSOR, COLORADO

This FIRST AMENDMENT TO INTERGOVERNMENTAL AGREEMENT FOR TREATED WATER SERVICE ("First Amendment") is entered into this 13th day of November, 2017, by and between **THE CITY OF GREELEY**, Colorado, a home rule municipality ("Greeley") and **THE TOWN OF WINDSOR**, Colorado, a home rule municipality acting as the governing board of the Windsor Water Utilities Enterprise ("Windsor"), to set forth the terms and conditions by which Greeley will use its supply and treatment facilities to provide the treatment and delivery of potable water to Windsor.

WHEREAS, pursuant to C.R.S. §29-1-203, governments may cooperate or contract with one another to provide any function, service or facility lawfully authorized to each of the following cooperating units of government; and

WHEREAS, Greeley and Windsor previously entered into that certain Intergovernmental Agreement for Treated Water Service on January 4, 1996 ("the 1996 IGA"); and

WHEREAS, authorized representatives of Greeley and Windsor have met on numerous occasions to review the 1996 IGA and discuss the possible modification of that agreement; and

WHEREAS, Greeley and Windsor have a continuing common interest in obtaining high-quality treated water in sufficient quantities to meet the present and future needs of their citizens and service areas; and

WHEREAS, Greeley and Windsor are agreeable to modifying the 1996 IGA under the terms and conditions of this First Amendment; and

WHEREAS, Greeley and Windsor desire to reduce their understandings, and the terms and conditions of this First Amendment, to writing;

NOW THEREFORE, for good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, and in further consideration of the mutual covenants, undertakings, terms, and conditions contained herein, Greeley and Windsor agree as follows:

1. **OTHER TERMS IN FULL FORCE AND EFFECT.** Except as explicitly modified in this First Amendment, all terms and conditions of the 1996 IGA remain in full force and effect.
2. **AMENDMENTS.** The 1996 IGA is hereby amended as follows.
 - a. **Section 1.8 and 1.9 are incorporated as follows.**

1.8 "Peaking Error" means a discrete operational incident experienced by Windsor that causes a measured peaking factor increase, which incident is agreed by both Greeley and

Windsor, in their sole respective discretions, to be a one-time event that is not anticipated to occur again in the future.

1.9 “Peaking Error Fee” means a one-time fee assessed to Windsor by Greeley in the event that an agreed upon Peaking Error occurs, in lieu of utilizing the increased measured peaking factor attributable to a Peaking Error in the calculation of rates under this agreement.

b. Section 12 of the 1996 IGA is amended in its entirety as follows.

12. PEAK DEMAND MEASUREMENT AND DETERMINATION.

12.1 Each year either Windsor or Greeley or both may register and record peak daily demands. Windsor’s peak daily demand factor will either be a flow-weighted average of several master meters, or it shall be derived from simultaneous readings from the several master meters, whichever method generates the highest demand factor. Peak hourly demand factors will be determined by dividing the peak daily demand reading by 24 (hours in the day), and then dividing that result by the average hourly demand for that calendar year.

Peak Hourly Demand Factor Calculation: Peak Daily Demand / 24 / Average Annual Hourly Demand

To modulate variations in peaking factors from year to year, and to thereby modulate fluctuations in the cost-of-service rates, peaking factors will be calculated based upon the average of the previous two years actual recorded peak flows. Notwithstanding the provisions regarding Peaking Error below, in no case will past year’s or current year’s water bills be adjusted for changes in the current peak demand factors. If peak daily demands are not registered in any given year, then the measurements used in the prior year’s rate study will be assumed constant in the next rate study.

12.2 Unanticipated Operational Peaking. If Windsor experiences an operational incident that causes its measured peaking factor to increase, it may request from Greeley that such increased measured peaking factor be deemed an error, and that the increased factor not be included in the forthcoming rate calculation. If Greeley agrees that the incident was a one-time event that is not anticipated to occur again in the future, the increased peaking measurement may be termed a Peaking Error. Mutual agreement by Windsor and Greeley that the increased factor constitutes a Peaking Error shall result in the assessment to Windsor of a Peaking Error Fee, as described below, and the increased factor shall not be included in the forthcoming rate calculation. If a Peaking Error occurs, the peaking factor used in the rate calculation shall be from the last two years, as described above, without the Peaking Error.

12.3 Peaking Error Fee. Upon mutual agreement by Windsor and Greeley that a Peaking Error has occurred, Windsor shall remit to Greeley a Peaking Error Fee and Greeley shall not utilize the increased peaking factor in the calculation of Windsor’s rate. The Peaking Error Fee assessed to Windsor shall be in an amount equal to 20% of the total annual revenue

paid by Windsor to Greeley pursuant to this agreement during the calendar year in which the Peaking Error occurred.

12.4 Water usage pursuant to an agreed upon Peaking Error shall not result in an increase in System Development Charges, nor an increase to the base rate as calculated pursuant to Section 8 of this agreement.

c. Section 13 of the 1996 IGA is amended in its entirety as follows.

13. SYSTEM DEVELOPMENT CHARGES.

13.1 Windsor shall pay to Greeley a system development charge ("SDC") when the metered water delivered to Windsor in any year exceeds the acre-feet delivered in the base year. Payment of system development charges will create a new base year delivery. No system development charges will be due in subsequent years for metered delivery equal to or less than the new base year delivery. Payments of the system development charge will occur in twelve monthly increments following the calendar year in which the exceedance occurs. In no case shall system development charges be refunded. Windsor's current base year volume at the time this First Amendment is executed is 651.33 acre-feet.

13.2 The SDC due shall be a percentage of the then current Inside the City Greeley ¾-inch tap plant investment fee (expressed in \$/acre-feet), to be multiplied by Windsor's consumption in acre-feet of water metered in excess of the base year delivery. The SDC percentage is calculated as follows: The typical Windsor single-family customer benefits from 75% of Greeley Water System. To express Greeley's plant investment fee in terms of \$/acre-feet, the average annual inside-the-City residential demand, as used in the annual update of the Greeley rate model, is divided into the plant investment fee.

13.3 *THE FOLLOWING CALCULATION UTILIZES 2016 DATA TO DERIVE EXAMPLE FIGURES FOR THE SOLE PURPOSE OF DEMONSTRATING THE SDC METHODOLOGY. ANY ACTUAL SDC BORNE BY WINDSOR WILL VARY ANNUALLY, IN ACCORDANCE WITH THE METHODOLOGY DESCRIBED IN THIS SECTION 13.*

Example Conversion and Calculation of SDC Rate

Average Annual Demand:	135,000 gallons (0.414 acre-feet per ¾-inch tap)
Current Inside the City Greeley PIF:	\$10,800

Conversion of Greeley PIF: $(\$10,800) / (0.414 \text{ AF/year}) = \$26,087 \text{ per AF/year}$

Windsor SDC: $(75\%) * (\$26,087 \text{ per AF/year}) = \$19,565 \text{ per AF/year}$

Example Base Year and SDC Calculation

Windsor Base Year Volume: 651.33 acre-feet
Windsor Actual Metered Flow: 660 acre-feet (8.67 AF in excess of Base Year Volume)

Calculation of Total SDC Due: $(660-651.33) * (\$19,565) = \$169,628.55$

Windsor's Base Year Volume would then increase to become 660 AF.

d. Section 16 of the 1996 IGA is amended in its entirety as follows.

16. INTEGRATION, MERGER, AND SUPERSESSION. This First Amendment incorporates and renews the terms and conditions of the 1996 IGA not explicitly modified herein, and supersedes all terms and conditions of any other agreements regarding water supply previously existing between Greeley and Windsor. This First Amendment contains all agreements and understandings, whether written or oral, between Greeley and Windsor regarding the subject matter herein.

e. Section 17 of the 1996 IGA is amended in its entirety as follows.

17. TERM. In the interest of reliability and security, this First Amendment shall be for an initial term of twenty-five years from the date of execution set forth above. At the expiration of this initial term, this agreement shall automatically renew for successive ten-year terms, unless terminated in accordance with Section 18 below.

f. Section 18 of the 1996 IGA is amended in its entirety as follows.

18. DEFAULT AND TERMINATION. In the event either party fails to meet the terms and conditions of this agreement, such failure shall constitute a default of this agreement and the non-defaulting party may immediately terminate this agreement, the effective day of termination being thirty days after the receipt of written notice of default by the defaulting party. Notice shall be given either to the Windsor Town Manager or the Greeley City Manager. Either party may cure the default during the aforesaid 30-day cure period. Upon cure of any default, this agreement shall remain in full force and effect. Nothing herein shall limit either party from collecting damages and amounts due from the other party upon termination of this agreement by default. Notwithstanding the above, this agreement may otherwise be terminated at will by either Greeley or Windsor by giving an advance written notice to the other party of no less than ten (10) years. Nothing herein shall preclude the parties from negotiating modifications of this agreement during the ten-year notification of termination window, in which case an amended agreement may modify or supplant this agreement.

IN WITNESS WHEREOF, the City of Greeley and the Town of Windsor have authorized and executed this First Amendment to Intergovernmental Agreement for Treated Water Service on the date first written above.

TOWN OF WINDSOR, COLORADO

By: Kristie Melendez
Kristie Melendez, Mayor

ATTEST:

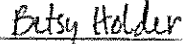
By: Patti Garcia
Patti Garcia, Town Clerk



THE CITY OF GREELEY, COLORADO

ATTEST:

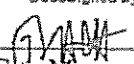
By: 
Mayor

By: 
City Clerk

WATER AND SEWER BOARD:

AS TO SUBSTANCE:

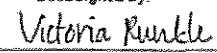
By: 
Chairman

By: 
City Manager

AS TO LEGAL FORM:

AS TO AVAILABILITY OF FUNDS:

By: 
City Attorney

By: 
Director of Finance

**INTERGOVERNMENTAL AGREEMENT FOR
TREATED WATER SERVICE
BETWEEN THE CITY OF GREELEY, COLORADO
AND THE TOWN OF WINDSOR, COLORADO**

THIS AGREEMENT is made this 4th day of January, 1998⁶, by and between **THE CITY OF GREELEY**, Colorado, a home rule municipality ("Greeley") and **THE TOWN OF WINDSOR**, a Colorado statutory town acting as the governing board of the Windsor Water Utilities Enterprise ("Windsor"), for the treatment and delivery of potable water to the Town of Windsor by and through the treatment facilities and transmission lines of the City of Greeley, Colorado.

WHEREAS, pursuant to § 29-1-203, C.R.S., governments may cooperate or contract with one another to provide any function, service or facility lawfully authorized to each of the cooperating or contracting units of government; and

WHEREAS, the Town of Windsor and the City of Greeley are neighboring municipalities which have a common interest in obtaining high-quality water in sufficient quantity to meet present and future needs; and

WHEREAS, the citizens of Windsor are desirous of long-term reliability in treated water; and

WHEREAS, Windsor and Greeley can cost-effectively combine their demand for treated water through one system of treatment, transmission and treated water storage thereby achieving economies of scale; and

WHEREAS, in addition to its own needs and demand, Greeley has the capacity and the facilities to meet the needs of Windsor for water treatment and transmission as are more fully set forth herein; and

WHEREAS, Windsor and Greeley shall and will continue to own their water rights individually and separately, each municipality relying upon the yield of its own water rights to provide the raw water necessary for treatment proposed under this agreement; and

WHEREAS, Greeley and Windsor are agreeable to entering into a long-term contract for the treatment and delivery of potable water to Windsor through an intergovernmental agreement; and

WHEREAS, the parties are desirous of reducing the understandings, terms and conditions of said agreement to writing.

NOW THEREFORE, IN CONSIDERATION of the mutual covenants, undertakings, terms and conditions contained herein, the parties agree as follows:

1. DEFINITIONS. The terms used herein are defined as follows:

1.1 "Greeley" shall refer to the City of Greeley and any authorized representative thereof.

1.2 "Greeley water system" or "Greeley water system enterprise" shall refer to Greeley's raw water and water rights, raw water storage and conveyance systems, water treatment plants, treated water conveyance and storage systems, pump stations and related appurtenances for the collection, distribution and measurement of water.

1.3 "Peak daily demand" means the greatest rate of treated water delivered by Greeley to Windsor over a twenty-four hour period, beginning at midnight, in a given calendar year.

1.4 "Peak hourly demand" means the greatest rate of treated water delivered by Greeley to Windsor over a one-hour period for any given day of the calendar year.

1.5 "Windsor" shall refer to the Town of Windsor as the governing board of the Windsor Water Utilities Enterprise and any authorized representative thereof.

1.6 "Windsor system" or "Windsor water system" shall refer to the pipes, pump stations, treated water storage reservoirs, and related appurtenances for the distribution of water (a) inside the Windsor town limits (b) downstream of master meters gauging Greeley's delivery to Windsor.

1.7 "Year" means a calendar year beginning on January 1.

2. USE. Pursuant to the terms of this intergovernmental agreement, Greeley agrees to treat water for Windsor in the manner and in such amounts as are more fully set forth herein.

It is understood and agreed that in reliance upon providing water to Windsor, the Town has appropriated certain funds for the construction of transmission lines capable of receiving and transporting such water. The parties acknowledge that the construction of these transmission lines is a condition precedent to delivery of water to Windsor. Water shall be made available to Windsor upon the completion of the transmission lines. Commencing with the first full year that this agreement is in effect and continuing annually for the term of this agreement Greeley shall make available not less than 600 acre feet of treated water. During each full year that this agreement is in effect Windsor shall take a minimum of 400 acre feet of treated water. If in any year treated water is available to Windsor and Windsor fails to take and use 400 acre feet of treated water Windsor shall nonetheless pay for this minimum allotment of treated water.

The parties further acknowledge that the initial year of this agreement will likely not be a full year. In this event, Windsor will be relieved of the 400 acre feet minimum requirement and will be required to pay only for the treated water actually delivered in this first year.

Nothing herein shall limit Windsor from taking treated water in excess of 600 acre feet subject to the availability thereof. All treated water in excess of 600 acre feet shall be expressly conditioned upon Greeley having the excess capacity to provide such water, and Windsor shall pay for the same.

3. POINT OF DELIVERY.

3.1 Treated water from Greeley's transmission and distribution system shall be delivered to Windsor through multiple master meters, the location of which will be mutually established and agreed upon by both municipalities.

3.2 Unless otherwise agreed upon between the parties, Greeley shall construct, own and maintain treated water meter vaults, meters, back-flow prevention devices and all associated facilities located at the delivery points. All of the costs of the metering facilities attributable to service to Windsor shall be paid by Windsor by and through inclusion in the Windsor rate base charged by Greeley and more fully described in paragraph eight of this agreement. Greeley agrees to design, construct and maintain all metering facilities in a prudent and cost effective manner. Each water meter shall be operated and maintained so as to record both cumulative flow and, as needed, maximum hourly and maximum daily flow within the accuracy prescribed by current American Water Works Standards. Each municipality will give the other seven calendar days notice prior to any routine or independent meter test. Windsor shall have the ability to valve the line downstream of a master meter for operation, maintenance and repair purposes.

4. **ALTERNATE SOURCES.** It is understood and agreed that as of the date of this agreement Windsor is receiving treated water from Greeley, the North Weld County Water District and the Fort Collins Loveland Water District. Nothing in this agreement shall be construed as limiting Windsor from continuing to receive treated water from sources other than Greeley during the term of this agreement, in whatever amounts Windsor deems appropriate.

5. **POTABLE WATER PROJECTION REQUIREMENTS.** No later than March 1 of each year, Windsor shall provide written notice to Greeley of its projected treated water requirements for the current calendar year and the five consecutive years following the year in which such notice is given. The projections in the notice shall include, at a minimum, both total annual consumption and maximum day and maximum hourly usage. Any actual usage in excess of projected peak demands which has a cost impact, excepting fire flow and other emergencies, shall result in supplemental demand charges as determined by the cost-of-service rate study and approved by the Greeley Water and Sewer Board.

6. **WATER RIGHTS.** Windsor shall acquire sufficient water rights which shall be usable in the Greeley water system and approved for municipal use in the Greeley water system under Colorado law in order to satisfy the treated water requirements of Windsor, expressly subject to the following conditions:

(a) On or before April 1 of each year, Windsor shall make raw water available to Greeley's water treatment plants equal to 130% of Windsor's projected potable water use for that calendar year.

(b) Windsor shall pay all assessment costs on any of the water provided for treatment by Greeley under this agreement.

(c) Windsor shall be responsible for meeting all return flow requirements of the raw water provided to Greeley for treatment, or other requirements of State or Federal law.

7. WATER SHORTAGE. In the event of a shortage of treated water, caused by the inability of a component of the Greeley water system to function, Windsor and Greeley shall share proportionally in water use reductions. Windsor and Greeley staff shall meet and mutually agree to a schedule and method of reducing water demand, with initial emphasis on reducing all nonessential uses such as lawn and parks irrigation. If a shortage persists, Windsor and Greeley agree to impose emergency rates which may be different for each customer category and which are intended to reduce discretionary consumption of treated water. The impact of the emergency rates shall be fairly and equally distributed among both Windsor and Greeley water customers. In a prolonged shortage, Windsor and Greeley agree to adopt a uniform set of enforcement tools and penalties to curtail usage. In any event, Greeley will make every effort feasible to continue to meet both Windsor's and Greeley's water demand, including obtaining treated water from other providers. In the event of a shortage, nothing shall prevent Windsor from independently using an alternate source of treated water in whatever amount Windsor deems necessary, until Greeley can again bring its facilities on line. In the event of a shortage caused by the inability of the Greeley water system to function, Windsor is relieved of the 400 acre-feet take-or-pay requirement specified in paragraph 2.

8. RATES. The initial rates for treated water delivered to Windsor shall be based upon the 1995 water rate cost-of-service model approved by the Greeley Water and Sewer Board. The Windsor rates shall be cost-of-service plus ten percent. The cost-of-service rates shall be reviewed annually and adjusted as needed by the Greeley Water and Sewer Board in accordance with section 17-4 of the Greeley City Charter.

9. BILLING. Bills shall be paid within thirty days of receipt, after which time interest penalties shall begin to accrue at the rate of one percent per month, or fraction thereof, during the period in which the bill remains unpaid.

10. NO ACQUIRED RIGHTS OR VESTING IN WATER RIGHTS OR IN WATER SYSTEM. As contained in section 17-1 of the Greeley City Charter, the Greeley water system is an Enterprise, as that term is defined pursuant to article X, section 20 of the Colorado Constitution. The Greeley water system Enterprise is owned by the citizens of Greeley.

Windsor Water Utilities Enterprise has been designated by Windsor as an Enterprise Fund as that term is defined pursuant to article X, section 20 of the Colorado Constitution.

Windsor specifically acknowledges and agrees that no rights or ownership of the Greeley water system shall become vested as a result of such service. Neither Greeley nor Windsor shall, by reason of any provision of this agreement or the use of water hereunder or otherwise, acquire any vested or adverse right, in law or in equity, in the water rights or water system owned by the other municipality. Neither the assignment, use, rental, or license of water or water rights nor the payment of system development charges shall be deemed to initiate, create, or vest any rights or ownership by either Greeley or Windsor in the other's water rights or water system. Further, Windsor shall not assert or claim any vested rights to continued service other than as established by the terms and conditions of this agreement.

11. POTABLE WATER. The treated water delivered by Greeley to the Windsor master meters shall be potable water which complies with applicable potable water law.

12. PEAK DEMAND MEASUREMENTS AND DETERMINATION. Each year either Windsor or Greeley or both may register and record peak daily and peak hourly demands. Windsor's peak daily and peak hourly demand factors will either be flow-weighted averages of the several master meters, or it shall be derived from simultaneous readings from the several master meters, whichever method generates the highest demand factor. To modulate variations in peaking factors year to year, and to thereby modulate fluctuations in the cost-of-service rates, peaking factors will be calculated based upon the average of the previous two years actual recorded peak flows. If the average of the peak hourly or the peak daily demand factors in the two immediately preceding years averages more than the factors used in the most current water rate study, then the next rate study will use the highest recorded peak daily or peak hourly factor from those two preceding years. If the average of the peak hourly or the peak daily demand factors in the two immediately preceding years averages less than the factors used in the most current water rate study, then the next rate study will use the highest recorded peak daily or peak hourly factor from those two preceding years. In no case will past year's or current year's water bills be adjusted for changes in current peak demand factors.

If peak daily or peak hourly demands are not registered in any given year, then the measurements used in the prior year's rate study will be assumed constant into the next rate study.

13. SYSTEM DEVELOPMENT CHARGES. This agreement allows Windsor's demand in any year to grow to an initial allowance of 600 acre-feet without payment of a system development charge. Water which is demanded by Windsor and delivered by Greeley to Windsor in any given calendar year which exceeds 600 acre-feet shall incur payment by Windsor to Greeley of a system development charge. This charge will be calculated as the current inside-Greeley plant 3/4-inch tap investment fee multiplied by every acre-foot of water consumed in excess of 600 acre-feet. Payments of this system development charge will occur in twelve monthly increments following the calendar year in which the excess occurs. The excess resulting in payment of a system development charge will create a new allowance. System development charges will not be refunded. No system development charges will be

paid in subsequent years for consumption equal to or less than the new allowance. Increased demand and delivery above the new maximum allowance in subsequent years will again cause payment of system development charges as calculated in this paragraph.

14. RELEASE, HOLD HARMLESS, INDEMNIFICATION. Both Windsor and Greeley are public entities, as that term is defined pursuant to the Colorado Governmental Immunity Act, C.R.S. § 24-10-101, *et seq.* The parties to this agreement have the benefits and responsibility enumerated in the Colorado Governmental Immunity Act. Each party shall defend any and all claims for injuries or damages pursuant to and in accordance with the requirements and limitations of the Colorado Governmental Immunity Act occurring as a result of negligent or intentional acts or omissions of the parties, their agents, employees and assigns.

In addition, Greeley shall be responsible for any and all liability for injuries or damages caused by any negligent acts or omissions of Greeley, its officers, employees and agents, performing functions or activities upon the property of Windsor. Greeley shall provide adequate workmen's compensation insurance for all of its employees, agents and assigns engaged in activities and functions upon the property of Windsor.

Windsor shall be responsible for any and all liability for injuries or damages caused by any negligent acts or omissions of Windsor, its officers, employees and agents, performing functions or activities upon the property of Greeley. Windsor shall provide adequate workmen's compensation insurance for all of its employees, agents and assigns engaged in activities and functions upon the property of Greeley.

Each party shall furnish the other party current certificates of insurance stating the coverages outlined above are in full force and effect.

15. NO PUBLIC UTILITIES COMMISSION CONTROL. The Town of Windsor, its employees and elected or appointed officials, agree neither to assert nor support any statement, policy, petition, rule making, or legislation attempting to place the Greeley water system under the rate making authority or jurisdiction of the Colorado Public Utilities Commission by virtue of this intergovernmental agreement or otherwise.

16. THIS AGREEMENT CONTROLS AND SUPERSEDES PREVIOUS AGREEMENTS. This agreement shall supersede any and all terms and conditions of water supply agreements previously existing between Greeley and Windsor.

17. TERM. In the interest of reliability and security, this agreement shall be for an initial term of twenty-five years from the date of its execution. After its initial term, this agreement shall be automatically renewed for successive ten-year terms, unless terminated as provided below.

18. DEFAULT AND TERMINATION. In the event either party fails to meet the terms and conditions of this agreement, such failure shall constitute a default of this agreement

and the non-defaulting party may immediately terminate this agreement, the effective day of termination being thirty days after the receipt of written notice of default by the defaulting party. Notice shall be either to the Windsor Town Administrator or the Greeley City Manager. Either party may cure any default during the aforesaid cure period. Upon cure of any default, this agreement shall remain in full force and effect. Nothing herein shall limit either party from collecting damages and amounts due from the other party upon termination of this agreement by default.

19. JURISDICTION AND VENUE. This agreement shall be interpreted pursuant to the laws of the State of Colorado. Venue to enforce this agreement shall be in Weld County.

20. AMENDMENT. This agreement shall be amended only in writing with the approval of the governing bodies of each municipality. No amendment or modification shall be effective unless in writing signed by the aforesaid persons. This agreement shall be governed by, construed and enforced in accordance with Colorado law.

21. DISPUTE RESOLUTION. Should disagreements arise regarding the interpretation of any portion of this agreement the parties agree to make efforts to resolve such disputes through negotiation; first, at the staff level; and second, with the respective Water Boards and/or City Councils. Procedures for such negotiations shall be established by mutual agreement at the time and may, with the concurrence of the parties, involve the use of qualified outside mediators. Any negotiations and resolution agreements reached therefrom must be within the legal authority granted to the parties by appropriate City Charters and/or State statutes, or shall be null and void. Notwithstanding anything to the contrary in this agreement, it is expressly agreed between the parties that this provision for dispute resolution does not apply to the authority granted the Greeley Water and Sewer Board pursuant to § 17-4 of the Greeley City Charter, including but not limited to, the establishment of minimum water rates.

IN WITNESS WHEREOF, the parties have executed this agreement the day and year first above written.

ATTEST:

THE CITY OF GREELEY, COLORADO

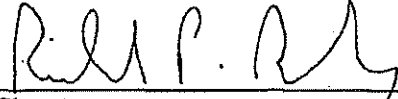
By: Betsy D. Felder
City Clerk

By: Steven Carlson
Mayor

Approved as to Substance:

By: 
City Manager

Approved as to Legal Form:

By: 
City Attorney

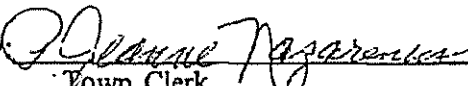
As to Availability of Funds:

By: 
Director of Finance

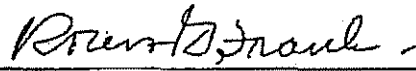
GREELEY WATER AND SEWER BOARD

By: 
Chairman

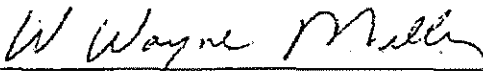
ATTEST:

By: 
Town Clerk

THE TOWN OF WINDSOR, COLORADO

By: 
Mayor

WINDSOR WATER BOARD

By: 
Chairman

njw:120695

Council Agenda Summary

August 17, 2021

Key Staff Contact: Andy McRoberts, Culture, Parks and Recreation Director, 970-350-9425

Title:

Consideration of a resolution authorizing the Mayor to execute an agreement with the State Board of the Great Outdoors Colorado Trust Fund for the construction of improvements in the east Greeley natural area.

Summary:

The City of Greeley is constructing the first phase of an east Greeley natural area (the neighborhood will help recommend a name for the site later this year) which is designed to be an urban natural area in what was recently a fallowed agricultural field (east of the Discovery Bay swimming pool). This site – not quite park, not quite open space, will provide local residents, particularly youth, with improved access to nature within their own neighborhood. Nature play amenities, interactive public art, native plantings, and a trail network with seating and shade structures are currently being constructed in this initial phase.

City staff applied for, and received, grant funding from Great Outdoors Colorado (GOCO) towards this project. This Resolution is a necessary action required by GOCO to accept the grant.

Fiscal Impact:

Does this item create a fiscal impact on the City of Greeley?	Yes
If yes, what is the initial, or, onetime impact?	\$1,645,350 which is previously approved and budgeted through the Capital Improvement Program (CIP)
What is the annual impact?	Staff calculate annual maintenance of the site at ~\$13,000, which is already included within the General Fund budget for Natural Areas and Trails.
What fund of the City will provide Funding?	Fund 318 - Quality of Life/Imagine Greeley
What is the source of revenue within the fund?	Sales tax and external grants
Is there grant funding for this item?	Yes
If yes, does this grant require a match?	Yes – the City of Greeley is contributing \$1,117,000 along with additional funds from the Colorado Heath Foundation and other in-kind contributions.

Is this grant onetime or ongoing?	One-time
Additional Comments:	This project was deemed a high priority through community outreach efforts in conjunction with a three (3) year, \$1.1 million grant through the Colorado Health Foundation.

Legal Issues:

The Agreement has been reviewed by the City Attorney's Office and this is a standard GOCO Agreement that has been utilized in the past for other projects in Greeley.

Other Issues and Considerations:

None

Strategic Work Program Item or Applicable Council Priority and Goal:

Image: Reinforce Greeley's vision as an attractive and vibrant community in which to live, learn, work and play.

and

Infrastructure & Growth: Establish the capital and human infrastructure to support and maintain a safe, competitive, appealing and successful community.

Decision Options:

- 1) Adopt the resolution as presented; or
- 2) Amend the resolution and adopt as amended; or
- 3) Deny the resolution; or
- 4) Continue consideration of the resolution to a date certain.

Council's Recommended Action:

A motion to adopt the Resolution.

Attachments:

Resolution
 Site Map of area
 Site map of improvements
 GOCO Agreement

**CITY OF GREELEY, COLORADO
RESOLUTION _____, 2021**

**A RESOLUTION AUTHORIZING THE MAYOR TO EXECUTE AN AGREEMENT WITH THE STATE
BOARD OF THE GREAT OUTDOORS COLORADO TRUST FUND FOR THE CONSTRUCTION OF
IMPROVEMENTS IN THE EAST GREELEY NATURAL AREA.**

WHEREAS, funds have been made available through the State Board of the Great Outdoors Colorado Trust Fund (GOCO) for the construction of Phase I improvements in the east Greeley natural area as the Get Outdoors East Greeley – Inspiring Access to Neighborhood Nature project; and

WHEREAS, the City of Greeley supports the completion of the Great Outdoors Colorado grant award for the Get Outdoors East Greeley project to construct Phase I of the east Greeley natural area; and

WHEREAS, GOCO will provide \$300,000 to construct Phase I of the east Greeley natural area, and the City of Greeley's responsibility is \$1,117,000 along with \$220,000 from the previously awarded Colorado Health Foundation's Healthy Communities grant award and \$8,350 in-kind from the Weld County Youth Conservation Corps; and

WHEREAS, it is in the best interest of the citizens of Greeley to enter into this contract.

NOW, THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL OF GREELEY, COLORADO THAT:

- Section 1: The City Council has appropriated matching funds for a grant with Great Outdoors Colorado.
- Section 2: The City Council authorizes the expenditure of funds necessary to meet the terms and obligations of the Grant awarded.
- Section 3: The project site is owned by City of Greeley and will be owned by City of Greeley for the next 25 years.
- Section 4: The City Council recognizes that as the recipient of a Great Outdoors Colorado Resilient Communities grant the project site must provide reasonable public access.
- Section 5: The City Council will continue to maintain Get Outdoors East Greeley in a high quality condition and will appropriate funds for maintenance in its annual budget.
- Section 6: The City Council hereby authorizes the Mayor to sign the grant agreement with Great Outdoors Colorado.
- Section 7: This resolution to be in full force and effect from and after its passage and approval.

PASSED AND ADOPTED, SIGNED AND APPROVED THIS ____ day of _____, 2021.

ATTEST:

THE CITY OF GREELEY, COLORADO

City Clerk

Mayor



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Neighborhood Access

Pedestrian Bridge

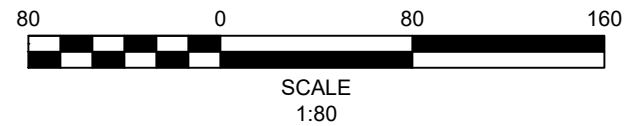
Neighborhood Access

Nature Play

Native Short Grass

DISCOVERY BAY

Neighborhood Access



**EAST MEMORIAL
NEIGHBORHOOD PARKS
OVERALL SITEPLAN**
EAST GREELEY NATURAL AREA
ISSUED FOR CONSTRUCTION

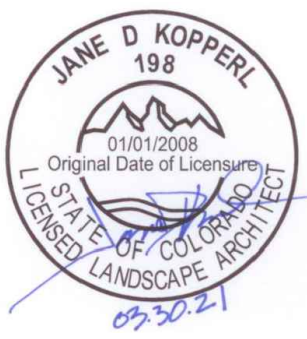
SP01

SHEET 1 OF X

Page 53



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DENVER, CO 80202
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<u>DRAWN</u>	###
<u>DESIGNED</u>	###
<u>REVIEWED</u>	###
<u>PROJECT NO.</u>	#####
<u>HORIZ. SCALE</u>	#####
<u>VERT. SCALE</u>	#
<u>SUBMITTAL DATE</u>	#####

[illegible]

GRANT AGREEMENT

Project Name: Get Outdoors East Greeley – Inspiring Access to Neighborhood Nature
Project Completion Date: March 31, 2022
Great Outdoors Colorado
Contract No.: 21105

PARTIES TO AGREEMENT

Board/GOCO: The State Board of the Great Outdoors Colorado Trust Fund
Address: 1900 Grant Street, Suite 725
Denver, CO 80203

Telephone: (303) 226-4520
Contact name: Matt Brady

Grantee: City of Greeley
Address: 651 10th Avenue, Greeley, CO 80631

Contact name: Justin Scharton

Date: August 11, 2021

EXHIBITS

Exhibit A Project Summary
Exhibit B Resolution
Exhibit C Approved Budget
Exhibit D Approved Workplan/Timeline
Exhibit E Intergovernmental (or other) Agreement (if required)

RECITALS

A. The State Board of the Great Outdoors Colorado Trust Fund (“GOCO” or “Board”) is a political subdivision of the State of Colorado, created by Article XXVII of the Colorado Constitution, adopted at the November 1992 General Election, which article appropriates a portion of the net proceeds of the Colorado Lottery to GOCO and directs GOCO to invest those proceeds in the state’s parks, wildlife, open space, and recreational resources.

B. In 2020, GOCO created a statewide grant program pursuant to which eligible entities could apply for grants for resilient communities projects. Grantee listed above (“Grantee”) submitted a detailed project application (“Project Application”) that contemplates the execution of the project entitled above and described in GOCO’s project summary (“Project Summary”), attached and incorporated as Exhibit A (“Project”). GOCO approved Grantee’s Project Application, which is incorporated into this Agreement by reference, on March 11, 2021, subject to the execution of a detailed grant agreement. GOCO and Grantee each have on file a copy of the Project Application.

C. The parties intend this agreement to be the detailed grant agreement required by GOCO (“Agreement”).

AGREEMENT

NOW, THEREFORE, in consideration of the parties’ mutual covenants contained in this Agreement and other good and valuable consideration, the receipt and sufficiency of which are acknowledged, the parties agree as follows:

SECTION 1 – PROJECT

1. Incorporation of Recitals. The Recitals set forth above are incorporated into this Agreement.
2. Representations and Warranties of Grantee. Grantee is a Municipality, duly organized in accordance with the laws of Colorado and has full and lawful authority to enter into, and comply with the terms of, this Agreement. Grantee’s governing body has authorized entering into this Agreement as evidenced by the resolution attached and incorporated as Exhibit B.
3. Grant and Project. GOCO awards to Grantee a grant in the amount not to exceed \$300,000.00 (“Grant”), subject to the terms and conditions set forth in this Agreement. The Grant shall be used by Grantee solely to complete the Project in substantial conformity with the final plans, specifications, designs, and uses approved by GOCO. In the event of a conflict between the Project Application and the Project Summary, the parties shall resolve the conflict by mutual agreement.
4. Project Scope. Grantee shall not materially modify the Project without the prior written approval of the Executive Director of GOCO (“Executive Director”) or the Executive Director’s designee, such approval to be in GOCO’s sole discretion. Any material modification to the

Project undertaken without GOCO's prior written consent may be deemed a breach of this Agreement, entitling GOCO to all remedies available under this Agreement. If Grantee determines with reasonable probability that the Project will not or cannot be completed as approved by the Board, Grantee will promptly so advise the Board and cooperate in good faith to seek a resolution before any further funds are advanced.

5. Grantee Efforts. Grantee agrees to use its best efforts to complete the Project in a timely fashion, in a good and workmanlike manner, and consistent with this Agreement and GOCO's approvals related to the Project.

6. Approved Budget. Grantee has completed a detailed budget that reflects all anticipated sources and uses of funds for the Project, including a detailed accounting of Grantee's anticipated direct costs associated with the Project, a copy of which is attached and incorporated as Exhibit C ("Budget"). Eligible costs are described in Paragraph 13 of this Agreement. Grantee has also completed a Workplan/Timeline that reflects Grantee's anticipated dates for completing all aspects of the Project, a copy of which is attached and incorporated as Exhibit D ("Workplan/Timeline"). The Project Application contains a budget and a workplan/timeline that may not match the approved versions attached as Exhibits C and D and which, therefore, shall not be relied upon by GOCO or Grantee. Where discrepancies exist, the approved Budget and Workplan/Timeline in Exhibits C and D, respectively, shall control until such time as GOCO approves the final versions of both documents.

7. Property Ownership. All properties on which GOCO-funded projects are located must be owned by or under the control of the grant recipient for the useful life of the project. Grantee warrants that it has good and sufficient title to the property or properties on which the Project is to be located (the "Property"). GOCO may require Grantee to provide evidence of its ownership of the Property and encumbrances against the Property satisfactory to GOCO in GOCO's discretion prior to funding.

8. Waiver. Prior to the disbursement of funds, the Executive Director in his or her discretion may waive certain conditions set forth in this Agreement. Anything else to the contrary notwithstanding, the exercise by GOCO staff ("Staff"), the Executive Director, or GOCO of any right or discretion reserved to them under this Agreement shall not be deemed a waiver. Furthermore, no waiver by them under this Agreement shall constitute a waiver of any other requirements, actions, or conditions, nor shall any waiver granted be deemed a continuing waiver. No waiver by the Staff, the Executive Director, or GOCO shall be effective unless in writing executed by them. Additionally, any failure by the Staff, the Executive Director, or GOCO to take any actions as set forth in this Agreement shall have no legal effect on the contractual duties of Grantee. Further, no waiver with respect to this Project, Grant, or Agreement shall constitute a waiver in any other GOCO-funded project.

9. Project Operation and Maintenance.

A. Subject to annual appropriations, Grantee shall operate, manage, and maintain the Project in a reasonable state of repair for the purposes specified and for the useful life of the Project stated in the Project Application, in accordance with product warranties and/or the generally accepted standards in the parks/recreation community. Grantee has estimated a useful

life of 15 years in the Project Application. Grantee also shall provide and maintain access to the Project and to the Property, regardless of the Property's ownership. Failure to comply with this paragraph may be deemed a breach by Grantee under Paragraph 23 below.

B. GOCO shall not be liable for any cost of maintenance, management, or operation of the Project.

C. Within 60 days of a reasonable request by the Board, Grantee will provide the Board with adequate records reflecting the operating and maintenance costs of the Project and provide the Board with such other information concerning the use of the Project by the public and the impact of the Project.

D. Grantee's staff shall request during the Grantee's annual budget process an appropriation sufficient to meet the financial obligations of Grantee under this Agreement. Grantee will use its best efforts to fully consider such appropriation. The parties understand that the Board is relying upon fair and full consideration of annual appropriation in its decision to extend its resources and the Grant and to enter into this Agreement. In the event that Grantee fails to appropriate sufficient funds to meet the obligations of this Agreement, Grantee shall provide notice to the Board of the specific reason(s) for any decision not to appropriate funding. Grantee's staff shall notify the Board of any recommendation not to fund or to partially fund the annual appropriation necessary to fulfill Grantee's obligations under this Agreement.

10. Public Access. Grantee agrees, for itself and its successors in interest, to allow reasonable public access to the Project for the term specified in Paragraph 9.A. Grantee may temporarily close such public access for construction, maintenance, emergency situations, or other reasonable purposes.

11. Insurance. Grantee shall maintain general liability insurance or self-insure for the entire period of the Project for protection in the event of injury and/or damage. The insurance limits shall not be less than \$1,000,000 per occurrence and \$2,000,000 aggregate. If the Grantee contracts with another organization to complete the Project, it is the responsibility of the Grantee to ensure its contractor carries insurance that fulfills this requirement.

12. Future Funding. This Agreement and the Grant only apply to the Project specifically described in this Agreement. GOCO makes no representations regarding future funding for future phases of the Project, whether or not described in the Project Application, Project Summary, or otherwise.

SECTION 2 – GRANT PAYMENT

13. Eligible Costs. The Grant and all matching funds shall be used only for the cost of fixed assets, including construction of new facilities and enlargement or renovation of existing facilities; these costs are eligible for reimbursement on the basis of costs actually incurred by Grantee and supported by written documentation (receipts, bills, etc.). The Grant and all matching funds may not be used to pay for maintenance costs, administrative costs (such as salaries associated with administering the Grant, office supplies, telephone, or travel expenses),

non-fixed assets (such as athletic or maintenance equipment), or any other costs deemed to be ineligible by the Board, at the Board's sole discretion.

14. Payment of Grant.

A. *Progress Payment.* Grantee may opt to receive a portion of the Grant after starting but prior to completing work on the Project ("Progress Payment"). Grantee shall provide GOCO with a progress report detailing expenditures and progress made to date ("Progress Report"). The Progress Report must be submitted using GOCO's Progress Report form (available at www.goco.org or by contacting GOCO). GOCO may, in its discretion, request additional documentation to support making a Progress Payment. A Progress Payment shall not exceed 50% of the Grant or the maximum percentage of funds GOCO can expend for the project to date based on the program's matching requirements, whichever is less. A Progress Payment shall be considered a loan until the Project is complete and Final Payment (as defined below) has been made.

B. *Final Payment.* Grantee shall submit a final report to GOCO detailing the accomplishments of and expenditures related to the Project and its completion ("Final Report"). The Project is "complete" when all facilities, trails, or other improvements included in the GOCO-approved Project scope have been built and are ready for their intended use. The Final Report must be submitted using GOCO's Final Report form (available at www.goco.org or by contacting GOCO). GOCO may, in its discretion, request additional documentation before its approval of the contents of the Final Report. Upon GOCO's review and approval of the Final Report, GOCO shall pay the outstanding balance on the Grant ("Final Payment"), subject to any reductions contemplated by any provision of this Agreement.

C. *GOCO Review.* GOCO shall have 30 days to review any Progress Report and Final Report and respond to Grantee.

D. *Waivers of Liens and Claims.* GOCO may, in its discretion, depending on the nature of the Project, require documentation of mechanics' lien waivers or waivers of claims to public project performance bonds as a precondition to any disbursement under this Agreement.

E. *Modifications.* Payment of the Grant is subject to the Project being completed with no material modifications made, except as otherwise agreed to in advance by GOCO in accordance with this Agreement. The Grant will not be increased, but GOCO may reduce the Grant if the Project changes in any way that GOCO deems material. "Material modifications" may include, but are not necessarily limited to, a reduction in the total cost of the Project, a reduction in the size or number of recreational development components to be constructed, changes to the nature of the recreational development components to be constructed, or any other variance from the Project as presented in the Project Application. It is the sole responsibility of Grantee to inform GOCO of any such modifications to the Project. GOCO strongly encourages Grantee to contact GOCO in writing when it becomes aware of or wishes to make any such modifications, however seemingly minor, to the Project.

F. *Net Lottery Proceeds.* Payment of the Grant is also subject to GOCO's determination in its sole discretion that it has received and has available sufficient net lottery proceeds to fund the Grant. In determining the sufficiency of net lottery proceeds, GOCO may consider all facts and circumstances as it deems necessary or desirable, including but not limited to adequate reserves, funding requirements, and/or commitments for other past, current, and future grants, and past, current, and future GOCO operating expenses and budgetary needs.

15. Withdrawal of GOCO Funding; Termination of Agreement. Anything in this Agreement to the contrary notwithstanding, with prior notice to Grantee, GOCO reserves the right to withhold or withdraw all or a portion of the Grant, to require a full or partial refund of the Grant, and/or to terminate this Agreement if GOCO determines in its sole discretion that:

A. *Altered Expectations.* Facts have arisen or situations have occurred that fundamentally alter the expectations of the parties or make the purposes for the Project or the Grant as approved by GOCO infeasible or impractical;

B. *Material Project Changes.* Material changes in the scope or nature of the Project have occurred from that which was presented in the Project Application, approved by GOCO and reflected in the Project Summary, without prior written approval of the Executive Director;

C. *Inaccuracies.* Any statement or representation made or information provided by Grantee in the Project Application, this Agreement, the Progress Report, the Final Report, or otherwise is untrue, inaccurate, or incomplete in any material respect;

D. *Reporting.* The results of GOCO's review of the Progress Report or the Final Report are not acceptable to GOCO;

E. *Conditions Precedent Not Fulfilled or Unsatisfactory.* Any of the conditions precedent to funding listed in Section 3 below is not fulfilled by Grantee or is unsatisfactory to GOCO, in its sole discretion;

F. *Delays.* The Project will not or cannot be completed by the Completion Date or any extensions granted, or delays in the implementation of the Project have occurred that make the Project impracticable in the Board's judgment;

G. *Costs.* The Project will not or cannot be completed within the Budget or any approved modifications, or the total Project cost and/or Grantee's matching funding are reduced; or

H. *Property.* Title to or encumbrances against the Property are or become such that Grantee is unable to complete the Project, or the Project and/or the Property are or become unavailable for public use.

SECTION 3 – CONDITIONS PRECEDENT

16. Completion Date. Grantee shall complete the Project and submit its Final Report no later than March 31, 2022 (“Completion Date”). Grantee may request an extension of the Completion Date in compliance with GOCO’s *Overdue Grants* procedure, as may be amended from time to time by GOCO in its sole discretion. GOCO may elect to terminate this Agreement and deauthorize the Grant in the event this Completion Date is not met and/or Grantee fails to comply with the *Overdue Grants* procedure.

17. Conditions Precedent to Funding. Anything else in this Agreement or otherwise to the contrary notwithstanding, the Grant is expressly conditioned upon Grantee’s fulfillment of all terms and conditions of this Agreement to GOCO’s satisfaction in its sole discretion, including but not limited to the following:

A. Matching Funds. Matching funds in the minimum amount required by GOCO policy or procedure and as set forth in the approved Budget, or as modified and approved in compliance with GOCO procedures, must have been received by Grantee, or the status of efforts to secure matching funding was disclosed and has been deemed satisfactory by Staff. Grantee shall provide evidence of matching funds as GOCO may require in its reasonable discretion.

B. GOCO Policies and Procedures. The Project must comply with all of GOCO’s policies and procedures, which may be amended from time to time by GOCO in its sole discretion, and must meet any special Board conditions as listed in the attached Project Summary (Exhibit A).

SECTION 4 – OTHER PROVISIONS

18. Publicity and Project Information. GOCO has the right and must be provided the opportunity to use information gained from the Project; therefore, Grantee shall acknowledge GOCO funding in all news releases and other publicity issued by Grantee concerning the Project. If any events are planned in relationship to the Project, GOCO shall be acknowledged as a contributor in the invitation for the event. GOCO shall be notified of any such events 30 days in advance. Grantee shall cooperate with GOCO in preparing public information pieces, providing access to the Property for publicity purposes, and providing photos or other imagery of the Project from time to time, which GOCO reserves the right to use and duplicate in any print or electronic publication or platform for publicity, illustration, advertising, web content, and other purposes at any time without the need to seek pre-approval from Grantee. Grantee shall give timely notice of the Project, its inauguration, significance, and completion to the local members of the Colorado General Assembly and members of the board of county commissioners of the county or counties in which the Project is located, as well as to other appropriate public officials. At no time shall Grantee represent in any manner to the public or to any party that it is affiliated with GOCO or acting on behalf of GOCO.

19. Signage. Grantee shall erect one or more signs at a prominent location(s) on the Project site acknowledging the assistance of Great Outdoors Colorado and the Colorado Lottery. GOCO will provide such signs at no cost to Grantee. Alternatively, GOCO will provide reproducible

samples of its logo to Grantee for custom signs. GOCO shall approve in advance the design of any permanent sign materially varying from the signs provided by GOCO. To obtain such approval, Grantee shall submit to GOCO plans describing the number, design, placement, and wording of signs and placards prior to completion of the Project. The Board may withhold Final Payment pending evidence of placement of permanent signage.

20. Liability.

A. *Indemnity.* To the extent allowed by law, Grantee shall be responsible for and shall indemnify, defend, and hold harmless GOCO, its officers, agents, and employees from any and all liabilities, claims, demands, damages, or costs (including reasonable attorneys' fees) resulting from, growing out of, or in any way connected with or incident to Grantee's performance of this Agreement. Grantee waives any and all rights to any type of express or implied indemnity or right of contribution from the State of Colorado, GOCO, its members, officers, agents, or employees for any liability resulting from, growing out of, or in any way connected with or incident to this Agreement. Grantee acknowledges that Grantee is the owner of the Project and the Property upon which it is located, or has control of the Project and the Property, and that GOCO neither possesses nor controls the Project, the Property, nor the operations of the Project.

B. *No CGIA Waiver.* No term or condition of this Agreement shall be construed or interpreted as a waiver, either express or implied, of any of the immunities, rights, benefits or protections provided to GOCO under the Colorado Governmental Immunity Act as amended or as may be amended in the future (including without limitation any amendments to such statute, or under any similar statute that is subsequently enacted) ("CGIA"). This provision may apply to Grantee if Grantee qualifies for protection under the Colorado Governmental Immunity Act, C.R.S. § 24-10-101, et seq. GOCO and Grantee understand and agree that liability for claims for injuries to persons or property arising out of the negligence of GOCO, its members, officials, agents, and employees may be controlled and/or limited by the provisions of the CGIA. The parties agree that no provision of this Agreement shall be construed in such a manner as to reduce the extent to which the CGIA limits the liability of GOCO, its members, officers, agents, and employees.

C. *Compliance with Regulatory Requirements and Federal and State Mandates.* Grantee assumes responsibility for compliance with all regulatory requirements in all applicable areas, including but not limited to nondiscrimination; worker safety; local labor preferences; preferred vendor programs; equal employment opportunity; use of competitive bidding; permits; approvals; local, state, and federal regulations and environmental laws; and other similar requirements. To the maximum extent permitted by law, Grantee agrees to indemnify, defend, and hold harmless GOCO, Executive Director, and Staff from any cost, expense, or liability for any failure to comply with any such applicable requirements.

D. *Nondiscrimination.* During the performance of this Agreement, Grantee and its contractors, subcontractors, and agents shall not unlawfully discriminate against any employee or applicant for employment because of race, religion, color, national origin, ancestry, physical handicap, medical condition, marital status, age, sex, or any other basis prohibited by local, state,

or federal law. Grantee and its contractors shall ensure that the evaluation and treatment of their employees and applicants for employment are free of such discrimination. Further, Grantee and anyone acting on behalf of Grantee shall not engage in any unlawful discrimination in permitting access and use of the Project.

21. Audits and Accounting Records. Grantee shall maintain standard financial accounts, documents, and records relating to the use, management, operation, and maintenance of the Project. Grantee shall retain the accounts, documents, and records related to the Project for five years following the date of disbursement by GOCO of the Grant funds, and they shall be subject to examination and audit by GOCO or its designated agent during this period. While Grantee is not required to use GAAP (Generally Accepted Accounting Principles), Grantee shall use reasonable and appropriate accounting systems in maintaining the required records under this Agreement.

22. Inspection. Throughout the term of this Agreement, GOCO shall have the right to inspect the Project to ascertain compliance with this Agreement.

23. Breach. In addition to other remedies available at law or in equity, in the event that Grantee breaches any of the terms or conditions of this Agreement, GOCO shall have the following non-exclusive remedies:

A. *Prior to Payment of Grant.* GOCO reserves the right to withdraw funding, terminate this Agreement, and/or deny Grantee eligibility for participation in future GOCO grants, loans, or projects.

B. *After Any Payment of Grant.* GOCO reserves the right to seek specific performance of Grantee's obligations under this Agreement, receive reimbursement in full of any disbursements made under the Grant, including in the event that Grantee does not fulfill its obligations under Paragraph 9 due to lack of annual appropriations, and/or deny Grantee eligibility for participation in future GOCO grants, loans, or projects.

In the event GOCO must pursue any remedy under this Agreement and is the substantially prevailing party, GOCO shall be awarded its costs and reasonable legal fees, including costs of collection.

24. GOCO Policies and Procedures. With regard to all named GOCO policies and procedures referenced in this Agreement, Grantee acknowledges it has received a copy of the policies and procedures or otherwise has access to the documents in connection with this Agreement and is familiar with their requirements.

25. Miscellaneous Provisions.

A. *Good Faith.* Both parties have an obligation of good faith, including the obligation to make timely communication of information that may reasonably be believed to be of interest to the other party.

B. *Assignment.* Grantee may not assign its rights or delegate its obligations under this Agreement without the express written consent of the Executive Director, who has the sole discretion to withhold consent to assign. Any assignment shall require that, at a minimum, the assignee is eligible to receive grants from the Board and assumes Grantee's ongoing obligations under this Agreement.

C. *Applicable Law.* Colorado law applies to the interpretation and enforcement of this Agreement. Venue for any dispute under this Agreement shall lie exclusively in the state courts of the City and County of Denver.

D. *No Joint Venture.* Nothing in this Agreement shall be construed to create a joint venture, partnership, employer/employee, or other relationship between the parties other than independent contracting parties. Except as permitted under the remedies provisions of this Agreement, neither party shall have the express or implied right to act for, on behalf of, or in the name of the other party.

E. *Status of Grantee.* The parties acknowledge that GOCO lacks the power and right to direct the actions of Grantee. Grantee acts in its separate capacity and not as an officer, employee, or agent of GOCO or the State of Colorado.

F. *Time is of the Essence.* Time is of the essence in this Agreement.

G. *Survival.* The terms and conditions of this Agreement, including but not limited to Grantee's obligations, shall survive the funding of the Grant and the completion of the Project.

H. *Fax and Counterparts.* This Agreement may be executed in one or more counterparts, each of which shall be an original, but all of which when taken together shall constitute one agreement. In addition, the parties agree to recognize signatures to this Agreement made electronically and transmitted electronically or by facsimile as if they were original signatures.

I. *Third-Party Beneficiary.* GOCO and Grantee acknowledge and agree that this Agreement is intended only to cover the relative rights and obligations between GOCO and Grantee and that no third-party beneficiaries are intended.

J. *Notice.* Any notice, demand, request, consent, approval, or communication that either party desires or is required to give the other shall be in writing and either served personally or sent by first class mail, postage prepaid, to the addresses shown on Page 1 of this Agreement.

K. *Construction; Severability.* Each party has reviewed this Agreement, and therefore any rules of construction requiring that ambiguities be resolved against a particular party shall not be applicable in the construction and interpretation of this Agreement. If any provision in this Agreement is found to be ambiguous, an interpretation consistent with the purpose of this Agreement that would render the provision valid shall be favored over any interpretation that would render it invalid. If any provision of this Agreement is declared void or

unenforceable, it shall be deemed severed from this Agreement, and the balance of this Agreement shall otherwise remain in full force and effect.

L. *Entire Agreement.* Except as expressly provided, this Agreement constitutes the entire agreement of the parties. No oral understanding or agreement not incorporated in this Agreement shall be binding upon the parties. No changes in this Agreement shall be valid unless made in writing and signed by the parties to this Agreement.

M. *Termination of the Board.* If Article XXVII of the Colorado Constitution, which established GOCO, is amended or repealed to terminate GOCO or merge GOCO into another entity, the rights and obligations of GOCO under this Agreement shall be assigned to and assumed by such other entity as provided by law, but, in the absence of such direction, by the Colorado Department of Natural Resources or its successor.

IN WITNESS WHEREOF, the parties by signature below of their authorized representatives execute this Agreement effective as of _____.

STATE BOARD OF THE GREAT
OUTDOORS COLORADO TRUST FUND

GRANTEE:
CITY OF GREELEY

By:

By:

Chris Castilian
Executive Director

Title:

GOCO Program Staff:
Route Grant Agreement to
Executive Director for signature:

NOTE Signee should be the same
individual authorized to sign the grant
agreement per Grantee's resolution

Council Agenda Summary

September 7, 2021

Key Staff Contact: Mark Jones, Police Chief, 970-350-9665

Title:

A Resolution Authorizing the City of Greeley to Enter into a Grant Agreement between the City of Greeley and the State of Colorado, Division of Local Affairs, Regarding Receipt of Grant Funding Provided by the Gray and Black Market Marijuana Enforcement Grant Program.

Summary:

The Colorado Department of Local Affairs (DOLA) has a grant opportunity to provide financial assistance annually to local law enforcement agencies and district attorneys through the local governments for the investigation and prosecution costs associated with unlicensed marijuana cultivation or distribution operations.

Fiscal Impact:

Does this item create a fiscal impact on the City of Greeley?	No
If yes, what is the initial, or, onetime impact?	N/A
What is the annual impact?	Unknown
What fund of the City will provide Funding?	General Fund
What is the source of revenue within the fund?	Grant
Is there grant funding for this item?	Yes
If yes, does this grant require a match?	No
Is this grant onetime or ongoing?	One time
Additional Comments:	The award amount is not decided until after application. DOLA determines the award based on funding availability and jurisdiction size.

Legal Issues:

None

Other Issues and Considerations:

None

Decision Options:

- 1) Adopt the resolution as presented; or
- 2) Amend the resolution and adopt as amended; or
- 3) Deny the resolution; or
- 4) Continue consideration of the resolution to a date certain.

Council's Recommended Action:

A motion to adopt the Resolution.

Attachments:
Resolution.

THE CITY OF GREELEY, COLORADO

RESOLUTION _____, 2021

A RESOLUTION AUTHORIZING THE CITY OF GREELEY TO ENTER INTO A GRANT AGREEMENT BETWEEN THE CITY OF GREELEY AND THE STATE OF COLORADO, DIVISION OF LOCAL AFFAIRS, REGARDING RECEIPT OF GRANT FUNDING PROVIDED BY THE GRAY AND BLACK MARKET MARIJUANA ENFORCEMENT GRANT PROGRAM.

WHEREAS, the City of Greeley's Police Department ("City") and the State of Colorado, Department of Local Affairs, desire to enter into a Grantor Agreement regarding funds from the Gray and Black Marijuana Enforcement Grant Program; and

WHEREAS, the grant funds shall be used for the cost of personnel, travel and telecommunications associated with marijuana cultivation and distributions operations; and

WHEREAS, it is in the best interest of the citizens of the City of Greeley to apply for this grant funding.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GREELEY, COLORADO:

1. The City Council hereby approved submission of a grant opportunity provided by the Colorado Department of Local Affairs.

2. This Resolution shall become effective immediately upon its passage.

PASSED AND ADOPTED, SIGNED AND APPROVED THIS _____ day of _____, 2021.

ATTEST:

THE CITY OF GREELEY, COLORADO

City Clerk

Mayor

Council Agenda Summary

September 7, 2021

Key Staff Contact: Mark Gonzales, Municipal Judge, 970-350-9245

Title:

Consideration of a resolution appointing Jerry Mazer as an Assistant Municipal Judge and Assistant Liquor Licensing Hearing Officer for the City of Greeley, Colorado

Summary:

Section 2-939 of the Greeley Municipal Code authorizes the Greeley City Council to appoint Assistant Judges to handle the caseload of the Municipal Court. Section 8-434 of the Greeley Municipal Code establishes a Local Licensing Authority which regulates liquor licensing and provides that Hearing Officers appointed by the City Council act as the Liquor Licensing Authority.

The City advertised for applicants to act as an Assistant Municipal Judge and as a back-up Hearing Officer for the Liquor Licensing Authority. Greeley Municipal Judge Mark Gonzales has recommended that Jerry Manzer be appointed as an Assistant Judge and Hearing Officer for the Liquor Licensing Authority.

Fiscal Impact:

Does this item create a fiscal impact on the City of Greeley?	Yes
If yes, what is the initial, or, onetime impact?	Dependent on number of hours the Assistant Judge or back-up Hearing Officer is needed
What is the annual impact?	
What fund of the City will provide Funding?	General
What is the source of revenue within the fund?	
Is there grant funding for this item?	N/A
If yes, does this grant require a match?	
Is this grant onetime or ongoing?	
Additional Comments:	The salary for the Assistant Municipal Judge and back-up Hearing Officer has been budgeted.

Legal Issues:

None

Other Issues and Considerations:

None

Strategic Work Program Item or Applicable Council Priority and Goal:

Infrastructure & Growth: Establish the capital and human infrastructure to support and maintain a safe, competitive, appealing and successful community.

Decision Options:

- 1) Adopt the resolution as presented; or
- 2) Amend the resolution and adopt as amended; or
- 3) Deny the resolution; or
- 4) Continue consideration of the resolution to a date certain.

Council's Recommended Action:

A motion to adopt the Resolution.

Attachments:

Resolution

CITY OF GREELEY, COLORADO

RESOLUTION NO. _____, 2021

**A RESOLUTION APPOINTING JERRY MANZER AS AN ASSISTANT MUNICIPAL JUDGE
AND ASSISTANT LIQUOR LICENSING HEARING OFFICER FOR THE CITY OF GREELEY,
COLORADO**

WHEREAS, Section 2-939 of the Greeley Municipal Code authorizes the Greeley City Council to appoint one or more Assistant Judges to handle the case load of the Municipal Court; and

WHEREAS, the Charter of the City of Greeley provides that the "Judge or Judges of the Municipal Court" must be admitted to practice law in Colorado, and must be a resident of the City during their tenure;

WHEREAS, the Charter of the City of Greeley provides that the "Judge or Judges" of the Municipal Court shall be appointed by the Council for a term of four (4) years, and may be removed by the Council for cause;

WHEREAS, the Greeley City Council has determined that it is necessary and appropriate to appoint Assistant Judges to handle the case load of the Municipal Court and to act in the absence of the Presiding Municipal Court Judge; and

WHEREAS, Section 8-434 of the Greeley Municipal Code establishes a Local Licensing Authority which regulates licensing related to the sale and service of alcohol beverages within the City of Greeley; and

WHEREAS, Section 8-434 of the Greeley Municipal Code provides that a Hearing Officer appointed by the City Council shall act as the Liquor Licensing Authority; and

WHEREAS, Section 8-434 provides that the Liquor Licensing Authority Hearing Officers are appointed by the Greeley City Council by resolution and may be removed with or without cause by a majority vote of the Greeley City Council; and

WHEREAS, the Greeley City Council has determined that it is appropriate to appoint the Assistant Judges as Hearing Officers to act as the Liquor Licensing Authority as needed; and

WHEREAS, the Greeley Municipal Judge has recommended that Jerry Manzer be appointed as an Assistant Judge and Hearing Officer for the Liquor Licensing Authority and Council has determined that Mr. Manzer is qualified to fill these positions; and

WHEREAS, the Greeley City Council finds that it is in the best interests of the citizens of the City of Greeley to appoint Jerry Manzer as an Assistant Judge and Hearing Officer for the Liquor Licensing Authority.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF GREELEY, COLORADO:

Section 1. The Greeley City Council appoints Jerry Manzer as an Assistant Municipal Judge for the City of Greeley, Colorado for a term beginning September 7, 2021 and ending September 7, 2025.

Section 2. Pursuant to Section 7-1 of the Greeley Municipal Charter and Section 2-939 of the Greeley Municipal Code, the Greeley City Council has previously set the compensation for the Assistant Municipal Judges.

Section 3. The Greeley City Council appoints Jerry Manzer as a Hearing Officer for the Greeley Liquor Licensing Authority.

Section 4. This resolution shall become effective immediately upon its passage.

PASSED AND ADOPTED, SIGNED AND APPROVED, THIS 7th DAY OF SEPTEMBER, 2021.

ATTEST:

THE CITY OF GREELEY, COLORADO

City Clerk

Mayor

Council Agenda Summary

September 7, 2021

Key Staff Contact: Sean Chambers, Water & Sewer Director, 970-350-9815

Title:

Introduction and first reading of an Ordinance Amending Article VI, Chapter 3, Title 20 of the Greeley Municipal Code (Industrial Pretreatment Chapter)

Summary:

Following a routine audit of the City's Industrial Pretreatment Program, the United States EPA (Environmental Protection Agency) made a list of recommended ordinance modifications and best practices for Greeley to implement. Staff worked with the EPA Pretreatment Program advisors and the Greeley City Attorney's Office to develop the program modifications that meet the expectations of the EPA. Those modifications to the Industrial Pretreatment Program must be codified amendments to the Municipal Code.

In summary, the code changes amend the definitions to better align with Federal definitions and align the ordinance with current program processes such as permitting, enforcement and corrects minor clerical errors. The amendments will provide more clarity for enforcement actions.

Fiscal Impact:

Does this item create a fiscal impact on the City of Greeley?	No
If yes, what is the initial, or, onetime impact?	NA
What is the annual impact?	NA
What fund of the City will provide Funding?	NA
What is the source of revenue within the fund?	Sewer Rates
Is there grant funding for this item?	No
If yes, does this grant require a match?	NA
Is this grant onetime or ongoing?	NA
Additional Comments:	

Legal Issues:

Consideration of this matter is a legislative process.

Other Issues and Considerations:

EPA requires City Council approval and a 30 public notice.

Strategic Work Program Item or Applicable Council Priority and Goal:

Image: Reinforce Greeley's vision as an attractive and vibrant community in which to live, learn, work and play.

Safety: Manage the health, safety and welfare in a way that promotes a sense of security and well-being for residents, businesses and visitors.

Economic Health & Development: Foster and maintain public and private investment in business development.

Infrastructure & Growth: Establish the capital and human infrastructure to support and maintain a safe, competitive, appealing and successful community.

Decision Options:

- 1) Introduce the ordinance as presented; or
- 2) Amend the ordinance and introduce as amended; or
- 3) Deny the ordinance; or
- 4) Continue consideration of the ordinance to a date certain.

Council's Recommended Action:

A motion to introduce the ordinance and schedule the public hearing and final reading for October 19, 2021.

Attachments:

Ordinance Amending Article VI, Chapter 3, Title 20 of the Greeley Municipal Code
Appendix A

CITY OF GREELEY, COLORADO
ORDINANCE _____, 2021

AN ORDINANCE AMENDING ARTICLE VI, CHAPTER 3, TITLE 20 OF THE GREELEY MUNICIPAL CODE (INDUSTRIAL PRETREATMENT CHAPTER)

WHEREAS, the City of Greeley, Colorado ("City") is a home rule municipality empowered pursuant to Sections 1 and 6 of Article XX of the Colorado Constitution to, *inter alia*, construct, purchase, acquire, lease, add to, maintain, conduct, and operate water works and everything required therefor, within or without its territorial limits, for the use of the City; and

WHEREAS, the City is required to develop, implement, and administer an industrial pretreatment program pursuant to 40 CFR §403.8; and

WHEREAS, from August 10-19, 2020, the Environmental Protection Agency ("EPA") conducted a Pretreatment Compliance Inspection ("PCI") of Greeley's Wastewater Treatment and Reclamation Facility; and

WHEREAS, on September 30, 2020, EPA transmitted to Greeley a Pretreatment Compliance Inspection Report (the "Compliance Report") prepared after the PCI, identifying program components that the City was recommended or required to implement, including amendments to Article VI, Chapter 3, Title 20 of the Greeley municipal code (the "Pretreatment Chapter"), in order to effectively implement the industrial pretreatment program and to meet its regulatory requirements; and

WHEREAS, in accordance with the Compliance Report and further recommendations by EPA, staff has prepared the necessary amendments to the Pretreatment Chapter; and

WHEREAS, on May 19, 2021, the Greeley Water and Sewer Board reviewed the proposed amendments to the Pretreatment Chapter and recommended that City Council adopt the same; and

WHEREAS, Water and Sewer staff recommends that City Council adopt the proposed amendments to Article VI, Chapter 3, Title 20, of the Greeley Municipal Code.

NOW THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF GREELEY, COLORADO:

Section 1. That Section 20-393 contained in Chapter 3, Article VI, Industrial Pretreatment, shall be amended to read as shown on Appendix A, attached hereto and incorporated herein.

Section 2. That Section 20-395 of the above-entitled ordinance shall be deleted and the section reserved as shown on Appendix A.

Section 3. That Section 20-396 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 4. That Section 20-421 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 5. That Section 20-422 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 6. That Section 20-423 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 7. That Section 20-424 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 8. That Section 20-428 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 9. That Section 20-432 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 10. That Section 20-433 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 11. That Section 20-434 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 12. That Section 20-435 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 13. That Section 20-456 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 14. That Section 20-457 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 15. That Section 20-458 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 16. That Section 20-459 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 17. That Section 20-460 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 18. That Section 20-462 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 19. That Section 20-463 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 20. That Section 20-464 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 21. That Section 20-465 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 22. That Section 20-466 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 23. That Section 20-467 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 24. That Section 20-468 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 25. That Section 20-470 of the above-entitled ordinance shall be deleted and reserved as shown on Appendix A.

Section 26. That Section 20-473 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 27. That Section 20-475 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 28. That Section 20-476 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 29. That Section 20-478 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 30. That Section 20-480 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 31. That Section 20-481 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 32. That Section 20-482 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 33. That Section 20-484 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 34. That Section 20-485 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 35. That Chapter 3, Article VI, Industrial Pretreatment, shall be amended by adding thereto a new Section 20-487 to read as shown on Appendix A.

Section 36. That Section 20-511 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 37. That Section 20-514 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 38. That Section 20-515 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 39. That Section 20-516 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 40. That Section 20-517 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 41. That Section 20-518 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 42. That Section 20-519 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 43. That Chapter 3, Article VI, Industrial Pretreatment, shall be amended by adding thereto a new Section 20-520 to read as shown on Appendix A.

Section 44. That Section 20-520 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 45. That Section 20-521 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 46. That Section 20-522 of the above-entitled ordinance shall be deleted to read as shown on Appendix A.

Section 47. That Section 20-523 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 48. That Section 20-524 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 49. That Chapter 3, Article VI, Industrial Pretreatment, shall be amended by adding thereto a new Section 20-525 to read as shown on Appendix A.

Section 50. That Section 20-525 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 51. That Section 20-526 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 52. That Section 20-527 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 53. That Section 20-528 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 54. That Section 20-529 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 55. That Section 20-530 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 56. That Section 20-531 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 57. That Section 20-532 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 58. That Section 20-533 of the above-entitled ordinance shall be amended to read as shown on Appendix A.

Section 59. That Section 20-534 of the above-entitled ordinance shall be deleted to read as shown on Appendix A.

Section 60. Except as explicitly modified on Exhibit A, all other provisions of Chapter 3, Title 20 of the Greeley Municipal Code shall remain in full force and effect.

Section 61. This Ordinance shall take effect on the fifth day following its final publication, as provided by Section 3-16 of the Greeley City Charter.

PASSED AND ADOPTED, SIGNED AND APPROVED ON THIS ____ DAY OF _____, 2021.

ATTEST

THE CITY OF GREELEY, COLORADO

City Clerk

Mayor

APPENDIX A
ORDINANCE AMENDING ARTICLE VI, CHAPTER 3, TITLE 20
GREELEY MUNICIPAL CODE

Section 1. Section 20-393 contained in Chapter 3, Article VI, Industrial Pretreatment, shall be amended to read as follows:

Sec. 20-393. Purpose and policy.

This article establishes uniform requirements for ~~Dischargers~~ users of ~~to~~ the city's publicly owned treatment works (POTW) and enables the city to comply with relevant state and federal laws, including the Federal Water Pollution Control Act (33 USC 1251—1387) and the General Pretreatment Regulations (40 CFR 403). The objectives of this article are:

- (1) To prevent the introduction of pollutants into the city's POTW that will interfere with the POTW's operation;
- (2) To prevent the introduction of pollutants into the city's POTW that will pass through the POTW, inadequately treated, into receiving waters, or that will otherwise be incompatible with the POTW;
- (3) To protect both city personnel who may be affected by wastewater and biosolids in the course of their employment, and the general public;
- (4) To promote reuse and recycling of wastewater and biosolids from the city's POTW;
- (5) To establish and distribute equitably fees for the cost of operating, maintaining and improving the city's POTW; and
- (6) To enable the city to comply with its Colorado discharge permit system (CDPS) permit conditions, biosolids use and disposal requirements, and other relevant federal and state laws.

Section 2. Section 20-395 of the above-entitled ordinance shall be deleted and the section reserved as follows:

Sec. 20-395. Reserved. ~~Citation to federal regulations.~~

~~All citations in this article to the Code of Federal Regulations are to those federal regulations in effect on the date this article becomes law. This article does not incorporate later amendments or editions of the cited material.~~

Section 3. Section 20-396 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-396. Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Act means the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 USC 1251—1387.

Administrative appeal means a petition to reconsider an order issued or a penalty or fine imposed by the director pursuant to this chapter in accordance with section 20-530.

Approval authority means the EPA Regional Administrator for Region VIII; or the state, if and when the state obtains primacy to administer its own pretreatment program under the Act.

Authorized representative of the user means:

- (1) If the user is a corporation: the president, secretary, treasurer or a vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation;
- (2) If the user is a partnership or sole proprietorship: a general partner or proprietor, respectively; or
- (3) If the user is a federal, state or local governmental entity: a director or highest level official appointed or designated to oversee the operation and performance of the activities of the government entity.

The individuals described in subsections (1) through (3) of this definition may designate another authorized representative of the user if the authorization is in writing and is submitted to the ~~city~~ director. The authorization shall specify either an individual or a position having responsibility for the overall operation of the facility from which the discharge originates, such as the position of plant manager or a position of equivalent responsibility or having overall responsibility for environmental matters for the company.

Best management practices or *BMPs* means schedules of activities, maintenance policies and other management procedures that prevent or reduce the discharge of pollutants into the POTW, and that implement the prohibitions listed in section 20-421. ~~Best management practices BMPs~~ include pretreatment standards and requirements, operating procedures and practices to control plant site runoff, spills, leaks, waste disposal and drainage from raw material storage.

Biochemical oxygen demand or *BOD* means the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure for five days at 20 degrees Celsius, usually expressed as a concentration (e.g., mg/l).

Bypass means the intentional diversion of wastestreams from any portion of a user's treatment facility into the POTW.

Categorical industrial user or *CIU* means a user subject to a categorical pretreatment standard or categorical standard.

Categorical pretreatment standard or *categorical standard* means any regulation containing discharge limits promulgated by EPA in accordance with sections 307(b) and (c) of the Act (33 USC 1317(b) and (c)), which applies to a specific category of users, and which appears in 40 CFR 405—471. ~~The term "categorical pretreatment standard" or "categorical standard" includes prohibited discharge standards.~~

Chain of custody means an accurate written record that, at a minimum, lists the outfall location, sample date, sample time, sample type, type of sample preservation, and name of sample collector and can be used to trace the possession and handling of the sample from the moment of its collection through its analysis.

Chapter or Greeley pretreatment chapter means article vi, chapter 3, title 20 of this code.

Composite sample means a sampling procedure defined in 40 CFR 403, Appendix E—Sampling Procedures, I. Composite Method.

Control authority means the POTW.

Daily or day means a calendar day unless otherwise specified. Any time period set forth in this chapter that commences, expires or is determined from a date which falls on a Saturday, Sunday or legal holiday of the state of Colorado, the date of such commencement, performance, expiration or determination shall automatically be extended to the next business day which is not a Saturday, Sunday or legal holiday of the state of Colorado.

Daily maximum means the arithmetic average of all effluent samples for a pollutant collected during a day.

Daily maximum limit means the maximum allowable discharge of a pollutant during a day. Where daily maximum limitations are expressed in units of mass, the daily discharge is the total mass discharged over the course of the day. Where daily maximum limits are expressed in terms of a concentration, the daily discharge is the arithmetic average measurement of the pollutant concentration derived from all measurements taken that day.

Department means the city water and sewer department.

Director means the director of the city water and sewer department or his authorized designee.

Discharge or indirect discharge means the introduction of pollutants into the POTW from any nondomestic source regulated under section 307(b), (c) or (d) of the Act.

Domestic wastewater means a combination of liquid wastes (sewage) which may include household chemicals, household wastes, human excreta, animal or vegetable matter in suspension or solution or other solids in suspension or solution which are discharged from a dwelling, building or other structure. The term "domestic wastewater" does not include commercial or industrial wastewater, or grease removed from a restaurant grease trap.

Environmental Protection Agency or EPA means the United States Environmental Protection Agency.

Existing source means any source of indirect discharge that is not a new source.

General permit means an authorization to discharge, ~~pollutants to the POTW~~ which covers multiple users within a specific sector in accordance with the requirements of the Act and this chapter.

Grab sample means a sampling procedure defined in 40 CFR 403, Appendix E—Sampling Procedures, II. Grab Method.

Hauled portable toilet wastewater means the liquid or solid material removed from a portable toilet that holds only domestic wastewater (not the portable toilet chemicals or matrix itself).

~~*Indirect discharge or discharge* means the introduction of pollutants into the POTW from any nondomestic source.~~

Industrial wastewater or nondomestic wastewater means water carrying wastes from any process or activity of industry, manufacturing, trade or business, from development of any natural resource, or from animal operations, or contaminated stormwater or leachate from solid waste facilities.

Instantaneous maximum allowable discharge limit means the maximum concentration of a pollutant allowed to be discharged at any time, determined from the analysis of any grab or composite sample, independent of the industrial flow rate and the duration of the sampling event.

Interference means a discharge that, alone or in conjunction with a discharge or discharges from other sources, both:

- (1) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- (2) Contributes to a violation of any requirement of the city's CDPS permit (including an increase in the magnitude or duration of a violation), or of the prevention of sewage sludge use or disposal in compliance with any of the following statutory/regulatory provisions or permits issued thereunder, or any more stringent state or local regulations: section 405 of the Act; the Solid Waste Disposal Act (SWDA), including title II, commonly referred to as the Resource Conservation And Recovery Act (RCRA); any state regulations contained in any state sludge management plan prepared pursuant to subtitle D of the ~~Solid Waste Disposal Act (SWDA)~~; the Clean Air Act; and the Toxic Substances Control Act.

Maximum allowable headworks loading or MAHL means the estimated maximum loading of a pollutant that can be received at a POTW's headworks without causing pass through or interference.

Maximum allowable industrial loading or MAIL means the estimated maximum loading of a pollutant that can be received at a POTW's headworks from all permitted users and other controlled sources without causing pass through or interference. The mail is usually calculated by applying a safety factor to the MAHL and discounting for uncontrolled sources, hauled waste and growth allowance.

Medical waste means isolation wastes, infectious agents, pathological wastes, sharps, body parts, contaminated bedding, surgical wastes, potentially contaminated laboratory wastes, and dialysis wastes.

Monthly or month means a calendar month unless otherwise specified.

Monthly average limit means the highest allowable average of daily discharges over a month, calculated as the sum of all daily discharges measured during a month divided by the number of daily discharges measured during that month.

New source.

- (1) The term "new source" means any building, structure, facility or installation from which there is (or may be) a discharge, the construction of which commenced after the publication of proposed pretreatment standards under section 307(c) of the Act that will apply to such source if such standards are thereafter promulgated in accordance with that section, provided that:
 - a. The building, structure, facility or installation is constructed at a site at which no other source is located;
 - b. The building, structure, facility or installation totally replaces the process or production equipment that causes the discharge at an existing source; or
 - c. The production or wastewater generating processes of the building, structure, facility or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, the city director will consider such factors as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source.
- (2) Construction on a site at which an existing source is located results in a modification rather than a new source if the construction does not create a new building, structure, facility or installation meeting the criteria of subsection (1)a or (1)c of this definition, but otherwise alters, replaces, or adds to existing process or production equipment.
- (3) Construction of a new source as defined under this subsection has commenced if the owner or operator has:
 - a. Begun, or caused to begin, as part of a continuous onsite construction program:
 1. Any placement, assembly or installation of facilities or equipment; or
 2. Significant site preparation work including clearing, excavating or removing existing buildings, structures or facilities that is necessary to place, assemble or install new source facilities or equipment; or
 - b. Entered into a binding contract for the purchase of facilities or equipment intended for use in its operation within a reasonable time. Options to purchase or contracts that can be terminated or modified without substantial loss, and contracts for feasibility, engineering and design studies do not constitute a binding contract for the purpose of this subsection.

Notice of violation or NOV means an order issued pursuant to section 20-515, based on a finding that a user has violated or continues to violate a provision of this

chapter, a wastewater discharge permit, any order issued pursuant to this chapter, or any other pretreatment standard or requirement.

Non-significant categorical industrial user means a CIU that the director has determined to be a non-significant categorical industrial user rather than a significant industrial user based on a finding that the CIU has never discharged more than one hundred (100) gpd of total categorical wastewater (excluding sanitary, noncontact cooling and boiler blowdown wastewater, unless specifically included in the pretreatment standard) and that the following conditions have been met:

- (1) The CIU, prior to the director's finding, has consistently complied with all applicable categorical pretreatment standards and requirements;
- (2) The CIU annually submits the certification statement required in section 20-487 (b), together with additional information necessary to support the certification statement; and
- (3) The CIU never discharges any untreated concentrated wastewater.

Noncontact cooling water means water used for cooling that does not directly contact any raw material, intermediate product, waste product or finished product.

Pass through means a discharge from the POTW into state waters in quantities or concentrations that, alone or in conjunction with a discharge or discharges from other sources, causes or contributes to a violation of any requirement of the city's CDPS permit, including an increase in the magnitude or duration of a violation.

Person means an individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity or any other legal entity; or their legal representatives, agents or assigns. This definition includes all federal, state and local government entities.

pH means a measure of the acidity or alkalinity of a solution, expressed in standard units.

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, medical waste, chemical waste, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, municipal, agricultural and industrial waste and certain characteristics of wastewater (such as pH, temperature, TSS, turbidity, color, BOD, toxicity or odor).

Pretreatment means the reduction in the amount of pollutants, the elimination of pollutants or the alteration of the nature of pollutant properties in wastewater prior to introducing such pollutants into the POTW. The user may obtain this reduction or alteration by physical, chemical or biological processes; by process changes; or by other means, except by diluting the concentration of the pollutants allowed by an applicable pretreatment standard. Appropriate pretreatment technology includes control equipment such as equalization tanks or facilities for protection against surges or slug loads that might interfere with or otherwise be incompatible with the POTW. Where wastewater from a regulated process is mixed with unregulated wastewater or with wastewater from another regulated process, the effluent from the equalization facility

must meet an adjusted pretreatment limit calculated limit using the combined waste stream formula in 40 CFR 403.6(e).

Pretreatment requirement or requirement means any substantive or procedural requirement related to pretreatment imposed on a user, other than a pretreatment standard.

Pretreatment standard or standard means ~~any prohibited discharge standard~~ any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307 (b) and (c) of the Act, which applies to users. this term includes prohibitive discharge limits established pursuant to §403.5, categorical pretreatment standard, best management practices, or local limit.

Pretreatment ~~supervisor~~ coordinator means the individual who oversees and administers the pretreatment program for the POTW.

Prohibited discharge standard or prohibited discharge means an absolute prohibition against the discharge of certain substances; these prohibitions appear in section 20-421.

Publicly-owned treatment works or POTW means the treatment works, as defined by section 212 of the Act (33 USC 1292), that is owned by the city. The definition of the term "publicly-owned treatment works" or "POTW" includes any devices or systems used in the collection, storage, treatment, recycling or reclamation of domestic or nondomestic wastewater and any conveyances that carry such wastewater. ~~POTW also means the city.~~ The term "publicly-owned treatment works" or "POTW" also means the municipality as defined in section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

Satellite waste dump site means a designated location directly connected to the POTW that is permitted to accept hauled portable toilet wastewater or nonhazardous wastewater and nondomestic wastewater.

Sector means users that engage in similar activities and discharge similar pollutants. Examples of similar activities that produce similar pollutants may include, but are not limited to, food service establishments or processors that commonly discharge fats, oils and grease; transportation vehicle repair, maintenance and washing facilities that commonly discharge petroleum oil, grease and sand; photographic or x-ray processing facilities or operations that commonly discharge silver; dental offices that commonly discharge mercury; and healthcare facilities that often have new or emerging contaminants.

Severe property damage means substantial physical damage to property, damage to the user's treatment facility that renders it inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

Significant industrial user or SIU means:

- (1) ~~A user subject to a categorical pretreatment standard under 40 CFR 403.6 and 40 CFR chapter I, subchapter N-CIU, except for a CIU that the director has designated as a non-significant categorical industrial user; or~~

- (2) A user that:
- a. Discharges an average of 25,000 gpd or more of process wastewater to the POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater);
 - b. Contributes a process waste stream that makes up five percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or
 - c. Is designated as such by the city on the basis that the user has a reasonable potential to adversely affect the POTW's operation or to violate any pretreatment standard or requirement.
- (3) ~~The city may determine that an industrial user subject to a categorical pretreatment standard under 40 CFR 403.6 and 40 CFR chapter I, subchapter N, is a nonsignificant categorical industrial user rather than a significant industrial user on a finding that the industrial user never discharges more than 100 gpd of total categorical wastewater (excluding sanitary, noncontact cooling and boiler blowdown wastewater, unless specifically included in the pretreatment standard) and the following conditions are met:~~
- ~~a. The industrial user, prior to the city's finding, has consistently complied with all applicable categorical pretreatment standards and requirements;~~
 - ~~b. The industrial user annually submits the certification statement required in section 20-534(b), together with additional information necessary to support the certification statement; and~~
 - ~~c. The industrial user never discharges any untreated concentrated wastewater.~~
- (4) Upon a finding that a user meeting the criteria in subsection (3) of this definition has no reasonable potential to adversely affect the POTW's operation or to violate any pretreatment standard or requirement, the city director may at any time, on ~~its~~ their own initiative or in response to a petition received from a user, and in accordance with procedures in 40 CFR 403.8(f)(6), determine that such user should not be considered a significant industrial user.

Slug load or slug means any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or non-customary batch discharge at a flow rate or concentration that could violate the prohibited discharge standards of section 20-421 or the local limits of section 20-424, permit conditions, or which has the reasonable potential to cause interference or pass through.

Slug discharge control plan means a written plan prepared in accordance with section 20-433 and implemented by a user to control slug discharges.

Stormwater means any flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snowmelt.

Total suspended solids (TSS) means the total suspended matter that floats on the surface of, or is suspended in, water, wastewater or other liquid and which is removable by laboratory filtering.

Upset means an exceptional incident that results in unintentional and temporary noncompliance with a categorical pretreatment standard because of factors beyond the reasonable control of the user. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance or careless or improper operation.

~~User or industrial user~~ means a person who is a source of indirect discharge.

Wastewater means liquid and water-carried industrial and domestic waste from residential dwellings, commercial buildings, industrial and manufacturing facilities and institutions, whether treated or untreated, that is contributed to the POTW.

Wastewater discharge permit means an individual ~~wastewater discharge~~ permit or a general permit giving authorization to discharge pollutants to the POTW in accordance with the requirements of the Act and this chapter.

Wastewater treatment plant or treatment plant means that portion of the POTW designed to treat wastewater.

Section 4. Section 20-421 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-421. Prohibited discharge standards.

(a) The following general and specific prohibitions apply to all users of the POTW, whether or not they are subject to categorical pretreatment standards, or any other national, state or local pretreatment standard or requirement.

- (1) *General prohibition.* No user shall introduce or cause to be introduced into the POTW any pollutant or wastewater that causes pass through or interference.
- (2) *Specific prohibitions.* No user shall introduce or cause to be introduced into the POTW the following pollutants, substances or wastewater:
 - a. Any liquid, solid or gas that creates, singly or by interaction with other substances, a fire or explosion hazard in the POTW, including, but not limited to, waste streams with a closed cup flashpoint of less than 140 degrees Fahrenheit (60 degrees Celsius) using the test methods specified in 40 CFR 261.21;
 - b. Wastewater having a pH less than 5.5 or greater than 11.5, or that may otherwise corrode POTW structures or equipment;
 - c. Solid or viscous substances in amounts that will obstruct the flow in the POTW, hinder POTW operations or cause POTW interference;
 - d. Wastewaters containing sand or other inorganic particulate matter that will result in a settleable solids concentration greater than 25 milliliters per liter in the user's discharge;

- e. Pollutants, including oxygen-demanding pollutants (BOD, etc.), discharged at a flow rate and/or pollutant concentration that, either singly or by interaction with other pollutants, will cause interference;
- f. Wastewater of a temperature sufficient to damage the POTW collection system, or inhibit biological activity in the POTW treatment plant (resulting in interference) or that causes the temperature of the entire wastewater stream to exceed 104 degrees Fahrenheit (40 degrees Celsius) at the entry point to the treatment plant;
- g. Petroleum oil, nonbiodegradable cutting oil or products of mineral oil origin, in amounts that will cause interference or pass through;
- h. Pollutants that cause toxic gases, vapors or fumes within the POTW in a quantity that may cause worker health or safety problems;
- i. Trucked or hauled pollutants, except at a discharge point designated by the director in accordance with section 20-434;
- j. Noxious or malodorous liquids, gases, solids or other wastewaters that, either singly or by interaction with other wastes, create a public nuisance or a human health hazard, or prevent entry into the sewers for maintenance or repair;
- k. Wastewater that imparts color that cannot be removed by the treatment process (such as, but not limited to, dye wastes and vegetable tanning solutions), which consequently imparts color to the POTW's effluent, thereby violating the city's CDPS permit;
- l. Wastewater containing any radioactive wastes or isotopes except in compliance with applicable state or federal regulations;
- m. Stormwater, surface water, groundwater, artesian well water, roof runoff and subsurface drainage, unless specifically authorized in writing by the director;
- n. Sludges, screenings or other residues from the pretreatment of industrial wastes;
- o. Wastewater causing, alone or in conjunction with other sources, the POTW's effluent to fail a toxicity test;
- p. Detergents, surface-active agents or other substances that may cause excessive foaming in the POTW;
- q. Fats, oils or greases of animal or vegetable origin in concentrations that cause blockages, flow obstructions or interference;
- r. Wastewater causing two readings on a combustible gas detection meter at any point in the POTW, of more than five percent, or any single meter reading over ten percent of the lower explosive limit;
- s. Chemical treatments used for controlling solidified grease in sewer lines or grease interceptors that cause pass through of grease or obstruction of

flow in the POTW, except in accordance with written authorization from the director;

- t. Unused or expired pharmaceuticals, including, but not limited to, prescription and over-the-counter medications, in amounts that cause or contribute to pass through or interference.

(b) No person shall process or store any pollutant, substance or wastewater prohibited by this article in such a manner that it could be discharged to the POTW.

Section 5. Section 20-422 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-422. National categorical pretreatment standards.

(a) The categorical pretreatment standards found at 40 CFR 405—471 are hereby incorporated in this article. Users must comply with applicable categorical pretreatment standards and requirements.

(b) Where a categorical pretreatment standard is expressed only in terms of either the mass or the concentration of a pollutant in wastewater, the director may impose, on their own initiative or at the request of a user, equivalent concentration or mass limits in accordance with 40 CFR 403.6(c) and subsections (b)(1) - (3) and (c) of this section 20-422.

(1) To be eligible for equivalent mass limits, the user must:

- a. employ, or demonstrate that it will employ, water conservation methods and technologies that substantially reduce water use during the term of its individual wastewater discharge permit;
- b. currently use control and treatment technologies adequate to achieve compliance with the applicable categorical pretreatment standard, and not have used dilution as a substitute for treatment;
- c. provide sufficient information to establish the facility's actual average daily flow rate for all wastestreams, based on data from a continuous effluent flow monitoring device, as well as the facility's long-term average production rate. both the actual average daily flow rate and the long-term average production rate must be representative of current operating conditions;
- d. not have daily flow rates, production levels, or pollutant levels that vary so significantly that equivalent mass limits are not appropriate to control the discharge; and
- e. have consistently complied with all applicable categorical pretreatment standards during the period prior to the user's request for equivalent mass limits.

(2) An user subject to equivalent mass limits must:

- a. maintain and effectively operate control and treatment technologies adequate to achieve compliance with the equivalent mass limits;

- b. continue to record the facility's flow rates through the use of a continuous effluent flow monitoring device;
 - c. continue to record the facility's production rates and notify the director whenever production rates are expected to vary by more than 20 percent from its baseline production rates determined in subsection (b)(1)c of this section. upon notification of a revised production rate, the director will reassess the equivalent mass limit and revise the limit as necessary to reflect changed conditions at the facility; and
 - d. continue to employ the same or comparable water conservation methods and technologies as those implemented pursuant to subsection (b)(1)a of this section so long as it discharges under an equivalent mass limit.
- (3) When developing equivalent mass limits, the director:
- a. will calculate the equivalent mass limit by multiplying the actual average daily flow rate of the regulated process(es) of the user by the concentration-based daily maximum and monthly average standard for the applicable categorical pretreatment standard and the appropriate unit conversion factor;
 - b. upon notification of a revised production rate, will reassess the equivalent mass limit and recalculate the limit as necessary to reflect changed conditions at the facility; and
 - c. may retain the same equivalent mass limit in subsequent individual wastewater discharger permit terms if the user's actual average daily flow rate was reduced solely as a result of the implementation of water conservation methods and technologies, and the actual average daily flow rates used in the original calculation of the equivalent mass limit were not based on the use of dilution as a substitute for treatment pursuant to section 20-426. the user must also be in compliance with section 20-533 regarding the prohibition of bypass.
- (c) The director may convert the mass limits of the categorical pretreatment standards of 40 CFR Parts 414, 419, and 455 to concentration limits for purposes of calculating limitations applicable to users. The conversion is at the discretion of the director.
- (d) Once included in its permit, the user must comply with the equivalent limitations developed in this section in lieu of the promulgated categorical standards from which the equivalent limitations were derived.
- (e) ~~(c)~~ When wastewater subject to a categorical pretreatment standard is mixed with wastewater not regulated by the same standard, the director shall impose an alternate limit using the combined waste stream formula in 40 CFR 403.6(e).
- (f) ~~(d)~~ A user may obtain a variance from a categorical pretreatment standard if the user can prove, pursuant to the procedural and substantive provisions in 40 CFR 403.13, that factors relating to its discharge differ fundamentally from the factors that EPA considered in developing the categorical pretreatment standard.

- (g) ~~(e)~~ A user may obtain a net/gross adjustment to a categorical pretreatment standard in accordance with 40 CFR 403.15.
- (h) ~~(f)~~ Each user shall be knowledgeable of all regulations applicable to the user. The director shall make reasonable efforts to notify all affected users of applicable standards and reporting requirements under 40 CFR 403.12. Failure of the director to notify an affected user, however, does not relieve the user of complying with appropriate categorical pretreatment standards or applicable reporting requirements.

Section 6. Section 20-423 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-423. Deadline for compliance with applicable pretreatment requirements and standards.

Existing sources shall comply with applicable categorical pretreatment standards within three years of the effective date for the standard unless the standard specifies a shorter compliance period. The ~~city~~ director shall establish a final compliance deadline for any existing user not covered by categorical pretreatment standards, or for any ~~categorical user CIU~~ whose local limits are more restrictive than the categorical pretreatment standards. new sources and new users must comply with applicable pretreatment standards and requirements upon initial discharge. new sources and new users shall install, have operable and start up all pollution control equipment required to meet applicable pretreatment standards and requirements before beginning to discharge.

Section 7. Section 20-424 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-424. Local limits.

- (a) The city has established the following local limits to prevent pass through and interference and to protect beneficial use of biosolids:

Table ~~14.11~~ 20-424 A. Total Metals and Conventional Pollutants

Pollutant/Pollutant Property	Daily Maximum Allowable Industrial Loading, lbs./day
Arsenic, Total	0.527
Cadmium, Total	0.316
Chloride	17,082.000
Chromium, Hexavalent	7.978
Copper, Total	6.241
Cyanide, Total	1.170
Lead, Total	1.528
Mercury, Total	0.009
Molybdenum, Total	1.354

Nickel, Total	4.728
Selenium, Total	1.114
Silver, Total	4.436
Zinc, Total	11.711
BOD	14,173.000
TSS	13,176.000

Table 14.11-20-424 B. Total BTEX (Benzene, Toluene, Ethylbenzene and Xylenes) and Benzene

Pollutant/Pollutant Property	Instantaneous Grab, ug/L
BTEX	750
Benzene	50

- (b) The ~~city~~ director will allocate the daily maximum allowable industrial loading among significant industrial users through wastewater discharge permits. The total mass of pollutants allocated to significant industrial users shall not exceed the maximum allowable industrial loading. Allocation of the POTW's maximum allowable industrial loading among all significant industrial users shall be based upon consideration of discharge volume, flow rate or equitable but feasible distribution.
- (c) In addition, the director may develop specific discharge limitations for any other toxic or inhibiting pollutant as necessary to prevent interference, pass through, danger to the health and safety of ~~POTW city~~ city personnel or the general public, environmental harm, a POTW permit violation, or to avoid rendering the POTW's biosolids unacceptable for economical reclamation, disposal or use.

Section 8. Section 20-428 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-428. Sector control programs.

The director may establish sector control programs to control specific pollutants as necessary to meet the objectives of this article for users that engage in similar activities and discharge similar pollutants. The director shall establish policies for each sector control program. users subject to these sector control programs may be required to install and operate wastewater pretreatment systems and/or implement ~~best management practices~~ BMPS and may be required to apply for a wastewater discharge permit.

Section 9. Section 20-432 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-432. Additional pretreatment measures.

- (a) Whenever the director finds it necessary to protect the POTW or to accurately assess a user's compliance with this article, he may require a user to restrict its

discharge during peak flow periods, discharge only into specific sewers, relocate and/or consolidate points of discharge, separate sewage waste streams from industrial waste streams or take other relevant measures.

- (b) The director may require users to install and maintain on their property a suitable storage and flow-control facility to ensure equalization of flow. The city director may issue a wastewater discharge permit solely for flow equalization.
- (c) The user shall install grease, oil and sand interceptors when, in the opinion of the director, they are necessary to properly handle wastewater containing excessive amounts of grease, oil or sand. All interceptors shall be of the type and capacity specified in the city's building code. users shall locate all interceptors so they are easily accessible for cleaning and inspection. The user shall inspect, clean, maintain and repair as needed all interceptors at its expense. The user shall make available for inspection by the director all cleaning and maintenance records for a minimum of three years.
- (d) The director may require users with the potential to discharge flammable substances to install and maintain an approved combustible gas detection meter at a point prior to discharge to the POTW.
- (e) The user shall calibrate all devices used to measure wastewater flow for billing purposes to ensure their accuracy as outlined in the city's wastewater flow meter accuracy verification guidelines. A copy of such guidelines is available from the director.

Section 10. Section 20-433 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-433. ~~Accidental discharge/s~~Slug discharge control plans.

- (a) The director shall evaluate whether an ~~industrial~~ user needs an ~~accidental discharge/slug~~ discharge control plan. Such evaluations must be documented in the administrative file. The director may require any user to develop, submit for approval and implement such a plan. Any requirement to develop and implement a slug discharge control plan shall be included in the user's wastewater discharge permit. An ~~accidental discharge/slug~~ discharge control plan shall contain, at a minimum, the following:
 - (1) A description of discharge practices including non-routine batch discharges;
 - (2) A description of stored chemicals;
 - (3) Procedures for immediately notifying the director of any ~~accidental~~ or slug discharge, as required by section 20-478(a); and
 - (4) Procedures to prevent adverse impact from any ~~accidental~~ or slug discharge. Such procedures must address inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site runoff, worker training, containment structures or equipment, measures for containing toxic organic pollutants (including solvents) and measures and equipment for emergency response.

- (b) An SIU shall notify the director immediately of any changes at its facility affecting the potential for a slug discharge.

Section 11. Section 20-434 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-434. Hauled portable toilet wastewater.

- (a) A user may introduce hauled portable toilet wastewater into the POTW only in accordance with its wastewater discharge permit.
- (b) Hauled portable toilet wastewater shall comply with all relevant provisions of this chapter, including, but not limited to, section 20-421.
- (c) All portable toilet wastewater haulers shall obtain wastewater discharge permits. Portable toilet wastewater haulers must submit a waste manifest form for every load.

Section 12. Section 20-435 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-435. Satellite waste dump sites.

- (a) Satellite waste dump site operators must obtain a wastewater discharge permit prior to introducing wastewater to the POTW.
- (b) Satellite waste dump site operators shall comply with all relevant provisions of this chapter, including, but not limited to, section 20-421.
- (c) Satellite waste dump site operators must maintain records for all loads disposed of at their site. Such records shall include, at a minimum, the name of the hauler, the hauler's vehicle, the license number, the volume of waste and the hauler's certification that the waste is not RCRA hazardous. satellite waste dump site operators shall submit such records to the director as required by their wastewater discharge permit.

Section 13. Section 20-456 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-456. Requirement to obtain wastewater discharge permit.

- (a) All SIUs and CIUs shall obtain a wastewater discharge permit from the director ~~prior to any discharge to the POTW.~~
- (b) The director may require other users to obtain a wastewater discharge permit as necessary to accomplish the purposes of this article.
- (c) Any violation of the terms and conditions of a wastewater discharge permit shall constitute a violation of this article. Obtaining a wastewater discharge permit does not relieve a permittee of its obligation to comply with all applicable federal and state pretreatment standards or requirements, or with any other applicable requirements of federal, state and local law.

Section 14. Section 20-457 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-457. Wastewater discharge permitting; existing connections.

An existing ~~discharger~~ user that becomes newly subject to permitting requirements under this article, and that does not currently have a wastewater discharge permit, may continue to discharge to the POTW until its timely wastewater discharge permit application is processed, provided that its discharge does not cause interference or pass through. In order to qualify under this provision, the ~~discharger~~ user must submit its application within ten business days of notification by the director of the permitting requirement.

Section 15. Section 20-458 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-458. Wastewater discharge permitting; new connections.

Any user required to obtain a wastewater discharge permit that proposes to begin or recommence discharging into the POTW shall obtain such wastewater discharge permit prior to beginning or recommencing its discharge. The user shall file an application for a wastewater discharge permit in accordance with section 20-459 at least 90 days prior to the date upon which such discharge will begin or recommence.

Section 16. Section 20-459 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-459. Wastewater discharge permit application.

All users required to obtain a wastewater discharge permit must submit a permit application. Users that are eligible may request a general permit under section 20-460. Such application shall include the following information for the premises from which the discharge will occur:

- (1) All information required by section 22-237(b);
- (2) A description of activities, facilities and plant processes, including a list of all raw materials and chemicals used or stored on the premises that will, or could accidentally or intentionally, be discharged to the POTW;
- (3) The number and type of employees and proposed or actual hours of operation;
- (4) Each product to be produced by type, amount, process or processes and rate of production;
- (5) The type and amount of raw materials to be processed (average and maximum per day);
- (6) Site plans, floor plans, mechanical and plumbing plans and details to show all sewers, floor drains and appurtenances by size, location and elevation, and all points of discharge;
- (7) Facility contact information;
- (8) Time and duration of the discharge; ~~and~~

- (9) Any requests for a monitoring waiver (or a renewal of an approved monitoring waiver) for a pollutant neither present nor expected to be present in the discharge based on section 20-476(e);
- (10) Any request to be covered by a general permit based on section 20-460; and
- (11) (9) Any other information that the director deems necessary to evaluate the wastewater discharge permit application. The director will return unprocessed to the user all incomplete or inaccurate applications.

Section 17. Section 20-460 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-460. Wastewater discharge permitting; general permits.

- (a) At the discretion of the director, the director may use general permits to control ~~industrial user discharges~~ to the POTW if the following conditions are met. All facilities to be covered by a general permit must:
 - (1) Involve the same or substantially similar types of operations;
 - (2) Discharge the same types of wastes;
 - (3) Require the same effluent limitations;
 - (4) Require the same or similar monitoring; and
 - (5) In the opinion of the director are facilities more appropriately controlled under a general permit than under individual wastewater discharge permits.
- (b) To be covered by ~~the a~~ general permit, ~~the a~~ user must file a written request for coverage that identifies its contact information, production processes, the types of wastes generated, the location for monitoring all wastes covered by the general permit, any requests in accordance with section 20-473(b) for a monitoring waiver for a pollutant neither present nor expected to be present in the discharge, and any other information the POTW director deems appropriate. A monitoring waiver for a pollutant neither present nor expected to be present in the discharge is not effective in the general permit until after the director has provided written notice to the user that such a waiver request has been granted in accordance with section 20-473(b).
- (c) The director will retain a copy of the general permit, documentation to support the POTW's determination that a specific user meets the criteria in subsections (a)(1) through (5) of this section and applicable state regulations, and a copy of the user's written request for coverage for three years after the expiration of the general permit.
- (d) The director may not control an ~~SCIU~~ through a general permit where the facility is subject to production-based categorical pretreatment standards or categorical pretreatment standards expressed as mass of pollutant discharged per day or for users whose limits are based on the combined waste stream formula in section 20-422(c) or net/gross calculations in section 20-422(e).

Section 18. Section 20-462 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-462. Issuance of draft wastewater discharge permits.

If the director determines that a wastewater discharge permit is appropriate, he will first issue a draft wastewater discharge permit for review. Notice of the availability of the draft shall be posted in the same manner as other public notices. The user and the public shall have 30 days to submit written comments on the draft wastewater discharge permit. The director shall issue a wastewater discharge permit within 15 days of the close of the 30-day comment period.

Section 19. Section 20-463 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-463. Wastewater discharge permit decision appeals.

- (a) Any person, including the user, may petition the director to reconsider the terms of a wastewater discharge permit ~~(administrative appeal)~~ within 30 days of the effective date of the final wastewater discharge permit or the decision not to issue a wastewater discharge permit. ~~(4)~~ Failure to submit a written petition for review within such 30-day period shall constitute a waiver of the right to ~~the administrative appeal~~ the terms of a wastewater discharge permit or the decision not to issue a wastewater discharge permit.
- ~~(21)~~ In its written petition for review, the appealing party must indicate the wastewater discharge permit provisions or the basis for the decision not to issue a wastewater discharge permit that it is objecting to, the reasons for ~~this~~ its objection and the alternative condition, if any, it seeks to place in the wastewater discharge permit. Except for provisions that change from the draft to the final wastewater discharge permit, the ~~petitioner~~ appealing party may only appeal those issues ~~#~~ that the appealing party raised during the public comment period.
- ~~(32)~~ Only the challenged portions of the final wastewater discharge permit shall be stayed pending ~~an~~ the appeal.
- ~~(43)~~ The director must issue their final decision within 20 days of receiving the written petition for review. Failure of the director's failure to act within 20 days of receiving a written petition for review shall constitute denial of the petition for review. The director's decision not to reconsider, issue or modify a wastewater discharge permit shall be considered the director's final decision for purposes of this section.
- ~~((5))~~ ~~Aggrieved parties may seek review of the director's wastewater discharge permit decision by filing a request with the director within 30 days of the date of his final decision asking that the director's written decision be sent to the water and sewer board. The director shall submit his written decision to the water and sewer board within 30 days of receiving the request. The water and sewer board shall make its decision based on the administrative record.~~
- ~~(6)~~ ~~Aggrieved~~ (b)(1) The appealing parties, or the user, if not the appealing party, may seeking review of the water and sewer board's wastewater discharge permit director's decision on the petition for review must do so by filing a request for hearing with the administrative hearing officer, as authorized by the city Charter,

within 30 days ~~after of the date of the director's final decision of the board.~~ the administrative hearing officer shall conduct the hearing in accordance with the procedures set forth in chapter 12 of title 2 of this code and the administrative hearing officer rules and regulations. Such ~~review~~ hearing shall be de novo, and the administrative hearing officer's decision shall be considered final administrative action for purposes of subsection (c).

(2) The administrative hearing officer's decision to deny a request for hearing shall be considered final administrative action for purposes of subsection (c).

(3) To the extent this chapter is inconsistent with chapter 12 of title 2 of this code or the administrative hearing officer rules and regulations, this chapter shall govern. Chapter 10 of title 1 of this code does not apply to this chapter.

(Zc) Any appeal from the decision of the administrative hearing officer shall be to the appropriate court pursuant to C.R.C.P. 106.

Section 20. Section 20-464 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-464. Wastewater discharge permit contents.

The director shall include such conditions in the wastewater discharge permit that he determines are reasonably necessary to prevent pass through or interference, protect the quality of the water body receiving the treatment plant's effluent, protect ~~POTW worker~~ city personnel health and safety, facilitate biosolids management and disposal and protect against damage to the POTW.

(1) Wastewater discharge permits shall:

- a. Identify the permit term, which in no event shall exceed five years;
- b. Contain a statement that the wastewater discharge permit is nontransferable without prior notification to the director in accordance with section 20-467, and provisions for furnishing the new owner or operator with a copy of the existing wastewater discharge permit;
- c. Contain effluent limits, including BMPs, based on applicable pretreatment standards and requirements;
- d. Contain self-monitoring, sampling, reporting, notification and record-keeping requirements, which shall include the pollutants or BMP to be monitored, sampling location, sampling frequency, sample type and analysis method based on federal, state and local law;
- e. Contain requirements to control slug discharges, if determined by the director to be necessary;
- f. Contain a statement of applicable civil and criminal penalties for violating pretreatment standards and requirements; and
- g. Contain any applicable compliance schedule, which shall not extend the time for compliance beyond that required by applicable federal, state or local law.

- (2) Wastewater discharge permits may contain the following:
- a. Limits on the average and/or maximum rate of discharge, time of discharge and/or requirements for flow regulation and equalization;
 - b. Requirements to install, operate and maintain pretreatment technology, pollution control or containment devices to reduce, eliminate or prevent the introduction of pollutants into the POTW;
 - c. Requirements to develop and implement spill control plans or other special conditions necessary to prevent accidental, unanticipated or no routine discharges;
 - d. Requirements to develop and implement waste minimization plans to reduce the amount of pollutants discharged to the POTW;
 - e. The unit charge or schedule of user charges and fees for treating wastewater discharged to the POTW;
 - f. Requirements to install and maintain inspection and sampling facilities or other equipment, including flow measurement devices;
 - g. A statement that compliance with the wastewater discharge permit does not relieve the permittee of responsibility to comply with all applicable federal and state pretreatment standards, including those that become effective during the term of the wastewater discharge permit; and
 - h. Other conditions that the director deems necessary to ensure compliance with this chapter and state and federal requirements.

Section 21. Section 20-465 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-465. Wastewater discharge permit duration.

A wastewater discharge permit shall be issued for a specified term, not exceeding five years from the effective date of the wastewater discharge permit. The director may issue a wastewater discharge permit for a term less than five years.

Section 22. Section 20-466 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-466. Wastewater discharge permit modification.

- (a) The director may modify a wastewater discharge permit for good cause, including, but not limited to, the following reasons:
- (1) To incorporate any new or revised federal, state or local pretreatment standards or requirements;
 - (2) To address significant alterations or additions to the user's operation, processes or wastewater volume or character since the time of wastewater discharge permit issuance;
 - (3) A change in the POTW that requires either a temporary or permanent reduction or elimination of the permitted discharge;

- (4) Information indicating that the permitted discharge may threaten the POTW, human health or the environment;
 - (5) Violation of any terms or conditions of the wastewater discharge permit;
 - (6) Misrepresentations or failure to fully disclose all relevant facts in the wastewater discharge permit application or in any required reporting;
 - (7) Revision of categorical pretreatment standards, or a variance there from under 40 CFR 403.13;
 - (8) To correct typographical or other errors in the wastewater discharge permit; or
 - (9) To reflect a transfer of facility ownership or operation to a new owner or operator.
- (b) A user may petition the director and seek review of any wastewater discharge permit modification ~~and request an administrative appeal hearing~~ within ten days following issuance of the wastewater discharge permit with modifications. ~~The administrative appeal hearing shall be conducted according pursuant to procedures described in section 20-463.~~

Section 23. Section 20-467 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-467. Wastewater discharge permit transfer.

- (a) A wastewater discharge permit holder may transfer its wastewater discharge permit to a new owner or operator only if the permittee gives ~~at least 60 days' advance~~ written notice to the director, no less than 30 days in advance of the date of transfer, and the director approves the wastewater discharge permit transfer in writing. The notice to the director must include a written certification by the new owner or operator that:
- (1) The new owner and/or operator acknowledges receipt of a copy of the existing wastewater discharge permit;
 - (2) The new owner and/or operator has fully read and understands the wastewater discharge permit conditions and accepts full responsibility for complying with the existing wastewater discharge permit;
 - (3) The new owner and/or operator has no immediate intent to change the facility's operations and processes; and
 - (4) Identifies the specific date of transfer.
- (b) Upon approval of the wastewater discharge permit transfer, the director shall reissue the transferred wastewater discharge permit in the name of the new owner and/or operator.

Section 24. Section 20-468 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-468. Wastewater discharge permit suspension, ~~or revocation~~, or termination.

- (a) The director may suspend or revoke a wastewater discharge permit for good cause, including, but not limited to, the following reasons:
- (1) Failure to provide prior notification to the director of changed conditions pursuant to section 20-477;
 - (2) Misrepresentation or failure to fully disclose all relevant facts in the wastewater discharge permit application;
 - (3) Falsifying monitoring reports;
 - (4) Tampering with monitoring equipment;
 - (5) Refusing to allow the director timely access to the facility premises and records;
 - (6) Failure to pay fines;
 - (7) Failure to pay sewer charges;
 - (8) Failure to meet compliance schedules;
 - (9) Failure to complete a wastewater survey or timely permit renewal application;
 - (10) Failure to provide advance notice of the transfer of business ownership of a permitted facility as required by section 20-467; or
 - (11) Violation of any pretreatment standard or requirement, or any terms of the permit or this article.
- (b) A user may file a petition to reconsider the suspension or revocation of its wastewater discharge permit and request an administrative appeal within ten days following issuance of the notice of suspension or revocation. The administrative appeal shall be conducted according to the procedures described in section 20-530.
- (c) All Wastewater Discharge Permits shall be voidable terminate upon (1) the cessation of operations; ~~All Wastewater Discharge Permits are void upon~~ (2) the issuance of a new replacement Wastewater Discharge Permit; ~~(3) THE EXPIRATION OF THE WASTEWATER DISCHARGE PERMIT TERM; OR (4 THE REQUEST OF THE PERMITTEE.~~ The permittee may file a petition to reconsider the appeal the voiding termination of a wastewater discharge permit pursuant to section 20-463 within ten days of notice that the wastewater discharge permit is void has terminated. This appeal may be taken pursuant to section 20-463.

Section 25. Section 20-470 of the above-entitled ordinance shall be deleted and reserved:

Sec. 20-470. Reserved. ~~Suspension or revocation of permit; appeal; emergency suspension.~~

- ~~(a) Upon determination by the director of just cause under the terms of this chapter to suspend or revoke a wastewater discharge permit, the user shall be sent, by~~

~~certified mail or personal delivery service, written notice of termination of POTW service.~~

- ~~(b) The user may elect to appeal such determination, in which event such user shall, within ten days of the date of mailing or service, notify in writing, the director of intent to appeal, specifying the particular section of the determination contested and the basis thereof. The appeal shall be conducted according to procedures described in section 20-463.~~
- ~~(c) The suspension or revocation of the permit shall be stayed pending the appeal hearing unless the director determines that the suspension is necessary to prevent an imminent danger to the public health, safety or welfare, or interference with the operation or treatment abilities of the POTW. The director may include in the temporary suspension reasonable orders or conditions with which the permittee shall comply to protect the public health and safety.~~
 - ~~(1) Any user notified to suspend its discharge shall immediately stop or eliminate its contribution. If a user fails to immediately comply voluntarily with the suspension order, the director may take all necessary steps, including immediate severance of the water or sewer connection, to prevent or minimize damage to the POTW, its receiving stream or danger to any individuals. The director may allow the user to recommence its discharge when the user demonstrates to the director that the threat has been satisfactorily resolved, unless the director initiates termination proceedings against the user under section 20-519.~~
 - ~~(2) A user wholly or partly responsible for any discharge that is ordered suspended under this section shall, within five days of receiving such order, submit to the director a detailed written report describing the causes of the harmful situation and the measures taken to prevent any future occurrence.~~
- ~~(d) Any breach of the conditions or orders of an emergency suspension is an independent ground for revocation of the permit, assessment of a penalty or both.~~

Section 26. Section 20-473 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-473. Baseline monitoring reports.

- (a) *Generally.* Within either 180 days after the effective date of a categorical pretreatment standard, or the final administrative decision on a category determination under 40 CFR 403.6(a)(4), whichever is later, existing categorical users currently discharging to or scheduled to discharge to the POTW shall submit to the director a report containing the information listed in subsection (b) of this section. At least 90 days prior to commencing their discharge, new sources, and sources that become categorical users subsequent to the promulgation of an applicable categorical standard, shall submit to the director a report containing the information listed in subsection (b) of this section. A new source shall report the method of pretreatment it intends to use to meet applicable categorical standards. A new source also shall estimate the anticipated flow and quantity of pollutants it will discharge.

(b) *Required information of report.* Each user described in subsection (a) of this section shall submit a report containing the following information:

- (1) *Identifying information.* The name and address of the facility, including the name of the operator and owner.
- (2) ~~*Contact information, description of activities, facilities, etc.*~~ *Contact information, description of activities, facilities and plant production processes on the premises.*
- ~~(3) *Environmental permits.*~~ A list of all environmental control permits held by or for the facility.
- (43) *Description of operations.* A brief description of the user's operations and average production rates, including identification of all applicable North American Industry Classification System Codes. This description should include a schematic process diagram that indicates points of discharge to the POTW from the regulated processes.
- (54) *Flow measurement.* The measured average daily and maximum daily flow, in gpd, to the POTW from regulated process streams and other streams, as necessary, to allow use of the combined waste stream formula set out in 40 CFR 403.6(e).
- (65) *Measurement of pollutants.*
 - a. The categorical pretreatment standards applicable to each regulated process.
 - b. The results of sampling and analysis identifying the nature and concentration, and/or mass where required by the categorical standard or by the director, of regulated pollutants in the discharge from each regulated process. The information shall include a chain of custody record ~~that lists the outfall location, sample date, sample time, sample type and name of sample collector.~~
 - c. Instantaneous, daily maximum and long-term average concentrations, or mass where required.
 - d. The sample shall be representative of daily operations and shall be analyzed according to procedures set out in section 20-483. Where the standard requires compliance with a BMP or pollution prevention alternative, the user shall submit documentation as required by the director or the applicable standards to determine compliance with the standard.
 - e. The user must sample according to the procedures set out in section 20-484.
 - f. The user shall take a minimum of one representative sample to compile that data necessary to comply with the requirements of this subsection.
 - g. The user should take samples immediately downstream from pretreatment facilities if such exist or immediately downstream from the regulated process if no pretreatment exists. If other wastewaters are mixed with the

regulated wastewater prior to pretreatment, the user should measure the flows and concentrations necessary to allow use of the combined waste stream formula in 40 CFR 403.6(e) to evaluate compliance with the pretreatment standards. Where an alternative concentration or mass limit has been calculated in accordance with 40 CFR 403.6(e), the user shall submit this adjusted limit along with supporting data to the POTW.

- h. The director may allow the user to submit a baseline report that utilizes only historical data so long as the data provides information sufficient to determine the need for industrial pretreatment measures.
 - i. The baseline report shall indicate the time, date and place of sampling and methods of analysis, and shall certify that such sampling and analysis accurately represent normal work cycles and expected pollutant discharges to the POTW.
- (76) *Certification.* A statement, reviewed by the authorized representative of the user and certified by a qualified professional, indicating whether pretreatment standards are being met on a consistent basis, and, if not, whether additional O&M and/or additional pretreatment is required to meet the pretreatment standards and requirements.
- (87) *Compliance schedule.* If additional pretreatment and/or O&M is required to meet the categorical pretreatment standards, the shortest schedule by which the user will provide such additional pretreatment and/or O&M shall be submitted. The completion date in this schedule shall not be later than the compliance date established for the applicable pretreatment standard. A compliance schedule pursuant to this chapter must meet the requirements set out in section 20-474 and, when applicable, submitted in accordance with 40 CFR. § 403.12 (b)(7)(i-ii).
- (98) *Signature and report certification.* All baseline monitoring reports must be signed and certified in accordance with section ~~20-534(a)~~ 20-487(a).

Section 27. Section 20-475 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-475. Reports on compliance with categorical pretreatment standard deadline.

Within 90 days following the date for final compliance with applicable categorical pretreatment standards or, in the case of a new source, following commencement of the introduction of wastewater into the POTW, any user subject to such pretreatment standards and requirements shall submit to the director a report containing the information described in section 20-473(b)(4) through (6). For users subject to equivalent mass or concentration limits established according to the procedures in 40 CFR 403.6(c), this report shall contain a reasonable measure of the user's long-term production rate. For all other users subject to categorical pretreatment standards expressed in terms of allowable pollutant discharge per unit of production (or other measure of operation), this report shall include the user's actual production during the appropriate sampling period. All compliance reports must be signed and certified according to section ~~20-534(a)~~ 20-487(a).

Section 28. Section 20-476 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-476. Periodic self-monitoring compliance reports.

- (a) An SIU shall submit periodic reports that indicate the nature and concentration of pollutants in its discharge that are limited by a pretreatment standard, along with the measured daily flows. The information shall include a chain of custody record ~~that lists the outfall location, sample date, sample time, sample type and name of sample collector.~~ The director shall establish the schedule for such reporting in the SIU's wastewater discharge permit. Such schedule shall require submittal of the reports at a frequency of no less than every six months. In cases where the pretreatment standard requires compliance with a BMP or pollution prevention alternative, the user must submit documentation as required by the director or the applicable Standard to determine the compliance status of the user. All periodic compliance reports must be signed and certified according to section ~~20-534(a)~~ 20-487(a).
- (b) All reports under this section are due 30 days following the end of the reporting period stated in the SIU's permit.
- (c) All wastewater samples required under this section must be representative of the SIU's discharge. The SIU shall properly operate and maintain all wastewater monitoring and flow measurement facilities. Failure of an SIU to keep its monitoring facility in good working order shall not be grounds for the SIU to claim that sample results are unrepresentative of its discharge.
- (d) If an SIU subject to the reporting requirement in this section monitors any pollutant more frequently than required by the director using the procedures prescribed in section 20-484, the SIU shall include the results of this monitoring in the periodic compliance report.
- (e) the director may authorize a user subject to a categorical pretreatment standard to forego sampling of a pollutant regulated by a categorical pretreatment standard if the user has demonstrated through sampling and other technical factors that the pollutant is neither present nor expected to be present in the discharge, or is present only at background levels from intake water and without any increase in the pollutant due to activities of the industrial user. (see 40 CFR 403.12(e)(2)) this authorization is subject to the following conditions:
 - (1) the waiver may be authorized where a pollutant is determined to be present solely due to sanitary wastewater discharged from the facility provided that the sanitary wastewater is not regulated by an applicable categorical standard and otherwise includes no process wastewater.
 - (2) the monitoring waiver is valid only for the duration of the effective period of the individual wastewater discharge permit, but in no case longer than five years. The user must submit a new request for the waiver before the waiver can be granted for each subsequent individual wastewater discharge permit. See section 20-459 (9).

- (3) in making a demonstration that a pollutant is not present, the user must provide data from at least one sampling of the facility's process wastewater prior to any treatment present at the facility that is representative of all wastewater from all processes.
- (4) the request for a monitoring waiver must be signed in accordance with section 20-487 and include the certification statement in section 20-487(c).
- (5) non-detectable sample results may be used only as a demonstration that a pollutant is not present if the EPA approved method from 40 CFR part 136 with the lowest minimum detection level for that pollutant was used in the analysis.
- (6) any grant of the monitoring waiver by the director must be included as a condition in the user's permit. The reasons supporting the waiver and any information submitted by the user in its request for the waiver must be maintained by the director for 3 years after expiration of the waiver.
- (7) upon approval of the monitoring waiver and revision of the user's permit by the director, the user must certify on each report with the statement in section 20-487(c), that there has been no increase in the pollutant in its wastestream due to activities of the user.
- (8) in the event that a waived pollutant is found to be present or is expected to be present because of changes that occur in the user's operations, the user must immediately: comply with the monitoring requirements of section 20-476(a), or other more frequent monitoring requirements imposed by the director, and notify the director
- (9) this provision does not supersede certification processes and requirements established in categorical pretreatment standards, except as otherwise specified in the categorical pretreatment standard.

Section 29. Section 20-478 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-478. Reports of potential problems.

- (a) In the case of any discharge that may cause potential problems for the POTW, including, but not limited to, accidental discharges, discharges of a nonroutine episodic nature, a noncustomary batch discharge or a slug load, the user shall immediately notify the POTW director by telephone of the incident. This notification shall include the location of the discharge, type of waste, duration, concentration and volume, if known, and corrective actions taken by the user.
- (b) Within five days following such discharge, the user shall, unless waived by the director, submit a detailed written report describing the cause of the discharge and the measures the user will take to prevent similar future occurrences. Such report shall not relieve the user of any expense, loss, damage or other liability that it may incur as a result of damage to the POTW, natural resources or other persons or property; nor shall such report relieve the user of any fines, penalties or other liability that may be imposed pursuant to this chapter or other applicable law.

- (c) A user shall permanently post on its bulletin board or other prominent place information advising employees whom to call in the event of a discharge described in subsection (a) of this section. The ~~City~~ user shall ensure that all employees who may cause such a discharge to occur are advised of the emergency notification procedure.

Section 30. Section 20-480 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-480. Reporting of violations and repeat sampling.

If sampling performed by a user indicates a violation, the user must notify the director in writing or by telephone within 24 hours of becoming aware of the violation. The user shall also repeat the sampling and analysis and submit the results of the repeat analysis to the director within 30 days after becoming aware of the violation. Where the city director has performed sampling and analysis in lieu of the user, the city director must perform the repeat sampling and analysis unless it notifies the user of the violation and requires the user to perform the repeat analysis. Where the city director finds a violation as a result of its compliance monitoring event, then the user shall perform repeat sampling and analysis within 30 days after becoming notified of the violation.

Section 31. Section 20-481 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-481. Bypass reporting.

Users must report all bypasses in accordance with section 20-5323(c).

Section 32. Section 20-482 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-482. Notification of the discharge of hazardous waste.

- (a) A user shall notify in writing the director, the EPA Region VIII Waste Management division and the state hazardous materials and waste management division of any discharge into the POTW of a substance which, if otherwise disposed of, would be a hazardous waste under 40 CFR 261. Such notification must include the name of the hazardous waste as set forth in 40 CFR 261, the EPA hazardous waste number and the type of discharge (continuous, batch or other).
- (1) If the user discharges more than 100 kilograms of such waste per ~~calendar~~ month to the POTW, to the extent such information is known and readily available to the user, the notification shall also identify the hazardous constituents contained in the waste stream; estimate the mass and concentration of such constituents in the waste stream discharged during that ~~calendar~~ month; and estimate the mass and concentration of such constituents in the waste stream the user expects to discharge during the following 12 months.
- (2) The user shall provide such notification no later than 180 days after the discharge commences. Any notification under this subsection need be submitted only once for each hazardous waste discharged. (However, the

user must notify the ~~POTW~~ director of any changed conditions under section 20-477). The notification requirement in this subsection does not apply to pollutants already reported by users subject to categorical pretreatment standards under the self-monitoring requirements of sections 20-473, 20-475 and 20-476.

- (b) Users are exempt from the requirements of subsection (a) of this section during a ~~calendar~~ month in which they discharge no more than 15 kilograms of hazardous wastes, unless the wastes are acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e). Discharge of more than 15 kilograms of non-acute hazardous wastes in a ~~calendar~~ month, or of any quantity of acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e), requires a one-time notification. Subsequent months during which the user discharges more than such quantities of any hazardous waste do not require additional notification. (However, the user must notify the ~~POTW~~ director of any changed conditions under section 20-477.)
- (c) If EPA or the state issues any new regulations under section 3001 of RCRA identifying any additional characteristic of a hazardous waste or listing any additional substance as a hazardous waste, the user must notify the director, the EPA Region VIII Waste Management division and the state hazardous materials and waste management division of the discharge of such substance within 90 days of the effective date of such regulations.
- (d) In the case of any notification made under this chapter, the user shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practicable.
- (e) This provision does not create a right to discharge any substance not otherwise permitted to be discharged by this chapter, a wastewater discharge permit issued hereunder or any applicable federal or state law.

Section 33. Section 20-484 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-484. Sample collection.

Reports required in sections 20-473, 20-475 and 20-476 must be based on data obtained through appropriate sampling and analysis performed during the period covered by the report, based on data that is representative of conditions occurring during the reporting period.

- (1) Except as indicated in subsections (2) and (3) of this section, the user must collect wastewater samples using 24-hour flow-proportional composite sampling techniques, unless time-proportional composite sampling or grab sampling is authorized by the director. Where time-proportional composite sampling or grab sampling is authorized by the ~~city~~ director, the samples must be representative of the discharge. Using protocols (including appropriate preservation) specified in 40 CFR 136 and appropriate EPA guidance, multiple grab samples collected during a 24-hour period may be composited prior to the analysis as follows: for cyanide, total phenols and sulfides, the samples may

be composited in the laboratory or in the field; for volatile organics and oil and grease, the samples may be composited in the laboratory. Composite samples for other parameters unaffected by the compositing procedures as documented in approved EPA methodologies may be authorized by the ~~city~~ director, as appropriate. In addition, grab samples may be required to show compliance with instantaneous limits.

- (2) Samples for oil and grease, temperature, pH, cyanide, total phenols, sulfides and volatile organic compounds must be obtained using grab collection techniques unless specified otherwise in a wastewater discharge permit or otherwise approved by the ~~city~~ director.
- (3) For sampling required in support of baseline monitoring and 90-day compliance reports required in sections 20-473 and 20-475, a minimum of four grab samples must be used for pH, cyanide, total phenols, oil and grease, sulfide and volatile organic compounds for facilities for which historical sampling data do not exist; for facilities for which historical sampling data are available, the director may authorize a lower minimum. For the reports required by section 20-476, the ~~industrial~~ user is required to collect the number of grab samples necessary to assess and ensure compliance with applicable pretreatment standards and requirements.

Section 34. Section 20-485 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-485. Timely submittal of reports.

For written reports required by this article or a wastewater discharge permit:

- (1) The date of the postmark shall constitute submittal for reports sent postage prepaid by U.S. Mail;
- (2) The date of receipt by the director shall constitute submittal for reports sent by other means, including but not limited to private courier.

Section 35. Chapter 3, Article VI, Industrial Pretreatment, shall be amended by adding thereto a new Section 20-487 to read as follows:

Sec. 20-487. Signatories and certification.

- (a) General. All wastewater discharge permit applications and user reports must be signed by an authorized representative of the user and contain the following certification statement:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false

information, including the possibility of fine and imprisonment for knowing violations.

- (b) Annual certification for nonsignificant categorical industrial users. A facility that the director determines is a nonsignificant categorical industrial user must annually submit to the POTW the following certification signed by an authorized representative of the user. This certification must accompany an alternative report required by the director:

Based on my inquiry of the person or persons directly responsible for managing compliance with the categorical pretreatment standards under 40 CFR _____, I certify that, to the best of my knowledge and belief that during the period from _____, _____, to _____, _____, [months, days, year]:

- (1) The facility described as _____ [facility name] met the definition of a nonsignificant categorical industrial user.
- (2) The facility complied with all applicable pretreatment standards and requirements during this reporting period; and
- (3) The facility never discharged more than one hundred (100) gallons of total categorical wastewater on any given day during this reporting period.

This compliance certification is based upon the following information:

_____ official signature

- (c) Certification of pollutants not present. Users that have an approved monitoring waiver based on section 20-476 (e) must certify on each report with the following statement that there has been no increase in the pollutant in its wastestream due to activities of the user.

Based on my inquiry of the person or persons directly responsible for managing compliance with the pretreatment standard for 40 CFR _____ [specify applicable national pretreatment standard part(s)], I certify that, to the best of my knowledge and belief, there has been no increase in the level of _____ [list pollutant(s)] in the wastewaters due to the activities at the facility since filing of the last periodic report under section sec. 20-476 (a).

Section 36. Section 20-511 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-511. Right of entry; inspection and sampling.

Upon presentation of proper credentials, the director may enter the premises of any user to determine the user's compliance with this article and any wastewater discharge permit or order issued hereunder. Users shall allow the director ready access to all parts of the premises to inspect, sample, examine and copy records, and to perform any additional duties related to such compliance issues.

- (1) Where a user has security measures in force that require proper identification and clearance before entry into its premises, the user shall make necessary arrangements with its security personnel so that, upon presentation of suitable identification, the director will be permitted to enter without delay for the purpose of performing specific responsibilities.
- (2) The director shall have the right to set up on the user's property, or require installation of, any devices necessary to sample and/or measure the user's operations.
- (3) The director may require the user to install, in accordance with local construction standards and specifications, such sampling and monitoring equipment and facilities as necessary to ensure compliance with applicable requirements. The user shall maintain sampling and monitoring equipment at all times in a safe and proper operating condition at its own expense.
- (4) The director may require the user to install and maintain sampling and monitoring facilities independent of the user's sampling and monitoring facilities to enable the director to independently monitor the user's discharge activities.
- (5) At the request of the director, the user shall promptly remove any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled. The user shall bear any costs of clearing such access.
- (6) In the event that the director is refused admission to the ~~discharger's premises~~ user's property, the director may discontinue water or wastewater service to the premises until the director has been afforded reasonable access to the premises to accomplish inspection or sampling.

Section 37. Section 20-514 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-514. Publication of users in significant noncompliance.

The director shall publish annually, in a newspaper of general circulation that provides meaningful public notice within the jurisdiction served by the POTW, a list of the users that, at any time during the previous 12 months-calendar year, were in significant noncompliance with applicable pretreatment standards and requirements. A user is in The term "significant Noncompliance" shall mean if a user committed a violation that meets one or more of the following criteria:

- (1) Chronic violations of any wastewater discharge limits, defined ~~herein~~ as those violations in which 66 percent or more of all of the wastewater measurements

- taken for the same pollutant parameter during a six-month period exceed by any ~~amount~~ magnitude, a numeric pretreatment standard or requirement, including instantaneous maximum allowable discharge limits;
- (2) Technical review criteria (TRC) violations, defined ~~herein~~ as those violations in which 33 percent or more of all of the wastewater measurements taken for ~~each the same~~ pollutant parameter during a six-month period equal or exceed the product of the numeric pretreatment standard or requirement, including the instantaneous maximum allowable discharge limit, multiplied by the applicable ~~criteria~~ TCR (1.4 for BOD, TSS, fats, oils and grease, and 1.2 for all other pollutants except pH);
 - (3) Any other violation of pretreatment standards or requirements (daily maximum, long-term average, instantaneous maximum allowable discharge limit or narrative standard) that the director determines (a) has caused, alone or in combination with other discharges, interference or pass through, ~~or that~~ (b) has endangered the health of ~~POTW~~ city personnel or the general public;
 - (4) Any discharge ~~of a pollutant~~ that (a) caused imminent endangerment to human health or welfare or the environment, or resulted in the director's exercise of his emergency authority under section 20-520 to halt or prevent such a discharge;
 - (5) Failure to meet, within 90 days of the scheduled date, a compliance schedule milestone contained in a wastewater discharge permit or ~~enforcement~~ compliance order for starting construction, completing construction or attaining final compliance;
 - (6) Failure to provide within ~~45~~ 30 days after the due date, any required reports, including baseline monitoring reports, reports on compliance with categorical pretreatment standard deadlines, periodic self-monitoring reports and reports related to compliance schedules;
 - (7) Failure to accurately report noncompliance; or
 - (8) Any other violation, including a violation of a sector control program or BMP, that the director determines will adversely affect the operation or implementation of the local pretreatment program.

Section 38. Section 20-515 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-515. Notice of violation.

When the director finds that a user has violated or continues to violate any provision of this article, a wastewater discharge permit, an order issued ~~hereunder~~ this chapter or any other pretreatment standard or requirement, the director may serve that user a written notice of violation. ~~Within 30 days of the receipt of such notice, the user shall submit in writing to the director an explanation of the violation and a plan with specific steps to correct the violation and prevent its recurrence. Submission of this plan~~ A notice of violation only applies to the violation(s) identified therein and in no way relieves the user of liability for any violations occurring before or after receipt of the notice of violation. Issuance of a notice of violation shall not be a bar against, or a

prerequisite for, taking any other action against the user. ~~A user may seek review of a notice of violation and request an administrative appeal hearing within ten days following issuance of the notice of violation. The administrative appeal hearing shall be conducted according to procedures described in section 20-529.~~

Section 39. Section 20-516 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-516. Compliance orders.

When the director finds that a user has violated or continues to violate any provision of this article, a wastewater discharge permit, an order issued ~~hereunder~~ this chapter or any other pretreatment standard or requirement, the director may order the user responsible for the discharge to attain compliance within a specified time. Compliance orders also may contain other requirements to address the noncompliance, including prohibiting discharge, requiring treatment, additional self-monitoring and other management practices designed to minimize the amount of pollutants discharged to the POTW. Compliance orders may ~~also assess fines and administrative costs include the assessment of administrative fines~~ against the user in accordance with section 20-521. A compliance order ~~may~~ shall not extend the deadline for compliance established for a pretreatment standard or requirement, nor does a compliance order relieve the user of liability for any violation, including any continuing violation. Issuance of a compliance order shall not be a bar against, or a prerequisite for, taking any other action against the user. A User may ~~seek review~~ file a petition to reconsider the issuance of a compliance order and request an administrative appeal Hearing within ten ~~(10)~~ days following issuance of a compliance order. The administrative appeal ~~Hearing~~ shall be conducted according to the procedures described in section 20-~~529~~530. A user's petition to reconsider will not stay any condition of a compliance order that is not challenged by the user. The user shall be liable for all continuing violations.

Section 40. Section 20-517 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-517. Show cause hearing.

The director may order a user that has violated, or continues to violate, any provision of this article, a wastewater discharge permit, ~~or an order issued~~ this chapter or any other pretreatment standard or requirement, to appear before the director and show cause why the city should not take the proposed enforcement action, including the assessment of administrative fines and costs. The director shall serve notice on the user specifying the time and place for the hearing, the proposed enforcement action, the reasons for such action, and requesting that the user show cause why the proposed enforcement action should not be taken. The director shall serve notice of the hearing by ~~certified mail (return receipt requested)~~ personal service or first class U.S. mail at least ~~five~~ ten days prior to the hearing. The director may serve such notice on any authorized representative of the user. A show cause hearing shall not be a bar against, or prerequisite for, taking any other action against the user. ~~A user may seek review of a show cause hearing determination and request an administrative appeal hearing~~

~~within ten days following receipt of show cause hearing decision. The administrative appeal hearing shall be conducted according to procedures described in section 20-529.~~

Section 41. Section 20-518 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-518. Consent orders.

The ~~director~~ city may enter into a consent order, an assurance of voluntary compliance or other similar document establishing an agreement with any user responsible for noncompliance. Such ~~documents~~ agreement shall include specific action for the user to take to correct the noncompliance within a specified time period and may include administrative fines, stipulated penalties, supplemental environmental projects, or other conditions and requirements as agreed to by and between the city and the user. Such ~~documents~~ agreement shall have the same force and effect as the compliance orders issued pursuant to section 20-516, ~~may contain an agreement as to payment of fines and costs~~ and shall be judicially enforceable.

Section 42. Section 20-519 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-519. Cease and desist orders.

- (a) When the director determines: that a user has violated, or continues to violate, any provision of this chapter, a wastewater discharge permit, ~~or an order issued hereunder~~ this chapter, or any other pretreatment standard or requirement and; that the user's past violations are likely to recur; ~~or that the user's discharge endangers the environment or threatens to interfere with the operation of the POTW;~~ then the director may, ~~after formal notice to the user and an opportunity to be heard under section 20-517,~~ order the user to cease and desist all such violations and direct the user to:
- (1) Immediately comply with all requirements; and
 - (2) Take such appropriate remedial or preventive action necessary to properly address a continuing or threatened violation, including halting operations and/or terminating the discharge.
- (b) ~~When the director determines that a user's discharge imminently threatens human health or welfare, the director may, after informal notice to the user, order the user to cease and desist such threat and direct the user to:~~
- ~~(1) Immediately comply with all requirements; and~~
 - ~~(2) Take such appropriate remedial or preventive action necessary to properly address the imminent threat, including halting operations and/or terminating the discharge.~~
- ~~(c)~~ A user may file a petition to reconsider the issuance seek review of a cease and desist order according to procedures described in section 20-529530. A user's petition to reconsider will not stay any condition of a cease and desist order that is not challenged by the user. The user shall be liable for all continuing violations.

Issuance of a cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the user.

Section 43. Chapter 3, Article VI, Industrial Pretreatment, shall be amended by adding thereto a new Section 20-520 to read as follows:

Sec. 20-520. Emergency suspension of service.

- (a) Endangerment to human health or welfare. The director, without written notice to the responsible user, may immediately halt or prevent any discharge into the POTW or sanitary sewer system of a connecting jurisdiction by any available means to the city, including but not limited to physical disconnection from the POTW, whenever it reasonably appears that a user's discharge presents an imminent endangerment to human health or welfare.
- (b) Endangerment to environment or treatment works. The director, after written notice to the responsible user, may halt or prevent any discharge into the POTW or sanitary sewer system of a connecting jurisdiction by any available means to the city, including but not limited to physical disconnection from the POTW, whenever a user's discharge presents or may present an endangerment to the environment or threatens to interfere with the operation of the POTW.
- (c) Suspension of service and elimination of non-complying discharge. Any user notified of a suspension of its wastewater discharge permit and/or its wastewater treatment service shall immediately stop or eliminate the discharge. In the event that a user fails to comply with the suspension order, the director may take any measure they deems necessary, including but not limited to immediate physical disconnection of the sewer connection, to prevent or minimize harm to human health or the environment or damage to the POTW. The director may reinstate the user's wastewater discharge permit and/or its wastewater treatment service upon proof that the user has eliminated the non-complying discharge.
- (d) Statement of cause and preventative measures. Within five days after receiving the notice of a suspension, the responsible user shall submit a detailed written statement to the director describing the cause of the harmful discharge and the measures taken to prevent any reoccurrence. Suspension of service shall not be a bar against, or a prerequisite for, taking any other action against the user.

Section 44. Section 20-520 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-5201. Administrative fines.

- (a) ~~Following the issuance of a notice of violation, a compliance order or order to show cause, the director may fine a user in an amount not to exceed \$1,000.00 per violation. The director shall determine the applicable fine using the city's administrative penalty evaluation form and administrative penalty matrix. When the director determines that a user has violated, or continues to violate, any provision of this chapter, a wastewater discharge permit, an order issued under this~~

chapter or any other pretreatment standard or requirement, the director may assess an administrative fine against such user in an amount not to exceed one thousand dollars (\$1,000.00) per violation per day.

- (1) Each day on which ~~noncompliance~~ a violation occurs, or continues, shall constitute a separate and distinct violation. In the case of monthly or other long-term average discharge limits, the director may assess an administrative fines for each day during the period of violation. The director may add the costs of preparing administrative enforcement actions, such as notices and orders, to the administrative fine.
- (12) The director may add unpaid charges and fines to the user's next scheduled sewer service charge or utilize other collection remedies. All unpaid fines and charges shall constitute a lien against the user's property. ~~In that case, the director of finance shall file such lien to protect the city's interest. Fines and charges remaining unpaid for 60 calendar days shall accrue interest at the rate set forth in section 6-197 on the unpaid balances.~~
- (23) ~~The assessment~~ issuance of an administrative ~~penalty~~ fine shall not be a bar against, or a prerequisite for, taking any other action against the user.
- (b) A user may file a petition to reconsider the assessment of an administrative fine according to procedures described in section 20-530. A user's petition to reconsider will not stay any enforcement action that is not challenged by the user. The user shall be liable for all continuing violations.

Section 45. Section 20-521 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-521.2. Delinquent payment of administrative fines ~~and costs~~; notice before collection action.

Before filing a civil action to collect one or more delinquent ~~penalty~~ assessments, the director shall send a notice to the responsible ~~party or parties~~ user, which advises the ~~party or parties~~ user of the nature of the violation that resulted in ~~a civil penalty~~ the assessment of an administrative fine, the dates on which violations occurred, the original due date of the ~~penalty~~ delinquent assessment and the total amount due ~~of the penalty~~, including any delinquency charges. The notice shall further advise the responsible ~~party or parties~~ user that, unless payment of ~~all assessments~~ the total amount due is made to the city within ten days of the date of the notice, civil action to collect the delinquent amounts may be filed in a court of competent jurisdiction for collection of such assessments.

Section 46. Section 20-522 of the above-entitled ordinance shall be deleted to read as follows:

Sec. 20-522. Delinquent payment of administrative fines ~~and costs~~; collection action initiation.

~~If the city does not receive full payment of all fines and costs following the notice provided for in section 20-521, the city attorney shall file civil action for collection in the~~

~~appropriate court. Any inaccuracy or omission in the notice under section 20-521 shall not bar or serve as a defense to the civil action. Any such defect may result in the disallowance of interest until the city perfects notice.~~

Section 47. Section 20-523 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-523. Liability for expenses and fines.

Any user violating this article shall be liable for any expense, loss or damage ~~caused to the POTW caused by reason of~~ such violation, including increased costs for sewage treatment, biosolids treatment and disposal, and POTW operation and maintenance expenses resulting from the user's discharge. If a user's discharges ~~pollutants that causes the state or EPA to assess a fine against the city for violating any condition of its CDPS permit or its approved pretreatment program, then the discharger user shall be fully liable for the total amount of the fine assessed against the city by the state or EPA indemnify the city for the total cost of the fine, including, without limitation, all legal, sampling, analytical and other associated costs and expenses.~~

Section 48. Section 20-524 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-524. Injunctive relief.

When the director finds that a user has violated, or continues to violate, any provision of this article, a wastewater discharge permit, an order issued ~~hereunder~~ this chapter or any other pretreatment standard or requirement, the ~~director city~~ may petition the appropriate court, ~~through the city attorney,~~ to issue a temporary or permanent injunction, as appropriate, to restrain or compel the specific performance of the wastewater discharge permit, order or other requirement imposed by this chapter on activities of the user. The ~~director city~~ may also seek such other action appropriate for legal and/or equitable relief, including requiring the user to conduct environmental remediation. A petition for injunctive relief shall not be a bar against, or a prerequisite for, taking any other action against a user.

Section 49. Chapter 3, Article VI, Industrial Pretreatment, shall be amended by adding thereto a new Section 20-525 to read as follows:

Sec. 20-525. Civil penalties

(a) A user who has violated, or continues to violate, any provision of this chapter, a wastewater discharge permit, an order issued pursuant to this chapter, or any other pretreatment requirement or standard shall be liable to the city for a civil penalty not to exceed one thousand dollars (\$1,000.00) per day per violation. In the case of a monthly or other long-term average discharge limit, penalties shall accrue for each day during the period of violation.

- (b) The city may recover reasonable attorneys' fees, court costs, and other expenses associated with enforcement activities, including sampling and monitoring expenses, and the cost of any actual damages incurred by the city.
- (c) Filing a suit for civil penalties shall not be a bar against, or a prerequisite for, taking any other action against a user.
- (d) In determining the amount of civil liability, the court shall take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration of the violation, any economic benefit gained through the user's violation, corrective actions by the user, the compliance history of the user, and any other factor as justice requires.

Section 50. Section 20-525 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-5256. Criminal prosecution.

- (a) A user who knowingly or negligently violates any provision of this chapter, a wastewater discharge permit, ~~an~~ ~~or~~ order issued ~~here~~under this chapter, or any other pretreatment standard or requirement, shall, upon conviction, be guilty of a misdemeanor offense, punishable by a fine of not more than \$1,000.00 per violation per day or imprisonment for not more than one year, or both. Each day, or portion thereof, that a ~~person~~ user commits, continues or allows a violation of any provision of this article, wastewater discharge permit, ~~an~~ ~~or~~ order issued ~~here~~under this chapter, or any other pretreatment standard or requirement, shall constitute a separate offense and ~~is~~ be punishable accordingly.
- (b) A user who knowingly makes any false statements, representations or certifications in any application, record, report, plan or other documentation filed or required to be maintained pursuant to this chapter, a wastewater discharge permit, ~~or~~ ~~an~~ order issued ~~here~~under this chapter, or who falsifies, tampers with or knowingly renders inaccurate any monitoring device or method required under this chapter shall, upon conviction, be punished by a fine of not more than \$1,000.00 per violation per day, or imprisonment of not more than one year, or both.
- (c) The city may refer violations that may warrant criminal prosecution to the U.S. attorney, state attorney general, EPA criminal investigations division, or other appropriate agency. Such referral shall not be a bar against, or a prerequisite for, taking any other action against a user.

Section 51. Section 20-526 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-5267. Remedies nonexclusive.

The remedies provided for in this article are not exclusive of any other remedies that the city may have under Colorado law. The ~~director~~ city may take any, all or any combination of ~~these~~ actions described in this chapter against a ~~noncompliant~~ user who violates any provision of this chapter, a wastewater discharge permit, an order issued pursuant to this chapter, or any other pretreatment requirement ~~as permitted by~~

~~law. The city may seek damages from any user whose discharge causes damage or detrimental effects on the POTW or otherwise causes the city to expend resources to respond to such discharge. The city's enforcement response guide will direct enforcement of pretreatment violations. However, the director may take other action against any user when the circumstances warrant, interested parties may obtain copies of the city's enforcement response guide from the director.~~

Section 52. Section 20-527 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-5278. Performance bonds.

The director may decline to issue or reissue a wastewater discharge permit to any user who has failed to comply with any provision of this article, a previous wastewater discharge permit ~~or an order issued hereunder~~ this chapter, or any other pretreatment standard or requirement, unless such user first files a bond or other financial instrument acceptable to the director of finance and payable to the city, in a sum not to exceed a value that the director determines to be necessary to achieve consistent compliance.

Section 53. Section 20-528 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-5289. Water supply severance.

The director may discontinue water service to any user who has violated or continues to violate any provision of this article, a wastewater discharge permit, ~~or an order issued hereunder~~ this chapter, or any other pretreatment standard or requirement. Service will only recommence, at the user's expense, after it has satisfactorily demonstrated its ability to comply. Within ten days following discontinuance of water service, the user may request a hearing which shall be held in accordance with section 20-~~529~~530.

Section 54. Section 20-529 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-52930. Administrative appeal hearings.

(a) Any user ("appealing party") may petition the director to reconsider ("administrative appeal") an ~~notice of violation, order issued under this chapter, penalty or any other enforcement action~~ fine imposed pursuant to in this chapter within ten days of the receipt of the ~~notice of violation or other enforcement action order, penalty or fine.~~ (1) failure to submit a written petition for ~~review~~ reconsideration within such ten-day period shall constitute a waiver of the right to the administrative appeal.

(2) In its written petition, the appealing party must indicate the enforcement actions objected to, the reasons for ~~this its~~ objection, and any proposed alternative action. (3) Only the challenged portions of the final enforcement action shall be stayed pending an appeal.

- (42) The director shall serve the appealing party with notice of the hearing on the administrative appeal, including the location, date and time by certified first class U.S. mail (return receipt requested) of the location, date and time of the administrative appeal hearing at least five ten days prior to the hearing.
- (35) The director shall issue a written decision on the ~~petition~~ administrative appeal within 20 days after the ~~administrative appeal~~ hearing. The director's written decision shall be considered the director's final decision for purposes of this section.
- ~~(6) Aggrieved parties may seek review of the director's decision by filing a written request with the director within 30 days of the date of such final decision, asking that the director's written decision be sent to the water and sewer board. The director shall submit his written decision to the water and sewer board within 30 days of receiving the request. The water and sewer board shall make its decision based on the administrative record. The water and sewer board may elect to decline to issue a decision on the user's appeal. If the water and sewer board so elects, the user's appeal shall be directed to the administrative hearing officer.~~
- ~~(b7)(1) aggrieved parties~~ the appealing party may seeking review of the water and sewer board ~~director's decision on the petition for reconsideration on the administrative record must do so by filing a request and fee for hearing with the administrative hearing officer, as authorized by the city charter within 30 days of the date of the director's~~ after the decision of the board. The administrative hearing officer shall conduct the hearing in accordance with the procedures set forth in chapter 12 of title 2 of this code and the administrative hearing officer rules and regulations. Such review hearing shall be de novo-, and the administrative hearing officer may assess fines and issue orders consistent with the provisions of this chapter. The administrative hearing officer's decision shall be considered final administrative action for purposes of subsection (c).
- (2) The administrative hearing officer's decisions not to deny a request for hearing ~~reconsider an enforcement action shall be considered the final administrative action for the purposes of judicial review subsection c. The administrative hearing officer shall conduct the hearing in accordance with the procedures set forth in chapter 12 of title 2 of this Code and in the administrative hearing officer rules and regulations. The administrative hearing officer may assess fines and issue orders consistent with the provisions of this chapter.~~
- (3) To the extent this chapter is inconsistent with chapter 12 of title 2 of this Code or the administrative hearing officer rules and regulations, this chapter shall govern. chapter 10 of title 1 of this code does not apply to this chapter.
- (8c) Any appeal from the decision of the administrative hearing officer shall be to the appropriate court pursuant to C.R.C.P. 106.

Section 55. Section 20-530 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-5301. Upset.

- (a) ~~For the purposes of this section, the term "upset" means an exceptional incident that results in unintentional and temporary noncompliance with a categorical pretreatment standard because of factors beyond the reasonable control of the user. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance or careless or improper operation.~~
- (a**b**) An upset shall constitute an affirmative defense to an action brought for noncompliance with categorical pretreatment standards, provided that the user immediately notifies the director upon discovery of the upset and meets the requirements of subsection (c) of this section.
- (b**e**) A user who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that:
- (1) An upset occurred and the user can identify its cause;
 - (2) The facility was, at the time, being operated in a prudent and professional manner and in compliance with applicable operation and maintenance procedures; and
 - (3) In addition to the immediate notice required in subsection (b) of this section, the user submitted the following information to the director within 24 hours of becoming aware of the upset:
 - a. A description of the indirect discharge and cause of noncompliance;
 - b. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue;
 - c. Steps the user is taking or plans to take to reduce, eliminate and prevent recurrence of the noncompliance; and
 - d. If the user initially provided the foregoing information orally, the user must submit it in writing within five days.
- (c**d**) In any enforcement proceeding, the user seeking to establish the affirmative defense of an upset shall have the burden of proof.
- (d**e**) A user will have the opportunity for a judicial determination on any claim of upset only in an enforcement action brought for noncompliance with categorical pretreatment standards.
- (e**f**) A user shall control all discharges to the extent necessary to maintain compliance with categorical pretreatment standards upon reduction, loss or failure of its treatment facility until restoring the facility or providing an alternative method of treatment. This requirement applies in the situation, among others, where the user partially or completely loses power to its treatment facility.

Section 56. Section 20-531 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-5312. Affirmative defense. Lack of knowledge.

A user shall have an affirmative defense to an enforcement action brought against it for noncompliance with the general prohibition in section 20-421 (b) or the specific prohibitions in section 20-421 (c), if it can prove that it did not know, or have reason to know, that its discharge, alone or in conjunction with discharges from other sources, would cause pass through or interference and that either:

- (1) A local limit exists for each pollutant discharged, and the user complied with each limit directly prior to and during the pass through or interference; or
- (2) No local limit exists, but the discharge did not change substantially in nature or constituents from the user's prior discharge when the city was regularly in compliance with its CDPS permit and, in the case of interference, was in compliance with applicable sludge use or disposal requirements.

Section 57. Section 20-532 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-5323. Bypass.

~~(a) Definitions. The following words, terms and phrases, when used in this section, shall have the meanings ascribed to them in this subsection, except where the context clearly indicates a different meaning:~~

~~Bypass means the intentional diversion of waste streams from any portion of a user's treatment facility.~~

~~Severe property damage means substantial physical damage to property, damage to the treatment facility that renders it inoperable or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. The term "severe property damage" does not mean economic loss caused by delays in production.~~

- ~~(a)~~ A user may allow any bypass to occur that does not violate a pretreatment standard or requirement, but only if such bypass is necessary for essential maintenance to ensure efficient operation. These bypasses are not subject to subsections ~~(d)~~ and ~~(e)~~ of this section.
- ~~(b)~~ If a user knows in advance of the need for a bypass, it shall notify the director at least ten days before the date of the bypass or at the earliest possible time the user becomes aware of the bypass need if less than ten days prior to the bypass.
- ~~(c)~~ A user shall orally notify the director of an unanticipated bypass that exceeds applicable pretreatment standards immediately upon becoming aware of the bypass, but in no case later than 24 hours from the time it becomes aware of the bypass. The user must also submit a written report within five days of the time it becomes aware of the bypass. The report shall describe the bypass and its cause; state the duration of the bypass, including exact dates and times, and, if the bypass has not been corrected, its anticipated duration; and steps taken or planned to prevent reoccurrence of the bypass.
- ~~(d)~~ Bypass is prohibited, and the director may take enforcement action against a user for a bypass, unless:

- (1) The bypass was unavoidable to prevent loss of life, personal injury or severe property damage;
 - (2) There was no feasible alternative to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes or maintenance during normal periods of equipment downtime. (This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance); and
 - (3) The user submitted the notices required under subsection (d) of this section.
- (e) The director may approve an anticipated bypass, after considering its adverse effects, if the director determines that the bypass will meet the three conditions listed in subsection (e) of this section.

Section 58. Section 20-533 of the above-entitled ordinance shall be amended to read as follows:

Sec. 20-5334. Pretreatment charges and fees.

The city may assess reasonable fees and charges through rules or other means to recoup the costs of administering its pretreatment program, which may include:

- (1) Fees for wastewater discharge permit applications, including the cost of processing such applications;
- (2) Fees for monitoring, inspection and surveillance procedures, including the cost to collect and analyze a user's discharge samples and to review monitoring reports submitted by users;
- (3) Fees for reviewing accidental discharge procedures;
- (4) Fees for filing appeals; and
- (5) Other fees that the city may deem necessary to carry out the requirements contained herein.

These fees relate solely to the matters covered by this chapter and are separate from all other fees, fines and penalties chargeable by the city.

Section 59. Section 20-534 of the above-entitled ordinance shall be deleted as follows:

~~Sec. 20-534. Signatories and certification.~~

~~(a) All wastewater discharge permit applications and user reports must be signed by an authorized representative of the user and contain the following certification statement:~~

~~I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information~~

~~submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.~~

- ~~(b) Annual certification for nonsignificant categorical industrial users. A facility that the director determines is a nonsignificant categorical industrial user, as defined in section 20-396, must annually submit to the POTW the following certification signed by an authorized representative of the user. This certification must accompany an alternative report required by the director:~~

~~Based on my inquiry of the person or persons directly responsible for managing compliance with the categorical pretreatment standards under 40 CFR ____, I certify that, to the best of my knowledge and belief that during the period from _____, _____, to _____, _____, [months, days, year]:~~

- ~~a. The facility described as _____ [facility name] met the definition of a nonsignificant categorical industrial user as described in section 20-396;~~
- ~~b. The facility complied with all applicable pretreatment standards and requirements during this reporting period; and~~
- ~~c. The facility never discharged more than 100 gallons of total categorical wastewater on any given day during this reporting period.~~

~~This compliance certification is based upon the following information:~~

Official Signature

--

Industrial Pretreatment Program



**Introduction and
First Reading of
Amendments to
Title 20, Chapter 3,
Article VI of the
City Code
(Industrial
Pretreatment)**

City of Greeley Water Treatment & Reclamation Facility - Pre-Construction

Industrial Pretreatment Program

Required Program Modifications

- **Substantial Modifications to the Program required from EPA Audit in August 2020**
 - **Amend Pretreatment Chapter of the City Code (Industrial Pretreatment Ordinance)**
 - **Amend IPP Enforcement Response Plan**
 - **Ensure consistent enforcement between all user classes**



Industrial Pretreatment Program

Ordinance Modifications

- **Amend City Code Title 20, Article VI (Industrial Pretreatment) to achieve the following:**
 - **Better align Ordinance definitions with Federal definitions**
 - **Align the Ordinance with procedures, permitting, SOPs, and enforcement practices**
 - **Simplify submittal process**
 - **Correct minor clerical errors**



Industrial Pretreatment Program

Ordinance Modification Timeline

- **Develop Program Modification Package (March 2021)**
- **W&S Board Informational Presentation (April 21, 2021)**
- **Submit Formal Substantial Program Modification Request to EPA (May 24, 2021)**
- **Update EPA Enforcement Section on Program Modification Progress (June 10, 2021)**
- **W&S Board Approval (May 19, 2021)**
- **IPP conducts an informational workshop with permitted users (July 13, 2021)**
- **1st Council Reading (September 7, 2021)**
- **EPA Approval following 30 day notice (starting on September 8, 2021)**
- **2nd Council Reading (October 19, 2021)**

Recommended Council Action

- **A motion introducing first reading of an Ordinance amending Article VI, Chapter 3, Title 20 of the Greeley Municipal Code (Industrial Pretreatment Chapter)**





Questions?

Council Agenda Summary

September 7, 2021

Agenda Item Number

Key Staff Contact: John Karner, Finance Director, 350-9732

Title:

First reading of an ordinance appropriating additional sums to defray the expenses and liabilities of the City of Greeley for the balance of the fiscal year of 2021 and for funds held in reserve for encumbrances at December 31, 2020.

Summary:

This is the third supplemental appropriation ordinance modifying the 2021 budget. This appropriation ensures that existing commitments in progress at 2020 year end can be completed in 2021, designates funds for additional commitments, and appropriates new grants that have been awarded.

Fiscal Impact:

Does this item create a fiscal impact on the City of Greeley?	Yes
If yes, what is the initial, or, onetime impact?	\$ 13,721,212
What is the annual impact?	\$ 13,721,212
What fund of the City will provide Funding?	See Ordinance
What is the source of revenue within the fund?	Grant, Fund Balance, American Rescue Plan Act, Operating Transfers, Expense Reimbursement, Intergovernmental Agreement, Private Contributions, & Permit Fees.
Is there grant funding for this item?	Yes, Item 13
If yes, does this grant require a match?	Yes, Item 13
Is this grant onetime or ongoing?	Onetime
Additional Comments:	Total appropriations made by this ordinance are \$ 13,721,212. The following funding sources will be used to cover the appropriations made by this ordinance.

Source		Total
Grant		\$ 6,000,000
Fund Balance		3,242,629
American Rescue Plan Act		2,238,174
Operating Transfers		1,739,402
Intergovernmental Agreement		289,797
Permit Fees		114,725
Expense Reimbursement		94,135
Private Contribution		2,350
Grand Total		\$ 13,721,212

Legal Issues:

City Charter prohibits actual expenditures from exceeding appropriations at the fund level. This ordinance will ensure that this does not occur.

Other Issues and Considerations:**Applicable Council Priority and Goal:**

Image: Reinforce Greeley's vision as an attractive and vibrant community in which to live, learn, work and play.

Decision Options:

- 1) Introduce the ordinance as presented; or
- 2) Amend the ordinance and introduce as amended; or
- 3) Deny the ordinance; or
- 4) Continue consideration of the ordinance to a date certain.

Council's Recommended Action:

A motion to introduce the ordinance and schedule the public hearing and final reading for September 21, 2021.

Attachments:

Ordinance

Detail Supporting Schedule

CITY OF GREELEY, COLORADO
ORDINANCE NO. _____, 2021

AN ORDINANCE APPROPRIATING ADDITIONAL SUMS TO DEFRAY THE EXPENSES AND LIABILITIES OF THE CITY OF GREELEY FOR THE BALANCE OF THE FISCAL YEAR OF 2021 AND FOR FUNDS HELD IN RESERVE FOR ENCUMBRANCES AT DECEMBER 31, 2020.

WHEREAS, the City of Greeley has or will incur expenses for certain activities described below during the 2021 fiscal year, and

WHEREAS, the revenues received in the City of Greeley in 2020, exceeded the amount of revenues estimated in the 2020 Budget by more than the total amount of the expenditures in the same year;

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF GREELEY, COLORADO:

Section 1. In accordance with section 5-17 of the Greeley Charter, from actual and anticipated revenues which exceed the revenue estimates in the 2021 budget and amounts held in fund balance reserves from 2020, there is hereby appropriated the following designated sums to be allocated for use during the remainder of 2021:

Fund	Total
100 General	\$ 5,469,331
105 Conservation Trust	21,000
123 Cash In Lieu of Landscaping	16,052
143 Community Memorials	2,350
301 Public Improvement	700,000
304 Food Tax	15,066
334 Road Development	1,000,000
411 Sewer Operations	22,734
421 Water Operations	6,053,045
423 Water Capital Replacement	415,134
605 Memorials	6,500
Grand Total	\$ 13,721,212

Section 2. All actions heretofore taken (not inconsistent with the provisions of this ordinance) by the officers, agents and employees of the City in connection with this appropriation are hereby ratified, approved and confirmed.

Section 3. This Ordinance shall become effective five (5) days after its final publication as is provided by Section 3-16 of the Greeley Charter,

PASSED AND ADOPTED, SIGNED AND APPROVED THIS ____ DAY OF _____, 2021.

ATTEST:

THE CITY OF GREELEY

City Clerk

Mayor



City of Greeley

2021 Appropriation No. 3

City Council Meetings: September 7th & 21st

Fund	Funding Source	Description	Fund Balance	Revenue	Expenditures	Net Impact
100 - GENERAL FUND						
1	Permit Fees	Funding is requested for an additional temporary Construction Inspector as part of a two-year program involving the installation of roughly 1.7 million lineal feet of new fiber in the City of Greeley. The majority of this fiber will be installed underground in the City Right of Way. Civil Inspections will be responsible for providing inspection services that cannot be maintained with current staffing levels. Additional licensing & permit fees will be received to cover the employment expenditures to complete this task. Funding is requested for the remainder of 2021 with additional funding and revenue requested as part of the 2022 budget.	-	38,946	38,946	-
2	Fund Balance	Funding is requested for executive search services regarding the Community Development Director, Police Chief, Information Technology Director and City Manager positions.	100,500	-	100,500	-
3	Operating Transfer: COMMUNITY MEMORIALS & CASH IN LIEU OF LANDSCAPING	Community Forestry is a necessary component to manage the thousands of trees the city owns, as well as to provide citizen education and cost-saving programs to support citizen maintenance and planting efforts. This request will allow proper urban forest care through proper planting, maintenance, and planning in public spaces and rights-of-way. Funding will allow proper management of the Share the Shade program, which offers value-priced options for residents to reforest the city's rights-of-way. Additionally, funds will support a low-cost option for families to honor a loved one through the Memorial Tree program. This has been a long-standing operational tradition. Lastly, funds will be used for the Emerald Ash Bore (EAB) treatment program that supports residents with a low-cost Ash tree treatment option to protect them from this invasive species.	-	42,726	42,726	-
4	Operating Transfer: CONSERVATION TRUST FUND	In 2019, the City entered into a memorandum of understanding (MOU) with the statewide volunteer management non-profit Volunteers for Outdoor Colorado (VOC). The goal is to both house a new Volunteer Partnership Coordinator position at Natural Areas & Trails (NAT) office and to support a portion of the position for an initial two-year term in both financial and in-kind contributions. The City receives great value through this partnership, leveraging Volunteers for Outdoor Colorado's professional volunteer management skillset for outdoor stewardship volunteer projects. The city also leverages VOC's statewide presence to bring additional resources and exposure to NAT's events, filling events with both Greeley residents and volunteers from across the state. This funding fulfills the City's financial contribution for the two-year term of the agreement and represents approximately 10% of the full cost.	-	21,000	21,000	-
5	Expense Reimbursement	Greeley Fire provides equipment, supplies, and personnel as part of the Front Range Fire Consortium Fire Academy. This reimbursement is a result of our enrolled personnel numbers being lower than normal in the last academy compared to what we provided the academy (apparatus, tools, instructors, etc.). The funds will be used to upgrade communications systems hardware in the fire stations to shorten the time a fire crew receives dispatch information for emergency response for the remaining five fire stations. Software and software maintenance expenditures will be included in current county dispatch costs.	-	53,759	53,759	-
6	American Rescue Plan Act (ARPA)	Funding is being appropriated for one-time compensation for Fire, Police & essential City employees and government expenditures that are allowed under the American Rescue Plan Act (ARPA).	-	2,238,174	2,238,174	-
7	Fund Balance	Funding is being appropriated to support wages increases and/or one-time compensation that was not included in the original 2021 budget.	1,274,226	-	1,274,226	-
100 - GENERAL FUND			1,374,726	2,394,605	3,769,331	-
301 - PUBLIC IMPROVEMENT						
8	Operating Transfer: GENERAL FUND	Funding is requested to be fully compliant in regards to the road crossings at 8th Street & 13th Street. Funds will go towards the purchase and installation of Quad Gates by Union Pacific Railroad allowing these crossings to be in full compliance with federal quiet zone standards. By installing quad gates, the Federal Railroad Administration (FRA) will be able to approve the quiet zone by providing proper crossing in alignment with current standards.	-	700,000	700,000	-
301 - PUBLIC IMPROVEMENT			-	700,000	700,000	-

Fund	Fund	Item No. 16.	ption	Fund Balance	Revenue	Expenditures	Net Impact
304 - FOOD TAX							
9	Intergovernmental Agreement	Funding is being requested for the replacement of diving boards at the Recreation Center. The Recreation Center houses the only full-size competitive swimming pool in Greeley. New diving boards and stands are required for school district diving competitions. Through a Joint Use Agreement, the City of Greeley partnered with Weld County School District 6 to host swimming and diving meets at the Greeley Recreation Center. Weld County School District 6 requested both diving boards be replaced and are paying for fifty percent of the total cost.		-	15,066	15,066	-
304 - FOOD TAX				-	15,066	15,066	-
334 - ROAD DEVELOPMENT							
10	Operating Transfer: GENERAL FUND	Funding is requested for the completion of the 35th Avenue interchange design to improve both safety and traffic flow as identified in the current 2025 Transportation Masterplan. The preliminary design is now complete and the Colorado Department of Transportation (CDOT) share fifty percent of the final design costs with the City. The same consultant, AECOM will continue doing the work which is expected to last approximately 12 months. The City has submitted a federal RAISE grant, which in correlation with the final design being complete allows the City to move forward with construction.		-	1,000,000	1,000,000	-
334 - ROAD DEVELOPMENT				-	1,000,000	1,000,000	-
411 - SEWER OPERATIONS							
11	Permit Fees	Funding is requested for Sewer's portion of the cost for two temporary utility locators for the broadband fiber optic installation project. The inspectors will directly support the Allo broadband project, bringing another high-speed telecom provider to the Greeley community. The inspectors will protect Greeley's transmission and distribution assets from damage due to the fiber-optic install project. The inspectors are needed for locating utility assets and performing inspections in conjunction with the Allo project which is proposing to install 322 miles of underground cable throughout Greeley. These are project-based hires, meaning the crossing-fee revenues collected from the Allo project will fund these positions for the project duration. Utility locating is a state-mandated activity with the threat of fines if locates are not complete within 48-hours of ticket submission. In addition to possible fines, water and sewer lines are at risk of being damaged if not located before work begins, potentially leading to service outages and costly repairs.		-	22,734	22,734	-
411 - SEWER OPERATIONS				-	22,734	22,734	-
421 - WATER OPERATIONS							
12	Permit Fees	Funding is requested for Water's portion of the cost for two temporary utility locators for the broadband fiber optic installation project. The inspectors will directly support the Allo broadband project, bringing another high-speed telecom provider to the Greeley community. The inspectors will protect Greeley's transmission and distribution assets from damage due to the fiber-optic install project. The inspectors are needed for locating utility assets and performing inspections in conjunction with the Allo project which is proposing to install 322 miles of underground cable throughout Greeley. These are project-based hires, meaning the crossing-fee revenues collected from the Allo project will fund these positions for the project duration. Utility locating is a state-mandated activity with the threat of fines if locates are not complete within 48-hours of ticket submission. In addition to possible fines, water and sewer lines are at risk of being damaged if not located before work begins, potentially leading to service outages and costly repairs.		-	53,045	53,045	-
13	Grant	Funding is requested for the mitigation of damages from the Cameron Peak Fire. Water quality issues have impacted raw water treatment at the Bellvue & Boyd treatment plants, and sedimentation and erosion issues exist, which impact 5 of Greeley's reservoirs. The Cameron Peak Fire, which began August 13th, 2020, was unanticipated and was not fully contained until December of 2020. The fire burned over 208,000 acres of Greeley's Poudre River watershed where half of Greeley's water supplies are diverted. Watershed mitigation activities will include the installation of sediment basins at Chambers, Barnes, Comanche, Hourglass, and Peterson reservoirs, as well as wattles and log jam debris prevention structures on several slopes throughout the burn area to minimize erosion. Additionally, aerial mulching will be required on as many acres as possible to minimize erosion and sedimentation impacts. Mulching and construction activities started in July and are ongoing. Just under \$17.0 million has been appropriated this year for fire mitigation activities, with the majority of that funding, \$15.0 million, coming from federal, state and other local sources. Staff has been informed that the Colorado Water Conservation Board (CWCB) is allocating another \$6.0 million to Greeley for fire mitigation work. There is a matching requirement but existing work done by Greeley and others in Cameron Peak Fire burn area should be sufficient to meet the requirement.		-	6,000,000	6,000,000	-
421 - WATER OPERATIONS				-	6,053,045	6,053,045	-

Fund	Fund	Option	Fund Balance	Revenue	Expenditures	Net Impact
Item No. 16.						
423 - WATER CAPITAL REPLACEMENT						
14	Fund Balance / Intergovernmental Agreement	The School District and the City swapped land that would allow for the relocation of 3.5 golf holes to a more attractive location. In exchange, the City would provide an equal amount of land along 71st Street to the School District for improved site access to a new K-8 school planned for the property. Recent weather impacts from heavy rain and severe storms have delayed construction of the golf holes, seeding, installing the wet well, the non-potable (NP) pump station, constructing the NP ponds and lining the NP ponds. This has caused increased project components costs for utilizing scrapers, increasing the underdrain length, and potentially having to install dewatering well points and dewatering the ponds. The project team is requesting funds for the design of the non-potable outlet and storm line that must be upsized from 8" to 12" to meet State stormwater requirements for handling flows in the 100-year storm events. These funds were planned in the 2022 budget, but due to the current need, the project team is requesting the funds for design be moved up into 2021. The construction will begin in 2022 as originally budgeted. Funding to support the project includes \$274,731 from Weld County District 6, and \$140,403 from the Water Capital Replacement Fund.	140,403	274,731	415,134	-
423 - WATER CAPITAL REPLACEMENT			140,403	274,731	415,134	-
605 - MEMORIALS						
15	Fund Balance	The requested funds will allow Museums to properly steward the White-Plumb Farm Learning Center, a Centennial Farm that exemplifies our western heritage. Restricted funds are requested to cover unexpected expenses at the White Plumb Farm caretaker's house and the main house, including but not limited to electrical and plumbing repairs, painting, and fence repairs. With a recent decision that the City will retain the site, Culture/Museums is faced with unanticipated deferred maintenance expenses. As Museums must maintain the historic structures on-site, funds are needed to avoid neglect and unnecessary damage now before it becomes a larger financial and logistical issue later.	6,500	-	6,500	-
605 - MEMORIALS			6,500	-	6,500	-
TOTAL (Less Additional Operating Expenditures Between Funds)			1,521,629	10,460,181	11,981,810	-
OPERATING TRANSFERS						
3	Private Contribution / Expense Reimbursement	Share the Shade, Memorial Trees, & Emerald Ash Bore: Operating Transfer of Private Contribution COMMUNITY MEMORIALS to GENERAL FUND Operating Transfer of Expense Reimbursement CASH IN LIEU OF LANDSCAPING to GENERAL FUND	-	18,402	18,402	-
4	Fund Balance	Weld County Volunteer Partnership Coordinator: Operating Transfer of Fund Balance CONSERVATION TRUST FUND to GENERAL FUND	21,000	-	21,000	-
8	Fund Balance	Quiet Zone Crossings: 8th Street & 13th Street: Operating Transfer of Fund Balance GENERAL FUND to PUBLIC IMPROVEMENT	700,000	-	700,000	-
10	Fund Balance	Interchange Design: 35th Avenue & Hwy 34 : Operating Transfer of Fund Balance GENERAL FUND to ROAD DEVELOPMENT	1,000,000	-	1,000,000	-
TOTAL ADDITIONAL OPERATING EXPENDITURES BETWEEN FUNDS			1,721,000	18,402	1,739,402	-
GRAND TOTAL			3,242,629	10,478,583	13,721,212	-

Council Agenda Summary

September 7, 2021

Becky Safarik, Interim Community Development Director, 970-350-9786

Carol Kuhn, Chief Planner, 970-350-9276

Mike Garrott, Planning Manager, 970-350-9784

Title:

Public hearing for an ordinance amending Title 24 of the Greeley Municipal Code relating to the Development Code by deleting the current Title in its entirety and adding a new Chapter 3 – Subdivision Standards, Chapter 4 – Zoning Districts and Uses, Chapter 5 – Residential Development Standards, Chapter 6 – Nonresidential Development Standards, and Chapter 13 – Definitions and Terms.

Summary:

The Community Development Department is undertaking a multi-year project to update the Development Code, with an anticipated final adoption in September of 2021. The last major update to the Development Code was in 1998. A Plan Conformance Report was prepared and used as a guide to determine areas where the code could be improved to conform to the Comprehensive Plan and other policy documents; staff reviewed this report with the citizen Advisory Committee, Planning Commission, and City Council. Throughout this process items of interest for more extensive discussion, research and evaluation were placed on a “punch-list” for subsequent analysis and potential recommendation at a later time.

Staff is bringing forward the final five chapters as the final step of the code update project. These five chapters include updates to the subdivision standards, zoning districts, residential development and design standards, and nonresidential development and design standards as well as reorganization and consolidation of the definitions and terms.

On June 22, 2021 and July 20, 2021, Staff conducted worksessions with the Planning Commission regarding the proposed revisions for Chapters 3-6 and presented Planning Commission with draft code language for Chapters 3-6 during the July 20, 2021 worksession. On July 27, 2021, Planning Commission recommended that Council adopt Chapters 3-6 & 13, by a vote of 4-1.

As reflected in the attached minutes of the July 20th worksession and the July 27th public hearing, there was some discussion among Planning Commissioners concerning requirements for the formation of Homeowners Associations relative to maintenance of common area elements such as perimeter landscaping and fencing. Following discussion, this matter was placed on the Commission's punch-list for future research and deliberation.

Since the introduction of the Ordinance for these chapters, minor clarifications have been made to this chapter to provide additional clarity. As staff has been working with

the code and “testing” it on existing projects, staff recognized the need for additional clarity in the Residential Building Type & Lot standards (Table 24-5-1). The Apartment Large/Complex line in the table was split into Apartment Complex Medium and Apartment Complex Large. A minor clarification was also made to this table to correct a Scribner's error. Also, two diagrams have been added to the dimension exceptions to provide additional clarity. Clarifying language was added to the Lot Open Space Design, and the Neighborhood Features and Common Areas table was clarified to reflect the refinement in the various types of apartments. The amendments have been included in the attached draft Ordinance and the draft motion has been revised to reflect the amended ordinance.

Chapter 3 – Subdivision Standards

This chapter provides planning, engineering, and urban design standards for subdivisions. It establishes development patterns and infrastructure requirements as land is divided and ownership fractures. The changes in this code integrate more “urban design” elements into the planning and development process at this key preliminary stage of development.

Chapter 3 includes the following sections:

24-301	Streets
24-302	Parks & Trails
24-303	Blocks & Lots
24-304	Required Improvements
24-305	Adequate Public Facilities

Specific provisions include reorganization of all of the subdivision standards into five key components of large-scale development patterns. Key revisions pertaining to streets include:

- Consolidation of current street standards from various documents (current Development Code, Public Works Specifications, and Transportation Plan) and include the following additions:
 - Refines the standards related to street connectivity primarily distinguishing walkable areas and car-oriented areas.
 - Makes the narrow neighborhood street, allowed only as a “performance option” in the current code, applicable for all neighborhoods, provided sufficient connectivity and appropriate neighborhood design features to complement this street type are included.
 - Adds walkable mixed-use/commercial streets in “centers” and mixed-use areas identified in the Imagine Greeley Comprehensive Plan.

Chapter 4 – Zoning Districts & Uses

This chapter establishes the zoning districts; uses are either allowed “by right,” subject to the applicable district development and design standards, or are permitted through a Use by Special Review application process, with specific standards unique to that use.

Chapter 4 includes the following sections:

24-401	District Intent & Applicability
24-402	Allowed Uses
24-403	Accessory Uses

24-404	Specific Use Standards
24-405	District Performance Standards

This chapter includes few revisions, but modifies the existing standards by:

- Focusing purely on land use, with the zoning district development standards moved to either Chapter 5 (residential) or Chapter 6 (Nonresidential).
- Adding two new Mixed-Use (MU-) districts – MU-L (Low Intensity) and MU-H (High Intensity), proposed as counterparts to the existing commercial (C) districts. These proposed additions are based on the placemaking discussions with the Advisory Committee, Planning Commission, and City Council. These districts would not be retroactively applied to existing uses, but are eligible for consideration as initiated by applicants.

Chapter 5 – Residential Development Standards

This chapter includes all of the development and design standards for residential neighborhoods. It consolidates the various residential lot, setback, and height standards, and it incorporates community and building/lot design standards from the current code. All of the topics in this section are currently regulated. These proposed modifications aim to: (1) simplify current standards into objective, measureable standards; (2) focus or emphasize a key component of the current design standards; and (3) create more nuance and distinctions for standards based on the context of a particular neighborhood.

Chapter 5 – Residential Development Standards includes the following sections:

24-501	Intent & Applicability
24-502	Residential Development Standards
24-503	Residential Design Standards
24-504	Neighborhood Features & Common Areas
24-505	Courtyard Pattern
24-506	Residential Micro-Housing District

Specific revisions of note are:

- Residential Building Types. The revisions shift to a “building type” approach, and place greater emphasis on “missing middle” housing – higher-density, smaller-scale, multi-unit projects. Changes impacting the existing residential districts are:
 - R-E (estate lots): No change
 - R-L (low density): Shrinks the minimum lot size to 4,500 s.f. by right (currently allowed only through a cluster option)
 - R-M (medium density): Increases the range of building types allowed - specifically the lower end of the “missing middle” types (smaller lot detached houses and small-scale multi-unit buildings, and accessory dwelling units)
 - R-H (high density): Adds specific language regarding standards that may apply to the missing middle building types and promotes these as strategies for infill.
- Residential Design Standards. This section reorganizes the standards to centralize requirements for improved access and application and a focus on three key components – frontage design, building design, and block and lot design. Staff

worked with a homebuilders focus group to refine the existing standards and finetune the draft regulations.

- Neighborhood Features & Common Areas. This section establishes design standards for neighborhoods and ensures connectivity for open spaces, trails, and parks.
- Courtyard Pattern. This design relates to a specific infill strategy, but can also be used in new developments and allows lots without street frontage and a minor lot size reduction. This pattern combines the "missing middle" housing options and the smaller formal open space options into a residential development that can increase housing options with a higher level of neighborhood design.
- Residential Micro-Housing District. These changes reflect the standards for the existing R-MH district with the following changes:
 - Improves the neighborhood/community design of these projects based on the principles applied to all neighborhoods, emphasizing the streets and open spaces and improving the relationship of housing sites and buildings to those spaces;
 - Reduces the overall project size to allow projects to fit into more areas;
 - Aligns the density and lot sizes with comparable typical manufactured housing sites;
 - Broadens the applicability of this district to more small-format housing types that meet the same scale, pattern, design, and intensity standards.

Chapter 6 – Nonresidential Development Standards

This chapter includes all of the development and design standards for nonresidential development. Similar to Chapter 5, it consolidates the various commercial and industrial zoning districts found throughout the current code. Changes to this section include (1) adding more specific criteria where alternatives and options should apply, (2) emphasizing the primary goal of the design standards (to create better relationships to the public spaces and strengthen the character of an area), and (3) mitigating impacts on surrounding property.

Chapter 6 – Nonresidential Development Standards includes the following sections:

24-601	Intent & Applicability
24-602	Nonresidential Development Standards
24-603	Nonresidential Design Standards

Specific sections to note include:

- Nonresidential Development Standards. This section captures existing district standards, and limits the scale of lots for the new mixed-use districts to promote compact, walkable patterns (maximum sizes, rather than minimum).
- Nonresidential Design Standards. An outcome of the placemaking facilitated discussions was to "bundle" most of the building and design standards into packages that escalate as the building moves closer to the street. Key aspects of this strategy include:
 - Building on topics already regulated in the current code by simplifying them into building placement and orientation, transparency, and facade design.
 - Providing options for street-front buildings and allowing the existing commercial districts to maintain the default to more car-oriented

- patterns (C-L and C-H) with a minimum of a 25' setback, with basic building design standards to reflect existing standards.
- Providing an option for two new mixed use districts (MU-L and MU-H) to allow more options outside of a Planned Unit Development process. These new zone districts have default standards oriented toward pedestrian-oriented patterns, but would allow options for more relaxed standards in specific cases.
- Creating a simplified approach using building form and design standards for specific areas, based on a block-by-block urban design pattern.

Chapter 13 – Definitions and Terms

This chapter includes most of the definitions currently spread throughout various sections of the code consolidated into one chapter. Certain chapters, terms and definitions have a particular meaning and these terms remain in their associated chapters for interpretation of that chapter. A glossary of architecture and design terms to explain concepts, strategies, and techniques that are used to affect building and site design has also been included in Chapter 13.

Chapter 13 – Definitions and Terms includes the following sections:

24-1301 Definitions
24-1302 Architecture & Design Terms

Adoption of the Development Code is as follows:

Track	Chapter(s)	PC Worksession	PC Hearing	CC Public Hearings
Track I - Non-substantive changes for organization and improved usability.	Ch 1 – General Provisions	March 23, 2021	April 13, 2021	June 1, 2021 (First Reading)
	Ch 2 - Procedures	April 27, 2021	May 18, 2021	June 15, 2021 (Public Hearing) September 21, 2021 (2 nd Reading – No public comment)
Track II - Non-policy technical changes and coordination with other City policies and documents.	Ch 7 – Access & Parking Ch 8 – Landscape & Site Design Standards Ch 9 – Signs Ch 10 – Special Purpose Districts & Areas	May 25, 2021	June 8, 2021	July 6, 2021 (First Reading) July 20, 2021 (Public Hearing)

	Ch 11 – Supplemental Standards Ch 12 - Reserved			September 21, 2021 (2 nd Reading – No public comment)
Track III - Substantive changes called for in the Comprehensive Plan, Strategic Housing Plan, and Council's 3-Year Priorities that need broader input and direction from the Advisory Committee, Planning Commission, and City Council.	Ch 3 – Subdivision Standards Ch 4 – Zoning Districts & Uses Ch 5 – Residential Development Standards Ch 6 – Non-residential Development Standards Ch 13 – Definitions	June 22, 2021 and July 13, 2021 – continued to July 20, 2021	July 27, 2021	August 17, 2021 (First Reading) September 7, 2021 (Public Hearing) September 21, 2021 (2 nd Reading – No public comment)

Fiscal Impact:

Does this item create a fiscal impact on the City of Greeley?	No
If yes, what is the initial, or, onetime impact?	
What is the annual impact?	
What fund of the City will provide Funding?	
What is the source of revenue within the fund?	
Is there grant funding for this item?	No
If yes, does this grant require a match?	
Is this grant onetime or ongoing?	
Additional Comments:	

Legal Issues:

Consideration of this matter is a legislative process.

Other Issues and Considerations:

None.

Strategic Work Program Item or Applicable Council Priority and Goal:

The Development Code Update project relates to a number of Council Priorities and Goals:

Image: Reinforce Greeley's vision as an attractive and vibrant community in which to live, learn, work and play. The revised code will create opportunities to reinforce the City's vision as an attractive and vibrant community by modernizing, streamlining, and simplifying the Development Code requirements.

Safety: Manage the health, safety and welfare in a way that promotes a sense of security and well-being for residents, businesses and visitors. This update to the City's development code sets standards for well-designed streets, water and sewer systems, neighborhoods, parks, trails, open space, and floodplains.

Economic Health & Development: Foster and maintain public and private investment in business development. Throughout the code update process, staff has worked with an Advisory Committee comprised of members from the development community, businesses, homebuilders, and citizen as well as the Planning Commission to draft regulations that create a streamlined, clear, and predictable development process.

Infrastructure & Growth: Establish the capital and human infrastructure to support and maintain a safe, competitive, appealing and successful community. The revised regulations have been developed to support Council's 3-Year Priorities, the Strategic Housing Plan, and the Imagine Greeley Comprehensive Plan. The proposed regulations will encourage a variety of housing options, mixed-use development options, and walkable, human-scale development to help keep Greeley competitive with neighboring jurisdictions.

Decision Options:

- 1) Direct staff to bring the revised ordinance for a second reading; or
- 2) Direct staff to amend the ordinance and bring the amended ordinance for a second reading; or
- 3) Deny the ordinance; or
- 4) Continue consideration of the ordinance to a date certain.

Council's Recommended Action:

A motion to direct staff to bring back the revised ordinance as presented for a second reading on September 21, 2021.

Attachments:

Draft Ordinance for Adoption of Chapters 3-6 & 13

PC Update Memo – Minor Revision to Proposed Housing Diversity Table

Planning Commission Staff Report

Attachment A – DRAFT – Chapter 3

Attachment B – Section Map – Chapter 3

Attachment C – DRAFT – Chapter 4

Attachment D – Section Map – Chapter 4

Attachment E – DRAFT – Chapter 5

Attachment F – Section Map – Chapter 5

Attachment G – DRAFT – Chapter 6

Attachment H – Section Map – Chapter 6

Attachment I – DRAFT – Chapter 13
PC Draft Minutes – 07-27-21 – Public Hearing
PC Draft Minutes – 07-20-21 - Worksession
Hartford Homes Emails – July 27, 2021
PowerPoint

**CITY OF GREELEY, COLORADO
ORDINANCE NO. ____, 2021**

AN ORDINANCE AMENDING TITLE 24 OF THE GREELEY MUNICIPAL CODE RELATING TO THE DEVELOPMENT CODE BY DELETING THE CURRENT TITLE IN ITS ENTIRETY AND ADDING A NEW CHAPTER 3 RELATING TO SUBDIVISION STANDARDS, A NEW CHAPTER 4 RELATING TO ZONING DISTRICTS AND USES, A NEW CHAPTER 5 RELATING TO RESIDENTIAL DEVELOPMENT STANDARDS, A NEW CHAPTER 6 RELATING TO NONRESIDENTIAL DEVELOPMENT STANDARDS, AND A NEW CHAPTER 13 RELATING TO DEFINITIONS AND TERMS.

WHEREAS, it becomes necessary to update the Greeley Municipal Code from time to time to adopt zoning codes and development standards that continue to align with public values and Council priorities; and,

WHEREAS, amending the Development Code in this manner will update those elements of the Code relative to such court cases and provide for the public interest and further protect the health, safety and welfare of City residents; and,

WHEREAS, the Planning Commission conducted a public hearing to review and consider the proposed changes on July 27, 2021, and recommended their adoption by City Council.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF GREELEY, COLORADO:

Section 1. That the current Title 24 of the Greeley Municipal Code be and hereby is repealed.

Section 2. That the Greeley Municipal Code be amended by adding thereto a new Chapter 3 of Title 24 to read as shown in Appendix A.

Section 3. That the Greeley Municipal Code be amended by adding thereto a new Chapter 4 of Title 24 to read as shown in Appendix A.

Section 4. That the Greeley Municipal Code be amended by adding thereto a new Chapter 5 of Title 24 to read as shown in Appendix A.

Section 5. That the Greeley Municipal Code be amended by adding thereto a new Chapter 6 of Title 24 to read as shown in Appendix A.

Section 6. That the Greeley Municipal Code be amended by adding thereto a new Chapter 13 of Title 24 to read as shown in Appendix A.

Section 7. This ordinance shall become effective on October 1, 2021.

PASSED AND ADOPTED, SIGNED AND APPROVED, THIS ____ DAY OF _____, 2021.

ATTEST:

CITY OF GREELEY

City Clerk

Mayor

Appendix A

AN ORDINANCE AMENDING TITLE 24 OF THE GREELEY MUNICIPAL CODE RELATING TO THE DEVELOPMENT CODE BY DELETING THE CURRENT TITLE IN ITS ENTIRETY AND ADDING A NEW CHAPTER 3 RELATING TO SUBDIVISION STANDARDS, A NEW CHAPTER 4 RELATING TO ZONING DISTRICTS AND USES, A NEW CHAPTER 5 RELATING TO RESIDENTIAL DEVELOPMENT STANDARDS, A NEW CHAPTER 6 RELATING TO NONRESIDENTIAL DEVELOPMENT STANDARDS, AND A NEW CHAPTER 13 RELATING TO DEFINITIONS AND TERMS.

Section 1. Title 24 of the Greeley Municipal Code is hereby repealed in its entirety.

Section 2. The Greeley Municipal Code shall be amended by adding thereto a new Chapter 3 – Subdivision Standards in Title 24 to read as follows:

Chapter 3. Subdivision Standards

24-301 Streets
24-302 Parks & Trails
24-303 Blocks & Lots
24-304 Required Improvements
24-305 Adequate Public Facilities

24-301 Streets

- a. **Intent.** The intent of the street design standards is to:
1. Plan street networks to connect to adjacent projects, correspond with the topography, and to ensure the proper arrangement of blocks and lots for coordinated long-range growth and development.
 2. Emphasize street design as a key determinant of Greeley's community image and unique identity.
 3. Integrate street networks and street designs with open spaces to establish a valuable public realm.
 4. Build complete and multi-modal networks of well-connected streets, trails, and paths to improve the access, capacity, safety, and efficiency of transportation systems.
 5. Plan frequent collector or neighborhood connector streets to link multiple projects or neighborhoods together, and avoid major streets becoming barriers.
 6. Use street design to call attention to differing contexts within the City, and to better support development patterns and uses abutting the streets.
 7. Design streets to account for all potential users of the streets, including pedestrians, bicycles, automobiles, trucks, and transit.
 8. Implement the Greeley Comprehensive Plan and Transportation Master Plan as development occurs, and in particular, the complete street policies and the connectivity policies of those plans.

- b. **Street Network.** Arterial, collector, neighborhood connector, and local streets shall generally be laid out according to the policies of the Comprehensive Plan, Transportation Master Plan, and other major street, parks, trail and open space plans. In the absence of more specific guidance in these plans, the following standards shall apply to street networks:

1. **Blocks and Connectivity.** Streets shall be laid out to provide a network of streets and blocks based on the planning context and development pattern as identified in Table 24-3-1:

Table 24-3-1: Block Sizes & Connectivity

Planning Context <i>Comprehensive Plan Development Framework Categories</i>	Block Size	Cul-de-sac Limits
Walkable Commercial & Neighborhoods <i>Downtown; Downtown, Legacy Urban, and Mixed Use Neighborhoods; Mixed Use Areas and Centers; and any other commercial areas or neighborhoods where walkable patterns are planned.</i>	200' min. 500' max. 5.5 ac. max.	Prohibited
Suburban Neighborhoods & General Non-residential <i>Suburban Neighborhoods; Employment, Industrial and Commercial Areas; and other areas supporting commercial corridors or employment areas outside walkable centers.</i>	260' min. 1,000' max. 8 ac. max.	500' max.



Figure 24-3-1 Connectivity & Block Sizes. Street networks shall be based on maximum block sizes (length between centerlines of perimeter streets and area) and stub to adjacent property at a frequency sufficient to create connected networks, unless exceptions justify not connecting.

2. **Exceptions.** The following are exceptions to the block and connectivity standards in Table 24-3-1:

- (a) *Natural Features, Parks, Trails or Other Civic Spaces.* Blocks or parcels abutting or containing important natural features, topographical constraints or otherwise creating parts of the public parks or common space system, may be larger provided the proposed street layout preserves these features and integrates them into public realm design for the area.
- (b) *Regional Transportation Routes.* Blocks or parcels abutting significant regional transportation routes that impede local network connectivity, such as highways or rail rights-of-way, may be larger provided the street networks and development patterns achieve local connectivity in all other ways possible.
- (c) *Rural Lots or Future Development Tracts.* Property divided into lots of at least five acres for rural or very low-intensity development, or tracts reserved for future development, may exceed block limits provided development is arranged to allow future streets in compliance with these regulations and a logical pattern of re-subdivision can occur with minimal disruption of buildings, utilities, and other structures.
- (d) *Oversized Parcels.* Where oversized parcels are platted for special land uses or projects that involve large-scale buildings and development patterns, such as campuses, large-scale employment complexes, or regional commercial areas, blocks may be larger than specified in Table 24-3-1. Internal access streets shall mimic the block structure in Table 24-3-1, include the urban design amenity of streets in Table 24-3-2, and create logical extensions and connectivity to the public streetscape beyond the project.
- (e) In any case where streets are not required to connect by Table 24-3-1 through exceptions to this Section, alternative designs such as loops, eyebrows, closes, or courtyard layouts are preferred over dead ends and cul-de-sacs.



Figure 24-3-2 Internal Access Streets. Internal access streets used to mimic public street networks and streetscapes for over-sized parcels and large scale development (24-301.b.2.(d)).

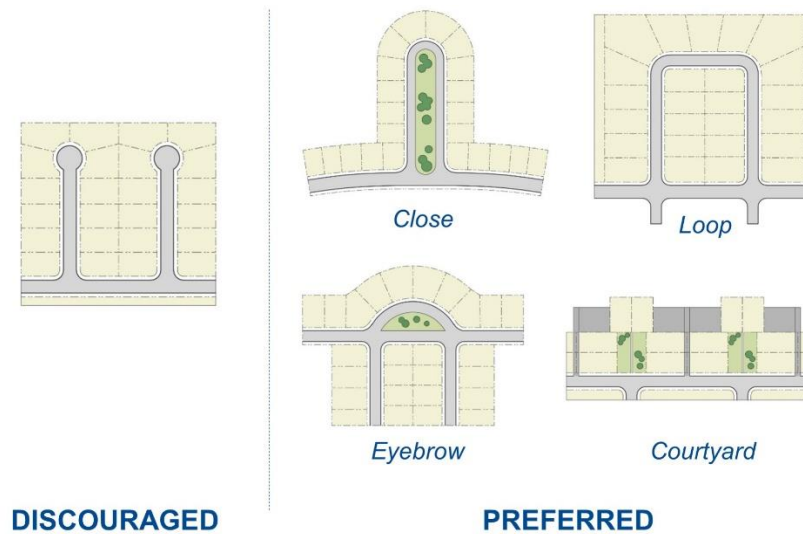


Figure 24-3-3 Disconnected Street Options. Where streets will not connect, blocks and lots should be laid out to limit the need for cul-de-sacs and maximize other options such as loops, closes, eyebrows and courtyard patterns. (24-301.b.2.(e)).

3. **Walkways and Bicycle Routes.** In any case where exceptions for larger blocks apply, or any other area where pedestrian and bicycle connections are important, such as adjacent to schools, parks, trail systems or community centers, the City may require pedestrian walkways or bicycle routes through blocks or at the end of any cul-de-sac. Connections shall be dedicated to the City and meet the City's trail standards or be common areas and meet the Trail or Pedestrian Passage design standards in Section 24-504.



Figure 24-3-4 Walkways and Bicycle Routes. Where streets will not connect or where larger blocks are platted, connections for pedestrians or bikes may be required through blocks or at the ends of disconnected streets. (24-301.b.3).

4. **External Connections.** Streets shall be planned to provide continuation to adjacent undeveloped and future growth areas at intervals of at least the maximum block length in Table 24-3-1, unless justified by an exception in 24-301.b.2. The City may require dedication of right-of-way and construction of streets extended to the boundary line of the property to be subdivided, or approve alternative arrangements for location and timing of construction that equally or better coordinate with anticipated future development of adjacent areas.

5. *Half Streets.* Street systems shall be laid out to eliminate or avoid new perimeter half streets between adjacent property owners. The full right-of-way width of streets shall be dedicated and half-streets shall only be accepted by the City when it conforms to the Transportation Master Plan.
 6. *Intersections and Offsets.* Streets shall be laid out to intersect subject to the following:
 - (a) Intersection angles should be as near as possible to right angles, and intersections less than 75 degrees are generally not acceptable.
 - (b) Oblique streets should be curved approaching an intersection and should be approximately at right angles for at least 100 feet prior to the intersection.
 - (c) Intersections should be generally aligned with existing intersections on the opposite side of the street, and offsets of the centerlines between 25 feet and 125 feet are generally not acceptable.
 - (d) Intersections of more than two streets at one point are generally not acceptable.
 7. *Alternative Compliance.* Alternative compliance to the street network standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and where the proposed network meets any of the following additional applicable criteria:
 - (a) Better coordinate streets and trail connections with adjacent development, and particularly considering a greater frequency of bicycle and pedestrian connections.
 - (b) Implement any officially approved transportation plan for a specific area.
 - (c) Emphasize unique natural features or better correspond to topography,
 - (d) Implement traffic calming in a manner that improves pedestrian and bicycle connections.
 - (e) Create gateways and focal points within the street network by unique arrangements of streets and blocks.
 - (f) Average block sizes for the project as a whole implement a comparable or greater degree of connectivity, particularly considering the frequency of collector and neighborhood connector streets that can extend beyond the project.
- c. **Street Types & Design.** The street types in this section provide typical cross sections to implement context-based street design, design “complete” streets, and result in multi-modal networks for the various contexts in Greeley, based on the policies of the Comprehensive Plan and Transportation Master Plan.
1. *Context & Type.* The street designs are grouped with the following design types for application to specific contexts:
 - (a) *Neighborhood Streets.* A neighborhood-oriented residential street type, appropriate where a higher level of neighborhood design amenity and neighborhood walkability is desired. It is characterized by large street trees, wide sidewalks, slow speeds, and occasional on-street parking. Neighborhood streets require a well-connected network to disperse traffic and slow speeds, so that no single street is burdened with high volumes and speeds.
 - (b) *Pedestrian Streets.* A pedestrian-oriented commercial or mixed-use street type, appropriate for all areas where walkability is a goal. It is characterized by narrow lanes, slow speeds, on-street parking, wide sidewalks, and large, well-designed pedestrian amenity zones that support social and economic activity along these streets. Pedestrian streets require a highly-connected network so that a variety of street design types can better support abutting uses and urban design characteristics, and ensure that vehicles and pedestrians have multiple alternative and direct routes to destinations.
 - (c) *Standard Streets.* A basic street type, appropriate generally where no particular development characteristics or urban design context warrant application of other street types. These streets accommodate peak anticipated vehicle traffic, but seek to balance and integrate other modes of transportation.

2. *Alternative Compliance.* The design standards shown for each street type in Table 24-3-2: Street Types and Cross Sections, are typical. They may be modified based on context and according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
- (a) The Director shall consult with the Public Works Director to reconcile any planning, urban design, traffic, and engineering issues.
 - (b) In contexts where there is constrained rights-of-way, unusual topographic conditions, or unanticipated development pattern and traffic issues, specific elements of the cross section may be modified to best reflect the priorities for the street type expressed in sub-section c.1.
 - (c) Any official plan approved by the Planning Commission for streets, or applying specific street types or street sections to a particular area, shall be used by the Director and Public Works Director.
 - (d) The Director and Public Works Director may consult the guidance provided by the Transportation Master Plan, or any other street specification and design guides officially authorized by the City that meet the intent of this section.

Table 24-3-2: Street Types & Cross Sections

Street Type	ROW Width	Street Width [1]	Travel Lanes	Edge Condition [2]	Landscape Amenity	Sidewalk	Bicycle Facility [2]	Applicability / Functional Class
<i>Neighborhoods</i>								
Neighborhood Street	54'	30'	16' – 18' yield flow	7' parking both sides	7+ parkway	5'	N/A slow street / low volume	- Local – Low Volume - Local Residential 25' – 1-side parking; 20' – no parking
Neighborhood Connector	60'	32' - 34'	2 @ 9'-10'	7' parking both sides	8+ parkway	6' - 8'	6' bike lane (optional)	- Local - Residential - Minor Collector - Residential
Neighborhood Parkway [3]	90'	34' (+ 12' - 20' center median)	2 @ 10'	bike lane	10+ parkway 12' -20' median (optional)	8' -10'	6' - 7' bike lane	- Minor Collector – Residential - Major Collector – Residential - Minor Arterial - Residential
Access Alley [4]	20'	14'-16' (< 40 units) 16'-18' (41+ units)	n/a	shoulder	n/a	n/a	n/a	n/a – internal to block
<i>Pedestrian (Walkable centers / Mixed Use areas)</i>								
Pedestrian Street	60' – 80'	36'	2 @ 10'	8' parallel parking both sides (angled optional)	4' – 8' amenity zone	8' -12'	N/A slow street / low volume;	- Local - Minor Collector
Avenue	90' - 100'	56'	4 @ 10'	8' parallel parking both sides (angled optional)	4' – 8' amenity zone	12' – 16'	6' bike lane (optional)	- Minor Collector - Major Collector - Minor Arterial
Access Alley [4]	20'	18' – 20'	n/a	shoulder	n/a	n/a	n/a	n/a – internal to block
<i>Standard (Commercial / Industrial)</i>								
Standard Local	60'	36'	2 @ 11'	parking and/or bike lanes	7+ parkway	5' – 8'	6' bike lane (optional)	Local
Standard Collector	70'	36'	2 @ 11'	parking and/or bike lanes	8+ parkway	6' -10'	6' bike lane (optional)	Minor Collector
Standard Collector	90' – 100'	58'	4 @ 11'	bike lane	8+ parkway	8' -12'	6' – 7' bike lane	Major Collector
Standard Arterial	120+	72' (w/ 16' center median)	4 @ 11'	bike lanes	12+ parkway	8' - 12'	6' - 7' bike lane OR 12' multi-use trail (off-street)	Minor Arterial
Standard Arterial	130+	82' (w/ 16' center median)	6 @ 11'	curb & gutter	12+ parkway & 16' center median	12+ multi-use trail	12' multi-use trail (off-street)	Major Arterial

[1] Street width is back-of-curb measurement, with curb and gutter included street width where it is on-street parking or a travel lane. Where bike lanes are on the edge, the curb and gutter may need to be added to the width to provide a clear surface for bicycles.

[2] Configurations reflect typical cross sections; where bicycle lanes or angled parking is optional, or where both are provided, greater street and ROW widths may be necessary for proper configuration.

[3] On a Neighborhood Parkway, a center median is optional, but if not provided space shall be allocated to a wider parkway with additional trees.

[4] Access alleys may be located in an easement at the City's discretion and provided a property owner's association or other entity with financial and administrative capacity for maintenance is established.

Neighborhood Street

①	ROW width	54'
②	Street Width	30'*
③	Travel Lanes	16' – 18' yield flow
④	Edge Condition	7' parking both sides
⑤	Landscape Amenity	7'+ parkway
⑥	Sidewalk	5'
⑦	Bicycles	N/A
Applicability		- Local – Low Volume - Local Residential

Neighborhood Connector

①	ROW width	60'
②	Street Width	32' – 34'
③	Travel Lanes	2 @ 9' – 10'
④	Edge Condition	7' parking both sides
⑤	Landscape Amenity	8'+ parkway
⑥	Sidewalk	6' – 8'
⑦	Bicycles	6' bike lane (optional)
Applicability		- Local - Minor Collector

Neighborhood Parkway

①	ROW width	90'
②	Street Width (curb-to-curb)	34' (+median width)
③	Travel Lanes	2 @ 10'
④	Edge Condition	bike lane
⑤	Landscape Amenity	10'+ parkway 12' – 20' median (optional)
⑥	Sidewalk	8' – 10'
⑦	Bicycles	6' – 7' bike lane
Applicability		- Minor Collector - Major Collector - Minor Arterial

Access Alley (Residential)

①	ROW / Easement width	20'
②	Street Width	14 – 16' (< 40 units) 16' – 18' (41+ units)
③	Travel Lanes	N/A
④	Edge Condition	shoulder
⑤	Landscape Amenity	N/A
⑥	Sidewalk	N/A
⑦	Bicycles	N/A
	Applicability	N/A – internal to block

**Pedestrian Street**

①	ROW width	60' – 80'
②	Street Width	36'
③	Travel Lanes	2 @ 10'
④	Edge Condition	8' parallel parking (angled optional)
⑤	Landscape Amenity	4' – 8' amenity zone
⑥	Sidewalk	8' – 12' min.
⑦	Bicycles	N/A
	Applicability	• Local • Minor Collector

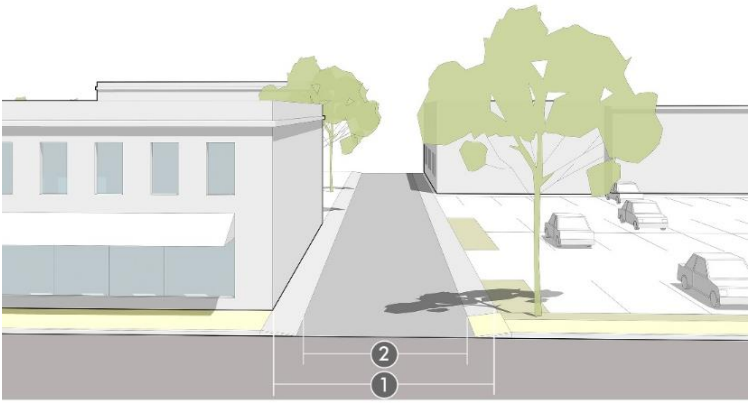
**Avenue**

①	ROW width	90' – 100'
②	Street Width	58'
③	Travel Lanes	4 @ 10'
④	Edge Condition	8' parallel parking both sides (angled optional)
⑤	Landscape Amenity	4' – 8' amenity zone 12' -20' median (optional)
⑥	Sidewalk	12' – 16' min.
⑦	Bicycles	6' bike lane (optional)
	Applicability	• Minor Collector • Major Collector

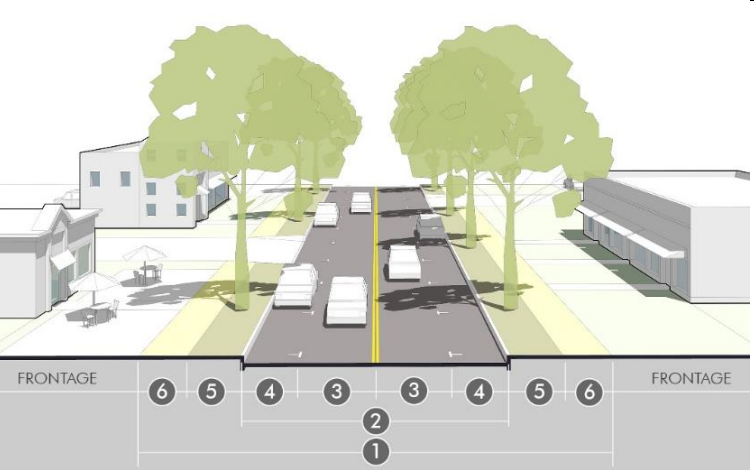


- Minor Arterial

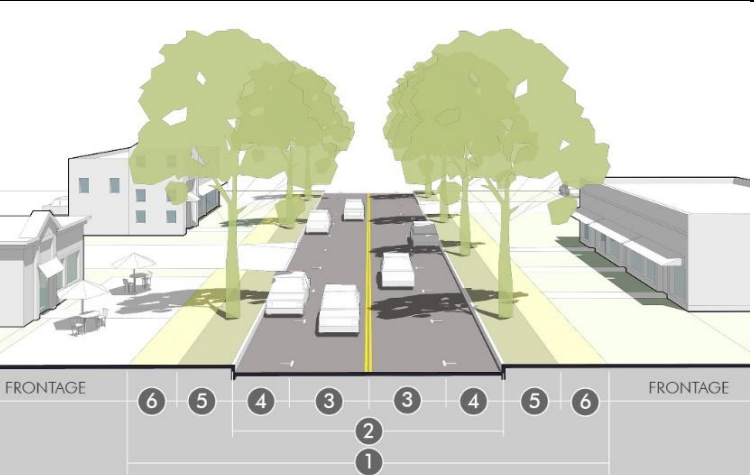
Access Alley (Commercial / Industrial)

①	ROW /Easement width	20'	
②	Street Width	18' – 20'	
③	Travel Lanes	N/A	
④	Edge Condition	shoulder	
⑤	Landscape Amenity	N/A	
⑥	Sidewalk	N/A	
⑦	Bicycles	N/A	
	Applicability	N/A – internal to block	

Standard Local

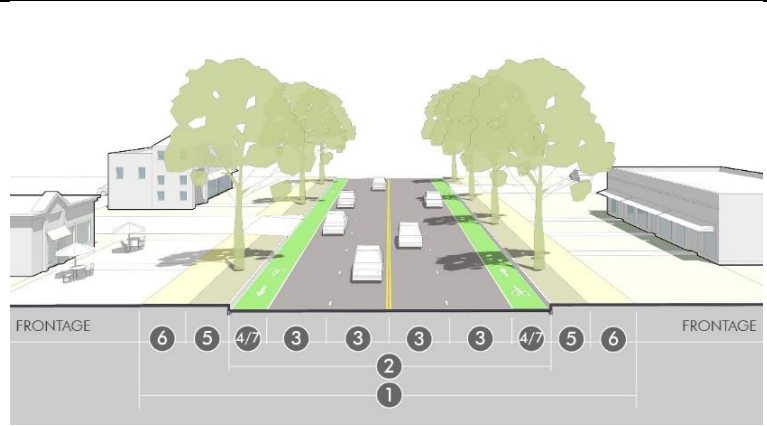
①	ROW width	60'	
②	Street Width	36'	
③	Travel Lanes	2 @ 11'	
④	Edge Condition	Parking and/or bike lanes	
⑤	Landscape Amenity	7' + parkway	
⑥	Sidewalk	5' – 8'	
⑦	Bicycles	6' bike lane (optional)	
	Applicability	• Local	

Standard Collector (Minor)

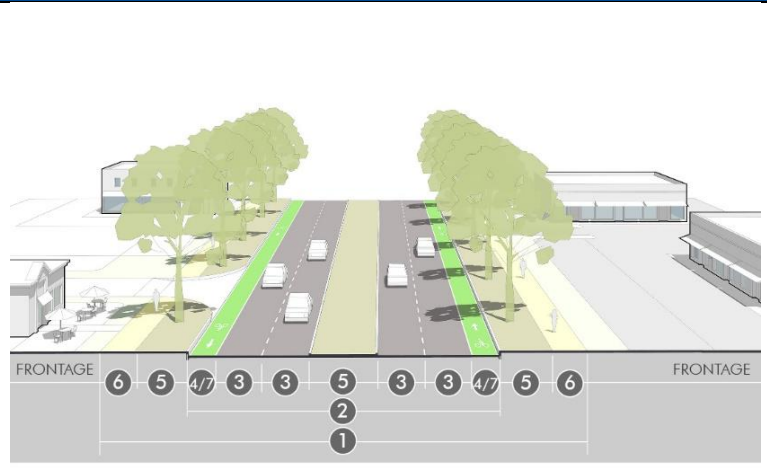
①	ROW width	70'	
②	Street Width	36'	
③	Travel Lanes	2 @ 11'	
④	Edge Condition	Parking and/or bike lanes	
⑤	Landscape Amenity	8' + parkway	
⑥	Sidewalk	6' – 10'	
⑦	Bicycles	6' bike lane (optional)	
	Applicability	• Minor Collector	

Standard Collector (Major)

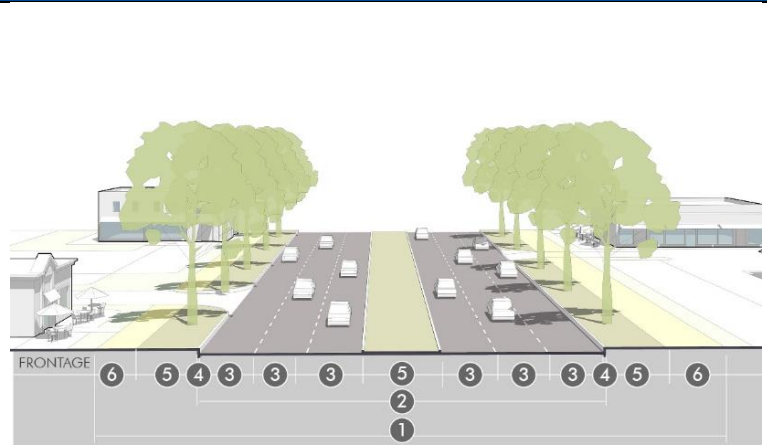
①	ROW width	90' – 100'
②	Street Width	58'
③	Travel Lanes	4 @ 11'
④	Edge Condition	bike lane
⑤	Landscape Amenity	8'+ parkway
⑥	Sidewalk	8' – 12'
⑦	Bicycles	6' – 7' bike lane
	Applicability	• Major Collector

**Standard Arterial (Minor)**

①	ROW width	120'+
②	Street Width	72' (w/ median)
③	Travel Lanes	4 @ 11'
④	Edge Condition	bike lanes
⑤	Landscape Amenity	12'+ parkway 16' center median
⑥	Sidewalk	8' – 12'
⑦	Bicycles	6' – 7' bike lane OR 12' multi-use trail (off-street)
	Applicability	• Minor Arterial

**Standard Arterial (Major)**

①	ROW width	130'+
②	Street Width	82' (w/ median)
③	Travel Lanes	6 @ 11'
④	Edge Condition	Curb & gutter
⑤	Landscape Amenity	12'+ parkway 16' center median
⑥	Sidewalk	12' multi-use trail
⑦	Bicycles	12' multi-use trail (off-street)
	Applicability	• Major Arterial



- d. **Intersection Design.** Intersections shall generally be designed according to the Greeley Design Criteria and Construction Specifications for streets. The subsections below provide specific and additional considerations to align intersection design with the development patterns and public realm design of a particular area.

1. **Corner Radii.** In order to balance the competing interest of vehicle turning movements and the safety and distance of pedestrians crossing the street, the Director and Public Works Director may approve decreases from the corner radii specified in the Design Criteria and Construction Specifications based on the following considerations:
 - (a) The context of a particular development, and in particular, whether walkable development patterns are a priority.
 - (b) The impact that the specified radii has on increasing the distance that pedestrians must cross.
 - (c) The desired speeds of vehicles in the roadway and the desired speeds and volume of turning vehicles.
 - (d) The connectivity of the street network and whether vehicles have multiple alternative routes that minimize frequent turning movements at one particular location.
 - (e) The effective turning radius of vehicles considering other features of the specific cross section, including bicycle lanes, on-street parking or other configurations that impact the actual path of turning movements.
 - (f) The likelihood that large vehicles will make frequent turning movements at a particular location, compared with the ability of over-sized vehicles or unusual turning movements to safely encroach into other areas of the street.
 - (g) Other design guides or industry manuals officially authorized by the City that meet the intent of this section.
2. **Sight Distance.** Proper lines of sight shall be maintained at all intersections and all vehicle connections to the street. The proper line of sight shall be an unobstructed view from the stopping point on the approaching street, or 15 feet back from the flow line where no specific point is evident, to all points 2.5 feet above the roadway along the centerline of the intersecting street. The distance of the unobstructed view shall be based upon the design speed of the intersecting street specified in Table 24-3-4, Clear Sight Distance.

Table 24-3-4: Clear Sight Distance

Class & Speed of Intersecting Street	Left Y Distance	Right Y Distance
Arterial 30 – 50+ MPH	150'	75'
Collector 30-35 MPH	120'	75'
Local 25 – 30MPH	100'	60'

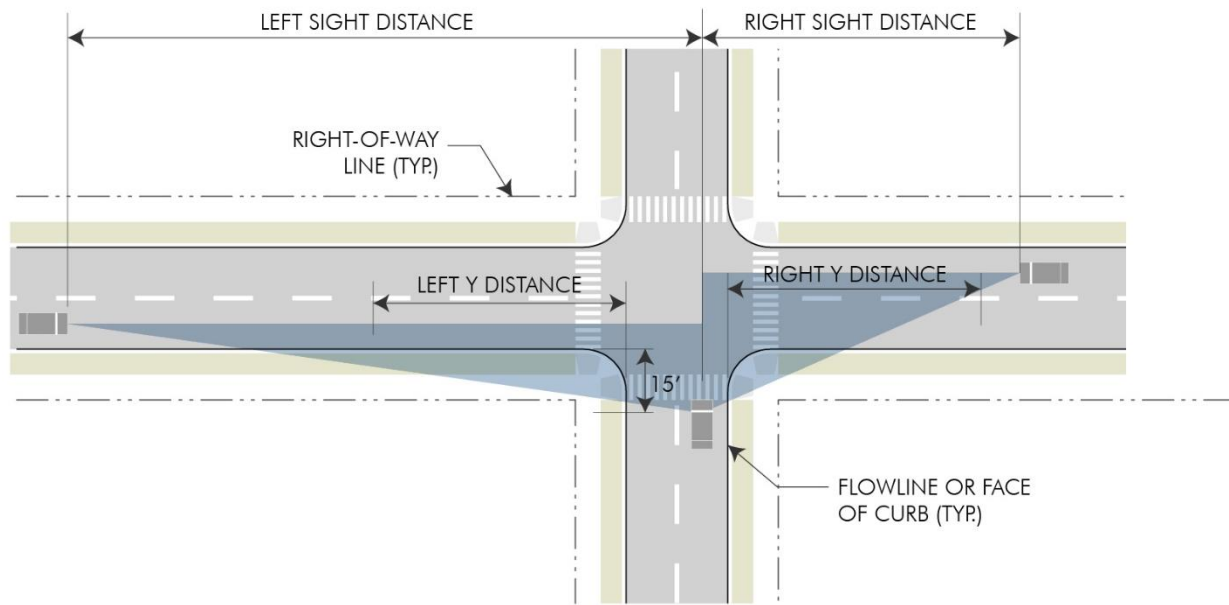


Figure 24-3-5 Clear Sight Distance

- (a) These distances are typical to be used under normal conditions and may be modified by the Traffic Engineer to protect the public safety and welfare under exceptional conditions.
 - (b) No building, structure, vegetation or other type of visual obstruction shall be placed or maintained within the triangle created by the centerline of the street intersection, the stopping point on the approaching street, and the sight distance specified in Table 24-3-6 to the centerline of the intersecting street.
 - (c) Street trees, light poles or other limited narrow obstructions are allowed within the sight triangle provided they do not have any foliage, limbs, or other broad obstructions between 2.5 and 8 feet and are no closer than 20 feet to the intersecting right-of-way line.
 - (d) Fully controlled intersections where signalization establishes and prioritizes safe turning movements may deviate from the above sight triangle standards if site conditions warrant and based upon a recommendation of the Director and Public Works Director.
3. **Crosswalks.** All intersections and crosswalks shall be designed to address conditions at each specific location, based on the guidance in the Transportation Master Plan and applicable standards in the Design Criteria and Construction Specifications. In general or where this guidance does not provide more specificity, sidewalks or trails intersecting with public streets or other vehicle access shall have crossings meeting the following standards:
- (a) Curb ramps meeting Americans with Disability Act (ADA) accessibility standards and guidelines shall provide a direct, non-diverted approach from the sidewalk along the block into the designated or protected crossing area.
 - (b) Crossings on collector streets or higher classification shall be considered for enhanced crosswalks including pavement markings, bulb outs, signalization, refuge islands or other traffic-calming measures that are appropriate to the context of the intersection.
 - (c) Where blocks exceed more than 700 feet between intersections or at other locations of high pedestrian activity, mid-block crossings shall be considered.

Mid-block crossing designs and locations are subject to a specific recommendation and approval of the Director and Public Works Director.

- (d) Any crosswalk over 80 feet, or any other significant pedestrian crossing, may require a pedestrian refuge in the median at the discretion of the Director and Public Works Director.
- 4. **Turn Lanes.** Turn lanes for left or right turn movements may be required for specific intersections, based on an approved traffic study and with consideration by Director and Public Works Director. Requirements for turn lanes should be based on careful consideration of the context balancing the impact of crossing distances for pedestrians, vehicle turning speeds, and prioritization of other planning, urban design, and traffic engineering issues. In general, this space should come from reconfiguration of the space within the roadway width near the intersection (i.e. within median space, narrowing lanes, or limiting on-street parking) rather than claiming space from the pedestrian area or streetscape, or rather than widening the road and right-of-way.
- e. **Traffic Calming.** In order to meet the desired speeds throughout the street network, to manage volumes in association with the street network, and to meet the City's Complete Streets policies and intent of this section, traffic-calming strategies may be required in street plans. Traffic calming may include bulb outs and curb extensions, medians and islands, neck downs, vertical diverters, enhanced or raised crossings, and other speed management techniques approved by the Director and Public Works Director. [See *National Association of City Transportation Officials Guidelines*.]
- f. **Engineering and Construction Specifications.** All other engineering specifications, horizontal and vertical alignment, design details, and technical or construction specifications for constructing streets shall be covered by the City of Greeley's Design Criteria and Construction Specifications for streets, and administered by the Public Works Director.

24-302 Parks & Trails

- a. **Intent.** The intent of this section is to:
 - 1. Emphasize open and civic space design as a key determinant of Greeley's community image and unique identity.
 - 2. Integrate parks and trail systems, and other common areas into the patterns of streets and blocks to create a coordinated public realm.
 - 3. Value the design, function and appropriate location of different types of open space, rather than solely the quantity of space.
 - 4. Consider the context and multiple functions that open spaces can serve to support development including ecological, recreation, aesthetic and urban design functions.
 - 5. Promote good civic design and create focal points for the community, district, neighborhood or development site.
 - 6. Integrate natural systems into the design of public or common open spaces to improve stormwater management, protect water resources, preserve ecosystems, and improve sustainability efforts.
 - 7. Implement Greeley's Parks, Trails, and Open Lands Master Plan, other plans for natural areas and trails, and coordinate the design and location of other open and civic spaces with these plans.
- b. **Required Park Dedication.** All residential subdivision applications shall dedicate land suitable for the development of parks according to the formula in Table 24-3-5: Park Land Dedication. Where no suitable land is available in the proposed development, the City may accept the cash-in-lieu equivalent of the land value. This requirement shall also apply to any rezoning or use by

special review for residential uses that is not associated with a plat application, and where a previous plat application was not required to dedicate land or pay a cash-in-lieu equivalent.

Table 24-3-5: Park Land Dedication

	Dedication Requirement	Formula
Total Acre Requirement	9.75 acres / 1,000 people	Units x 2.7 people / unit x 0.00975 acres / person
Neighborhood Park	3.25 acres / 1,000 people	Units x 2.7 people / unit x 0.00325 acres / person
Community Park	3.5 acres / 1,000 people	Units x 2.7 people / unit x 0.0035 acres / person
Sports Complex	1.5 acres / 1,000 people	Units x 2.7 people / unit x 0.0015 acres / person
Regional Park	1.5 acres / 1,000 people	Units x 2.7 people / unit x 0.0015 acres / person

1. The city reserves the right to adjust the acreage requirement between the four park categories as deemed necessary to meet specific needs and to determine the amount of developed park acreage required based upon recommendations by the Cultural, Parks and Recreation Department.
 2. Existing dwelling units within a subdivision shall be excluded from the calculation of the park dedication requirement.
 3. Where a final unit count cannot be determined until subsequent stages of a project, land dedication shall be based on an assumed average density. Multifamily density shall be assumed at 20 dwelling units per acre but may be adjusted by the City where more specific information on the site, developable area or anticipated building types exist.
 4. Land proposed for park dedication shall be clearly identified on any submitted plat including the number of acres for each site and the total acreage proposed for city park dedication within the project.
 5. The dedication shall be by warranty deed, and the title shall be free and clear of all liens and encumbrances, including real property taxes prorated to the time of dedication. The applicant shall provide the City with a title insurance policy in the City's name and a certified survey at the time of conveyance.
 6. Land dedicated for parks shall include adequate site access, installation of curb, sidewalks, and storm drainage systems, and the necessary water rights or other available water service to provide for irrigation and drinking water.
 7. Community park and/or sports complex park land shall be dedicated to the City prior to recordation of the first final plat for the subdivision as defined by the preliminary plat. Neighborhood park land shall be dedicated at the time of the final plat for the area to be served by the neighborhood park.
- c. **Cash-in-lieu of Dedication.** Cash-in-lieu of land dedication may be used when the City determines the cash value of land to be more appropriate in satisfying the needs of the proposed subdivision than land within the proposed subdivision. Typical cases include small developments, locations with disadvantageous topography or access, or developments that already have adjacent facilities that could be expanded to satisfy the need created by the proposed development.
1. The City will adopt a pre-determined per acre cash-in-lieu of land for parks amount, that may be administratively adjusted periodically and will be available on file with the Community Development Department. The pre-determined amount will be based on a mass appraisal performed by an independent qualified appraiser using generally accepted appraisal practices. As an alternative to the City's predetermined cash-in-lieu amount, the applicant may submit a proposal for determination of the cash-in-lieu amount. The proposal shall supply supporting information, including at least one report by an independent, qualified appraiser using generally accepted appraisal practices. The supporting information supplied must be adequate to allow the City to evaluate the proposed amount. If the City determines that the alternate proposal is not adequately supported, the City's predetermined cash-in-lieu amount will be applied.

2. The cash-in-lieu amount will be paid at the time the plat is recorded, unless otherwise determined by the City and agreed to in a subdivision improvement agreement.
 3. The City may adjust the cash-in-lieu requirement between the types of open and civic space in this code, or based on any policies of the Parks, Trails, and Open Lands Master Plan.
 4. The City may accept combinations of cash and dedication where only a portion of the required dedication can be met by acceptable park sites within the project. The required cash value shall be pro-rated to the amount of required land not dedicated and accepted.
- d. **Trails & Natural Areas.** The City may require or the applicant may offer trails and natural areas for public dedication in addition to the land for parks and rights-of-way. Based on the recommendations of the Parks, Trails, and Open Lands Master Plan, and other plans of the Culture, Recreation and Parks Department, the City may accept the dedication, and may credit this dedication to the parks requirement where it equally or better meets the intent of this section.
- e. **Neighborhood Features & Common Area Systems.** Land dedication, or cash-in-lieu of dedication parks is not intended to replace, discourage, or prohibit the creation of pocket parks, civic spaces, or other open lands features operated and owned by a homeowners' association or other governing entities for any other public, common, or private purpose. Section 24-504 includes requirements for Neighborhood Features and Common Areas. These areas shall be coordinated with the design and location of street networks, parks and trails to better leverage a system of parks, trails, open lands, and civic spaces throughout the area.

24-303 **Blocks & Lots**

- a. **Intent.** The intent of the blocks and lots standards is to:
1. Ensure the proper arrangement of blocks and lots to complement the street network, parks and trail system, and neighborhood features and common areas.
 2. Arrange blocks, lots and development in a manner that is least disruptive to existing topography and capitalizes on inherent natural characteristics of the land as defining features.
 3. Coordinate access and utilities for each lot in association with larger systems of streets and infrastructure.
 4. Promote appropriate site, building and frontage designs in relation to streetscapes and open spaces.
 5. Ensure that all lots are buildable according to this code, that all sensitive, hazardous or other non-buildable areas are preserved from development, and that all non-developed out lots or other parcels serve an urban design or planning function in relation to the overall development pattern.
- b. **Block & Lot Arrangement**
1. *General Layout.* All blocks shall be laid out to have two tiers of lots unless dictated by existing development patterns outside of the control of the project or by access management on major arterial streets or railroad rights-of-way. In these cases, streetscape standards, trails, or common areas should be used to create buffers and transitions where the rear of lots would abut these areas.
 2. *Hazards and Unbuildable Areas.* Blocks and lots shall be arranged to avoid hazards and unbuildable areas including steep grades, unstable or expansive soils, lands with inadequate drainage or subject to flooding, and natural drainage areas. These areas shall be incorporated into open and civic space systems, restricted tracts or out lots, or otherwise mitigated to eliminate hazards.

3. *Block Size & Patterns.* The maximum block length and size shall be based on the street connectivity standards in Section 24-301.b.
4. *Lot Patterns.* All lots shall front on a public street, or on an internal access street or common area open space where specifically allowed by these regulations. Lots shall meet the standards for the zoning district, or where applicable for the specific permitted building types. All side lot lines shall generally be perpendicular to front lot lines, or radial to any curves along the front lot lines. Other irregular lot patterns shall only be permitted where they are used to integrate patterns of buildable lots into the overall block structure and to provide consistent relationships of buildings and lots to the streetscape.
5. *Addressing.* All lots and other parcels shall require an address following City address policies and guidelines, including streets and street names.
6. *Easements.* All blocks shall include easements for all utilities, required improvements, and access necessary to serve each lot.
 - (a) Easements shall be granted by the owner to the appropriate entity, according to the needs and specifications of that entity.
 - (b) Easements shall be coordinated with each entity early in the platting process to ensure proper arrangement of blocks, lots and building sites.
 - (c) In general, easements and any associated structures or facilities shall be located on the most remote and least visible portions of sites. Where available, alleys shall be used for easements and services. Otherwise, easements and associated facilities shall be located along rear lot lines, remote corners, and other low-visibility joint lot lines.
 - (d) In cases where block, lot and building patterns necessitate easements and facilities along the side or front lot lines, additional design and screening may be required to ensure appropriate relationships to frontages and streetscapes.
7. *Drainage.* Where a subdivision is traversed by a watercourse, drainage way or stream, blocks shall be laid out in coordination with these features.
 - (a) A pedestrian or bikeway easement may be required where drainage areas interrupt the block structure more than permitted in Section 24-301.b, or where the City determines the area is appropriate for active recreation or transportation uses.
 - (b) All necessary rights-of-way and easements shall be dedicated to the City or other public entity to preserve the hydrologic, environmental, or stormwater function of the watercourse, drainage way or stream.
 - (c) Access for service vehicles shall be incorporated into the design of any drainage areas or easements internal to the block structure or common areas.

24-304 Required Improvements

- a. **Intent.** The intent of this section is to:
 1. Ensure that all improvements necessary to serve lots within a subdivision are constructed, inspected or otherwise assured of completion prior to the issuance of permits and final approvals.
 2. Prevent the location or design of a subdivision from placing an undue burden on public utility systems and community facilities serving other areas.
 3. Provide appropriate apportionment of costs, and offset higher net costs or premature costs to the public resulting from subdivisions.
 4. Protect against subdivisions where soil, subsoil or flooding conditions would create potential dangers to public health or safety.

5. Coordinate subdivisions and construction of required improvements with other anticipated improvements or with future growth.
- b. **Timing of Improvements.** All required improvements shall be provided in one of the following ways:
1. *Construction Prior to Building Permit.* Improvements may be constructed and certified record drawings of as-built shall be submitted to the City and certified that it was built as shown and to city specifications by:
 - (a) the contractor;
 - (b) the project surveyor; and
 - (c) the project engineer
 2. *Financial Guarantee.* The applicant may defer any improvements by submitting a financial guarantee for 125% of the total cost of improvements based on approved design or construction plans.
 - (a) The guarantee shall be in a form and for an amount acceptable by the City.
 - (b) Any deferral of streets shall require all weather surfaces of concrete, asphalt or road base placed on the lip of the curb and gutter for interim access of construction and emergency vehicles.
 - (c) All improvements for the particular phase of the plat shall be installed prior to a certificate of occupancy for any part of the phase.
 - (d) Upon submittal and acceptance of as-built drawings for the improvements, the City may release the financial guarantee, but retain 20% for the 2-year warranty period.
 3. *Subdivision Improvement Agreement.* The City and the applicant may enter into a subdivision improvement agreement recorded in association with an approved plan that more specifically defines the type, timing, and guarantees for required improvements.
- c. **Required Improvements.** The following improvements and plans are required for all subdivisions. All improvements are subject to the City or other responsible entities' standards, plans, and specifications for improvements.
1. Survey monuments;
 2. Sanitary sewer main lines and service lines to each lot;
 3. Water main lines and service lines to each lot;
 4. All non-potable mains and services to required lots'
 5. Fire Hydrants
 6. Storm sewers, culverts, detention facilities, bridges and any other approved storm drainage components, or elements required by a Stormwater Management Plan.
 7. Dust Abatement and Erosion Control Plan; and
 8. Perimeter Treatment Landscape Plan.
 9. Utilities (telephone, electrical service, gas lines and cable television). All utilities shall be installed underground and be in place prior to any postponed street or alley surfacing. Above-ground facilities necessarily appurtenant to underground facilities or other installation of peripheral overhead electrical transmission and distribution feeder lines or other installation of either temporary or peripheral overhead communications, distance, trunk or feeder lines may be above ground. No curb, gutter or sidewalk shall be installed until all utilities are provided.
 10. Streets, Alleys and Sidewalks. All streets shall be paved and all other improvements such as sidewalk, bike paths, curb and gutter shall be installed as required. In cases where an existing street has not been brought up to City specifications the street shall be paved and all other improvements such as sidewalk, bike paths, curb and gutter shall be installed in order to meet City specifications. If any subdivision is located adjacent to any existing street right-of-way, the applicant shall improve at least the adjacent half of the street according to City specification.

11. Street signs (on residential projects only);
12. Street Lights
13. All other improvements required as a condition of approval of the plat or contained within the subdivision improvement agreement shall be completed.

- d. **Procedures for Improvements.** To ensure that all required improvements are built according to City specifications, the construction process shall generally take the following steps:

Table 24-3-9: Procedures for Improvements	
<i>Step 1: Construction permit application</i>	- Plans and specifications, submitted by the applicant. - Warranty for improvements submitted per Section 24-304.e.. - Staff review and scheduling of pre-construction coordination meeting.
<i>Step 2: Construction permit issued</i>	- Release of grading permits - Release of ROW permits
<i>Step 3: Initial Inspection</i>	- Permittee notifies the City of completion of construction as permitted. - As-built drawings submitted by the permittee, certified by the contractor, surveyor and project engineer. Any major changes to the as-built drawings shall be reflected and recertified prior to Final Acceptance. - City inspects and issues a punch list for any necessary deficiencies or maintenance. - If no punch list items, or after punch list completed, Preliminary Acceptance by the City and Certificate of Substantial Completion issued. - City maintenance begins, but permittee financial responsibility for defects, maintenance and repairs continues. - Two year warranty period begins
<i>Step 4: Intermediate Inspection</i>	- Option of the City. - Any point at least 120 days prior the expiration of warranty period.
<i>Step 5: Final Inspection (30 – 60 days prior to expiration of warranty period)</i>	- Permittee submits request for Final Acceptance Certificate - Punch list issued for any outstanding items to be completed before end of the 2-year warranty. - If no deficiencies identified, Final Acceptance Certificate issued - Release of warranty authorized (unless cash deposit option used, which is non-refundable)

- e. **Warranty.** All public improvement infrastructure, perimeter landscaping treatment improvements and common area improvements shall provide a two-year warranty period covering design and construction defects.

1. Warranty shall be one of the following, at the option of the permittee and subject to approval of the form by the City:
 - (a) Warranty Bond for 20% of total construction cost of required improvements
 - (b). Letter of Credit for 20% of total construction cost of required improvements
 - (c) Cash deposit for 1% of total construction cost of required improvements that is non-refundable. A cash deposit is an administration fee and shall not be construed as creating any type of insurer/insured relationship or subject the City to the provisions of Title 10, C.R.S.
2. The warranty amount shall be based on an estimate provided by the applicant, or the Director may determine an alternate amount based on relevant similar projects and comparable improvements.
3. The City may approve the construction permit in clearly defined, logical phases of construction, and may accept the apportioned warranty prior to the beginning of each phase.
4. The use of the warranty shall be restricted for the repair, replacement, completion and maintenance of all improvements subject to the construction permit, including detention facilities, perimeter landscaping and open space.

5. If the City uses any of the warranty, the permittee shall replace that amount used prior to being issued any new construction permits, either for the affected specific project or any other projects in which the permittee has an interest.
6. The City may extend the two-year warranty for all or a portion of the amount if major items have not been repaired/replaced to the City's satisfaction.
7. At least once each year, the City Engineer shall review the use of all cash payment funds received by the City pursuant to this Section. After review, the City Engineer shall report to the City Manager and City Council, and make recommendations regarding the cash payment fund including transfers of fund balances to the General Fund.
8. After final inspection and final acceptance, and at the end of the 2-year warranty period, the City shall release the permittee from any Warranty Bond or Letter of Credit. If the warranty is by cash deposit, this amount is not refundable.

24-305 Adequate Public Facilities

- a. **Intent.** The intent of the adequate public facilities standards is to:
1. Anticipate and evaluate the incremental and long-term impact of development on broader public and community facility needs.
 2. Identify opportunities to integrate plans for public and community facilities into the planning and design of proposed land divisions.
 3. Consider the location of public and community facilities in coordination with the initial planning considerations for streets, open spaces, blocks, and lots, so that needed facilities are appropriately located prior to the premature commitment of these areas to conflicting development patterns.
 4. Ensure that public facilities needed to serve new development are available concurrent with development, and maintain service levels in existing areas as new development occurs.
 5. Apportion appropriate costs for the impact of new development on existing and planned public facilities.
 6. Provide the opportunity to negotiate implementation of public or community facilities beyond the impact of the particular project, where the lack of facilities may otherwise constrain potential future development.
 7. Promote fiscal responsibility for all public entities by coordinating the planning, design and financing of public facilities with the impact generated from proposed development.
- b. **General Requirements.**
1. *Public Facility Plans.* Public facilities shall be provided consistent with the following adopted City documents:
 - (a) Comprehensive Plan;
 - (b) Water, Sewer, and Non-potable Water Master Plans;
 - (c) Comprehensive Storm Water Master Plans;
 - (d) Transportation Master Plan;
 - (e) Development Fee Study;
 - (f) Parks, Trails, and Open Space Master Plan; and
 - (g) Other adopted documents related to City capital improvements.
 2. *Service Area Map.* Available services shall generally mean it is existing, or funds are allocated to construct or service implementation of the facility in the current 2-year city budget cycle. The City shall update the existing and budgeted service area map at least once each year. [include appropriate cross reference to map].
 3. *Project Impacts.* Individual projects will be evaluated for adequacy based on specific studies provided by the applicant and accepted by the City that demonstrate:
 - (a) The location of the proposed development relative to existing facilities and service;
 - (b) The ability of the project to access those facilities and services; and
 - (c) The capacity of existing facilities and services to serve the new project while maintaining acceptable levels of service for existing development.
 4. *Other Provisions.*
 - (a) Finding of adequate facilities does not exempt the applicant from paying impact fees provided in Section 24-305.d.
 - (b) Nothing in this Section shall limit the City from denying an application where it otherwise determines that adequate public facilities will not be in place concurrent with the application, despite the effect of any of the requirements or options provided in this Section.

- (c) Nothing in this Section shall prohibit any other public entity from establishing fees that apportion the appropriate contribution for the impacts on planning, design and land acquisition for facilities needed due to the development.

c. **Specific Adequacy Standards.** In addition to being consistent with the public facility plans in Section 24-305.b.1, adequacy of specific public facilities shall be evaluated as follows. City analysis and project-specific studies of the impact, demand and capacity of existing facilities will be required to make a final adequacy determination.

1. *Fire.* Fire service is considered adequate if the proposed development is located within a 1.38 mile radius of an existing, operational fire station. This requirement is based on the analysis that one fire station is needed for every 30,000 people generally living in a six-square-mile area, as applied in the Comprehensive Plan. Proposed developments including land uses that pose a high risk of fire may be subject to more stringent requirements.
2. *Parks.* Park facilities are considered adequate if the proposed development is located within a half-mile radius of a neighborhood park and within a one-mile radius of a community park, where the park is not separated from the proposed development by an expressway, facility or natural feature. Regional parks, trails, natural areas, or sports facilities are not included in the analysis unless they contain facilities equivalent to those available in neighborhood parks.
3. *Police.* Police service extends to the City limits and adequacy shall be determined according to call response times relevant to the proposed development location.
4. *Sanitary Sewer.* Sewer facilities are considered adequate if the proposed development is connected to a sewer line that is eight inches or larger in diameter with sufficient system capacity as defined by the City.
5. *Water.* Water facilities are considered adequate if the proposed development has sufficient connection to existing water lines that are eight inches or larger in diameter with sufficient system capacity.
6. *Storm water.* Storm water facilities are generally considered adequate if the site can safely convey storm water runoff to a regional storm water detention facility with sufficient capacity as defined by the City. If the City determines that the proposed development cannot safely convey runoff to an adequate storm water system, adequacy requirements shall be met with detention facilities constructed on site.
7. *Transportation.* Transportation facilities to support new development are generally considered adequate if the proposed development is connected to a collector or arterial road or expressway (or will be connected at the time the improved arterial or collector is constructed within the two-year budget cycle) constructed to an acceptable cross-section with sufficient capacity to serve the development as defined by the City.

d. **Impact Fees.** To mitigate project impacts on City service systems beyond the improvements required in Section 3.04 Required Improvements, developers shall pay standard impact fees established by Title 6, Chapter 15 of the Greeley Municipal Code

1. If the facility is currently inadequate, sub-standard, or not existing, the impact fee shall be paid at the time of final plat. For purposes of economic development, the City may defer the impact fees for commercial and industrial development until the time of a building permit.
2. Impact fees where adequate facilities are existing shall be paid at the time of building permit.

3. As an alternative to the fee, the City may accept the applicant constructing or upgrading of any facility to the standards of this Section.
4. **Exceptions.** The City Council may waive requirements that the developer absorb the development costs identified through the adequacy analyses outlined above, and obligate the City to pay said costs only if all of the following conditions are true:
 - a. The project meets City economic development goals as defined in Chapter 4.52 of the municipal code;
 - b. The cost benefit analysis has been prepared by the applicant and accepted by the City; and
 - c. The City Council has identified an adequate mechanism for funding mitigation of impacts at the time of development.
- e. **Reimbursement Agreements.** Applicants constructing required improvements for their property, or other adequate public facilities to serve their project, may be required to oversize the facilities to serve areas larger than their project based on planned future facility for the City. The City may require the applicant to enter into reimbursement agreements established elsewhere in the municipal code and according to the policies and procedures of the department responsible for the facility.
- f. **Dedication of Land.** The City may require the dedication of land to the City or other government entity with jurisdiction over public and community facilities, for parks, open space, public safety facilities, or other public or community facilities.
 1. The requirement shall be based on an official master plan of the entity having jurisdiction over the facility identifying the general location and extent of the facility, or some other documented need for the facility that is available for public review.
 2. The dedication must be included on the preliminary plat or a condition of approval of the preliminary plat.
 3. Acceptance of the dedication shall be agreed to in writing by the entity having jurisdiction over the site or facility prior to approval of the final plat or through approval of the final plat if dedication is to the City.
 4. Dedication of land for community facilities beyond the impact of the application may be credited to the required impact fees based on a detailed analysis and documentation showing costs of land.

Reserved Sections 24-306 through 24-400

Section 3. The Greeley Municipal Code shall be amended by adding thereto a new Chapter 4 – Zoning Districts and Uses of Title 24 to read as follows:

Chapter 4. Zoning Districts & Uses

- 24-401 District Intent & Applicability
- 24-402 Allowed Uses
- 24-403 Accessory Uses
- 24-404 Specific Use Standards
- 24-405 District Performance Standards

24-401 District Intent & Applicability

- a. **Intent.** To carry out the purposes of this code, the following districts are established, with the intent given for the context and character of specific areas, the development patterns, and the types or intensity of uses and buildings. The relationship to the Comprehensive Plan is listed to guide the applicability of all zoning districts, but is not determinative in any case without considering the rezoning criterion in Section 24-204.

Table 24-4-1: Zoning Districts & Intent

<i>District & Intent</i>	<i>Relationship to Comprehensive Plan</i>
H-A – Holding-Agriculture. The H-A district is intended for properties which have been annexed to the City and are either being used for agricultural purposes or have little or no immediate. Due to the development patterns and inefficiency of providing city services, this area receives only limited infrastructure investment and is therefore used as a “pre-development” district to either preserve open and rural lands and agriculture uses, or hold areas until more coordinated planning for infrastructure, land uses, and design can occur.	Limited application as a pre-development area or for agriculture uses in Rural Neighborhoods
R-E - Residential Estate. The R-E district is intended for very low density residential living with detached houses on larger lots or in rural patterns. The district permits limited institutional uses and less intense rural uses that are compatible with low density living. Due to the dispersed development intensity, this area receives lower levels of infrastructure and public service, and should have limited application unless mixed with an overall pattern of housing options.	General application in Suburban Neighborhoods. Limited application in other Neighborhoods for large lot options on the edges of walkable patterns; or in Rural Neighborhoods as part of conservation and open space patterns.
R-L- Residential Low Density. The R-L district provides residential living (detached houses) in lower-density suburban neighborhood settings with access to supporting uses such as schools, churches, parks and other public facilities. Alternatively, it may be used for single-family areas integrated into walkable or urban neighborhood patterns.	General application Suburban Neighborhoods Limited applicability in Mixed-use, Legacy Urban, and Downtown Neighborhoods if integrated into walkable patterns.
R-M – Residential Medium Density. The R-M district provides residential living (wide range of small-scale residential building types) in a compact, walkable neighborhood settings allowing a mix of housing options at strategic locations which transition to complimentary and supporting non-residential uses. A well-designed public realm provides the focal point to integrate a variety of building types with a consistent neighborhood character.	General application the Mixed-use, Legacy Urban, and Downtown Neighborhoods. Limited Application in Suburban and Rural Neighborhoods, as part of housing mix or creating walkable neighborhoods.
R-H – Residential High Density. The R-H district provides multi-family residential living in a moderate-density pattern in suburban neighborhoods or higher-density, and larger-scale projects in strategic locations for walkable and urban neighborhoods. It is located in areas that have transitions between lower-density neighborhoods or more intense non-residential uses and where a high level of accessibility, public amenity and support services are immediately available.	General application the Mixed-use, Legacy Urban, and Downtown Neighborhoods; Multi-modal Corridors; and Mixed-use High-intensity Areas. Limited Application in Suburban Neighborhoods, as part of housing mix or creating walkable neighborhoods.
R-MH – Residential Micro-Housing District. The R- MH district provides residential living for smaller format manufactured, mobile, or other small-format residences in a planned community that shares common amenities located in areas that have transitions between lower-density neighborhoods or more intense, non-residential uses and where a high level of accessibility, public amenity and support services are immediately available.	Limited application on a project specific basis, considering context and design. (See Section 24-505 for specific applicability).
C-L - Commercial Low Intensity. The C-L district provides small-scale retail, service, civic and employment uses to support suburban or walkable neighborhoods. Uses are compatible with residential living in terms of scale, operation, intensity, and format. This district is generally located near and well-integrated with residential neighborhoods an	General application in Employment, Industrial, and Commercial Areas Limited Application in Mixed-use Areas, Multi-modal Corridors, of Centers if integrated into walkable patterns

Table 24-4-1: Zoning Districts & Intent

<i>District & Intent</i>	<i>Relationship to Comprehensive Plan</i>
along minor arterial streets, or is located as a transition between more intense commercial areas and neighborhoods..	
C-H - Commercial High Intensity. The C-H district provides wide range retail, service and employment uses at a scale, intensity or in a format that requires a high level of vehicle accessibility and visibility, typically along corridors or major intersections, and is not easily integrated with other land uses or development patterns. Planned versions of this district can yield campus or mixed-use district patterns that are oriented to internal open space systems or other focal points of development.	General application in Employment, Industrial, and Commercial Areas Limited Application in Mixed-use Areas, Multi-modal Corridors, of Centers if integrated into walkable patterns
MU-L - Mixed Use Low Intensity. The MU-L district provides a mix of retail, service, employment, entertainment and civic uses in a walkable setting, intended for small-scale, neighborhood serving activity centers tightly integrated with and serving the daily needs of adjacent neighborhoods (typically under 15 acres before transitioning to other supporting and compatible uses and districts)	General Application in Neighborhood Centers; Downtown Center; Mixed-use Areas; and Employment, Industrial, and Commercial Areas Limited Application in Mixed-Use High Intensity Areas; Regional Centers, and Multi-modal Corridors
MU-H - Mixed Use High Intensity. The MU-H district provides a mix of retail, service, employment, entertainment and civic uses in a walkable setting that complements higher-density neighborhoods or serves as the center of a more intense, multi-modal community or regional destination. (Typically between 15 and 40 acres before transitioning to other supporting and compatible uses and districts.)	General Applicability in Mixed-Use High Intensity Areas; Regional Centers; and Multi-modal Corridors Limited applicability in Downtown Center; and Employment, Industrial, and Commercial Areas.
I-L –Industrial Low Intensity. The I-L district provides primarily service, employment, manufacturing and distribution uses at a scale, intensity and format that won't have significant impact on adjacent uses, and which can mix with supporting and compatible service and retail uses.	General application in Employment, Industrial, and Commercial Areas; and Airport Areas. Limited application in Centers; Mixed-use Areas; and Multi-modal Corridors.
I-M - Industrial Medium Intensity. The I-M district provides employment, manufacturing and distribution uses and a moderate scale, intensity and format, that is more compatible with high-intensity commercial uses that require a moderate degree of vehicle and freight access from arterial streets, highways or rail corridors.	General application in Employment, Industrial, and Commercial Areas; and Airport Areas. Limited application in Multi-modal Corridors
I-H – Industrial High Intensity. The I-H district provides for the broadest scope of manufacturing and distribution uses that are not compatible with residential or commercial activity due to the scale, operation, intensity or impacts of activities, or due to the high level of transportation access and support infrastructure required of the business.	Limited application Employment, Industrial and Commercial Areas, and Airport Areas
C-D Conservation District. The C-D district intended to provide a zoning classification for commercial mineral deposits, the floodway, farming, parks and permanent open space. It is a non-development district that can provide productive uses without significant building and infrastructure investment, or generates value to surrounding development through ecological, recreation, or aesthetic services on the land.	General application in Open Lands and Natural Areas, or any other natural area warranting conservation and integration into development patterns.
See Chapter 10 for Special Area and Overlay Districts and Chapter 11 for Supplemental Standards in all districts.	

- b. **Official Zoning Map.** The boundaries of the districts are shown on the official Zoning Districts Map on file with the Community Development Department. Electronic copies and files of this map shall reference the “Official Copy” on file with the Community

Development Department, but any copy should be verified with the Department before materially relying on any electronic or other representative copy of the map.

24-402 Allowed Uses

- a. **Use Table.** Table 24-4-2 establishes permitted uses for each zoning districts. These uses and development standards are established to implement the intent of these district, permit a compatible range of uses within each district, and facilitate complimentary transitions between districts.
1. The table identifies uses as;
 - (a) Permitted uses (P) subject to staff review and/or site plan approval to confirm compliance with general district and building standards applicable throughout this code.
 - (b) Use by special review (S) subject to the review process and criteria in Section 24-206.
 - (c) Uses not permitted in the district (blank).
 - (d) Uses not specifically listed in the Table shall be presumed to be prohibited, except if the Director determines that a use is similar to and has similar impacts as a use listed in the Table, then the Director may make a written determination as to the category and review required for the use.
 2. Other accessory or temporary uses may be permitted according to the standards of Section 24-403, Accessory Uses.
 3. Uses listed in the table, or more specific types of uses generally enabled in the table, may be subject to specific standards or limits in Section 24-404, Use-specific Standards.
 4. Uses in the table are more specifically described in Section 24—402.b., Description of Uses.
 5. Uses distinguished by scale are based on gross leasable area (GLA) of the uses space within buildings, size of the lot (acre), or other specified building or site features.

Table 24-4-2: Zoning Districts & Uses

Use	Districts													
	R-E	R-L	R-M	R-H	R-MH	C-L	C-H	MU-L	MU-H	I-L	I-M	I-H	H-A	C-D
Residential Uses														
Single-family Dwelling	P	P	P	P		S	S	P	P				P	
Two-family dwellings			P	P		S	S	P	P					
Row House dwellings			P	P		S	S	P	P					
Multi-family Dwellings			P	P		S	S	P	P					
Mixed-use dwelling				S		P	P	P	P					

Table 24-4-2: Zoning Districts & Uses

Use	Districts													
	R-E	R-L	R-M	R-H	R-MH	C-L	C-H	MU-L	MU-H	I-L	I-M	I-H	H-A	C-D
Established Residential (all types)						P	P			P	P	P	P	
Accessory Dwelling Unit			P	P		P	P	P	P					
Mobile / Manufactured Home & Parks					P									
Boarding House & Single Room Occupancies				P		S	S	S	S					
Farming	P	P	P	P		P	P			P	P	P	P	P
Residential Care – Group Home	P	P	P	P		P	P	P	P					
Residential Care – Assisted Living			S	S		P	P	P	P	P				
Residential Care - General				S		S	P	S	P	P				
Residential Care - Institutional				S		S	P	S	P	P				
Public & Civic Uses														
Assembly – Limited (up to 499 occupancy)	P	P	P	P	P	P	P	P	P	P	P	P		
Assembly - General (500 – 1,500 occupancy)		S	S	S	S	S	P	S	P	P	P	P		
Assembly – Large (1,501+ occupancy; or outside)							P		P	P	P			
Cemeteries, Columbarium							P	P	P	P	P	P		
Golf Course & Country Clubs (no lights)	P	P	P	P	P	P	P	P	P	P				
Libraries, Museums, Public or Quasi-public	S	S	S	S		P	P	P	P	P	P			
Police, Fire Stations, Ambulance Dispatch & Storage	S	S	S	S		P	P	P	P	P	P			
Parks, Open Spaces & Common Areas	See Section 24-302 and 24-504 for standards applicable to all districts.													
Schools	P	P	P	P	P	P	P	P	P	P				
Schools - Adult (Business, Trade)						S	P	S	P	P	P	P		
Schools - Universities / Colleges	P	P	P	P	P	P	P	P	P	P				
Transportation – Bus, Taxi, or Transit Station							S		S	P	P	P		
Transportation – Freight & Maintenance Yard											P	P		
Transportation – Airport, Heliport / Helipad											S	S		
Transportation – Public Parking	S	S	S	S	S	S	P	S	S	P	P	P		
Transportation – Towing Services							S			P	P	P		
Utilities – Limited (towers under heights permitted by zoned and accessory structures and cabinets)	P	P	P	P	P	P	P	P	P	P	P	P		
Utilities – General (towers over heights permitted by zone or large structures and cabinets)	S	S	S	S	S	S	S	S	S	S	S	S		
Utilities - Lines over 33 KVA, overhead	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Utilities – Co-generation or Power Plants											P	P		
Commercial Uses														
Adult Businesses (See also Section 24-1103)										P	P	P		
Animal Care – Limited (indoor, < 5K GLA, no boarding)						P	P	P	P	P	P			

Table 24-4-2: Zoning Districts & Uses

Use	Districts													
	R-E	R-L	R-M	R-H	R-MH	C-L	C-H	MU-L	MU-H	I-L	I-M	I-H	H-A	C-D
P = Permitted Use S= Use by special review blank = prohibited														
Animal Care – General (indoor, 5K-20K GLA or boarding)						S	P	S	P	P	P			
Animal Care – Large (outdoor or > 20K GLA)										P	P			
Animal Care – Stables (> 5 boarded animals)										S	S		S	
Auction Houses (excludes livestock)										P	P	P		
Automobile - Gas Station Limited (up to 8 pumps)						S	P	S	P	P	P	P		
Automobile - - Gas Station General (9 – 20 pumps)							P		S	P	P	P		
Automobile Gas Station Large (21+ pumps)							S			P	P	P		
Automobile - Repair/Service Limited (up to 3 service bays; < 0.5 acre)						S	P	S	P	P	P			
Automobile - Repair/Service General (4-6 service bays; 0.5 – 1.0 acre)							P		P	P	P			
Automobile - Repair / Service Large (7+ service bays; > 1 acre)							S			P	P			
Automobile - Repair / Service for Heavy vehicle and Equipment											P	P		
Automobile - Sales / Rental Limited (< 0.5 acre)						S	P			P	P			
Automobile - Sales / Rental General (0.5 – 1.0 acre)							P			P	P			
Automobile - Sales / Rental Large (> 1.0 acre)							S			P	P	P		
Child Care Home (accessory / home occupation)	P	P	P	P	P	P	P	P	P	P	P	P		
Child Care Center / Pre-School						P	P	P	P	S	S	S		
Drive-through services - Accessory						See Section 24-403.e.								
Entertainment / Even Establishments							P		P	P	P			
Food & Beverage – Bar Limited (< 3K GLA; < 100 seats)							P	P	P	P	P			
Food & Beverage – Brewery / Winery; Bar General							P		P	P	P			
Food & Beverage – Restaurant Limited (< 5K GLA; < 100 seats)						P	P	P	P	P	P			
Food & Beverage – Restaurant Quick Serve							P	S	S	P	P			
Food & Beverage – Restaurant General (5K+ GLA)							P		P	P	P			
Lodging – Short Term Rental	P	P	P	P	P	P	P	P	P	P			P	
Lodging – Bed & Breakfast (up to 5 rooms)				S		P	P	P	P	P				
Lodging – Inn (6 to 40 rooms)							P	S	P	P				
Lodging – Hotel/Motel Small (41+ rooms)							P		S	P				
Medical – Limited (< 5K GLA; no emergency service)						P	P	P	P	P				
Medical – General (5K – 20K GLA; no emergency service)						S	P	S	P	P				
Medical – Large (> 20K GLA; or emergency service)							P		P	P				
Medical - Hospitals						S	P		P	P				
Mortuaries and Funeral Homes						P	P	P	P	P	P			
Office – General (< 20K GLA)						P	P	P	P	P	P	P		

Table 24-4-2: Zoning Districts & Uses

Use	Districts													
	R-E	R-L	R-M	R-H	R-MH	C-L	C-H	MU-L	MU-H	I-L	I-M	I-H	H-A	C-D
Office – Large (20K+ GLA)							P	S	P	P	P			
Pawn Shops							P			P	P			
Personal Service – Limited (< 5K GLA; < 1.0 acre)						P	P	P	P	P	P			
Personal Service – General (5K+ GLA; 1.0+ acre)							P		P	P	P			
Recreation – Indoor Limited (< 5K GLA; < 0.5 acre)						P	P	P	P	P	P			
Recreation – Indoor General (5K - 20K GLA; 0.5 – 1.0 acre)							P	S	P	P	P			
Recreation – Indoor Large (> 20K GLA; > 1.0 acre)							P		S	P	P			
Recreation – Outdoor Limited (no lights; < 0.5 acre)						P	P	P	P	P	P			
Recreation – Outdoor General (no lights; 0.5 – 1.0 acre)							P			P	P			
Recreation – Outdoor Large (lights or > 1.0 acre)							S			S	S	S		
Recreation – RV and Travel Trailer Park							S			S	S			
Recreation – Outdoor Racetrack											S	S		
Retail – limited (< 3K GLA)						P	P	P	P	P	P			
Retail – General (3K – 20K GLA)							P	S	P	S	S			
Retail – Large (20K – 100K GLA)							P		S	S	S			
Retail – Warehouse (> 100K GLA)							S		S	S	S			
Retail – Outdoor Limited (> 25%; > 0.5 acre)							P	S	P	P				
Retail – Outdoor General (25% - 50%; 0.5 – 1.0 acre)							P		S	P				
Retail – Outdoor Large (> 50%; > 1.0 acre)							S			P	P			
Retail – Outdoor Nurseries and Greenhouse							P		P	P	P			
Retail – Outdoor Flea Market or Swap Shop											P	P		
Industrial Uses														
Auto Dismantling, Junk & Salvage Yards												S		
Commercial Services – Limited (up to 9 vehicle fleet)							P			P	P	P		
Commercial Services – General (11 – 20 vehicle fleet)							S			P	P	P		
Commercial Services – Large (21+ vehicle fleet)										S	P	P		
Concrete and Asphalt Batch Plants											P	P		
Crematoriums										P	P	P		
Foundries												S		
Gravel & Mineral Extraction, Batch Plants														S
Grain & Feed Elevators & Supply												S		
Livestock Auctions												S		
Manufacturing – Limited / Artisan (< 5K GLA)						S	P	P	P	P	P	P		
Manufacturing – General (5K – 100K GLA)										P	P	P		

Table 24-4-2: Zoning Districts & Uses

P = Permitted Use S= Use by special review blank = prohibited Use	Districts													
	R-E	R-L	R-M	R-H	R-MH	C-L	C-H	MU-L	MU-H	I-L	I-M	I-H	H-A	C-D
Manufacturing – Large (> 100K GLA)											P	P		
Manufacturing – Food & Beverage Minor (up to 3 acres)							P		P	P	P	P		
Manufacturing – Food & Beverage Major (3+ acres)											S	S		
Manufacturing – Chemical Plant											S	S		
Manufacturing – Rendering, Slaughter & Packaging												S		
Oil & Gas Operations	See Section 24-1102 for standards and procedures applicable in all districts													
Research & Testing Labs							P		P	P	P	P		
Warehousing / Storage – Indoor Limited (< 50K GLA; < 1.0 acre)							P		S	P	P	P		
Warehousing / Storage - Indoor General (50K-200K GLA; 1.0 – 5.0 acre)							P			P	P	P		
Warehousing / Storage – Indoor Large (> 200K GLA; > 5.0 acres)							S			S	P	P		
Warehouse / Storage– Distribution Center										S	P	P		
Warehouse / Storage – Outdoor Limited (< 1.0 acre)							S			S	P	P		
Warehouse / Storage – Outdoor General (1.0 + acre)										S	P	P		
Warehouse / Storage – Bulk Storage of Flammable Liquids and Gases											P	P		
Waste Management – Recycling Collection Small						S	P	S	P	P	P	P		
Waste Management – Recycling Processing & Collection							P			P	P	P		
Waste Management – Refuse & Transfer Station											S	S		
Water & Waste Water Treatment Plants											P	P		
Well Drilling Companies											P	P		
Wireless Communication Facilities	See Section 24-1101 for standards and procedures applicable in all districts													

- b. **Description of Uses.** This section provides descriptions of uses of land and buildings associated with Table 24-4-2 Allowed Uses. It is organized by Categories and Types of uses. Where a proposed use is not generally listed or appears to meet the description of more than one use type, the Director shall make an interpretation on the most equivalent described use considering:

- (1) The similarity of the use in terms of scale, impact, and operations to other described uses;
- (2) The typical building format and site design associated with the use based on relevant and established examples; and
- (3) The compatibility of the use with other allowed uses in the zoning district, and the potential for the use to contribute to the intent of the zoning district.

Any uses that may not be interpreted as equivalent to a use in Table 24-4-2 is not anticipated by these regulations and may only be allowed by a text amendment.

1. *Residential Dwelling.*

The Residential Dwelling category is the principal use of land and buildings for dwelling units. A dwelling unit is one or more connected rooms, constituting a separate, independent housekeeping establishment for owner occupancy, or rental or lease as a single unit on a monthly basis or longer, physically separated from any other room or dwelling units which may be in the same structure and served by no more than one gas meter and one electric meter. The arrangement and extent of dwelling units depends on the zoning district uses and building types:

Dwelling, Single-family. A residential building designed and used as a single detached dwelling unit by one family, other than a mobile home. Typical building types are detached houses, with variants based on lot sizes. The term single-family residence shall include a manufactured home which:

- (1) Is partially or entirely manufactured in a factory;
- (2) Is installed on an engineered permanent foundation; and
- (3) Is certified pursuant to the National Manufactured Housing Construction and Safety Standards Act of 1974, 42 U.S.C. §5401, et seq., as amended, and all regulations enacted pursuant thereto, including any local modifications as are expressly allowed by federal law, or which has been certified by the State of Colorado as being in compliance with the requirements of the Uniform Building code, as adopted by the State of Colorado and as is enforced and administered by the Colorado Division of Housing.

Dwelling, Two-family. Residential building designed to accommodate 2 primary dwelling units in a building designed and scaled to be compatible with detached houses, and which may commonly be referred to as a duplex or multi-unit house (with two units). Two-family buildings that share a single common wall may be on a single lot, or may be platted as separate lots along the common wall line subject to the building code and platting restrictions. All other two-family dwellings shall be on a single lot. Duplex / multi-unit houses shall have a scale, design, orientation, access, and entrance features that maintains the appearance and form similar to a detached house.

Dwelling, Row House. A multi-unit residential building designed for 3 to 8 dwelling units each sharing a common wall with the abutting units. Each unit has its own private entry presenting an outward appearance on the frontage as distinct units in a single building. Units may be on a single lot subject to common ownership restrictions or platted on separate lots along the common wall subject to building code and platting restrictions.

Dwelling, Multi-family. A residential building that contains three or more dwelling units, or group of similar buildings in a complex. Typical building and lot types include multi-unit houses (provided they maintain the scale, design, orientation, access and entrance features similar to a detached house), small apartments, medium apartments, large apartments, apartment complexes, and mixed-use buildings with residential uses.

Dwelling, Mixed-use (apartment over commercial / service). A residential use in a building designed for street level retail, service or employment uses, and where dwelling units are accommodated on upper stories, or otherwise separated from the principal commercial function of the building.

Dwelling, Established Residential (all types). Any residential building and use, legally established at when it originated but where new development of the same use or similar building type is no longer permitted in the zoning district. These uses shall be permitted so that continued use and further investment in the building and use is not discouraged.

Dwelling, Accessory Unit. A dwelling unit that is secondary and accessory to a principal dwelling unit and on the same lot. Accessory dwelling units may be in the same building as the principal dwelling unit (basement or attic apartments) or in a detached accessory structure (garage apartment or “granny flat”).

Mobile / Manufactured Home Park. A parcel of land planned and designed for multiple home sites for the placement of manufactured, mobile or other small homes, and used for the principal dwelling of households for long-term residency. These communities include internal common areas, circulation systems and accessory uses and facilities to support the community. Dwellings may either be located on home sites designated within a larger project or on single lots owned through appropriate condominium procedures or platted under certain conditions.

Boarding House & Single Room Occupancy. A residential building is used to accommodate boarders or roomers as the primary residential dwelling, and whose occupants shall have common access to facilities such as kitchen, bathroom, dining areas, or community areas. Boarding and single-room occupancies houses shall be rented or leased on a monthly basis or longer, and not include hotels, motels and lodges.

Farming. The production of crops such as vegetables, fruit trees or grain; the growing of trees and shrubs for landscape purposes; and the raising of farm animals such as poultry or swine, as limited by the standards for accessory keeping of livestock. Farming shall not include the commercial raising of animals, commercial production of milk, commercial pen feeding (feed lots) or the commercial feeding of garbage or offal to swine or other animals.

Residential Care - Group Home. A residential building operated as a single primary dwelling which provides residency, supervision, and other services for up to 8 persons who are in need of special care due to being developmentally disabled, mentally ill, 60 years of age or older, or due to physical condition, illness, or social or behavioral problems. Group homes require up to 2 residential caregivers, and shall be licensed by, operated by, or owned by a governmental agency or non-profit qualified to provide care and supervision. Group homes shall not include alcoholism or drug treatment centers, work release facilities or other housing facilities serving as an alternative to incarceration and shall not house more than one individual per dwelling who is required to register as a sex offender under the provisions of Section 18-3-412.5, C.R.S

Residential Care – Assisted Living. A residential building or planned community operated as the primary residence for persons who do not have an illness, injury or condition that requires 24-

hour care or supervisions, but who need social, physical, and therapeutic and recreation support for daily living. Support services are accessory to the residential use and character of the buildings and area, and do not require 24-hour staffing, other than security. Typical examples include assisted living, group homes larger than 8 individuals, and retirement communities.

Residential Care - General. A residential or institutional building, or group of buildings, designed to provide a primary or interim residence and health care for persons who require care on a full-time basis. Medical support, rehabilitative services, and counseling is provided by professional, nursing and medical staff on site. Accessory support uses include meals, therapeutic services, transportation and recreation. Typical examples include nursing homes, long-term care facility, continuing care facility, congregate care communities, or hospices.

Residential Care – Institutional. A residential or institutional building operated by a government, non-profit, charitable or religious organization providing temporary housing, food, counseling and other support services to persons at risk, on an interim basis and with transitional, protective, or rehabilitative goals. Security and supervisory services are required on-site. Typical examples include emergency shelters, missions, rehabilitation residence, halfway houses.

2. *Public / Civic*

The Public / Civic use category is the use of land and buildings to serve public or community interest by enhancing the daily cultural, social, or recreation needs for residents and neighborhoods. It can include uses generally available to the public at large, community uses structured by voluntary affiliation, or private uses limited by property ownership or membership. It includes the following types:

Assembly. A civic use designed to serve the community for regular or periodic events, including worship, social, cultural, recreation, and accessory uses associated with organized civic or institutional activities.

Assembly – Limited (up to 499 occupancy). A place of assembly designed and located to serve nearby neighborhoods, typically designed for up to 499 people. Examples include small neighborhood association clubhouse, meeting hall, or small religious facility.

Assembly – General (500 - 1,500 occupancy). A place of assembly designed and located to serve the broad community at large, typically designed for 500 – 1,500 people. Examples include a community/recreation center, small event hall, or large religious facility.

Assembly – Large (1,501+ occupancy, or outside). A place of assembly designed and located to serve as a destination for the city or region, typically designed for more than 1,500 people, or where any facility is designed for outside assembly. Examples include an auditorium, large event hall, major worship hall, convention and conference center, or any assembly use with a small outside amphitheater.

Cemeteries and Columbarium. A public or civic use where land or buildings are used for the burial of the deceased and dedicated for interment purposes, including gravesites or buildings used for the internment of ashes of cremated dead.

Golf Courses & Country Clubs (no lights). A public or civic use and designed and dedicated for playing the game of golf, run by a public agency or a private club operated on a membership basis. This includes accessory facilities and structures related to playing golf, but shall not include any lights, activities, or associated events not compatible with outdoor recreation in a residential setting. (See Recreation – Outdoor for commercial recreation activities).

Libraries, Museums, Public or Quasi-public. A public or civic use which provides resources and exhibits to support education, culture, and information exchange open to the public at large.

Police, Fire Stations, Ambulance Dispatch & Storage. A public use that supports the community at large by through public health and safety, protective or related services. Examples include police and fire stations, dispatch, and related facilities, or similar government and quasi-government buildings and grounds.

Parks, Open Spaces & Common Areas. Any parcel or area of land or water permanently reserved for public and/or private use and enjoyment, which is generally open, undeveloped, and characterized by natural features and landscape enhancements, except for facilities to serve the social, recreational, aesthetic, or environmental function of the space. (See Section 24-302 and 24-504 for standards applicable to all districts.)

School. A public or civic building designed, constructed, or used for education or instruction in any branch of knowledge.

School, adult (business, trade). A public or private school primarily teaching useable skills to adults, including, but not limited to, business, vocational, driving and trade courses.

School, compulsory. A public or private elementary, junior high or high school licensed by the state and which meets state requirements for providing compulsory education.

Schools – University / College. A public or private institution dedicated to post-secondary education.

Transportation – Bus, Taxi, or Transit Station. A public transportation facility designed for the transfer, pick-up and drop-off of passengers traveling by bus, taxi, trolley, or similar low-impact means, including with buildings or associated passenger convenience facilities, distinguished from public stops accommodated in the design of the right-of-way.

Transportation - Freight & Maintenance Yard. An area and/or building where storage, maintenance, or dispatch of vehicles used for public transportation occurs, or any other similar high-intensity activities associated with public transportation.

Transportation – Airport, Heliport, or Helipad. Any area of land or water designed for the landing and take-off of aircraft for business or commercial purposes, including all necessary facilities for passenger and cargo loading, maintenance and fueling facilities and housing of aircraft. This includes any area used by helicopters for landing and take-off, passenger and cargo loading.

Transportation – Public Parking. A parcel of land where the principle use is to park vehicles whether on a fee basis operated by a public or private entity or whether to support an adjacent use or business located on a different lot. Parking may be on a surface lot or in a structure.

Transportation – Towing Service. A parcel of land used for the storage, impoundment, and retrieval of vehicles that have been towed.

Utilities – Limited. Any aboveground structure or facility, excluding buildings, which is owned by a governmental entity or any entity defined as a public utility for any purpose by the state public utilities commission, and used in connection with delivery of utility services to nearby lots and other areas, with maximum heights of towers and accessory structures under those permitted by the zoning district. Examples include accessory utility structures that served customary needs of the uses in the zoning district.

Utilities – General. Any aboveground structure or facility, which is owned by a governmental entity or any entity defined as a public utility for any purpose by the state public utilities commission, and used in connection with delivery of utility services to nearby lots and other areas, with maximum heights of towers and accessory structures above those permitted by the zoning district. Examples include substations or other facilities that support the storage and generation of facilities.

Utilities – Lines over 33KVA, overhead. Any utility that utilizes overhead lines that transmit above 33 kilo volt amperes.

Utilities – Co-generation or Power Plants. A facility which is owned by a governmental entity or any entity defined as a public utility for any purpose by the state public utilities commission, and used for generating of power for distribution to sub-stations or other general accessory distribution facilities.

3. *Commercial.*

The Commercial use category is the use of land and buildings for entities engaged in sale of products or services, the limited production and distribution of products, or other administrative or support services to help businesses. It includes the following types of uses:

Adult business. Any store, establishment, tavern, club or theater having a substantial portion of its stock in trade, books, magazines or other periodicals; video movies, films, slides or photographs; instruments, devices or paraphernalia; or live performances, which are characterized by their emphasis on matters depicting, describing, or related to specified anatomical areas or specified sexual activities. For the purposes of this definition, a business

shall not be considered an adult business if it carries less than 20 percent of its stock in adult materials and it prevents the public from viewing or observing merchandise or products that depict specified anatomical areas or specific sexual activities, as may be displayed by the products or on the packaging.

1. *Specified anatomical areas* means:
 - (a) Less than completely and opaquely covered human genitals, pubic region, buttocks and female breast above or below a point which would expose any portion of the areola; and
 - (b) Human male genitals in a discernibly turgid state, even if completely and opaquely covered.
2. *Specified sexual activities* means:
 - (a) The fondling or other erotic touching of human genitals, pubic region, buttocks, anus or female breast;
 - (b) Human genitals in a state of sexual stimulation or arousal;
 - (c) Sex acts, actual or simulated, including intercourse, oral copulation or sodomy;
 - (d) Masturbation, actual or simulated; or
 - (e) Excretory functions as part of or in connection with any of the activities set forth in subsections (2)a through d of this definition.

Animal Care. A commercial use that provides care and medical or non-medical services for domesticated animals, including boarding, training, breeding, showing, treatment, grooming, or sale. Animal care is further refined by the scale and intensity of the operations, as follows (for Non-domesticated animals and livestock, see *Farming, and limits on the accessory keeping of Livestock*):

Animal Care - Limited. A small office or facility providing animal care that involves less than 5,000 square feet of commercial area, all activities occur indoors (except routine daily pet care), and any overnight boarding is limited to that necessary for medical care or observation. Examples include a veterinary office, pet grooming or training, and small animal day cares.

Animal Care – General. A moderate sized office or facility providing animal care that is between 5,000 to 20,000 square feet of commercial space, or that involves animal boarding. Examples include a veterinary clinic, animal shelters, and indoor commercial kennels.

Animal Care – Large. A large office or facility providing animal care that is more than 20,000 square feet of commercial space, or has significant outdoor activity including boarding kennels or play areas where animals may ordinarily be kept and . Examples include domestic animal hospitals, large facilities for pet daycare, and large commercial/outdoor kennels

Animal Care – Stable (>5 boarded animals). A commercial use for the keeping, boarding and/or training of horses, ponies, llamas, mules or other animals which may be used for riding purposes, for compensation and which may include an arena.

Auction House. A business that facilitates the buying and selling of assets, such as works of art, collectibles, household estate items, and other personal property. Auction House excludes selling of livestock.

Automobile – Gas Station. A specific retail use engaged in the sale of fuel to the general public, and may involve limited accessory sales of convenience goods. This use may be combined with accessory vehicle service and repair uses, subject to the service bay limitations stated below. Vehicle – Gas Station uses are further refined by the scale, format and intensity as follows.

Automobile - Gas Station, Limited (up to 8 pumps). A vehicle gas station limited to no more than 8 fueling stations, no more than 2 service islands, no more than 2 accessory vehicle service bays and no more than 1,500 square feet of accessory retail or service areas. Examples include small, neighborhood service stations.

Automobile - Gas Station, General (9-20 pumps). A vehicle gas station limited to between 9 and 20 fueling stations, no more than 5 service islands, no more than 3 accessory vehicle service bays and no more than 5,000 square feet of accessory retail or service areas. Examples include general stores and gas stations.

Automobile - Gas Station, Large (21+ pumps). A vehicle gas station that contains more than 20 fueling stations, more than 5 islands, and up to 4 accessory vehicle service bays and no more than 5,000 square feet of accessory retail or service areas. Examples include a large convenience center and gas station, or truck stops and travel centers.

Automobile – Repair / Service. A specific service use engaged in motor vehicle and mechanical equipment maintenance and repair services, and accessory retail sale of supplies and accessories. Automobile Repair / Service is further refined by scale, format and intensity as follows:

Automobile – Repair / Service – Limited (up to 3 service bays; 0.5 acre max.). An automobile service and repair use limited to no more than 3 vehicle service bays, all vehicles are under 1.5 tons G.V.W, where all work and storage of equipment and supplies occurs indoors, and where on-site or overnight storage of vehicles is limited and requires no special site accommodations other than ordinary parking areas. Sites are limited to no more than 0.5 acres. Examples include a small machine shop, mechanic, lubricant center, tire store, auto glass installation or audio or alarm installation.

Automobile – Repair / Service – General (4-6 service bays; 1.0 acre max). An automobile service and repair use that involves 4 to 6 service bays, all vehicles are under 1.5 tons G.V.W, where all work and storage of equipment and supplies occurs indoors, but where on-site or overnight storage of vehicles may be stored outdoors on the lot. Sites are limited to no more than 1.0 acre. Examples include large mechanic shop, lubricant center, tire store, non-accessory car wash, or an auto body shop.

Automobile – Repair / Service – Large (7+ service bays; 1.0+ acres). An automobile service and repair use that involves 7 or more service bays, all vehicles are under 1.5 tons G.V.W, where all work and storage may occur outdoors and where on-site or overnight

storage of vehicles and outdoor storage is typical. Sites are more than 1.0 acres. Examples include large service center, auto body and frame repair facilities, transmission and engine overhaul yards, or automobile painting facilities.

Automobile – Repair / Service for Heavy Vehicles & Equipment. An automobile service and repair use engaged in the maintenance and repair of motor vehicles, recreational vehicles or boats, commercial vehicles, heavy equipment and other vehicles over 1.5 tons G.V.W., and other similar uses where services typically involve outside storage or work. Examples large vehicle maintenance, large truck or boat wash, and equipment yards.

Automobile – Sales / Rental. A commercial business engaged in the sale, lease, or rental of automobiles. Automobile – Sales / Rental is further refined by scale, format and intensity as follows:

Automobile – Sales / Rental – Limited (< 0.5 acres). An automobile sales / rental facility on less than ½ acre that uses outdoor vehicle storage at a similar scale to a small-site commercial parking area. Examples include an automobile broker that may have little or only temporary on-site storage, or a small car rental office.

Automobile – Sales / Rental – General (0.5 - 1.0 acres). An automobile sales / rental facility on between ½ and 1.0 acre, where outdoor vehicle storage occupies a large portion of the site. Examples include a small car dealership, or a larger rental car facility.

Automobile – Sales / Retail Large (> 1 acre). An automobile sales / rental facility on more than one acre that includes significant amounts of outdoor vehicle storage. Examples include a large car dealership or car or truck rental facility

Child Care Home. A residential dwelling licensed by the Colorado Department of Human Services to provide child care services as a home occupation and an accessory use to the operator's principal residence. The facility may provide care for up to 12 children, and subject to greater restrictions based on Colorado Department of Human Services licensing rules as an accessory use to the operator's principal residence.

Child Care Center. A commercial use that provides care for children outside of the home, or any care for more than 12 children.

Entertainment / Event Establishment. A commercial use that rents facilities and grounds for special events, concerts, social functions, or other large gatherings. This use does not include any events that are accessory to an otherwise permitted civic, institutional, or commercial use.

Food & Beverage. A specific service and retail use engaged in the business of serving prepared food and/or beverages to the public for immediate consumption. Food and beverage uses are further refined by scale, format and intensity based on the following:

Food & Beverage – Bar Limited (Under 3K; under 100 seats). A food & beverage use where a significant portion of the business, in sales and in hours of operation, involves

the sale of alcoholic liquors by the drink for consumption on premises, and food services is secondary or accessory. The limited use requires under 3,000 square feet and under 100 seats to ensure compatibility with other neighborhood-serving or small-scale uses in terms of intensity of activity and hours of operation.

Food & Beverage – Brewery / Winery; Bar General. A food & beverage use where a significant portion of the business, in sales and in hours of operation, involves the sale of alcoholic liquors by the drink for consumption on premises, and may include accessory craft manufacturing of alcoholic beverages. This general use is of a scale and intensity that frequently has accessory live entertainment or events and where the scale and intensity of the use is more compatible with general commercial uses.

Food & Beverage - Restaurant Limited (under 5K; under 100 seats). A small scale restaurant under 5,000 square feet and under 100 seats at full capacity.

Food & Beverage – Restaurant Quick Serve. A food and beverage use where the food is served from a counter ready to eat with no significant table service, and where the customer turnover will be high due to any combination of accessory drive-through services, carry out orders, or quick sit-down services

Food & Beverage - Restaurant General (5K+). A large scale restaurant with over 5,000 square feet of commercial area or over 100 seats.

(for accessory drive-through facilities see Section 24-403.e.)

Lodging. A commercial use providing accommodations for temporary, short-term overnight occupancy on at least a 24-hour basis, and accessory uses associated with typical guest services such as food service, recreation or similar accommodations to support overnight-guests. Lodging is refined to the following scales based on building type, format and intensity of use.

Lodging – Short Term Rental. The rental of a dwelling unit, or portion thereof, for less than one month.

Lodging – Bed & Breakfast (up to 5 rooms). A small residential building used for lodging, meals, and shared living space between the primary occupants and patrons and includes at least 2 but no more than 5 rooms.

Lodging – Hotel / Motel Small (6 to 40 rooms). A small commercial or large residential building providing lodging and includes at least 6 but no more than 40 rooms.

Lodging – Hotel / Motel General (40+ Rooms). A large commercial building providing lodging and includes 41 or more rooms.

Medical Care. A commercial service use providing medical, dental, or physical health or wellness care to the public. This use type is further categorized by the following formats.

Medical Care – Limited (Under 5K). A medical care use offering routine outpatient services, that occupies less than 5,000 square feet of diagnostic or treatment area, includes no surgical or in-patient facilities, and operates in normal business hours. Examples include a small doctor or dentist office, eye-care center, or urgent care center that is accessory to a larger retail or pharmacy use.

Medical Care – General (5K – 20K). A medical care use offering routine outpatient services, that occupies between 5,000 and 20,000 square feet for diagnostic or treatment areas, includes no inpatient facilities, and operates in normal business hours. Examples include a larger doctor or dentist group practice, small clinic or analytical lab, or small outpatient urgent care or surgical center.

Medical Care – Large (>20K). A medical care use offering a full range of services that occupies over 20,000 square feet for diagnostic or treatment areas, and may include emergency care, surgical services or other inpatient treatment. The use may include accessory retail, food service, pharmacy or wellness/fitness uses. Examples include small hospital, remote surgical centers, or large clinic or analytical labs.

Medical Care – Hospitals. A medical care use with a full range of diagnostic, surgical, and emergency services, and occupies a large commercial building or multiple buildings arranged around a campus that serves a greater region. It includes a wide range of accessory office, lab, and retail uses related to patron, patient, and visitor needs. Examples include a large hospital or regional medical center campus.

Mortuaries and Funeral Homes. A building used for human funeral services, which may contain space and facilities for services used in preparation of the dead for burial; the storage of caskets, urns, and other related funeral supplies; and the storage of funeral vehicles. Funeral homes shall not include crematoriums as accessory uses.

Office. A commercial use focused on employment and engaged in the administrative, professional, clerical or management aspect of business or professional services that typically do not have frequent or unscheduled on premise interaction with the public or clients. Office uses are further refined by the scale and format of buildings based on the following:

Office – General (under 20K). An office use in a small commercial building with under 20,000 square feet, typically within one moderate-sized building

Office – Large. (20K+). An office use in a large commercial building or multiple buildings in a complex or campus, with over 20,000 square feet.

Pawn Shops. A commercial use engaged in the loaning of money on the security of property pledged in the keeping of the pawnbroker, and the incidental sale of such property.

Personal Service. A commercial use engaged in the business of providing personal or professional services to the public that may include frequent or unscheduled interaction with clients or customers on-premises. Examples include barbershop or beauty salon, travel agency,

small equipment repair, tailor, bank or personal financial services. Service uses are further refined by scale, intensity and format based on the following:

Personal Service – Limited (under 5K; under 1 acre). A service use under 5,000 square feet, typically in line with other small-scale uses in a multi-tenant commercial building or in mixed-use building on a site of less than 1 acre.

Personal Service – General (5K+; 1+ acre). A service use between of 5,000 square feet, in a small freestanding building or part of a large mixed-use building

Recreation. A commercial service use engaged in the business of providing daily or regularly scheduled activities for entertainment, leisure activities, training and instruction, or exercise, offered to the public through individual, membership, or group arrangements. This use type is further refined by the scale, format and intensity as follows:

Recreation – Indoor, Limited (< 5K; < 1.0 acre). An indoor recreation/entertainment use that involves a building less than 10,000 square feet. Examples include a small bowling alley, fitness club, billiard hall, or dance or yoga studio.

Recreation – Indoor, General (5K – 20K; 0.5 – 1.0 acre). An indoor recreation/entertainment use that involves a building between 10,001 square feet and 40,000. Examples include a large bowling alley, a small sports and recreation center, a small theater, large health club or fitness center, or small shooting range.

Recreation– Indoor Large (> 20K; > 1.0 acre). An indoor recreation/entertainment use that involves a building more than 40,000 square feet. Examples include a large sports and recreation center, skating ring, or theater complex.

Recreation– Outdoor, Limited (no lights; < 0.5 acre). An outdoor recreation use that involves less than 2 acres of active outdoor recreation grounds. Examples include a small pickle ball center, batting cages, or small community center.

Recreation/Entertainment – Outdoor, General (no lights; 0.5 – 1.0 acre). An outdoor recreation use that involves less between 2 and 5 acres of active outdoor recreation grounds. Examples include miniature golf, swimming pool, tennis center, small band shell or amphitheater.

Recreation/Entertainment – Outdoor, Large (lights or > 1.0 acre). An outdoor recreation use that involves more than 5 acres of active outdoor recreation grounds. Examples include waterpark, drive-in theater, shooting range, driving range, sports and athletic complex.

Recreation – RV and Travel Trailer Park. An outdoor recreation use providing overnight accommodations within a large open area for recreational purposes and may involve associated accessory buildings or facilities for parking RVs on a temporary basis for recreation or vacation purposes.

Recreation – Outdoor Racetrack. An outdoor recreation use for racing of any motorized vehicles.

Retail. A commercial use primarily engaged in the sale of products for final use to the general public with frequent interaction of patrons or consumers on premises. Retail uses are further refined by scale, intensity and format based on the following:

Retail – Limited (< 3k). A small-scale retail use contained in a building with under 3,000 square feet of gross leasable area.

Retail – General (3K-20K) A retail use contained in a building with at least 3,000 but less than 20,000 square feet of gross leasable area.

Retail – Large (20K – 100K). A large-scale retail use contained in a building with at least 20,000 but less than 100,000 square feet of gross leasable area.

Retail – Warehouse (100K+). A large-scale retail use contained in a building with at least 100,000 square feet of gross leasable area.

Retail – Outdoor Limited (less than 25%; up to 0.5 acres). A retail use where a small portion of the merchandise is displayed permanently outside, limited to no more than 25% of the merchandise area being outside and limited to sites no more than 0.5 acres. Examples include a garden center, statuary store, or small equipment dealer. This does not include accessory outdoor sales and display areas that may be permitted as an accessory use to an otherwise permitted use or seasonal events that may be permitted through a temporary use permit.

Retail – Outdoor General (less than 50%; up to 1 acre). A retail use where a significant portion of the merchandise is displayed permanently outside, limited to no more than 50% of the merchandise area being outside and limited to sites no more than 1.0 acres. Examples include a lumber yard, large equipment rental or dealer, or small landscape supply store.

Retail – Outdoor Large (over 50% or more than 1 acre). A retail use where a substantial portion of the merchandise is displayed permanently outside, including more than 50% of the merchandise area being outside or sites more than 1.0 acres. Examples include a, equipment sales lot, boat or recreational vehicle sales lot, large machine or farm implement sales yard.

Retail – Outdoor Nurseries and Greenhouses. A retail use engaged in the sale of plants and other living vegetation, and where substantial portions of the merchandise is displayed outside.

Retail – Outdoor Flea Market or Swap Shop. A retail use where a large number of vendors will display merchandise indoors or outdoors on a short term or interim basis.

4. *Industrial.*

The Industrial use category involves the use of land and buildings for businesses engaged in the production, processing, storage or distribution of goods, which may have potential impacts beyond the site due to the types of activities, the physical needs of the site or facility, the types of materials used, or the delivery and access operations. Depending on the scale, intensity, and operations of these uses they may not be compatible with other uses or buildings, and may need special districts, more careful location criteria, and/or increased site design or operational limitations in order to be more generally applicable in the City.

Auto Dismantling, Junk & Salvage Yards. An industrial use for collecting, storing or selling scrap metal or discarded material or for collecting, dismantling, storing, salvaging or demolishing vehicles, machinery or other material and including the sale of such material or parts.

Commercial Services. A business engaged in service to other businesses and industries, or engaged in services to the general public but where industrial uses support the service, or where services dispatched from a central location for storage of vehicles, equipment, or merchandise. Examples include plumbing, exterminators, HVAC repair, janitorial services, commercial laundry services, or other similar uses.

Commercial Services – Limited (< 10 vehicle fleet). A small-scale commercial service use with limited outdoor storage needs and with a vehicle fleet less than 10 vehicles, where surface parking and vehicle storage needs are similar to other general commercial uses.

Commercial Services – General (10 – 20 vehicle fleet). A commercial service use where outdoor storage is necessary or with a vehicle fleet between 10 and 20 vehicles, requiring dedicated areas for storage of vehicles during down times or off hours.

Commercial Services – Large (21+ vehicle fleet). A large-scale commercial service use that may have substantial outdoor storage needs or with vehicle fleet is more than 20 vehicles, requiring large areas for storage of vehicles or equipment.

Concrete and Asphalt Batch Plant. A facility or equipment used in mixing the dry warm aggregate, padding and asphalt for homogeneous mixture at the required temperature, typically in association with a street, large parking area or other large-scale construction project, sometimes on a temporary or interim basis.

Crematoriums. A place for the cremation of human or animal remains.

Foundries. An industrial use for producing castings in molten metal.

Gravel & Mineral Extraction, Batch Plant. The process of extracting metallic or nonmetallic mineral deposits from the earth and crushing, separating or otherwise processing the extracted mineral deposits into a useable form.

Grain & Feed Elevators & Supply. An industrial use that stores grain and similar agriculture and feed products in bulk for storage, processing, or distribution to other locations.

Livestock Auction. A business that facilitates the buying and selling of livestock, including showing, housing, and otherwise caring for livestock to facilitate the purchase.

Manufacturing – Limited / Artisan (under 5K). A small-scale manufacturing use converting prepared materials into finished products. The activities produce little or no byproducts such as smoke, odor, dust, or noise discernable from outside of the building where deliveries and distribution are made by general consumer delivery services requiring no special large truck access, and where products are made available to the general public. Uses occupy buildings or spaces under 5,000 square feet of gross leasable area. Examples include artists' studios, small wood or metal shops, craft manufacturing, small bakery, or other similar small-scale assembly of finished products.

Manufacturing – General (5K – 100K). A manufacturing use converting prepared materials into finished products or parts. The activities produce little or no byproducts such as smoke, odor, dust or noise are discernable from outside of the building, and where distribution and delivery needs occur through light to moderate commercial truck access. Examples include small equipment or commodity assembly, production of consumer products, or similar businesses.

Manufacturing – Large (100K+). A large-scale manufacturing use converting raw or previously prepared materials into other materials or finished products. The activities may produce byproducts such as noise, dust, smoke or odor, but are mitigated to limit impacts beyond the property boundary. Outside storage and activities may be necessary, and distribution and delivery needs involve frequent or large truck access. Examples include large-scale manufacturing or fabrication plants, large equipment assembly, metal fabrication plants, chemical laboratories or other similar high-intensity manufacturing or distribution operations.

Manufacturing - Food and Beverage Minor (up to 3 acres). A manufacturing establishment primarily for packaging, producing or processing foods for human consumption that meets the definition of *food and beverage processing (major)* but which also dedicates a portion of the building footprint's square footage (a minimum of ten percent [10%], up to fifty percent [50%]) to sales of food, beverages and/or other retail for on-premises purchase and/or consumption; and which occupies a site of three (3) acres or less; and which cannot generate offensive odors, emissions, traffic or other off-site impacts or shall otherwise be considered a major food processing facility.

Manufacturing - Food and Beverage Major (3+ acres). A manufacturing establishment packaging, producing or processing foods for human consumption and certain related products and includes, but is not limited to the following: (1) bakery products, sugar, and confectionary products (except facilities that produce goods only for on-site sales and not wider distribution); (2) dairy products processing; (3) fats and oil products (not including rendering plants); (4) fruit and vegetable canning, preserving and related processing; (5) grain mill products and by-products; (6) meat, poultry, and fish canning, curing and byproduct processing (not including

facilities that also slaughter animals); and (7) miscellaneous food preparation from raw products, including catering services that are independent from food stores or restaurants.

Manufacturing – Chemical Plant. An industrial use primarily engaged in the storage, processing, production, and distribution of chemicals on a large scale, where chemical reactions are used to transform materials for use in other industrial or business applications.

Manufacturing – Rendering, Slaughter & Packaging. An industrial use where waste products and livestock carcasses are converted into industrial fats.

Oil and Gas Operations means exploration for oil and gas, including the conduct of seismic operations and the drilling of test bores; the siting, drilling, deepening, recompletion, reworking or abandonment of an oil and gas well, underground injection well or gas storage well; production operations related to any such well including the installation of flowlines and gathering systems; the generation, transportation, storage, treatment or disposal of exploration and production wastes; and any construction, site preparation or reclamation activities associated with such operations. See Section 24-1102 for specific definitions, standards, and procedures related to oil and gas uses.

Research & Testing Labs. A building or group of buildings in which are located facilities for scientific research, investigation, testing or experimentation, but not facilities for the manufacture or sale of products, except as incidental to the main purpose of the laboratory.

Warehouse / Storage. An industrial use engaged in the business of keeping goods and products for interim or long-term periods for personal or business uses, or for the distribution to other businesses and industries, including any logistic services related to this business such as labeling, bulk packaging, inventory control, or light assembly. Warehouse and storage uses are refined further based on the scale, format and intensity as follows:

Warehouse / Storage – Indoor Limited (< 50K; up to 1 acre). A warehouse / storage use where individuals store personal property in units or space leased or rented on a periodic basis and where all storage are accessed from within the principal building. Examples include small indoor self-storage mini-warehouses, or small commercial warehouse.

Warehouse / Storage – Indoor / General (50K – 200K; 1-5 acres). A warehouse / storage use for businesses or larger personal products where all items are stored indoors. Examples include large indoor self-storage mini-warehouse, large commercial warehouses, and long-term garages.

Warehouse / Storage – Large (200K+; 5+ acres). A large-scale warehouse / storage use for long-term storage of products or supplies, and where access and truck traffic is not frequent.

Warehouse / Storage – Distribution Center. A large-scale facility where goods or products are stored on-site temporarily for the purpose of delivery to a retailer or final destination, and where the nature of the operation has frequent daily truck traffic. Such

facilities may include automated systems, office space and a pick and pack area to be used by employees for sorting and packaging goods and products for delivery from available, on-site inventory.

Warehousing / Storage –Outdoor Limited (up to 1 acre). A storage use for the public where individuals store personal property in units leased or rented on a periodic basis and where all storage is inside but individual units may be accessed directly from the outside. Examples include small outdoor self-storage mini warehouses or small equipment storage yard.

Warehouse / Storage – Outdoor General (1+ acre). A storage use for the public or other businesses where large-scale household items or machinery, commercial products, raw materials, or supplies are stored on an outdoor lot. Examples include large outdoor self-storage mini warehouse, boat or RV storage, building supply lots or similar industrial supply storage yards.

Warehouse / Storage – Bulk Storage of Flammable Liquids and Gases. The use of grounds for storing tanks used for gasses or liquefied petroleum, often as a distribution point for further shipment or processing or re-use at other locations.

Waste Management – Recycling Collection Small. A small-scale disposal point for recyclable or reusable materials, where items are dropped in bins that protect them from the elements, eliminate them from view of surrounding areas, and otherwise mitigate any noise or odor. These facilities are solely for temporary drop off and storage, until weekly or daily pick up of the materials, can bring them to a separate location for further procession or disposition.

Waste Management – Recycling Processing & Collection. A large-scale disposal point for recyclable or reusable material, where longer-term storage or processing of materials may occur on site.

Waste Management – Refuse & Transfer Station. A facility for the purposes of separation, aggregation and/or compaction of solid waste prior to delivery to a landfill.

Water & Waste Water Treatment Plant. An industrial use used to treat and process water and wastewater for further distribution or disposal.

Well Drilling Companies. A business that stores, supplies, operates or distributes machinery and equipment used for drilling wells.

Wireless Communication Facilities. A pole, tower, or antenna for the purposes of transmitting and receiving communication signals, other than that accessory to a principal use of the property. Wireless communication facilities include monopoles and towers with attached appurtenances such as microwave dishes and antennae, rooftop, wall- and ground-mounted microwave dishes and antennas. See Section 24-1101 for specific definitions, standards, and procedures applicable in all districts.

24-403 Accessory Uses

In addition to the general use and development standards applicable to all districts, permitted uses may include other accessory uses. This section provides basic performance standards for all accessory uses and some specific standards for particular accessory uses.

- a. **Accessory Uses, Generally.** All principal uses shall include accessory uses subject to the following general standards:
 1. The use and any structure is clearly incidental and subordinate to an allowed use and customarily associated with the allowed use.
 2. The use is on the same lot as the principal use or otherwise clearly associated with an active principal use.
 3. The use is compatible with the general character of the area and comparable in scale and intensity to uses of other property in the vicinity.
 4. No use or structure may be constructed, maintained, or conducted in a way that produces noise, vibration, noxious odor or material, any visible light, glare or other visible impacts that are harmful, damaging or disturbing to the adjacent property.
 5. Any structures or site design elements to support the use can be screened or located to minimize impact on adjacent property or are not significantly different from what is typical for other allowed uses in the district.
 6. There are no unusual traffic patterns or increases in operational activity that impact the use and design of streets and public spaces differently than other allowed uses.
 7. All uses and structures are conducted in a way that is consistent with the intent and objectives of all other design and development standards applicable to the property.
- b. **Accessory Dwelling.** Accessory dwellings are permitted as an accessory use to a principal dwelling as indicated in Table 24-4-2, and subject to the following additional standards:
 1. One accessory dwelling may be permitted per lot only when associated with a detached house or duplex/multi-unit house.
 2. Accessory dwelling units may be located in a detached accessory building or located within the principal building (such as an attic or basement apartment).
 3. The accessory dwelling shall not exceed 60 percent of the living area of the principal dwelling or 1,200 square feet, whichever is less.
 4. All parking necessary for the use shall meet the neighborhood design standards, and be confined to the garage, driveway or street directly in front of the dwelling.
 5. A detached accessory structure shall meet all development and design standards for the building and lot in Chapter 5, Residential Development Standards.
 6. The accessory dwelling shall be compatible with principal building, and whether within the principal building or in a detached structure, be clearly subordinate to

the principal dwelling through the location of parking, access, building entrances and other design features that accommodate the dwelling.

c. **Home Occupation.** Home occupations may be accessory to a primary residential use on the lot and shall meet all of the following standards:

1. The occupation shall be limited to residents of the dwelling and no other employees may be at the site for the purpose of conducting any part of the business operation. If the resident applicant is not the homeowner, the homeowner shall provide authorization with the permit application.
2. Areas dedicated to the use and storage for a home occupation shall not exceed more than 20% of the habitable floor area of the dwelling, except as may be required for state-licensed child care home.
3. All activity shall be conducted with an enclosed living area, accessory building, or the garage, except as required for state-licensed in-home family child care.
4. Any materials or equipment used in the home occupation that is not customary to a residential use shall be stored within an enclosed structure.
5. No alteration of the exterior of the principal residential building or site shall be made which changes the residential character of the building or site, including use of colors, materials, construction, lighting or signs.
6. No traffic, services, or deliveries shall be generated by the home occupation that is abnormal to a residential neighborhood. In general, this shall be limited to:
 - (a) No more than 1 customer vehicle parked at the property at a time, except for drop off of children for child care or instruction;
 - (b) No more than 10 client visits per week, except for drop off of children for child care or instruction.
 - (c) Delivery of products or materials is limited to that normally associated with residential purposes.
 - (d) All parking necessary for the use shall meet the neighborhood design standards, and be confined to the garage, driveway or street directly in front of the dwelling.
 - (e) Only one vehicle, not to exceed one-ton capacity, and one trailer which cannot exceed 15 feet, may be related to and used in conjunction with the home occupation and shall be parked on-site except for customary agricultural vehicles and equipment at rural homes.
7. No equipment, machinery or operation shall be used in such activities that is perceptible off the premises because of noise, smoke, odor, dust, glare, radiation, electrical interference or vibration.
8. There shall be no retail operations that result in regular or intermittent customer visits to the home, except for the sale of agricultural produce at a rural home, where all merchandise was produced on site.
9. The property shall be in compliance with all other building codes and property maintenance standards.
10. Use of utilities shall be limited to that normally associated with residential purposes.

11. All home occupations shall require a permit issued by the Director according to the following:
- An application form and materials shall be submitted to the Community Development Department;
 - Notice of a permit application shall be posted and mailed to all abutting or other affected property owners according to Section 24-201.f.
 - The applicant shall submit the application concurrently to the Finance Department for approval of a business license.
 - A permit may be approved by the Director upon a finding that all criteria are met, and the Director may require any additional conditions of limitations to ensure that the criteria continue to be met;
 - A permit shall be valid for three years, but may be renewed for subsequent three-year periods;
 - A permit is valid only for the original applicant, and is not transferable to another person or to another location;
 - The Director may revoke a permit for non-compliance with these criteria, violation of any conditions of the approval, misinformation or misrepresentation in the application, or a change in the nature or extent of the use, or any other circumstance that violates the public health, safety, and welfare.
12. Any home occupation not meeting these criteria, or otherwise denied a permit by the Director, may only be approved according to Section 24-206, Use By Special Review.
- c. **Livestock.** The limitations in Table 24-4-3: Animal Unit Equivalency Chart shall apply to the keeping of livestock as an accessory use to farming, residential uses, or any other use involving livestock. This chart shall not be used in a cumulative fashion. For example, in the H-A Zone, there is a maximum of 2 animal units permitted per acre. These animal units may be derived from a combination of animals, but in no event shall it exceed the maximum of 2 animal units per acre.

Table 24-4-3: Animal Unit Equivalency Chart			
Animal Species	Max Animals Per Acre (by species)		Animal Unit Equivalent
	H-A zone	Other zone	
Slaughter, feed & dairy cattle, bison, elk, llamas, horses, mules, burros, yaks, alpacas	2	1	1.0
Swine, butcher & breeding - over 55 lbs.	4	4	0.5
Sheep, lamb, goats	4	4	0.5
Turkeys	10	5	0.2
Chickens, broiler & layer; rabbits	20	10	0.1
Total Cumulative Animal Units Allowed Per Acre (combined species)		H-A district	2.0
		Other zones	1.0

- Young stock, less than 50% of adult weight, reduces the above equivalency factor by one-half).
- "Per acre" refers to areas specifically devoted for animal use.)

- d. **Satellite & Communication Equipment.** The following provisions shall apply to the installation of devices and structures used to transmit and receive radio, television or communication signals, except residential satellite dish installations which are three feet or less in diameter, residential single-pole or tower roof or ground-mounted television, or amateur radio antennas:
1. The placement of all equipment shall conform to all standards of the zoning district and overlay district, and shall not be located in any required setback or on any structure unless architecturally screened.
 2. The maximum overall height for a ground-mounted antenna shall be as established for building height in the applicable zoning district. The height of a roof-mounted antenna, combined with the building height, shall not exceed the maximum building height in the applicable zoning district.
 3. The operation of the antenna shall not cause interference with any electrical equipment in the surrounding neighborhood, such as television, radio, telephone or computers unless exempted by federal regulation.
 4. The antenna shall be a single, non-reflective color.
 5. The antenna shall be sited to assure compatibility with surrounding development and not adversely impact the neighborhood, and screened according to Section 24-803.
 6. The antenna and equipment shall be accessory to the principal use of the lot or site.
- e. **Accessory Drive-Through.** Drive-through or drive-up service accessory to an allowed commercial use is permitted subject to the following standards:
1. This section applies to buildings and sites designed for orders to be taken from a customer in a car, where they wait in a queuing area, and then receive products or services delivered to the car from a service window or station. It does not apply to businesses that provide carry-out or to-go products where there is no specific site design or structural facilities dedicated to vehicle service.
 2. Accessory drive-through or drive-up services shall be limited to the following districts:
 - (a) Non-food and beverage service – C-L, MU-L, C-H, MU-H, I-L, and I-M
 - (b) Food & beverage service – C-H, MU-H, I-L, and I-M
 3. The service area shall not substantially expand the traffic or vehicle circulation otherwise necessary for access, parking and circulation to serve the site. In general, the service area shall use the same entrance and exit from the site as the principal use, unless a more remote or discrete service off an alley or secondary street better meets this criteria.
 4. Vehicle service facilities shall avoid potential pedestrian/vehicle conflicts on the site and along the streetscape.
 - (a) Adequate stacking spaces for automobiles shall be provided on site and outside of setbacks to eliminate any impact on public streets.
 - (b) Stacking areas shall generally accommodate at least 5 vehicles, but may be modified for greater or lessor stacking dependent on the use or the context of the site, provided no stacking shall impede vehicle access or circulation on the site or in the right of way.
 - (c) Circulation, stacking and other access issues shall be designed in a manner that has the least impact on pedestrians entering the principal building from public streets and from internal streets or parking areas. .

- (b) No access or queuing area shall be provided between the building and the street on any street designed to walkable street standards in Section 24-301 (Pedestrian or Avenue street types), or on “Walkable A” frontage type in Section 24-603. Use of alleys, internal access and the rear of buildings for drive-through services is required to preserve the streetscape design and development patterns of these areas.
 - 5. Service areas and windows shall be located on the most remote wall that is practicable, considering adjacencies to public-streetscapes, residential property, or other sensitive adjacent areas.
 - (a) No service area, speaker, ordering station, or pick-up window shall be located within 100 feet of any residentially zoned property, or otherwise be audible from residentially zoned property or the public right-of-way,
 - (b) Signs, circulation areas, and lighting elements shall not be create any negative impacts on the public right-of-way or adjacent residential property.
 - (c) Additional screening or buffers may be required beyond the standards of Section 24-803 in order to ensure compatibility.
 - 6. The Director may require any other drive-through service area that does not clearly meet these standards and criteria to be reviewed subject to the procedures and criteria for Use by Special Review in Section 24-206.
- f. **Craft Manufacturing.** Production, storage, and distribution of products, or other on-site manufacturing, is allowed accessory to an otherwise allowed commercial use, provided:
- 1. The manufacturing area is no more than 50% of the building area, and any outdoor storage is limited to all applicable site design and screening standards.
 - 2. The entire site is limited to less than 1 acre.
 - 3. That all manufacturing areas, warehousing, shipping and distribution facilities are clearly subordinate to the principle commercial use, and all manufacturing is to support the principal use.
 - 4. No byproducts such as smell, waste, smoke or noise results from the manufacturing that is distinctly different or of greater intensity than the principle use.
 - 5. Traffic, customer, and shipping patterns and activities from the manufacturing use are not distinctly different from the principle commercial use in terms of intensity and hours of activity.
 - 6. Examples include microbrewery, bakery, furniture shop, art studio, or similar retail uses with limited and subordinate on-site manufacturing.
- Otherwise such uses are only permitted as a principle manufacturing use.
- g. **Outdoor Storage, Non-residential.** Accessory outdoor storage may be permitted in the non-residential districts subject to the following standards:
- 1. In the C-L, MU-L, and MU-H districts, the storage area shall be located behind the front building line of the principal building.
 - 2. The storage area shall be fully screened from residential property or public spaces according to the standards and design requirement of Section 24-803 and no materials shall be stacked higher than the screening.

3. The storage area shall be located on the most remote section of the site or building as possible, but no closer than 30 feet to any street or right-of-way and outside of required setbacks in all cases.
 4. Outdoor storage areas shall be limited to:
 - a. No more than 300 square feet in the C-L district.
 - b. No more than 500 square feet in the MU-L or MU-H districts.
 - c. No more than 30% of the building footprint in the C-H and I-L districts.
 5. The storage area shall be paved per the requirements for parking lots, except a stabilized dust-free surface may be used in the I-M and I-H district.
 6. Alternatives to these accessory use limits may only be approved by the Director through site plan review procedures in Section 24-207.
- h. **Outdoor Display and Service Areas.** Outdoor display and service areas accessory to an allowed commercial use, such as sidewalk seating and dining or sidewalk sales are allowed subject to the following conditions:
1. Outdoor display and service areas shall be located on the same lot as the principal use or along the street frontage immediately abutting the use in the case of street front buildings.
 2. Outdoor display areas shall be limited to no more than 20% of the ground floor area of the principal use, and outdoor service areas shall be limited to no more than 50% of the interior service area.
 3. Display and service areas shall not be arranged where they interfere with pedestrian or building access or clear vision areas. When located on public, common or private sidewalks accessing the building, at 5 feet clear or at least 50% of the width any sidewalk, whichever is greater, shall remain clear and unobstructed..
 4. The area may be located in parking areas, provided it does not interfere with adequate parking and circulation of the entire site. The permanence of any structures shall be considered in evaluating the impact on adequate parking needs for the site.
 5. The area shall be screened from view along any property line abutting a residential use or district according to Section 24-803.
 6. A site plan shall be provided for any outside display or service area more than 400 square feet, lasting more than seven consecutive days, or more than four separate occurrences per year. A site plan shall show the location, area, and dimensions of the display area, and specifications for all lighting, fencing, screening or temporary or permanent structures.
 7. In reviewing the site plan, conditions or performance standards to mitigate noise, visual or operational impacts may be added by the Director to address specific sites or contexts.
- i. **Temporary Construction & Sales Offices.** Temporary construction or sales offices that are accessory to a permitted development project shall provide the following:
1. The lot shall be within or adjacent to the construction site, or located so that access from the site does not impact public streets or surrounding uses. A sales office shall be limited to sales for the subject site.
 2. Temporary office structures shall be architecturally compatible with surrounding uses and may be permitted on the site until 75% of the project is built out.

3. All structures and materials shall be removed within one month after occupancy of the project.
 4. If the sales office is intended as a model home, it shall be completed to meet all Building and Zoning Code requirements.
- j. **Temporary Uses.** Uses that may not otherwise be interpreted as being permitted by Table 24-4-2, or accessory uses in Section 24-403, may be permitted through a Temporary Use Permit, provided they are accessory to a principal use of the site or building. Temporary uses on property without a principal use shall be considered under the change of use provisions as a principal use, and are required to meet all applicable standards of the zoning district.
1. *Permit.* An application for a permit shall be submitted by the owner, or an agent of the owner with written permission from the owner at least 10 days prior to the desired issue date.
 - (a) The permit shall have a specified start and end date not more than 90 days per year or be based on a schedule that includes no more than 90 days per year.
 - (b) The applicant shall submit a complete description of the event or activity, including anticipated traffic, hours and peak times of operation, access and circulation plans, the ability to accommodate fire and police access, and any need for special protection or other public safety, health and welfare needs.
 - (c) The applicant shall submit a plan identifying the extent of the grounds, gathering places and circulation routes, any streets or public spaces to be dedicated to the event, the location of all structures, equipment or other accessory facilities, and any utility needs for these structures, equipment or fixtures.
 - (d) The Director may extend the permit one time for up to an additional 30 days. The extension shall only be permitted based on circumstances not foreseeable at the time of the original permit and provided no problems have arisen under the original permit.
 2. *Standards.* All activities and any temporary structures shall meet the zoning district setbacks and standards, with the exception of the following:
 - (a) Outdoor vendors may operate according outdoor vendor regulations and standards contained in Title 8, Chapter 5 of the City's Code
 - (b) Parking requirements shall generally be met for the principal use and the temporary use, except that the Director may account for any existing and underutilized parking, the duration of the event, and any transportation management when considering the permit criteria.
 - (c) Garage sales for residential property are not subject to the standards of this section or required to get a permit, provided:
 - (1) It is operated by the owner or resident of the property;
 - (2) It is for goods not acquired specifically for resale; and
 - (3) It is limited to no more than 3 consecutive days, and no more than 2 events per calendar year.
 3. *Criteria.* A temporary use permit shall be evaluated based on the following, in addition to all other general procedures and criteria for site plans in Section 24-207:
 - (a) The proposed use is of a scale, intensity and format that is ordinarily occurring in the vicinity considering the size, anticipated traffic, hours of operation and duration of the event.
 - (b) The anticipated traffic and parking can be handled by the existing street network, site access and lot layout, or the applicant has demonstrated sufficient management strategies and procedures to mitigate any potential negative effects on the area.
 - (c) The degree of potential negative impacts on adjacent property, and in particular the likelihood of the event violating the general District Performance Standards in Section 24-405. The applicant may submit mitigation plans for any potential

- impacts, including limiting hours of operation, buffers and screening, transportation management, or other evidence or plans to accommodate concerns and limit impacts on surrounding property owners or residents.
- (d) The use shall comply with all other applicable codes, licenses, or other public health, safety, and welfare requirements.
 - (e) The location subject to the temporary use permit shall be restored to its original condition upon the earlier of the expiration of permit or end of operation, except that permanent improvements made to the location may remain with the property owner's written consent.
 - (f) The Director may impose any other conditions on a permit necessary to protect the public health, safety, and welfare.
 - (g) Any temporary use permit that does not meet these criteria may only be approved through the procedures and criteria for a Use by Special Review, in Section 24-206.

24-404 Specific Use Standards

- a. **Mixed-use Dwelling.** In districts where mixed-use dwellings are allowed uses, the following standards shall apply to a building or structure with two or more different uses, one of which shall be residential:
 - 1. In the commercial zoning districts, at least 50 percent of the ground floor of a mixed-use building shall be in a nonresidential land use. In the R-H Zoning District, no more than 50 percent of the total gross floor area of a structure containing a mixed-use, including basement area, shall be devoted to nonresidential uses.
 - 2. In the R-H zone, only commercial uses permitted in the C-L district are allowed, and they may be further conditioned, limited or prohibited through the Use by Special Review process in Section 24-206. Mixed-use dwellings in commercial and mixed-use zones may include any commercial use permitted within that zoning district.
 - 3. The design and character of all buildings and sites shall be compatible with the predominant character of the surrounding neighborhood. The operating characteristics of a nonresidential land use in a predominantly residential neighborhood shall be compatible with the residential uses. For the purposes of this section, operating characteristics shall include, but not be limited to, hours of operation, lighting, noise and traffic.
- b. **Residential Care.** When residential care is a permitted or use by special review, they shall meet the following conditions to ensure they are integrated into neighborhoods, have a non-institutional nature, and maintain the residential character.
 - 1. *Residential Care – Group Home.*
 - (a) Group homes shall meet all of the residential design standards applicable in the particular district, and any alterations to support the group living shall be done in a discrete way in accordance with the design standards.
 - (b) In the R-L and R-M districts, no group home shall be located less than 750 from another existing group home.

- (c) Group homes shall be supervised at all times, and may include up to 2 resident care givers.
- (d) Group homes shall be licensed by, operated by, or owned by a governmental agency or non-profit qualified to provide care and supervision.
- (e) Group homes shall not include alcoholism or drug treatment centers, work release facilities or other housing facilities qualifying as residential care – institutional.

2. *Residential Care – Assisted Living, General, and Institutional:*

- (a) The use shall be located on a collector street or higher, or otherwise located as a transition between the neighborhoods and other non-residential or mixed-use areas.
- (b) In residential districts, the building(s) and site shall meet all residential design standards so that the use, building and site is compatible with the neighborhood in terms of scale and intensity of activity.
- (c) Any facilities necessary to serve the residents, guests or support the staff, that are non-residential in nature shall be located on the most discrete portions of the site and building, and otherwise designed and screened to mitigate impacts on adjacent property according to Section 24-803.

c. **Animal Care.** All animal care facilities shall comply with the following:

- 1. All animal care businesses shall provide proof of compliance with all standards and licenses required by local or state animal care and control laws.
- 2. Any facility that provides boarding shall provide the following:
 - (a) Adequate shelter from the elements for the animals.
 - (b) Adequate facilities for preventing the escape of animals from the premises.
 - (c) Adequate facilities for keeping the animal environment clean and free of filth.
 - (d) Confinement and treatment of animals shall be in a manner that is humane and appropriate, which enclosures where the animal spends the majority of the day or where there is otherwise not access to an outside animal run, shall meet the requirements of Table 24-4-4: Animal Boarding Standards, which do not include required exercise areas:

Table 24-4-4: Animal Boarding Standards

<i>Animal Size</i>	<i>Minimum Kennel Area Floor Space*</i>	<i>Height</i>
<i>Extra-small dogs up to 10" high</i>	4.5 s.f.	
<i>Small dogs up to 16" high</i>	6.0 s.f.	▪ Min. 18 inches ▪ At least 1.5 times height of animal at shoulder. ▪ Max. Required: 48 inches
<i>Medium dogs up to 22" high</i>	9.0 s.f.	
<i>Large dogs up to 26" high</i>	12.0 s.f.	

Table 24-4-4: Animal Boarding Standards

Animal Size	Minimum Kennel Area Floor Space*	Height
<i>Extra-large dogs up to 30" high</i>	16.0 s.f.	
<i>Giant breeds over 30" high</i>	18.0 s.f.	

* Calculated as:(length of dog in inches + six) (squared) divided by 144 times two equals required floor space in feet

3. Dog runs and exercise areas shall meet the following minimum space requirements:
 - (a) The length of the runs and exercise areas shall be a minimum of three times the length of the dog from the tip of its nose to the base of its tail; the width shall allow the dog to turn around easily; and the height shall be 1½ times the height of the dog at the shoulders, with the maximum height required of 48 inches, the minimum of 18 inches.
 - (b) Indoor/outdoor runs that have the primary enclosure and the exercise area in combination shall for measuring purposes be considered an exercise run and shall be measured from the extreme inside to the extreme outside for length determination.
 - (c) Outdoor or indoor runs used as a combined primary enclosure and exercise area shall be measured from one extreme end to the other extreme end for length. The same criteria will apply to freestanding runs used for exercise areas only.
 - (d) Each dog housed in the specified primary enclosure must be provided the opportunity to exercise for a minimum of 60 minutes over a 24-hour period.
4. Adequate supervision of the animals in the kennel facility must be present to the following standards:
 - (a) There must be a minimum of one human supervisor (at least 16 years of age), present at all times and able to directly view each enclosure or common area where dogs from different owners are commingled.
 - (b) If more than 15 dogs are housed in a common area or enclosure, there must be at least one adult supervisor present for each 15 dogs housed within each enclosure or common area, with a maximum of 60 dogs housed in any enclosure or common area at a single time.
 - (c) Where after-business hours or overnight boarding care is provided, the applicant must provide an animal care and supervision plan if human supervision is not provided during this period. Such plan must address how animal care and emergency needs will be managed in the absence of human supervision.
5. Commercial businesses for which the principal use is either a pet shop or grooming operation, a pet management plan may be submitted in lieu of compliance with the confinement and exercise standards within this section. The plan must demonstrate compliance with local and state animal care and welfare

standards, and include a description of the alternate accommodations related to area, location, duration of enclosure periods, and access to food, water and shelter.

d. **Automobile Gas Stations.** All automobile gas station uses shall comply with the following:

1. No more than one access drive shall be permitted for each street frontage.
2. All light sources, including canopy, perimeter and flood lights and lenses, shall be shielded or fully recessed within the roof canopy so that light is contained on-site.
3. If on-site convenience store or other retail or service component is provided, the design, location and operation of these facilities shall be compatible with the design, location and operation of the gas station.
4. The maximum height of a canopy shall be 20 feet for flat roofs and 24 feet for pitched roofs.. Canopies shall be architecturally compatible with the principal building and all other accessory structures on the site with the same or complementary materials, architectural style and colors. The material used on the underside of the canopy shall not be highly reflective. Setbacks for the canopy shall be measured from the outside edge of the canopy.
5. Adequate stacking space shall be provided on-site without using any portion of the adjacent street or alley for stacking. Stacking shall not occur in required setbacks.
6. Dispensing pumps and adjacent parking, fueling or service areas shall not be located within the property setbacks.
7. If the convenience store, gas station or auto repair use is immediately adjacent to residential zoned property or existing residential uses on at least two sides, the hours of operation shall be limited to between 6:00 a.m. and 11:00 p.m. daily.

e. **Automobile Repair / Service.** All automobile repair / service uses shall comply with the following:

1. Areas for overnight vehicular storage shall be enclosed or screened from the view of adjacent properties and the public right-of-way except when located in the Industrial - Medium Intensity (I-M) or Industrial -High Intensity (I-H) zones.
2. Where a automobile repair / service use abuts residential uses or residential zones, a minimum 20-foot side yard setback and a minimum 25-foot rear yard setback shall be provided.
3. No used or discarded automotive parts or equipment, or disabled, junked or wrecked vehicles shall be located outside any structure.
4. Landscaping, screen walls, berms, placement of the use or other site design techniques shall be used to screen cars being serviced or waiting for service and to screen overhead doors from view from the public right-of-way.
5. Auto repair uses within an integrated shopping center shall have an architectural style consistent with the theme established in the center. The architecture of any auto repair use shall be compatible with surrounding uses in form, materials, color and scale. The location, size and design of the auto repair use shall be compatible with and have minimal adverse impact on the use of surrounding properties. Overhead doors shall be constructed of non-reflective materials.

- f. **Automobile Repair / Service - Car & Truck Washes.** Uses that include car or truck washes as an accessory or principal use shall comply with the following:
1. Bays shall be located so that they are perpendicular to the public right-of-way or screened from view if on a corner site.
 2. No auto repair shall be conducted within a car or truck wash bay.
 3. All-over spray shall be contained on-site.
 4. Operating characteristics of car and truck washes, such as hours of operation and the use of lighting, shall be conducted in such a manner that is compatible with surrounding land uses.
 5. Other applicable requirements for car and truck washes may be found in the city's storm drainage and water department standards and criteria.
- g. **Bed & Breakfasts.** All bed and breakfast uses shall comply with the following:
1. Cooking facilities, including stoves, hot plates or microwave ovens, shall not be permitted in guest rooms.
 2. Meals or food served in the bed and breakfast shall be prepared in a central kitchen on-site and served solely for bed and breakfast occupants.
 3. Individual rooms in a bed and breakfast shall not be rented more than twice during a 24-hour period.
- h. **Manufacturing – Food & Beverage Minor.** All minor food and beverage manufacturing uses shall comply with the following:
1. Commercial elements of the use shall be visually and physically accessible to the public realm and designed as the most prominent aspect of the site. Commercial elements include the sale of food, beverages or other retail for on-premises purchase or consumption. The use of architecture, sidewalks, landscaping and parking shall be to define and emphasize these commercial components while de-emphasizing the manufacturing and other aspects of the facility.
 2. Loading and storage areas, where otherwise allowed by this Development Code, shall be separated from public entrances and areas associated with the commercial elements of a minor food and beverage processing facility and shall be located at the rear of the facility and screened from rights-of-way and off-site uses, to the extent feasible.
 3. Traffic by heavy trucks or rail shall be separated from public entrances and areas to avoid regular conflicts with the public and commercial aspects of the use.
 4. Environmental impacts, such as odor, heat, glare, noise, vibration and other such emissions or impacts shall be reasonably contained on-site and not discernable at or beyond the property line. The inability to confine such impacts to the site would qualify this use as a major food processing use.
 5. The applicant for a minor food and beverage processing facility shall demonstrate that a portion of the building footprint's square footage, equal to or greater than ten percent and no more than 50 percent, is dedicated to sales of food, beverages or other retail or services for on-premises purchase or consumption.
 6. All other applicable site and building design standards applicable in the particular district or location shall be met.

- i. **Waste Management – Recycling Collection Small.** All small recycling collection uses shall comply with the following:
1. The facility shall be installed as an accessory use to an existing multifamily development, commercial or industrial land use.
 2. Facilities shall not be located within 100 feet (excluding right-of-way) of any residential zoning district.
 3. The facility shall be no larger than 300 square feet and occupy no more than five parking spaces, excluding space that will be periodically needed for removal of materials or exchange of containers, and one parking space for an attendant, which shall be located outside setbacks.
 4. All permanent or temporary structures shall be set back at least 10 feet from any public right-of-way, shall be located so that pedestrian or vehicular circulation is not obstructed, and otherwise located in a manner to limit adverse impacts on adjacent property and the public streetscape.
 5. The facility shall accept only glass, metals, plastic containers, papers and similar items; or may be a collection point for donation of reusable, non-perishable household items such as books or clothing.
 6. No power-driven processing equipment shall be used except for reverse vending machines.
 7. Containers shall be constructed and maintained with durable waterproof and rustproof material, covered when the site is not attended, and shall be of a capacity sufficient to accommodate materials collected and collection schedule. All material shall be stored in the unit and shall not be left outside of the unit when unattended. The facility shall be placed on asphalt or concrete and shall not impact any landscaping or landscaped areas.
 8. The facility shall be maintained in a clean and sanitary manner, free of litter and any other undesirable materials.
 9. Containers shall be clearly marked to identify the type of material that may be deposited. The facility shall be clearly marked to identify the name and telephone number of the facility operator and the hours of operation, and display a notice stating that no material shall be left outside the recycling containers.
- j. **Waste Management – Recycling Processing & Collection.** Recycling collection facilities that do not meet the small facility limits, or all recycling processing and collection uses shall be limited to industrial districts and comply with the following:
1. The facility shall not be adjacent to a parcel designated or planned for residential use.
 2. Structure setbacks shall be those provided for the zoning district in which the facility is located.
 3. All exterior storage of material shall be in sturdy containers that are covered, secured and maintained in good condition. Outdoor storage shall be screened by a six-foot solid fence or wall. No storage, excluding truck trailers, shall be visible above the height of the wall or fence. No outdoor storage shall be permitted in zoning districts that do not permit outdoor storage.

4. The site shall be maintained clean, sanitary and free of litter and any other undesirable materials and shall be cleaned regularly of loose debris. Containers shall be clearly marked to identify the type of material that may be deposited, and the facility shall display a notice stating that no material shall be left outside the recycling containers.
5. Space shall be provided on-site for a minimum of five vehicles to circulate and to deposit recyclable materials and for employee and commercial vehicle parking.
6. All containers provided for after-hours donation of recyclable materials shall be at least 100 feet from any residential use or zoning district and constructed of sturdy rustproof construction with sufficient capacity to accommodate materials collected, and shall be secure from unauthorized entry or removal of materials.
7. The facility shall be clearly marked with the name and telephone number of the facility operator and the hours of operation. Identification, informational and directional signs shall meet the sign standards of the zoning district.
8. Power-driven processing shall be permitted, provided all noise level requirements are met. Light processing facilities are limited to baling, briquetting, crushing, compacting, grinding, shredding and sorting of source-separated recyclable materials and repairing of reusable materials.
9. The site shall be secured from unauthorized entry and removal of materials when attendants are not present.
10. Hazardous materials, dead animals or yard waste shall not be considered recyclable material, except as otherwise provided in this Development Code.

24-405 District Performance Standards

All principal and accessory uses in non-residential districts shall be operated in a manner that meets the performance standards in Table 24-4-5, Non-residential District Performance Standards.

Table 24-4-5: Non-residential District Performance Standards				
	C-L, MU-L	C-H, MU-H, I-L	I-M	I-H
Limits on hours of operation for businesses	6AM – 10PM	n/a	n/a	n/a
No smoke, radiation, vibration or concussion, heat or glare shall be produced that is perceptible outside a building.	☑	☑		
No smoke or particulate matter shall be produced that is a number I or darker on the Ringelmann chart	☑	☑	☑	
No vibration or concussion which is perceptible without instruments at the property line	☑	☑	☑	
Dust, fly ash, radiation, gases, heat, glare or other effects shall not be produced which are obviously injurious or damaging to humans or property beyond the property line;	☑	☑	☑	☑
Lighting	See Section 24-603.e			

Reserved Sections 24-406 through 24-500

Section 4. The Greeley Municipal Code shall be amended by adding thereto a new Chapter 5 – Residential Development Standards of Title 24 to read as follows:

Chapter 5. Residential Development Standards

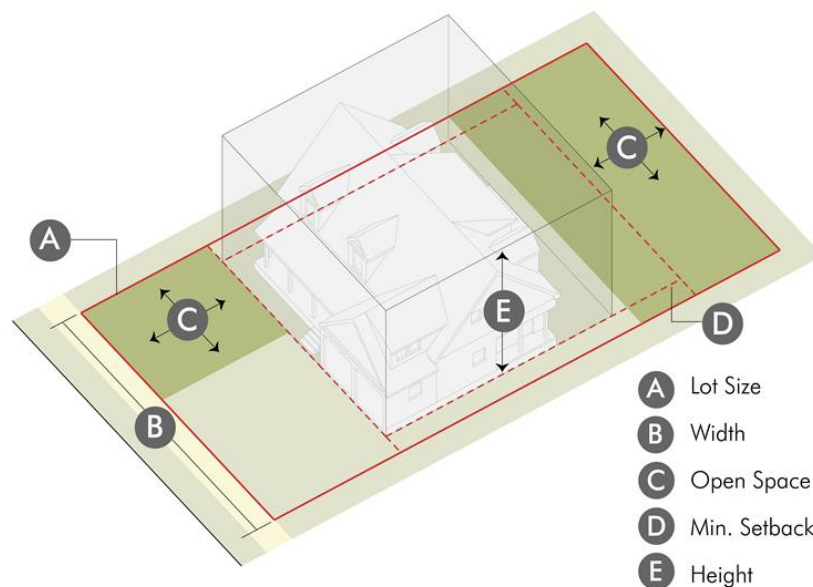
24-501	Intent & Applicability
24-502	Residential Development Standards
24-503	Residential Design Standards
24-504	Neighborhood Features & Common Areas
24-505	Courtyard Pattern
24-506	Residential Micro-Housing District

24-501 Intent & Applicability

- a. **Intent.** The Residential Development Standards have the following intent.
 1. Improve the appearance and livability of neighborhoods with good civic design, and reinforce the distinct character of different neighborhoods based on their context.
 2. Design and locate parks, trails and other open spaces as focal points that shape neighborhood character.
 3. Design walkable neighborhood streetscapes, with slow traffic speeds, well-connected sidewalks, and shade and enclosure provided by street trees.
 4. Orient all buildings and lots to the public street or to common open spaces that serve as an extension of the streetscape and public realm.
 5. Promote human-scale buildings and create active social spaces along the streetscape.
 6. Provide housing variety within neighborhoods and among different neighborhoods, and ensure compatible transitions between different building types.
 7. Promote lasting and sustained investment in neighborhoods with quality design.
- b. **Applicability.** The standards in this Chapter provide lot, building development, and design standards, and generally apply to all residential development except:
 1. Where stated, some sections may only apply to specific building types, specific districts or specific scales of projects;
 2. The Character Overlay established according to Section 24-1007 may modify standards for a particular area;
 3. Residential development may be further impacted by the standards for Areas of Ecological Significance in Section 24-1004 or Hillside Development Standards in Section 24-1009; or
 4. Any use-specific standards in Chapter 4 may require a more specific or different standard for a particular use.

24-502 Residential Development Standards

- a. **Building Types and Lot Standards.** The development standards for residential districts shall be based on the different building types permitted in each district, as specified in Table 24-5-1, Residential District Building Type & Lot Standards. The design standards in other sections of this article may further specify the design and location of each building type in a specific context.

**Figure 24-5-1 Building Types**

Building types in Table 24-5-1 are distinguished based on lot sizes, unit configuration, building footprints and massing, building placement, and lot open space. This diagram illustrates the key elements standards in Table 24-5-1 applied to a typical lot.

**Figure 24-5-2 Range of Building Types**

Each zoning district allows a range of building types that are compatible based on the building scale, frontage design, and intent of the specific zoning district. The R-H zoning district allows the greatest range of building types, each specifically defined by the standards of Table 24-5-1: Residential Building Type & Lot Standards.

Table 24-5-1: Residential Building Type & Lot Standards

Zoning Districts						Building / Lot Types	# of Primary Units	Development Standards							
H-A	R-E	R-L	R-M	R-H	R-MH			Lot Standards		Lot Open Space	Front [2]	Minimum Setbacks [5]		Rear	Building Height
						Area	Width [1]					Interior Side	Corner Side [1]		
■						Agriculture Acreage	1	40 + ac.	300'+	n/a	35'	25'	25'	50'	30'
	■	■	■	■		Detached House – Estate Lot	1	13K + s.f.	100'+	30%	25'	5'	15'	20'	30'
		■	■	■		Detached House – Standard Lot	1	6K + s.f.	60' – 99'	30%	25'	5'	15'	20'	30'
		■	■	■		Detached House – Medium Lot	1	4.5K + s.f.	45' – 59'	25%	25'	5'	10'	20'	30'
			◇	■		Detached House – Small Lot	1	3K + s.f.	35' – 44'	20%	10'	5'	10'	20'	30'
			◇	◇	■	Detached House – Small Format	1	1.5K + s.f	25' – 34'	15%	10'	3'	8'	10'	40'
			■	■		Multi-unit House – Standard Lot	2-4	6.5K + s.f. 2K s.f. per unit	60' - 99'	25%	25'	5' [3]	10'	20'	30'
			■	■		Multi-unit House – Medium Lot	2-3	4.5K + s.f. 2K + per unit	45 – 59'	20%	25'	5' [3]	10'	20'	30'
				■		Multi-Unit House – Small Lot	2	3K + s.f.	35' – 44'	15%	10'	5' [3]	10'	20'	30'
				■	■	Row House – Standard Lot	3-8	1.5K + s.f. per unit	21' – 30' per unit	12%	10'	5' [3, 4]	10'	10'	40'
				■		Row House – Small Lot	3-8	1K + sf. per unit	14' – 20' per unit	10%	10'	5' [3, 4]	10'	10'	40'
				◇	■	Apartment – Small Lot	3-12	4.5K – 10K s.f.	40' – 79'	10%	10'	5' [4]	10'	10'	40'
				■		Apartment – Medium Lot	13-24	10K – 30K s.f.	80' – 150'	15%	10'	5' [4]	5'	10'	50'
				□		Apartment – Large Lot	25+	30K s.f. – 2 ac.	150'+	20%	25'	10' [4]	15'	10'	70'
				■		Apartment – Complex. Medium	29 du / ac.	2 ac. – 5 ac.	150' +	25%	25'	10' [4]	10'	20'	40'
				□		Apartment – Complex. Large	45 du / ac.	5 + ac.	300' +	30%	25'	20'	20'	25'	60'
□	□	□	□	□	□	Civic		30K + s.f.	100' +	40%	25'	5'	20'	20'	40'
■	■	■	■	■	■	Accessory Buildings		See Residential Accessory Buildings in Section 24-502.c							
			■	■		Accessory Buildings		See 24-403.b. for ADUs							

■ Allowed

◇ Limited to projects that meet the housing diversity requirements of Section 24-502.d.

□ Civic buildings and uses, and Apartments – Large Lot or Large Complexes shall only be located on collector or arterial streets in residential districts.

Zoning Districts: H-A Holding-Agriculture; R-E Residential Estate; R-L Residential Low Density; R-M Residential Medium Density; R-H Residential High Density; R-MH Residential Micro-Housing

[1] Corner lots shall add at least 5' to the required lot width. Otherwise, lot width ranges shall determine the applicable building type standards within a category

[2] Front setbacks shall be modified based on context and the Frontage Design standards in 24-503.b.

[3] Rowhouses and side-by-side Multi-unit Houses (i.e. duplex), may be platted for individual ownership of the unit and lot, with a 0' interior side setback as provided in section 24-502.b.1.(a).

[4] Row Houses, Small Apartments, and Medium Apartments shall have a 10' side setback when abutting lots with a detached house; Large Apartments / Apartment Complexes shall have a 20' side setback when abutting lots with a detached house.

[5] Buildings that require a certificate of occupancy shall be setback at least 250' from an oil/gas facility, and 50' from a well that has been plugged and abandoned. Buildings that do not require a certificate of occupancy shall be setback 150' from a tank battery or oil/gas well (unless plugged and abandoned). See Section 24-1102 Oil & Gas.

b. **Dimension Exceptions.** The following are exceptions to setback and building dimensions standards established in Table 24-5-1: Residential Building Type & Development Standards.

1. *Lot and Building Configurations.*

- (a) Row Houses and side-by-side Multi-unit Houses (i.e. duplexes) may be configured as a single project, provided the lot and building cumulative meet any per lot standards; or as individual lots with a 0-foot interior side setback, provided the building includes a party wall meeting building code standards. Individual ownership of units on a commonly owned lot are subject to the platting requirements in 24-202.
- (b) Side lot easements between abutting lots may be granted in association with a plat to have the effect of “zero lot line” patterns. Easements for exclusive use of the side yard may be granted to the abutting owner to meet the lot open space requirements and design standards in Section 24-503 for the grantee, yet maintain the required setbacks from the platted lot line for each building in Table 24-5-1 for the grantor. Easements shall be private agreements and account for all access and maintenance scenarios for the lots, open space, and buildings.
- (c) The front setbacks for each building may be modified according to the frontage types and Frontage Design Standards in Section 24-503.b.
- (d) Lots may be configured in a Courtyard Pattern as provided in Section 24-505.

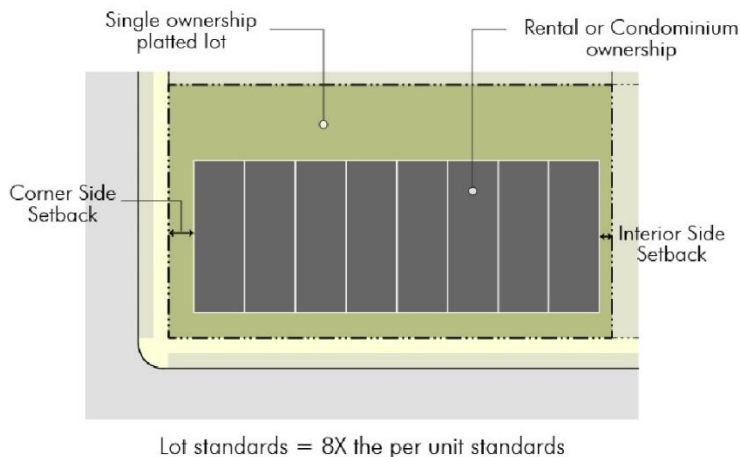


Figure 24-5-3 Row House & Duplex Lot Standards
 The building and lot standards for Row Houses or Side-by-side Multi-unit Houses (duplexes) can be applied to allow the same building configuration to be owned as individual lots and units (platted 0' party wall), owned as individual units on a common lot (condominium), or owned as a single project (rental of units), subject to required platting procedures. (24-502.b.1.(a))

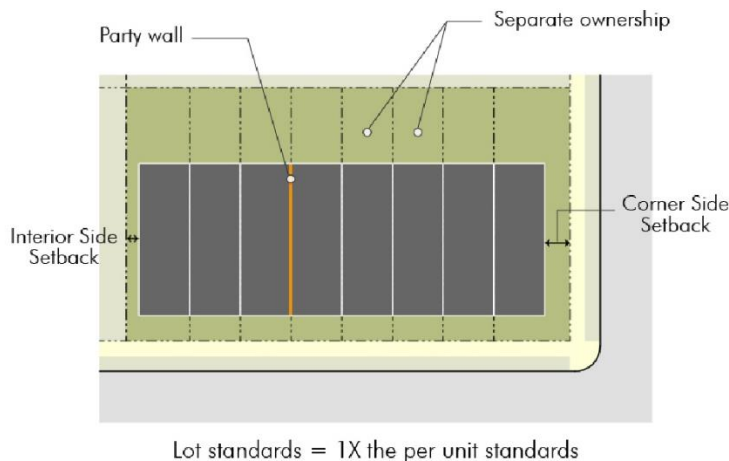




Figure 24-5-4 Side Lot Easements

Side lot easements may be used to provide more contiguous areas to meet the lot open space requirements, and have the effect of a zero lot line configuration. (24-502.b.1.(b))

2. **Setback Encroachments.** The following encroachments into the required setback are permitted, except in no case shall this authorize structures that violate the provisions of any easement.
 - (a) Primary entrance features may encroach beyond the required front building line, as specified in Section 24-503.b.
 - (b) Structural projections such as bay windows, balconies, canopies, chimneys, eaves, cornices, open fire escapes, egress wells, or other non-foundational overhangs or projections may extend up to 4 feet from the foundation and encroach into the setback, but no closer than 3 feet from any lot line. This exception shall be limited to no more than 20% of the total area of a building elevation.
 - (c) Unenclosed decks or patios at or below the first floor elevation may extend into the rear or side setback but no closer than 5 feet to any lot line. Where a roof is provided, it shall only be single story and shall remain unenclosed with at least 65% open and unobstructed on 3 sides.
 - (d) Ground-mounted mechanical equipment, meters, and utility boxes accessory to the building may be located in the side or rear setback provided that it extends no more than 6 feet from the principal building, no closer than 3 feet to the lot line, and is screened from public right-of-way by structures or landscape. These limitations do not apply to any utility structures otherwise authorized to be located in easements or rights-of-way, subject to the design standards of those specific authorizations.
 - (e) Any other accessory use or structure within the setback, not specified in Section 24-502.c, shall have a setback of at least 1/3 its height from the property line.
3. **Height Exceptions.** The following are exceptions to the height limits in Table 24-5-1:
 - (a) Building elements integral to the design and construction of the building, such as parapet walls, false mansards, or other design elements essential to a quality appearance of the building may extend up to 6 feet above the roof deck of a flat roof.

- (b) Architectural features such as chimneys, ornamental towers or spires, and similar accessory features that are cumulatively less than 20% of the building footprint may extend up to 50% above the actual building height.
- (c) Functional and mechanical equipment such as elevator bulkheads, cooling towers, smoke stacks, roof vents or other equipment may be built up to their necessary height in accordance with building codes, provided they are screened according to the standards of this code.

- c. **Accessory Buildings - Residential.** Accessory buildings shall be permitted in association with, and on the same lot as, a principal building or use, subject to the standards in Table 24-5-2, Residential Accessory Structures, and to the following additional limitations.

Table 24-5-2: Residential Accessory Structures

Type	Quantity	Size	Height	Setbacks
Minor Structure (small shed, and similar structures)	▪ 1 / lot; ▪ + 1 / each 10k s.f.; ▪ Maximum of 3	▪ 120 s.f. max	▪ 12' max	▪ 0' side or rear; ▪ 5' if on a concrete slab or similar foundation; and ▪ Behind the rear building line of the principle structure
Secondary Building (detached accessory building)	▪ 1 / lot ▪ 2 / lot, over 1 ac.; ▪ 1 / principal building (apartments)	▪ 50% of principal building footprint, up to 1,200 s.f. max.	▪ 25' max, but no higher than principal structure.	▪ 5' from side and rear; ▪ 20' from street side; and ▪ At least 12' behind the front building line of the principal structure
Any building over 12' high or more than 250 square feet shall meet the design standards in Section 24-502.c.2.				
Out-building (large storage building, barns, etc.)	▪ 1 / lot over 1 ac. ▪ + 1 / each 3 ac. ▪ Maximum of 4	▪ 2,000 s.f. max ▪ 5,000 s.f. max in H-A	▪ 25' max ▪ 60' max in HA	▪ 10' from side and rear; ▪ 30' from any street side; and ▪ Behind the rear building line of the principal structure
Applies to detached houses and civic / institutional uses only				

1. **Generally.**
 - (a) All accessory buildings shall be at least 6 feet from the principal building, or other distance specified by applicable building codes based on fire ratings of adjacent walls.
 - (b) Accessory buildings shall be clearly incidental and subordinate to the principal building or use, in terms of scale, location, and orientation.
 - (c) Minor accessory structures 120 square feet or less, and not on a foundation or slab do not have a required side or rear setback, but should be movable and are otherwise placed "at risk" by the owner with regard to any easements, fence, or screening requirements.
2. **Secondary Building Standards.** In any residential district, secondary buildings over 250 square feet shall or over 12 feet high shall meet the following massing and design standards to ensure compatibility with the principal structure:
 - (a) The wall height shall be no more than 9 feet above the finished floor, except that gables, dormers, or other subordinate walls may support a pitched roof.
 - (b) The roof peak or other top of structure shall not exceed 22 feet above finished floor for pitched roofs with a 6:12 pitch or greater, and no more than 16 feet for shed roofs or pitched roofs below a 6:12 pitch.
 - (c) The design shall be compatible with the principal building considering materials, architectural details and style, window and door details, and roof forms.

- (d) Secondary buildings with vehicle access directly from an alley or shared easement may be built on the lot line at the alley or shared easement.

- d. **Housing Diversity.** Individual projects shall meet the following housing diversity guidelines based on the scale and context of the project. Diversity shall be based on the categories and building types indicated in Table 24-5-3, and be applied according to Table 24-5-4. The guidelines shall be met by one or a combination of the following:
1. Use a mix of housing types permitted in the zoning district, or propose more than one zoning districts within the project.
 2. The Director may waive this requirement where there is an existing mix of housing within ¼ mile of the project that provides a comparable mix of housing considering the size, price points, and types of housing.
 3. The Director may approve alternative compliance if the applicant submits evidence that achieving the mix unreasonable based on industry data and conditions beyond the applicant's marketing information.

Table 24-5-3: Housing Categories & Building Types

Category I: Detached Houses	Category II: Missing Middle Housing	Category III: Multi-family and Mixed Use
▪ Detached House - Estate Lot ▪ Detached House - Standard Lot ▪ Detached House - Medium Lot	▪ Detached House – Small Lot ▪ Detached House – Compact / Small Format ▪ Multi-Unit House – Standards Lot ▪ Multi-unit house – Medium Lot ▪ Row house – Small Lot ▪ Row house – Large Lot ▪ Apartment - Small	▪ Apartment – Medium ▪ Apartment – Large ▪ Apartment – Complex (medium / large) ▪ Apartment – Mixed-use Building

Table 24-5-4: Housing Diversity

Project Scale	Required Mix
< 50 Units	no requirement
50 - 150 Units	▪ At least 2 building types ▪ No more than 70% of one type
151 - 300 Units	▪ At least 3 building types ▪ No more than 50% of one type ▪ At least 20% Category II
301+ Units	▪ At least 4 building types ▪ No more than 50% of one type ▪ At least 30% from Category II

- e. **Fences & Walls.** Fences and walls in residential districts shall be limited to the sizes and locations in Table 24-5-5, Residential Fences & Walls, and the following additional standards.

Table 24-5-5 Residential Fences & Walls

Location	
Front <i>In the front setback or any location in front of Front Building Line.</i>	3.5' high 3.5' – 6' if it is ornamental design that is at least 75% open (i.e. wrought iron). - Up to 8' for ornamental features at pedestrian entries.
Side and Rear <i>In the side, street side, or rear yard and behind the Front Building Line.</i>	6' high - A fence or wall outside of required setbacks (i.e. in the buildable envelope), and behind front building line can exceed 6', but may be limited by building codes or other general development and design standards.
Perimeter Fences <i>Any fence within 30' of a Collector or Arterial street right-of-way as part of Perimeter Landscape in Section 24-803.</i>	Any fence designed as part of a perimeter landscape area along collector or arterial streets, or otherwise located within 30' of a collector or arterial right-of-way and longer than 100', shall meet the following standards: - All fencing shall be softened with landscape materials on the street side of fences meeting the perimeter landscape standards of Section 24-802. - Expanses of over 100' shall be broken up by either: - Offsets of +/- 3' on 1/3 of length for every 150' span; or - Ornamental designs on at least 50' of every 150' space that is at least 75% open (i.e. wrought iron); or - Architectural pillars or posts (i.e. stone, or masonry) at least every 50'. - Alternatives may be approved by the Director in association with the perimeter landscape plans for in Section 24-803, Streetscapes in 24-301, and Neighborhood Features & Common Areas (Trails) in 24-504.
All Locations	All fences or walls along rights-of-way or easements shall be set back at least: 1' from any ROW or easement that prohibits structures; otherwise fences in easements shall be permitted only subject to specific easement language and limitations. 2' from any sidewalk. 3' from the edge of any alley or similar vehicle access surface - Fences or walls may only be located in the right-of-way or public easement by a revocable right-of-way permit from the Public Works Department

1. **General Fence & Wall Design Standards.**
 - (a) All fences or walls located along common lot lines shall be located so the fence is on the property line, or at least three feet from the property line. Any areas set back three feet or more, which could become enclosed by other similarly located fences, shall provide at least one gate for access and maintenance equipment.
 - (b) The finished side shall face adjacent property or any public right-of-way, public space, or common areas.
 - (c) Any fence or wall in the floodplain shall also require a floodplain development permit.
 - (d) All fence or walls shall be located and designed to comply with sight distance requirements of 24-301.d.2. Any fence or wall that could potentially create a sight obstruction for vehicles crossing pedestrian areas or entering the street may require greater transparency or additional location restrictions to allow for safe sight distances for the vehicle.
 - (d) Temporary fences for construction may be up to 6 feet tall or as otherwise specified in construction permits
 - (e) All fences and walls may be subject to additional standards of the building code, approved drainage plans for the lot, or other design and development standards. In particular, the following require a building permit when allowed by this code:
 - (1) Any fence or wall over 6 feet.
 - (2) Any retaining walls over 4 feet.

- (3) Walls in the setbacks over 6 feet shall only be permitted by alternative compliance in Section 24-208.
2. **Materials.** Fences and walls shall be consistent in character, materials and appearance with the architecture of the principal building(s) on the same lot. Fences and walls shall be constructed out of any of the following materials:
- (a) Wood or vinyl simulating wood. Wood shall be either naturally rot resistant (such as cedar), or pressure treated for rot resistance;
 - (b) Wrought iron or aluminum simulating wrought iron;
 - (c) Stone, brick, concrete with stone or brick veneer, pre-cast concrete simulated stone or brick, or decorative concrete textured to simulate masonry; or
 - (d) Chain link or vinyl clad chain link, in the side or rear yard only and limited to 4 feet high, or up to 12 feet for any security fence around sports facilities, courts, pools or similar facilities, provided it is 20 feet from any lot line and provided all portions over 8 feet remain free of opaque screens.

24-503 Residential Design Standards

- a. **Applicability.** The Design Standards shall apply to the R-L, R-M, and R-H zoning districts, and to any residential building type permitted in non-residential zoning districts. The standards shall specifically apply to the following circumstances:

Table 24-5-6: Applicability	
Activity	Applicability of Standards
Site or Landscape work on less than 50% of the lot	Standards only apply to changes associated with the proposed work, and only to the extent that any non-conforming situations for the entire site are brought closer to compliance.
Site or Landscape work on 50% or more of the lot.	All site and landscape for the entire lot shall be brought into compliance with the standards.
Rehabilitation, remodeling or additions to buildings that add more than 200 square feet to the building footprint or mass, but less than 50%.	Standards only apply to changes associated with the proposed work, and only to the extent that any non-conforming situations for the entire site are brought closer to compliance. However, staff may require full compliance for the building and lot for any rehabilitation, remodel or addition that is greater than 75% of the assessed value.
New primary structure; or Rehabilitation, remodeling or additions to the building that add more than 50% to the building footprint or mass.	All standards for the entire building and lot shall be met.
Ordinary Maintenance	The standards shall not apply to ordinary maintenance of existing buildings, except that maintenance to any building may not occur in a manner that brings the building or site to a greater degree of non-conformance with these standards.

- b. **Frontage Design.** The design of lot frontages establishes the relationship of buildings and lots to the streetscape, including building placement, lot access, garage extent and location, and entry features. Frontage Types designed according to the standards and design objectives of this subsection may be used to modify the front setback established in Table 24-5-1.
1. **Design Objectives.** Frontage types shall be applied to meet the following design objectives:
- (a) Enhance the image of neighborhoods by coordinating streetscape investment with private lot and building investment.

- (b) Design frontages to the particular context of the neighborhood, block and street.
- (c) Coordinate development across several lots, considering the cumulative impacts on streetscapes from the frontage design of each lot.
- (d) Orient all buildings and lot frontages to the streetscape, while still promoting effective transitions from public spaces to private spaces on the lot.
- (e) Limit the impact on the neighborhood streetscape from frontages designed for car access, particularly on narrower lots or walkable streets and neighborhoods.
- (f) Provide outdoor livable spaces that activate the streetscape.
- (g) Use front entry features to reinforce neighborhood character, promote unique design with subtle variations to building patterns, and create consistent, human-scale connections to the streetscape.

2. **Frontage Design Standards.** Frontage types shall be designed according to the standards in Table 24-5-7, Residential Frontage Types & Design Standards. Subsections following the table provide specific design strategies and techniques to be used in meeting these standards and design objectives. Where multiple frontage types are permitted, the frontages should be similar for all lots on the same block face or gradually transition to different building placement and frontage types on adjacent lots. In general, the front building line of adjacent buildings shall not differ by more than 5 feet.

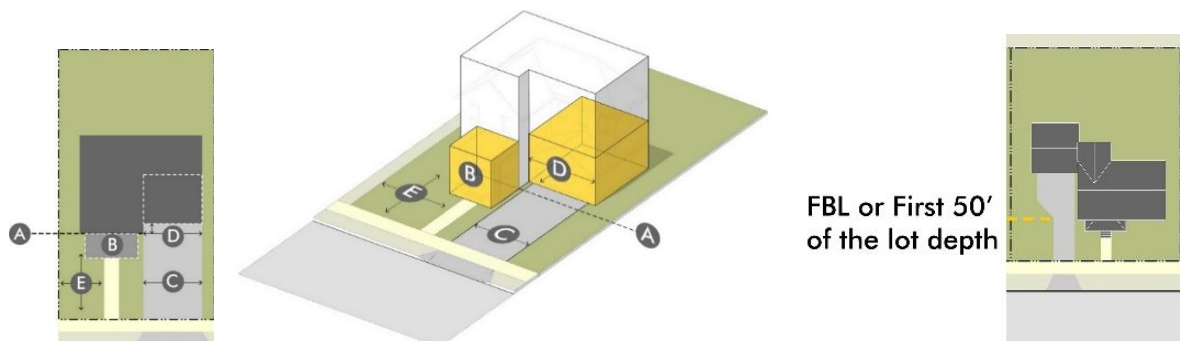
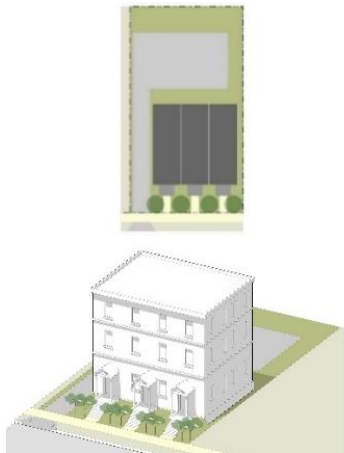
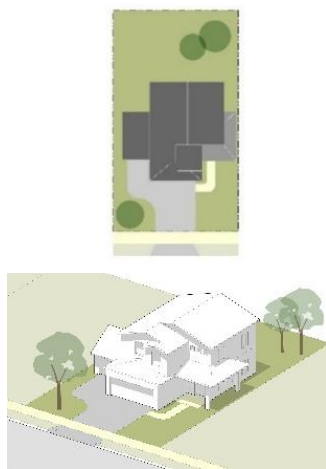


Figure 24-5-5 Frontage Design Standards

This diagram illustrates the key elements of frontage design in table 24-5-7: (A) front building line; (B) front entry features; (C) driveway widths; (D) garage extent and location, and (E) landscape areas. These elements determine the relationship between the building, the lot, and the streetscape, and affect the character of the area when applied across multiple lots on a block.

Table 24-5-7: Residential Frontage Types & Design Standards

Frontage Element		Terrace Frontage	Neighborhood Frontage	Suburban Frontage
				
Application	R-L		☐ Required frontage type for R-L in the Legacy Urban & Downtown Neighborhood areas	☒
	R-M	☐	☒	
	R-H	☐	☒	
Front Building Line		10' – 25'	25' – 60'	25' +
Front Entry Feature		Required, See Section 24-503.b.5	Required, See Section 24-503.b.5	Required, See Section 24-503.b.5
Driveway Width		15% of lot width, up to 20' maximum	20% of lot width, up to 20' maximum	50% of lot width, up to 27' maximum
Garage Limitations		20% of facade – must be at or behind FBL; - Up to 35% if stepped back 12'+ from FBL	35% of facade – must be at or behind FBL; - Up to 45% if stepped back 12'+ from FBL	65% of facade –no more than 12' in front of FBL
Landscape [1]		60% minimum landscape; and 40% maximum hardscape.	70% minimum landscape; and 30% maximum hardscape.	50% minimum landscape; and 50% maximum hardscape

■ Required, default standard

□ Optional, alternative standard to be applied based on context

[1] Landscape refers to allocation of space between front lot line and front building line. See Section 24-802 Landscape Design for planting requirements, standards, and specifications.

3. **Driveway Limits.** Driveway limits maintain active spaces along the frontage, preserve areas of streetscape landscape, and reduce curb cut width protecting sidewalks and curbside parking. The following standards apply to the driveway limits in Table 24-5-7:
- (a) Driveway width limits apply to the first 50' of the lot depth, or up to the Front Building Line, whichever is less.
 - (b) Any garage meeting the design standards in this Section may have a driveway expanded to the width of the entry, provided:
 - (1) The expansion extends no further than 20' from the garage entry;
 - (2) The expansion cannot be closer than 10' to the front property line; and
 - (3) The width of the driveway within the right of way and first 10' shall be reduced to no wider than 20' wide.
 - (c) In cases where driveway width and garage standards prohibit front-loaded garages and driveways on a particular lot, a range of options with different access patterns and garage locations may be used.
 - (d) All parking shall be outside of the frontage area, except detached houses or multi-unit houses may have one of the required parking spaces per unit in the driveway, provided it is at least 7 feet by 18 feet, entirely outside of the right of way, and does not interfere with any pedestrian area.

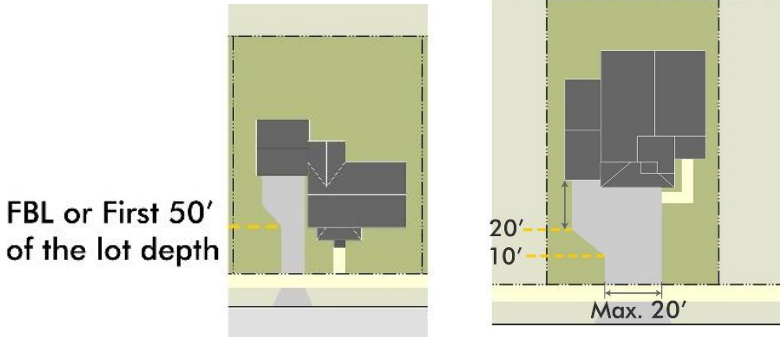


Figure 24-5-6 Application of Driveway Limits

Driveway limits shall apply to the first 50' or up to the Front Building line, whichever is less, except any front-loaded garage meeting these standards may have a driveway expanded to the width of the entry 20 feet in front of the entry. (24-503.b.3.(a) and (b)).

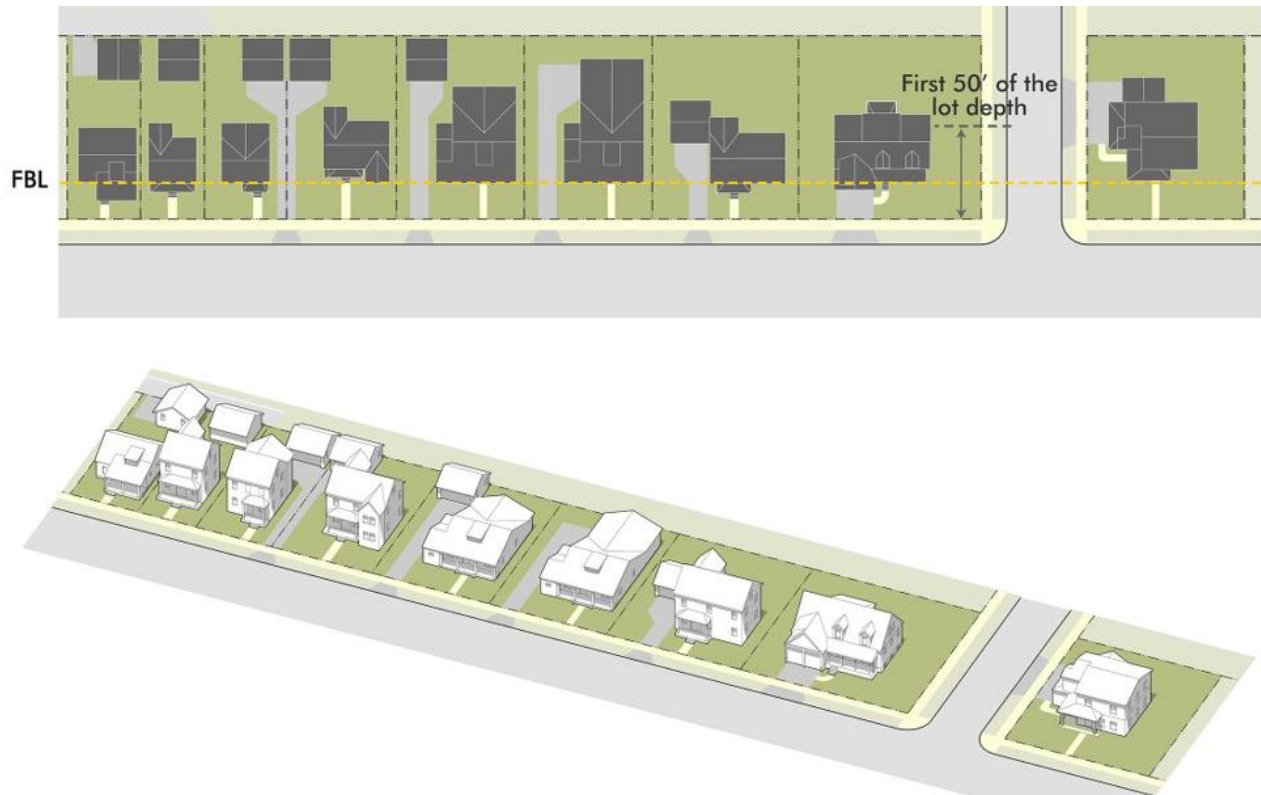


Figure 24-5-7 Driveway & Garage Options

Frontage type standards are based on lot widths to recognize both the proportionate and cumulative effect that frontage design elements have on the streetscape, and narrower or compact lots may be more limited. In these situations, options that reduce the car-orientation yet accommodate the convenience of access of vehicles should be used. Options include narrower entries, side entries, shared drives, common lanes, or internal block alleys. (24-503.b.3.(c).

4. **Garage Design:** Garage design reduces the extent; massing, and proximity and of front-loaded garages relative to the streetscape, and promote more human-scale building elements and active living areas along the frontage. The following standards apply to the garage limits in Table 24-5-7:
 - (a) Garage limits apply to front-loaded garages. Alternatives such as detached garages, side or rear-loaded garages, or attached garages that are accessed from the front but located on the rear of buildings are not subject to the limits.
 - (b) Garage limits shall be measured by the exterior walls of the floor plan or other clearly distinguished massing element on the front facade;
 - (c) Any front-loaded garage that is more than 35% of the elevation or that projects in front of the main mass of the house shall include at least 2 of the following features to reduce the scale and prominence of the garage:
 - (1) A front entry feature associated with the non-garage mass of the building that projects in front of or is no more than 4 feet behind the garage entry, and is at least 10 feet wide.
 - (2) The wall plane with a garage door is limited to no more than 200 square feet, and distinguished from other wall planes by the following:
 - i. At least one bay stepped back at least 2 feet; and/or
 - ii. Ornamental features such as canopies, eyebrows, or cantilevers distinguish the wall plane of any upper level gables or living space.

- (3) Garage doors and any other related wall planes have at least 15% windows, and other ornamental trim or accents are included on the doors and pillars related to the garage entry.

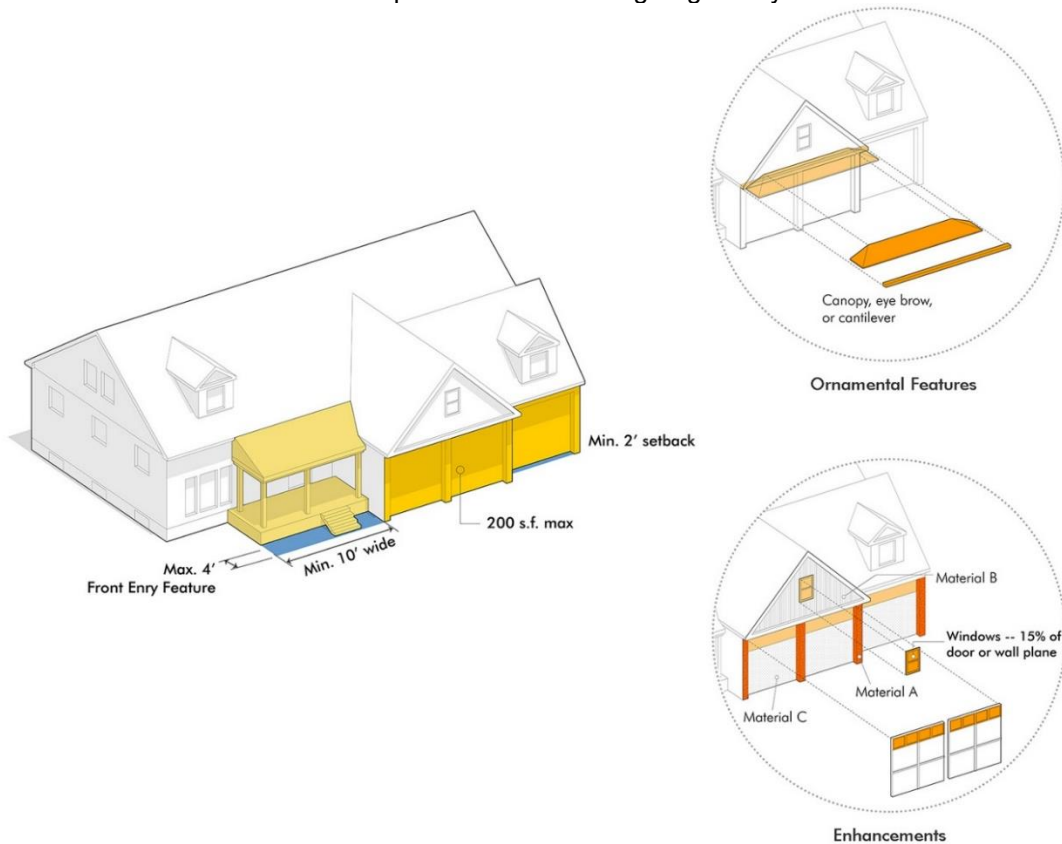


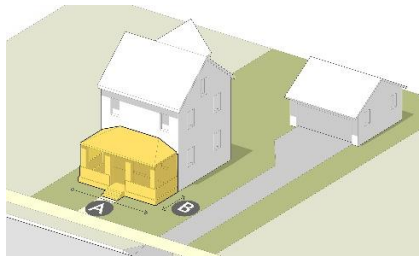
Figure 24-5-8 Front Loaded Garage Design

Where front-loaded garages project in front of the main mass or occupy a larger percentage of the elevation, design strategies can be used to reduce the scale and coordinate the garage entries with other livable spaces of the building. (24-503.b.4.)

5. **Front Entry Features.** The entry feature standards and design techniques in Table 24-5-8 shall be used where entry features are required by Frontage Types in Table 24-5-7, and are otherwise recommended to achieve the design objectives of this Section and to meet the standards of Table 24-5-9, Building Design Standards.

Table 24-5-8: Front Entry Features			
Design Element	Width	Depth	Details & Ornamentation
Porch	12' minimum	8' - 12'	- Decorative railing or wall 2.5' to 4' high along at least 50% of the perimeter. - If not roofed, a canopy, pediment, transom windows, enlarged trim and molding or other similar accents accompany the front entrance.
	Suburban Frontage may reduce porch to 48 s.f.; at least 4' in all directions.		
Stoop	6' – 12'	6' – 8'	- Decorative railing or walls along steps and side of stoop. - Ornamental features accent the front entrance such as canopy, pediment, transom windows, enlarged trim and molding, or other similar accents that emphasize the door over other facade features. - May be associated with a single-story enclosed front entry portico, projecting from the building.

<i>Entry Court</i>	12' +, but never more than 50% of facade	10' – 24'	▪ Recessed entry within the building footprint. ▪ Decorative wall or railing, no higher than between 2.5' and 6' high along at least 50% of the opening. ▪ Ornamental pillars, posts or landscape accent the pedestrian entrance and create a gateway into the entry court.
<i>General Design</i>	▪ All entry features shall have a sidewalk or path at least 4 feet wide directly connecting the entry feature to the public sidewalk or street. For Suburban Frontage, this can connect via the driveway. ▪ All entry features shall be integrated into the overall building design including compatible materials, roof forms, and architectural style and details. ▪ Entry features shall be single-story, so that any roof structure and any ornamentation occur between 8' and 14' above the floor-level of the entry feature. ▪ Entry features meeting these standards may encroach up to 10 feet in front of the front building line, but never closer than 5 feet to a public or common property line, provided they are unenclosed with at least 65% open and unobstructed on all sides that project into the setback. ▪ Any building with more than 150 feet of front facade, or any side greater than 200 feet and permitted within 20 feet of the street, shall have 1 entry feature for every 100 linear feet of building frontage on the street.		



Porch



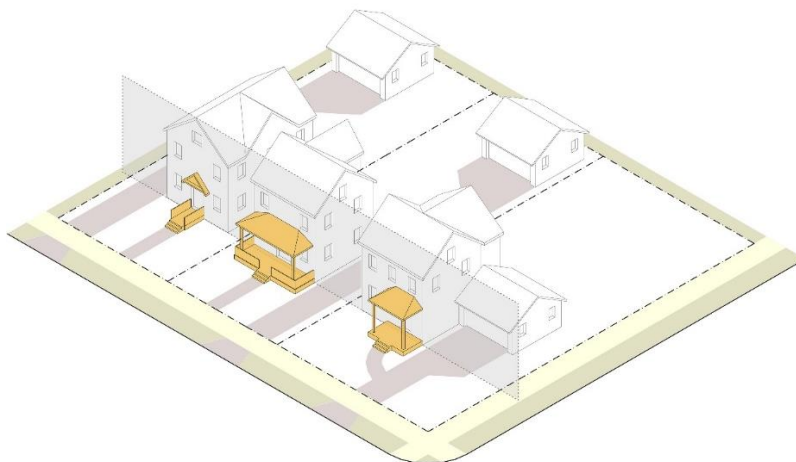
Stoop



Entry Court

Figure 24-5-9 Front Entry Features - Types

The porch, stoop and entry court are three distinct types of entry features that create active, social spaces and human-scale details on the residential frontages. Spaces with a minimum width (A) and depth (B) specified in Table 24-5-8 provide usable social spaces, activate the streetscape and frontage, and contribute to the massing and modulation required by the building design standards.

**Figure 24-5-10 Primary Entry Feature - Encroachments**

Front entry features meeting the standards of this section create social spaces that help activate streetscapes and create a variety of human-scale details along blocks. These features may encroach into the front setback to improve the frontages along blocks. (24-503.b.5 / Table 24-5-8)

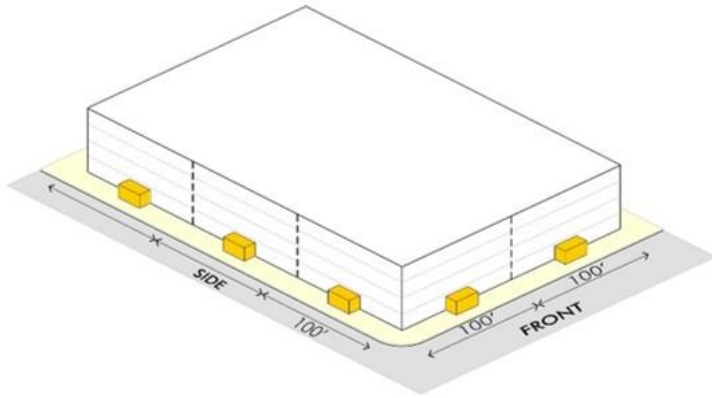


Figure 24-5-11 Primary Entry Feature - Large Buildings

Front entry features should be more frequently located on larger buildings with wall planes in close proximity to the street. This breaks up the building massing and activates the streetscape. (24-503.b.5 / Table 24-5-8)

5. **Alternative Compliance.** Alternative compliance to the frontage design standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
 - (a) The context presents clear pattern of existing buildings and lots on the same block and opposite block face with a different arrangement in terms of the front building line, driveway access patterns, and extent and placement of garages.
 - (b) An alternative design allows the building, garage, and access to be sited in a way that preserves topography or other natural features on the site, and does so in a way that equally or better meets the design objectives.
 - (c) The alternative preserves the streetscape landscape area and the curb areas available for on-street parking to the greatest extent practical.
 - (d) For detached houses or multi-unit houses alternatives to the driveway widths and setbacks may be approved for a required, accessory or guest parking space provided:
 - (1) No other reasonable alternative exists;
 - (2) It is limited to no more than 140 square feet of additional paved or all weather surfaces;
 - (3) The expanded paving is at least 10 feet from the front lot line if 45 degrees to perpendicular to the front, or at least 25 feet if 45 degrees to parallel to the front;
 - (4) All drainage and potential impacts on adjacent property are addressed; and
 - (5) The Director may require other design or landscape mitigation to ensure the parking and access is as discrete as possible,
 - (e) In all cases the deviation is the minimum necessary to address the circumstance and does not negatively impact other design standards applicable to the building or site.

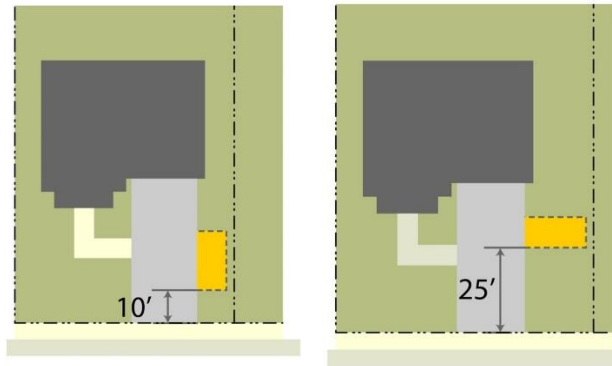
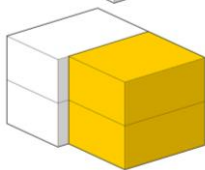
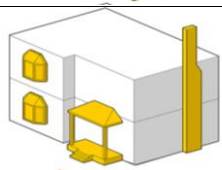


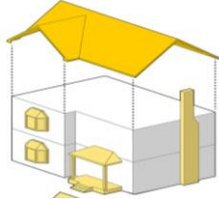
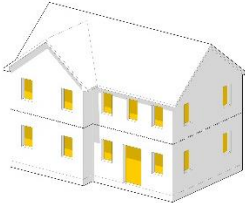
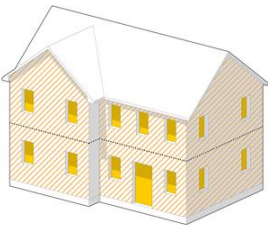
Figure 24-5-12 Accessory Parking Pad

To meet parking requirements, accessory parking pads may be approved by alternative compliance provided they minimize impacts on the streetscape and adjacent property. (24-503.b.5.(c))

- c. **Building Design.** Building design refines the scale and form of buildings beyond basic height, setback and lot coverage standards.
1. **Design Objectives.** The following design objectives shall be used in applying the building design standards in this Section.
 - a. Relate buildings to public realm and streetscape in a consistent manner and create a compatible massing along the block.
 - b. Arrange buildings in a way that creates meaningful outdoor spaces on the site, with building designs that define and activate these spaces.
 - c. Use combinations of height, width, depth, and roof forms break down the building volume into smaller-scale masses
 - d. Blend a variety of building sizes and types and create compatible transitions between adjacent buildings of different scale by mimicking similar massing and proportions of adjacent development.
 - e. Use materials and human-scale architectural features to create depth, texture, variation and visual interest to walls, particularly on larger facades, along streetscapes, and near active open spaces or adjacent lots.
 - f. Encourage unique architectural expression, and promote the use of key details and design characteristics inherent in the chosen style for the building.
 - g. Promote enduring investments with the application of durable, quality materials.
 2. **Building Design Standards.** Table 24-5-9, Building Design Standards provides standards for massing and facade design. Sub-sections following the table provide specific design strategies and techniques to be used in meeting these standards and design objectives.

Table 24-5-9: Building Design Standards

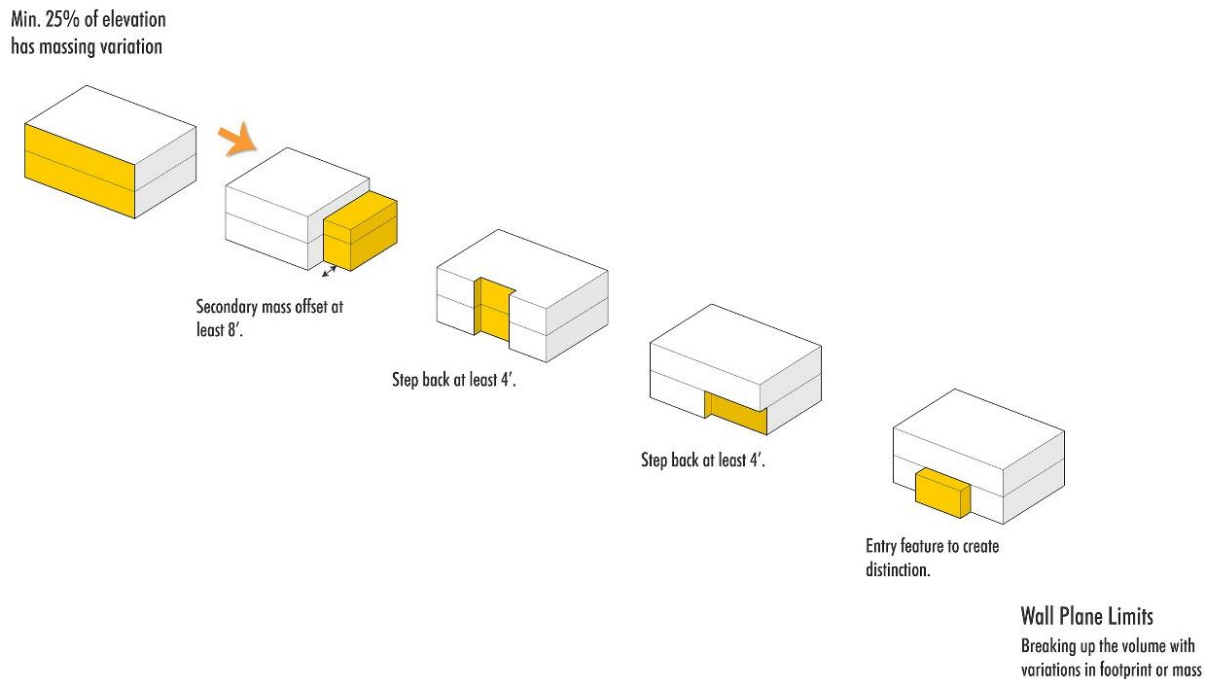
Design Detail	Building Type	Detached House (all), and Multi-Unit House	Row House, Apartment (all)
Wall Plane Limits. Maximum wall plane without a massing variation of 4'+ on at least 25% of elevation.		800 s.f. or 50 linear feet	1,200 s.f. or 70 linear feet
Blank Wall Limits. Maximum wall plane without modulation on at least 20% of the wall plane.		500 s.f. or 30 linear feet	800 square feet or 45 linear feet

<i>Roof Pane Limits.</i> Maximum roof plane without offset of at least 2', complex planes, dormers or gables.		600 s.f. or 50 linear feet	1,000 s.f. or 70 linear feet
<i>Transparency.</i> Minimum window and door openings per elevation (includes decorative trim, molding and casing)		Does not apply to flat roofs, provided there is a parapet, cornice or other defined edge at the roofline	Front – 20%; 15% 1-story Side – n/a, except 8% if side yard is > 2x required setback Street-side - 10% Rear - 8% Front – 20% Side – 8% Street-side - 10% Rear - 8% Exterior walls of any allowed garage may be excluded from this requirement, provided other architectural details and materials are used to meet any applicable modulation requirements
<i>Materials</i>		Primary Materials – 80% - 90% (limit 2 materials, no more than 80% of any one material) Secondary / Accent Materials - 10% - 20% (limit 2 materials)	Primary Materials: Lap siding (9" maximum board); vertical siding; alternative exposure pattern siding; brick, stone, stucco, synthetic / veneer brick or stone; and standing seam metal (roofs only) Secondary / Accent Materials: All primary materials, plus architectural metals, integrally tinted and textured masonry block; and wood or prefabricated synthetic trim or architectural details.

3. **Wall Plane Limits.** Massing techniques use changes in the building footprint, height, or significant shifts in wall and roof planes to break down the volume of larger buildings. Wall planes that exceed the wall plane limits in Table 5-5 shall have at least 25% of the elevation differentiated by one or more of the following massing techniques:
- Break the building into distinct masses (primary mass, secondary mass, and wings), where portions of the building are offset from the main mass by at least 8 feet, or are otherwise be noticeably smaller and subordinate to the main mass.
 - Step back portions of the building or upper stories by at least 4 feet in association with meaningful outside space, such as a balcony, deck, patio or entry court.
 - Use cantilevers of upper stories that provide at least a 2 feet overhang of other portions of the wall plane.
 - Provide single-story entry feature that project at least 6 feet from the wall plane.
 - Articulate rooflines by stepping the roof, using gables and dormers, dropping eaves, and using prominent overhangs to create offsets and projections of at least 2 feet.
 - Where larger buildings are next to smaller buildings, or are along a block with smaller buildings, step the height of the building or offset secondary masses to create compatible massing with adjacent structures.

Figure 24-5-13 Wall Plane Limits

Wall planes over the size specified in Table 24-5-9 shall be broken up with a range of techniques so that at least 25% of the elevation is differentiated with distinct wall planes.(24-503.c.3.).



4. **Blank Wall Limits.** Modulation uses materials, ornamental details, and subtle variations in the wall plane to break up blank wall planes. Wall planes that exceed the blank wall limits in Table 24-5-9 shall use one or more of the following techniques so that at least 20% of the facade is distinguished with modulated elements:
- Create projections in the wall planes with bay windows, balconies, awnings, or canopies that project at least 2 feet from the wall plane.
 - Create voids in the wall plane with step-backs of upper stories or balconies that recess at least 4 feet beyond the wall plane.
 - Differentiate stories, roofs, or other masses with prominent trim materials and/or incorporate material changes on different modules of the building. Significant trim or ornamentation used to break up blank walls or wall planes shall project between 2 inches and 2 feet from the wall and be at least 8 inches wide.
 - Use color changes and accent materials to emphasize distinct components of the facade. Material and color changes should wrap corners and occur at the inside corner of a massing element, or occur in association with a significant trim or ornamentation to give a finished and unified appearance to the element.
 - Break up remaining large expanses of blank walls with facade composition that considers the location and grouping of windows, doors, or architectural details.

Min. 20% of wall plane
has details & variation

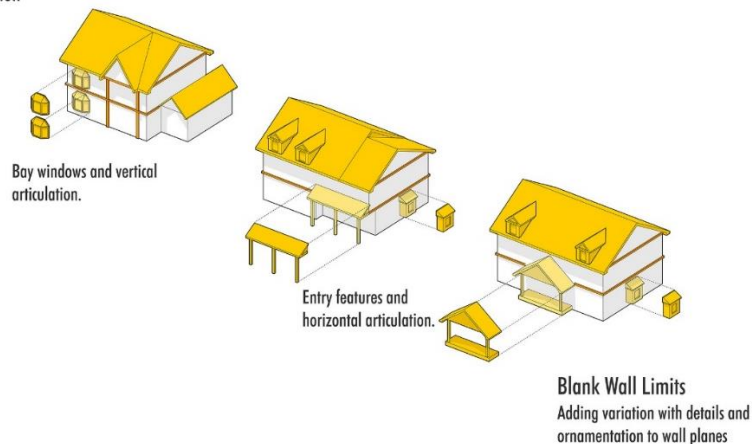


Figure 24-5-14 Blank Wall Limits

Wall planes over the size specified in Table 24-5-9 shall have ornamental details or subtle variations in the wall plane on at least 20% of any wall plane to eliminate large expanses of blank walls. (24-503.c.4).

5. **Transparency.** Windows and doors provide transparency, detail, and visual rhythm on the facade, and they break up blank walls with the location, pattern, and proportions of these openings. The following techniques should be used to achieve the design objectives of this sub-section and to meet the windows and doors requirements of Table 24-5-9, Building Design Standards:
 - (a) Provide transparency with the location, pattern, and proportions of windows and doors, and create relationships to surrounding spaces and buildings.
 - (b) Incorporate distinct and visually significant windows and doors (size, orientation, and ornamentation) to emphasize key locations on the facade or to relate to important outside open spaces.
 - (c) Locate windows doors to create a coordinated facade composition considering the entire facade as a whole, and to break up large expanses into different components with the grouping of windows and doors.
 - (d) Emphasize a hierarchy of doors with different levels of ornamentation and details, particularly to make multi-unit houses compatible with adjacent detached houses and appear as single houses.
 - (e) Locate and design windows strategically in relation to privacy concerns in adjacent spaces and buildings, but maintain consistent exterior patterns; recall that high-bank windows, transom windows, opaque windows, and window treatments that are a adaptable and user-controlled are a better strategy than simply no windows at all.
 - (f) Use windows and doors with projecting trim and ornamentation to create depth, texture, and shadows on the facade; to emphasize openings; or to gang groups of openings. Openings that have projecting trim and casements (at least 1 inch off the facade and 4 inches wide); or otherwise group widows with significant details that clearly differentiate these elements from the main facade may count these features for up to 25% of the window and door requirement.

- (g) The window requirement may be waived on sides of buildings that are closer than 3 feet to the property line, if necessary to meet applicable building code requirements.

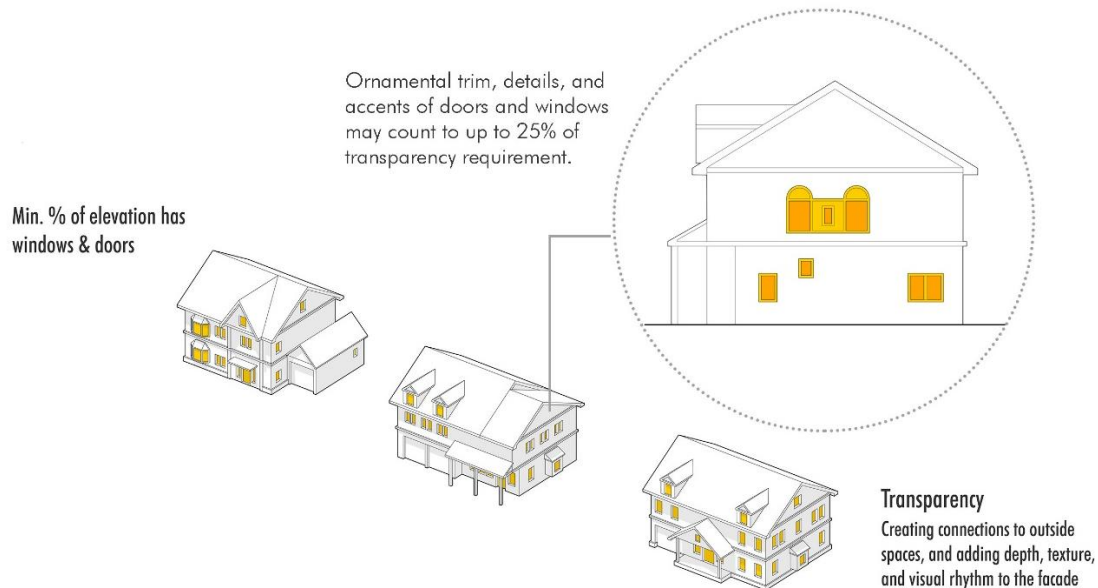


Figure 24-5-15 Transparency

The minimum transparency specified in Table 24-5-9 shall create connections to outside spaces and break up blank walls. Enhancements that emphasize the windows and the location, arrangement, or grouping of windows may count to this requirement. (24-503.c.5).

6. **Materials.** Building materials with texture and patterns create visual interest and signify quality construction and detailing. The following techniques should be used to achieve the design objectives of this section and the materials standards of Table 24-5-9, Building Design Standards:
 - (a) Use natural materials such as painted or natural finish wood siding (horizontal lap, tongue-and-groove, board and batten, or vertical), brick, stone, stucco, ceramic, or terra cotta tile. Synthetic alternatives to these natural materials may be used if manufacturer specifications and/or precedents for application demonstrate that it will perform equally or better than the principal materials in terms of maintenance, design, and aesthetic goals.
 - (b) Siding shall be continued to within 18 inches of finished grade on any side, unless the foundation is stone, stone veneer, or other ornamental finish is applied.
 - (c) Brick, stone, or other ornamental accent materials shall wrap the corner for at least 2 feet on any facade, or otherwise terminate at interior corners to give a finished appearance the architectural element.
 - (d) Coordinate changes in color and materials in association other changes in massing and modulation of the building.
 - (e) Use changes in color or materials to differentiate the ground floor from upper floors and the main body of the building from the top or roof-structure, particularly on buildings 3 stories or more.
 - (e) In multi-building projects, use subtle variations in building materials and colors on different buildings, within a consistent palette of materials and colors.

7. *Variations of Buildings.* All projects involving three or more buildings shall provide variations in the elevation from the two buildings on each adjacent side, and the three nearest buildings on the opposite side of a facing block, with at least two of the following:
- (a) Variations in the front entry features as indicated in 24-503.b.5. Variations should include combinations of at least two of the following changes:
 - (1) Different types of entry features: such as, porch, stoop, or entry court;
 - (2) Different roof styles associated with the entry feature: such as gable, hip, shed, flat, arched, or no roof;
 - (3) Different locations and extent of the entry feature: such as centered, shifted, wrapped; projecting, or embedded; and half or full; and/or
 - (4) Different ornamentation or architectural styles that lead to distinct qualities within a similar scale or pattern.
 - (b) Variations in the facade composition, including massing, modulation, window types and placement, materials and material changes, and details and ornamentation, to the extent that the buildings have a distinct appearance;
 - (c) Variations of the roof forms considering the type of roof, orientation of gables, or use of dormers; or
 - (d) Variations of the model or building type with distinctively different floor plans that lead to different massing. Mirror images of the same model and floor plan shall not be used to meet the variation requirement.
 - (e) In the case of multi-unit buildings:
 - (1) For duplexes / multi-unit houses that are intended to mimic the scale and form of detached houses, a hierarchy of doors and entrances shall be used to create the appearance of a single building, and the variation shall apply between buildings.
 - (2) For row houses and similar buildings that are clearly designed for multiple units, subtle variations in the materials and entry features shall apply to emphasize different units, and the variation shall apply between units in the building.



Figure 24-5-16 Front Entry Features - Variety

Using a wide variety of entry feature types, styles and designs is a way to create subtle distinctions between the same or similar building types, and can add common human-scale patterns among different types or scales of buildings. (24-503.b.5 and b.7.)

8. *Alternative Compliance.* Alternative compliance to the building design standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
 - (a) The requirement is not consistent with the particular architectural style selected for the building based on reputable resources documenting the style.
 - (b) The requirement would make the building less compatible with designs or characteristics of other buildings or sites adjacent to the project or that are prevalent throughout the area.
 - (c) Deviations from material standards and any simulated products demonstrate a proven performance in terms of maintenance and quality appearance.
 - (d) In any case, the deviation is the minimum necessary to address the circumstance and does not negatively impact other design standards applicable to the building or site.

- d. **Lot Open Space Design.** Lot open space helps scale buildings properly to the lot and block, create transitions from public streetscapes to private lots, and ensure that residents have usable open space and outside social areas. These spaces also complement the neighborhood features, common areas, and public parks throughout the neighborhood. Open space designed according to the standards and design objectives of this sub-section shall be used to meet the lot open space standard established in Table 24-5-1.
 1. *Design Objective.* The following design objectives shall be used to apply the lot open space standards in this section.
 - (a) Promote the arrangement of neighborhoods, blocks and lots in a way that responds to the existing natural features and ensures access to a variety of open spaces
 - (b) Design all unbuilt areas to serve as valuable neighborhood features, considering the aesthetic, ecological, recreation, or community serving potential of these spaces.
 - (c) Ensure that all lots and buildings have access and proximity to useable open space, whether public, common or private on-lot spaces.

 2. *On-Lot Open Space Design.* On-lot and building open space required for each building type in Table 24-5-1: Residential Building Type & Lot Standards, shall create a common or private amenity for the site and building. Buildings and open spaces on a lot shall be arranged to create usable outdoor spaces that meet one or more of the following types:
 - (a) Private frontage areas designed according to Section 24-503-b., excluding any driveways, parking areas or other automobile space;
 - (b) A front entry feature designed according to Section 25-503.b.3, provided it is at least 80 square feet, and at least 8 feet in all directions – this space is limited to no more than 25% of the requirement for the lot and building.
 - (c) Courtyards, meeting the standards of Section 24-505;
 - (d) Rear or side yards provided they are part of an open area at least 300 square feet and at least 15 feet in all directions.
 - (e) Uncovered decks or patios, provided they are part of an open area at least 120 square feet and at least 10 feet in all directions – this space is limited to no more than 50% of the requirement for the lot and building;
 - (f) Apartment or mixed use buildings may also count the following spaces:
 - (1) Common rooftop decks provided they are at least 200 square feet, and at least 12 feet in all directions – this space is limited to no more than 25% of the requirement for the lot and building; or
 - (2) Private balconies or patios, provided they are at least 6 feet by 10 feet – this space is limited to no more than 25% of the requirement for the lot and building.

3. **Alternative Compliance.** Alternative compliance to the open space design standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
 - (a) The lot and building has access to at least two different active open space within 1,320 feet, and meeting the design and service area standards Section 24-504, Neighborhood Features and Common Areas.
 - (b) All buildings and lots shall include at least 1 of the required lot or open space types.
- e. **Exterior Lighting.** All exterior lighting in residential zoning districts shall meet the standards of 24-603.f. Exterior Lighting.

24-504 Neighborhood Features and Common Areas

- a. **Design Objectives.** The following design objectives shall be used to design and locate neighborhood features and common space.
 1. Arrange neighborhoods, blocks and lots around a connected system of open lands, parks, trails and civic spaces
 2. Design and locate unbuilt areas to serve multiple aesthetic, ecological, recreation and social functions
 3. Integrate civic spaces and neighborhood features into streetscape designs and create gateways and transitions to unique neighborhoods and districts
 4. Design neighborhoods with access to outdoor recreation and opportunities active living.
 5. Locate formal civic spaces to serve as gathering places and focal points of compact, walkable neighborhoods
 6. Preserve natural features for their aesthetic and ecological value, including groves of trees, prairie, streams, unusual and attractive topography, and similar natural landscape features.
 7. Distribute open and civic spaces so that all development has access and proximity to a variety of amenities appropriate to its context.
- b. **Required Features & Common Areas.** Neighborhood features and commons areas shall be required for all residential projects based on the number of dwelling units specified in Table 24-5-10. It may include the types of spaces identified in Table 24-5-11 provided they are designed and located according to the criteria in Section 24-504.c.

Table 24-5-10: Required Neighborhood Features	
Required Features	Dwelling Units
0	<25
1	25-50
2	51 - 100
3	101-200 units
+1	each increment of 100 units

- c. **Neighborhood Feature & Common Area Design.** Neighborhood features and common areas may include the types of spaces identified in Table 24-5-11.

Table 24-5-11 Neighborhood Feature & Common Area Types			
Type	Size	Service Area	Feature Points
Natural Areas	At least 1 acre, but dependent on ecological value of the space and the ability to other coordinated and undisturbed natural areas (ideally 40 acres or more)	n/a	1 – 3 depending on quality / size
Trail System	20' min. width landscape corridor; 8' minimum width paved or crusher fine path; 10' minimum if multi-modal; - At least 1 block length, but sufficient continuity to connect entire project with pedestrian and bicycle systems outside of project.	w/in 1000' of trail, or up to 0.25 mile from trail head.	1
Pocket Park (See 24-302 for larger parks)	1 – 4 acres - At least 100' wide in all directions - Frontage on at least 1 public street OR connections to street by a trail	w/in 0.25 miles	1
Recreation Center	10K s.f. – 4 acres 2K s.f. min. community building and/or 20' x 40' min. community pool	w/in 0.5 miles	2 for building 2 for pool 3 for both
Square / Green	5K s.f. – 1 acre - At least 50' wide in all directions - Frontage on at least 2 public streets	w/in 1,000'	1
Plaza / Courtyard / Community Garden	1K – 5K s.f. - At least 25' wide in all directions - Frontage on at least 1 public street OR connection to street by trail or pedestrian passage	abutting lots or on the same block	1
Enhanced Streetscape	50% minimum increase above pedestrian / amenity area required by 24-301; OR - Median – 12' minimum on collector; 16' minimum on arterial - At least 1 block length	abutting lots on the same block	0.25
Gateways	100 – 1K s.f. at all intersections of collector streets or higher classification OR - Smaller but equivalent monumentation and identify features dispersed at all intersections.	abutting lots on the same block	0.25
Pedestrian Passage	12' – 20' wide corridor 6' wide minimum paved path 150' length min, and through the entire block or connecting from street to other civic space.	abutting lots on the same block	0.25

1. **Design Criteria.** All neighborhood features and common space shall include enhanced landscape design to ensure a distinctive identity and amenity for the neighborhood.

- a. Natural areas (open lands and trails) include large areas of vegetation, native or natural landscape, and undisturbed or restored topography and natural features. These areas shall be located to preserve valuable ecological resources such as riparian corridors, plant or animal habitat, or prominent landscape features.
 - b. Recreation areas (parks, trails, and recreation centers) include playgrounds, sport courts, and larger landscape areas designed for un-programmed outdoor recreation. These areas shall be located at highly-visible, central locations and important intersections of the street networks and/or trail systems.
 - c. Formal areas (greens, plazas, squares and courtyards) include hardscape, public art, seating areas, ornamental landscape, water features or other enhancements to serve as focal points and gathering places. These areas shall be located to serve as focal points for compact development patterns or higher density development serving the immediate surrounding area.
2. *Designated Out Lots.* All neighborhood features and common space shall be designated on a plat as out lots under common ownership and reserved for the limited and specified purpose of serving surrounding development with amenities. Except, multi-family projects may include the neighborhood features or common space within the required 30% lot open space in private ownership.
3. *Coordination with Other Public Space.* All neighborhood features and common areas shall be coordinated, to the greatest extent practical, with the larger system of parks and civic spaces required in Section 24-302.
- d. **Stormwater Facilities.** Stormwater facilities shall be designed and integrated into the street network or open and civic space system in order to avoid redundant and inefficient facilities on individual lots. Any area used for stormwater may be counted towards the neighborhood feature and common areas provided:
 1. It is integrated into the design of the space as aesthetic amenity and is consistent with the design, function, and character of the space.
 2. The design does not impact the utility of the space for either purpose (i.e stormwater functions do not compromise the use and value of the space as intended open space, and open space designs do not compromise maintenance and management and performance for stormwater functions according to the design and performance standards of the Design Criteria and Construction Specifications for Stormwater, Volume II).
 3. The maintenance and management of the portion of the facility serving stormwater function is clearly identified, whether that is a public dedication or whether it is an obligation of the owner or property owners' association.
- e. **Ownership and Management.** Neighborhood features and common areas platted as part of a development shall require specific designation on the final plat as a separate out lot. Options for ownership and management include:
 1. Creation of or dedication to a non-profit entity capable of carrying out the ownership and management.
 2. Creation of a homeowners', leaseholders' and/or property owners' association that owns the space in common and is capable of carrying out the ownership and management.
 3. Dedication to a public entity as part of the rights-of-way, parks or other community facilities element of the plan. The City may accept dedications of land in its sole discretion, provided it meets other open space and conservation goals of the City indicated in the Comprehensive Plan or other official Culture, Parks, and Recreation Department plans.

All neighborhood features and common areas shall require documentation recorded with the final plat that outlines the ongoing maintenance plans, as well as administrative and financial

management of the space according to these standards. Documents such as covenants for a homeowners' association, bylaws or charter for a non-profit entity, or similar agreements and guarantees, shall be filed with the clerk and recorders office in association with the plat prior to any building permits.

- f. **Alternative Compliance.** Alternative compliance to the neighborhood feature and common areas standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and the following additional applicable criteria:
1. The location, accessibility and quality of existing publicly dedicated areas, streetscape, or other public realm elements, particularly as it relates to infill development.
 2. The extent of lot open space associated with buildings and the opportunity for it to provide usable open space to residents.
 3. Alternatives to the neighborhood amenity and common area types that create a distinct identity or preserve a valuable resources.

24-505 Courtyard Pattern

- a. **Applicability.** Residential buildings and lots may be designed to front on a courtyard based on the following design standards. The courtyard pattern is appropriate where:
1. Courtyards are designed as an extension of the public streetscape and open space system for the project, block or neighborhood.
 2. Blocks and surrounding lots are deep, allowing a different configuration of buildable lots; or
 3. Other developed areas where existing lot patterns in the vicinity warrant use of this pattern to facilitate infill development and compatible building types.
- b. **Eligible Building Types.** The following building types are eligible for this pattern, subject to the limitations stated:
1. Small Apartments, up to 5 buildings or 36 units, whichever is less.
 2. Row Houses, up to 4 buildings or 24 units, whichever is less.
 3. Multi-unit House or Detached House, up to 8 buildings.
- c. **Design Standards and Exceptions.**
1. The minimum lot size per building in Table 24-5-1 may be reduced up to 30%, provided the courtyard is owned in common by all lots or otherwise established as a shared-space amenity.
 2. Lots and buildings may front on the courtyard, rather than along a street, provided they otherwise meet the design standards applicable to the front of buildings.
 3. The front setback may be reduced to 5 feet from the courtyard.
 4. Vehicle access and parking for each lot shall be coordinated for all lots and buildings, and designed in a way that minimizes the impact on the public street and the courtyard. Access shall meet all frontage standards applied to the project as a whole.
 5. Any buildings fronting on the street, or the sides of any buildings adjacent to the street shall still meet requirements for public frontages and orientation standards in this section. Corner buildings may need to meet the front building design standards on both the street front and the courtyard.
 6. The courtyard shall meet the following design standards:
 - (a) *Size.* 1,000 to 5,000 square feet.
 - (b) *Proportions.* The courtyard shall be at least 25 feet in all directions and be no wider than 4:1 (length to width).

- (c) *Frontage & Access.* The courtyard shall have frontage on a public street, or be visible from and directly connected to the streetscape.
- (d) *Landscape:* At least 25% of the area shall be allocated to planter beds, seasonal plantings, foundation plants or other landscape amenities, and otherwise meet the landscape standards applicable to Terrace frontages.

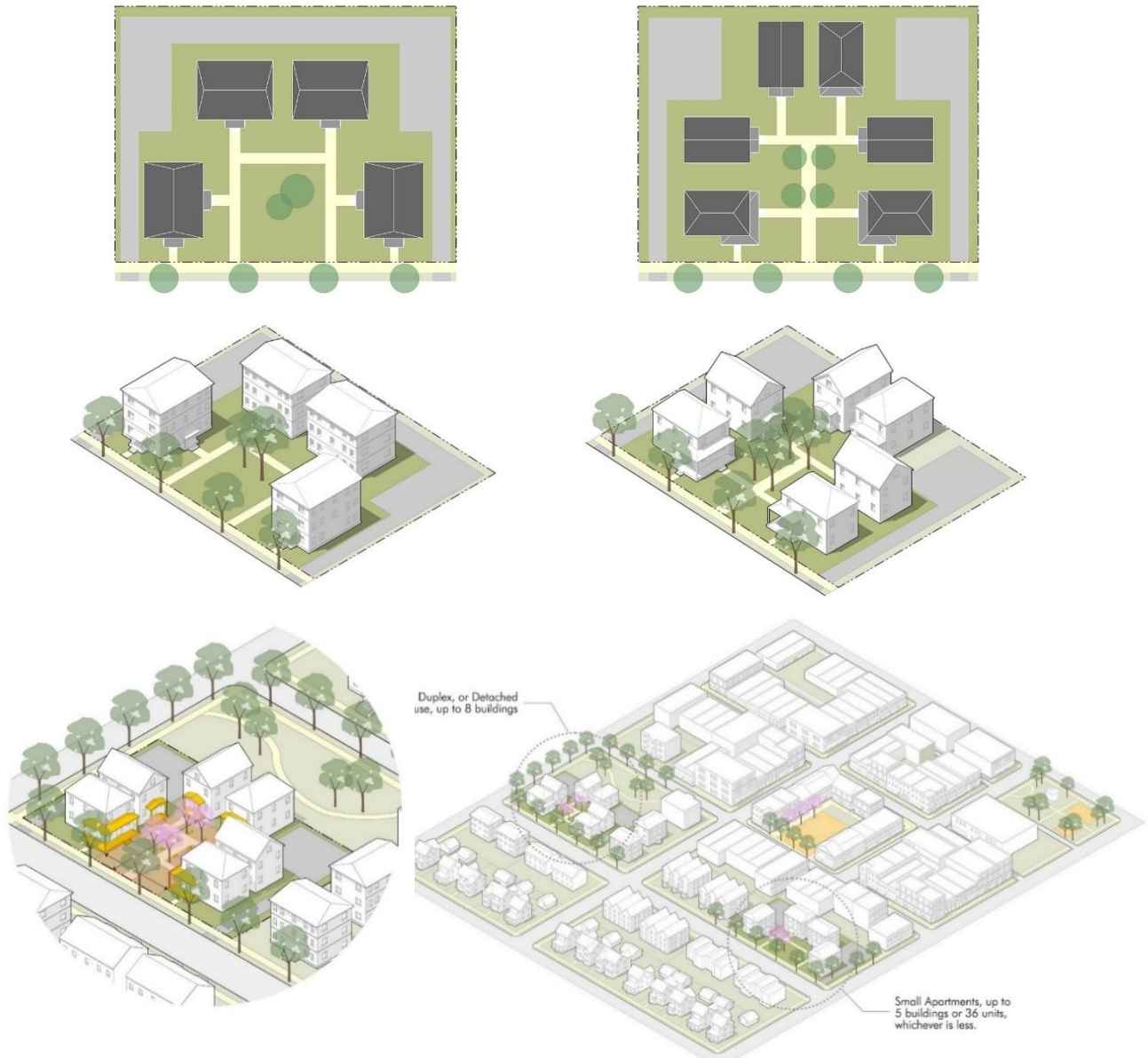


Figure 24-5-17 Courtyard Pattern

Courtyard patterns allow multiple buildings to front on common open spaces with reduced lot sizes and setbacks, provided all open space design standards are met, provided the courtyard and buildings maintain frontage design and streetscape standards on a public street.

24-506 Residential Micro-Housing District

- a. **Intent.** The intent of this section is to provide smaller-format manufactured, mobile or other small homes, in a neighborhood or community that includes common neighborhood amenities, and with

site designs that limit impacts on adjacent property and promotes development patterns that are compatible with the surrounding areas.

- b. **Applicability.** Small format home communities are permitted in the Residential Micro-Housing District (R– MH), and implemented through rezoning conditioned on a specific project plan according to Section 24-204, or as a Planned Unit Development according to Section 24-205. These standards shall not apply to:
1. Mobile homes, trailers or similar temporary buildings used as an interim structure associated with an ongoing construction project under valid permit;
 2. A single mobile or manufactured home used as an accessory structure in the H-A district.
 3. Interim or temporary housing strategies to address emergencies; or
 4. Detached houses that are assembled off site and “manufactured,” provided they meet all other standards of the applicable zoning district.
- c. **Development Standards.** Except as otherwise modified through a development plan according to the approval procedures and criteria in Section 24-204, the general development standards for manufactured and other small format home projects are included in Table 24-5-12.

Table 24-5-12: R-MH Development Standards

<i>Project</i>	<i>Amount of Bonus Units Above Base Density</i>
<i>Project Size:</i>	5 acre minimum, 150' minimum frontage an arterial or collector 20% open space <i>Exception:</i> the Director may recommend a plan for as small as 3 acres and 100 feet of public street frontage if the plan demonstrates exceptional community design and layout for the common areas within the community, a high-quality and well-designed housing concept, and special attention to integrating and relating the project to surrounding areas.
<i>Project Intensity:</i>	10 units per acre, maximum <i>Exception:</i> Up to 18 units per acre for any project with more than 30% of the project area designed as useable open space meeting Open & Civic Space standards in Section 24-302.
<i>Perimeter Setbacks</i>	25' minimum from any street boundary; 20' from any property boundary See Section 24-803 for perimeter landscape standards.
Home Sites	
<i>Lot Size</i>	2,500 s.f. minimum, <i>Exception:</i> 1,200 s.f. minimum for any project with more than 30% of the project areas designed as useable Open & Civic Spaces meeting the types and standards in Section 24-302
<i>Lot Width</i>	25' minimum, and at least 20' frontage on a public street, common internal street, or common open space with street access at the rear of the site.
<i>Setbacks</i>	Front: 10' minimum, or 18' minimum from internal street edge, whichever is greater Side: 5' minimum, or 3' minimum with 10' between buildings on adjacent lots Rear: 10' minimum All buildings shall meet the project perimeter setback.
<i>Height</i>	30' maximum
<i>Site Design</i>	Each home site shall have a private patio, courtyard or similar outdoor amenity of at least 120 square feet. Any structure associated with this outside amenity may be located within 5 feet of the lot or home site boundary. Each home site may have accessory storage up to 120 square feet, up to 8 feet tall. The accessory storage shall be in an accessory building or in an area screened from the internal streets, common areas or adjacent property. An accessory building shall be set back at least 40 feet from any public or internal street, or behind the dwelling unit. Accessory buildings shall be separated by at least 5

Table 24-5-12: R-MH Development Standards

	feet from any other structure. Where the project provides a community storage area of comparable size for each unit, storage on the site is not required
<i>Parking</i>	Projects shall meet Chapter 7 for required parking. At least one parking space shall be on the home site. However, and additional space and any required guest parking may be located on the internal street or in a common parking lot within 250' of the home site..

- d. **Uses.** In addition to any uses enabled for the R-MH district in Table 24-4-2: Zoning Districts and Uses projects may include the following specific uses:
1. Dwelling units consisting of modular homes, mobile homes, or other similar small detached dwellings.
 2. Accessory buildings and uses incidental to those listed above and which support the residential community, including offices, recreation buildings, storage areas, maintenance and utility facilities, or other community services.
- e. **Common Areas.** All common areas not dedicated as home sites according to the development standards in Section 24-504.c, shall be designed as common spaces according to the development plan. This space shall be allocated to:
1. *Internal Streets.* Internal streets shall laid out to organize the project into blocks and lots so that all home sites and lots are served by streets. Internal streets shall be 20' where no parking is permitted, 24' wide where parking is permitted on one side, and 28' wide where parking is permitted on both sides. Internal streets shall connect to public streets as follows:
 - (a) One connection for projects under 25 dwelling units;
 - (b) Two connections for projects between 25 and 100 dwelling units.
 - (c) One connection per every 50 dwelling units for projects over 100 dwelling units
 2. *Neighborhood Features & Common Areas.* Common areas shall meet one of the design types specified in Section 24-504 at a rate specified in Table 24-5-10. All common areas shall be designed and located in a manner that ensures adequate accessibility for all units in the community.
 3. At least one of these spaces shall include a community building, which is centrally located, for recreation and meeting functions, laundry facilities, or other common amenities. The community building shall be at least 1,000 square feet, or 15 square feet per dwelling unit, whichever is greater.
 4. Other internal circulation or open space such as walkways, landscape perimeters or other site design amenities that improves the quality of the community and its relationship to surrounding areas. Pedestrian connections shall be accounted for on all internal streets or at greater intervals through a trail or path system.
 5. A common storage and utility area shall be provided within the plan including at least 100 square feet per unit. This area may be used for storage of large equipment, recreational vehicles, maintenance or other utility functions for the community. This area shall be screened from the project and from surrounding property according to the landscape standards in Article 8.

- f. **Building Design.**
1. All dwellings shall have a front entry feature, such as a porch, stoop, or outside patio relating the home site to the lot frontage or other common open space upon which the dwelling is located.
 2. Parking spaces on a home site shall be located to the side or rear of the dwelling. Home sites may include a carport, provided it remains open and unenclosed on at least 75% of the perimeter, is no taller than the dwelling unit, is no larger than 400 square feet, but in no case larger than the dwelling unit.
 3. Any mobile home or similar non-foundational dwellings shall:
 - a. Be secured to the ground by tie downs and ground anchors in accordance with the applicable building code;
 - b. Be skirted within 14 days after placement in the community by enclosing the open area under the unit with a material that is compatible with the exterior finish of the dwelling and consistent with the quality of development in the community.
 - e. Be located on a hard surface pad with a minimum of 18-inch concrete ribbons or slabs capable of carrying the weight and of sufficient length to support all blocking points, with a proper surface between to control weeds.
- g. **Landscape and Parking Design.** The standards of Chapters 7 and 8 are generally applicable to R-MH district development plans, except as modified through a development plan based on the approval procedures and criteria in Section 24-204 or 24-205.
- h. **Subdivisions.** Each home site may be individually platted if:
1. All lots shall have public utility access as provided in Chapter 3, including public easements for access to each home site and all other standards and criteria of the subdivision standards are met;
 2. All dwellings are on a permanent foundation or affixed to a permanent slab; and
 3. There are covenants and restrictions assuring that all provisions of this section and the approved development plan, will be maintained through a management entity or common association.

Reserved Sections 24-507 through 24-600

Section 5. The Greeley Municipal Code shall be amended by adding thereto a new Chapter 6 – Nonresidential Development Standards of Title 24 to read as follows:

Chapter 6 Nonresidential Development Standards

24-601 Intent & Applicability
24-602 Nonresidential Development Standards
24-603 Nonresidential Design Standards

24-601 Intent & Applicability

- a. **Intent.** The Nonresidential Development Standards have the following intent.
 - 1. Promote good civic design and improve the appearance and vibrancy of commercial districts, employment centers, civic spaces, and other public places.
 - 2. Design and locate open spaces as an extension of the public realm, and emphasize the different contexts of places throughout the City.
 - 3. Improve the accessibility of centers and districts throughout the City by arranging development within multi-modal networks, and coordinating site access and internal circulation systems with these networks.
 - 4. Use buildings to shape streetscapes and public spaces, and design building facades and lot frontages to relate to these spaces.
 - 5. Refine the design, scale, and details of buildings based on the relationship to the public realm and make distinctions in design based on the context of development.
 - 6. Improve the value of places, strengthen the economic potential of commercial districts and employment centers, and promote lasting and sustained investment in nonresidential development through good design.
- b. **Applicability**
 - 1. The standards in this Chapter shall apply to all development in the C-L, C-H, MU-L, MU-H, I-L, I-M, and I-H districts, except where stated that sections only apply to specific districts or specific situations.
 - 2. All new structures shall comply with these standards.
 - 3. Modification or additions to existing structures or sites shall meet these standards to the extent of the modification or addition, except that the Director may waive any design standards applied to modifications or additions that:
 - (a) Conflict with the consistent design of an existing building;
 - (b) Conflict with the prevailing character on the block or immediate vicinity of the project; or
 - (c) To otherwise facilitate infill development or adaptive reuse of an existing building.
 - 4. The standards shall not apply to ordinary maintenance of existing buildings, except that maintenance to any building shall not occur in a manner that brings the building or site to a greater degree of non-conformance with these standards.

24-602 Nonresidential Development Standards

- a. **District Lot and Building Standards.** The lot and building standards for nonresidential districts are specified in Table 24-6-1.

Table 24-6-1: Nonresidential District Lot & Building Standards

Zoning District	Lot Standards			Minimum Setbacks				Building Height
	Size	Frontage Width	Open Space	Front [1]	Interior Side [2]	Corner Side [1]	Rear [2]	
C-L <i>Commercial Low Intensity</i>	n/a	25'+	20%	25'	0'	25'	0'	40'
C-H <i>Commercial High Intensity</i>	n/a	25'+	20%	25'	0'	25'	0'	60'
MU-L <i>Mixed-use Low Intensity</i>	20K s.f. max	25' – 100'	15%	0' – 10'	0'	0' – 10'	0'	40'
MU-H <i>Mixed Use High Intensity</i>	2 ac. max	25' – 300'	15%	0' – 10'	0'	0' – 10'	0'	60'
I-L <i>Industrial Low Intensity</i>	n/a	50' +	10%	25'	0'	25'	0'	40'
I-M <i>Industrial Medium Intensity</i>	n/a	100'+	10%	25'	0'	25'	0'	40'
I-H <i>Industrial High Intensity</i>	n/a	100'+	10%	25'	0'	25'	0'	60'

[1] Front setbacks may be modified according to the frontage type design standards in 2-603.b.

[2] Non-street setbacks shall be as specified by the building code for each class of building. However, greater setbacks may be necessary to meet the building design standards or landscape standards applicable to a particular use or building.

[3] Any district that permits residential uses may allow residential lots and buildings designed according to the residential building type standards in Chapter 5.

b. **Dimension Exceptions.** The following are exceptions to setback and building dimensions standards established in Table 24-6-1: Nonresidential District Building & Lot Standards.

1. **Setback Encroachments.** The following encroachments into the required setback are permitted, except in no case shall this authorize structures that violate the provisions of any easement.
 - (a) Any projections over public rights of way, or any similar area designed for pedestrian circulation, shall be at least 8 feet above the grade, and in no case within 5 feet of any curb for a street, through access drive or other area designed for vehicles.
 - (b) Structural projections such as bay windows, balconies, awnings, canopies, chimneys, eaves, cornices, open fire escapes, egress wells, or other non-foundational overhangs or projections may extend up to 4 feet from the foundation and encroach into the setback, but no closer than 3 feet from any side or rear lot line. This exception shall be limited to no more than 20% of a building elevation.
 - (c) Ground-mounted mechanical equipment, meters, and utility boxes accessory to the building may be located in the side or rear setback provided that it extends no more than 6 feet from the principal building, no closer than 3 feet to the lot line, and is screened from public right-of-way by structures or landscape. These limitations do not apply to any utility structures otherwise authorized to be located according to easements or in the right-of-way, which shall follow the location and design standards of those specific authorizations.
 - (d) A lot may have more than one principal building, provided any accessory, secondary, or principal building shall be located at least 10 feet from any other building on the same or adjacent lots, or be joined by a party wall meeting all aspects of the building code.
 - (e) Any other accessory use or structure within the setback, not specified in Section 24-602.c, shall have a setback of at least 1/3 its height from the property line.

2. **Height Exceptions.** The following are exceptions to the height limits in Table 24-6-2:
- Building elements integral to the design and construction of the building, such as parapet walls, false mansards, or other design elements essential to a quality appearance of the building may extend up to 6 feet above the roof deck of a flat roof.
 - Architectural features such as chimneys, ornamental towers or spires, and similar accessory features that are less than 20% of the building footprint may extend up to 15 feet above the maximum building height, but in no case more than 50% above the actual building height.
 - Functional and mechanical equipment such as elevator bulkheads, cooling towers, smoke stacks, roof vents, or other equipment may be built up to their necessary height in accordance with building codes provided they are screened according to the standards of this code or otherwise incorporated into the architecture of the building.
 - Accessory site structures such as flag poles, monuments, or water towers, may have a height limit of 50 feet, but shall be setback a distance of at least 1/3 its height from the property line.
 - 1 foot of additional height may be permitted for each 1 foot in additional setback, up to a maximum of 10 additional feet above the maximum height limit. For any structure using this exception where there is no required setback, and default required setback of 10 feet shall be used for applying this exception. The additional setback area shall be used for landscape areas required by Section 24-803 or open space meeting the standards of Section 24-603.d.
 - All height exceptions shall be in conformance with air space regulations relative to the Airport Overlay District in Section 24-1002.

- c. **Accessory Buildings – Nonresidential.** Accessory buildings shall be permitted in association with and on the same lot as a principal building, subject to the standards in Table 24-6-2, Nonresidential Accessory Structures, and to the following additional limitations.

Table 24-6-2: Nonresidential Accessory Structures

Type	Quantity	Size	Height	Setbacks
Minor Structure (small shed, and similar structures)	1 / lot; + 1 / each additional 10k s.f.; - Maximum of 3	120 s.f. max.	12' max.	0' side or rear; 5' if on a concrete slab or similar foundation; and 25' on any street side lot line - Behind the rear building line of the principle structure
Secondary Building (detached accessory building)	1 / principal building	25% max. of principal building footprint, up to 1,200 s.f. max.	25' max., but no higher than principal structure.	5' from side and rear; 10' from street side; and - At least 12' behind the front building line of the principal structure
Any building over 12' high or more than 250 s.f. footprint shall meet the design standards.in Section 24-502.c.2.				

1. **Generally.**
- All accessory buildings shall be at least 10 feet from the principal building, or other distance specified by applicable building codes based on fire ratings of adjacent walls.
 - Accessory buildings shall be clearly incidental and subordinate to the principal building or use, in terms of scale, location, and orientation.
 - Minor accessory structures of 120 square feet or less, and not on a slab or similar foundation do not have a required interior side or rear setback, but should be movable and are otherwise placed “at risk” by the owner with regard to any easements, fence, or screening requirements.

2. **Secondary Building Standards.** In any nonresidential district, secondary buildings over 250 square feet footprint or 12 feet high shall meet the following massing and design standards to ensure compatibility with the principal structure:
- Any portion of the building or structure potentially visible from the street or other public areas shall use materials, colors, scale and forms (roofs and massing), and architectural details that are compatible with the principal structure, or otherwise be screened according Section 24-803.
 - Any building or structure exceeding the limits in Table 24-6-2 shall be treated as a second principal building and meet all lot and building design standards applicable to principal buildings.
- d. **Fences & Walls.** Fences and walls in Nonresidential districts shall be limited to the sizes and locations in Table 24-6-3, Nonresidential Fences & Walls.

Table 24-6-3 Nonresidential Fences & Wall	
Location	
Front <i>In the front setback or any location in front of Front Building Line.</i>	3.5' high 3.5' – 6' if it is ornamental design that is at least 75% open (i.e. wrought iron). - Up to 8' for ornamental features at pedestrian entries.
Side and Rear <i>In the side, street side, or rear yard and behind the Front Building Line.</i>	6' high; 8' in the I-M or I-H district, provided the fence remains open (i.e. wrought iron or chain link) - A fence or wall outside of required setbacks (i.e. in the buildable envelope), and behind front building line can exceed 6', but may be limited by building codes or other general development and design standards.
Perimeter Fences <i>Any fence within 30' of a Collector or Arterial street right-of-way as part of Perimeter Landscape in Section 24-803.</i>	Any fence designed as part of a perimeter landscape area along collector or arterial streets, or otherwise located within 30' of a collector or arterial right-of-way and longer than 100', shall meet the following standards: - All fencing shall be softened with landscape materials on the street side of fences meeting the perimeter landscape standards of Section 24-802. - Expanses of over 100' shall be broken up by either: - Offsets of +/- 3' on 1/3 of length for every 150' span; or - Ornamental designs on at least 50' of every 150' space that is at least 75% open (i.e. wrought iron); or - Architectural pillars or posts (i.e. stone, or masonry) at least every 50'. - Alternatives may be approved by the Director in association with the perimeter landscape plans for in Section 24-803, and Streetscapes in 24-301.

1. **General Height & Location Standards.** The following standards are applicable to fences and walls in all locations.
- All fences or walls along rights-of-way or easements shall be located:
 - At least 1' from any ROW or easement that prohibits structures; otherwise fences in easements shall be permitted only subject to specific easement language and limitations.
 - At least 2' from any sidewalk.
 - At least 3' from the edge of any alley or similar vehicle access.
 - Fences or walls may only be located in the right-of-way or easement by a revocable right-of-way permit from the Public Works Department.
 - All fences or walls located along common lot lines shall be located so:
 - The fence is on the property line; or
 - The fence is at least three feet from the property line. Any areas set back three feet or more, which could become enclosed by other similarly located fences, shall provide at least one gate for access and maintenance equipment.

- (3) The finished side faces adjacent property or any public right-of-way, public space or common areas.
 - (c) Any fence or wall in the floodplain shall also require a floodplain development permit.
 - (d) All fence or walls shall be located and designed to comply with sight distance requirements of 24-301.d.2. Any fence or wall that could potentially create a sight obstruction for vehicles crossing pedestrian areas or entering the street may require greater transparency or additional location restrictions to allow for safe sight distances for the vehicle.
 - (e) Temporary fences for construction may be up to 6 feet or as otherwise specified in construction permits.
 - (f) All fences and walls may be subject to additional standards of the building code, approved drainage plans for the lot, or other design and development standards. In particular, any of the following allowed by these standards, permitted by alternative compliance, or approved by a variance, requires a building permit:
 - (1) Any fence or wall over 6 feet high;
 - (2) Any retaining walls over 4 feet high;
 - (3) Walls in the setbacks over 6 feet high shall only be permitted by alternative compliance in Section 24-208.
2. *Materials.* Fences and walls shall be consistent in architectural character, materials, and appearance of the principal building(s) on the same lot. Fences shall be constructed out of any of the following materials:
- (a) Wood or vinyl simulating wood. Wood shall be either naturally rot resistant (such as cedar), or pressure treated for rot resistance;
 - (b) Wrought iron or aluminum simulating wrought iron;
 - (c) Stone, brick, concrete with stone or brick veneer, pre-cast concrete simulated stone or brick, or decorative concrete textured to simulate masonry; or
 - (d) Chain link or vinyl clad chain link:
 - (1) Chain link is permitted in the side or rear yard only in the C-L, C-H, MU-L and MU-H districts.
 - (2) Chain link with slats is only allowed in the I-M and I-H districts, and proved it is not located along a collector or arterial street.
 - (3) Chain link fences may be up to 12 feet for any security fence around sports facilities, courts, pools or similar facilities, provided it is 20 feet from any lot line and provided all portions over 8' remain free of opaque screens.
 - (e) Barbed wire may be allowed only in the I-M, I-H, C-D and H-A districts, added to the height of chain link fences and located above 6.5 feet. Barbed wire is limited to no more than three bands. Exterior area security lighting, controlled by an automatic light level switch, is installed and maintained in good operating condition.

Section 24-603 Nonresidential Design Standards

- a. **Applicability.** The design standards shall apply to the C-L, C-H, MU-L, MU-H, I-L, I-M, and I-H zoning districts.

1. *General Applicability.* The design standards apply based on the context of a particular project, according to the general applicability provisions in Table 24-6-4.

Table 24-6-4: Applicability of Design Standards

Zoning District	Applicability
C-L , C-H, I-L, I-M and I-H	- Frontage C standards preferred and generally applicable; - Frontage D standards may apply on large commercial sites (over 2 acres) or industrial buildings; - Frontage A and B standards by alternative compliance.
MU-L	- Frontage A standards preferred and on at least 2 blocks or at least 50% of a project; - Frontage B standards generally applicable on the remainder; - Frontage C or D standards by alternative compliance.
MU-H.	- Frontage A standards preferred and on at least 4 blocks or at least 50% of a project; - Frontage B standards generally applicable on the remainder; - Frontage C or D standards by alternative compliance.
Residential Development	Where residential building types are permitted in any nonresidential district, they may be developed according to the Residential Development Standards in Chapter 5.

2. *Alternative Compliance.* Alternative compliance to the general applicability of the design standards in Table 24-6-2 may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
- Streets with pedestrian amenities, on-street parking, or designed according to the Pedestrian or Avenue Street type standards in Section 24-301 are generally appropriate for the Frontage A and Frontage B frontage type and design standards.
 - Streets with higher traffic speeds or volumes, that lack pedestrian amenities, or that lack on-street parking are generally appropriate for Frontage C and Frontage D frontage type and design standards.
 - Where the context of a specific block or site has a prevalence of development that reflects patterns similar to any particular frontage and design type, the prevailing pattern may be implemented.
 - A development plan for an area or project may more specifically map street types and frontage types on a block-by-block basis, and any plan officially approved by the Planning Commission or City Council in association with the development may further specify the applicability of the frontage types and design standards for a particular district, area, or project.

- b. **Frontage Design.** Frontage design determines the relationship between private development and the public realm, and determines the character of different districts. Building placement, parking and access locations, and landscape and streetscape design encompass the design of the frontage. Frontage types designed according to the standards and design objectives of this sub-section may be used to modify the front setback established in Table 24-6-1, as indicated by the applicability provisions of Section 24-603.a.

1. **Design Objectives.** Frontage types in Table 24-6-5: Nonresidential Frontage Design shall be applied to meet the following design objectives:
 - (a) Enhance the image of the City by coordinating streetscape investment with private lot and building investment.
 - (b) Orient all buildings and lots to the public street, or to common open spaces that serve as an extension of the streetscape and public realm.
 - (c) Design frontages based on the context of the area, block, and street, particularly emphasizing landscape areas to screen and separate sites from higher-volume / higher speed streets and emphasizing social spaces and human-scale architectural features on streets intended for more compact and walkable development.
 - (d) Coordinate development across multiple lots along block faces, considering access, parking, landscape, and open space design.
 - (e) Allow a range of different building types to engage the streetscape in compatible ways along a block through similar frontage designs.
 - (f) Strengthen the identity and economic value of distinct places by reinforcing consistent patterns of streetscape, frontage design, and building placement and form.
 - (g) Frontages should be similar for all lots on the same block face or gradually transition to different types in contexts that allow multiple frontage types.
2. **Frontage Design Standards.** Frontage types shall be designed according to the standards in Table 24-6-5: Nonresidential Frontage Design. Sub-sections following the table provide specific design strategies and techniques to be used to meet these standards and the design objectives of this sub-section.

Table 24-6-5: Nonresidential Frontage Design

	<i>Frontage A</i>	<i>Frontage B</i>	<i>Frontage C</i>	<i>Frontage D</i>
<i>Front Building Line (build-to range)</i>	0' – 10'	0' – 25'	25' – 80'	80' +
<i>Required Front Building Line</i>	80%	60%	40%	n/a
<i>Access Width (max.)</i>	20'	24'	32'	40'
<i>Access Spacing (min.)</i>	1 per block	200'	150'	50'
<i>Parking Setback (min.)</i>	Behind rear of building.	Behind front building line	5' – 20' min. See Section 24-704.b. for parking setbacks specific to parking lot size	5' – 20' min.
<i>Extent of Parking Frontage (max.)</i>	0%	30%	n/a	n/a
<i>Landscape</i>	See Sections 24-301 and 24-302		See Section 24-803	
<i>Applicability</i> (See Table 24-6-4)	<i>MU-L, MU-H</i>	■	□	◇
	<i>C-L, C-H</i>	◇	◇	■
	<i>I-L, I-M, I-H</i>	◇	◇	■

- Preferred
 □ Permitted
 ◇ Limited to Alternative Compliance

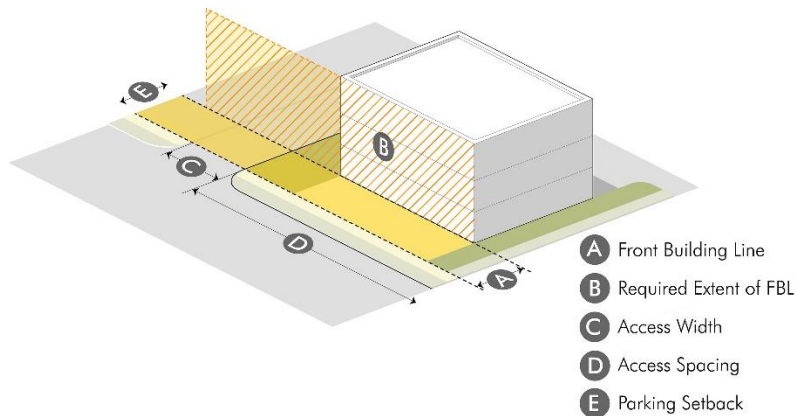


Figure 24-6-1 Frontage Design

Frontage types are differentiated based on the location of the front building line (FBL), the extent of the front building line occupied by the building (Required FBL), access widths, and parking location and extent along frontage. Coordinating frontage design of multiple buildings and sites along a block impacts the character of the streetscape and the block.

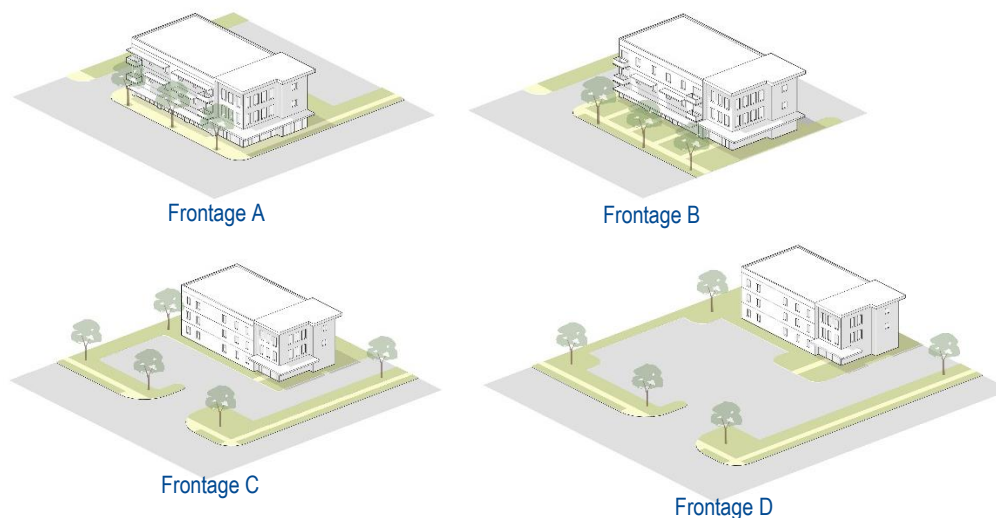


Figure 24-6-2 Frontage Types

The relationship between private development and the public realm determines the character of different districts. Building placement, parking and access locations, and landscape and streetscape design distinguish different frontage type designs. Social spaces and human-scale architectural features are emphasized in more pedestrian-oriented contexts, and landscape screens and setbacks are emphasized in more car-oriented areas.

3. **Building Form and Placement.** All buildings shall establish a front building line within the range specified in Table 24-6-5, Nonresidential Frontage Design. The required front building line shall modify the required front setback in Table 6-2 based on the appropriate frontage for the street and block. All buildings shall occupy the minimum percentage specified for required front building line with either of the following:
 - (a) Front building facades meeting the design standards in Table 24-6-6, Nonresidential Building Design; or
 - (b) Open spaces meeting the requirements of Section 24-603.d provided:
 - (1) It is limited to no more than 50 feet or 50% of the lot frontage, whichever is greater;

- (2) There are defining features at the extension of the required front building line, such as decorative walls or fences, landscape features and other human scale details; and
- (3) All building facades fronting the open space meet the standards otherwise applicable along the streetscape.
- (c) Projects designed around internal access streets according to Section 24-301 may use the internal access streets for the purpose of applying frontage standards.

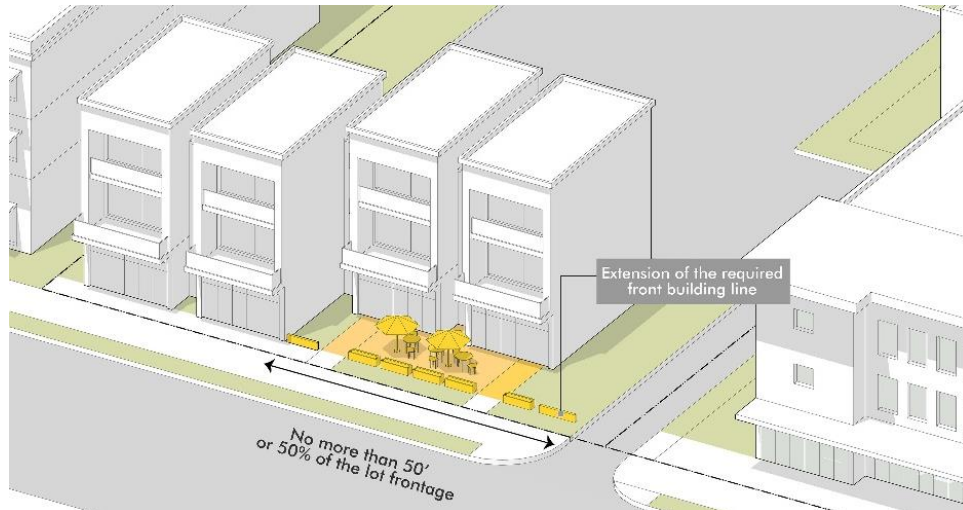


Figure 24-6-3 Required Front Building Line

The required front building line determines the extent of the lot width required to be occupied by building frontage at the front building line. Alternative spaces that activate the streetscape with active social spaces may serve this function provided they establish similar defining elements of this space along the frontage. 24-603.b.3.(a) and (b).

- 4. **Access and Parking Limits.** The following standards apply to the driveway and parking limits in Table 24-6-5, Nonresidential Frontage Design:
 - (a) Access width limits apply to the first 25' of the lot depth, or up to the Front Building Line, whichever is less.
 - (b) Access spacing specifies the minimum distance between edges of driveways or internal access streets. However, the Greeley Design Criteria and Construction Specifications for Streets may specify different access standards on any particular street or lot.
 - (c) In cases where these standards limit access to a particular lot, options that coordinate access to lots on the same block shall be used, including mid-block alleys, internal access streets, common access lanes, or shared drives and cross access easements.
 - (d) All parking shall be setback as specified in Table 24-6-5 and limited only to the extent specified along the frontage, and be screened according to the standards in Chapter 7.

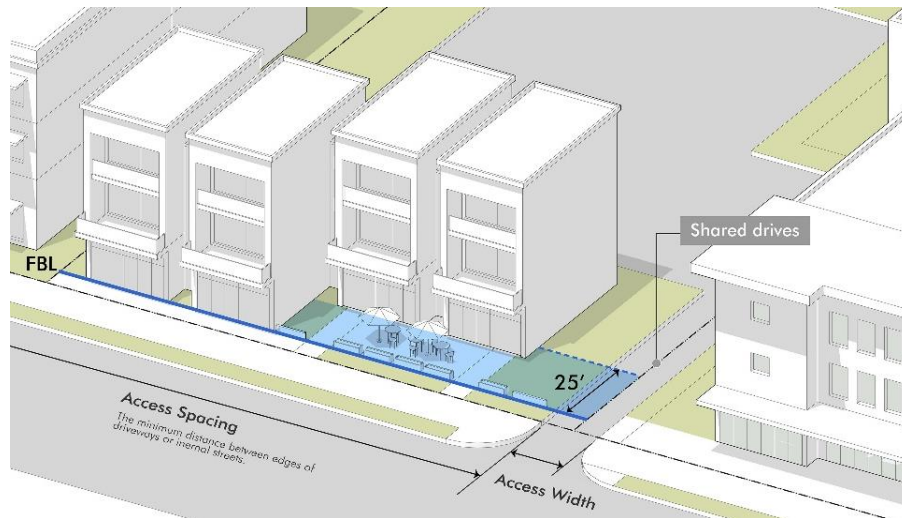


Figure 24-6-4 Access and Parking Limits

Access & parking limits determine the extent of frontages that are designed for cars, including driveways and surface parking. Parking and vehicle access is more limited in the frontage area for pedestrian-oriented contexts, and more permissive in car-oriented areas. 24-603.b.4.(a) and (b).

5. **Landscape.** The remainder of the frontage between the streetscape and front building line shall include landscape and open space designs.
 - (a) For Frontages A and B this area shall be designed to coordinate as an extension of the streetscape according to Sections 24-301.
 - (b) For Frontages B and C this area shall be designed according to the parking setback and landscape design standards in Chapters 7 and 8.
 - (c) On all frontage types, lot open space meeting the standards of Section 24-603.d may be included in this area.
 6. **Alternative Compliance.** The appropriate application of frontage types is based upon a combination of the character of the zoning district, the streetscape design on which the development fronts, and the building form and placement on a specific lot. Alternative compliance to the frontage design standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
 - (a) The context presents clear pattern of existing buildings and lots on the same block and opposite block face with a different arrangement in terms of the front building line, driveway access patterns, and extent and placement of parking lots and service areas.
 - (b) An alternative design allows the building, access, and parking to be sited in a way that preserves topography or other natural features on the site, and does so in a way that equally or better meets the design objectives.
 - (c) Parking and access that serves a greater area beyond the site and block may deviate from these standards, provided the location is consistent with development patterns in the vicinity and it is designed to minimize impacts on streetscapes.
 - (d) In all cases the deviation is the minimum necessary to address the circumstance and does not negatively impact other design standards applicable to the building or site.
- c. **Building Design.** Building design refines the scale and form of buildings beyond the basic setback, height, and lot coverage standards by breaking down the volume into smaller-scale masses, and by adding depth, texture, and variation to surfaces to relate to the spaces around the building.

1. **Design Objectives.** Building design standards in Table 24-6-5, Nonresidential Building Design shall be applied to meet the following objectives:
 - (a) Reinforce the context, patterns, and design character of the zoning district or a particular area.
 - (b) Refine the scale, massing, and details of buildings to a greater degree the closer they are to the public realm and other publicly used spaces.
 - (c) Arrange buildings and vary the massing in a way that defines streetscapes, public spaces, and other valuable active and social spaces on the site.
 - (d) Locate doors and windows in a way that activates spaces, creates connections to important exterior spaces, and promotes economic activity at the interface of buildings and public spaces.
 - (e) Relate buildings to adjacent development by mimicking similar scale, massing and proportions through step-backs and secondary masses that break up larger masses and reduce the volume and perceived size of larger buildings.
 - (f) Use materials and human-scale architectural features to create depth, texture, variation, and visual interest to walls, particularly on larger facades, along streetscapes, or near active open spaces or adjacent lots.
 - (g) Strengthen the identity and economic value of distinct places by reinforcing any prevailing architectural themes or styles; where no prevailing theme or style exists, encourage unique architectural expression and design characteristics inherent in the chosen architectural style for the building to establish distinctive themes and styles.
 - (h) Emphasize the quality and longevity of investments with materials and colors that are attractive, durable, and have low maintenance requirements.

2. **Building Design Standards.** Table 24-6-5, Nonresidential Building Design provides standards for massing and facade design based on the frontage type and the placement of the building. Sub-sections following the table provide specific design strategies and techniques to be used in meeting these standards and the design objectives.

Table 24-6-6: Nonresidential Building Design				
	Frontage A	Frontage B	Frontage C	Frontage D
<i>Front Building Line (from Table 24-6-5)</i>	0' – 10'	0' – 25'	25' – 80'	80' +
<i>Wall Plane Limits</i>	50' / 500 s.f.	100' / 1,000 s.f.	100' / 1,000 s.f.	150' / 2,000 s.f.
<i>Blank Wall Limits</i>	15' / 300 s.f.	30' / 600 s.f.	50' / 1,000 s.f.	50' / 1,000 s.f.
<i>Entry Feature Spacing (max)</i>	50'	75'	1 per building	1 per building
<i>First Story Transparency</i>	60% - 90%	40% - 90%	40% - 90% within 50' of entrance	40% - 90% within 25' of entrance
<i>Upper Story Transparency</i>	15% - 40%	15% - 40%	15% - 40%	n/a
<i>Secondary or Side elevations within 20' of ROW</i>	Meet primary frontage design standards for at least 30' or 30% of elevation of building whichever is greater.			
<i>Secondary Side / Rear elevations between 20' and 100' or otherwise directly visible from ROW</i>	Meet standard at 50% of the requirement for primary elevations, except for required entrance ; OR Have a Type III or higher perimeter landscape within 50' of the building per Section 24-803.			

3. **Wall Plane Limits.** Larger building elevations shall be broken into smaller components by one or a combination of the following techniques to meet the wall plane limits in Table 24-6-5, Nonresidential Building Design:
- (a) Emphasize structural bays and vertical breaks in interior components of the building at regular intervals, with visible features such as columns, pillars, or pilasters, or other details and accents that are between 6 and 48 inches wide, project between 4 and 24 inches off the façade.
 - (b) Differentiate massing with projections, balconies, cantilevers or step backs from the main mass associated with entrance features, different stories, or secondary masses of the building. Massing shall create deviations in the wall plane of at least 2 feet if projecting from the façade and at least 4 feet if recessed from the façade, and encompass at least 20% of the entire elevation.
 - (c) Horizontal differentiation of a base, body and top of buildings.
 - (1) For buildings less than 3 stories, this can be a distinct foundation, a main façade, and an embellished roof structure, such as eaves and fascia for pitched roofs, or cornices and parapets for flat roofs.
 - (2) For buildings 3 stories or more, the first floor should be clearly differentiated from upper stories to establish the base and an embellished roof structure.
 - (3) Any belt course or trim band establishing the break in base, body and top shall use a material or pattern distinct from the primary material, be 6 to 36 inches wide, and off-set from the wall plane 4 to 24 inches; or be a lessor trim associated with a material change.

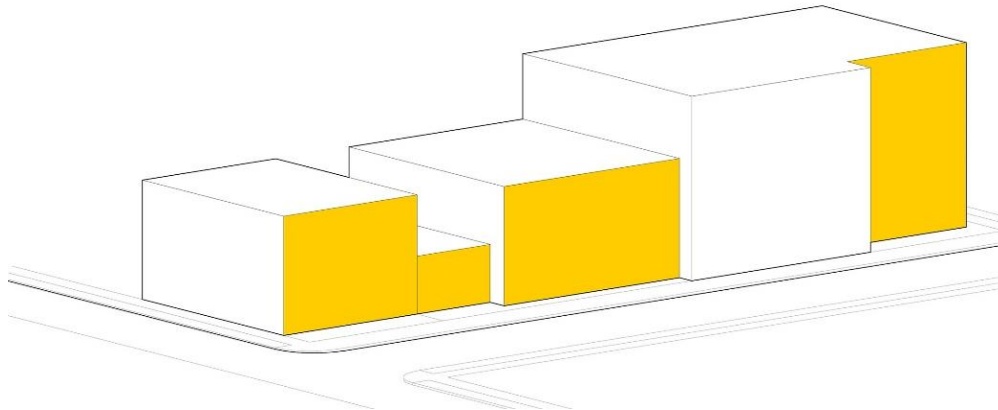


Figure 24-6-5 Wall Plane Limits

Wall planes that exceed either the linear dimension limits or the square foot limits in Table 24-6-4 wall plane limits shall be broken up by massing elements and/or architectural details. 24-603.c.2. / Table 24-6-6



Figure 24-6-6 Vertical Articulation

Defining buildings with a distinct structural bays creates a finer grain of buildings, both when viewed from a distance and when experiences on the streetscape. This is particularly important for longer expanses of buildings and can help integrate larger buildings and lots within a pattern of smaller buildings and lots. 24-603.c.3.(a)



Figure 24-6-7 Horizontal Articulation

Defining buildings with a distinct base, body and top can help reduce the scale of larger buildings and can create relationships between adjacent buildings with dissimilar scale. 24-603.c.3.(c)

4. **Blank Wall Limits.** Building elevations shall feature interest, variation, depth, and texture by one or a combination of the following techniques to meet the blank wall limits in Table 24-6-5, Nonresidential Building Design:
 - (a) Patterns of windows and doors meeting the transparency requirements in Section 24-603.c.5. and 6.
 - (b) Massing elements meeting the wall plane limits of Section 24-603.c.3
 - (c) Ornamental architectural details complimentary to the materials and architectural style of the building.
 - (d) Color and material changes associated with trim or massing elements of the building.

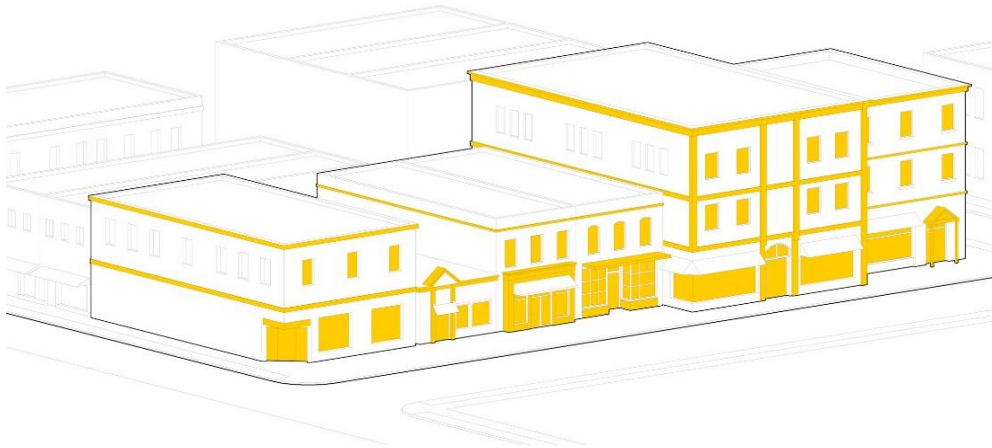


Figure 24-6-8 Blank Wall Limits.

A combination of architectural features, windows and doors breaks up larger expanses of wall plane and allow them to relate better to spaces around the building. More pedestrian-oriented streetscapes or active social spaces limit blank wall areas more strictly than buildings remote from the streetscape or not near active social spaces. 24-603.c.4.

5. **Primary Entrance Features.** Primary public entrances shall be clearly defined on all front facades with at least three of the following elements and be located at intervals specified in Table 24-6-5, Nonresidential Building Design:
 - (a). A single-story architectural emphasis such as raised parapets or gables, canopies, porticos, overhangs, pediments, or arches.
 - (b). Transom or sidelight windows that frame and emphasize the entry.
 - (c). Architectural details such as tile work and moldings, columns, pilasters, or other similar material changes.
 - (d). Integral planters or wing walls associated with a recessed or projecting entry court or plaza that integrates landscape and hardscape designs.
 - (f). For corner buildings, any entrance feature located on the corner may count to both sides, and may be considered located at 25' from each corner for the purpose of the required Primary Entry Feature intervals.

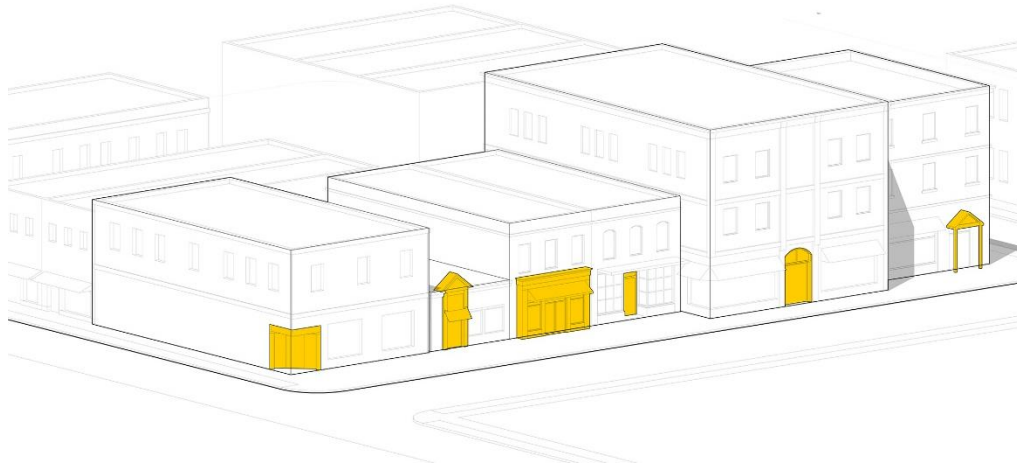


Figure 24-6-9 Primary Entry Features.

Entrances help activate the streetscape and orient buildings to public spaces. More pedestrian-oriented blocks benefit from the activity created by smaller-scale uses and the rhythm created by more frequent entrances. More car-oriented streets may allow less frequent entrances or alternative orientations of buildings to internal access streets or common spaces. 24-603.c.5.

6. **Transparency.** Buildings shall have the percentage of openings specified in Table 24-6-5, Nonresidential Building Design, based on the following:
- Where expressed as a first story requirement the percentage shall be measured between 2 feet and 8 feet above the sidewalk grade, or within 10 feet above the first floor elevation if the building is set back more than 10 feet from the street.
 - Where expressed as an upper story requirement, the percentage shall be measured between the floor level and ceiling of each story.
 - All first story windows required shall provide direct views to the building's interior or to a lit display area extending a minimum of 3 feet behind the window.
 - For industrial and civic buildings setback more than 25 feet from the street, clerestory windows may meet the first or upper story window requirements.



Figure 24-6-10 Transparency.

Transparency requirements eliminate large expanses of blank walls and create physical and perceptual connections to spaces around buildings. Meeting the requirements for each story helps reduce the scale of larger buildings. 24-603.c.6.

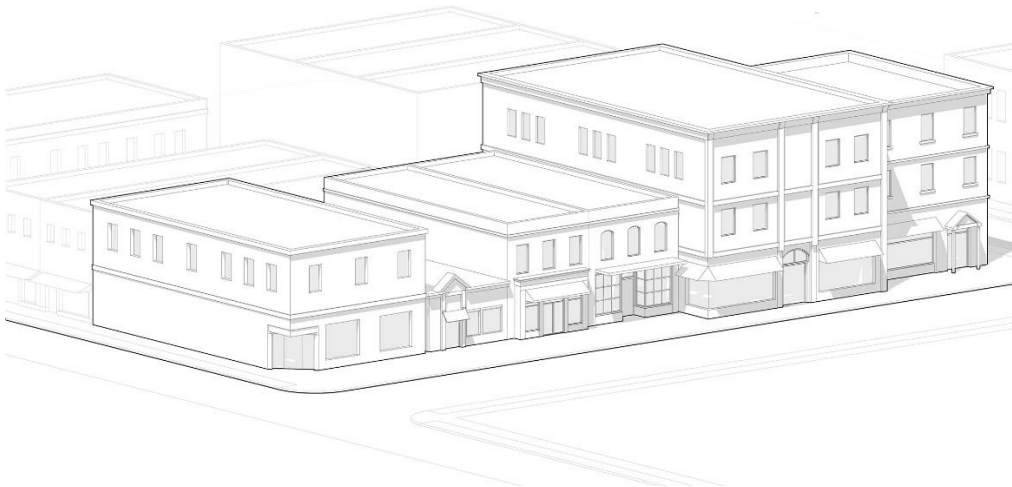


Figure 24-6-11 Facade Composition.

The combination of massing, modulation, entrances, and window transparency determine how a building relates to frontages and adjacent spaces. Building design standards based on the context of the area, type of street, and the position of the building on the block help reinforce the character of distinct districts and places.

7. **Materials.** Use building materials with a texture and pattern that creates visual interest and signifies quality construction and detailing.

- (a) The predominant surfaces on building walls shall be one of the primary materials listed in Table 24-6-6, Nonresidential Building Materials.
- (b) Synthetic alternatives may be approved by the Director if manufacturer specifications and/or precedents for application demonstrate that it will perform equally or better than the principal materials in terms of maintenance, design and aesthetic goals.
- (c) No more than 4 materials should be use, including the use of secondary and accent materials.
- (d) Material changes shall emphasize different elements of the building, in association with the massing and modulation standards.
 - (1) Where material changes are vertical (i.e. different materials stacked one above another), the transition between materials should include a belt course, trim band, sill, cap, frame, roof (if at ceiling height), or similar element to separate the two materials.
 - (2) Where material changes are horizontal (i.e. different materials side-by-side) the transition between materials should occur at interior corners or at the trim line, architectural column, or pilaster in association with a different structural or massing component of the building.
- (e) Material colors shall be used to blend buildings into an area, to coordinate elements of a development, and be drawn from the prevalent color schemes in the surrounding area. Primary material colors should be low-reflectance, subtle, neutral or earth tone colors. Monotonous or monochromatic color palettes are strongly discouraged. The use of high-intensity colors, metallic colors, black or fluorescent colors is limited to accent areas.

Table 24-6-6: Nonresidential Building Materials

Primary Materials (50% to 90%)	Secondary Materials (20% to 40%)	Accent Materials (10% to 30%)
Brick Stone Stucco Slate Exterior Insulation and Finish System (EIFS) – water managed only Concrete Masonry Units (CMU) - colored and textured only Horizontal wood lap siding (50% limit) Architectural metals (prefinished non-corrugated) (50% limit) Corrugated metals (I-H only) Standing seam metal (roofs only)	Any of the primary materials Architectural tiles Glass Color concrete Precast concrete Corrugated metal (I-L, I-M and I-H only)	Any of the primary or secondary materials Precast stone Wood trim

- 8. **4-sided Design.** All buildings shall incorporate 4-sided design, so that that no matter what view you have of the building, the design is not interrupted and all parts are perceived as a coordinated part of a unified whole. Specifically:
 - a. All sides shall exhibit the same quality, continuity, and durability of design including the same primary and secondary materials, although more important sides can reflect priority in the allocation of these materials.
 - b. All sides that are visible from streets, public spaces or active portions of adjacent sites shall have a similar level trim, accent material, details, and ornamentation, although the extent and details may be different to reflect the greater importance

of certain areas closest to the public realm or with greater visibility, and parts not exposed to the public may be designed for utility.

9. **Alternative Compliance.** Alternative compliance to the building design standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
 - (a) The requirement is not consistent with the particular architectural style selected for the building based on reputable resources documenting the style.
 - (b) The requirement would make the building less compatible with designs or characteristics of other buildings or sites adjacent to the project or that are prevalent throughout the area.
 - (c) The requirement is inconsistent with the principal function of the building when applied to industrial buildings in the I-M and I-H districts.
 - (d) Deviations from material standards and any simulated products demonstrate a proven performance in terms of maintenance and quality appearance.
 - (e) In any case, the deviation is the minimum necessary to address the circumstance and does not negatively impact other design standards applicable to the building or site.
- d. **Lot Open Space Design.** The design of open space can reinforce the character of unique districts and distinct places. Lot open space coordinates unbuilt areas with the public realm design of commercial, mixed-use, and industrial areas or uses landscape areas to mitigate undesirable impacts..
 1. **Design Objectives.** The required lot open space in Table 24-6-1 shall be designed and located to meet the following design objectives:
 - (a) Coordinate site design with the larger open space system and public realm design of the area.
 - (b) Use open space as an organizing element for development, creating focal points for buildings or groups of buildings, and creating transitions between distinct building sites or different places.
 - (c) Design a hierarchy of gateways, gathering places, parks, landscape perimeters, and natural features, integrated with streets, internal access streets, trails, and pedestrian passages.
 - (d) Select open space types based on the context of the areas and natural amenities of the site; in general more compact and formal gathering spaces are most appropriate in walkable commercial and mixed use areas, and more spacious and natural areas are most appropriate in large commercial or industrial areas.
 - (e) Use landscape, furnishings, fixtures, art, planters, and other elements of common spaces to complement buildings, coordinate buildings and sites within an area, and distinguish the unique character of different places.
 - (f) Preserve natural features and historical drainage patterns that can serve as amenities for development, maintain views to and from important outside spaces, perform ecological functions, or provide important connecting corridors.
 2. **Lot Open Space Design.** Lot open space required for each building and lot in Table 24-6-1 shall create a common or private amenity for the site and building. Buildings and open spaces on a lot shall be arranged to create usable outdoor spaces that meet one or more of the following types:
 - (a) Private frontage landscape areas designed according to Section 24-603.b., excluding any driveways, parking areas, or other automobile space;
 - (b) Courtyards, plazas, patios, or similar outdoor seating areas that are either designed as an extension of the public streetscape on the frontage, or at least 500 square feet and 20 feet in all directions if internal to the site;

- (c) Common rooftop decks provided they are at least 200 square feet, and at least 12 feet in all directions – this space is limited to no more than 25% of the requirement for the lot and building;
- (d) Private balconies or patios, provided they are at least 6 feet by 10 feet – this space is limited to no more than 25% of the requirement for the lot and building; or
- (e) Landscape areas and perimeter treatments designed according to the standards of Chapter 8. These areas shall be limited to:
 - (1) No more than 25% of the requirement for lot open space in mixed-use districts.
 - (2) No more than 50% of the requirement for lot open space in commercial districts; and
 - (3) No limit in industrial districts.

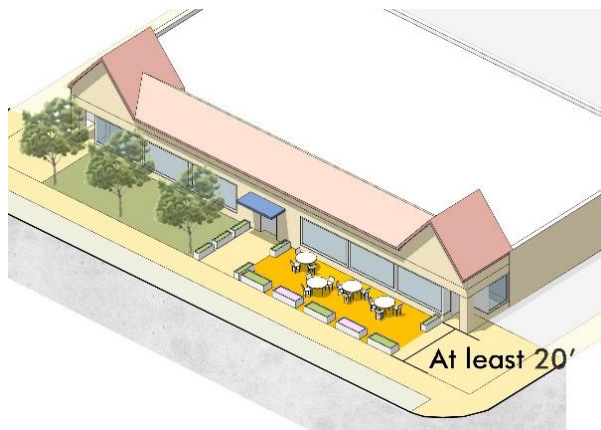


Figure 24-6-12 Courtyards, Patios and Plazas

More compact and walkable places benefit from smaller and more formal social spaces, such as courtyards, patios and plazas. 24-603.d.2.(b).

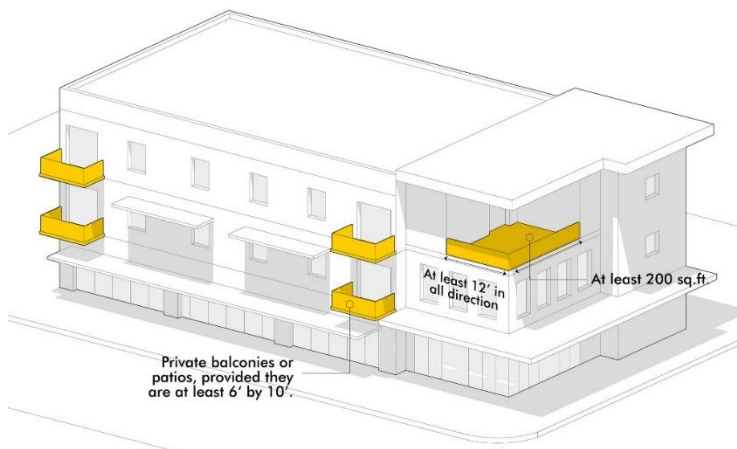


Figure 24-6-13 Private or Common Open Spaces

Private or commons areas incorporated into the building can provide a portion of the useable on-lot open spaces. These elements can also meet design requirements for breaking up the massing or blank wall of buildings 24-603.d.2.(c) and (d)

3. **Alternative Compliance.** Alternative compliance to the lot open space design standards established in this Section may be authorized according to the process and criteria in

Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:

- (a) The lot and building has access to at least two different active open space on the same block or abutting block, and meeting the design and service area standards Section 24-302 or 24-504.
- (b) Other designs that promote infill development or rehabilitation of existing buildings and sites in a compact, and walkable context.

e. **Exterior Lighting.**

1. *Design Objectives.* The following design objectives shall be used in applying the lighting standards in this Section:
 - (a) Provide sufficient illumination for security and safety needs in specific areas
 - (b) Ensure lighting does not interfere with the proper and safe function of the rights-of-way, and mitigate any potential negative affects on adjacent property.
 - (c) Protect residential property or other low-intensity uses from unnecessary light impacts from adjacent uses.
 - (d) Maintain adequate lighting for publicly accessible outdoor areas and social spaces.
 - (e) Enable lighting that enhances architectural elements and landscape features, in subtle and attractive ways.
2. *Location & Height.* Exterior lighting shall be located as specified in Table 24-6-7.

Table 24-6-7: Light Location & Height

<i>Location</i>	<i>Maximum Height</i>
<i>Within 50' of any Residential Zoning</i>	▪ 20'
<i>All other locations – free-standing</i>	▪ 30', but no taller than the principal building
<i>Building-mounted</i>	▪ 30' or 3' below the eave, parapet or cornice, whichever is less.

3. *Maximum Lighting Levels.* Maximum lighting levels are provided in Table 24-6-8. Lighting levels are average maintained horizontal levels, measured using a calibrated, color and cosine-corrected portable light meter and taken at a level position not more than six inches above the ground which the subject light source is on.

Table 24-6-8: Maximum Lighting Levels*

<i>Area</i>	<i>Residential Zones</i>	<i>Commercial & Industrial Zones</i>
<i>Building exterior</i>	0.5; (0.0 at property line)	1.0—5.0
<i>Walks, pathways</i>	0.5; (0.0 at property line)	1.0
<i>Parking lots</i>	1.0; (0.0 at property line)	2.0
<i>Street or driveway lighting (internal to site)</i>	0.6; (0.0 at property line)	1.2
<i>Loading docks</i>	N/A	20.0
<i>Auto sales (outdoor display)</i>	N/A	30.0 average, 60.0 spot location

* Information gathered from Illuminating Engineering Society (IES) Lighting Handbook. One footcandle is equal to one lumen uniformly distributed over an area of one square foot.

4. *General Standards.* All lighting shall be the following design and performance standards:
 - (a) No lighting shall be used in any way which could interfere with the safe movement of vehicles on public streets, including:

- (1) Any fixed lighting that is not designed for street illumination that produces light which could interfere with the operation of a vehicle;
 - (2) Any lighting which could be confused with any type of traffic control device, emergency or warning signals; or
 - (3) Any lighting that blinks, flashes, flickers or changes intensity with the exception of temporary holiday displays.
- (b) No light spillage or glare shall be visible at or beyond the property line of the development. Lighting shall be provided at sidewalks or pathways, common areas or facilities, primary building entrances and in parking areas. All outside lighting shall include fixtures with a dimming interface
- (c) Outdoor lighting shall be L.E.D (Light emitting Diode) "Dark Sky" compliant, per the International Dark Sky Association requirements for reducing light pollution and minimizing glare. The use of low pressure sodium light fixtures shall be prohibited in the city.
- (d) The style and materials of light standards and fixtures shall be compatible with the architectural character and materials of buildings on the site, and building mounted lights are encouraged to use ornamental lights rather than wall pack fixtures.
- (e) All lights shall be directed downward and the light source shall be shielded to direct light away from and not visible from any adjacent property.
- (1) An exception for accent and flagpole lighting may be permitted for upward lights as long as the light source is shielded and not visible from any adjacent property.
 - (2) Wall lights shall be full cutoff fixtures, with flat lenses, and mounted so the lights are directed downward and the light source shall not go beyond the property line.
 - (3) Fixtures installed under canopies, awnings, and overhangs shall be fully recessed.

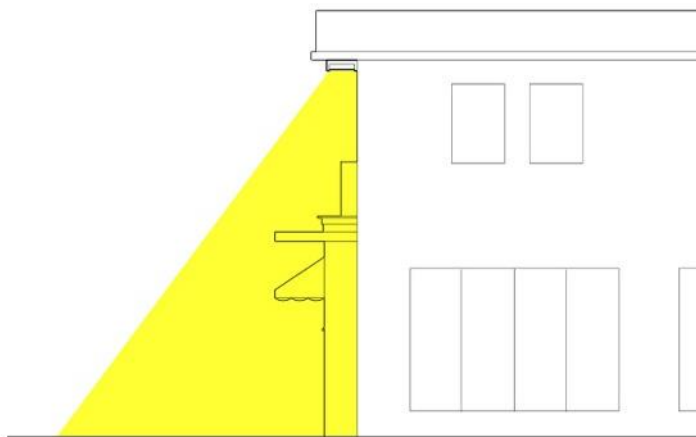


Figure 24-6-14 Lighting Directed Downward onto Site.

.Lighting directed downward eliminates negative impacts of lighting on adjacent property and helps to preserve the night sky views. 24-603.e.4.(e).

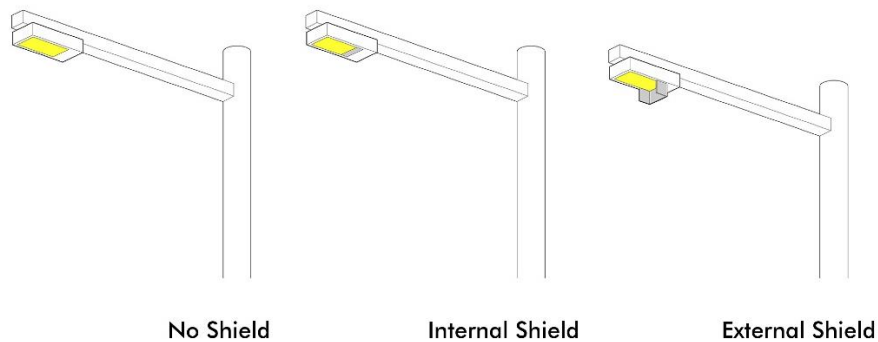


Figure 24-6-15 Light Shielding.

.Light shielding related to the different fixture styles, height, and location helps mitigate the potential negative impacts of specific lights. 24-603.e.4.(e).

- (f) No activity shall be conducted within 500 feet of a residential zone which creates glare exceeding 0.0 footcandle at the property line, except for parking lots, neighborhood recreation and service facilities and streets, which may be illuminated at levels up to 1.0 footcandle.
- (g) All parking lot lighting fixtures and exterior building floodlights, except those required for security purposes, shall be extinguished within one hour after the end of business hours and remain extinguished until one hour prior to the beginning of business hours. If a portion of a parking lot is offered for use after dark, only that portion shall be lighted.
- (h) Lighting within parking structures shall be designed to provide safety and security and be integrated into the architectural character of the structure.
- (i) In addition to all other standards lighting of all outdoor recreational facilities except baseball, softball, soccer, volleyball or football fields; driving ranges; outdoor arenas and amphitheaters shall meet the following:
 - (1) All lighting or illumination units or sources shall be hooded or shielded and directed downward so that they are not visible from any adjacent lot or property; and
 - (2) Lights or illuminating units shall not allow light either directly or through a reflecting device to spill upon any adjacent real property.
- (j) In addition to all other standards, baseball, softball, soccer, volleyball or football fields; driving ranges; or other field recreation facilities shall meet the following:
 - (1) Light fixture or illumination source shall not exceed 90 feet high.
 - (2) Individual lighting of 150 watts or greater shall not be used after 11:00 p.m., or within one hour after the event, whichever is later. Exceptions to this section may be granted by the Director.

Reserved Sections 24-604 through 24-700

Section 6. The Greeley Municipal Code shall be amended by adding thereto a new Chapter 13 – Definitions and Terms of Title 24 to read as follows:

Chapter 13. Definitions & Terms

24-1301 Definitions

24-1302 Architecture & Design Terms

24-1301 Definitions

All terms used in this code shall have their plain and commonly accepted meaning, based upon the context of their use in the code. The following terms shall have the meaning given below, unless more specifically described, limited or qualified within the standards of this code. Some Chapters have specific definitions where the terms have the given meaning for interpretation of that chapter.

100-year flood. A flood having a recurrence interval that has a one-percent chance of being equaled or exceeded during any given year (one-percent-annual-chance flood). The terms "one-hundred-year flood" and "one-percent-chance flood" are synonymous with the term "100-year flood."

100-year floodplain. The area of land susceptible to being inundated as a result of the occurrence of a 100-year flood.

Abandoned Sign.

- (1) A sign or sign structure and components, for which no legal owner can be found; and/or
- (2) A sign and structure which are used to identify or advertise a business, tenant, owner, product, service, use, event or activity that has not been located on the premises for a period of 90 consecutive days or longer.

Accessory Building or Structure. A detached building or structure located upon the same lot as the principal building or structure to which it is related, which is incidental to and customarily found in connection with such principal building or structure.

Accessory Use. A use customarily incidental, related and subordinate to the main use of the lot, building or structure which does not alter the principal use.

Adjacent. Close, contiguous, and related to by proximity, sharing a common boundary or otherwise nearby to have a relationship without intervening dissimilar elements. When referring to land, separation caused by a street, alley, sidewalk, railroad right-of-way, utility line, trail, or irrigation ditch, or similarly related land can be considered adjacent.

Abutting. Directly touching elements that share a common edge or boundary.

Alley. A minor way used primarily for vehicular access or service to the back of properties adjacent to a street. An alley shall not be considered a street.

Alteration. Any act or process requiring a building permit, moving permit, demolition permit or sign permit for the reconstruction, moving, improvement or demolition of any designated property or district; or any other action in which a review by either the historic preservation commission or the city's historic preservation specialist is necessary under this article and/or the district designation plan and in accordance with the definitions of major and minor alterations, for the purposes of this article.

American National Standards Institute (ANSI). The standards by said organization that helps development in the use have an equitable and open process that serves industry and the public good, having a consensus in standards development; ANSI's essential requirements.

Animal Unit. A unit of measurement used to determine the animal capacity of a particular site or parcel of land and to establish an equivalency for various species of livestock.

Animated Sign (see *Flashing or animated or Imitating sign*).

Antenna. A device used to transmit and/or receive radio, television or any other transmitted signal and which may be rooftop, wall or ground-mounted.

Appeal. A review of a final decision by a higher authority.

Applicant. The owners or lessees of property, their agent, or persons who have contracted to purchase property, or the city or other quasi-governmental entity that is proposing an action requiring review and approval by one or more of the sections in this title. An applicant may subsequently become the developer once approval is granted and, in this case, the terms shall be interchangeable.

Appurtenances. The visible, functional objects accessory to and part of buildings or structures and which may extend above the height of the roof.

Art. All forms of original creations of visual art, including, but not limited to, sculpture; mosaics; painting, whether portable or permanently fixed, as in the case of murals; photographs; crafts made from clay; fiber and textiles; wood; glass; metal; plastics; or any other material or any combination thereof; calligraphy; mixed media composed of any combination of forms or media; unique architectural styling or embellishment, including architectural crafts, environmental landscaping; or restoration or renovation of existing works of art of historical significance. Works of art are not intended to be used for commercial advertising purposes.

Arterial street (see *Street*).

Artificial turf. Any of the various synthetic fibers made to resemble natural grass.

Awning, Internally Illuminated. Any transparent backlit awning or awning lettering which transmits light from within the awning to the outside surface of the awning.

Awning Sign. A sign that is mounted or painted on or attached to an awning.

Backing. The background area of a sign, which differentiates the total sign display from the background against which it is placed.

Basement. Any level of a building where more than one-half of the vertical distance between floor and ceiling is below the grade of the site.

Beacon (see *Searchlight, strobe light or beacon*).

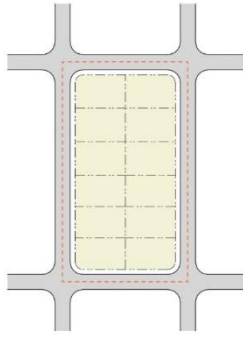
Bedroom. Any room intended and used principally for sleeping purposes.

Berm (see "Earthen berm.")

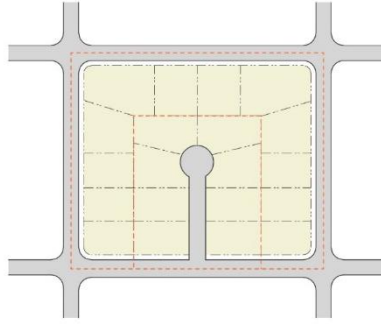
Bioretention Facility. A landscaped stormwater element designed to concentrate or remove debris and pollution from surface water runoff by moving water slowly and horizontally at the surface through vegetation using gently sloped sides that cleanse water from pollutants and soil erosion before it enters the city's stormwater system.

Bioswale. A channeled depression or trench that receives rainwater runoff (as from a parking lot) and has vegetation (such as grasses, flowering herbs, and shrubs) and organic matter (such as mulch) to slow water infiltration and filter out pollutants.

Block. A group of platted lots and outlots surrounded by streets or by other features that interrupt the street network such as parks, railroad rights-of-way, or municipal boundary lines; or the perimeter of all lots fronting on the street in the case of a cul-de-sac.



Standard Block

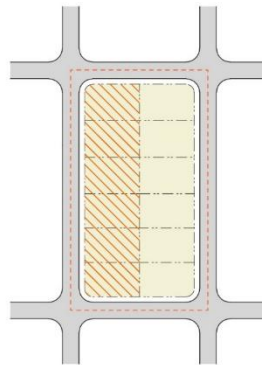


Cul-de-sac Block



Exception

Block face. All lots on one side of a block.



Block Face

Buffer. To promote separation and enhance compatibility between land uses of different intensities.

Building. Any structure built for the shelter or enclosure of persons, animals or property of any kind, excluding fences or walls.

Building Appurtenance. The visible, functional or ornamental object accessory to and part of a building.

Building Code. Any law, ordinance or code which is in force in the city and which pertains to the design and construction of buildings and other structures, or to any components thereof, such as cooling and heating, plumbing, electricity and the like.

Building Envelope. The area in which a building or structure is constructed or placed in a development and in which the land area beyond the envelope is under the single ownership or common ownership of all property owners within the development.

Building Footprint. The outline of the total area which is covered by a building's perimeter at the ground level.

Building Frontage. The area of the lot along the front building line, and when referring to design standards it may include relationship of this area and the primary facade of the building.

Building Frontage, Principal. The horizontal linear dimension which is designated as the primary facade of that portion of a building occupied by a single use or occupancy for the purposes of allocating signs and other design requirements.

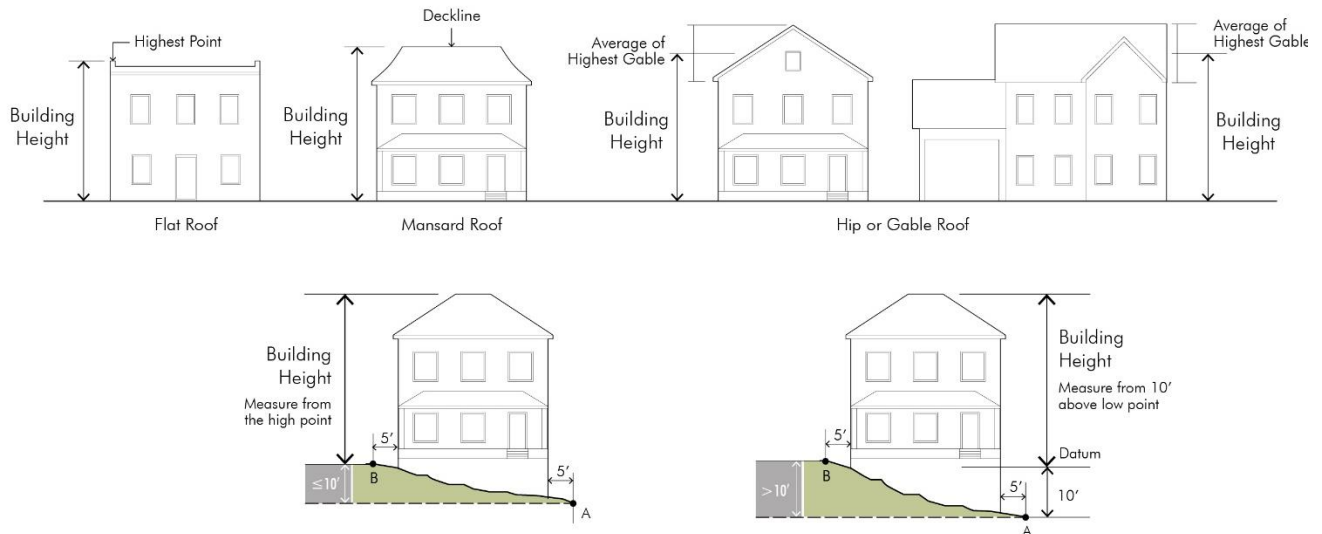
Building Frontage, Secondary. That dimension of a building abutting a public right-of-way other than the principal building frontage for the purposes of allocating signs and other design requirements.

Building or Structure Height. The vertical distance from grade at an exterior wall of a building or structure to the highest point of the coping of a flat roof, to the average height of the highest gable of a hipped roof, or a monitor roof, or to the highest point of a curved roof. This measurement shall be exclusive of church spires, cupolas, chimneys, ventilators, pipes, and similar appurtenances. For the purposes of this definition, grade applies as follows:

- (1) When there is less than a ten-foot difference between the highest and lowest ground surface within a five-foot horizontal distance from the wall, use the highest elevation.
- (2) When there is greater than a ten-foot difference between the highest and lowest ground surface within a five-foot horizontal distance from the wall, use ten-feet higher than the lowest elevation in this area.

The height of the building is the vertical distance above a reference datum measured to

- (a) the highest point on a flat roof;
- (b) the deck line of a mansard roof;
- (c) the average of the highest gable on a hip or gabled roof.



Building, Principal. The primary building on a lot or a building that houses the principal use.

Building Line. The actual line at which a building is constructed, and the location of other elements on the lot or adjacent lots may refer to this line extended outward from the building.

Building Line, Required Front. The portion of the lot frontage required to be occupied by the front facade of a principle structure, or other permitted accessory structures or landscape associated with the frontage design.

Caliper. The diameter or circumference of a tree.

Candela. A unit of luminous intensity, defined as the luminous intensity of a source that emits monochromatic radiation of frequency 540×10^{12} Hertz and that has a radiant intensity of $1/683$ watt/steradian and adopted in 1979 as the international standard of luminous intensity.

Centerline (of Public Right-of-Way). A line running midway between the bounding right-of-way lines of a street or alley. For the purposes of calculating signage, the centerline means the apparent centerline of the road determined by finding the point midway between the outer edges of the road surface.

Certificate of Approval. A certificate issued by the city authorizing the construction, alteration or demolition of property and improvements designated under this article.

Certificate of Occupancy (C.O.). A written certificate provided by the city signifying the subject building/structure (property) has complied with city standards allowing for use and occupancy.

Change of Use. A use that substantially differs from the previous use of a building or land and which may affect such things as parking, drainage, circulation, landscaping, building configuration, noise, or lighting. A change of ownership which does not include any of the factors listed above shall not be considered a change of use.

Changeable Copy Sign (also known as a marquee sign). A sign designed to allow the changing of copy as with individual letters through manual means, without altering the sign backing or structure in any such way.

Channel. A natural or artificial watercourse of perceptible extent, with definite bed and banks to confine and conduct continuous or periodic flowing water.

Channel Letters, Individual Letters, Raceway and Channel Sign. Individual letters, flat cutout letters or symbols constructed to be applied singly in the formation of a wall sign or freestanding sign.

Channelization. The artificial creation, enlargement, or realignment of a stream channel.

Circumference. The perimeter measurement of a building or structure, measured as a continuous line.

Clear Vision Zone or Area. That area which the city requires maintenance of in order to preserve the sight distance and safety of motorists, pedestrians, and bicyclists by requiring an unobstructed line of sight necessary for most drivers stopped at an intersection to see an approaching vehicle, pedestrian or bicyclist to avoid a collision.

Collector Street (see *Street*).

Commercial Mineral Deposit. A natural mineral deposit of limestone used for construction purposes, coal, sand, gravel, and quarry aggregate, for which extraction is or will be commercially feasible and regarding which it can be demonstrated by geologic, mineralogic, or other scientific data that such deposit has significant economic or strategic value to the area, state, or nation.

Common Consumption Area. An area designed as a common area located within a designated Entertainment District and approved by the local licensing authority that uses physical barriers to close the areas to motor vehicle traffic and limit pedestrian access.

Comprehensive Plan. The comprehensive plan of the city, as provided for in the city Charter and which provides for the future growth and improvement of the community, for the preservation of historic and natural resources, and for the general location and coordination of streets and highways, recreation areas, public building sites and other physical development. Comprehensive plan may also include any specific plans, policies, or programs adopted under the guidance of that plan for the purposes of interpreting and applying this code.

Condominium. A form of ownership in which the interior floor space of a unit or area is owned individually, and the structure, common areas and facilities are owned by all of the owners on a proportional, undivided basis.

Coverage. Land area which is covered with impervious surfaces, such as buildings, patios, or decks with roofs, carports, swimming pools, tennis courts, or land area covered by any other type of structure, including parking lots.

Cul-de-sac. A local street with one open end and the other end terminating in a vehicular turn around.

Deciduous. A plant with foliage that is shed annually.

Decision Point Distance. Where the clear vision sight distance triangle begins.

Deck. A floored outdoor area, typically elevated above grade and adjoining a residential dwelling.

Dedication. Setting aside property for a specific purpose, including, but not limited to, streets, utilities, parks, and trails.

Demolition. Any act or process which destroys, in part or in whole, any designated property or property located within a designated historic district.

Density. The number of dwelling units per gross acre of land area.

Detention Area. An area which is designed to capture specific quantities of stormwater and to gradually release the same at a sufficiently slow rate to reduce the risk of flooding.

Developer. Any person, partnership, joint venture, association, or corporation or other legal entity who or which shall participate as owner, promoter, designer, builder, or sales agent in the planning, platting, development, promotion, sale, or lease of a subdivision.

Developing. A lot, or grouping of lots or tracts of land, with less than 60 percent of their perimeter boundary adjacent to existing development. For the purposes of this definition, public parks, natural areas and other such areas which are not eligible for further development shall be considered developed. Areas which were originally platted prior to 1978 and which have at least 75 percent of the lots in the development built on within this 20-year period shall also be considered developed. A replat of the original plat shall not affect the commencement of this 20-year period.

Development. Any construction or activity which changes the basic character or use of land on which construction or activity occurs, including, but not limited to, any non-natural change to improved or unimproved real estate, substantial improvements to buildings or other structures, mining, dredging, filling, grading, paving, extraction, or drilling operations.

Development or Subdivision Improvement Agreement. A written instrument for the purposes of specifying all improvements to be constructed by the developer, as well as the timetable for construction of such improvements, any special conditions of construction, and construction cost estimates.

Direct Lighting. Spot or floodlighting used to illuminate a sign surface.

Directional On-Site. Signs that direct the movement or placement of pedestrian or vehicular traffic on a lot without reference to, or inclusion of, the name or logo of a product sold or services performed on the lot or in a building, structure or business enterprise occupying property, such as "welcome," "entrance," "exit," "restrooms," "parking," "loading area," and "drive-thru."

Dissolve. A mode of message transition on an electronic message display accomplished by varying the light intensity or pattern, where the first message gradually appears to dissipate and lose legibility simultaneously with the gradual appearance and legibility of the second message.

District. A portion of the community within which uniform regulations apply.

Downtown Entertainment District. That area contained within the south curb flow line of 7th Street, the west curb flow line of 8th Avenue, the north curb flow line of 10th Street and the east curb flow line of 9th Avenue.

Drive-in or Drive-through. Accessory site and building features that encourage or permit customers to order and receive food or beverages while remaining in a motor vehicle for consumption on or off the site and which includes a menu board and audio or video speakers.

Drive-up. Accessory site or building features that encourage or permit customers to receive services or obtain or drop off products while remaining in a motor vehicle and which excludes a menu board and/or audio or video speakers.

Driveway. An improved concrete or asphalt path leading directly to one or more city-approved parking spaces constructed with a concrete, asphalt, or similar all-weather surface.

Dry Wash Channel. Natural passageways or depressions of perceptible extent, containing intermittent or low-base flow.

Dust Abatement Plan. A plan intended and designed to control dust during the construction or development of property.

Dwelling Unit. One room, or connected rooms, constituting a separate, independent housekeeping establishment for owner occupancy, or rental or lease as a single unit, on a monthly basis or longer, physically separated from any other room or dwelling units which may be in the same structure and served by no more than one gas meter and one electric meter.

Earthen Berm. A mound of earth, higher than grade, used for screening or buffering, the definition of space, noise attenuation, and decoration in landscaping.

Easement. A right granted by a property owner permitting a designated part of interest in the owner's property to be used by others for a specific use or purpose.

Ecological Character. The natural features and attributes of an area or landscape that, combined, give the area its character.

Electronic Message Display. A sign capable of displaying words, symbols, figures, or images that can be electronically or mechanically changed by remote or automatic means.

Emergency. An unexpected and sudden event that must be dealt with urgently in order to stabilize or protect a structure.

Entertainment District. An area within the city that is designated as an Entertainment District of a size no more than 100 acres and containing at least 20,000 square feet of premises licensed as a tavern, hotel and restaurant, brew pub, retail gaming tavern, or vintner's restaurant at the time the district is created.

Evergreen. A plant with foliage that persists and remains green year-round.

Existing Development. Any development in the city once all public improvements, including water, sewer, streets, curb, gutter, streetlights, fire hydrants, and storm drainage facilities, are installed and completed.

Exposed Incandescent or High intensity Discharge Lighting. Any sign or portion of a sign that utilizes an exposed incandescent or high intensity lamp, with the exception of neon.

Exterior or Perimeter Wall. A wall, elements of a wall, parapet wall or any elements or groups of elements which define the exterior boundaries or courts of a building.

Facade. The exterior face of a building.

Fade. A mode of message transition on an electronic message display accomplished by varying the light intensity, where the first message gradually reduces intensity to the point of not being legible and the subsequent message gradually increases intensity to the point of legibility.

Family. An individual living alone, or any number of persons living together as a single household who are interrelated by blood, marriage, adoption or other legal custodial relationship; or not more than two unrelated adults and any number of persons related to those unrelated adults by blood, adoption, guardianship or other legal custodial relationship. In multifamily units, the number of unrelated adults shall be determined based on the provisions of the city's housing code. For the purposes of this definition, a bona fide employee of the family who resides in the dwelling unit and whose live-in status is required by the nature of his employment shall be considered a member of the family.

Federal Register. The official daily publication for rules, proposed rules, and notices of federal agencies and organizations, as well as executive orders and other presidential documents.

Fence. Any artificially constructed barrier of an approved material or combination of materials erected vertically to enclose or screen areas of land.

Figures. An outline, shape or pattern of numbers, letters or abstract images.

Financial Security or Guarantee. A financial obligation, in a form acceptable to the city, which assures completion and payment for all improvements related to development of property.

Flag. Material attached to or designed to be flown from a flagpole or similar device and which may display the name, insignia, emblem or logo of any nation, state, municipality, or commercial or noncommercial organization (see *Pennants*).

Flashing or Animated. Signs or lighting with flashing, blinking, moving or other animation effects or that give the visual impression of such movement by use of lighting, or intermittent exhibits or sequential flashing of natural or appearance of artificial light or colors, including those signs that rotate, revolve, spin, swing, flap, wave, shimmer, or make any other motion, or illusion of motion, or which imitate official governmental protective or warning devices (see *Imitating sign*).

Flood or Flooding. A general and temporary condition of partial or complete inundation of normally dry land areas from the unusual and rapid accumulation or runoff of surface waters from any source.

Floodplain. An area which is adjacent to a stream or watercourse and which is subject to flooding as a result of the occurrence of an intermediate regional flood and which is so adverse to past, current or foreseeable construction or land use as to constitute a significant hazard to public health and safety or to property. The term "floodplain" includes, but is not limited to, mainstream floodplains, debris fan floodplains, and dry wash channels and floodplains.

Floor Area, Gross. The total area of a building measured by taking the outside dimensions of the building at each floor level, or from the centerlines of walls separating two buildings and excluding areas used exclusively for the service of the building such as mechanical equipment spaces and shafts, elevators, stairways, escalators, ramps, loading docks, cellars, unenclosed porches, attics not used for human occupancy, any floor space in accessory buildings, or areas within the building which are intended for the parking of motor vehicles.

Flow Line. The low point within a street section wherein water is intended to collect and flow, typically the gutters along each edge of pavement.

Foundation Plantings. Live plantings located immediately around the base of the foundation of a building façade that reflects the formal geometry of the structure.

Frame. A complete, static display screen on an electronic message display.

Frame Effect. A visual effect on an electronic message display applied to a single frame to attract the attention of viewers.

Freestanding Sign. A sign which is not attached to any building. A freestanding sign shall include, but is not limited to, a pole, monument, a canopy, and freestanding wall sign. A sign that extends more than four feet from a wall but is attached and/or is part of a canopy or an awning shall be considered a freestanding sign.

Freestanding Wall or Fence. Either a wall that is not attached to a building or a wall attached to a building that projects more than four feet beyond the exterior wall of the habitable portion of the building.

Frontage. The area of a lot between the front building line and the front lot line.

Garage or Yard Sale. The occasional sale of new or used goods at a residence, which may be held outside and/or within a garage or accessory building.

Gas. All natural gases and all hydrocarbons not defined as oil.

General Improvement District #1. That 19-block district bounded by 11th Street to the south, 6th Street to the north, 7th Avenue to the east and 11th Avenue to the west, excluding city Block 35.

Geologic Hazard. A geologic condition which is adverse to current or foreseeable future construction or land use associated therewith, constituting a hazard to public health and safety or property, including, but not limited to, landslide, rock fall, subsidence, expansive soils, slope failure, mudflow, or other unstable surface or subsurface conditions.

Ghost Sign. Old hand-painted signage that has been preserved on a building for an extended period of time, whether by actively keeping it or choosing not to destroy it.

Glare. A sensation of brightness within the visual field that causes annoyance, discomfort, or loss in visual performance and visibility.

Grade. The average elevation of the finished surface of the ground, paving, or sidewalk with a radius of five feet from the base of the structure.

Graphics. Drawings, decals, paint, or illustrations.

Gravel. Inert materials such as loose fragments of rock larger than "pea" size and commonly used as parking surface material.

Gross Floor Area (see *Floor area*).

Gross Leasable Area (GLA). The area of a building that can be leased to tenants, including storage areas and common areas apportioned to the number of tenants sharing the area. Gross leasable area shall be measured in the same manner of gross floor area, but is apportioned to specific uses or tenants in the building.

Gross Land Area. The total land area of a site or property, including land to be dedicated for streets and other public purposes.

Ground Cover. Materials that typically do not exceed one foot in height used to provide cover of the soil in landscaped areas, which may include a combination of, but not limited to river rock, cobble, boulders, concrete pavers, grasses, flowers, low-growing shrubs and vines, and those materials derived from once-living things, such as wood mulch. In no event shall weeds be considered ground cover.

Ground Kites. Freestanding frames usually covered with flexible fabric and designed to be animated by the wind to attract attention.

Guest. A person who is visiting at the principal or primary home of another person for up to 30 days, and which home is not the principal or primary home of the guest.

Habitat. Areas that contain adequate food, water and cover to enable one or more species of wildlife to live in or use the area for part of all of the year and which typically consists of natural or planted vegetation, along with one or more sources of water available in the area or adjacent areas.

Hazard. Any structure or use of land which endangers or obstructs the airspace required for aircraft in landing, take-off and maneuvering at the airport.

Hazardous Material. Any substance or materials that, by reason of their toxic, caustic, corrosive, abrasive or otherwise injurious properties, may be detrimental or deleterious to the health of any person handling or otherwise coming into contact with such material or substance, or which may be detrimental to the natural environment and/or wildlife inhabiting the natural environment.

Height (see *Building height*).

Highest Adjacent Grade. The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

Hillside Development. Development in areas which contain existing, natural slopes in excess of 15 percent.

Historic District. A geographically definable area with a concentration of buildings, structures, sites, spaces or objects unified by past events, physical development, design, setting, materials, workmanship, sense of cohesiveness or related historical and aesthetic associations, that is recognized through listing in a local, state or national landmarks register.

Historic Preservation. The protection, rehabilitation and/or restoration of districts, buildings, structures, and artifacts which are considered significant in history, architecture, archaeology, or culture.

Historic Sign. A sign that has been officially designated as an historic landmark.

Historic Structure. Any structure that is:

- (1) Listed individually in the National Register of Historic Places (a listing maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
- (2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;

- (3) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or
- (4) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:
 - a. By an approved state program as determined by the Secretary of the Interior; or
 - b. Directly by the Secretary of the Interior in states without approved programs.

Holiday Decorations. Temporary decorations, lighting or displays which are clearly incidental and customary and commonly associated with any national, state, local, religious or commonly celebrated holiday and which contain no commercial message.

Home Occupation. An occupation, profession, activity, or use conducted within a residential dwelling unit that is incidental and secondary to the use of a residential dwelling unit, which does not alter the exterior of the property or affect the residential character of the environment and which meets the provisions of this article.

Home Occupation, Rural. An accessory use to a farming operation or a nonfarm household located in a rural area, designed for gainful employment involving the sale of agricultural produce grown on the site, conducted either from within the dwelling and/or from accessory buildings located within 500 feet of the dwelling occupied by those conducting the rural home occupation.

Homeowners' Association. An association of homeowners or property owners within a development, typically organized for the purpose of enforcement of private covenants and/or carrying out the maintenance of common areas, landscaping, parks, building exteriors and streets.

Household Pet. Any nonvenomous species of reptile and any domestic dog, cat, rodent, primate or bird over the age of four months, which is typically kept indoors. For the purposes of this definition, guide or assistance animals shall not be considered household pets.

Illumination. The use of artificial or reflective means for the purpose of lighting a sign.

Imitating Sign. Signs which purport to be, are an imitation of, or resemble an official traffic sign, signal or equipment which attempt to direct the movement of pedestrian or vehicular traffic using such words as "Stop," "Danger" or "Caution" to imply a need or requirement to stop, or a caution for the existence of danger, such as flashing red, yellow and green (see *Flashing or animated*).

Impervious. Any hard-surfaced, man-made area that does not readily absorb or retain water, including but not limited to building roofs, paved parking and driveway areas, compacted areas, sidewalks, and paved recreation areas.

Incidental Sign. Nondescript signs, emblems or decals attached to a permanent structure informing the public only of those facilities or services available on the premises, such as a credit card sign or a sign indicating hours of business.

Indirect Lighting. Reflected light or lighting directed toward or across a surface.

Individual Letters (see Channel letters).

Infill. A lot, or grouping of lots or tracts of land, with at least 60 percent of their perimeter boundary adjacent to existing development. If a right-of-way at least 120 feet in width or streets designated on the comprehensive transportation plan, as major collectors or arterial streets are adjacent to the subject lot, lots across such a street shall be excluded for the purposes of determining infill and at least 60 percent of the remaining boundaries of the site shall be adjacent to existing development for the lot to be determined to be infill.

Inflatable Sign or Inflatable Object. Any object filled with air or other gas, including balloons, which characterize a commercial symbol or contain a message.

Intensity. An expression of the level or nature of development in nonresidential developments, or zones or specific land uses based on combinations of building coverage and height, impervious surfaces, expected traffic, hours of operation, noise, or similar impacts on surrounding areas.

Internal Illumination. A light source that is contained within the sign itself, or where light is visible through a translucent surface.

Irrigation System. An underground, automatic sprinkler system or above-ground drip system explicitly designed for watering vegetation.

Kiosk. A freestanding structure upon which temporary information and/or posters, notices, and announcements are posted.

Landscape Plan. A scaled graphic plan showing the treatment of all open space areas, parking lots, parking areas, areas adjacent to the public right-of-way, perimeter treatment, and other landscaped areas.

Landscaping. Any combination of living plants, such as trees, shrubs, vines, ground covers, flowers, or grass; natural features, such as rock, stone, bark chips, or shavings; and structural features, including but not limited to, fountains, reflecting pools, screening walls, solid fences, and benches.

Lawn. A stretch of open, turf-grass covered land; artificial turf shall not be considered lawn or turf-grass.

Leading Edge. The point of a sign, including its support structure, nearest to the public right-of-way.

Legal Description. A land description recognized by law, including the measurements and boundaries.

Legible. A sign capable of being read with certainty without visual aid by a pedestrian of normal visual acuity.

Live Plantings. Trees, shrubs and organic ground cover which are in healthy condition.

Livestock. Animals typically related to agricultural or farming uses, including, but not limited to, chickens, swine, sheep, goats, horses, cattle, yaks, alpacas, and emus.

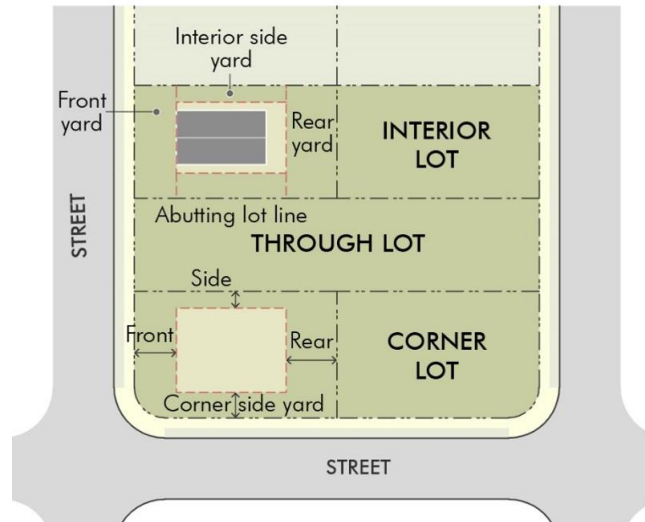
Living Fence. A permanent hedge tight enough and strong enough to serve almost any of the functions of a manufactured fence, but it offers agricultural and biological services.

Living Unit. Any habitable room or group of rooms forming a single habitable unit, used or intended to be used for living and sleeping, but not for cooking or eating.

Loading Space or Zone. An off-street space or berth used for the loading or unloading of cargo, products, or materials from vehicles.

Local street (see Street).

Lot. A parcel of land, established by a subdivision plat, having the required minimum dimensions, which shall be located on either a public right-of-way or on a legal and perpetual access and which is occupied or designed to be occupied by one or more principal buildings, structures, or uses.



Types of Lots

Lot Area. The total square footage or acreage contained within lot lines.

Lot, Corner. A lot abutting on and at the intersection of two or more streets.

Lot Coverage (see *Coverage*).

Lot Depth. The average distance between the front and rear lot lines.

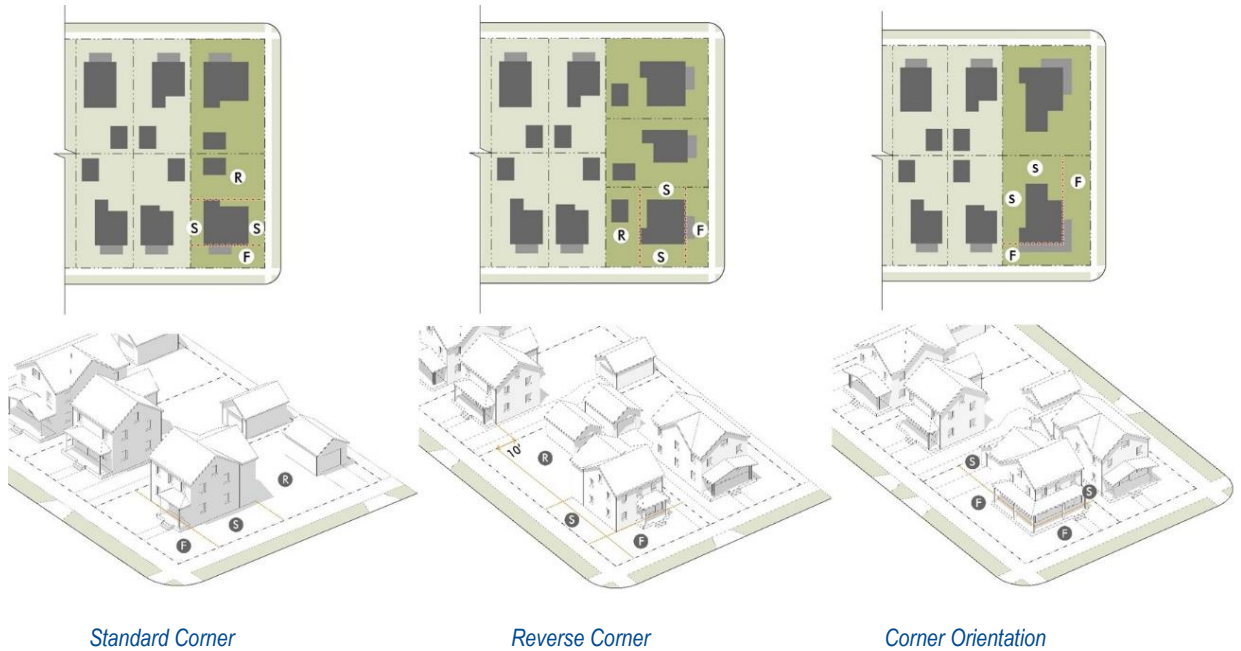
Lot, double Frontage or Through. A lot that fronts upon two parallel streets or that fronts upon two streets that do not intersect at the boundaries of the lot. The lot line abutting the street which provides primary access shall be considered the front lot line.

Lot, Interior. A lot other than a corner lot, with frontage on only one street.

Lot Line. A line dividing one lot from another lot or parcel, or from a street or alley.

Lot Line, Front. The property line dividing a lot from a street or public or common space on which the building and lot orients. On a corner lot, generally the shorter street frontage shall be considered as a front lot line, except that the context of the block and abutting lots may allow the following arrangements:

- (1) **Standard Corner.** The building orients to the same front as all other buildings on the same street, and an expanded side setback applies on the other street side of the lot. Side and rear setbacks apply to the remaining sides.
- (2) **Reverse Corner.** The building orients to the end-grain of the block (not the same as other buildings on the interior of the block), and the front setback and frontage design applies to that street. The other street-side setback is the greater of (a) the stated street-side setback for that building type or (b) 10 feet in front of the forward-most point of the front building line of the abutting lot. Side and rear setbacks apply to the remaining sides.
- (3) **Corner Orientation.** The building orients to both streets, with the front setback and frontage design applying on both street sides. The two remaining lot lines are treated as side setbacks and there is no rear setback.

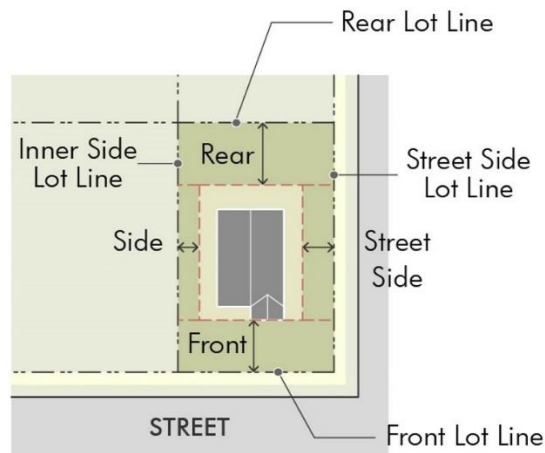


Lot Line, Interior Side. A side lot line which is adjacent to a side lot line of another lot.

Lot Line, Rear. The line opposite the front lot line. Where the side lot lines meet in a point, the rear lot line shall be assumed to be a line not less than ten feet long, lying within the lot and parallel to the front lot line.

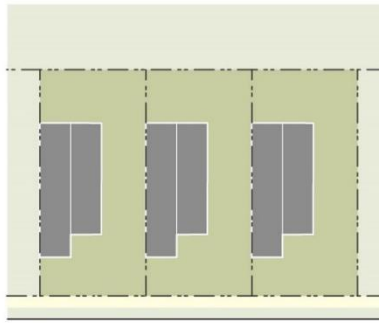
Lot Line, Side. Any lot lines other than the front or rear lot line.

Lot Line, Street Side. A side lot line which separates the lot from a street.



Lot and Building Lines

Lot line, zero. The location of a building on a lot in such a manner that one or more of the building's sides rests directly on a lot line, provided that separations or setbacks between buildings meet all applicable building and fire code provisions.



Zero Lot Line Development

Low-water Adaptive Plants. Plants which have or can adapt to low levels of irrigation water.

Maintenance of Landscaping. Regular watering, mowing, pruning, fertilizing, clearing of debris and weeds, removing and replacing of dead plants, and the repair and replacement of irrigation systems.

Maintenance of a Sign. Cleaning, repairing, painting, or replacement of defective parts in a manner that does not alter the dimension, material or structure.

Manufactured Home (see *Dwelling or Residence, Single-Family in the description of uses*).

Mechanical Equipment. Any and all equipment ancillary to the use or function of a building and/or structure, including, but not limited to, heating or cooling equipment, pool pumps and filters, electrical equipment, transformers, exhaust stacks, and roof vents.

Menu Board. A permanently mounted sign which lists the products or services available at a drive-in or drive-thru facility and not legible from the right-of-way.

Mid-range Expected Service Area. The growth area capable of accommodating the estimated increase in development in the city in the next five years.

Mineral Owner. Any person having title or right of ownership in subsurface oil and gas or leasehold interest therein.

Mobile Home. A detached, single-family housing unit that does not meet the definition of single-family dwelling or residence set forth in these definitions and which has all of the following characteristics:

- (1) Designed for a long-term occupancy and containing sleeping accommodations, a flush toilet, a tub or shower bath and kitchen facilities and has plumbing and electrical connections provided for attachment to outside systems;
- (2) Designed to be transported after fabrication on its own wheels, on a flatbed or other trailers or on detachable wheels;
- (3) Arrives at the site where it is to be occupied as a complete unit and is ready for occupancy except for minor and incidental unpacking and assembly operations, location on foundation supports or jacks, underpinned, connections to utilities and the like;
- (4) Exceeding 8 feet in width and 32 feet in length, excluding towing gear and bumpers; and
- (5) Is without motive power.

Mobile Home Accessory Building or Structure. A building or structure that is an addition to or supplements the facilities provided in a mobile home. It is not a self-contained, separate, habitable building or structure. Examples are awnings, cabanas, garages, storage structures, carports, fences, windbreaks, or porches and patios that are open on at least three sides.

Mobile Home Park or Community. A site or tract of land held under one ownership, which is suited for the placement of mobile homes.

Mobile Home Park or Community, Existing. A mobile home park or community for which the construction of facilities for servicing the lots on which the mobile homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets and either final site grading or the pouring of concrete pads) are completed before the effective date of the ordinance codified in this Development Code.

Mobile Home Park or Community, Expansion to. The preparation of additional sites by the construction of facilities for servicing the lots on which the mobile homes are to be affixed (including the installation of utilities, the construction of streets and either final site grading or the pouring of concrete pads).

Mobile or Micro Home Site. A plot of ground within a mobile home community, or other small format housing project, designed for the accommodation of one mobile home or similar small-format dwelling unit and its accessory structures.

Model Home. An unoccupied dwelling unit built on a site in a development for display and/or sales purposes and which may include an office solely for the development in which it is located, and which typifies the units that will be constructed in the development.

Monument Sign. A freestanding sign supported primarily by an internal structural framework or other solid structure features where the base of the sign is in contact with the ground.

Mulch. A natural planting material such as pine straw, coconut fiber, ground pine post peeling, or tree bark used to control weed growth, reduce soil erosion and water loss.

Multiple Use. A site, tract of land or development that contains more than one type of land use, including, but not limited to, residential, office, retail, or industrial uses.

Native Grass. A native Colorado grass.

Natural Area. Aquatic or terrestrial habitats or areas which exist in their natural condition and which have not been significantly altered by human activity.

Natural Area Corridor. An aquatic or terrestrial corridor that connects one or more natural areas or habitats together.

Natural Feature. Features which give an area its general appearance and ecological character and which attract or support the wildlife species that use or inhabit the area.

Neighborhood. The land area which is in the vicinity of the lot, tract, outlot, or parcel of land in question and which will be affected to a greater extent than other land areas in the city by uses which exist on the lot or are proposed for it. A neighborhood also includes lots which are adjacent to one another and have a community of shared interest.

Neon. A sign illuminated by a light source consisting of a neon or gas tube that is bent to form letters, symbols or other shapes.

New Construction. Structures for which the start of construction commenced on or after the effective date of the ordinance codified in this article.

Nits. A unit of measurement of luminance, or the intensity of visible light, where one nit is equal to one candela per square meter.

Nonconforming. Any building, structure, site, or use that does not conform to the regulations of this Development Code, but which was lawfully constructed, established and/or occupied under the regulations in force at the time of construction or initial operation.

Nonconforming Mobile Home Communities. Mobile home communities lawfully established and properly licensed by the city under the 1976 Code, or which were developed and used prior to and as of September 5, 1972, as a place where mobile homes were located for residential occupancy and, as of that date, the area must have been in compliance with any and all applicable city or county ordinances and regulations related to mobile home use of land.

Non-deciduous. Shrubs or trees, also called evergreens that keep their foliage year-round.

Official Map. The map establishing the zoning classifications of all land in the city and showing all amendments to zoning classifications as they may be adopted.

Off-premises Sign. A sign or device that advertises a business establishment, good, facility, service, or product which is not sold or conducted on the premises on which the sign or device is located and which may be designed to change copy on a periodic basis.

Off-street Parking Areas (see *Parking*).

Oil. Crude petroleum oil and any other hydrocarbons, regardless of gravities, which are produced at the well in liquid form by ordinary production methods, and which are not the result of condensation of gas before or after it leaves the reservoir.

Opacity. The degree or extent that light is obscured.

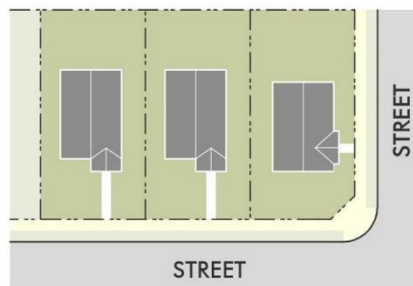
Open Space, Common. A common area permanently set aside for the common use and enjoyment of residents or occupants of a development or members of a homeowners' association, which open area may be landscaped and/or left with natural vegetation cover and which may include swimming pools and other recreational leisure facilities; areas of scenic or natural beauty and habitat areas; hiking, riding, or off-street bicycle trails; and landscape areas adjacent to roads which are in excess of minimum required rights-of-way.

Open Space, Private or On-lot. An outdoor area not intended for habitation, directly adjoining a dwelling unit or building, which is intended for the private enjoyment of the residents or occupants of the adjacent dwelling unit or building and which is defined in such a manner that its boundaries are evident. Private or on-lot open space may include lawn area, decks, balconies, and/or patios.

Open Space, Required. That portion or percentage defined by the zoning standards of a lot required to be open and unobstructed. The area must not be covered by any structure or impervious surface, such as sidewalks or driveways, with the exception of required amenities, identity features, or useable open space required pursuant to this code.

Open Space, Usable. That portion of a lot or site available to all occupants of the building or site for recreational and other leisure activities that are customarily carried on outdoors.

Oriented. To locate or place a building or structure in a particular direction on a lot or site which shall generally be parallel to the adjacent street.



Buildings Oriented to the Street

Ornamental Tree. A deciduous tree planted primarily for its ornamental value or for screening and which will typically be smaller than a shade tree approximately 15 to 25 feet in height.

Outdoor Display. The display of products for sale outside a building or structure in areas to which customers have access..

Outdoor Storage. The keeping, outside a building, of any goods, material, merchandise, or vehicles in the same place for more than 24 hours. Outdoor storage shall not include the storing of junk or the parking of inoperable motor vehicles. Storage of commercial recreational vehicles/equipment, boat, and personal vehicles are excluded from this definition.

Outlot. A tract of land platted in a subdivision for a specific purpose, which shall be shown on the face of the plat. Specific purposes may include, but are not limited to, drainage areas, stormwater detention or retention areas, parks, open space, or land areas reserved for other public facilities.

Overlay District. A zoning district classification which encompasses a defined geographic area and imposes additional requirements above that required by the underlying zoning. Overlay districts may be combining, where they join property included in two or more adjoining districts based on common attributes or policies; or overlay districts may be separating, where they distinguish property in a single district based on a specific attribute or context that requires different regulations.

Parcel. A unit or contiguous units of land in the possession of, or recorded as the property of one person, partnership, joint venture, association or corporation, or other legal entity.

Park. Any dedicated and accepted public or private land available for recreational or scenic purposes.

Parking. The parking or leaving of an operable, licensed vehicle, current in its registration, for a temporary period.

Parking Areas or Lots. Areas designed, used, required, or intended to be used for the parking of motor vehicles, including driveways or access ways in and to such areas but excluding public streets and rights-of-way.

Parking Bay. A group of parking stalls or vehicle parking spaces to accommodate 15 or more vehicles.

Parking Block. A group of parking bays surrounded by landscape edges, internal access streets, public streets or buildings and sidewalks, typically used to break larger parking areas into smaller distinct components. Parking blocks are used to minimize the visual impact of parking, improve organization of the development and circulation within the site, and/or preserve opportunities for the site to accept infill or redevelopment in a more logical pattern without disruption of streets and utilities.

Parking, Shared. The development and use of parking areas on two or more separate properties for joint use by those properties.

Parking Slab. A paved parking space located off-street and designed to accommodate standard-sized motor vehicles as provided in the off-street parking and loading requirements chapter of this Development Code.

Parking Space. A space or stall within a parking area established in conformance with this Development Code.

Parking Space, Storage. A space for the storage of operable, licensed vehicles, current in registration, including recreational vehicles or equipment, for a period of 30 days or longer.

Parkway. The strip of land typically located between the sidewalk and the curb, also referred to as a *tree lawn*.

Path or Pathway. A designated route or path for non-motorized use such as for walking or bicycling. Paths may include both sidewalks and trails.

Pennants. Any long, narrow, usually triangular flag typically made of lightweight plastic, fabric, or other material, and not containing a message, image or representative symbol, usually found in a series on a line and designed to move in the wind.

Perennials. Non-woody plants, which may die back to the ground each year but continue to grow on an annual basis. Perennials shall also include cold weather bulbs and tubers and ornamental grasses that grow each year and shall count toward ground cover requirements.

Perimeter Treatment Plan. A plan intended to provide visual and noise protection for the outer edges of developments, which border arterial streets, major collector streets, or other sensitive borders. Perimeter treatment also provides an attractive and varied streetscape for people traveling along thoroughfares.

Permanent Sign. A sign attached to a building, structure or the ground in a manner that precludes ready removal or relocation of the sign.

Permeable. A material that allows liquids or gases to pass through it.

Permitted Sign. A sign having a legal permit issued in accordance with the provisions of this title.

Permitted Use. A use allowed in a zoning district and subject to the restrictions and review procedures which apply to that district.

Person. Any person, firm, association, organization, partnership, business, trust, corporation, company, contractor, supplier, installer, user, or owner or any representative, officer or employee thereof.

Pervious. A surface that allows water to pass through; a surface that presents an opportunity for precipitation to infiltrate into the ground.

Planned Unit Development (PUD). A development planned, designed, and constructed with specific standards as an integral unit and which typically consists of a combination of uses district, and provides for an equivalent level of standards, and broader community benefits in exchange for flexibility in the standards.

Planting Median. An area in the approximate center of a city street, road, or state highway that is used to separate the directional flow of traffic or the center of two parking bays that provide vegetation and pedestrian accessibility to the principal building or structure by way of a paved sidewalk.

Plat. A subdivision map or plan of property.

Plat, Final. A completed map of a subdivision setting forth fully and accurately all legal and engineering information, survey certification and any accompanying materials as required by this title.

Plat, Preliminary. A proposed subdivision map and any accompanying materials as required by this title, which provide sufficiently detailed information so that preliminary agreement as to the form and content of the plat, coordinating the planning, design, and engineering standards of this title, may be reached between the developer and the city.

Pole Sign. A sign that is affixed, attached, or mounted on a freestanding pole or structure that is not itself an integral part of or attached to a building or structure.

Pollinator Gardens. Gardens designed for the purpose of providing habitat for or attracting bees, butterflies, moths, hummingbirds, or other beneficial creatures that transfer pollen from flower to flower, or in some cases, within flowers.

Portable Sign. A sign that is not permanently affixed to a building, structure or the ground and that is easily moved, such as a sandwich board sign.

Practicable. Capable of being done within existing constraints including environmental, economic, technological, or other pertinent considerations.

Premises. The land, site or lot at which, or from which, a principal land use and activity is conducted.

Primary Entrance. The entrance to a building or structure which is intended to be the main pedestrian or public entrance and which shall typically be located on the front of the building or structure, and therefore includes enhancements and human-scale details to show the priority and importance of the space to the public.

Principal Building or Structure (see Building).

Prohibited Activities Sign. Signs located on a property posting said property for warning or prohibition, such as "no hunting," "no swimming," or "no parking."

Projecting Wall Sign. Any sign attached to a building and that extends more than 20 inches from the surface to which it is attached, but no more than four feet from the wall of the building. Signs projecting more than four feet from the building shall be considered freestanding signs.

Promotional Association. An association that is incorporated within the state that organizes and promotes entertainment activities within a common consumption area and is organized or authorized by two or more people who own or lease property within an Entertainment District.

Public. A person, structure, activity, or purpose owned or operated by a governmental agency or by a public nonprofit corporation with tax-exempt status under the federal Internal Revenue Code.

Public Hearing. A hearing held to allow interested persons to present their views before the zoning board of appeals, planning commission or city council. A public hearing is different from an open meeting which does not allow participation by the public.

Public Improvement. Any improvement required by title for which the city or a quasi-public agency agrees to assume responsibility for maintenance and operation, or which may affect an improvement for which the city or a quasi-public agency is already responsible. Such facilities include, but are not limited to, streets, parks, trails, drainage facilities, water and sewer facilities, gas, electricity, telephone, cable television, and other utility facilities.

Public Sign. Signs required or specifically authorized for a public purpose by any law, statute, or ordinance, including public directional signs on the right-of-way; signs which identify the city by name; signs that direct travelers to public buildings, parks or attractions; interpretative signs; way-finding signs, municipal uniform traffic control devices; and the like.

Rain Garden. A soil absorption or filter system designed to be depression storage or a planted hole that allows water filtration and absorption of rainwater runoff from impervious urban areas, such as roofs, driveways, walkways, parking lots, and turf-grass or sod areas. It is a type of bioretention facility designed to provide stormwater infrastructure improvements with vegetation. Typically shallow vegetative depressions with gentle slide slopes designed as individual stormwater receiving areas or linked to conveyance systems. Soils may or may not be amended in these facilities.

Recreational Equipment. Equipment intended for outdoor recreational use, including, but not limited to, snowmobiles, jet skis, all-terrain vehicles (ATVs), canoes and boats, and including the trailers for transporting such equipment.

Recreational Vehicle. A vehicle which is designed, intended and used for the purposes of temporary living accommodation for recreation, camping and travel use, including, but not limited to, travel trailers, truck campers, camping trailers and self-propelled motor homes, horse trailers and bus campers. For the purposes of this definition, neither a pop-up trailer nor a truck topper accessory (also known as a camper shell) which is not higher than eight inches above the truck cab when installed shall be considered a recreational vehicle. A horse trailer used primarily for transport of horses and/or livestock to or from the site it is stored upon shall not be considered a recreational vehicle under this definition.

Recyclable Material. Reusable material, including, but not limited to, metals, glass, plastic, and paper, which are intended for reuse or reconstitution for the purpose of using the altered form. The term "recyclable material" shall not include refuse or hazardous materials or the processing of recyclable materials.

Redevelopment District. All land located within the boundaries of the urban renewal area of the city, as it may be amended from time to time by the city council.

Residential Complex, Subdivision or Multi-family Entry Sign. An on-site sign that identifies a specific residential complex or subdivision.

Right-of-way. A right granted by a property owner and which is intended to be occupied by a street, sidewalk, railroad, utilities, and other similar uses.

Right-of-way Landscaping. Landscaping located within the public or private rights-of-way adjacent to a privately owned lot, outlot, or tract, including parkways.

Riparian Zone. An area where the presence of a surface and/or high subsurface water level permits the existence of increased vegetative diversity and abundance as contrasted to surrounding areas.

Roof Sign. A sign that is mounted on the roof of a building or structure such as a portico which is wholly dependent upon a building for support and which projects above the parapet of a building with a flat roof, or above the peak of the roof on that portion of the roof on which the sign is placed.

Satellite & Communication Equipment. A reflective surface configured in the shape of a shallow dish, cone, horn, or cornucopia which shall be used to transmit and/or receive radio or electromagnetic waves

between terrestrially and/or orbitally based uses, including, but not limited to, satellite earth stations, television reception only satellite dish antennas, and satellite microwave antennas.

Screening. A method of reducing the impact of visual and/or noise intrusions through the use of plant materials, earthen berms, solid fences, and/or walls, or any combination thereof, intended to block that which is unsightly or offensive with a more harmonious element.

Searchlight, Strobe Light or Beacon. A stationary or revolving light that flashes or projects illumination, single color or multicolored, in any manner that is intended to attract or divert attention; excluding any device required or necessary under the safety regulations described by the Federal Aviation Administration or similar agencies.

Seasonal Use. A use intended for a period of limited duration, including, but not limited to, the sale of seasonal goods and products such as pumpkins, Christmas trees, produce and living plants.

Setback. The minimum distance a building, structure or use may be erected from a street, alley, or property line. Setbacks are also called required yards.

Setback, Front. The area extending across the full width of the lot, between the front lot line and the nearest line or point of the area allowed for construction or establishment of the building, structure, or use. Where expressed as a range, the front setback shall be interpreted as a "build to range," within which distance the front building line of the principal building shall be established.

Setback, Interior Side. The area extending from the front yard to the rear yard, between the side lot line adjacent to another lot and the nearest line or point of the area allowed for construction or establishment of the building, structure, or use.

Setback, Oil and Gas (see Section 24-1102 of this title).

Setback, Rear. The area extending across the full width of the lot between the rear lot line and the nearest line or point of the area allowed for construction or establishment of the building, structure, or use.

Setback, Side. The area extending from the front yard to the rear yard, between the side lot line and the nearest line or point of the area allowed for construction or establishment of the building, structure or use.

Setback, Street Side. The area extending from the front yard to the rear yard, which separates the lot from an adjacent street.

Shade Tree. A large woody plant, usually deciduous, that normally grows with one main trunk and has a mature height at least 30 feet, a canopy height above 12 feet, and screens and filters the sun.

Shrub. A woody plant which consists of a number of small stems from the ground or small branches near the ground and which may be deciduous or evergreen.

Sidewalk. A paved, surfaced or leveled area, paralleling and usually separated from the street, used as a pedestrian path.

Sign. Any device, surface, object, structure, building architecture or part thereof using graphics, symbols or written copy for the purpose of advertising, identifying or announcing or drawing attention to any establishment, product, goods, facilities, services or idea, whether of a commercial or noncommercial nature.

Sign Allowance. The amount of signage that is allowable under the provisions of this article.

Sign Alteration. Any change of copy (excluding changeable copy signs), sign face, color, size, shape, illumination, position, location, construction, or supporting structure of any sign.

Sign Area. The entire face of a sign and any backing, frame, trim or molding and which may include the supportive structure.

Sign Backing. The surface, pattern or color of which any sign is displayed upon, against or through and that forms an integral part of such display and differentiates the total display from the background against which it is placed.

Sign, Exposed Incandescent or High Intensity Discharge Lighting. Any sign or portion of a sign that utilizes an exposed incandescent or high intensity lamp, with the exception of neon, in such a fashion as to project light directly onto adjoining property or right-of-way.

Sign Face. The area of a sign on which the copy is placed, or, for individual cutout letters, painted letters, channel letters or symbols, the perimeter of the individual elements shall be considered the area of the sign.

Sign Frame. A sign cabinet or that portion of the sign that holds the sign face in place.

Sign Height. The vertical distance measured from the grade, as defined herein, to the highest point of the sign or sign structure.

Sign, Interior to a Building. Signs inside buildings that are not legible from the public right-of-way or other publicly accessible exterior areas of the building. .

Sign, Interior to Development. Any sign that is located so that it is not legible from any adjoining property or the public right-of-way and not oriented in such a way as to attract the attention of those traveling along the right-of-way.

Sign Permit. A permit issued by a building official and which is required for any sign specified by this code.

Sign Setback. The minimum distance required from the apparent centerline of the right-of-way, to any portion of a sign or sign structure.

Sign Structure. The supports, uprights, bracing or framework of any structure for the purposes of displaying a sign.

Sign, Wall. A sign attached parallel to and extending less than 20 inches from the wall of a building. The definition of the term "wall sign" includes painted, individual letter, cabinet signs and those signs located on the roof of a building which are not roof signs as defined herein.

Sign, Window. Any type of sign that is painted or attached to or within 12 inches of any exterior window.

Site Plan. A set of drawings that the property owner, builder, or contractor uses to make improvements to a property through graphic representation, whether computer-generated or hand-drawn, of the arrangement of buildings, parking, drives, landscaping, and any other structure that is part of a development project.

Sky Dancers. Freestanding tubes which often simulate the shape of a person into which air is forced to inflate and animate and which do not characterize a commercial message or contain a message.

Slope. The ratio between elevation change to horizontal distance, expressed as a percentage.

Soil Amendments. Elements added to the soil, such as compost, natural fertilizer, manure, or chemical fertilizer, to improve its capacity to support plant life.

Solid Fence. A fence that is opaque and provided the fence is composed of solid wood, composite, vinyl, or masonry.

Species of Special Concern. Species of wildlife and plants which the state division of wildlife has identified and listed as state species of special concern.

Stacking Space. An area for motor vehicles to line up in while waiting to go through a drive-thru facility, a designated passenger drop-off/pick-up area or a parking lot or area.

Stormwater Management Plan. A plan for the management of stormwater drainage and control prepared in conformance with the regulations for stormwater management, adopted by the state department of public health and environment; and further, including a plan for erosion and sediment control pursuant to the requirements of chapter 12 of title 3 of this Code, including its references.

Story. That portion of a building included between the surface of any floor and the surface of the floor next above it or, if there is no floor above it, the space between the floor and the ceiling above it.

Street. A way for vehicular, pedestrian or bicycle traffic whether designated as a street, highway, thoroughfare, parkway, throughway, road, avenue, boulevard, lane, place or however otherwise designated.

Street, Arterial. Streets that permit relatively unimpeded traffic movement throughout the city and connecting to outside communities.

Street, Arterial Major. Arterial streets which generally carry traffic volumes greater than 20,000 vehicles per day when the property which the arterial street serves is fully developed and which permit rapid and relatively unimpeded traffic movement throughout the city, connecting major land use elements as well as connecting to outside communities.

Street, Arterial Minor. Arterial streets which generally carry traffic volumes greater than 10,000 vehicles per day when the property which the arterial street serves is fully developed and which permit relatively unimpeded traffic movement and are intended for use on routes where four moving lanes and one turn lane are required but where a major arterial cross-section is not warranted.

Street, Collector. Streets that collect and distribute traffic between arterial and local streets and serve as main connectors within the city, linking one neighborhood with another and which carry traffic with an origin or destination within the community.

Street, Collector Major. Collector streets which generally carry traffic volumes greater than 7,000 vehicles per day when the property which the collector serves is fully developed and which permit relatively unimpeded traffic movement and are intended for use on those routes where four moving lanes are required but where a larger classified street is not warranted.

Street, Collector Minor. Collector streets which generally carry traffic volumes up to 7,000 vehicles per day and collect and distribute traffic between arterial and local streets and which serve as main connectors within communities, linking one neighborhood with another.

Street, Design Type. A reference to the design attributes of a specific segment of the street, regardless of the functional class, and including lane widths, number of lanes, parking, streetscape, and sidewalks. Street design types allow the design of segments of streets to transition and relate better to the context and anticipated abutting land uses, without disrupting the overall role of the street in the functional classification system.

Street, Functional Classification. A system of categorizing streets based on their role in the overall street network, considering traffic volumes, traffic speeds, and continuity of the street.

Street, Local. Streets that provide direct access to adjacent property and which carry traffic with an origin or destination within the immediate neighborhood.

Street, Local Low Volume. Local streets which carry traffic volumes of up to 500 vehicles per day and which provide direct access to adjacent property.

Street, Private. A private roadway used to provide vehicular and emergency access.

Street Tree. A tree planted in close proximity to a street in order to provide shade over the street and to soften the street environment.

Streetscape. The scene that may be observed along a street, including both natural and non-natural components, including vegetation, buildings, paving, plantings, lighting fixtures and miscellaneous structures.

Structure. Anything constructed or erected on or in the ground, the use of which requires a more or less permanent location on or in the ground, and, including, but not limited to, walls, retaining walls, fences, parking lots, parking slabs and oil and gas production facilities.

Subdivision. The division of a lot, tract or parcel of land into two or more lots, tracts or parcels, or other division of land in compliance with the requirements of this title.

Symbol. A graphic device which stands for a concept or object.

Temporary Sign. Any sign, not intended for permanent installation such as, but not limited to, a banner, balloon, pennant, searchlight or beacon. Generally, these signs are intended to be used for a limited period of time or for a purpose announcing a special event or presenting other miscellaneous or incidental information or instructions.

Temporary Structure. A structure without any foundation or footings and which is intended to be removed at some point in the future.

Temporary Use. A use which shall generally be permitted to exist and be operated for no longer than 90 days in 12 consecutive months and which may occur as an accessory or principal use.

Time or Temperature Sign. A sign or portion thereof on which the only copy that is capable of being changed is an electronic or mechanical indication of time and/or temperature.

Tract. A parcel or parcels of land designated on a plat and intended to be further subdivided before development at some point in the future, but which may be initially created under single ownership through a subdivision process.

Travel Trailer or Recreational Vehicle. A portable structure, mounted on wheels and designed to be towed by a motor vehicle, or propelled by its own motive power, that may contain cooking or sleeping facilities and is intended to provide temporary living quarters for recreational camping or travel. A travel trailer also does not comply with either the National Manufactured Housing Construction and Safety Standards Act of 1974 or the uniform building code standards. Travel trailers are not permitted in residential zones as living quarters except as guest quarters for no longer than seven consecutive days.

Tree. A large woody plant with one or several self-supporting stems or trunks and numerous branches and may be deciduous or evergreen.

Turf-grass. A blend or mix of grasses most tolerant to the Colorado climate, whether in sod or seed form when planted, intended to be regularly maintained as a lawn in urbanized areas. Artificial turf shall not be considered lawn or turf-grass.

Universal Design. The design of buildings, products, or environments, to make them accessible to all people, regardless of age, disability, or other factors. The term "universal design" was coined by the architect Ronald Mace to describe the concept of designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their age, ability, or status in life.

Urban Heat Island. An urban area that is significantly warmer than its surrounding rural areas due to modifications of land surfaces such as development and other human activities. The temperature difference is usually more significant at night than during the day.

Use. The type of activity for which land or a building or structure is designated, arranged or intended and also means the activity which regularly takes place upon the land or in a building or structure on the land. Not all uses shall be considered legal or permitted uses.

Use, Principal. The primary use of a building, structure or lot.

Utility Box or Pedestal. Devices designed and intended to house equipment necessary for the delivery of utility services to commercial and/or industrial customers, including, but not limited to, electric transformers, switch boxes, telephone pedestals and boxes, cable television boxes, traffic control boxes and similar devices.

Utility Line Clearance Zones. The minimum clearance horizontal or vertical standard determined by the utility holder. Obstructions and encroachments are prohibited.

Utility Stand. Part of a mobile home space which is used for the placement of the utility connections.

Vacant means a site or area that is not put to any use other than gardening.

Vacation. The legal abandonment of a right granted by a property owner, which was intended for a particular purpose, such as for streets or utility lines.

Variance. A modification of the strict terms of this Development Code as provided in this code.

Vehicle Signs. Signs which are attached to or located on licensed vehicles, trailers or semi-trailers and contain or display signage for the primary purpose of advertisement, excluding bumper stickers on the bumper and similar-sized adhesive decals.

Vested Property Right. The right to undertake and complete a development and use of property under the terms and conditions of an approved site specific development plan.

Weed. Any plant not typically propagated by the horticultural trades and not typically installed for the purposes of landscaping; or which presents a particularly noxious allergenic or growth characteristic. Weed does not include native and naturalized plants, other than designated noxious weeds, grown in areas managed primarily for ecological services.

Wildlife. Wild, native vertebrates (including fish), mollusks and crustaceans and any species introduced or released by the division of wildlife, whether alive or dead, including any part, egg or offspring thereof.

Wind Sign (see Pennants, Ground kites and Sky dancers).

Work Vehicle. A vehicle outfitted with equipment such as, but not limited to, storage racks, hoists, cranes, vises, heavy equipment or other business and construction equipment, whether attached or removable, or which may have attached trailers carrying such work equipment. A horse trailer used primarily for transport of horses and/or livestock shall not be considered a work vehicle under this definition.

Xeric Landscaping or Xeriscape. A landscape design strategy coined by Denver Water in 1981 to help make water-efficient landscaping an easily recognized concept. Xeriscape is a combination of the word "landscape" and the Greek word "xeros," which means dry. For the purposes this code, it shall mean the use of low-water or very low-water plants in place of plants that typically require more water to survive. Xeric landscaping does not mean the same as hardscaping or the use of rocks or rock mulch.

Yard. The area of a lot between the property line and the foundation of a building, structure or use. The term "required yard" means that area also described as a required setback area where construction of buildings, structures and uses is limited in placement.

Yard, Front. The portion of a lot between the front façade of a primary structure and the right-of-way. A yard may contain more land area than a setback area.

Yard, Interior Side. An open-space area between the interior side property line and the building setback line, extending between the front building setback line and the rear building setback line.

Yard, Rear. The space or area of a lot between the rear property line and the principal building, extending the lot's full width, and measured perpendicular to the building at the closest point to the rear property line.

Yard, Street-side. The area extending between the front yard and the rear yard or rear street yard and situated between the side street property line and the face of the principal building which is parallel to, or most nearly parallel to, the side street property line.

24-1302 Architecture & Design Terms

This glossary of architecture and design terms explains concepts, strategies, and techniques that are used to affect building and site design.

a. Architectural Style.

When used generally, architectural style refers to a distinctive manner of expression, fashion or composition of building elements at a specific time.

When used specifically, architectural style refers to a prevalent or historical style that is documented with common or typical patterns in assembling building elements and form, and where variations within the style follow common rules of application for materials, massing or composition of the details. (i.e. Art Deco, Colonial Revival, Craftsman, Mid-Century Modern, Mission, Spanish Colonial Revival, Tudor Revival, Victorian, etc. See *Colorado's Historic Architecture & Engineering Guide*, www.historycolorado.org/colorados-historic-architecture-engineering-guide)

b. Building Elements. Buildings are made up of vertical elements, horizontal elements, details, and ornamentation that break up the building elevations into distinct components and establish the form and scale of the building. Building elements include:

1. *Awning.* A sloped or rounded framed projection attached to a wall and extended over a window or door to provide protection from the elements.
2. *Bay (window).* A bump out in the facade typically associated with an element of the interior floor plan but located to provide balance and relief to the massing on the exterior facade. A bay is usually associated with a window.
3. *Belt Course.* A continuous row or layer of stones, brick or other primary building material set in a wall and in line with changes in stories, changes in materials, or window sills. Belt courses make a visually prominent horizontal line to break up a wall plane by using a distinct material and/or implementing a pronounced and distinct pattern of the material.
4. *Bracket.* A projecting support placed under an eave or other projection with design qualities and details that add emphasis to the roof structure or massing element.
5. *Canopy.* A flat roofed projection attached to a wall and extended over a window, door, or walkway, or a freestanding structure over walkway or service area that gives protection from the elements.
6. *Clerestory Window.* A window high on a wall section above eye level and used to permit light or air into areas that otherwise do not have windows due to functional constraints of the building.
7. *Column.* A supporting pillar, especially one consisting of design qualities and details that add emphasis and ornamentation to a portion of the facade, or any roof structure or area it supports.
8. *Cornice.* An ornamental topping projecting from the wall with design qualities and details that crowns a structure along the top near the roof, with an emphasis that is compatible with but more elaborate than other similar details and ornamentation on the building.
9. *Eaves.* An overhang of the roof structure, where larger eaves can increase the prominence of the roof as a "cap" to the building and protect portions of the facade (particularly windows) from the elements.
10. *Entry Feature.* A structural component of the building or building footprint used to emphasize and add interest to the entry into the building, provide active social space protected from elements, contribute human scale to the building elevation, and create transitions from public to private space.
11. *Facia.* The exposed vertical edge of the roof often with design qualities and details that add emphasis and ornamentation to the roof structure.
12. *Foundation.* The base upon which the entire structure sits, designed with stronger, heavier materials, and often includes details and ornamentation to emphasize a buildings

connection to the ground, a sense of permanence, and transition to the main wall plane for vertical articulation.

13. *Gable.* The triangular and vertical portion of a wall plane between intersecting roof pitches.
14. *Lintel.* A horizontal beam, typically over a door, window or storefront to support the structure above it and add accent to the door, window, or storefront.
15. *Parapet.* A vertical extension of the wall plane above the roof, typically used to hide a flat or low-sloped roof and the rooftop equipment, or function as a firewall for attached structures, and usually including ornamentation to provide a visually prominent “cap” to the building.
16. *Pediment.* A gable or ornamental tablet or panel, typically triangular or arched, placed above a point of emphasis on a facade and often supported by columns or pilasters.
17. *Pilaster.* A projecting vertical element on a wall plane used to give the appearance of a supporting column and used to articulate the extent of a wall plane or other component of a facade.
18. *Sidelight.* A window with a vertical orientation along an opening (door or window) that is narrower than the opening but provides emphasis to the importance of the opening with expanded transparency, additional trim and ornamentation, or other architectural details.
19. *Transom.* A window above an opening (door or window) built on a horizontal crossbar that may provide light and/or swing open to add ventilation.

c. **Building Form.** Building form refers to the outward three dimensional envelope of a building or space affected by the mass, shape, composition, and articulation of building elements.

1. *Mass.* Mass is the volume (height x width x depth or height x building footprint) defined by a structure relative to its surroundings.
2. *Shape.* Shape affects the massing and refers to the simplicity or complexity of the outer dimensions of surface planes (wall planes or roof planes), and their orientation (horizontal / vertical; symmetrical / asymmetrical).
3. *Composition.* Composition is how the different building elements or materials are arranged to either distinguish or coordinate a particular shape or mass.
4. *Articulation.* Articulation is using architectural elements to clearly call out a different portion of the composition, shape, or mass and break the building form into smaller, identifiable pieces.
 - (a) *Horizontal Articulation.* Breaking the mass down through different levels of height on the building, particularly for taller buildings, or by a step back or other voids in the massing.
 - (b) *Vertical Articulation.* Breaking the mass down through different bays or structural components along the length of the building elevation, particularly for longer, larger footprint buildings.
5. *Altering Form.* Techniques to alter the form of a building and affect the scale include:
 - (a) Main mass and wing or secondary masses;
 - (b) Stepping back in the wall plane, usually larger differences (i.e. 4 feet +) at upper story(ies);
 - (c) Cantilever or overhangs, usually a smaller distance (i.e. 1 to 4 feet) over a lower story;
 - (d) Off-sets or breaks in a wall plane in relation to interior floor plan or outside space, not to the level of creating a wing or secondary mass;
 - (e) Dormers, including a window and sub-roof within roof structure;
 - (f) Projections of an element of the facade composition such as a bay window, entry feature, or eaves; and
 - (g) Articulation and composition of the facade in relation to, or in addition to any of the above techniques.

d. **Scale.**

Scale refers to the perceived or relative size of a form in relation to something else – usually a person, a social space (courtyard, lot, streetscape, etc.), or another building. For example, “human scale” refers to how spaces or objects relate to and are experienced or perceived by people at a close range and a slow pace. Scale can be affected by the mass, shape, composition, or articulation of the form to make an otherwise larger form seem smaller or more relatable based on how the components are perceived.

- e. **Compatibility.** Compatibility refers to the similarity of buildings and sites to adjacent properties or to prevalent patterns and themes in an area. In general, the elements of compatibility will include combinations of the following:
1. Similar proportions of building masses, particularly nearest the property lines and other adjacent buildings;
 2. Similar orientation of the building including the relationship to streetscapes, the shaping of open spaces, and the locations and arrangements of the building footprint;
 3. Similar window and door patterns, including location, size, and proportions;
 4. Similar roof lines (planes, pitches, profiles and details);
 5. Similar building materials, particularly primary building materials, or where materials differ they share common textures or color palettes;
 6. A common architecture style, including the facade composition and materials; however, many styles can allow differences in design within the style.

Note: Compatibility does not necessarily mean the same, but rather a sensitivity to the context, adjacencies, and character of the area. While not all of the above elements are necessary for compatibility, the greater the number that are similar, the greater the compatibility will be; significant departures from any one element should be compensated with either greater similarity of other elements or by similarity of more elements. Where things are not compatible, transitions should occur through space and landscape buffer designs.



Planning Commission Memorandum

Date: July 27, 2021
To: City of Greeley Planning Commission
From: Carol Kuhn, AICP, Chief Planner
Through: Mike Garrott, AICP, Planning Manager
RE: Update to CU2021-0005 Staff Report - Proposed revision to the Housing Diversity Table (Table 24-5-4) for Chapter 5 – Residential Development Standards

Based on further evaluation and analysis, staff is proposing a revised Housing Diversity Table (Table 24-5-4) found in Chapter 5 – Residential Development Standards. The proposed table is shown below.

Table 24-5-4: Housing Diversity	
Project Scale	Required Mix
< 50 Units	no requirement
50 - 150 Units	- At least 2 building types - No more than 70% of one type
151 - 300 Units	- At least 3 building types - No more than 50% of one type - At least 20% Category II
301+ Units	- At least 4 building types - No more than 50% of one type - At least 30% from Category II

This simplified table retains the housing diversity mix proposed by the Advisory Committee members, but allows for a more streamlined approach to administration of the code. If the Planning Commission recommendation includes this revised table, the table would be included with the draft of Chapter 5 – Residential Development Standards going to City Council on August 17, 2021 and September 7, 2021.

The staff presentation will include this proposed revision.

PLANNING COMMISSION SUMMARY

ITEM: Amending Title 24 of the 2021 Greeley Municipal Code to Recommend Approval of Chapter 3 – Subdivision Standards, Chapter 4 – Zoning Districts and Uses, Chapter 5 – Residential Development Standards, Chapter 6 – Nonresidential Development Standards, and Chapter 13 – Definitions and Terms to be Adopted by Ordinance

PROJECT: Title 24 – Chapter 3 – Subdivision Standards
Title 24 – Chapter 4 – Zoning Districts & Uses
Title 24 – Chapter 5 – Residential Development Standards
Title 24 – Chapter 6 – Nonresidential Development Standards
Title 24 – Chapter 13 – Definitions & Terms

FILE NO: Title 24 – Chapters 3-6 & 13 – CU2021-0005

LOCATION: (City-wide)

APPLICANT: City of Greeley, Community Development Department

CASE PLANNER: Carol Kuhn, AICP, Chief Planner

PLANNING COMMISSION HEARING DATE: July 27, 2021

PLANNING COMMISSION FUNCTION:

The Planning Commission shall consider the staff report, along with testimony and comments made by the staff and the public, and shall then make recommendations to the City Council regarding the proposed amendment to the Development Code.

PROJECT OVERVIEW AND BACKGROUND:

The Community Development Department is undertaking a multi-year project to update the Development Code, with an anticipated final adoption in September of 2021. The last major update to the Development Code was in 1998. A Plan Conformance Report was prepared and used as a guide to determine areas where the code could be improved to conform to the Comprehensive Plan and other policy documents; staff reviewed this report with the citizen Advisory Committee, Planning Commission, and City Council.

The Development Code, Title 18 of the City’s Municipal Code, was recently recodified into Title 24 as part of a citywide initiative.

On June 22, 2021 and July 20, 2021, Staff conducted a worksession with the Planning Commission regarding the proposed revisions for Chapters 3-6 and presented Planning Commission with draft code language for Chapters 3-6 during the July worksession.

The proposed schedule for the adoption of the Development Code is as follows:

Track	Chapter(s)	PC Worksession	PC Hearing	CC Public Hearings
Track I - Non-substantive changes for organization and improved usability.	Ch 1 – General Provisions	March 23, 2021	April 13, 2021	June 1, 2021 (First Reading)
	Ch 2 - Procedures	April 27, 2021	May 18, 2021	June 15, 2021 (Public Hearing) September 21, 2021 (Final Adoption)
Track II - Non-policy technical changes and coordination with other City policies and documents.	Ch 7 – Access & Parking Ch 8 – Landscape & Site Design Standards Ch 9 – Signs Ch 10 – Special Purpose Districts & Areas Ch 11 – Supplemental Standards Ch 12 - Reserved	May 25, 2021	June 8, 2021	July 6, 2021 (First Reading) July 20, 2021 (Public Hearing) September 21, 2021 (Final Adoption)
Track III - Substantive changes called for in the Comprehensive Plan, Strategic Housing Plan, and Council's 3-Year Priorities that need broader input and direction from the Advisory Committee, Planning Commission, and City Council.	Ch 3 – Subdivision Standards Ch 4 – Zoning Districts & Uses Ch 5 – Residential Development Standards Ch 6 – Non-residential Development Standards Ch 13 – Definitions	June 22, 2021 -and- July 20, 2021	July 27, 2021	August 17, 2021 (First Reading) September 7, 2021 (Public Hearing) September 21, 2021 (Final Adoption)

KEY ISSUES / STAFF ANALYSIS:

The attached drafts of Chapters 3-6 and 13 include updates related to subdivision standards, zoning districts, uses, residential development and design standards, nonresidential development and design standards, and definitions and terms:

Chapter 3. Subdivision Standards

24-301	Streets
24-302	Parks & Trails
24-303	Blocks & Lots
24-304	Required Improvements
24-305	Adequate Public Facilities

This chapter provides planning, engineering, and urban design standards for subdivisions. It establishes development patterns and infrastructure requirements as land is divided and ownership fractures. The changes in this code integrate more “urban design” elements into the planning and development process at this key preliminary stage of development.

Specific provisions would include:

Reorganization of all of the subdivision standards into five key components of large-scale development patterns – Streets, Parks & Trails, Blocks & Lots, Required Improvements, and Adequate Public Facilities (infrastructure).

- *Streets.* Consolidate current street standards from various documents (current Development Code, Public Works Specifications, and Transportation Plan) and include the following additions:
 - Refine the standards related to street connectivity to distinguish different contexts in the plan – primarily distinguishing walkable areas and car-oriented areas.
 - Make the narrow neighborhood street, allowed only as a “performance option” in the current code, applicable for all neighborhoods, provided sufficient connectivity and appropriate neighborhood design features to complement this street type are included.
 - Add walkable mixed-use / commercial streets for application in the “centers” and mixed-use areas identified in Imagine Greeley Comprehensive Plan.

Chapter 4. Zoning Districts & Uses

24-401	District Intent & Applicability
24-402	Allowed Uses
24-403	Accessory Uses
24-404	Specific Use Standards
24-405	District Performance Standards

This chapter establishes the zoning districts; uses are either allowed “by right,” subject to the applicable district development and design standards, or are permitted through a Use by Special Review application process, with specific standards unique to that use. This chapter would include few revisions, but would modify the existing standards by:

- Focusing purely on land use, with the zoning district development standards moved to either Chapter 5 (residential) or Chapter 6 (Nonresidential).
- Adding two new Mixed-Use (MU-) districts – MU-L (Low Intensity) and MU-H (High Intensity), which would be proposed as counterparts to the existing commercial (C) districts. These proposed additions are based on the Placemaking discussions with the Advisory Committee, Planning Commission, and City Council. These new districts could be used for new development projects; no existing zoning would be changed through the code update – any applications to rezone to MU-L or MU-H would be applicant-initiated.

Chapter 5. Residential Development Standards

24-501	Intent & Applicability
24-502	Residential Development Standards
24-503	Residential Design Standards
24-504	Neighborhood Features & Common Areas
24-505	Courtyard Pattern
24-506	Residential Micro-Housing District

This chapter includes all of the development and design standards for residential neighborhoods. It consolidates the various residential lot, setback, and height standards, and it incorporates community and building/lot design standards from the current code. All of the topics in this section are currently regulated. These proposed modifications aim to: (1) simplify current standards into objective, measureable standards; (2) focus or emphasize a key component of the current design standards; and (3) create more nuance and distinctions for standards based on the context of a particular neighborhood. Specific revisions to note are:

- *Residential Building Types.* The current standards are a mix of district and building type standards; the proposed revisions shift to a “building type” approach, and place a greater emphasis on “missing middle” housing – higher-density, smaller-scale, multi-unit projects. Changes impacting the existing residential districts are:
 - R-E. No change
 - R-L. Allowing a minimum lot size of 4,500 s.f. lot by right, which is currently allowed through the cluster option.
 - R-M. Increasing the range of building types allowed - specifically the lower end of the “missing middle” types (smaller lot detached houses and small-scale multi-unit buildings, and accessory dwelling units (ADUs))
 - R-H – No significant change, but added specific language regarding standards that may apply to the missing middle building types and promoting these more as strategies for infill.
- *Residential Design Standards.* In the current code, the residential standards are scattered throughout the code. Similar sections repeat throughout the code, but may be phrased differently and reference similar areas of residential design, sometimes causing conflicts and interpretation issues. This section reorganizes the standards to focus on three key components – frontage design, building design, and block and lot design. Over the last few months, staff worked with a homebuilders focus group to refine the existing standards and fine-tune the draft regulations.

- *Neighborhood Features & Common Areas.* This section would establish design standards for neighborhoods and ensure connectivity for open spaces, trails, and parks.
- *Courtyard Pattern.* This pattern is related to a specific infill strategy, but it could also be used in new developments. For this housing type, an exception would be made to allow lots to not front a street and to allow for a minor lot size reduction. This pattern would combine the “missing middle” housing options and the smaller formal open space options into a particular type of residential development that can increase housing options while supplying a higher level of neighborhood design.
- *Residential Micro-Housing District.* These changes would reflect the standards for the existing R-MH district but would also include the following changes:
 - Improve the neighborhood / community design of these projects based on the same principles applied to all neighborhoods – emphasizing the streets and open spaces and improving the relation of housing sites and buildings to those spaces;
 - Reduce the overall project size to allow projects to fit into more areas;
 - Align the density and lot sizes with comparable typical manufactured housing sites;
 - Broaden the applicability of this district to more types of small format housing that would meet the same scale, pattern, design, and intensity standards.

Chapter 6 Nonresidential Development Standards

24-601	Intent & Applicability
24-602	Nonresidential Development Standards
24-603	Nonresidential Design Standards

This chapter includes all of the development and design standards for nonresidential development. Similar to Chapter 5, it consolidates the various commercial and industrial zoning districts found throughout the current code. The topics of the design standards are all addressed in the current code, but are not well-coordinated and are difficult to follow. Many are addressed in alternatives or performance options, but do not have clear criteria as to when and where they should apply. Proposed changes to this section include (1) adding more specific criteria for the circumstances where alternatives and options should apply, (2) emphasizing the primary goal of the design standards (to create better relationships to the public spaces and strengthen the character of an area), and (3) mitigating impacts on surrounding property.

Specific sections to note include:

- *Nonresidential Development Standards.* This section would capture the existing district standards, but add limits on the scale of lots for the new mixed-use districts to promote compact, walkable patterns (maximum sizes, rather than minimum).
- *Nonresidential Design Standards.* An outcome of the placemaking facilitated discussions was to “bundle” most of the building and design standards into packages that escalate as the building moves closer to the street. Key aspects of this strategy include:
 - Build on topics already regulated in the current code by simplifying them into building placement and orientation, transparency, and facade design.
 - Provide options for street-front buildings as well as allow for the existing commercial districts to maintain the default to more car-oriented patterns (C-L and C-H) with a

minimum of a 25' setback, with basic building design standards to reflect existing standards.

- Provide an option for two new mixed use districts (MU-L and MU-H, unmapped) to allow for more options outside of a Planned Unit Development process. These new zone districts would have default standards oriented toward more pedestrian-oriented patterns (0' – 10' setback, with enhanced human scale design), but would allow options for more relaxed standards in specific cases.
- Create a simplified approach using building form and design standards for specific areas, based on a block-by-block urban design pattern.

Chapter 13. Definitions & Terms

24-1301	Definitions
24-1302	Architecture & Design Terms

This chapter includes most of the definitions currently spread throughout various sections of the code. Where multiple definitions were referenced in the existing Title 24, the terms and definitions have been consolidated into one chapter. However, in certain chapters, terms and definitions have a particular meaning and these terms remain in their associated chapters for interpretation of that chapter. A glossary of architecture and design terms to explain concepts, strategies, and techniques that are used to affect building and site design has also been included in Chapter 13.

NOTICE AND COMMENTS:

Notice has been published in the Greeley Tribune on July 21, 2021, pursuant to the City's notification requirements for revisions to the Development Code.

The drafts of Chapters 3-6 and 13 were posted on the City's website and referrals were sent to neighboring jurisdictions. No comments were received.

PLANNING STAFF RECOMMENDATION: Approval

PLANNING COMMISSION RECOMMENDED MOTION:

Based on the project summary and attached drafts of Chapters 3-6 and 13, the Planning Commission finds that the proposed revisions to Chapters 3-6 and 13 are consistent with the City's Comprehensive Plan and are necessary and appropriate in meeting the intent of the Comprehensive Plan and to clarify administration of the Development Code. Planning Commission recommends that the City Council adopt Chapters 3-6 and 13 of Title 24 as shown in Attachments A, C, E, G, and I.

ATTACHMENTS:

Attachment A – DRAFT – Chapter 3
Attachment B – Section Map – Chapter 3
Attachment C – DRAFT – Chapter 4
Attachment D – Section Map – Chapter 4
Attachment E – DRAFT – Chapter 5
Attachment F – Section Map – Chapter 5
Attachment G – DRAFT – Chapter 6
Attachment H – Section Map – Chapter 6
Attachment I – DRAFT – Chapter 13

Chapter 3. Subdivision Standards

- 24-301 Streets
- 24-302 Parks & Trails
- 24-303 Blocks & Lots
- 24-304 Required Improvements
- 24-305 Adequate Public Facilities

24-301 Streets

- a. **Intent.** The intent of the street design standards is to:
- Plan street networks to connect to adjacent projects, correspond with the topography, and to ensure the proper arrangement of blocks and lots for coordinated long-range growth and development.
 - Emphasize street design as a key determinant of Greeley's community image and unique identity.
 - Integrate street networks and street designs with open spaces to establish a valuable public realm.
 - Build complete and multi-modal networks of well-connected streets, trails, and paths to improve the access, capacity, safety, and efficiency of transportation systems.
 - Plan frequent collector or neighborhood connector streets to link multiple projects or neighborhoods together, and avoid major streets becoming barriers.
 - Use street design to call attention to differing contexts within the City, and to better support development patterns and uses abutting the streets.
 - Design streets to account for all potential users of the streets, including pedestrians, bicycles, automobiles, trucks, and transit.
 - Implement the Greeley Comprehensive Plan and Transportation Master Plan as development occurs, and in particular, the complete street policies and the connectivity policies of those plans.
- b. **Street Network.** Arterial, collector, neighborhood connector, and local streets shall generally be laid out according to the policies of the Comprehensive Plan, Transportation Master Plan, and other major street, parks, trail and open space plans. In the absence of more specific guidance in these plans, the following standards shall apply to street networks:
- Blocks and Connectivity.** Streets shall be laid out to provide a network of streets and blocks based on the planning context and development pattern as identified in Table 24-3-1:

Table 24-3-1: Block Sizes & Connectivity

Planning Context	Block Size	Cul-de-sac Limits
<i>Comprehensive Plan Development Framework Categories</i>		
Walkable Commercial & Neighborhoods <i>Downtown; Downtown, Legacy Urban, and Mixed Use Neighborhoods; Mixed Use Areas and Centers; and any other commercial areas or neighborhoods where walkable patterns are planned.</i>	200' min. 500' max. 5.5 ac. max.	Prohibited
Suburban Neighborhoods & General Non-residential	260' min. 1,000' max.	500' max.

Table 24-3-1: Block Sizes & Connectivity

Planning Context	Block Size	Cul-de-sac Limits
<i>Comprehensive Plan Development Framework Categories</i>		
<i>Suburban Neighborhoods; Employment, Industrial and Commercial Areas; and other areas supporting commercial corridors or employment areas outside walkable centers.</i>	8 ac. max.	



Figure 24-3-1 Connectivity & Block Sizes. Street networks shall be based on maximum block sizes (length between centerlines of perimeter streets and area) and stub to adjacent property at a frequency sufficient to create connected networks, unless exceptions justify not connecting.

2. **Exceptions.** The following are exceptions to the block and connectivity standards in Table 24-3-1:
 - (a) **Natural Features, Parks, Trails or Other Civic Spaces.** Blocks or parcels abutting or containing important natural features, topographical constraints or otherwise creating parts of the public parks or common space system, may be larger provided the proposed street layout preserves these features and integrates them into public realm design for the area.
 - (b) **Regional Transportation Routes.** Blocks or parcels abutting significant regional transportation routes that impede local network connectivity, such as highways or rail rights-of-way, may be larger provided the street networks and development patterns achieve local connectivity in all other ways possible.
 - (c) **Rural Lots or Future Development Tracts.** Property divided into lots of at least five acres for rural or very low-intensity development, or tracts reserved for future development, may exceed block limits provided development is arranged to allow future streets in compliance with these regulations and a logical pattern of re-

subdivision can occur with minimal disruption of buildings, utilities, and other structures.

- (d) **Oversized Parcels.** Where oversized parcels are platted for special land uses or projects that involve large-scale buildings and development patterns, such as campuses, large-scale employment complexes, or regional commercial areas, blocks may be larger than specified in Table 24-3-1. Internal access streets shall mimic the block structure in Table 24-3-1, include the urban design amenity of streets in Table 24-3-2, and create logical extensions and connectivity to the public streetscape beyond the project.
- (e) In any case where streets are not required to connect by Table 24-3-1 through exceptions to this Section, alternative designs such as loops, eyebrows, closes, or courtyard layouts are preferred over dead ends and cul-de-sacs.



Figure 24-3-2 Internal Access Streets. Internal access streets used to mimic public street networks and streetscapes for over-sized parcels and large scale development (24-301.b.2.(d)).

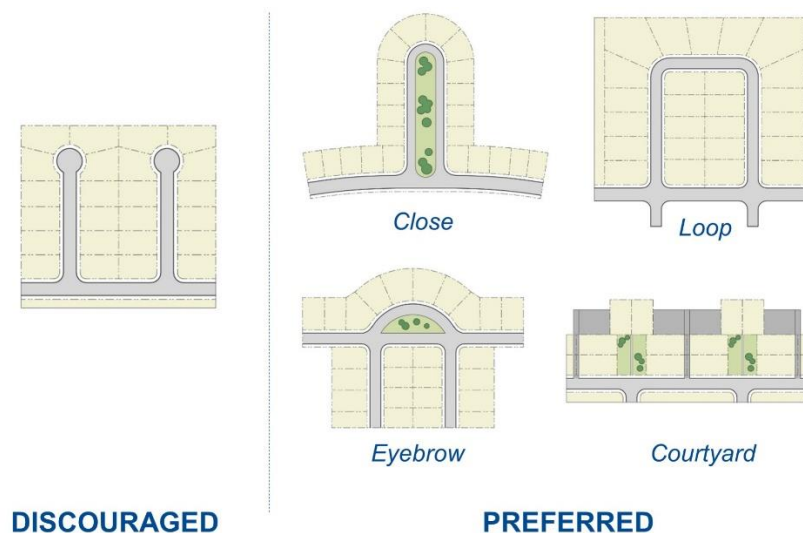


Figure 24-3-3 Disconnected Street Options. Where streets will not connect, blocks and lots should be laid out to limit the need for cul-de-sacs and maximize other options such as loops, closes, eyebrows and courtyard patterns. (24-301.b.2.(e)).

3. **Walkways and Bicycle Routes.** In any case where exceptions for larger blocks apply, or any other area where pedestrian and bicycle connections are important, such as adjacent to schools, parks, trail systems or community centers, the City may require pedestrian walkways or bicycle routes through blocks or at the end of any cul-de-sac. Connections shall be dedicated to the City and meet the City's trail standards or be common areas and meet the Trail or Pedestrian Passage design standards in Section 24-504.



Figure 24-3-4 Walkways and Bicycle Routes. Where streets will not connect or where larger blocks are platted, connections for pedestrians or bikes may be required through blocks or at the ends of disconnected streets. (24-301.b.3).

4. **External Connections.** Streets shall be planned to provide continuation to adjacent undeveloped and future growth areas at intervals of at least the maximum block length in Table 24-3-1, unless justified by an exception in 24-301.b.2. The City may require dedication of right-of-way and construction of streets extended to the boundary line of the property to be subdivided, or approve alternative arrangements for location and timing of construction that equally or better coordinate with anticipated future development of adjacent areas.
5. **Half Streets.** Street systems shall be laid out to eliminate or avoid new perimeter half streets between adjacent property owners. The full right-of-way width of streets shall be dedicated and half-streets shall only be accepted by the City when it conforms to the Transportation Master Plan.
6. **Intersections and Offsets.** Streets shall be laid out to intersect subject to the following:
 - (a) Intersection angles should be as near as possible to right angles, and intersections less than 75 degrees are generally not acceptable.
 - (b) Oblique streets should be curved approaching an intersection and should be approximately at right angles for at least 100 feet prior to the intersection.
 - (c) Intersections should be generally aligned with existing intersections on the opposite side of the street, and offsets of the centerlines between 25 feet and 125 feet are generally not acceptable.
 - (d) Intersections of more than two streets at one point are generally not acceptable.
7. **Alternative Compliance.** Alternative compliance to the street network standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and where the proposed network meets any of the following additional applicable criteria:
 - (a) Better coordinate streets and trail connections with adjacent development, and particularly considering a greater frequency of bicycle and pedestrian connections.
 - (b) Implement any officially approved transportation plan for a specific area.

- (c) Emphasize unique natural features or better correspond to topography,
 - (d) Implement traffic calming in a manner that improves pedestrian and bicycle connections.
 - (e) Create gateways and focal points within the street network by unique arrangements of streets and blocks.
 - (f) Average block sizes for the project as a whole implement a comparable or greater degree of connectivity, particularly considering the frequency of collector and neighborhood connector streets that can extend beyond the project.
- c. **Street Types & Design.** The street types in this section provide typical cross sections to implement context-based street design, design “complete” streets, and result in multi-modal networks for the various contexts in Greeley, based on the policies of the Comprehensive Plan and Transportation Master Plan.
 - 1. *Context & Type.* The street designs are grouped with the following design types for application to specific contexts:
 - (a) *Neighborhood Streets.* A neighborhood-oriented residential street type, appropriate where a higher level of neighborhood design amenity and neighborhood walkability is desired. It is characterized by large street trees, wide sidewalks, slow speeds, and occasional on-street parking. Neighborhood streets require a well-connected network to disperse traffic and slow speeds, so that no single street is burdened with high volumes and speeds.
 - (b) *Pedestrian Streets.* A pedestrian-oriented commercial or mixed-use street type, appropriate for all areas where walkability is a goal. It is characterized by narrow lanes, slow speeds, on-street parking, wide sidewalks, and large, well-designed pedestrian amenity zones that support social and economic activity along these streets. Pedestrian streets require a highly-connected network so that a variety of street design types can better support abutting uses and urban design characteristics, and ensure that vehicles and pedestrians have multiple alternative and direct routes to destinations.
 - (c) *Standard Streets.* A basic street type, appropriate generally where no particular development characteristics or urban design context warrant application of other street types. These streets accommodate peak anticipated vehicle traffic, but seek to balance and integrate other modes of transportation.
 - 2. *Alternative Compliance.* The design standards shown for each street type in Table 24-3-2: Street Types and Cross Sections, are typical. They may be modified based on context and according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
 - (a) The Director shall consult with the Public Works Director to reconcile any planning, urban design, traffic, and engineering issues.
 - (b) In contexts where there is constrained rights-of-way, unusual topographic conditions, or unanticipated development pattern and traffic issues, specific elements of the cross section may be modified to best reflect the priorities for the street type expressed in sub-section c.1.
 - (c) Any official plan approved by the Planning Commission for streets, or applying specific street types or street sections to a particular area, shall be used by the Director and Public Works Director.
 - (d) The Director and Public Works Director may consult the guidance provided by the Transportation Master Plan, or any other street specification and design guides officially authorized by the City that meet the intent of this section.

Table 24-3-2: Street Types & Cross Sections

Street Type	ROW Width	Street Width [1]	Travel Lanes	Edge Condition [2]	Landscape Amenity	Sidewalk	Bicycle Facility [2]	Applicability / Functional Class
<i>Neighborhoods</i>								
Neighborhood Street	54'	30'	16' – 18' yield flow	7' parking both sides	7'+ parkway	5'	N/A slow street / low volume	- Local – Low Volume - Local Residential 25' – 1-side parking; 20' – no parking
Neighborhood Connector	60'	32' - 34'	2 @ 9'-10'	7' parking both sides	8'+ parkway	6' - 8'	6' bike lane (optional)	- Local - Residential - Minor Collector - Residential
Neighborhood Parkway [3]	90'	34' (+ 12' - 20' center median)	2 @ 10'	bike lane	10'+ parkway 12' -20' median (optional)	8' -10'	6' - 7' bike lane	- Minor Collector – Residential - Major Collector – Residential - Minor Arterial - Residential
Access Alley [4]	20'	14'-16' (< 40 units) 16'-18' (41+ units)	n/a	shoulder	n/a	n/a	n/a	n/a – internal to block
<i>Pedestrian (Walkable centers / Mixed Use areas)</i>								
Pedestrian Street	60' – 80'	36'	2 @ 10'	8' parallel parking both sides (angled optional)	4' – 8' amenity zone	8' -12'	N/A slow street / low volume;	- Local - Minor Collector
Avenue	90' - 100'	56'	4 @ 10'	8' parallel parking both sides (angled optional)	4' – 8' amenity zone	12' – 16'	6' bike lane (optional)	- Minor Collector - Major Collector - Minor Arterial
Access Alley [4]	20'	18' – 20'	n/a	shoulder	n/a	n/a	n/a	n/a – internal to block
<i>Standard (Commercial / Industrial)</i>								
Standard Local	60'	36'	2 @ 11'	parking and/or bike lanes	7'+ parkway	5' – 8'	6' bike lane (optional)	Local
Standard Collector	70'	36'	2 @ 11'	parking and/or bike lanes	8'+ parkway	6' -10'	6' bike lane (optional)	Minor Collector
Standard Collector	90' – 100'	58'	4 @ 11'	bike lane	8'+ parkway	8' -12'	6' – 7' bike lane	Major Collector
Standard Arterial	120+	72' (w/ 16' center median)	4 @ 11'	bike lanes	12'+ parkway	8' - 12'	6' - 7' bike lane OR 12' multi-use trail (off-street)	Minor Arterial
Standard Arterial	130+	82' (w/ 16' center median)	6 @ 11'	curb & gutter	12'+ parkway & 16' center median	12'+ multi-use trail	12' multi-use trail (off-street)	Major Arterial

[1] Street width is back-of-curb measurement, with curb and gutter included street width where it is on-street parking or a travel lane. Where bike lanes are on the edge, the curb and gutter may need to be added to the width to provide a clear surface for bicycles.

[2] Configurations reflect typical cross sections; where bicycle lanes or angled parking is optional, or where both are provided, greater street and ROW widths may be necessary for proper configuration.

[3] On a Neighborhood Parkway, a center median is optional, but if not provided space shall be allocated to a wider parkway with additional trees.

[4] Access alleys may be located in an easement at the City's discretion and provided a property owner's association or other entity with financial and administrative capacity for maintenance is established.

Neighborhood Street

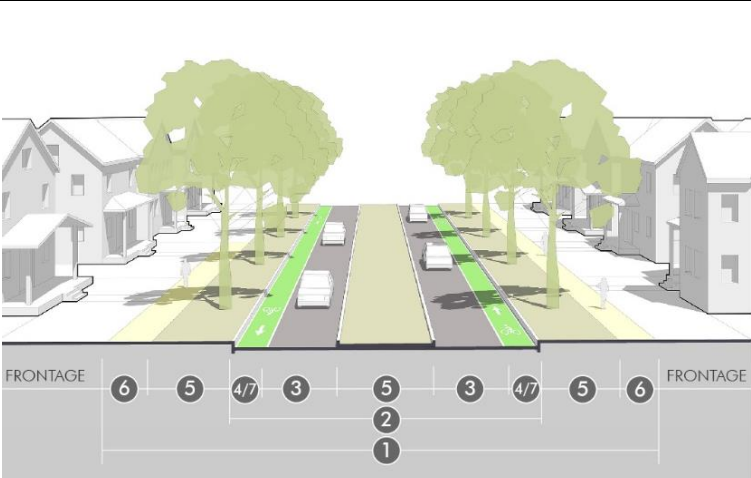
①	ROW width	54'
②	Street Width	30' *
③	Travel Lanes	16' – 18' yield flow
④	Edge Condition	7' parking both sides
⑤	Landscape Amenity	7'+ parkway
⑥	Sidewalk	5'
⑦	Bicycles	N/A
Applicability		• Local – Low Volume • Local Residential


Neighborhood Connector

①	ROW width	60'
②	Street Width	32' – 34'
③	Travel Lanes	2 @ 9' – 10'
④	Edge Condition	7' parking both sides
⑤	Landscape Amenity	8'+ parkway
⑥	Sidewalk	6' – 8'
⑦	Bicycles	6' bike lane (optional)
Applicability		• Local • Minor Collector


Neighborhood Parkway

①	ROW width	90'
②	Street Width (curb-to-curb)	34' (+median width)
③	Travel Lanes	2 @ 10'
④	Edge Condition	bike lane
⑤	Landscape Amenity	10'+ parkway 12' – 20' median (optional)
⑥	Sidewalk	8' – 10'
⑦	Bicycles	6' – 7' bike lane
Applicability		• Minor Collector • Major Collector • Minor Arterial



Access Alley (Residential)

①	ROW / Easement width	20'
②	Street Width	14 – 16" (< 40 units) 16' – 18' (41+ units)
③	Travel Lanes	N/A
④	Edge Condition	shoulder
⑤	Landscape Amenity	N/A
⑥	Sidewalk	N/A
⑦	Bicycles	N/A
	Applicability	N/A – internal to block

**Pedestrian Street**

①	ROW width	60" – 80'
②	Street Width	36'
③	Travel Lanes	2 @ 10'
④	Edge Condition	8' parallel parking (angled optional)
⑤	Landscape Amenity	4' – 8' amenity zone
⑥	Sidewalk	8' – 12' min.
⑦	Bicycles	N/A
	Applicability	• Local • Minor Collector

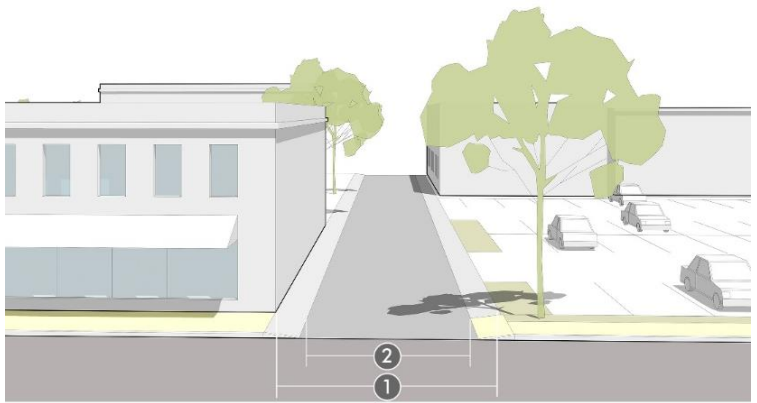
**Avenue**

①	ROW width	90' – 100'
②	Street Width	58'
③	Travel Lanes	4 @ 10'
④	Edge Condition	8' parallel parking both sides (angled optional)
⑤	Landscape Amenity	4' – 8' amenity zone 12' -20' median (optional)
⑥	Sidewalk	12' – 16' min.
⑦	Bicycles	6' bike lane (optional)
	Applicability	• Minor Collector • Major Collector • Minor Arterial

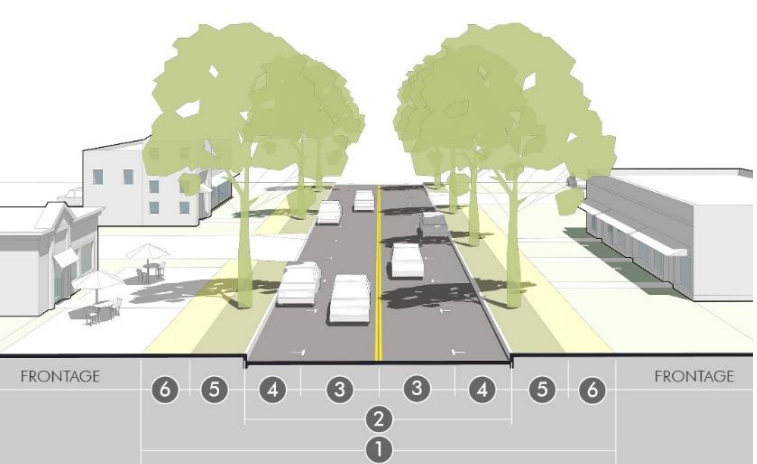


Access Alley (Commercial / Industrial)

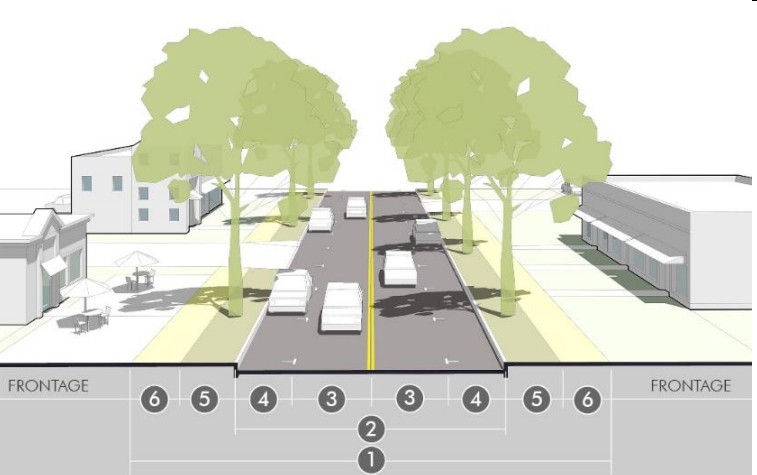
①	ROW /Easement width	20'
②	Street Width	18' – 20'
③	Travel Lanes	N/A
④	Edge Condition	shoulder
⑤	Landscape Amenity	N/A
⑥	Sidewalk	N/A
⑦	Bicycles	N/A
	Applicability	N/A – internal to block


Standard Local

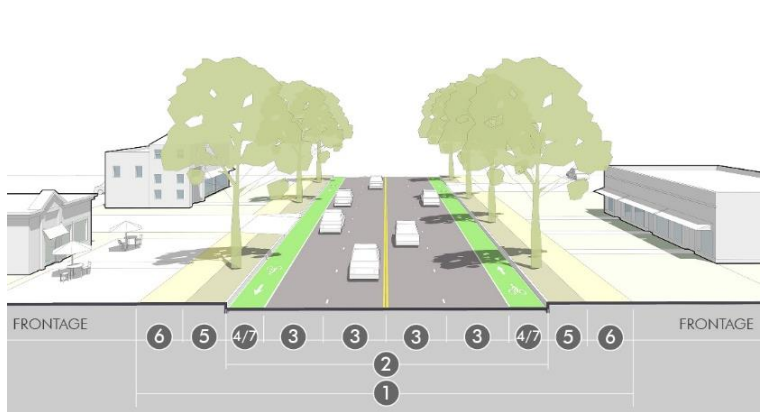
①	ROW width	60'
②	Street Width	36'
③	Travel Lanes	2 @ 11'
④	Edge Condition	Parking and/or bike lanes
⑤	Landscape Amenity	7'+ parkway
⑥	Sidewalk	5' – 8'
⑦	Bicycles	6' bike lane (optional)
	Applicability	• Local


Standard Collector (Minor)

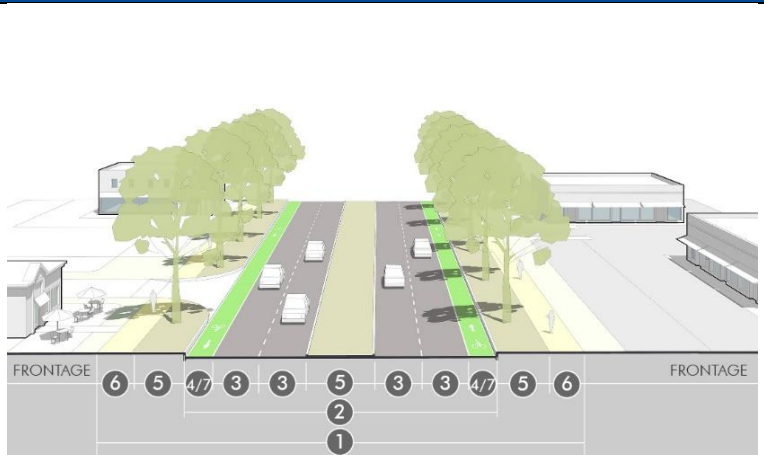
①	ROW width	70'
②	Street Width	36'
③	Travel Lanes	2 @ 11'
④	Edge Condition	Parking and/or bike lanes
⑤	Landscape Amenity	8'+ parkway
⑥	Sidewalk	6' – 10'
⑦	Bicycles	6' bike lane (optional)
	Applicability	• Minor Collector



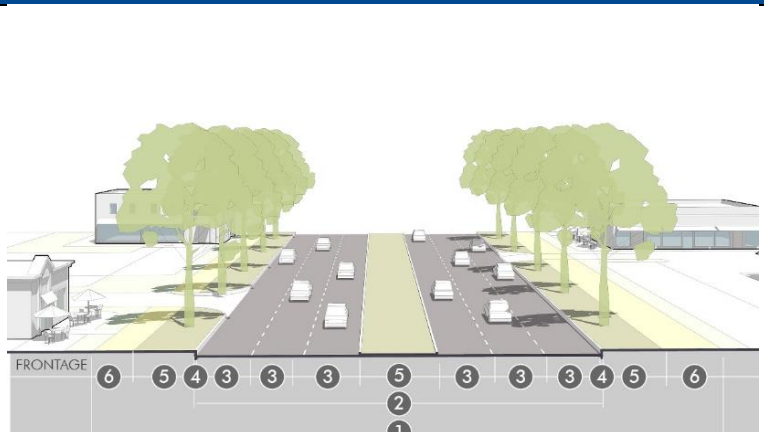
Standard Collector (Major)

①	ROW width	90' – 100'	
②	Street Width	58'	
③	Travel Lanes	4 @ 11'	
④	Edge Condition	bike lane	
⑤	Landscape Amenity	8'+ parkway	
⑥	Sidewalk	8' – 12'	
⑦	Bicycles	6' – 7' bike lane	
Applicability			• Major Collector

Standard Arterial (Minor)

①	ROW width	120'+	
②	Street Width	72' (w/ median)	
③	Travel Lanes	4 @ 11'	
④	Edge Condition	bike lanes	
⑤	Landscape Amenity	12'+ parkway 16' center median	
⑥	Sidewalk	8' – 12'	
⑦	Bicycles	6' – 7' bike lane OR 12' multi-use trail (off-street)	
Applicability			• Minor Arterial

Standard Arterial (Major)

①	ROW width	130'+	
②	Street Width	82' (w/ median)	
③	Travel Lanes	6 @ 11'	
④	Edge Condition	Curb & gutter	
⑤	Landscape Amenity	12'+ parkway 16' center median	
⑥	Sidewalk	12' multi-use trail	
⑦	Bicycles	12' multi-use trail (off-street)	
Applicability			• Major Arterial

- d. **Intersection Design.** Intersections shall generally be designed according to the Greeley Design Criteria and Construction Specifications for streets. The subsections below provide specific and additional considerations to align intersection design with the development patterns and public realm design of a particular area.
1. **Corner Radii.** In order to balance the competing interest of vehicle turning movements and the safety and distance of pedestrians crossing the street, the Director and Public Works Director may approve decreases from the corner radii specified in the Design Criteria and Construction Specifications based on the following considerations:
 - (a) The context of a particular development, and in particular, whether walkable development patterns are a priority.
 - (b) The impact that the specified radii has on increasing the distance that pedestrians must cross.
 - (c) The desired speeds of vehicles in the roadway and the desired speeds and volume of turning vehicles.
 - (d) The connectivity of the street network and whether vehicles have multiple alternative routes that minimize frequent turning movements at one particular location.
 - (e) The effective turning radius of vehicles considering other features of the specific cross section, including bicycle lanes, on-street parking or other configurations that impact the actual path of turning movements.
 - (f) The likelihood that large vehicles will make frequent turning movements at a particular location, compared with the ability of over-sized vehicles or unusual turning movements to safely encroach into other areas of the street.
 - (g) Other design guides or industry manuals officially authorized by the City that meet the intent of this section.
 2. **Sight Distance.** Proper lines of sight shall be maintained at all intersections and all vehicle connections to the street. The proper line of sight shall be an unobstructed view from the stopping point on the approaching street, or 15 feet back from the flow line where no specific point is evident, to all points 2.5 feet above the roadway along the centerline of the intersecting street. The distance of the unobstructed view shall be based upon the design speed of the intersecting street specified in Table 24-3-4, Clear Sight Distance.

Table 24-3-4: Clear Sight Distance

Class & Speed of Intersecting Street	Left Y Distance	Right Y Distance
Arterial 30 – 50+ MPH	150'	75'
Collector 30-35 MPH	120'	75'
Local 25 – 30MPH	60'	60'

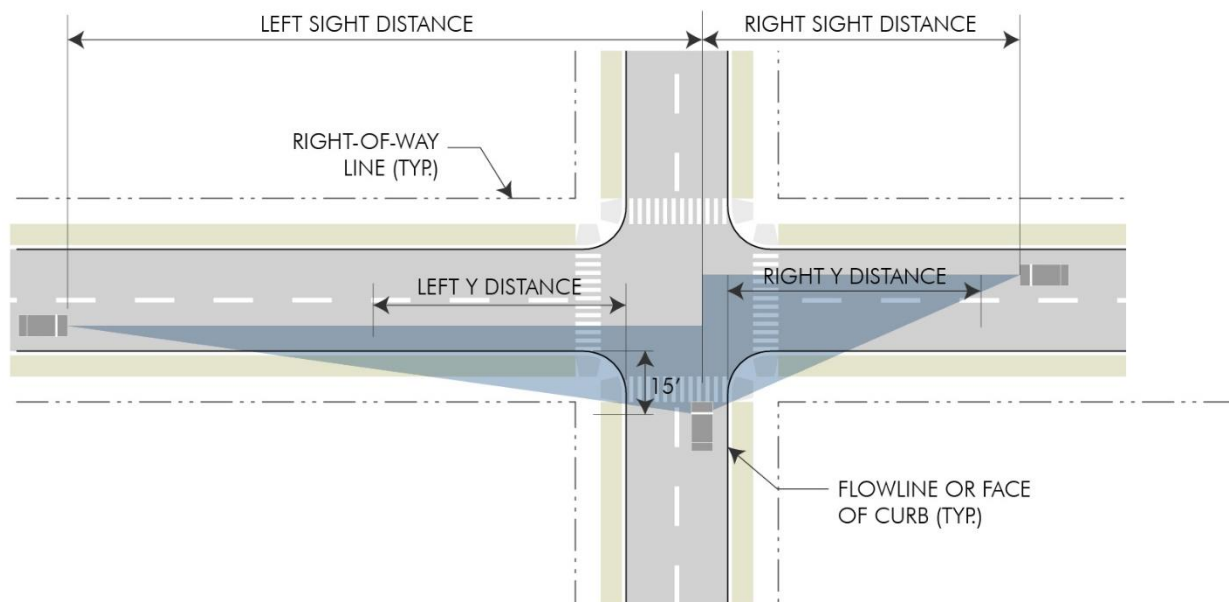


Figure 24-3-5 Clear Sight Distance

- (a) These distances are typical to be used under normal conditions and may be modified by the Traffic Engineer to protect the public safety and welfare under exceptional conditions.
 - (b) No building, structure, vegetation or other type of visual obstruction shall be placed or maintained within the triangle created by the centerline of the street intersection, the stopping point on the approaching street, and the sight distance specified in Table 24-3-6 to the centerline of the intersecting street.
 - (c) Street trees, light poles or other limited narrow obstructions are allowed within the sight triangle provided they do not have any foliage, limbs, or other broad obstructions between 2.5 and 8 feet and are no closer than 20 feet to the intersecting right-of-way line.
 - (d) Fully controlled intersections where signalization establishes and prioritizes safe turning movements may deviate from the above sight triangle standards if site conditions warrant and based upon a recommendation of the Director and Public Works Director.
3. **Crosswalks.** All intersections and crosswalks shall be designed to address conditions at each specific location, based on the guidance in the Transportation Master Plan and applicable standards in the Design Criteria and Construction Specifications. In general or where this guidance does not provide more specificity, sidewalks or trails intersecting with public streets or other vehicle access shall have crossings meeting the following standards:
 - (a) Curb ramps meeting Americans with Disability Act (ADA) accessibility standards and guidelines shall provide a direct, non-diverted approach from the sidewalk along the block into the designated or protected crossing area.
 - (b) Crossings on collector streets or higher classification shall be considered for enhanced crosswalks including pavement markings, bulb outs, signalization, refuge islands or other traffic-calming measures that are appropriate to the context of the intersection.

- (c) Where blocks exceed more than 700 feet between intersections or at other locations of high pedestrian activity, mid-block crossings shall be considered. Mid-block crossing designs and locations are subject to a specific recommendation and approval of the Director and Public Works Director.
 - (d) Any crosswalk over 80 feet, or any other significant pedestrian crossing, may require a pedestrian refuge in the median at the discretion of the Director and Public Works Director.
- 4. **Turn Lanes.** Turn lanes for left or right turn movements may be required for specific intersections, based on an approved traffic study and with consideration by Director and Public Works Director. Requirements for turn lanes should be based on careful consideration of the context balancing the impact of crossing distances for pedestrians, vehicle turning speeds, and prioritization of other planning, urban design, and traffic engineering issues. In general, this space should come from reconfiguration of the space within the roadway width near the intersection (i.e. within median space, narrowing lanes, or limiting on-street parking) rather than claiming space from the pedestrian area or streetscape, or rather than widening the road and right-of-way.
- e. **Traffic Calming.** In order to meet the desired speeds throughout the street network, to manage volumes in association with the street network, and to meet the City's Complete Streets policies and intent of this section, traffic-calming strategies may be required in street plans. Traffic calming may include bulb outs and curb extensions, medians and islands, neck downs, vertical diverters, enhanced or raised crossings, and other speed management techniques approved by the Director and Public Works Director. [See *National Association of City Transportation Officials Guidelines*.]
- f. **Engineering and Construction Specifications.** All other engineering specifications, horizontal and vertical alignment, design details, and technical or construction specifications for constructing streets shall be covered by the City of Greeley's Design Criteria and Construction Specifications for streets, and administered by the Public Works Director.

24-302 Parks & Trails

- a. **Intent.** The intent of this section is to:
 - 1. Emphasize open and civic space design as a key determinant of Greeley's community image and unique identity.
 - 2. Integrate parks and trail systems, and other common areas into the patterns of streets and blocks to create a coordinated public realm.
 - 3. Value the design, function and appropriate location of different types of open space, rather than solely the quantity of space.
 - 4. Consider the context and multiple functions that open spaces can serve to support development including ecological, recreation, aesthetic and urban design functions.
 - 5. Promote good civic design and create focal points for the community, district, neighborhood or development site.
 - 6. Integrate natural systems into the design of public or common open spaces to improve stormwater management, protect water resources, preserve ecosystems, and improve sustainability efforts.
 - 7. Implement Greeley's Parks, Trails, and Open Lands Master Plan, other plans for natural areas and trails, and coordinate the design and location of other open and civic spaces with these plans.

- b. **Required Park Dedication.** All residential subdivision applications shall dedicate land suitable for the development of parks according to the formula in Table 24-3-5: Park Land Dedication. Where no suitable land is available in the proposed development, the City may accept the cash-in-lieu equivalent of the land value. This requirement shall also apply to any rezoning or use by special review for residential uses that is not associated with a plat application, and where a previous plat application was not required to dedicate land or pay a cash-in-lieu equivalent.

Table 24-3-5: Park Land Dedication		
	Dedication Requirement	Formula
Total Acre Requirement	9.75 acres / 1,000 people	Units x 2.7 people / unit x 0.00975 acres / person
Neighborhood Park	3.25 acres / 1,000 people	Units x 2.7 people / unit x 0.00325 acres / person
Community Park	3.5 acres / 1,000 people	Units x 2.7 people / unit x 0.0035 acres / person
Sports Complex	1.5 acres / 1,000 people	Units x 2.7 people / unit x 0.0015 acres / person
Regional Park	1.5 acres / 1,000 people	Units x 2.7 people / unit x 0.0015 acres / person

- The city reserves the right to adjust the acreage requirement between the four park categories as deemed necessary to meet specific needs and to determine the amount of developed park acreage required based upon recommendations by the Cultural, Parks and Recreation Department.
 - Existing dwelling units within a subdivision shall be excluded from the calculation of the park dedication requirement.
 - Where a final unit count cannot be determined until subsequent stages of a project, land dedication shall be based on an assumed average density. Multifamily density shall be assumed at 20 dwelling units per acre but may be adjusted by the City where more specific information on the site, developable area or anticipated building types exist.
 - Land proposed for park dedication shall be clearly identified on any submitted plat including the number of acres for each site and the total acreage proposed for city park dedication within the project.
 - The dedication shall be by warranty deed, and the title shall be free and clear of all liens and encumbrances, including real property taxes prorated to the time of dedication. The applicant shall provide the City with a title insurance policy in the City's name and a certified survey at the time of conveyance.
 - Land dedicated for parks shall include adequate site access, installation of curb, sidewalks, and storm drainage systems, and the necessary water rights or other available water service to provide for irrigation and drinking water.
 - Community park and/or sports complex park land shall be dedicated to the City prior to recordation of the first final plat for the subdivision as defined by the preliminary plat. Neighborhood park land shall be dedicated at the time of the final plat for the area to be served by the neighborhood park.
- c. **Cash-in-lieu of Dedication.** Cash-in-lieu of land dedication may be used when the City determines the cash value of land to be more appropriate in satisfying the needs of the proposed subdivision than land within the proposed subdivision. Typical cases include small developments, locations with disadvantageous topography or access, or developments that already have adjacent facilities that could be expanded to satisfy the need created by the proposed development.
- The City will adopt a pre-determined per acre cash-in-lieu of land for parks amount, that may be administratively adjusted periodically and will be available on file with the Community Development Department. The pre-determined amount will be based on a mass appraisal performed by an independent qualified appraiser using generally accepted appraisal practices. As an alternative to the City's predetermined cash-in-lieu amount, the applicant may submit a proposal for determination of the cash-in-lieu

- amount. The proposal shall supply supporting information, including at least one report by an independent, qualified appraiser using generally accepted appraisal practices. The supporting information supplied must be adequate to allow the City to evaluate the proposed amount. If the City determines that the alternate proposal is not adequately supported, the City's predetermined cash-in-lieu amount will be applied.
2. The cash-in-lieu amount will be paid at the time the plat is recorded, unless otherwise determined by the City and agreed to in a subdivision improvement agreement.
 3. The City may adjust the cash-in-lieu requirement between the types of open and civic space in this code, or based on any policies of the Parks, Trails, and Open Lands Master Plan.
 4. The City may accept combinations of cash and dedication where only a portion of the required dedication can be met by acceptable park sites within the project. The required cash value shall be pro-rated to the amount of required land not dedicated and accepted.
- d. **Trails & Natural Areas.** The City may require or the applicant may offer trails and natural areas for public dedication in addition to the land for parks and rights-of-way. Based on the recommendations of the Parks, Trails, and Open Lands Master Plan, and other plans of the Culture, Recreation and Parks Department, the City may accept the dedication, and may credit this dedication to the parks requirement where it equally or better meets the intent of this section.
- e. **Neighborhood Features & Common Area Systems.** Land dedication, or cash-in-lieu of dedication parks is not intended to replace, discourage, or prohibit the creation of pocket parks, civic spaces, or other open lands features operated and owned by a homeowners' association or other governing entities for any other public, common, or private purpose. Section 24-504 includes requirements for Neighborhood Features and Common Areas. These areas shall be coordinated with the design and location of street networks, parks and trails to better leverage a system of parks, trails, open lands, and civic spaces throughout the area.

24-303 Blocks & Lots

- a. **Intent.** The intent of the blocks and lots standards is to:
1. Ensure the proper arrangement of blocks and lots to complement the street network, parks and trail system, and neighborhood features and common areas.
 2. Arrange blocks, lots and development in a manner that is least disruptive to existing topography and capitalizes on inherent natural characteristics of the land as defining features.
 3. Coordinate access and utilities for each lot in association with larger systems of streets and infrastructure.
 4. Promote appropriate site, building and frontage designs in relation to streetscapes and open spaces.
 5. Ensure that all lots are buildable according to this code, that all sensitive, hazardous or other non-buildable areas are preserved from development, and that all non-developed out lots or other parcels serve an urban design or planning function in relation to the overall development pattern.
- b. **Block & Lot Arrangement**
1. *General Layout.* All blocks shall be laid out to have two tiers of lots unless dictated by existing development patterns outside of the control of the project or by access management on major arterial streets or railroad rights-of-way. In these cases, streetscape standards, trails, or common areas should be used to create buffers and transitions where the rear of lots would abut these areas.

2. *Hazards and Unbuildable Areas.* Blocks and lots shall be arranged to avoid hazards and unbuildable areas including steep grades, unstable or expansive soils, lands with inadequate drainage or subject to flooding, and natural drainage areas. These areas shall be incorporated into open and civic space systems, restricted tracts or out lots, or otherwise mitigated to eliminate hazards.
3. *Block Size & Patterns.* The maximum block length and size shall be based on the street connectivity standards in Section 24-301.b.
4. *Lot Patterns.* All lots shall front on a public street, or on an internal access street or common area open space where specifically allowed by these regulations. Lots shall meet the standards for the zoning district, or where applicable for the specific permitted building types. All side lot lines shall generally be perpendicular to front lot lines, or radial to any curves along the front lot lines. Other irregular lot patterns shall only be permitted where they are used to integrate patterns of buildable lots into the overall block structure and to provide consistent relationships of buildings and lots to the streetscape.
5. *Addressing.* All lots and other parcels shall require an address following City address policies and guidelines, including streets and street names.
6. *Easements.* All blocks shall include easements for all utilities, required improvements, and access necessary to serve each lot.
 - (a) Easements shall be granted by the owner to the appropriate entity, according to the needs and specifications of that entity.
 - (b) Easements shall be coordinated with each entity early in the platting process to ensure proper arrangement of blocks, lots and building sites.
 - (c) In general, easements and any associated structures or facilities shall be located on the most remote and least visible portions of sites. Where available, alleys shall be used for easements and services. Otherwise, easements and associated facilities shall be located along rear lot lines, remote corners, and other low-visibility joint lot lines.
 - (d) In cases where block, lot and building patterns necessitate easements and facilities along the side or front lot lines, additional design and screening may be required to ensure appropriate relationships to frontages and streetscapes.
7. *Drainage.* Where a subdivision is traversed by a watercourse, drainage way or stream, blocks shall be laid out in coordination with these features.
 - (a) A pedestrian or bikeway easement may be required where drainage areas interrupt the block structure more than permitted in Section 24-301.b, or where the City determines the area is appropriate for active recreation or transportation uses.
 - (b) All necessary rights-of-way and easements shall be dedicated to the City or other public entity to preserve the hydrologic, environmental, or stormwater function of the watercourse, drainage way or stream.
 - (c) Access for service vehicles shall be incorporated into the design of any drainage areas or easements internal to the block structure or common areas.

24-304 Required Improvements

- a. **Intent.** The intent of this section is to:

1. Ensure that all improvements necessary to serve lots within a subdivision are constructed, inspected or otherwise assured of completion prior to the issuance of permits and final approvals.
 2. Prevent the location or design of a subdivision from placing an undue burden on public utility systems and community facilities serving other areas.
 3. Provide appropriate apportionment of costs, and offset higher net costs or premature costs to the public resulting from subdivisions.
 4. Protect against subdivisions where soil, subsoil or flooding conditions would create potential dangers to public health or safety.
 5. Coordinate subdivisions and construction of required improvements with other anticipated improvements or with future growth.
- b. **Timing of Improvements.** All required improvements shall be provided in one of the following ways:
1. *Construction Prior to Building Permit.* Improvements may be constructed and certified record drawings of as-built shall be submitted to the City and certified that it was built as shown and to city specifications by:
 - (a) the contractor;
 - (b) the project surveyor; and
 - (c) the project engineer
 2. *Financial Guarantee.* The applicant may defer any improvements by submitting a financial guarantee for 125% of the total cost of improvements based on approved design or construction plans.
 - (a) The guarantee shall be in a form and for an amount acceptable by the City.
 - (b) Any deferral of streets shall require all weather surfaces of concrete, asphalt or road base placed on the lip of the curb and gutter for interim access of construction and emergency vehicles.
 - (c) All improvements for the particular phase of the plat shall be installed prior to a certificate of occupancy for any part of the phase.
 - (d) Upon submittal and acceptance of as-built drawings for the improvements, the City may release the financial guarantee, but retain 20% for the 2-year warranty period.
 3. *Subdivision Improvement Agreement.* The City and the applicant may enter into a subdivision improvement agreement recorded in association with an approved plan that more specifically defines the type, timing, and guarantees for required improvements.
- c. **Required Improvements.** The following improvements and plans are required for all subdivisions. All improvements are subject to the City or other responsible entities' standards, plans, and specifications for improvements.
1. Survey monuments;
 2. Sanitary sewer main lines and service lines to each lot;
 3. Water main lines and service lines to each lot;
 4. All non-potable mains and services to required lots'
 5. Fire Hydrants
 6. Storm sewers, culverts, detention facilities, bridges and any other approved storm drainage components, or elements required by a Stormwater Management Plan.
 7. Dust Abatement and Erosion Control Plan; and
 8. Perimeter Treatment Landscape Plan.
 9. Utilities (telephone, electrical service, gas lines and cable television). All utilities shall be installed underground and be in place prior to any postponed street or alley surfacing. Above-ground facilities necessarily appurtenant to underground facilities or other installation of peripheral overhead electrical transmission and distribution feeder lines or

- other installation of either temporary or peripheral overhead communications, distance, trunk or feeder lines may be above ground. No curb, gutter or sidewalk shall be installed until all utilities are provided.
10. Streets, Alleys and Sidewalks. All streets shall be paved and all other improvements such as sidewalk, bike paths, curb and gutter shall be installed as required. In cases where an existing street has not been brought up to City specifications the street shall be paved and all other improvements such as sidewalk, bike paths, curb and gutter shall be installed in order to meet City specifications. If any subdivision is located adjacent to any existing street right-of-way, the applicant shall improve at least the adjacent half of the street according to City specification.
 11. Street signs (on residential projects only);
 12. Street Lights
 13. All other improvements required as a condition of approval of the plat or contained within the subdivision improvement agreement shall be completed.
- d. **Procedures for Improvements.** To ensure that all required improvements are built according to City specifications, the construction process shall generally take the following steps:

Table 24-3-9: Procedures for Improvements

Step 1: Construction permit application	- Plans and specifications, submitted by the applicant. - Warranty for improvements submitted per Section 24-304.e.. - Staff review and scheduling of pre-construction coordination meeting.
Step 2: Construction permit issued	- Release of grading permits - Release of ROW permits
Step 3: Initial Inspection	- Permittee notifies the City of completion of construction as permitted. - As-built drawings submitted by the permittee, certified by the contractor, surveyor and project engineer. Any major changes to the as-built drawings shall be reflected and recertified prior to Final Acceptance. - City inspects and issues a punch list for any necessary deficiencies or maintenance. - If no punch list items, or after punch list completed, Preliminary Acceptance by the City and Certificate of Substantial Completion issued. - City maintenance begins, but permittee financial responsibility for defects, maintenance and repairs continues. - Two year warranty period begins
Step 4: Intermediate Inspection	- Option of the City. - Any point at least 120 days prior the expiration of warranty period.
Step 5: Final Inspection (30 – 60 days prior to expiration of warranty period)	- Permittee submits request for Final Acceptance Certificate - Punch list issued for any outstanding items to be completed before end of the 2-year warranty. - If no deficiencies identified, Final Acceptance Certificate issued - Release of warranty authorized (unless cash deposit option used, which is non-refundable)

- e. **Warranty.** All public improvement infrastructure, perimeter landscaping treatment improvements and common area improvements shall provide a two-year warranty period covering design and construction defects.
1. Warranty shall be one of the following, at the option of the permittee and subject to approval of the form by the City:
 - (a) Warranty Bond for 20% of total construction cost of required improvements
 - (b). Letter of Credit for 20% of total construction cost of required improvements
 - (c) Cash deposit for 1% of total construction cost of required improvements that is non-refundable. A cash deposit is an administration fee and shall not be construed as creating any type of insurer/insured relationship or subject the City to the provisions of Title 10, C.R.S.

2. The warranty amount shall be based on an estimate provided by the applicant, or the Director may determine an alternate amount based on relevant similar projects and comparable improvements.
3. The City may approve the construction permit in clearly defined, logical phases of construction, and may accept the apportioned warranty prior to the beginning of each phase.
4. The use of the warranty shall be restricted for the repair, replacement, completion and maintenance of all improvements subject to the construction permit, including detention facilities, perimeter landscaping and open space.
5. If the City uses any of the warranty, the permittee shall replace that amount used prior to being issued any new construction permits, either for the affected specific project or any other projects in which the permittee has an interest.
6. The City may extend the two-year warranty for all or a portion of the amount if major items have not been repaired/replaced to the City's satisfaction.
7. At least once each year, the City Engineer shall review the use of all cash payment funds received by the City pursuant to this Section. After review, the City Engineer shall report to the City Manager and City Council, and make recommendations regarding the cash payment fund including transfers of fund balances to the General Fund.
8. After final inspection and final acceptance, and at the end of the 2-year warranty period, the City shall release the permittee from any Warranty Bond or Letter of Credit. If the warranty is by cash deposit, this amount is not refundable.

24-305 Adequate Public Facilities

- a. **Intent.** The intent of the adequate public facilities standards is to:
 1. Anticipate and evaluate the incremental and long-term impact of development on broader public and community facility needs.
 2. Identify opportunities to integrate plans for public and community facilities into the planning and design of proposed land divisions.
 3. Consider the location of public and community facilities in coordination with the initial planning considerations for streets, open spaces, blocks, and lots, so that needed facilities are appropriately located prior to the premature commitment of these areas to conflicting development patterns.
 4. Ensure that public facilities needed to serve new development are available concurrent with development, and maintain service levels in existing areas as new development occurs.
 5. Apportion appropriate costs for the impact of new development on existing and planned public facilities.
 6. Provide the opportunity to negotiate implementation of public or community facilities beyond the impact of the particular project, where the lack of facilities may otherwise constrain potential future development.
 7. Promote fiscal responsibility for all public entities by coordinating the planning, design and financing of public facilities with the impact generated from proposed development.
- b. **General Requirements.**
 1. *Public Facility Plans.* Public facilities shall be provided consistent with the following adopted City documents:
 - (a) Comprehensive Plan;
 - (b) Water, Sewer, and Non-potable Water Master Plans;
 - (c) Comprehensive Storm Water Master Plans;
 - (d) Transportation Master Plan;
 - (e) Development Fee Study;

- (f) Parks, Trails, and Open Space Master Plan; and
 - (g) Other adopted documents related to City capital improvements.
 - 2. *Service Area Map.* Available services shall generally mean it is existing, or funds are allocated to construct or service implementation of the facility in the current 2-year city budget cycle. The City shall update the existing and budgeted service area map at least once each year. **[include appropriate cross reference to map].**
 - 3. *Project Impacts.* Individual projects will be evaluated for adequacy based on specific studies provided by the applicant and accepted by the City that demonstrate:
 - (a) The location of the proposed development relative to existing facilities and service;
 - (b) The ability of the project to access those facilities and services; and
 - (c) The capacity of existing facilities and services to serve the new project while maintaining acceptable levels of service for existing development.
 - 4. *Other Provisions.*
 - (a) Finding of adequate facilities does not exempt the applicant from paying impact fees provided in Section 24-305.d.
 - (b) Nothing in this Section shall limit the City from denying an application where it otherwise determines that adequate public facilities will not be in place concurrent with the application, despite the effect of any of the requirements or options provided in this Section.
 - (c) Nothing in this Section shall prohibit any other public entity from establishing fees that apportion the appropriate contribution for the impacts on planning, design and land acquisition for facilities needed due to the development.
- c. **Specific Adequacy Standards.** In addition to being consistent with the public facility plans in Section 24-305.b.1, adequacy of specific public facilities shall be evaluated as follows. City analysis and project-specific studies of the impact, demand and capacity of existing facilities will be required to make a final adequacy determination.
- 1. *Fire.* Fire service is considered adequate if the proposed development is located within a 1.38 mile radius of an existing, operational fire station. This requirement is based on the analysis that one fire station is needed for every 30,000 people generally living in a six-square-mile area, as applied in the Comprehensive Plan. Proposed developments including land uses that pose a high risk of fire may be subject to more stringent requirements.
 - 2. *Parks.* Park facilities are considered adequate if the proposed development is located within a half-mile radius of a neighborhood park and within a one-mile radius of a community park, where the park is not separated from the proposed development by an expressway, facility or natural feature. Regional parks, trails, natural areas, or sports facilities are not included in the analysis unless they contain facilities equivalent to those available in neighborhood parks.
 - 3. *Police.* Police service extends to the City limits and adequacy shall be determined according to call response times relevant to the proposed development location.
 - 4. *Sanitary Sewer.* Sewer facilities are considered adequate if the proposed development is connected to a sewer line that is eight inches or larger in diameter with sufficient system capacity as defined by the City.

5. **Water.** Water facilities are considered adequate if the proposed development has sufficient connection to existing water lines that are eight inches or larger in diameter with sufficient system capacity.
 6. **Storm water.** Storm water facilities are generally considered adequate if the site can safely convey storm water runoff to a regional storm water detention facility with sufficient capacity as defined by the City. If the City determines that the proposed development cannot safely convey runoff to an adequate storm water system, adequacy requirements shall be met with detention facilities constructed on site.
 7. **Transportation.** Transportation facilities to support new development are generally considered adequate if the proposed development is connected to a collector or arterial road or expressway (or will be connected at the time the improved arterial or collector is constructed within the two-year budget cycle) constructed to an acceptable cross-section with sufficient capacity to serve the development as defined by the City.
- d. **Impact Fees.** To mitigate project impacts on City service systems beyond the improvements required in Section 3.04 Required Improvements, developers shall pay standard impact fees established by Title 6, Chapter 15 of the Greeley Municipal Code
1. If the facility is currently inadequate, sub-standard, or not existing, the impact fee shall be paid at the time of final plat. For purposes of economic development, the City may defer the impact fees for commercial and industrial development until the time of a building permit.
 2. Impact fees where adequate facilities are existing shall be paid at the time of building permit.
 3. As an alternative to the fee, the City may accept the applicant constructing or upgrading of any facility to the standards of this Section.
 4. **Exceptions.** The City Council may waive requirements that the developer absorb the development costs identified through the adequacy analyses outlined above, and obligate the City to pay said costs only if all of the following conditions are true:
 - a. The project meets City economic development goals as defined in Chapter 4.52 of the municipal code;
 - b. The cost benefit analysis has been prepared by the applicant and accepted by the City; and
 - c. The City Council has identified an adequate mechanism for funding mitigation of impacts at the time of development.
- e. **Reimbursement Agreements.** Applicants constructing required improvements for their property, or other adequate public facilities to serve their project, may be required to oversize the facilities to serve areas larger than their project based on planned future facility for the City. The City may require the applicant to enter into reimbursement agreements established elsewhere in the municipal code and according to the policies and procedures of the department responsible for the facility.
- f. **Dedication of Land.** The City may require the dedication of land to the City or other government entity with jurisdiction over public and community facilities, for parks, open space, public safety facilities, or other public or community facilities.
1. The requirement shall be based on an official master plan of the entity having jurisdiction over the facility identifying the general location and extent of the facility, or some other documented need for the facility that is available for public review.
 2. The dedication must be included on the preliminary plat or a condition of approval of the preliminary plat.

3. Acceptance of the dedication shall be agreed to in writing by the entity having jurisdiction over the site or facility prior to approval of the final plat or through approval of the final plat if dedication is to the City.
4. Dedication of land for community facilities beyond the impact of the application may be credited to the required impact fees based on a detailed analysis and documentation showing costs of land.

Reserved Sections 24-306 through 24-400

Chapter 1. General Provisions

- 24-101 Overview
- 24-102 Interpretation
- 24-103 Administration
- 24-104 Enforcement
- 24-105 Nonconformities

Chapter 2. Procedures

- 24-201 General – All Applications
- 24-202 Minor Subdivision
- 24-203 Major Subdivision
- 24-204 Rezoning
- 24-205 Planned Unit Development
- 24-206 Use By Special Review
- 24-207 Site Plan
- 24-208 Alternative Compliance
- 24-209 Variance
- 24-210 Appeal of Administrative Decision
- 24-211 Code Amendment
- 24-212 Vacation & Dedication of Easements
- 24-213 Vacation & Dedication Right-of-way
- 24-214 Annexation

Chapter 3. Subdivision Standards

- 24-301 Streets
- 24-302 Parks & Trails
- 24-303 Blocks & Lots
- 34-304 Required Improvements
- 24-305 Adequate Public Facilities

Chapter 4. Zoning Districts & Uses

- 24-401 Zoning Districts
- 24-402 Allowed Uses
- 24-403 Accessory Uses
- 24-404 Specific Use Standards
- 24-405 Temporary Uses

Chapter 5. Residential Development Standards

- 24-501 Intent & Applicability
- 24-502 Residential Development Standards
- 24-503 Residential Design Standards
- 24-504 Neighborhood Features & Common Areas
- 24-505 Courtyard Pattern
- 24-506 Residential Micro-Housing District

Chapter 6. Nonresidential Development Standards

- 24-601 Intent & Applicability
- 24-602 Nonresidential Development Standards
- 24-603 Nonresidential Design Standards

Chapter 7. Access & Parking Standards

- 24-701 Intent & Applicability
- 24-702 Access & Circulation
- 24-703 Required Parking
- 24-704. Parking Design
- 24-705 Loading Areas
- 24-706 Recreational & Oversized Vehicles
- 24-707 Alternate Access & Parking Plan

Chapter 8. Landscape Standards

- 24-801 Intent & Applicability
- 24-802 Landscape Design
- 24-803 Perimeter Landscape
- 24-804 Plant Specifications
- 24-805 Fences & Walls

Chapter 9. Signs

- 24-901 Intent & Applicability
- 24-902 Exempt Signs
- 24-903 Prohibited Signs
- 24-904 Standards Applicable to All Signs
- 24-905 Specific Sign Allowances
- 24-906 Historic Signs
- 24-907 Nonconforming Signs
- 24-908 Sign Measurements & Interpretation
- 24-909 Relief From Standards
- 24-910 Sign Chart

Chapter 10. Special Purpose Districts & Areas

- 24-1001 Floodplain Overlay District
- 24-1002 Airport Overlay District
- 24-1003 Historic Preservation
- 24-1004 Conservation District
- 24-1005 Areas of Ecological Significance
- 24-1006 Downtown General Improvement District
- 24-1007 Redevelopment Area
- 24-1008 Character Overlay Districts
- 24-1009 Entertainment Districts
- 24-1010 Hillside Development Standards

Chapter 11. Supplemental Standards

- 24-1101 Wireless Communication Facilities
- 24-1102 Oil & Gas
- 24-1103 Adult Uses
- 24-1104 Marijuana Uses

Chapter 12 Metropolitan Districts**Chapter 13 Definitions & Terms**

- 24-1301 Description of Uses
- 24-1302 Glossary of Architecture & Design Terms
- 24-1303 Definitions

Note: The current subdivision standards in Chapter 04 are written as a “stand alone” code, so many of the sections are repetitive of things that are included in Chapter 1 and Chapter 2 of the updated development code. This section Map tracks all of current Chapter 04 to provide a complete tracking, even though they are not included in Chapter 3 of the updated code.

CHAPTER 3 SUBDIVISION STANDARDS: SECTION MAP		
Current Standards	Reorganized	Comment
<i>The initial sections track the “Current Standards” column and the “Reorganized” column mostly refers to things that are not included in Chapter 3 of the updated development code</i>		
18.04.100 Purpose	24-301.a Streets, Intent; 24-302 Open & Civic Spaces, Intent; 24-303, Blocks & Lots, Intent; 24-304.a Required Improvements, Intent; 24-305.a. Adequate Public Facilities, Intent	Expanded to be more specific and coordinate with comp plan goals and “purposes” (in 24-101.d; broad and general) and “design objectives (various sub-sections; detailed and outcome oriented or performance based). This aids flexibility and interpretation of the code. (Also replaces 18.04.300 – 1200 – all the #00 numbers which are “Purpose” sections but merely restate the title of the section with no aid to interpreting the section.
18.04.110 Definitions	Chapter 13 Definitions	All definitions will be moved to one location to avoid problems of repeating definitions in multiple sections.
18.04.120 Application and Jurisdiction of Regulations	24-101.c. Jurisdiction	One section for entire code; some detailed provisions broken out into specific “applicability” sub-sections throughout code.
18.04.130 Variances	24-209 Variances	Note: “variances” are a zoning term by statute; flexibility in subdivision regulations should be via exceptions or waivers based on different criteria. Ability for flexibility in subdivisions is reflected in discretion and exceptions in standards, and in the platting process
18.04.200 Pre-application Conference, Process	24-201.c General – All Applications, Pre-application Meeting	Consolidated procedures in one chapter and included all common procedures in one section to avoid repetition.
18.04.300 – 310 Development Concept Master Plan	24-202 Minor Subdivisions; 24-203; Major subdivisions; 24-204.c.5. Rezoning, Criteria	Removed this as a specific application type and process; Emphasis shifted to information to support zoning and plat approvals; Under new procedures and based on the structure of substantive standards, more specific plans can bridge between the comp plan, area plans and the standards; the ability to condition zoning and plats on these types of plans is strengthened in this code as opposed to conditioning approvals on specific projects.
18.04.400 – 440 Preliminary Plat procedures	24-203.b Major Subdivisions; Preliminary Plat	Consolidated procedures in one chapter and included all common procedures in one section to avoid repetition; added public hearing requirement at Planning Commission for preliminary plat (note: in PUDs it may be separated from the plan and zoning decisions and likely a subsequent, and more detailed step.)
18.04.450 Combined Preliminary and Final Plat submittal	24.201.b. General – All Applications, Concurrent Applications	Consolidated procedures in one chapter and included all common procedures in one section to avoid repetition. Generalized combined process to other application types beyond combined preliminary and final plat process.
18.04.500 – 550 Final Plat procedures	24-203,c Major Subdivisions, Final Plat	Consolidated procedures in one chapter and included all common procedures in one section to avoid repetition; clarified steps for administrative approval(staff review and decisions) vs. city council acceptance of public dedications (consent agenda)
18.04.600 – 650 Minor Plat		Consolidated procedures in one chapter and included all common procedures in one section to avoid repetition; Clarified “administrative plat” types and criteria in minor subdivisions, and added condominium plat.
18.04.700 – 710 Easement Dedication, Vacation and Recordation	24-212 Vacation and Dedication of Easements	consolidated procedures in one chapter and included all common procedures in one section to avoid repetition; coordinated better with platting process
18.04.800-810 Right-of-way, Dedication and Vacation	24-213 Vacation and Dedication of Right-of-way	Consolidated procedures in one chapter and included all common procedures in one section to avoid repetition; coordinated better with platting process.

CHAPTER 3 SUBDIVISION STANDARDS: SECTION MAP

Current Standards	Reorganized	Comment
18.04.900 - 910 Filing Plat	24-202.a Minor Subdivisions, Applicability	Simplified as a type of administrative approval as minor subdivisions; see also 24-203 Major Subdivisions and 24-205 PUDs where platting process for PUDs (where "filing plats" were assumed to be most used)
18.04.1000 – 1100 Correction Plat	24-202.a Minor Subdivisions, Applicability	Simplified as a type of administrative approval as minor subdivision
18.04.1100 – 1197 Design & Performance Standards	24-301, 24-302, 24-303, 24-304, and 24-305	See reorganized structure and comments below.
18.04.1200 – 1220, Appeals	24-210, Appeals of Administrative Decisions	Consolidated procedures in one chapter and included all common procedures in one section to avoid repetition; coordinated better with platting process. (Note: plats have automatic appeals built in in Table 24-2-1 and 24-202 and 24-203.
18.04.1300 0 1310 Fees, Violations and Penalties	24-201.a General – All Applications, Applications & Fees; 24-104, Enforcement	Consolidated general provisions and procedures in one chapter and included all common procedures in one section to avoid repetition
18.04.1400 Severability	24-101.e Severability	Consolidated general provisions in one chapter to avoid repetition.
<i>Below this point is organized on the revised structure of the subdivision standards emphasizing distinct design elements – it is based on the "Reorganized" column, rather than the current standards.</i>		
18.04.100 Purposes	24-301.a Streets, Intent	Expanded to be more specific and coordinate with "purposes" (in 24-101.d; broad and general) and "design objectives (various sub-sections; detailed and outcome oriented or performance based). This aids flexibility and interpretation of the code
various sections – (18.04.1120 Site Considerations; 18.04.050 Vehicle Access and Circulation; 18.04.060)	24-301.b. Streets, Street Network	Updated to emphasize large-scale planning and development patterns and distinguish different contexts noted in the comprehensive plan. The street network and connectivity is the first and leading determinant of the structure and character of these different places and the current standards only have a single connectivity standard based on intersection spacing of the functional classes (a traffic focus, rather than a development pattern focus); also emphasized large scale access and connections vs. site- or project-scale access and connections.
18.04.1130 Streets, alleys and easements; 18.38.100 Zoning district development standards, Performance options	24-301.c. Streets, Street types	Updated for urban design elements and "complete streets policies"; and better coordinated with the Transportation Plan and the Street Specifications; Neighborhood streets are modified from the current performance option for narrower streets and the walkable mixed-use / commercial streets are new based on the centers concept in the plan and the "placemaking" discussions in the code update process.
new	24-301.d Intersection design	New, added to emphasize some of the pedestrian and bicycle principles in the comp plan.
new	24-301.e	New, added to support some of the pedestrian and bicycle principles in the comp plan and allow slower traffic where warranted
new	24-301.f. Streets, Engineering and Construction Specifications	New, making a clear distinction in streets between planning and urban design standards (subdivision standards of the development code) and engineering and construction standards (specifications).
18.04.100 Purpose	24-302.a Parks & Trails, Intent	Expanded to be more specific and coordinate with "purposes" (in 24-101.d; broad and general) and "design objectives (various sub-sections; detailed and outcome oriented or performance based). This aids flexibility and interpretation of the code.
18.04.1160 Dedications for public sites; 18.04.1165 Required Improvements for Parks; 18.38.020.l (common open space types	24-302.b-d.. Parks & Trails, Required Park Dedication, Cash-in-liu, Trails & Natural Ares, Required Open Space	Incorporated current public dedication sites with no substantive changes, but some clarification on potential acceptance of Trails or Natural Areas in addition to or as part of parks dedication.
18.04.1165(p) Dedication of parks reference to other common areas	24.302.e. Parks & Trails, Neighborhood Features & Common Areas	Revised and enhanced current statement to "not discourage" other open spaces to a more pro-active planning role for linking and integrating private or common open spaces (Required by Chapter 5, Neighborhood Development Standards) into a system
18.04.1140 Blocks 18.04.1150 Lots and Building Envelopes	24-303 Blocks and Lots	Coordination with larger-scale development pattern issues - street networks and utilities); (Note: overall coordination with better network connectivity; see 24-301.b above

CHAPTER 3 SUBDIVISION STANDARDS: SECTION MAP		
Current Standards	Reorganized	Comment
18.04.1170 – 1197 Required Improvements	24-304 Required Improvements	Existing sections reorganized and simplified, with no substantive changes; note potential ability to not do development agreement on every project (obligation to do what the code requires) and/or coordination with subdivision improvement agreements in 24.202 Minor Subdivisions, and 24-203 Major Subdivisions
18.04.1165 Dedication of land for the development of parks; 18.40.040 Adequate Public Facilities and Services	24-305 Adequate Public Facilities	Existing sections reorganized and simplified with no substantive changes, and some coordination with the process for parks dedications (see 24-302.b.).



CHAPTER 4 – ZONING DISTRICTS & USES

24-401 DISTRICT INTENT & APPLICABILITY

Chapter 4. Zoning Districts & Uses

- 24-401 District Intent & Applicability
- 24-402 Allowed Uses
- 24-403 Accessory Uses
- 24-404 Specific Use Standards
- 24-405 District Performance Standards

24-401 District Intent & Applicability

- a. **Intent.** To carry out the purposes of this code, the following districts are established, with the intent given for the context and character of specific areas, the development patterns, and the types or intensity of uses and buildings. The relationship to the Comprehensive Plan is listed to guide the applicability of all zoning districts, but is not determinative in any case without considering the rezoning criterion in Section 24-204.

Table 24-4-1: Zoning Districts & Intent

<i>District & Intent</i>	<i>Relationship to Comprehensive Plan</i>
H-A – Holding-Agriculture. The H-A district is intended for properties which have been annexed to the City and are either being used for agricultural purposes or have little or no immediate. Due to the development patterns and inefficiency of providing city services, this area receives only limited infrastructure investment and is therefore used as a “pre-development” district to either preserve open and rural lands and agriculture uses, or hold areas until more coordinated planning for infrastructure, land uses, and design can occur.	Limited application as a pre-development area or for agriculture uses in Rural Neighborhoods
R-E - Residential Estate. The R-E district is intended for very low density residential living with detached houses on larger lots or in rural patterns. The district permits limited institutional uses and less intense rural uses that are compatible with low density living. Due to the dispersed development intensity, this area receives lower levels of infrastructure and public service, and should have limited application unless mixed with an overall pattern of housing options.	General application in Suburban Neighborhoods. Limited application in other Neighborhoods for large lot options on the edges of walkable patterns; or in Rural Neighborhoods as part of conservation and open space patterns.
R-L- Residential Low Density. The R-L district provides residential living (detached houses) in lower-density suburban neighborhood settings with access to supporting uses such as schools, churches, parks and other public facilities. Alternatively, it may be used for single-family areas integrated into walkable or urban neighborhood patterns.	General application Suburban Neighborhoods Limited applicability in Mixed-use, Legacy Urban, and Downtown Neighborhoods if integrated into walkable patterns.
R-M – Residential Medium Density. The R-M district provides residential living (wide range of small-scale residential building types) in a compact, walkable neighborhood settings allowing a mix of housing options at strategic locations which transition to complimentary and supporting non-residential uses. A well-designed public realm provides the focal point to integrate a variety of building types with a consistent neighborhood character.	General application the Mixed-use, Legacy Urban, and Downtown Neighborhoods. Limited Application in Suburban and Rural Neighborhoods, as part of housing mix or creating walkable neighborhoods.
R-H – Residential High Density. The R-H district provides multi-family residential living in a moderate-density pattern in suburban neighborhoods or higher-density, and larger-scale projects in strategic locations for walkable and urban neighborhoods. It is located in areas that have transitions between lower-density neighborhoods or more intense	General application the Mixed-use, Legacy Urban, and Downtown Neighborhoods; Multi-modal Corridors; and Mixed-use High-intensity Areas.

Table 24-4-1: Zoning Districts & Intent

<i>District & Intent</i>	<i>Relationship to Comprehensive Plan</i>
non-residential uses and where a high level of accessibility, public amenity and support services are immediately available.	Limited Application in Suburban Neighborhoods, as part of housing mix or creating walkable neighborhoods.
R-MH – Residential Micro-Housing District. The R- MH district provides residential living for smaller format manufactured, mobile, or other small-format residences in a planned community that shares common amenities located in areas that have transitions between lower-density neighborhoods or more intense, non-residential uses and where a high level of accessibility, public amenity and support services are immediately available.	Limited application on a project specific basis, considering context and design. (See Section 24-505 for specific applicability).
C-L - Commercial Low Intensity. The C-L district provides small-scale retail, service, civic and employment uses to support suburban or walkable neighborhoods. Uses are compatible with residential living in terms of scale, operation, intensity, and format. This district is generally located near and well-integrated with residential neighborhoods an along minor arterial streets, or is located as a transition between more intense commercial areas and neighborhoods..	General application in Employment, Industrial, and Commercial Areas Limited Application in Mixed-use Areas, Multi-modal Corridors, of Centers if integrated into walkable patterns
C-H - Commercial High Intensity. The C-H district provides wide range retail, service and employment uses at a scale, intensity or in a format that requires a high level of vehicle accessibility and visibility, typically along corridors or major intersections, and is not easily integrated with other land uses or development patterns. Planned versions of this district can yield campus or mixed-use district patterns that are oriented to internal open space systems or other focal points of development.	General application in Employment, Industrial, and Commercial Areas Limited Application in Mixed-use Areas, Multi-modal Corridors, of Centers if integrated into walkable patterns
MU-L - Mixed Use Low Intensity. The MU-L district provides a mix of retail, service, employment, entertainment and civic uses in a walkable setting, intended for small-scale, neighborhood serving activity centers tightly integrated with and serving the daily needs of adjacent neighborhoods (typically under 15 acres before transitioning to other supporting and compatible uses and districts)	General Application in Neighborhood Centers; Downtown Center; Mixed-use Areas; and Employment, Industrial, and Commercial Areas Limited Application in Mixed-Use High Intensity Areas; Regional Centers, and Multi-modal Corridors
MU-H - Mixed Use High Intensity, The MU-H district provides a mix of retail, service, employment, entertainment and civic uses in a walkable setting that complements higher-density neighborhoods or serves as the center of a more intense, multi-modal community or regional destination. (Typically between 15 and 40 acres before transitioning to other supporting and compatible uses and districts.)	General Applicability in Mixed-Use High Intensity Areas; Regional Centers; and Multi-modal Corridors Limited applicability in Downtown Center; and Employment, Industrial, and Commercial Areas.
I-L –Industrial Low Intensity. The I-L district provides primarily service, employment, manufacturing and distribution uses at a scale, intensity and format that won't have significant impact on adjacent uses, and which can mix with supporting and compatible service and retail uses.	General application in Employment, Industrial, and Commercial Areas; and Airport Areas. Limited application in Centers; Mixed-use Areas; and Multi-modal Corridors.
I-M - Industrial Medium Intensity. The I-M district provides employment, manufacturing and distribution uses and a moderate scale, intensity and format, that is more compatible with high-intensity commercial uses that require a moderate degree of vehicle and freight access from arterial streets, highways or rail corridors.	General application in Employment, Industrial, and Commercial Areas; and Airport Areas. Limited application in Multi-modal Corridors
I-H – Industrial High Intensity. The I-H district provides for the broadest scope of manufacturing and distribution uses that are not compatible with residential or commercial activity due to the scale, operation, intensity or impacts of activities, or due to the high level of transportation access and support infrastructure required of the business.	Limited application Employment, Industrial and Commercial Areas, and Airport Areas

Table 24-4-1: Zoning Districts & Intent

<i>District & Intent</i>	<i>Relationship to Comprehensive Plan</i>
C-D Conservation District. The C-D district intended to provide a zoning classification for commercial mineral deposits, the floodway, farming, parks and permanent open space. It is a non-development district that can provide productive uses without significant building and infrastructure investment, or generates value to surrounding development through ecological, recreation, or aesthetic services on the land.	General application in Open Lands and Natural Areas, or any other natural area warranting conservation and integration into development patterns.
See Chapter 10 for Special Area and Overlay Districts and Chapter 11 for Supplemental Standards in all districts.	

- b. **Official Zoning Map.** The boundaries of the districts are shown on the official Zoning Districts Map on file with the Community Development Department. Electronic copies and files of this map shall reference the “Official Copy” on file with the Community Development Department, but any copy should be verified with the Department before materially relying on any electronic or other representative copy of the map.

24-402 Allowed Uses

- a. **Use Table.** Table 24-4-2 establishes permitted uses for each zoning districts. These uses and development standards are established to implement the intent of these district, permit a compatible range of uses within each district, and facilitate complimentary transitions between districts.
- The table identifies uses as;
 - Permitted uses (P) subject to staff review and/or site plan approval to confirm compliance with general district and building standards applicable throughout this code.
 - Use by special review (S) subject to the review process and criteria in Section 24-206.
 - Uses not permitted in the district (blank).
 - Uses not specifically listed in the Table shall be presumed to be prohibited, except if the Director determines that a use is similar to and has similar impacts as a use listed in the Table, then the Director may make a written determination as to the category and review required for the use.
 - Other accessory or temporary uses may be permitted according to the standards of Section 24-403, Accessory Uses.
 - Uses listed in the table, or more specific types of uses generally enabled in the table, may be subject to specific standards or limits in Section 24-404, Use-specific Standards.
 - Uses in the table are more specifically described in Section 24—402.b., Description of Uses.
 - Uses distinguished by scale are based on gross leasable area (GLA) of the uses space within buildings, size of the lot (acre), or other specified building or site features.

Table 24-4-2: Zoning Districts & Uses

P = Permitted Use S= Use by special review blank = prohibited	Districts													
	R-E	R-L	R-M	R-H	R-MH	C-L	C-H	MU-L	MU-H	I-L	I-M	I-H	H-A	C-D
	Use													
Residential Uses														

Table 24-4-2: Zoning Districts & Uses

Use	Districts													
	R-E	R-L	R-M	R-H	R-MH	C-L	C-H	MU-L	MU-H	I-L	I-M	I-H	H-A	C-D
Single-family Dwelling	P	P	P	P		S	S	P	P				P	
Two-family dwellings			P	P		S	S	P	P					
Row House dwellings			P	P		S	S	P	P					
Multi-family Dwellings			P	P		S	S	P	P					
Mixed-use dwelling				S		P	P	P	P					
Established Residential (all types)						P	P			P	P	P	P	
Accessory Dwelling Unit			P	P		P	P	P	P					
Mobile / Manufactured Home & Parks					P									
Boarding House & Single Room Occupancies				P		S	S	S	S					
Farming	P	P	P	P		P	P			P	P	P	P	P
Residential Care – Group Home	P	P	P	P		P	P	P	P					
Residential Care – Assisted Living			S	S		P	P	P	P	P				
Residential Care - General				S		S	P	S	P	P				
Residential Care - Institutional				S		S	P	S	P	P				
Public & Civic Uses														
Assembly – Limited (up to 499 occupancy)	P	P	P	P	P	P	P	P	P	P	P	P		
Assembly - General (500 – 1,500 occupancy)		S	S	S	S	S	P	S	P	P	P	P		
Assembly – Large (1,501+ occupancy; or outside)							P		P	P	P			
Cemeteries, Columbarium							P	P	P	P	P	P		
Golf Course & Country Clubs (no lights)	P	P	P	P	P	P	P	P	P	P				
Libraries, Museums, Public or Quasi-public	S	S	S	S		P	P	P	P	P	P			
Police, Fire Stations, Ambulance Dispatch & Storage	S	S	S	S		P	P	P	P	P	P			
Parks, Open Spaces & Common Areas	See Section 24-302 and 24-504 for standards applicable to all districts.													
Schools	P	P	P	P	P	P	P	P	P	P				
Schools - Adult (Business, Trade)						S	P	S	P	P	P	P		
Schools - Universities / Colleges	P	P	P	P	P	P	P	P	P	P				
Transportation – Bus, Taxi, or Transit Station							S		S	P	P	P		
Transportation – Freight & Maintenance Yard											P	P		
Transportation – Airport, Heliport / Helipad											S	S		
Transportation – Public Parking	S	S	S	S	S	S	P	S	S	P	P	P		
Transportation – Towing Services							S			P	P	P		
Utilities – Limited (towers under heights permitted by zoned and accessory structures and cabinets)	P	P	P	P	P	P	P	P	P	P	P	P		

Table 24-4-2: Zoning Districts & Uses

Use	Districts												
	R-E	R-L	R-M	R-H	R-MH	C-L	C-H	MU-L	MU-H	I-L	I-M	I-H	H-A
P = Permitted Use S= Use by special review blank = prohibited													
Utilities – General (towers over heights permitted by zone or large structures and cabinets)	S	S	S	S	S	S	S	S	S	S	S	S	
Utilities - Lines over 33 KVA, overhead	S	S	S	S	S	S	S	S	S	S	S	S	S
Utilities – Co-generation or Power Plants											P	P	
Commercial Uses													
Adult Businesses (<i>See also Section 24-1103</i>)										P	P	P	
Animal Care – Limited (indoor, < 5K GLA, no boarding)						P	P	P	P	P	P		
Animal Care – General (indoor, 5K-20K GLA or boarding)						S	P	S	P	P	P		
Animal Care – Large (outdoor or > 20K GLA)										P	P		
Animal Care – Stables (> 5 boarded animals)										S	S		S
Auction Houses (excludes livestock)										P	P	P	
Automobile - Gas Station Limited (up to 8 pumps)						S	P	S	P	P	P	P	
Automobile - - Gas Station General (9 – 20 pumps)							P		S	P	P	P	
Automobile Gas Station Large (21+ pumps)							S			P	P	P	
Automobile - Repair/Service Limited (up to 3 service bays; < 0.5 acre)						S	P	S	P	P	P		
Automobile - Repair/Service General (4-6 service bays; 0.5 – 1.0 acre)							P		P	P	P		
Automobile - Repair / Service Large (7+ service bays; > 1 acre)							S			P	P		
Automobile - Repair / Service for Heavy vehicle and Equipment											P	P	
Automobile - Sales / Rental Limited (< 0.5 acre)						S	P			P	P		
Automobile - Sales / Rental General (0.5 – 1.0 acre)							P			P	P		
Automobile - Sales / Rental Large (> 1.0 acre)							S			P	P	P	
Child Care Home (accessory / home occupation)	P	P	P	P	P	P	P	P	P	P	P	P	
Child Care Center / Pre-School						P	P	P	P	S	S	S	
Drive-through services - Accessory						See Section 24-403.e.							
Entertainment / Even Establishments							P		P	P	P		
Food & Beverage – Bar Limited (< 3K GLA; < 100 seats)							P	P	P	P	P		
Food & Beverage – Brewery / Winery; Bar General							P		P	P	P		
Food & Beverage – Restaurant Limited (< 5K GLA; < 100 seats)						P	P	P	P	P	P		
Food & Beverage – Restaurant Quick Serve							P	S	S	P	P		
Food & Beverage – Restaurant General (5K+ GLA)							P		P	P	P		
Lodging – Short Term Rental	P	P	P	P	P	P	P	P	P	P			P
Lodging – Bed & Breakfast (up to 5 rooms)				S		P	P	P	P	P			
Lodging – Inn (6 to 40 rooms)							P	S	P	P			

Table 24-4-2: Zoning Districts & Uses

Use	Districts													
	R-E	R-L	R-M	R-H	R-MH	C-L	C-H	MU-L	MU-H	I-L	I-M	I-H	H-A	C-D
P = Permitted Use S= Use by special review blank = prohibited														
Lodging – Hotel/Motel Small (41+ rooms)							P		S	P				
Medical – Limited (< 5K GLA; no emergency service)						P	P	P	P	P				
Medical – General (5K – 20K GLA; no emergency service)						S	P	S	P	P				
Medical – Large (> 20K GLA; or emergency service)							P		P	P				
Medical - Hospitals						S	P		P	P				
Mortuaries and Funeral Homes						P	P	P	P	P	P			
Office – General (< 20K GLA)						P	P	P	P	P	P	P		
Office – Large (20K+ GLA)							P	S	P	P	P			
Pawn Shops							P			P	P			
Personal Service – Limited (< 5K GLA, < 1.0 acre)						P	P	P	P	P	P			
Personal Service – General (5K+ GLA; 1.0+ acre)							P		P	P	P			
Recreation – Indoor Limited (< 5K GLA; < 0.5 acre)						P	P	P	P	P	P			
Recreation – Indoor General (5K - 20K GLA; 0.5 – 1.0 acre)							P	S	P	P	P			
Recreation – Indoor Large (> 20K GLA; > 1.0 acre)							P		S	P	P			
Recreation – Outdoor Limited (no lights; < 0.5 acre)						P	P	P	P	P	P			
Recreation – Outdoor General (no lights; 0.5 – 1.0 acre)							P			P	P			
Recreation – Outdoor Large (lights or > 1.0 acre)							S			S	S	S		
Recreation – RV and Travel Trailer Park							S			S	S			
Recreation – Outdoor Racetrack											S	S		
Retail – limited (< 3K GLA)						P	P	P	P	P	P			
Retail – General (3K – 20K GLA)							P	S	P	S	S			
Retail – Large (20K – 100K GLA)							P		S	S	S			
Retail – Warehouse (> 100K GLA)							S		S	S	S			
Retail – Outdoor Limited (> 25%; > 0.5 acre)							P	S	P	P				
Retail – Outdoor General (25% - 50%; 0.5 – 1.0 acre)							P		S	P				
Retail – Outdoor Large (> 50%; > 1.0 acre)							S			P	P			
Retail – Outdoor Nurseries and Greenhouse							P		P	P	P			
Retail – Outdoor Flea Market or Swap Shop											P	P		
Industrial Uses														
Auto Dismantling, Junk & Salvage Yards												S		
Commercial Services – Limited (up to 9 vehicle fleet)							P			P	P	P		
Commercial Services – General (11 – 20 vehicle fleet)							S			P	P	P		
Commercial Services – Large (21+ vehicle fleet)										S	P	P		

Table 24-4-2: Zoning Districts & Uses

Use	Districts													
	R-E	R-L	R-M	R-H	R-MH	C-L	C-H	MU-L	MU-H	I-L	I-M	I-H	H-A	C-D
Concrete and Asphalt Batch Plants											P	P		
Crematoriums										P	P	P		
Foundries												S		
Gravel & Mineral Extraction, Batch Plants														S
Grain & Feed Elevators & Supply												S		
Livestock Auctions												S		
Manufacturing – Limited / Artisan (< 5K GLA)						S	P	P	P	P	P	P		
Manufacturing – General (5K – 100K GLA)										P	P	P		
Manufacturing – Large (> 100K GLA)											P	P		
Manufacturing – Food & Beverage Minor (up to 3 acres)							P		P	P	P	P		
Manufacturing – Food & Beverage Major (3+ acres)											S	S		
Manufacturing – Chemical Plant											S	S		
Manufacturing – Rendering, Slaughter & Packaging												S		
Oil & Gas Operations	See Section 24-1102 for standards and procedures applicable in all districts													
Research & Testing Labs							P		P	P	P	P		
Warehousing / Storage – Indoor Limited (< 50K GLA; < 1.0 acre							P		S	P	P	P		
Warehousing / Storage - Indoor General (50K-200K GLA; 1.0 – 5.0 acre)							P			P	P	P		
Warehousing / Storage – Indoor Large (> 200K GLA; > 5.0 acres)							S			S	P	P		
Warehouse / Storage– Distribution Center										S	P	P		
Warehouse / Storage – Outdoor Limited (< 1.0 acre)							S			S	P	P		
Warehouse / Storage – Outdoor General (1.0 + acre)										S	P	P		
Warehouse / Storage – Bulk Storage of Flammable Liquids and Gases											P	P		
Waste Management – Recycling Collection Small						S	P	S	P	P	P	P		
Waste Management – Recycling Processing & Collection							P			P	P	P		
Waste Management – Refuse & Transfer Station											S	S		
Water & Waste Water Treatment Plants											P	P		
Well Drilling Companies											P	P		
Wireless Communication Facilities	See Section 24-1101 for standards and procedures applicable in all districts													

- b. **Description of Uses.** This section provides descriptions of uses of land and buildings associated with Table 24-4-2 Allowed Uses. It is organized by Categories and Types of uses. Where a proposed use is not generally listed or appears to meet the description of more than one

use type, the Director shall make an interpretation on the most equivalent described use considering:

- (1) The similarity of the use in terms of scale, impact, and operations to other described uses;
- (2) The typical building format and site design associated with the use based on relevant and established examples; and
- (3) The compatibility of the use with other allowed uses in the zoning district, and the potential for the use to contribute to the intent of the zoning district.

Any uses that may not be interpreted as equivalent to a use in Table 24-4-2 is not anticipated by these regulations and may only be allowed by a text amendment.

1. *Residential Dwelling.*

The Residential Dwelling category is the principal use of land and buildings for dwelling units. A dwelling unit is one or more connected rooms, constituting a separate, independent housekeeping establishment for owner occupancy, or rental or lease as a single unit on a monthly basis or longer, physically separated from any other room or dwelling units which may be in the same structure and served by no more than one gas meter and one electric meter. The arrangement and extent of dwelling units depends on the zoning district uses and building types:

Dwelling, Single-family. A residential building designed and used as a single detached dwelling unit by one family, other than a mobile home. Typical building types are detached houses, with variants based on lot sizes. The term single-family residence shall include a manufactured home which:

- (1) Is partially or entirely manufactured in a factory;
- (2) Is installed on an engineered permanent foundation; and
- (3) Is certified pursuant to the National Manufactured Housing Construction and Safety Standards Act of 1974, 42 U.S.C. §5401, et seq., as amended, and all regulations enacted pursuant thereto, including any local modifications as are expressly allowed by federal law, or which has been certified by the State of Colorado as being in compliance with the requirements of the Uniform Building code, as adopted by the State of Colorado and as is enforced and administered by the Colorado Division of Housing.

Dwelling, Two-family. Residential building designed to accommodate 2 primary dwelling units in a building designed and scaled to be compatible with detached houses, and which may commonly be referred to as a duplex or multi-unit house (with two units). Two-family buildings that share a single common wall may be on a single lot, or may be platted as separate lots along the common wall line subject to the building code and platting restrictions. All other two-family dwellings shall be on a single lot. Duplex / multi-unit houses shall have a scale, design, orientation, access, and entrance features that maintains the appearance and form similar to a detached house.

Dwelling, Row House. A multi-unit residential building designed for 3 to 8 dwelling units each sharing a common wall with the abutting units. Each unit has its own private entry presenting an outward appearance on the frontage as distinct units in a single building. Units may be on a single lot subject to common ownership restrictions or platted on separate lots along the common wall subject to building code and platting restrictions.

Dwelling, Multi-family. A residential building that contains three or more dwelling units, or group of similar buildings in a complex. Typical building and lot types include multi-unit houses (provided they maintain the scale, design, orientation, access and entrance features similar to a detached house), small apartments, medium apartments, large apartments, apartment complexes, and mixed-use buildings with residential uses.

Dwelling, Mixed-use (apartment over commercial / service). A residential use in a building designed for street level retail, service or employment uses, and where dwelling units are accommodated on upper stories, or otherwise separated from the principal commercial function of the building.

Dwelling, Established Residential (all types). Any residential building and use, legally established at when it originated but where new development of the same use or similar building type is no longer permitted in the zoning district. These uses shall be permitted so that continued use and further investment in the building and use is not discouraged.

Dwelling, Accessory Unit. A dwelling unit that is secondary and accessory to a principal dwelling unit and on the same lot. Accessory dwelling units may be in the same building as the principal dwelling unit (basement or attic apartments) or in a detached accessory structure (garage apartment or “granny flat”).

Mobile / Manufactured Home Park. A parcel of land planned and designed for multiple home sites for the placement of manufactured, mobile or other small homes, and used for the principal dwelling of households for long-term residency. These communities include internal common areas, circulation systems and accessory uses and facilities to support the community. Dwellings may either be located on home sites designated within a larger project or on single lots owned through appropriate condominium procedures or platted under certain conditions.

Boarding House & Single Room Occupancy. A residential building is used to accommodate boarders or roomers as the primary residential dwelling, and whose occupants shall have common access to facilities such as kitchen, bathroom, dining areas, or community areas. Boarding and single-room occupancies houses shall be rented or leased on a monthly basis or longer, and not include hotels, motels and lodges.

Farming. The production of crops such as vegetables, fruit trees or grain; the growing of trees and shrubs for landscape purposes; and the raising of farm animals such as poultry or swine, as limited by the standards for accessory keeping of livestock. Farming shall not include the commercial raising of animals, commercial production of milk, commercial pen feeding (feed lots) or the commercial feeding of garbage or offal to swine or other animals.

Residential Care - Group Home. A residential building operated as a single primary dwelling which provides residency, supervision, and other services for up to 8 persons who are in need of special care due to being developmentally disabled, mentally ill, 60 years of age or older, or due to physical condition, illness, or social or behavioral problems. Group homes require up to 2 residential caregivers, and shall be licensed by, operated by, or owned by a governmental agency or non-profit qualified to provide care and supervision. Group homes shall not include alcoholism or drug treatment centers, work release facilities or other housing facilities serving as an alternative to incarceration and shall not house more than one individual per dwelling who is required to register as a sex offender under the provisions of Section 18-3-412.5, C.R.S

Residential Care – Assisted Living. A residential building or planned community operated as the primary residence for persons who do not have an illness, injury or condition that requires 24-hour care or supervisions, but who need social, physical, and therapeutic and recreation support for daily living. Support services are accessory to the residential use and character of the buildings and area, and do not require 24-hour staffing, other than security. Typical examples include assisted living, group homes larger than 8 individuals, and retirement communities.

Residential Care - General. A residential or institutional building, or group of buildings, designed to provide a primary or interim residence and health care for persons who require care on a full-time basis. Medical support, rehabilitative services, and counseling is provided by professional, nursing and medical staff on site. Accessory support uses include meals, therapeutic services, transportation and recreation. Typical examples include nursing homes, long-term care facility, continuing care facility, congregate care communities, or hospices.

Residential Care – Institutional. A residential or institutional building operated by a government, non-profit, charitable or religious organization providing temporary housing, food, counseling and other support services to persons at risk, on an interim basis and with transitional, protective, or rehabilitative goals. Security and supervisory services are required on-site. Typical examples include emergency shelters, missions, rehabilitation residence, halfway houses.

2. *Public / Civic*

The Public / Civic use category is the use of land and buildings to serve public or community interest by enhancing the daily cultural, social, or recreation needs for residents and neighborhoods. It can include uses generally available to the public at large, community uses structured by voluntary affiliation, or private uses limited by property ownership or membership. It includes the following types:

Assembly. A civic use designed to serve the community for regular or periodic events, including worship, social, cultural, recreation, and accessory uses associated with organized civic or institutional activities.

Assembly – Limited (up to 499 occupancy). A place of assembly designed and located to serve nearby neighborhoods, typically designed for up to 499 people. Examples include small neighborhood association clubhouse, meeting hall, or small religious facility.

Assembly – General (500 - 1,500 occupancy). A place of assembly designed and located to serve the broad community at large, typically designed for 500 – 1,500 people. Examples include a community/recreation center, small event hall, or large religious facility.

Assembly – Large (1,501+ occupancy, or outside). A place of assembly designed and located to serve as a destination for the city or region, typically designed for more than 1,500 people, or where any facility is designed for outside assembly. Examples include an auditorium, large event hall, major worship hall, convention and conference center, or any assembly use with a small outside amphitheater.

Cemeteries and Columbarium. A public or civic use where land or buildings are used for the burial of the deceased and dedicated for interment purposes, including gravesites or buildings used for the interment of ashes of cremated dead.

Golf Courses & Country Clubs (no lights). A public or civic use and designed and dedicated for playing the game of golf, run by a public agency or a private club operated on a membership basis. This includes accessory facilities and structures related to playing golf, but shall not include any lights, activities, or associated events not compatible with outdoor recreation in a residential setting. (See Recreation – Outdoor for commercial recreation activities).

Libraries, Museums, Public or Quasi-public. A public or civic use which provides resources and exhibits to support education, culture, and information exchange open to the public at large.

Police, Fire Stations, Ambulance Dispatch & Storage. A public use that supports the community at large by through public health and safety, protective or related services. Examples include police and fire stations, dispatch, and related facilities, or similar government and quasi-government buildings and grounds.

Parks, Open Spaces & Common Areas. Any parcel or area of land or water permanently reserved for public and/or private use and enjoyment, which is generally open, undeveloped, and characterized by natural features and landscape enhancements, except for facilities to serve the social, recreational, aesthetic, or environmental function of the space. (See Section 24-302 and 24-504 for standards applicable to all districts.)

School. A public or civic building designed, constructed, or used for education or instruction in any branch of knowledge.

School, adult (business, trade). A public or private school primarily teaching useable skills to adults, including, but not limited to, business, vocational, driving and trade courses.

School, compulsory. A public or private elementary, junior high or high school licensed by the state and which meets state requirements for providing compulsory education.

Schools – University / College. A public or private institution dedicated to post-secondary education.

Transportation – Bus, Taxi, or Transit Station. A public transportation facility designed for the transfer, pick-up and drop-off of passengers traveling by bus, taxi, trolley, or similar low-impact means, including with buildings or associated passenger convenience facilities, distinguished from public stops accommodated in the design of the right-of-way.

Transportation - Freight & Maintenance Yard. An area and/or building where storage, maintenance, or dispatch of vehicles used for public transportation occurs, or any other similar high-intensity activities associated with public transportation.

Transportation – Airport, Heliport, or Helipad. Any area of land or water designed for the landing and take-off of aircraft for business or commercial purposes, including all necessary facilities for passenger and cargo loading, maintenance and fueling facilities and housing of aircraft. This includes any area used by helicopters for landing and take-off, passenger and cargo loading.

Transportation – Public Parking. A parcel of land where the principle use is to park vehicles whether on a fee basis operated by a public or private entity or whether to support an adjacent use or business located on a different lot. Parking may be on a surface lot or in a structure.

Transportation – Towing Service. A parcel of land used for the storage, impoundment, and retrieval of vehicles that have been towed.

Utilities – Limited. Any aboveground structure or facility, excluding buildings, which is owned by a governmental entity or any entity defined as a public utility for any purpose by the state public utilities commission, and used in connection with delivery of utility services to nearby lots and other areas, with maximum heights of towers and accessory structures under those permitted by the zoning district. Examples include accessory utility structures that served customary needs of the uses in the zoning district.

Utilities – General. Any aboveground structure or facility, which is owned by a governmental entity or any entity defined as a public utility for any purpose by the state public utilities commission, and used in connection with delivery of utility services to nearby lots and other areas, with maximum heights of towers and accessory structures above those permitted by the zoning district. Examples include substations or other facilities that support the storage and generation of facilities.

Utilities – Lines over 33KVA, overhead. Any utility that utilizes overhead lines that transmit above 33 kilo volt amperes.

Utilities – Co-generation or Power Plants. A facility which is owned by a governmental entity or any entity defined as a public utility for any purpose by the state public utilities commission, and used for generating of power for distribution to sub-stations or other general accessory distribution facilities.

3. Commercial.

The Commercial use category is the use of land and buildings for entities engaged in sale of products or services, the limited production and distribution of products, or other administrative or support services to help businesses. It includes the following types of uses:

Adult business. Any store, establishment, tavern, club or theater having a substantial portion of its stock in trade, books, magazines or other periodicals; video movies, films, slides or photographs; instruments, devices or paraphernalia; or live performances, which are characterized by their emphasis on matters depicting, describing, or related to specified anatomical areas or specified sexual activities. For the purposes of this definition, a business shall not be considered an adult business if it carries less than 20 percent of its stock in adult materials and it prevents the public from viewing or observing merchandise or products that depict specified anatomical areas or specific sexual activities, as may be displayed by the products or on the packaging.

1. **Specified anatomical areas** means:
 - (a) Less than completely and opaquely covered human genitals, pubic region, buttocks and female breast above or below a point which would expose any portion of the areola; and
 - (b) Human male genitals in a discernibly turgid state, even if completely and opaquely covered.
2. **Specified sexual activities** means:
 - (a) The fondling or other erotic touching of human genitals, pubic region, buttocks, anus or female breast;
 - (b) Human genitals in a state of sexual stimulation or arousal;
 - (c) Sex acts, actual or simulated, including intercourse, oral copulation or sodomy;
 - (d) Masturbation, actual or simulated; or
 - (e) Excretory functions as part of or in connection with any of the activities set forth in subsections (2)a through d of this definition.

Animal Care. A commercial use that provides care and medical or non-medical services for domesticated animals, including boarding, training, breeding, showing, treatment, grooming, or sale. Animal care is further refined by the scale and intensity of the operations, as follows (for Non-domesticated animals and livestock, see *Farming, and limits on the accessory keeping of Livestock*):

Animal Care - Limited. A small office or facility providing animal care that involves less than 5,000 square feet of commercial area, all activities occur indoors (except routine daily pet care), and any overnight boarding is limited to that necessary for medical care or observation. Examples include a veterinary office, pet grooming or training, and small animal day cares.

Animal Care – General. A moderate sized office or facility providing animal care that is between 5,000 to 20,000 square feet of commercial space, or that involves animal boarding. Examples include a veterinary clinic, animal shelters, and indoor commercial kennels.

Animal Care – Large. A large office or facility providing animal care that is more than 20,000 square feet of commercial space, or has significant outdoor activity including boarding kennels or play areas where animals may ordinarily be kept and . Examples include domestic animal hospitals, large facilities for pet daycare, and large commercial/outdoor kennels

Animal Care – Stable (>5 boarded animals). A commercial use for the keeping, boarding and/or training of horses, ponies, llamas, mules or other animals which may be used for riding purposes, for compensation and which may include an arena.

Auction House. A business that facilitates the buying and selling of assets, such as works of art, collectibles, household estate items, and other personal property. Auction House excludes selling of livestock.

Automobile – Gas Station. A specific retail use engaged in the sale of fuel to the general public, and may involve limited accessory sales of convenience goods. This use may be combined with accessory vehicle

service and repair uses, subject to the service bay limitations stated below. Vehicle – Gas Station uses are further refined by the scale, format and intensity as follows.

Automobile - Gas Station, Limited (up to 8 pumps). A vehicle gas station limited to no more than 8 fueling stations, no more than 2 service islands, no more than 2 accessory vehicle service bays and no more than 1,500 square feet of accessory retail or service areas. Examples include small, neighborhood service stations.

Automobile - Gas Station, General (9-20 pumps). A vehicle gas station limited to between 9 and 20 fueling stations, no more than 5 service islands, no more than 3 accessory vehicle service bays and no more than 5,000 square feet of accessory retail or service areas. Examples include general stores and gas stations.

Automobile - Gas Station, Large (21+ pumps). A vehicle gas station that contains more than 20 fueling stations, more than 5 islands, and up to 4 accessory vehicle service bays and no more than 5,000 square feet of accessory retail or service areas. Examples include a large convenience center and gas station, or truck stops and travel centers.

Automobile – Repair / Service. A specific service use engaged in motor vehicle and mechanical equipment maintenance and repair services, and accessory retail sale of supplies and accessories. Automobile Repair / Service is further refined by scale, format and intensity as follows:

Automobile – Repair / Service – Limited (up to 3 service bays; 0.5 acre max.). An automobile service and repair use limited to no more than 3 vehicle service bays, all vehicles are under 1.5 tons G.V.W, where all work and storage of equipment and supplies occurs indoors, and where on-site or overnight storage of vehicles is limited and requires no special site accommodations other than ordinary parking areas. Sites are limited to no more than 0.5 acres. Examples include a small machine shop, mechanic, lubricant center, tire store, auto glass installation or audio or alarm installation.

Automobile – Repair / Service – General (4-6 service bays; 1.0 acre max). An automobile service and repair use that involves 4 to 6 service bays, all vehicles are under 1.5 tons G.V.W, where all work and storage of equipment and supplies occurs indoors, but where on-site or overnight storage of vehicles may be stored outdoors on the lot. Sites are limited to no more than 1.0 acre. Examples include large mechanic shop, lubricant center, tire store, non-accessory car wash, or an auto body shop.

Automobile – Repair / Service – Large (7+ service bays; 1.0+ acres). An automobile service and repair use that involves 7 or more service bays, all vehicles are under 1.5 tons G.V.W, where all work and storage may occur outdoors and where on-site or overnight storage of vehicles and outdoor storage is typical. Sites are more than 1.0 acres. Examples include large service center, auto body and frame repair facilities, transmission and engine overhaul yards, or automobile painting facilities.

Automobile – Repair / Service for Heavy Vehicles & Equipment. An automobile service and repair use engaged in the maintenance and repair of motor vehicles, recreational vehicles or boats, commercial vehicles, heavy equipment and other vehicles over 1.5 tons G.V.W., and other similar uses where services typically involve outside storage or work. Examples large vehicle maintenance, large truck or boat wash, and equipment yards.

Automobile – Sales / Rental. A commercial business engaged in the sale, lease, or rental of automobiles. Automobile – Sales / Rental is further refined by scale, format and intensity as follows:

Automobile – Sales / Rental – Limited (< 0.5 acres). An automobile sales / rental facility on less than ½ acre that uses outdoor vehicle storage at a similar scale to a small-site commercial

parking area. Examples include an automobile broker that may have little or only temporary on-site storage, or a small car rental office.

Automobile – Sales / Rental – General (0.5 - 1.0 acres). An automobile sales / rental facility on between ½ and 1.0 acre, where outdoor vehicle storage occupies a large portion of the site. Examples include a small car dealership, or a larger rental car facility.

Automobile – Sales / Retail Large (> 1 acre). An automobile sales / rental facility on more than one acre that includes significant amounts of outdoor vehicle storage. Examples include a large car dealership or car or truck rental facility

Child Care Home. A residential dwelling licensed by the Colorado Department of Human Services to provide child care services as a home occupation and an accessory use to the operator's principal residence. The facility may provide care for up to 12 children, and subject to greater restrictions based on Colorado Department of Human Services licensing rules as an accessory use to the operator's principal residence.

Child Care Center. A commercial use that provides care for children outside of the home, or any care for more than 12 children.

Entertainment / Event Establishment. A commercial use that rents facilities and grounds for special events, concerts, social functions, or other large gatherings. This use does not include any events that are accessory to an otherwise permitted civic, institutional, or commercial use.

Food & Beverage. A specific service and retail use engaged in the business of serving prepared food and/or beverages to the public for immediate consumption. Food and beverage uses are further refined by scale, format and intensity based on the following:

Food & Beverage – Bar Limited (Under 3K; under 100 seats). A food & beverage use where a significant portion of the business, in sales and in hours of operation, involves the sale of alcoholic liquors by the drink for consumption on premises, and food services is secondary or accessory. The limited use requires under 3,000 square feet and under 100 seats to ensure compatibility with other neighborhood-serving or small-scale uses in terms of intensity of activity and hours of operation.

Food & Beverage – Brewery / Winery; Bar General. A food & beverage use where a significant portion of the business, in sales and in hours of operation, involves the sale of alcoholic liquors by the drink for consumption on premises, and may include accessory craft manufacturing of alcoholic beverages. This general use is of a scale and intensity that frequently has accessory live entertainment or events and where the scale and intensity of the use is more compatible with general commercial uses.

Food & Beverage - Restaurant Limited (under 5K; under 100 seats). A small scale restaurant under 5,000 square feet and under 100 seats at full capacity.

Food & Beverage – Restaurant Quick Serve. A food and beverage use where the food is served from a counter ready to eat with no significant table service, and where the customer turnover will be high due to any combination of accessory drive-through services, carry out orders, or quick sit-down services

Food & Beverage - Restaurant General (5K+). A large scale restaurant with over 5,000 square feet of commercial area or over 100 seats.

(for accessory drive-through facilities see Section 24-403.e.)

Lodging. A commercial use providing accommodations for temporary, short-term overnight occupancy on at least a 24-hour basis, and accessory uses associated with typical guest services such as food service, recreation or similar accommodations to support overnight-guests. Lodging is refined to the following scales based on building type, format and intensity of use.

Lodging – Short Term Rental. The rental of a dwelling unit, or portion thereof, for less than one month.

Lodging – Bed & Breakfast (up to 5 rooms). A small residential building used for lodging, meals, and shared living space between the primary occupants and patrons and includes at least 2 but no more than 5 rooms.

Lodging – Hotel / Motel Small (6 to 40 rooms). A small commercial or large residential building providing lodging and includes at least 6 but no more than 40 rooms.

Lodging – Hotel / Motel General (40+ Rooms). A large commercial building providing lodging and includes 41 or more rooms.

Medical Care. A commercial service use providing medical, dental, or physical health or wellness care to the public. This use type is further categorized by the following formats.

Medical Care – Limited (Under 5K). A medical care use offering routine outpatient services, that occupies less than 5,000 square feet of diagnostic or treatment area, includes no surgical or in-patient facilities, and operates in normal business hours. Examples include a small doctor or dentist office, eye-care center, or urgent care center that is accessory to a larger retail or pharmacy use.

Medical Care – General (5K – 20K). A medical care use offering routine outpatient services, that occupies between 5,000 and 20,000 square feet for diagnostic or treatment areas, includes no inpatient facilities, and operates in normal business hours. Examples include a larger doctor or dentist group practice, small clinic or analytical lab, or small outpatient urgent care or surgical center.

Medical Care – Large (>20K). A medical care use offering a full range of services that occupies over 20,000 square feet for diagnostic or treatment areas, and may include emergency care, surgical services or other inpatient treatment. The use may include accessory retail, food service, pharmacy or wellness/fitness uses. Examples include small hospital, remote surgical centers, or large clinic or analytical labs.

Medical Care – Hospitals. A medical care use with a full range of diagnostic, surgical, and emergency services, and occupies a large commercial building or multiple buildings arranged around a campus that serves a greater region. It includes a wide range of accessory office, lab, and retail uses related to patron, patient, and visitor needs. Examples include a large hospital or regional medical center campus.

Mortuaries and Funeral Homes. A building used for human funeral services, which may contain space and facilities for services used in preparation of the dead for burial; the storage of caskets, urns, and other related funeral supplies; and the storage of funeral vehicles. Funeral homes shall not include crematoriums as accessory uses.

Office. A commercial use focused on employment and engaged in the administrative, professional, clerical or management aspect of business or professional services that typically do not have frequent or unscheduled on premise interaction with the public or clients. Office uses are further refined by the scale and format of buildings based on the following:

Office – General (under 20K). An office use in a small commercial building with under 20,000 square feet, typically within one moderate-sized building

Office – Large. (20K+). An office use in a large commercial building or multiple buildings in a complex or campus, with over 20,000 square feet.

Pawn Shops. A commercial use engaged in the loaning of money on the security of property pledged in the keeping of the pawnbroker, and the incidental sale of such property.

Personal Service. A commercial use engaged in the business of providing personal or professional services to the public that may include frequent or unscheduled interaction with clients or customers on-premises. Examples include barbershop or beauty salon, travel agency, small equipment repair, tailor, bank or personal financial services. Service uses are further refined by scale, intensity and format based on the following:

Personal Service – Limited (under 5K; under 1 acre). A service use under 5,000 square feet, typically in line with other small-scale uses in a multi-tenant commercial building or in mixed-use building on a site of less than 1 acre.

Personal Service – General (5K+; 1+ acre). A service use between of 5,000 square feet, in a small freestanding building or part of a large mixed-use building

Recreation. A commercial service use engaged in the business of providing daily or regularly scheduled activities for entertainment, leisure activities, training and instruction, or exercise, offered to the public through individual, membership, or group arrangements. This use type is further refined by the scale, format and intensity as follows:

Recreation – Indoor, Limited (< 5K; < 1.0 acre). An indoor recreation/entertainment use that involves a building less than 10,000 square feet. Examples include a small bowling alley, fitness club, billiard hall, or dance or yoga studio.

Recreation – Indoor, General (5K – 20K; 0.5 – 1.0 acre). An indoor recreation/entertainment use that involves a building between 10,001 square feet and 40,000. Examples include a large bowling alley, a small sports and recreation center, a small theater, large health club or fitness center, or small shooting range.

Recreation– Indoor Large (> 20K; > 1.0 acre). An indoor recreation/entertainment use that involves a building more than 40,000 square feet. Examples include a large sports and recreation center, skating ring, or theater complex.

Recreation– Outdoor, Limited (no lights; < 0.5 acre). An outdoor recreation use that involves less than 2 acres of active outdoor recreation grounds. Examples include a small pickle ball center, batting cages, or small community center.

Recreation/Entertainment – Outdoor, General (no lights; 0.5 – 1.0 acre). An outdoor recreation use that involves less between 2 and 5 acres of active outdoor recreation grounds. Examples include miniature golf, swimming pool, tennis center, small band shell or amphitheater.

Recreation/Entertainment – Outdoor, Large (lights or > 1.0 acre). An outdoor recreation use that involves more than 5 acres of active outdoor recreation grounds. Examples include waterpark, drive-in theater, shooting range, driving range, sports and athletic complex.

Recreation – RV and Travel Trailer Park. An outdoor recreation use providing overnight accommodations within a large open area for recreational purposes and may involve associated

accessory buildings or facilities for parking RVs on a temporary basis for recreation or vacation purposes.

Recreation – Outdoor Racetrack. An outdoor recreation use for racing of any motorized vehicles.

Retail. A commercial use primarily engaged in the sale of products for final use to the general public with frequent interaction of patrons or consumers on premises. Retail uses are further refined by scale, intensity and format based on the following:

Retail – Limited (< 3k). A small-scale retail use contained in a building with under 3,000 square feet of gross leasable area.

Retail – General (3K-20K) A retail use contained in a building with at least 3,000 but less than 20,000 square feet of gross leasable area.

Retail – Large (20K – 100K). A large-scale retail use contained in a building with at least 20,000 but less than 100,000 square feet of gross leasable area.

Retail – Warehouse (100K+). A large-scale retail use contained in a building with at least 100,000 square feet of gross leasable area.

Retail – Outdoor Limited (less than 25%; up to 0.5 acres). A retail use where a small portion of the merchandise is displayed permanently outside, limited to no more than 25% of the merchandise area being outside and limited to sites no more than 0.5 acres. Examples include a garden center, statuary store, or small equipment dealer. This does not include accessory outdoor sales and display areas that may be permitted as an accessory use to an otherwise permitted use or seasonal events that may be permitted through a temporary use permit.

Retail – Outdoor General (less than 50%; up to 1 acre). A retail use where a significant portion of the merchandise is displayed permanently outside, limited to no more than 50% of the merchandise area being outside and limited to sites no more than 1.0 acres. Examples include a lumber yard, large equipment rental or dealer, or small landscape supply store.

Retail – Outdoor Large (over 50% or more than 1 acre). A retail use where a substantial portion of the merchandise is displayed permanently outside, including more than 50% of the merchandise area being outside or sites more than 1.0 acres. Examples include a, equipment sales lot, boat or recreational vehicle sales lot, large machine or farm implement sales yard.

Retail – Outdoor Nurseries and Greenhouses. A retail use engaged in the sale of plants and other living vegetation, and where substantial portions of the merchandise is displayed outside.

Retail – Outdoor Flea Market or Swap Shop. A retail use where a large number of vendors will display merchandise indoors or outdoors on a short term or interim basis.

4. *Industrial.*

The Industrial use category involves the use of land and buildings for businesses engaged in the production, processing, storage or distribution of goods, which may have potential impacts beyond the site due to the types of activities, the physical needs of the site or facility, the types of materials used, or the delivery and access operations. Depending on the scale, intensity, and operations of these uses they may not be compatible with other uses or buildings, and may need special districts, more careful location criteria, and/or increased site design or operational limitations in order to be more generally applicable in the City.

Auto Dismantling, Junk & Salvage Yards. An industrial use for collecting, storing or selling scrap metal or discarded material or for collecting, dismantling, storing, salvaging or demolishing vehicles, machinery or other material and including the sale of such material or parts.

Commercial Services. A business engaged in service to other businesses and industries, or engaged in services to the general public but where industrial uses support the service, or where services dispatched from a central location for storage of vehicles, equipment, or merchandise. Examples include plumbing, exterminators, HVAC repair, janitorial services, commercial laundry services, or other similar uses.

Commercial Services – Limited (< 10 vehicle fleet). A small-scale commercial service use with limited outdoor storage needs and with a vehicle fleet less than 10 vehicles, where surface parking and vehicle storage needs are similar to other general commercial uses.

Commercial Services – General (10 – 20 vehicle fleet). A commercial service use where outdoor storage is necessary or with a vehicle fleet between 10 and 20 vehicles, requiring dedicated areas for storage of vehicles during down times or off hours.

Commercial Services – Large (21+ vehicle fleet). A large-scale commercial service use that may have substantial outdoor storage needs or with vehicle fleet is more than 20 vehicles, requiring large areas for storage of vehicles or equipment.

Concrete and Asphalt Batch Plant. A facility or equipment used in mixing the dry warm aggregate, padding and asphalt for homogeneous mixture at the required temperature, typically in association with a street, large parking area or other large-scale construction project, sometimes on a temporary or interim basis.

Crematoriums. A place for the cremation of human or animal remains.

Foundries. An industrial use for producing castings in molten metal.

Gravel & Mineral Extraction, Batch Plant. The process of extracting metallic or nonmetallic mineral deposits from the earth and crushing, separating or otherwise processing the extracted mineral deposits into a useable form.

Grain & Feed Elevators & Supply. An industrial use that stores grain and similar agriculture and feed products in bulk for storage, processing, or distribution to other locations.

Livestock Auction. A business that facilitates the buying and selling of livestock, including showing, housing, and otherwise caring for livestock to facilitate the purchase.

Manufacturing – Limited / Artisan (under 5K). A small-scale manufacturing use converting prepared materials into finished products. The activities produce little or no byproducts such as smoke, odor, dust, or noise discernable from outside of the building where deliveries and distribution are made by general consumer delivery services requiring no special large truck access, and where products are made available to the general public. Uses occupy buildings or spaces under 5,000 square feet of gross leasable area. Examples include artists' studios, small wood or metal shops, craft manufacturing, small bakery, or other similar small-scale assembly of finished products.

Manufacturing – General (5K – 100K). A manufacturing use converting prepared materials into finished products or parts. The activities produce little or no byproducts such as smoke, odor, dust or noise are discernable from outside of the building, and where distribution and delivery needs occur through light to moderate commercial truck access. Examples include small equipment or commodity assembly, production of consumer products, or similar businesses.

Manufacturing – Large (100K+). A large-scale manufacturing use converting raw or previously prepared materials into other materials or finished products. The activities may produce byproducts such as noise, dust, smoke or odor, but are mitigated to limit impacts beyond the property boundary. Outside storage and activities may be necessary, and distribution and delivery needs involve frequent or large truck access. Examples include large-scale manufacturing or fabrication plants, large equipment assembly, metal fabrication plants, chemical laboratories or other similar high-intensity manufacturing or distribution operations.

Manufacturing - Food and Beverage Minor (up to 3 acres). A manufacturing establishment primarily for packaging, producing or processing foods for human consumption that meets the definition of *food and beverage processing (major)* but which also dedicates a portion of the building footprint's square footage (a minimum of ten percent [10%], up to fifty percent [50%]) to sales of food, beverages and/or other retail for on-premises purchase and/or consumption; and which occupies a site of three (3) acres or less; and which cannot generate offensive odors, emissions, traffic or other off-site impacts or shall otherwise be considered a major food processing facility.

Manufacturing - Food and Beverage Major (3+ acres). A manufacturing establishment packaging, producing or processing foods for human consumption and certain related products and includes, but is not limited to the following: (1) bakery products, sugar, and confectionary products (except facilities that produce goods only for on-site sales and not wider distribution); (2) dairy products processing; (3) fats and oil products (not including rendering plants); (4) fruit and vegetable canning, preserving and related processing; (5) grain mill products and by-products; (6) meat, poultry, and fish canning, curing and byproduct processing (not including facilities that also slaughter animals); and (7) miscellaneous food preparation from raw products, including catering services that are independent from food stores or restaurants.

Manufacturing – Chemical Plant. An industrial use primarily engaged in the storage, processing, production, and distribution of chemicals on a large scale, where chemical reactions are used to transform materials for use in other industrial or business applications.

Manufacturing – Rendering, Slaughter & Packaging. An industrial use where waste products and livestock carcasses are converted into industrial fats.

Oil and Gas Operations means exploration for oil and gas, including the conduct of seismic operations and the drilling of test bores; the siting, drilling, deepening, recompletion, reworking or abandonment of an oil and gas well, underground injection well or gas storage well; production operations related to any such well including the installation of flowlines and gathering systems; the generation, transportation, storage, treatment or disposal of exploration and production wastes; and any construction, site preparation or reclamation activities associated with such operations. See Section 24-1102 for specific definitions, standards, and procedures related to oil and gas uses.

Research & Testing Labs. A building or group of buildings in which are located facilities for scientific research, investigation, testing or experimentation, but not facilities for the manufacture or sale of products, except as incidental to the main purpose of the laboratory.

Warehouse / Storage. An industrial use engaged in the business of keeping goods and products for interim or long-term periods for personal or business uses, or for the distribution to other businesses and industries, including any logistic services related to this business such as labeling, bulk packaging, inventory control, or light assembly. Warehouse and storage uses are refined further based on the scale, format and intensity as follows:

Warehouse / Storage –Indoor Limited (< 50K; up to 1 acre). A warehouse / storage use where individuals store personal property in units or space leased or rented on a periodic basis and where all storage are accessed from within the principal building. Examples include small indoor self-storage mini-warehouses, or small commercial warehouse.

Warehouse / Storage – Indoor / General (50K – 200K; 1-5 acres). A warehouse / storage use for businesses or larger personal products where all items are stored indoors. Examples include large indoor self-storage mini-warehouse, large commercial warehouses, and long-term garages.

Warehouse / Storage – Large (200K+; 5+ acres). A large-scale warehouse / storage use for long-term storage of products or supplies, and where access and truck traffic is not frequent.

Warehouse / Storage – Distribution Center. A large-scale facility where goods or products are stored on-site temporarily for the purpose of delivery to a retailer or final destination, and where the nature of the operation has frequent daily truck traffic. Such facilities may include automated systems, office space and a pick and pack area to be used by employees for sorting and packaging goods and products for delivery from available, on-site inventory.

Warehousing / Storage –Outdoor Limited (up to 1 acre). A storage use for the public where individuals store personal property in units leased or rented on a periodic basis and where all storage is inside but individual units may be accessed directly from the outside. Examples include small outdoor self-storage mini warehouses or small equipment storage yard.

Warehouse / Storage – Outdoor General (1+ acre). A storage use for the public or other businesses where large-scale household items or machinery, commercial products, raw materials, or supplies are stored on an outdoor lot. Examples include large outdoor self-storage mini warehouse, boat or RV storage, building supply lots or similar industrial supply storage yards.

Warehouse / Storage – Bulk Storage of Flammable Liquids and Gases. The use of grounds for storing tanks used for gasses or liquefied petroleum, often as a distribution point for further shipment or processing or re-use at other locations.

Waste Management – Recycling Collection Small. A small-scale disposal point for recyclable or reusable materials, where items are dropped in bins that protect them from the elements, eliminate them from view of surrounding areas, and otherwise mitigate any noise or odor. These facilities are solely for temporary drop off and storage, until weekly or daily pick up of the materials, can bring them to a separate location for further procession or disposition.

Waste Management – Recycling Processing & Collection. A large-scale disposal point for recyclable or reusable material, where longer-term storage or processing of materials may occur on site.

Waste Management – Refuse & Transfer Station. A facility for the purposes of separation, aggregation and/or compaction of solid waste prior to delivery to a landfill.

Water & Waste Water Treatment Plant. An industrial use used to treat and process water and wastewater for further distribution or disposal.

Well Drilling Companies. A business that stores, supplies, operates or distributes machinery and equipment used for drilling wells.

Wireless Communication Facilities. A pole, tower, or antenna for the purposes of transmitting and receiving communication signals, other than that accessory to a principal use of the property. Wireless communication facilities include monopoles and towers with attached appurtenances such as microwave dishes and antennae, rooftop, wall- and ground-mounted microwave dishes and antennas. See Section 24-1101 for specific definitions, standards, and procedures applicable in all districts.

24-403 Accessory Uses

In addition to the general use and development standards applicable to all districts, permitted uses may include other accessory uses. This section provides basic performance standards for all accessory uses and some specific standards for particular accessory uses.

- a. **Accessory Uses, Generally.** All principal uses shall include accessory uses subject to the following general standards:
 1. The use and any structure is clearly incidental and subordinate to an allowed use and customarily associated with the allowed use.
 2. The use is on the same lot as the principal use or otherwise clearly associated with an active principal use.
 3. The use is compatible with the general character of the area and comparable in scale and intensity to uses of other property in the vicinity.
 4. No use or structure may be constructed, maintained, or conducted in a way that produces noise, vibration, noxious odor or material, any visible light, glare or other visible impacts that are harmful, damaging or disturbing to the adjacent property.
 5. Any structures or site design elements to support the use can be screened or located to minimize impact on adjacent property or are not significantly different from what is typical for other allowed uses in the district.
 6. There are no unusual traffic patterns or increases in operational activity that impact the use and design of streets and public spaces differently than other allowed uses.
 7. All uses and structures are conducted in a way that is consistent with the intent and objectives of all other design and development standards applicable to the property.
- b. **Accessory Dwelling.** Accessory dwellings are permitted as an accessory use to a principal dwelling as indicated in Table 24-4-2, and subject to the following additional standards:
 1. One accessory dwelling may be permitted per lot only when associated with a detached house or duplex/multi-unit house.
 2. Accessory dwelling units may be located in a detached accessory building or located within the principal building (such as an attic or basement apartment).
 3. The accessory dwelling shall not exceed 60 percent of the living area of the principal dwelling or 1,200 square feet, whichever is less.
 4. All parking necessary for the use shall meet the neighborhood design standards, and be confined to the garage, driveway or street directly in front of the dwelling.
 5. A detached accessory structure shall meet all development and design standards for the building and lot in Chapter 5, Residential Development Standards.
 6. The accessory dwelling shall be compatible with principal building, and whether within the principal building or in a detached structure, be clearly subordinate to the principal dwelling through the location of parking, access, building entrances and other design features that accommodate the dwelling.
- c. **Home Occupation.** Home occupations may be accessory to a primary residential use on the lot and shall meet all of the following standards:
 1. The occupation shall be limited to residents of the dwelling and no other employees may be at the site for the purpose of conducting any part of the business operation. If the resident applicant is not the homeowner, the homeowner shall provide authorization with the permit application.
 2. Areas dedicated to the use and storage for a home occupation shall not exceed more than 20% of the habitable floor area of the dwelling, except as may be required for state-licensed child care home.

3. All activity shall be conducted with an enclosed living area, accessory building, or the garage, except as required for state-licensed in-home family child care.
 4. Any materials or equipment used in the home occupation that is not customary to a residential use shall be stored within an enclosed structure.
 5. No alteration of the exterior of the principal residential building or site shall be made which changes the residential character of the building or site, including use of colors, materials, construction, lighting or signs.
 6. No traffic, services, or deliveries shall be generated by the home occupation that is abnormal to a residential neighborhood. In general, this shall be limited to:
 - (a) No more than 1 customer vehicle parked at the property at a time, except for drop off of children for child care or instruction;
 - (b) No more than 10 client visits per week, except for drop off of children for child care or instruction.
 - (c) Delivery of products or materials is limited to that normally associated with residential purposes.
 - (d) All parking necessary for the use shall meet the neighborhood design standards, and be confined to the garage, driveway or street directly in front of the dwelling.
 - (e) Only one vehicle, not to exceed one-ton capacity, and one trailer which cannot exceed 15 feet, may be related to and used in conjunction with the home occupation and shall be parked on-site except for customary agricultural vehicles and equipment at rural homes.
 7. No equipment, machinery or operation shall be used in such activities that is perceptible off the premises because of noise, smoke, odor, dust, glare, radiation, electrical interference or vibration.
 8. There shall be no retail operations that result in regular or intermittent customer visits to the home, except for the sale of agricultural produce at a rural home, where all merchandise was produced on site.
 9. The property shall be in compliance with all other building codes and property maintenance standards.
 10. Use of utilities shall be limited to that normally associated with residential purposes.
 11. All home occupations shall require a permit issued by the Director according to the following:
 - (a) An application form and materials shall be submitted to the Community Development Department;
 - (b) Notice of a permit application shall be posted and mailed to all abutting or other affected property owners according to Section 24-201.f.
 - (c) The applicant shall submit the application concurrently to the Finance Department for approval of a business license.
 - (d) A permit may be approved by the Director upon a finding that all criteria are met, and the Director may require any additional conditions of limitations to ensure that the criteria continue to be met;
 - (e) A permit shall be valid for three years, but may be renewed for subsequent three-year periods;
 - (f) A permit is valid only for the original applicant, and is not transferable to another person or to another location;
 - (g) The Director may revoke a permit for non-compliance with these criteria, violation of any conditions of the approval, misinformation or misrepresentation in the application, or a change in the nature or extent of the use, or any other circumstance that violates the public health, safety, and welfare.
 12. Any home occupation not meeting these criteria, or otherwise denied a permit by the Director, may only be approved according to Section 24-206, Use By Special Review.
- c. **Livestock.** The limitations in Table 24-4-3: Animal Unit Equivalency Chart shall apply to the keeping of livestock as an accessory use to farming, residential uses, or any other use involving livestock. This chart shall not be used in a cumulative fashion. For example, in the H-A Zone,

there is a maximum of 2 animal units permitted per acre. These animal units may be derived from a combination of animals, but in no event shall it exceed the maximum of 2 animal units per acre.

Table 24-4-3: Animal Unit Equivalency Chart

Animal Species	Max Animals Per Acre (by species)		Animal Unit Equivalent
	H-A zone	Other zone	
Slaughter, feed & dairy cattle, bison, elk, llamas, horses, mules, burros, yaks, alpacas	2	1	1.0
Swine, butcher & breeding - over 55 lbs.	4	4	0.5
Sheep, lamb, goats	4	4	0.5
Turkeys	10	5	0.2
Chickens, broiler & layer; rabbits	20	10	0.1
Total Cumulative Animal Units Allowed Per Acre (combined species)	H-A district		2.0
	Other zones		1.0

- Young stock, less than 50% of adult weight, reduces the above equivalency factor by one-half).
- "Per acre" refers to areas specifically devoted for animal use.)

- d. **Satellite & Communication Equipment.** The following provisions shall apply to the installation of devices and structures used to transmit and receive radio, television or communication signals, except residential satellite dish installations which are three feet or less in diameter, residential single-pole or tower roof or ground-mounted television, or amateur radio antennas:
1. The placement of all equipment shall conform to all standards of the zoning district and overlay district, and shall not be located in any required setback or on any structure unless architecturally screened.
 2. The maximum overall height for a ground-mounted antenna shall be as established for building height in the applicable zoning district. The height of a roof-mounted antenna, combined with the building height, shall not exceed the maximum building height in the applicable zoning district.
 3. The operation of the antenna shall not cause interference with any electrical equipment in the surrounding neighborhood, such as television, radio, telephone or computers unless exempted by federal regulation.
 4. The antenna shall be a single, non-reflective color.
 5. The antenna shall be sited to assure compatibility with surrounding development and not adversely impact the neighborhood, and screened according to Section 24-803.
 6. The antenna and equipment shall be accessory to the principal use of the lot or site.
- e. **Accessory Drive-Through.** Drive-through or drive-up service accessory to an allowed commercial use is permitted subject to the following standards:
1. This section applies to buildings and sites designed for orders to be taken from a customer in a car, where they wait in a queuing area, and then receive products or services delivered to the car from a service window or station. It does not apply to businesses that provide carry-out or to-go products where there is no specific site design or structural facilities dedicated to vehicle service.
 2. Accessory drive-through or drive-up services shall be limited to the following districts:
 - (a) Non-food and beverage service – C-L, MU-L, C-H, MU-H, I-L, and I-M
 - (b) Food & beverage service – C-H, MU-H, I-L, and I-M
 3. The service area shall not substantially expand the traffic or vehicle circulation otherwise necessary for access, parking and circulation to serve the site. In general, the service area shall use the same entrance and exit from the site as the principal use, unless a more remote or discrete service off an alley or secondary street better meets this criteria.

4. Vehicle service facilities shall avoid potential pedestrian/vehicle conflicts on the site and along the streetscape.
 - (a) Adequate stacking spaces for automobiles shall be provided on site and outside of setbacks to eliminate any impact on public streets.
 - (b) Stacking areas shall generally accommodate at least 5 vehicles, but may be modified for greater or lesser stacking dependent on the use or the context of the site, provided no stacking shall impede vehicle access or circulation on the site or in the right of way.
 - (c) Circulation, stacking and other access issues shall be designed in a manner that has the least impact on pedestrians entering the principal building from public streets and from internal streets or parking areas.
 - (b) No access or queuing area shall be provided between the building and the street on any street designed to walkable street standards in Section 24-301 (Pedestrian or Avenue street types), or on "Walkable A" frontage type in Section 24-603. Use of alleys, internal access and the rear of buildings for drive-through services is required to preserve the streetscape design and development patterns of these areas.
 5. Service areas and windows shall be located on the most remote wall that is practicable, considering adjacencies to public-streetscapes, residential property, or other sensitive adjacent areas.
 - (a) No service area, speaker, ordering station, or pick-up window shall be located within 100 feet of any residentially zoned property, or otherwise be audible from residentially zoned property or the public right-of-way,
 - (b) Signs, circulation areas, and lighting elements shall not be create any negative impacts on the public right-of-way or adjacent residential property.
 - (c) Additional screening or buffers may be required beyond the standards of Section 24-803 in order to ensure compatibility.
 6. The Director may require any other drive-through service area that does not clearly meet these standards and criteria to be reviewed subject to the procedures and criteria for Use by Special Review in Section 24-206.
- f. **Craft Manufacturing.** Production, storage, and distribution of products, or other on-site manufacturing, is allowed accessory to an otherwise allowed commercial use, provided:
1. The manufacturing area is no more than 50% of the building area, and any outdoor storage is limited to all applicable site design and screening standards.
 2. The entire site is limited to less than 1 acre.
 3. That all manufacturing areas, warehousing, shipping and distribution facilities are clearly subordinate to the principle commercial use, and all manufacturing is to support the principal use.
 4. No byproducts such as smell, waste, smoke or noise results from the manufacturing that is distinctly different or of greater intensity than the principle use.
 5. Traffic, customer, and shipping patterns and activities from the manufacturing use are not distinctly different from the principle commercial use in terms of intensity and hours of activity.
 6. Examples include microbrewery, bakery, furniture shop, art studio, or similar retail uses with limited and subordinate on-site manufacturing.
- Otherwise such uses are only permitted as a principle manufacturing use.
- g. **Outdoor Storage, Non-residential.** Accessory outdoor storage may be permitted in the non-residential districts subject to the following standards:
1. In the C-L, MU-L, and MU-H districts, the storage area shall be located behind the front building line of the principal building.
 2. The storage area shall be fully screened from residential property or public spaces according to the standards and design requirement of Section 24-803 and no materials shall be stacked higher than the screening.

3. The storage area shall be located on the most remote section of the site or building as possible, but no closer than 30 feet to any street or right-of-way and outside of required setbacks in all cases.
 4. Outdoor storage areas shall be limited to:
 - a. No more than 300 square feet in the C-L district.
 - b. No more than 500 square feet in the MU-L or MU-H districts.
 - c. No more than 30% of the building footprint in the C-H and I-L districts.
 5. The storage area shall be paved per the requirements for parking lots, except a stabilized dust-free surface may be used in the I-M and I-H district.
 6. Alternatives to these accessory use limits may only be approved by the Director through site plan review procedures in Section 24-207.
- h. **Outdoor Display and Service Areas.** Outdoor display and service areas accessory to an allowed commercial use, such as sidewalk seating and dining or sidewalk sales are allowed subject to the following conditions:
1. Outdoor display and service areas shall be located on the same lot as the principal use or along the street frontage immediately abutting the use in the case of street front buildings.
 2. Outdoor display areas shall be limited to no more than 20% of the ground floor area of the principal use, and outdoor service areas shall be limited to no more than 50% of the interior service area.
 3. Display and service areas shall not be arranged where they interfere with pedestrian or building access or clear vision areas. When located on public, common or private sidewalks accessing the building, at 5 feet clear or at least 50% of the width any sidewalk, whichever is greater, shall remain clear and unobstructed..
 4. The area may be located in parking areas, provided it does not interfere with adequate parking and circulation of the entire site. The permanence of any structures shall be considered in evaluating the impact on adequate parking needs for the site.
 5. The area shall be screened from view along any property line abutting a residential use or district according to Section 24-803.
 6. A site plan shall be provided for any outside display or service area more than 400 square feet, lasting more than seven consecutive days, or more than four separate occurrences per year. A site plan shall show the location, area, and dimensions of the display area, and specifications for all lighting, fencing, screening or temporary or permanent structures.
 7. In reviewing the site plan, conditions or performance standards to mitigate noise, visual or operational impacts may be added by the Director to address specific sites or contexts.
- i. **Temporary Construction & Sales Offices.** Temporary construction or sales offices that are accessory to a permitted development project shall provide the following:
1. The lot shall be within or adjacent to the construction site, or located so that access from the site does not impact public streets or surrounding uses. A sales office shall be limited to sales for the subject site.
 2. Temporary office structures shall be architecturally compatible with surrounding uses and may be permitted on the site until 75% of the project is built out.
 3. All structures and materials shall be removed within one month after occupancy of the project.
 4. If the sales office is intended as a model home, it shall be completed to meet all Building and Zoning Code requirements.
- j. **Temporary Uses.** Uses that may not otherwise be interpreted as being permitted by Table 24-4-2, or accessory uses in Section 24-403, may be permitted through a Temporary Use Permit, provided they are accessory to a principal use of the site or building. Temporary uses on property without a principal use shall be considered under the change of use provisions as a principal use, and are required to meet all applicable standards of the zoning district.

1. *Permit.* An application for a permit shall be submitted by the owner, or an agent of the owner with written permission from the owner at least 10 days prior to the desired issue date.
 - (a) The permit shall have a specified start and end date not more than 90 days per year or be based on a schedule that includes no more than 90 days per year.
 - (b) The applicant shall submit a complete description of the event or activity, including anticipated traffic, hours and peak times of operation, access and circulation plans, the ability to accommodate fire and police access, and any need for special protection or other public safety, health and welfare needs.
 - (c) The applicant shall submit a plan identifying the extent of the grounds, gathering places and circulation routes, any streets or public spaces to be dedicated to the event, the location of all structures, equipment or other accessory facilities, and any utility needs for these structures, equipment or fixtures.
 - (d) The Director may extend the permit one time for up to an additional 30 days. The extension shall only be permitted based on circumstances not foreseeable at the time of the original permit and provided no problems have arisen under the original permit.

2. *Standards.* All activities and any temporary structures shall meet the zoning district setbacks and standards, with the exception of the following:
 - (a) Outdoor vendors may operate according outdoor vendor regulations and standards contained in Title 8, Chapter 5 of the City's Code
 - (b) Parking requirements shall generally be met for the principal use and the temporary use, except that the Director may account for any existing and underutilized parking, the duration of the event, and any transportation management when considering the permit criteria.
 - (c) Garage sales for residential property are not subject to the standards of this section or required to get a permit, provided:
 - (1) It is operated by the owner or resident of the property;
 - (2) It is for goods not acquired specifically for resale; and
 - (3) It is limited to no more than 3 consecutive days, and no more than 2 events per calendar year.

3. *Criteria.* A temporary use permit shall be evaluated based on the following, in addition to all other general procedures and criteria for site plans in Section 24-207:
 - (a) The proposed use is of a scale, intensity and format that is ordinarily occurring in the vicinity considering the size, anticipated traffic, hours of operation and duration of the event.
 - (b) The anticipated traffic and parking can be handled by the existing street network, site access and lot layout, or the applicant has demonstrated sufficient management strategies and procedures to mitigate any potential negative effects on the area.
 - (c) The degree of potential negative impacts on adjacent property, and in particular the likelihood of the event violating the general District Performance Standards in Section 24-405. The applicant may submit mitigation plans for any potential impacts, including limiting hours of operation, buffers and screening, transportation management, or other evidence or plans to accommodate concerns and limit impacts on surrounding property owners or residents.
 - (d) The use shall comply with all other applicable codes, licenses, or other public health, safety, and welfare requirements.
 - (e) The location subject to the temporary use permit shall be restored to its original condition upon the earlier of the expiration of permit or end of operation, except that permanent improvements made to the location may remain with the property owner's written consent.

- (f) The Director may impose any other conditions on a permit necessary to protect the public health, safety, and welfare.
- (g) Any temporary use permit that does not meet these criteria may only be approved through the procedures and criteria for a Use by Special Review, in Section 24-206.

24-404 Specific Use Standards

- a. **Mixed-use Dwelling.** In districts where mixed-use dwellings are allowed uses, the following standards shall apply to a building or structure with two or more different uses, one of which shall be residential:
 - 1. In the commercial zoning districts, at least 50 percent of the ground floor of a mixed-use building shall be in a nonresidential land use. In the R-H Zoning District, no more than 50 percent of the total gross floor area of a structure containing a mixed-use, including basement area, shall be devoted to nonresidential uses.
 - 2. In the R-H zone, only commercial uses permitted in the C-L district are allowed, and they may be further conditioned, limited or prohibited through the Use by Special Review process in Section 24-206. Mixed-use dwellings in commercial and mixed-use zones may include any commercial use permitted within that zoning district.
 - 3. The design and character of all buildings and sites shall be compatible with the predominant character of the surrounding neighborhood. The operating characteristics of a nonresidential land use in a predominantly residential neighborhood shall be compatible with the residential uses. For the purposes of this section, operating characteristics shall include, but not be limited to, hours of operation, lighting, noise and traffic.
- b. **Residential Care.** When residential care is a permitted or use by special review, they shall meet the following conditions to ensure they are integrated into neighborhoods, have a non-institutional nature, and maintain the residential character.
 - 1. *Residential Care – Group Home.*
 - (a) Group homes shall meet all of the residential design standards applicable in the particular district, and any alterations to support the group living shall be done in a discrete way in accordance with the design standards.
 - (b) In the R-L and R-M districts, no group home shall be located less than 750 from another existing group home.
 - (c) Group homes shall be supervised at all times, and may include up to 2 resident care givers.
 - (d) Group homes shall be licensed by, operated by, or owned by a governmental agency or non-profit qualified to provide care and supervision.
 - (e) Group homes shall not include alcoholism or drug treatment centers, work release facilities or other housing facilities qualifying as residential care – institutional.
 - 2. *Residential Care – Assisted Living, General, and Institutional:*
 - (a) The use shall be located on a collector street or higher, or otherwise located as a transition between the neighborhoods and other non-residential or mixed-use areas.
 - (b) In residential districts, the building(s) and site shall meet all residential design standards so that the use, building and site is compatible with the neighborhood in terms of scale and intensity of activity.
 - (c) Any facilities necessary to serve the residents, guests or support the staff, that are non-residential in nature shall be located on the most discrete portions of the

site and building, and otherwise designed and screened to mitigate impacts on adjacent property according to Section 24-803.

c. **Animal Care.** All animal care facilities shall comply with the following:

1. All animal care businesses shall provide proof of compliance with all standards and licenses required by local or state animal care and control laws.
2. Any facility that provides boarding shall provide the following:
 - (a) Adequate shelter from the elements for the animals.
 - (b) Adequate facilities for preventing the escape of animals from the premises.
 - (c) Adequate facilities for keeping the animal environment clean and free of filth.
 - (d) Confinement and treatment of animals shall be in a manner that is humane and appropriate, which enclosures where the animal spends the majority of the day or where there is otherwise not access to an outside animal run, shall meet the requirements of Table 24-4-4: Animal Boarding Standards, which do not include required exercise areas:

Table 24-4-4: Animal Boarding Standards

<i>Animal Size</i>	<i>Minimum Kennel Area Floor Space*</i>	<i>Height</i>
<i>Extra-small dogs up to 10" high</i>	4.5 s.f.	
<i>Small dogs up to 16" high</i>	6.0 s.f.	
<i>Medium dogs up to 22" high</i>	9.0 s.f.	▪ Min. 18 inches ▪ At least 1.5 times height of animal at shoulder. ▪ Max. Required: 48 inches
<i>Large dogs up to 26" high</i>	12.0 s.f.	
<i>Extra-large dogs up to 30" high</i>	16.0 s.f.	
<i>Giant breeds over 30" high</i>	18.0 s.f.	

* Calculated as:(length of dog in inches + six) (squared) divided by 144 times two equals required floor space in feet

3. Dog runs and exercise areas shall meet the following minimum space requirements:
 - (a) The length of the runs and exercise areas shall be a minimum of three times the length of the dog from the tip of its nose to the base of its tail; the width shall allow the dog to turn around easily; and the height shall be 1½ times the height of the dog at the shoulders, with the maximum height required of 48 inches, the minimum of 18 inches.
 - (b) Indoor/outdoor runs that have the primary enclosure and the exercise area in combination shall for measuring purposes be considered an exercise run and shall be measured from the extreme inside to the extreme outside for length determination.
 - (c) Outdoor or indoor runs used as a combined primary enclosure and exercise area shall be measured from one extreme end to the other extreme end for length. The same criteria will apply to freestanding runs used for exercise areas only.
 - (d) Each dog housed in the specified primary enclosure must be provided the opportunity to exercise for a minimum of 60 minutes over a 24-hour period.
4. Adequate supervision of the animals in the kennel facility must be present to the following standards:

- (a) There must be a minimum of one human supervisor (at least 16 years of age), present at all times and able to directly view each enclosure or common area where dogs from different owners are commingled.
 - (b) If more than 15 dogs are housed in a common area or enclosure, there must be at least one adult supervisor present for each 15 dogs housed within each enclosure or common area, with a maximum of 60 dogs housed in any enclosure or common area at a single time.
 - (c) Where after-business hours or overnight boarding care is provided, the applicant must provide an animal care and supervision plan if human supervision is not provided during this period. Such plan must address how animal care and emergency needs will be managed in the absence of human supervision.
5. Commercial businesses for which the principal use is either a pet shop or grooming operation, a pet management plan may be submitted in lieu of compliance with the confinement and exercise standards within this section. The plan must demonstrate compliance with local and state animal care and welfare standards, and include a description of the alternate accommodations related to area, location, duration of enclosure periods, and access to food, water and shelter.
- d. **Automobile Gas Stations.** All automobile gas station uses shall comply with the following:
 1. No more than one access drive shall be permitted for each street frontage.
 2. All light sources, including canopy, perimeter and flood lights and lenses, shall be shielded or fully recessed within the roof canopy so that light is contained on-site.
 3. If on-site convenience store or other retail or service component is provided, the design, location and operation of these facilities shall be compatible with the design, location and operation of the gas station.
 4. The maximum height of a canopy shall be 20 feet for flat roofs and 24 feet for pitched roofs.. Canopies shall be architecturally compatible with the principal building and all other accessory structures on the site with the same or complementary materials, architectural style and colors. The material used on the underside of the canopy shall not be highly reflective. Setbacks for the canopy shall be measured from the outside edge of the canopy.
 5. Adequate stacking space shall be provided on-site without using any portion of the adjacent street or alley for stacking. Stacking shall not occur in required setbacks.
 6. Dispensing pumps and adjacent parking, fueling or service areas shall not be located within the property setbacks.
 7. If the convenience store, gas station or auto repair use is immediately adjacent to residential zoned property or existing residential uses on at least two sides, the hours of operation shall be limited to between 6:00 a.m. and 11:00 p.m. daily.
- e. **Automobile Repair / Service.** All automobile repair / service uses shall comply with the following:
 1. Areas for overnight vehicular storage shall be enclosed or screened from the view of adjacent properties and the public right-of-way except when located in the Industrial - Medium Intensity (I-M) or Industrial -High Intensity (I-H) zones.
 2. Where a automobile repair / service use abuts residential uses or residential zones, a minimum 20-foot side yard setback and a minimum 25-foot rear yard setback shall be provided.
 3. No used or discarded automotive parts or equipment, or disabled, junked or wrecked vehicles shall be located outside any structure.
 4. Landscaping, screen walls, berms, placement of the use or other site design techniques shall be used to screen cars being serviced or waiting for service and to screen overhead doors from view from the public right-of-way.
 5. Auto repair uses within an integrated shopping center shall have an architectural style consistent with the theme established in the center. The architecture of any auto repair

use shall be compatible with surrounding uses in form, materials, color and scale. The location, size and design of the auto repair use shall be compatible with and have minimal adverse impact on the use of surrounding properties. Overhead doors shall be constructed of non-reflective materials.

- f. **Automobile Repair / Service - Car & Truck Washes.** Uses that include car or truck washes as an accessory or principal use shall comply with the following:
 - 1. Bays shall be located so that they are perpendicular to the public right-of-way or screened from view if on a corner site.
 - 2. No auto repair shall be conducted within a car or truck wash bay.
 - 3. All-over spray shall be contained on-site.
 - 4. Operating characteristics of car and truck washes, such as hours of operation and the use of lighting, shall be conducted in such a manner that is compatible with surrounding land uses.
 - 5. Other applicable requirements for car and truck washes may be found in the city's storm drainage and water department standards and criteria.
- g. **Bed & Breakfasts.** All bed and breakfast uses shall comply with the following:
 - 1. Cooking facilities, including stoves, hot plates or microwave ovens, shall not be permitted in guest rooms.
 - 2. Meals or food served in the bed and breakfast shall be prepared in a central kitchen on-site and served solely for bed and breakfast occupants.
 - 3. Individual rooms in a bed and breakfast shall not be rented more than twice during a 24-hour period.
- h. **Manufacturing – Food & Beverage Minor.** All minor food and beverage manufacturing uses shall comply with the following:
 - 1. Commercial elements of the use shall be visually and physically accessible to the public realm and designed as the most prominent aspect of the site. Commercial elements include the sale of food, beverages or other retail for on-premises purchase or consumption. The use of architecture, sidewalks, landscaping and parking shall be to define and emphasize these commercial components while de-emphasizing the manufacturing and other aspects of the facility.
 - 2. Loading and storage areas, where otherwise allowed by this Development Code, shall be separated from public entrances and areas associated with the commercial elements of a minor food and beverage processing facility and shall be located at the rear of the facility and screened from rights-of-way and off-site uses, to the extent feasible.
 - 3. Traffic by heavy trucks or rail shall be separated from public entrances and areas to avoid regular conflicts with the public and commercial aspects of the use.
 - 4. Environmental impacts, such as odor, heat, glare, noise, vibration and other such emissions or impacts shall be reasonably contained on-site and not discernable at or beyond the property line. The inability to confine such impacts to the site would qualify this use as a major food processing use.
 - 5. The applicant for a minor food and beverage processing facility shall demonstrate that a portion of the building footprint's square footage, equal to or greater than ten percent and no more than 50 percent, is dedicated to sales of food, beverages or other retail or services for on-premises purchase or consumption.
 - 6. All other applicable site and building design standards applicable in the particular district or location shall be met.
- i. **Waste Management – Recycling Collection Small.** All small recycling collection uses shall comply with the following:
 - 1. The facility shall be installed as an accessory use to an existing multifamily development, commercial or industrial land use.

2. Facilities shall not be located within 100 feet (excluding right-of-way) of any residential zoning district.
 3. The facility shall be no larger than 300 square feet and occupy no more than five parking spaces, excluding space that will be periodically needed for removal of materials or exchange of containers, and one parking space for an attendant, which shall be located outside setbacks.
 4. All permanent or temporary structures shall be set back at least 10 feet from any public right-of-way, shall be located so that pedestrian or vehicular circulation is not obstructed, and otherwise located in a manner to limit adverse impacts on adjacent property and the public streetscape.
 5. The facility shall accept only glass, metals, plastic containers, papers and similar items; or may be a collection point for donation of reusable, non-perishable household items such as books or clothing.
 6. No power-driven processing equipment shall be used except for reverse vending machines.
 7. Containers shall be constructed and maintained with durable waterproof and rustproof material, covered when the site is not attended, and shall be of a capacity sufficient to accommodate materials collected and collection schedule. All material shall be stored in the unit and shall not be left outside of the unit when unattended. The facility shall be placed on asphalt or concrete and shall not impact any landscaping or landscaped areas.
 8. The facility shall be maintained in a clean and sanitary manner, free of litter and any other undesirable materials.
 9. Containers shall be clearly marked to identify the type of material that may be deposited. The facility shall be clearly marked to identify the name and telephone number of the facility operator and the hours of operation, and display a notice stating that no material shall be left outside the recycling containers.
- j. **Waste Management – Recycling Processing & Collection.** Recycling collection facilities that do not meet the small facility limits, or all recycling processing and collection uses shall be limited to industrial districts and comply with the following:
1. The facility shall not be adjacent to a parcel designated or planned for residential use.
 2. Structure setbacks shall be those provided for the zoning district in which the facility is located.
 3. All exterior storage of material shall be in sturdy containers that are covered, secured and maintained in good condition. Outdoor storage shall be screened by a six-foot solid fence or wall. No storage, excluding truck trailers, shall be visible above the height of the wall or fence. No outdoor storage shall be permitted in zoning districts that do not permit outdoor storage.
 4. The site shall be maintained clean, sanitary and free of litter and any other undesirable materials and shall be cleaned regularly of loose debris. Containers shall be clearly marked to identify the type of material that may be deposited, and the facility shall display a notice stating that no material shall be left outside the recycling containers.
 5. Space shall be provided on-site for a minimum of five vehicles to circulate and to deposit recyclable materials and for employee and commercial vehicle parking.
 6. All containers provided for after-hours donation of recyclable materials shall be at least 100 feet from any residential use or zoning district and constructed of sturdy rustproof construction with sufficient capacity to accommodate materials collected, and shall be secure from unauthorized entry or removal of materials.
 7. The facility shall be clearly marked with the name and telephone number of the facility operator and the hours of operation. Identification, informational and directional signs shall meet the sign standards of the zoning district.
 8. Power-driven processing shall be permitted, provided all noise level requirements are met. Light processing facilities are limited to baling, briquetting, crushing, compacting, grinding, shredding and sorting of source-separated recyclable materials and repairing of reusable materials.

9. The site shall be secured from unauthorized entry and removal of materials when attendants are not present.
10. Hazardous materials, dead animals or yard waste shall not be considered recyclable material, except as otherwise provided in this Development Code.

24-405 District Performance Standards

All principal and accessory uses in non-residential districts shall be operated in a manner that meets the performance standards in Table 24-4-5, Non-residential District Performance Standards.

Table 24-4-5: Non-residential District Performance Standards				
	C-L, MU-L	C-H, MU-H, I-L	I-M	I-H
Limits on hours of operation for businesses	6AM – 10PM	n/a	n/a	n/a
No smoke, radiation, vibration or concussion, heat or glare shall be produced that is perceptible outside a building.	☒	☒		
No smoke or particulate matter shall be produced that is a number 1 or darker on the Ringelmann chart	☒	☒	☒	
No vibration or concussion which is perceptible without instruments at the property line	☒	☒	☒	
Dust, fly ash, radiation, gases, heat, glare or other effects shall not be produced which are obviously injurious or damaging to humans or property beyond the property line;	☒	☒	☒	☒
Lighting	See Section 24-603.e			

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CHAPTER 4 ZONING DISTRICTS & USES: SECTION MAP

Current Standards	Reorganized	Comment
18.30.020 Zoning Districts established (plus general "Purpose" statements at beginning of each district in 18.38.	24-401.a District Intent & Applicability, Intent	No substantive changes, but improved description of districts relative to physical patterns, form and design characteristics of each district to better distinguish. Also added "Relationship to Comprehensive Plan" element to provide more specific link to the plan. This is a non-regulatory provision that can be used as a better guide to applying the districts. (Also intent statements for two new districts added)
18.30.040 Zoning Map Established	24-401.a District Intent & Applicability, Official Zoning Map	Simplified with no substantive change; many items in current section are incorporated into the rules of construction in Chapter 1 or procedures in Chapter 2
18.04.120 Application and Jurisdiction of Regulations	24-402.a. Allowed Uses, Use table	Generalized some uses where there was no distinction between the districts they were enabled in, but distinguished other uses by scale and intensity to better refine allowances for the character of different districts – this could allow for greater restrictions on some uses (at larger scales) but more allowances for other uses (at smaller scales). In general, all of the same or similar uses of the current code should be allowed in all of the districts, but the form / format of some may change. Notable changes include: • Adding two new Mixed-use districts • Adding "established residential" to allow existing and legal non-conforming uses an "allowed use" status in districts where residential is prohibited. This can better allow future investment in established housing (currently being addressed by a cumbersome "one time expansion" provision)
18.52 Accessory Uses & Structures 18.53 Temporary Uses & Structures	24-403 Accessory uses	No substantive changes for the current accessory uses, but emphasized a "general" accessory use allowance for any that are not specifically listed and incorporated current temporary use provisions. Moved accessory structures and fences and walls to Chapter 5 and 6 with other development standards. Notable additions to accessory uses include: • Adding an "accessory dwelling unit" (ADU –was secondary dwelling in current code) to the R-M zoning district • Revising home occupation (specifically child care) for recent bill streamlining administrative review of child care homes • Shifted "drive through" as an accessory site design / use element of otherwise allowed uses rather than an allowed principal use in the use table. The standards limit these by a combination of zoning district, context, and street types (relating to some new standards. • Added "craft manufacturing" as an accessory element of other commercial and retail uses. (could be used for micro-brewery/restaurant, bakery/restaurant, manufacturing / art studio, or similar small-scale combinations
18.46.050 Specific Use design standards; and 1846.060 – 1846-200	24-404 Specific Use standards	No substantive change except: • Some uses moved to different sections (Marijuana Uses and Adult uses in Chapter 11); Outdoor Storage and Drive-thru, Drive-in and drive up uses (24-403 Accessory uses for site design-level standards); Electronic Message Displays (Chapter 9 – Signs); and Mobile home and land lease communities(24-506 R-MH district) • Some "uses" and standards incorporated into general design / development standards (Large Commercial and Entertainment uses (24-603 – non-residential design
18.40.080	24-405 District performance standards	Converted generic "anti-nuisance" standards called "environmental standards" and generally applicable to all districts equally, to slightly more specific performance and ambient impact standards so they could potentially be refined more by different zoning districts.

Chapter 5. Residential Development Standards

- 24-501 Intent & Applicability
- 24-502 Residential Development Standards
- 24-503 Residential Design Standards
- 24-504 Neighborhood Features & Common Areas
- 24-505 Courtyard Pattern
- 24-506 Residential Micro-Housing District

24-501 Intent & Applicability

- a. **Intent.** The Residential Development Standards have the following intent.
 1. Improve the appearance and livability of neighborhoods with good civic design, and reinforce the distinct character of different neighborhoods based on their context.
 2. Design and locate parks, trails and other open spaces as focal points that shape neighborhood character.
 3. Design walkable neighborhood streetscapes, with slow traffic speeds, well-connected sidewalks, and shade and enclosure provided by street trees.
 4. Orient all buildings and lots to the public street or to common open spaces that serve as an extension of the streetscape and public realm.
 5. Promote human-scale buildings and create active social spaces along the streetscape.
 6. Provide housing variety within neighborhoods and among different neighborhoods, and ensure compatible transitions between different building types.
 7. Promote lasting and sustained investment in neighborhoods with quality design.
- b. **Applicability.** The standards in this Chapter provide lot, building development, and design standards, and generally apply to all residential development except:
 1. Where stated, some sections may only apply to specific building types, specific districts or specific scales of projects;
 2. The Character Overlay established according to Section 24-1007 may modify standards for a particular area;
 3. Residential development may be further impacted by the standards for Areas of Ecological Significance in Section 24-1004 or Hillside Development Standards in Section 24-1009; or
 4. Any use-specific standards in Chapter 4 may require a more specific or different standard for a particular use.

24-502 Residential Development Standards

- a. **Building Types and Lot Standards.** The development standards for residential districts shall be based on the different building types permitted in each district, as specified in Table 24-5-1, Residential District Building Type & Lot Standards. The design standards in other sections of this article may further specify the design and location of each building type in a specific context.



Building types in Table 24-5-1 are distinguished based on lot sizes, unit configuration, building footprints and massing, building placement, and lot open space. This diagram illustrates the key elements standards in Table 24-5-1 applied to a typical lot.



Each zoning district allows a range of building types that are compatible based on the building scale, frontage design, and intent of the specific zoning district. The R-H zoning district allows the greatest range of building types, each specifically defined by the standards of Table 24-5-1: Residential Building Type & Lot Standards.

Table 24-5-1: Residential Building Type & Lot Standards

Zoning Districts						Building / Lot Types	# of Primary Units	Development Standards							
H-A	R-E	R-L	R-M	R-H	R-MH			Area	Width [1]	Lot Open Space	Front [2]	Minimum Setbacks [4] Interior Side	Corner Side [1]	Rear	Building Height
■						Agriculture Acreage	1	40 + ac.	300'+	n/a	35'	25'	25'	50'	30'
	■	■	■	■		Detached House – Estate Lot	1	13K + s.f.	100'+	30%	25'	5'	15'	20'	30'
		■	■	■		Detached House – Standard Lot	1	6K + s.f.	60' – 99'	30%	25'	5'	15	20'	30'
		■	■	■		Detached House – Medium Lot	1	4.5K + s.f.	45' – 59'	25%	25'	5'	10'	20'	30'
			◇	■		Detached House – Small Lot	1	3K + s.f.	35' – 44'	20%	10'	5'	10'	20'	30'
			◇	◇	■	Detached House – Small Format	1	1.5K + s.f	25' – 34'	15%	10'	3'	8'	10'	40'
			■	■		Multi-unit House – Standard Lot	2-4	6.5K + s.f. 2K s.f. per unit	60'= 99'	25%	25'	5'	10'	20'	30'
			■	■		Multi-unit House – Medium Lot	2-3	4.5K + s.f. 2K + per unit	45 – 59'	20%	25'	5'	10'	20'	30'
				■		Multi-Unit House – Small Lot	2	3K + s.f.	35' – 44'	15%	10'	5'	10'	20'	30'
			■	■		Row House – Standard Lot	3-8	1.5K + s.f. per unit	21' – 30' per unit	12%	10'	5' [3]	10'	10'	40'
				■		Row House – Small Lot	3-8	1K + sf. per unit	14' – 20' per unit	10%	10'	5' [3]	10'	10'	40'
			◇	■		Apartment – Small Lot	3-12	4.5K – 10K s.f.	40' – 79'	200 s.f./unit	10'	5' [3]	10'	10'	40'
				■		Apartment – Medium Lot	13-24	10K – 30K s.f.	80' – 150'	150 s.f./unit	10'	5' [3]	5'	10'	50'
				□		Apartment – Large Lot / Complex	20+	30K + s.f. 1.5K + s.f. per unit	150'+	300 s.f./unit	25'	10' [3]	15'	10'	70'
□	□	□	□	□	□	Civic		30K + s.f.	100' +	40%	25'	5'	20'	20'	40'
■	■	■	■	■	■	Accessory Buildings		See Residential Accessory Buildings in Section 24-502.c							
			■	■		Accessory Buildings		See 24-403.b. for ADUs							

■ Allowed

◇ Limited to projects that meet the housing diversity requirements of Section 24-502.d.

□ Civic buildings and uses, and Apartments – Large Lot or Complexes shall only be located on collector or arterial streets in residential districts.

Zoning Districts: H-A Holding-Agriculture; R-E Residential Estate; R-L Residential Low Density; R-M Residential Medium Density; R-H Residential High Density; R-MH Residential Micro-Housing

[1] Corner lots shall add at least 5' to the required lot width. Otherwise, lot width ranges shall determine the applicable building type standards within a category

[2] Front setbacks shall be modified based on context and the Frontage Design standards in 24-503.b.

[3] Row Houses, Small Apartments, and Medium Apartments shall have a 10' side setback when abutting lots with a detached house; Large Apartments / Apartment Complexes shall have a 20' side setback when abutting lots with a detached house.

[4] Buildings that require a certificate of occupancy shall be setback at least 250' from an oil/gas facility, and 50' from a well that has been plugged and abandoned. Buildings that do not require a certificate of occupancy shall be setback 150' from a tank battery or oil/gas well (unless plugged and abandoned). See Section 24-1102 Oil & Gas.

- b. **Dimension Exceptions.** The following are exceptions to setback and building dimensions standards established in Table 24-5-1: Residential Building Type & Development Standards.

1. *Lot and Building Configurations.*

- (a) Row houses and side-by-side duplexes may have individual units platted on separate lots, provided the building meets the standards in Table 24-5-1 and each unit meets any per-unit or proportional standards for each lot. The lots shall be platted with a party wall according to building code standards.
- (b) Side lot easements between abutting lots may be granted in association with a plat to have the effect of “zero lot line” patterns. Easements for exclusive use of the side yard may be granted to the abutting owner to meet the lot open space requirements and design standards in Section 24-503 for the grantee, yet maintain the required setbacks from the platted lot line for each building in Table 24-5-1 for the grantor. Easements shall be private agreements and account for all access and maintenance scenarios for the lots, open space, and buildings.
- (c) The front setbacks for each building may be modified according to the frontage types and Frontage Design Standards in Section 24-503.b.
- (d) Lots may be configured in a Courtyard Pattern as provided in Section 24-505.



Figure 24-5-3 Side Lot Easements

Side lot easements may be used to provide more contiguous areas to meet the lot open space requirements, and have the effect of a zero lot line configuration. (24-502.b.1.(b))

2. *Setback Encroachments.* The following encroachments into the required setback are permitted, except in no case shall this authorize structures that violate the provisions of any easement.
 - (a) Primary entrance features may encroach beyond the required front building line, as specified in Section 24-503.b.
 - (b) Structural projections such as bay windows, balconies, canopies, chimneys, eaves, cornices, open fire escapes, egress wells, or other non-foundational overhangs or projections may extend up to 4 feet from the foundation and encroach into the setback, but no closer than 3 feet from any lot line. This exception shall be limited to no more than 20% of the total area of a building elevation.
 - (c) Unenclosed decks or patios at or below the first floor elevation may extend into the rear or side setback but no closer than 5 feet to any lot line. Where a roof is

- provided, it shall only be single story and shall remain unenclosed with at least 65% open and unobstructed on 3 sides.
- (d) Ground-mounted mechanical equipment, meters, and utility boxes accessory to the building may be located in the side or rear setback provided that it extends no more than 6 feet from the principal building, no closer than 3 feet to the lot line, and is screened from public right-of-way by structures or landscape. These limitations do not apply to any utility structures otherwise authorized to be located in easements or rights-of-way, subject to the design standards of those specific authorizations.
 - (e) Any other accessory use or structure within the setback, not specified in Section 24-502.c, shall have a setback of at least 1/3 its height from the property line.
3. **Height Exceptions.** The following are exceptions to the height limits in Table 24-5-1:
- (a) Building elements integral to the design and construction of the building, such as parapet walls, false mansards, or other design elements essential to a quality appearance of the building may extend up to 6 feet above the roof deck of a flat roof.
 - (b) Architectural features such as chimneys, ornamental towers or spires, and similar accessory features that are cumulatively less than 20% of the building footprint may extend up to 50% above the actual building height.
 - (c) Functional and mechanical equipment such as elevator bulkheads, cooling towers, smoke stacks, roof vents or other equipment may be built up to their necessary height in accordance with building codes, provided they are screened according to the standards of this code.
- c. **Accessory Buildings - Residential.** Accessory buildings shall be permitted in association with, and on the same lot as, a principal building or use, subject to the standards in Table 24-5-2, Residential Accessory Structures, and to the following additional limitations.

Table 24-5-2: Residential Accessory Structures

Type	Quantity	Size	Height	Setbacks
Minor Structure (small shed, and similar structures)	1 / lot; + 1 / each 10k s.f.; - Maximum of 3	120 s.f. max	12' max	0' side or rear; 5' if on a concrete slab or similar foundation; and - Behind the rear building line of the principle structure
Secondary Building (detached accessory building)	1 / lot 2 / lot, over 1 ac.; 1 / principal building (apartments)	50% of principal building footprint, up to 1,200 s.f. max.	25' max, but no higher than principal structure.	5' from side and rear; 20' from street side; and - At least 12' behind the front building line of the principal structure
Any building over 12' high or more than 250 square feet shall meet the design standards in Section 24-502.c.2.				
Out-building (large storage building, barns, etc.)	1 / lot over 1 ac. + 1 / each 3 ac. - Maximum of 4	2,000 s.f. max 5,000 s.f. max in H-A	25' max 60' max in HA	10' from side and rear; 30' from any street side; and - Behind the rear building line of the principal structure
Applies to detached houses and civic / institutional uses only				

1. **Generally.**
 - (a) All accessory buildings shall be at least 6 feet from the principal building, or other distance specified by applicable building codes based on fire ratings of adjacent walls.

- (b) Accessory buildings shall be clearly incidental and subordinate to the principal building or use, in terms of scale, location, and orientation.
 - (c) Minor accessory structures 120 square feet or less, and not on a foundation or slab do not have a required side or rear setback, but should be movable and are otherwise placed “at risk” by the owner with regard to any easements, fence, or screening requirements.
2. **Secondary Building Standards.** In any residential district, secondary buildings over 250 square feet shall or over 12 feet high shall meet the following massing and design standards to ensure compatibility with the principal structure:
- (a) The wall height shall be no more than 9 feet above the finished floor, except that gables, dormers, or other subordinate walls may support a pitched roof.
 - (b) The roof peak or other top of structure shall not exceed 22 feet above finished floor for pitched roofs with a 6:12 pitch or greater, and no more than 16 feet for shed roofs or pitched roofs below a 6:12 pitch.
 - (c) The design shall be compatible with the principal building considering materials, architectural details and style, window and door details, and roof forms.
 - (d) Secondary buildings with vehicle access directly from an alley or shared easement may be built on the lot line at the alley or shared easement.
- d. **Housing Diversity.** Individual projects shall meet the following housing diversity guidelines based on the scale and context of the project. Diversity shall be based on the categories and building types indicated in Table 24-5-3, and be applied according to Table 24-5-4. The guidelines shall be met by one or a combination of the following:
- 1. Use a mix of housing types permitted in the zoning district, or propose more than one zoning districts within the project.
 - 2. The Director may waive this requirement where there is an existing mix of housing within ¼ mile of the project that provides a comparable mix of housing considering the size, price points, and types of housing.
 - 3. The Director may approve alternative compliance if the applicant submits evidence that achieving the mix unreasonable based on industry data and conditions beyond the applicant’s marketing information.

Table 24-5-3: Housing Categories & Building Types

Category I: Detached Houses	Category II: Missing Middle Housing	Category III: Multi-family and Mixed Use
▪ Detached House - Estate Lot ▪ Detached House -Standard Lot ▪ Detached House - Medium Lot	▪ Detached House – Small Lot ▪ Detached House – Compact / Small Format ▪ Multi-Unit House – Standards Lot ▪ Multi-unit house – Medium Lot ▪ Row house – Small Lot ▪ Row house – Large Lot ▪ Apartment - Small	▪ Apartment – Medium ▪ Apartment – Large ▪ Apartment – Complex ▪ Apartment – Mixed-use Building

Table 24-5-4: Housing Diversity

Project Scale	Planning Context (See Comprehensive Plan Growth Framework, Neighborhood Types)		
	Rural Neighborhoods / Urban Reserve Area	Suburban Neighborhoods	Legacy Urban / Downtown Neighborhoods
	< 40 Units		
	no requirement	no requirement	no requirement

Table 24-5-4: Housing Diversity

Project Scale	Planning Context (See Comprehensive Plan Growth Framework, Neighborhood Types)		
	Rural Neighborhoods / Urban Reserve Area	Suburban Neighborhoods	Legacy Urban / Downtown Neighborhoods
40-100 Units	no requirement	- At least 2 building types - No more than 70% of one type	- At least 3 building types - No more than 50% of one type - At least 20% Category II
101-200 units	- At least 3 building types - No more than 50% of one type	- At least 3 building types - No more than 50% of one type - At least 20% Category II	- At least 3 building types - No more than 50% of one type - At least 30% form Category II
201-350 units	- At least 3 building types - No more than 70% from Category I	- At least 3 building types - No more than 50% of one type - At least 20% Category II	- At least 3 building types - No more than 50% of one type - At least 30% form Category II
351+ Units	- No more than 50% of a single type among all housing types - At least 30% from Category II		

- e. **Fences & Walls.** Fences and walls in residential districts shall be limited to the sizes and locations in Table 24-5-5, Residential Fences & Walls, and the following additional standards.

Table 24-5-5 Residential Fences & Walls

Location	
Front <i>In the front setback or any location in front of Front Building Line.</i>	3.5' high 3.5' – 6' if it is ornamental design that is at least 75% open (i.e. wrought iron). - Up to 8' for ornamental features at pedestrian entries.
Side and Rear <i>In the side, street side, or rear yard and behind the Front Building Line.</i>	6' high - A fence or wall outside of required setbacks (i.e. in the buildable envelope), and behind front building line can exceed 6', but may be limited by building codes or other general development and design standards.
Perimeter Fences <i>Any fence within 30' of a Collector or Arterial street right-of-way as part of Perimeter Landscape in Section 24-803.</i>	Any fence designed as part of a perimeter landscape area along collector or arterial streets, or otherwise located within 30' of a collector or arterial right-of-way and longer than 100', shall meet the following standards: - All fencing shall be softened with landscape materials on the street side of fences meeting the perimeter landscape standards of Section 24-802. - Expanses of over 100' shall be broken up by either: - Offsets of +/- 3' on 1/3 of length for every 150' span; or - Ornamental designs on at least 50' of every 150' space that is at least 75% open (i.e. wrought iron); or - Architectural pillars or posts (i.e. stone, or masonry) at least every 50'. - Alternatives may be approved by the Director in association with the perimeter landscape plans for in Section 24-803, Streetscapes in 24-301, and Neighborhood Features & Common Areas (Trails) in 24-504.
All Locations	All fences or walls along rights-of-way or easements shall be set back at least: 1' from any ROW or easement that prohibits structures; otherwise fences in easements shall be permitted only subject to specific easement language and limitations. 2' from any sidewalk. 3' from the edge of any alley or similar vehicle access surface - Fences or walls may only be located in the right-of-way or public easement by a revocable right-of-way permit from the Public Works Department

1. **General Fence & Wall Design Standards.**

- (a) All fences or walls located along common lot lines shall be located so the fence is on the property line, or at least three feet from the property line. Any areas set back three feet or more, which could become enclosed by other similarly located fences, shall provide at least one gate for access and maintenance equipment.
 - (b) The finished side shall face adjacent property or any public right-of-way, public space, or common areas.
 - (c) Any fence or wall in the floodplain shall also require a floodplain development permit.
 - (d) All fence or walls shall be located and designed to comply with sight distance requirements of 24-301.d.2. Any fence or wall that could potentially create a sight obstruction for vehicles crossing pedestrian areas or entering the street may require greater transparency or additional location restrictions to allow for safe sight distances for the vehicle.
 - (d) Temporary fences for construction may be up to 6 feet tall or as otherwise specified in construction permits
 - (e) All fences and walls may be subject to additional standards of the building code, approved drainage plans for the lot, or other design and development standards. In particular, the following require a building permit when allowed by this code:
 - (1) Any fence or wall over 6 feet.
 - (2) Any retaining walls over 4 feet.
 - (3) Walls in the setbacks over 6 feet shall only be permitted by alternative compliance in Section 24-208.
2. **Materials.** Fences and walls shall be consistent in character, materials and appearance with the architecture of the principal building(s) on the same lot. Fences and walls shall be constructed out of any of the following materials:
- (a) Wood or vinyl simulating wood. Wood shall be either naturally rot resistant (such as cedar), or pressure treated for rot resistance;
 - (b) Wrought iron or aluminum simulating wrought iron;
 - (c) Stone, brick, concrete with stone or brick veneer, pre-cast concrete simulated stone or brick, or decorative concrete textured to simulate masonry; or
 - (d) Chain link or vinyl clad chain link, in the side or rear yard only and limited to 4 feet high, or up to 12 feet for any security fence around sports facilities, courts, pools or similar facilities, provided it is 20 feet from any lot line and provided all portions over 8 feet remain free of opaque screens.

24-503 Residential Design Standards

- a. **Applicability.** The Design Standards shall apply to the R-L, R-M, and R-H zoning districts, and to any residential building type permitted in non-residential zoning districts. The standards shall specifically apply to the following circumstances:

Table 24-5-6: Applicability	
Activity	Applicability of Standards
Site or Landscape work on less than 50% of the lot	Standards only apply to changes associated with the proposed work, and only to the extent that any non-conforming situations for the entire site are brought closer to compliance.
Site or Landscape work on 50% or more of the lot.	All site and landscape for the entire lot shall be brought into compliance with the standards.

<i>Rehabilitation, remodeling or additions to buildings that add more than 200 square feet to the building footprint or mass, but less than 50%.</i>	Standards only apply to changes associated with the propose work, and only to the extent that any non-conforming situations for the entire site are brought closer to compliance. However, staff may require full compliance for the building and lot for any rehabilitation, remodel or addition that is greater than 75% of the assessed value.
<i>New primary structure; or Rehabilitation, remodeling or additions to the building that add more than 50% to the building footprint or mass.</i>	All standards for the entire building and lot shall be met.
<i>Ordinary Maintenance</i>	The standards shall not apply to ordinary maintenance of existing buildings, except that maintenance to any building may not occur in a manner that brings the building or site to a greater degree of non-conformance with these standards.

- b. **Frontage Design.** The design of lot frontages establishes the relationship of buildings and lots to the streetscape, including building placement, lot access, garage extent and location, and entry features. Frontage Types designed according to the standards and design objectives of this subsection may be used to modify the front setback established in Table 24-5-1.

1. **Design Objectives.** Frontage types shall be applied to meet the following design objectives:
 - (a) Enhance the image of neighborhoods by coordinating streetscape investment with private lot and building investment.
 - (b) Design frontages to the particular context of the neighborhood, block and street.
 - (c) Coordinate development across several lots, considering the cumulative impacts on streetscapes from the frontage design of each lot.
 - (d) Orient all buildings and lot frontages to the streetscape, while still promoting effective transitions from public spaces to private spaces on the lot.
 - (e) Limit the impact on the neighborhood streetscape from frontages designed for car access, particularly on narrower lots or walkable streets and neighborhoods.
 - (f) Provide outdoor livable spaces that activate the streetscape.
 - (g) Use front entry features to reinforce neighborhood character, promote unique design with subtle variations to building patterns, and create consistent, human-scale connections to the streetscape.
2. **Frontage Design Standards.** Frontage types shall be designed according to the standards in Table 24-5-7, Residential Frontage Types & Design Standards. Subsections following the table provide specific design strategies and techniques to be used in meeting these standards and design objectives. Where multiple frontage types are permitted, the frontages should be similar for all lots on the same block face or gradually transition to different building placement and frontage types on adjacent lots. In general, the front building line of adjacent buildings shall not differ by more than 5 feet.

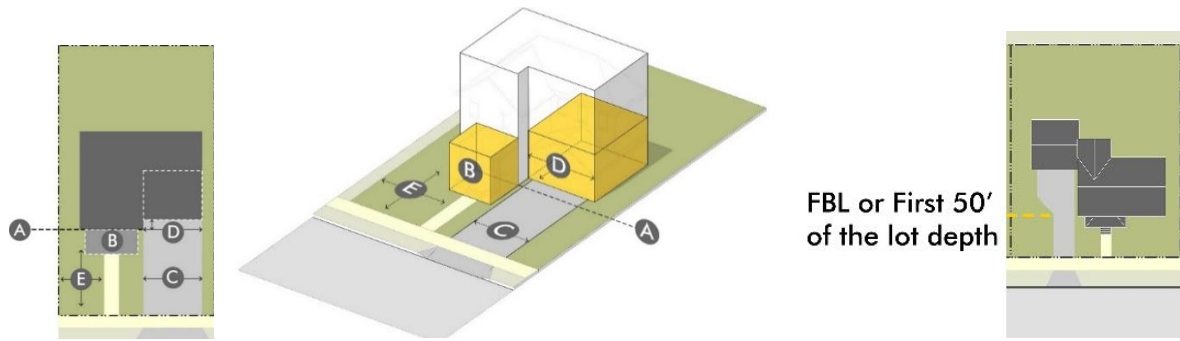
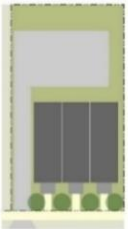
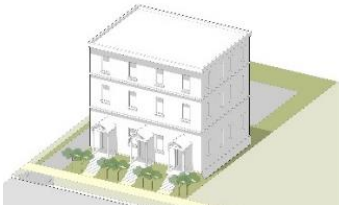


Figure 24-5-4 Frontage Design Standards

This diagram illustrates the key elements of frontage design in table 24-5-7: (A) front building line; (B) front entry features, (C) driveway widths; (D) garage extent and location, and (E) landscape areas. These elements determine the relationship between the building, the lot, and the streetscape, and affect the character of the area when applied across multiple lots on a block.

Table 24-5-7: Residential Frontage Types & Design Standards

Frontage Element		Terrace Frontage	Neighborhood Frontage	Suburban Frontage
		 	 	 
Application	R-L		☐ Required frontage type for R-L in the Legacy Urban & Downtown Neighborhood areas	☒
	R-M	☐	☒	
	R-H	☐	☒	
Front Building Line		10' – 25'	25' – 60'	25' +
Front Entry Feature		Required, See Section 24-503.b.5	Required, See Section 24-503.b.5	Required, See Section 24-503.b.5
Driveway Width		15% of lot width, up to 20' maximum	20% of lot width, up to 20' maximum	50% of lot width, up to 27' maximum
Garage Limitations		20% of facade – must be at or behind FBL; - Up to 35% if stepped back 12'+ from FBL	35% of facade – must be at or behind FBL; - Up to 45% if stepped back 12'+ from FBL	65% of facade –no more than 12' in front of FBL
Landscape ^[1]		60% minimum landscape; and 40% maximum hardscape.	70% minimum landscape; and 30% maximum hardscape.	50% minimum landscape; and 50% maximum hardscape

■ Required, default standard

□ Optional, alternative standard to be applied based on context

^[1] Landscape refers to allocation of space between front lot line and front building line. See Section 24-802 Landscape Design for planting requirements, standards, and specifications.

3. **Driveway Limits.** Driveway limits maintain active spaces along the frontage, preserve areas of streetscape landscape, and reduce curb cut width protecting sidewalks and curbside parking. The following standards apply to the driveway limits in Table 24-5-7:
- (a) Driveway width limits apply to the first 50' of the lot depth, or up to the Front Building Line, whichever is less.
 - (b) Any garage meeting the design standards in this Section may have a driveway expanded to the width of the entry, provided:
 - (1) The expansion extends no further than 20' from the garage entry;
 - (2) The expansion cannot be closer than 10' to the front property line; and
 - (3) The width of the driveway within the right of way and first 10' shall be reduced to no wider than 20' wide.
 - (c) In cases where driveway width and garage standards prohibit front-loaded garages and driveways on a particular lot, a range of options with different access patterns and garage locations may be used.
 - (d) All parking shall be outside of the frontage area, except detached houses or multi-unit houses may have one of the required parking spaces per unit in the driveway, provided it is at least 7 feet by 18 feet, entirely outside of the right of way, and does not interfere with any pedestrian area.

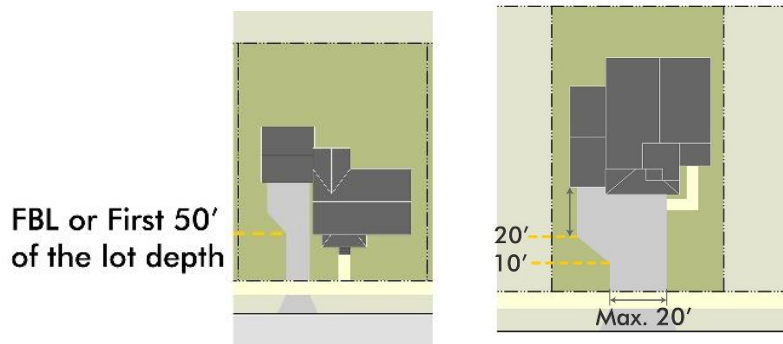


Figure 24-5-5 Application of Driveway Limits

Driveway limits shall apply to the first 50' or up to the Front Building line, whichever is less, except any front-loaded garage meeting these standards may have a driveway expanded to the width of the entry 20 feet in front of the entry. (24-503.b.3.(a) and (b).

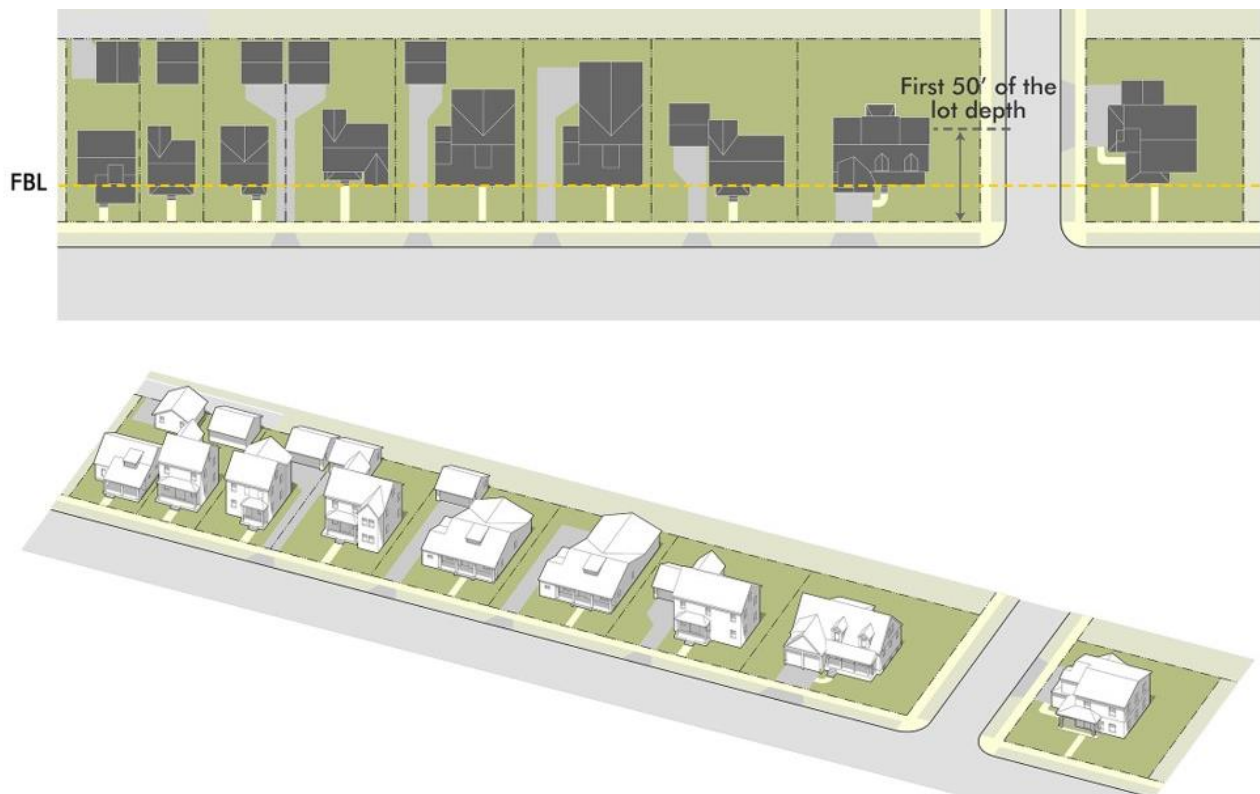


Figure 24-5-6 Driveway & Garage Options

Frontage type standards are based on lot widths to recognize both the proportionate and cumulative effect that frontage design elements have on the streetscape, and narrower or compact lots may be more limited. In these situations, options that reduce the car-orientation yet accommodate the convenience of access of vehicles should be used. Options include narrower entries, side entries, shared drives, common lanes, or internal block alleys. (24-503.b.3.(c)).

4. **Garage Design:** Garage design reduces the extent; massing, and proximity and of front-loaded garages relative to the streetscape, and promote more human-scale building elements and active living areas along the frontage. The following standards apply to the garage limits in Table 24-5-7:
 - (a) Garage limits apply to front-loaded garages. Alternatives such as detached garages, side or rear-loaded garages, or attached garages that are accessed from the front but located on the rear of buildings are not subject to the limits.
 - (b) Garage limits shall be measured by the exterior walls of the floor plan or other clearly distinguished massing element on the front facade;
 - (c) Any front-loaded garage that is more than 35% of the elevation or that projects in front of the main mass of the house shall include at least 2 of the following features to reduce the scale and prominence of the garage:
 - (1) A front entry feature associated with the non-garage mass of the building that projects in front of or is no more than 4 feet behind the garage entry, and is at least 10 feet wide.
 - (2) The wall plane with a garage door is limited to no more than 200 square feet, and distinguished from other wall planes by the following:
 - i. At least one bay stepped back at least 2 feet; and/or

- ii. Ornamental features such as canopies, eyebrows, or cantilevers distinguish the wall plane of any upper level gables or living space.
- (3) Garage doors and any other related wall planes have at least 15% windows, and other ornamental trim or accents are included on the doors and pillars related to the garage entry.

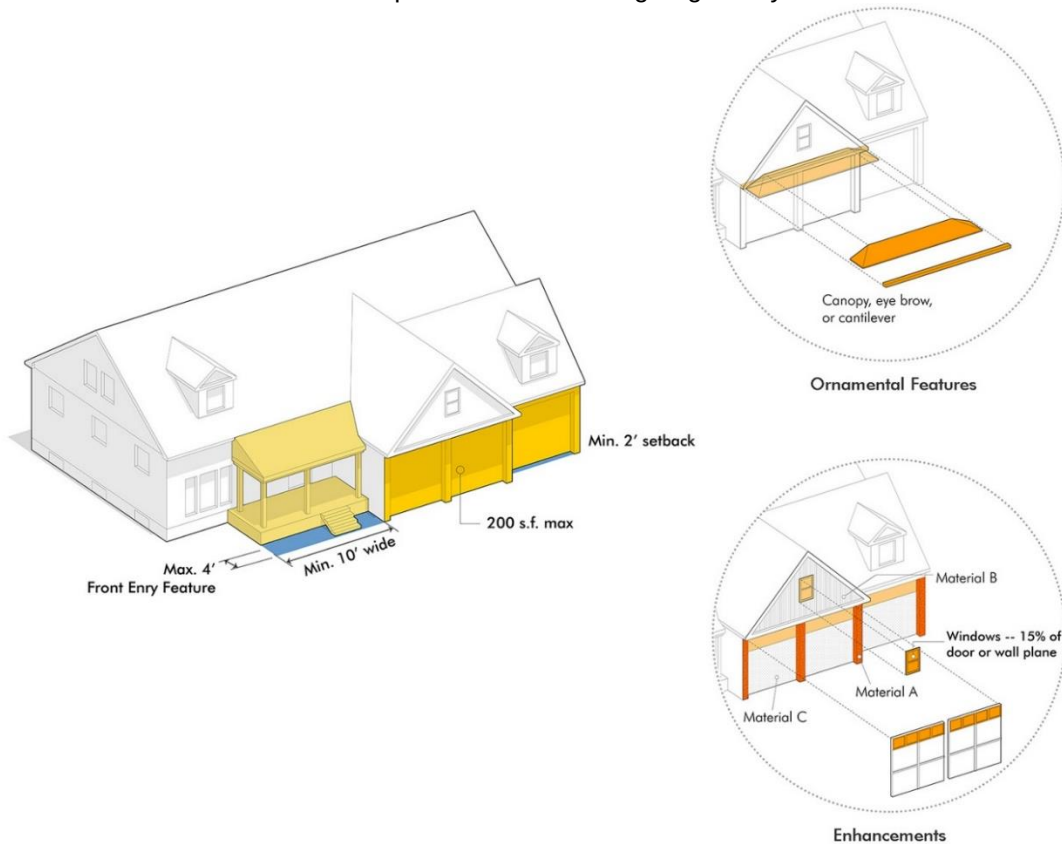


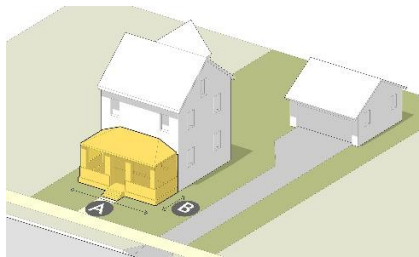
Figure 24-5-7 Front Loaded Garage Design

Where front-loaded garages project in front of the main mass or occupy a larger percentage of the elevation, design strategies can be used to reduce the scale and coordinate the garage entries with other livable spaces of the building. (24-503.b.4.)

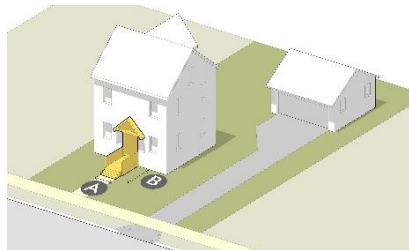
5. **Front Entry Features.** The entry feature standards and design techniques in Table 24-5-8 shall be used where entry features are required by Frontage Types in Table 24-5-7, and are otherwise recommended to achieve the design objectives of this Section and to meet the standards of Table 24-5-9, Building Design Standards.

Table 24-5-8: Front Entry Features			
Design Element	Width	Depth	Details & Ornamentation
Porch	12' minimum	8' - 12'	- Decorative railing or wall 2.5' to 4' high along at least 50% of the perimeter. - If not roofed, a canopy, pediment, transom windows, enlarged trim and molding or other similar accents accompany the front entrance.
	Suburban Frontage may reduce porch to 48 s.f.; at least 4' in all directions.		
Stoop	6' - 12'	6' - 8'	Decorative railing or walls along steps and side of stoop.

			- Ornamental features accent the front entrance such as canopy, pediment, transom windows, enlarged trim and molding, or other similar accents that emphasize the door over other facade features. - May be associated with a single-story enclosed front entry portico, projecting from the building.
Entry Court	12' +, but never more than 50% of facade	10' – 24'	- Recessed entry within the building footprint. - Decorative wall or railing, no higher than between 2.5' and 6' high along at least 50% of the opening. - Ornamental pillars, posts or landscape accent the pedestrian entrance and create a gateway into the entry court.
General Design	- All entry features shall have a sidewalk or path at least 4 feet wide directly connecting the entry feature to the public sidewalk or street. For Suburban Frontage, this can connect via the driveway. - All entry features shall be integrated into the overall building design including compatible materials, roof forms, and architectural style and details. - Entry features shall be single-story, so that any roof structure and any ornamentation occur between 8' and 14' above the floor-level of the entry feature. - Entry features meeting these standards may encroach up to 10 feet in front of the front building line, but never closer than 5 feet to a public or common property line, provided they are unenclosed with at least 65% open and unobstructed on all sides that project into the setback. - Any building with more than 150 feet of front facade, or any side greater than 200 feet and permitted within 20 feet of the street, shall have 1 entry feature for every 100 linear feet of building frontage on the street.		



Porch



Stoop



Entry Court

Figure 24-5-8 Front Entry Features - Types

The porch, stoop and entry court are three distinct types of entry features that create active, social spaces and human-scale details on the residential frontages. Spaces with a minimum width (A) and depth (B) specified in Table 24-5-8 provide usable social spaces, activate the streetscape and frontage, and contribute to the massing and modulation required by the building design standards.

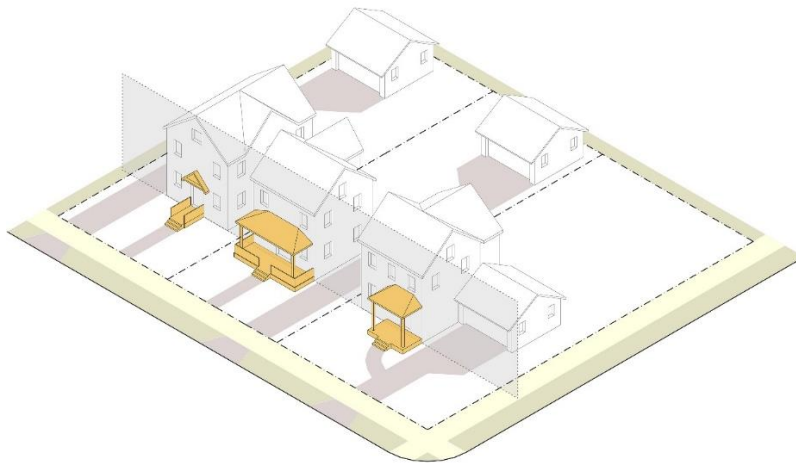


Figure 24-5-9 Primary Entry Feature - Encroachments

Front entry features meeting the standards of this section create social spaces that help activate streetscapes, and create a variety of human-scale details along blocks. These features may encroach into the front setback to improve the frontages along blocks. (24-503.b.5 / Table 24-5-8)

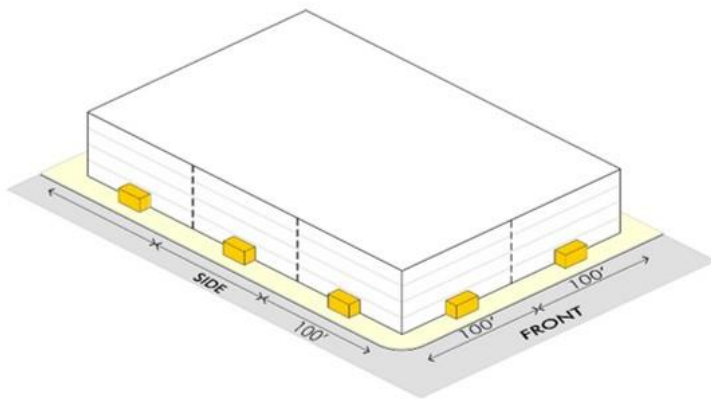


Figure 24-5-10 Primary Entry Feature - Large Buildings

Front entry features should be more frequently located on larger buildings with wall planes in close proximity to the street. This breaks up the building massing and activates the streetscape. (24-503.b.5 / Table 24-5-8)

5. **Alternative Compliance.** Alternative compliance to the frontage design standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
 - (a) The context presents clear pattern of existing buildings and lots on the same block and opposite block face with a different arrangement in terms of the front building line, driveway access patterns, and extent and placement of garages.
 - (b) An alternative design allows the building, garage, and access to be sited in a way that preserves topography or other natural features on the site, and does so in a way that equally or better meets the design objectives.
 - (c) The alternative preserves the streetscape landscape area and the curb areas available for on-street parking to the greatest extent practical.
 - (d) For detached houses or multi-unit houses alternatives to the driveway widths and setbacks may be approved for a required, accessory or guest parking space provided:
 - (1) No other reasonable alternative exists;
 - (2) It is limited to no more than 140 square feet of additional paved or all weather surfaces;
 - (3) The expanded paving is at least 10 feet from the front lot line if 45 degrees to perpendicular to the front, or at least 25 feet if 45 degrees to parallel to the front;

- (4) All drainage and potential impacts on adjacent property are addressed; and
- (5) The Director may require other design or landscape mitigation to ensure the parking and access is as discrete as possible,
- (e) In all cases the deviation is the minimum necessary to address the circumstance and does not negatively impact other design standards applicable to the building or site.

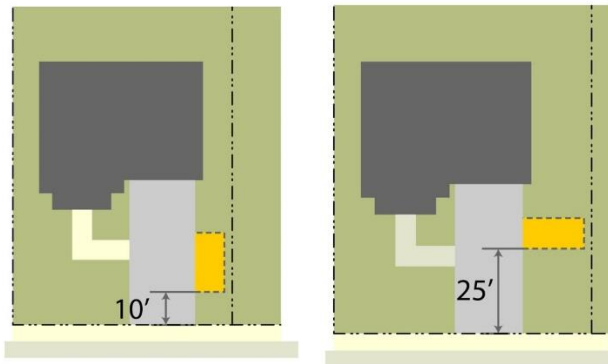
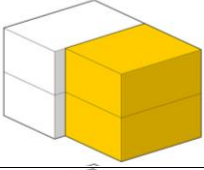
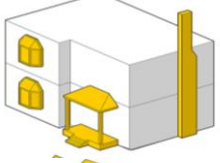
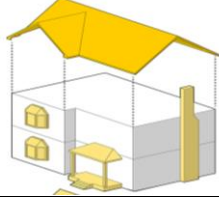
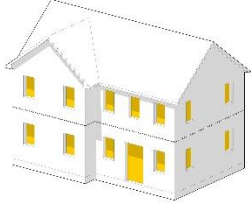
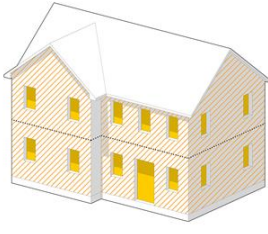


Figure 24-5-11 Accessory Parking Pad

To meet parking requirements, accessory parking pads may be approved by alternative compliance provided they minimize impacts on the streetscape and adjacent property. (24-503.b.5.(c))

- c. **Building Design.** Building design refines the scale and form of buildings beyond basic height, setback and lot coverage standards.
 - 1. **Design Objectives.** The following design objectives shall be used in applying the building design standards in this Section.
 - a. Relate buildings to public realm and streetscape in a consistent manner and create a compatible massing along the block.
 - b. Arrange buildings in a way that creates meaningful outdoor spaces on the site, with building designs that define and activate these spaces.
 - c. Use combinations of height, width, depth, and roof forms break down the building volume into smaller-scale masses
 - d. Blend a variety of building sizes and types and create compatible transitions between adjacent buildings of different scale by mimicking similar massing and proportions of adjacent development.
 - e. Use materials and human-scale architectural features to create depth, texture, variation and visual interest to walls, particularly on larger facades, along streetscapes, and near active open spaces or adjacent lots.
 - f. Encourage unique architectural expression, and promote the use of key details and design characteristics inherent in the chosen style for the building.
 - g. Promote enduring investments with the application of durable, quality materials.
 - 2. **Building Design Standards.** Table 24-5-9, Building Design Standards provides standards for massing and facade design. Sub-sections following the table provide specific design strategies and techniques to be used in meeting these standards and design objectives.

Table 24-5-9: Building Design Standards

Design Detail	Building Type	Detached House (all), and Multi-Unit House	Row House, Apartment (all)
Wall Plane Limits. Maximum wall plane without a massing variation of 4'+ on at least 25% of elevation.		800 s.f. or 50 linear feet	1,200 s.f. or 70 linear feet
Blank Wall Limits. Maximum wall plane without modulation on at least 20% of the wall plane.		500 s.f. or 30 linear feet	800 square feet or 45 linear feet
Roof Plane Limits. Maximum roof plane without offset of at least 2', complex planes, dormers or gables.		600 s.f. or 50 linear feet	1,000 s.f. or 70 linear feet
Transparency. Minimum window and door openings per elevation (includes decorative trim, molding and casing)		Front – 20%; 15% 1-story Side – n/a, except 8% if side yard is > 2x required setback Street-side - 10% Rear - 8%	Front – 20% Side – 8% Street-side - 10% Rear - 8%
Materials		Primary Materials –80% - 90% (limit 2 materials, no more than 80% of any one material) Secondary / Accent Materials - 10% - 20% (limit 2 materials)	Primary Materials: Lap siding (9" maximum board); vertical siding; alternative exposure pattern siding; brick, stone, stucco, synthetic / veneer brick or stone; and standing seam metal (roofs only) Secondary / Accent Materials: All primary materials, plus architectural metals, integrally tinted and textured masonry block; and wood or prefabricated synthetic trim or architectural details.

3. **Wall Plane Limits.** Massing techniques use changes in the building footprint, height, or significant shifts in wall and roof planes to break down the volume of larger buildings. Wall planes that exceed the wall plane limits in Table 5-5 shall have at least 25% of the elevation differentiated by one or more of the following massing techniques:
- Break the building into distinct masses (primary mass, secondary mass, and wings), where portions of the building are offset from the main mass by at least 8 feet, or are otherwise be noticeably smaller and subordinate to the main mass.
 - Step back portions of the building or upper stories by at least 4 feet in association with meaningful outside space, such as a balcony, deck, patio or entry court.
 - Use cantilevers of upper stories that provide at least a 2 feet overhang of other portions of the wall plane.
 - Provide single-story entry feature that project at least 6 feet from the wall plane.

- (e) Articulate rooflines by stepping the roof, using gables and dormers, dropping eaves, and using prominent overhangs to create offsets and projections of at least 2 feet.
- (f) Where larger buildings are next to smaller buildings, or are along a block with smaller buildings, step the height of the building or offset secondary masses to create compatible massing with adjacent structures.

Min. 25% of elevation
has massing variation

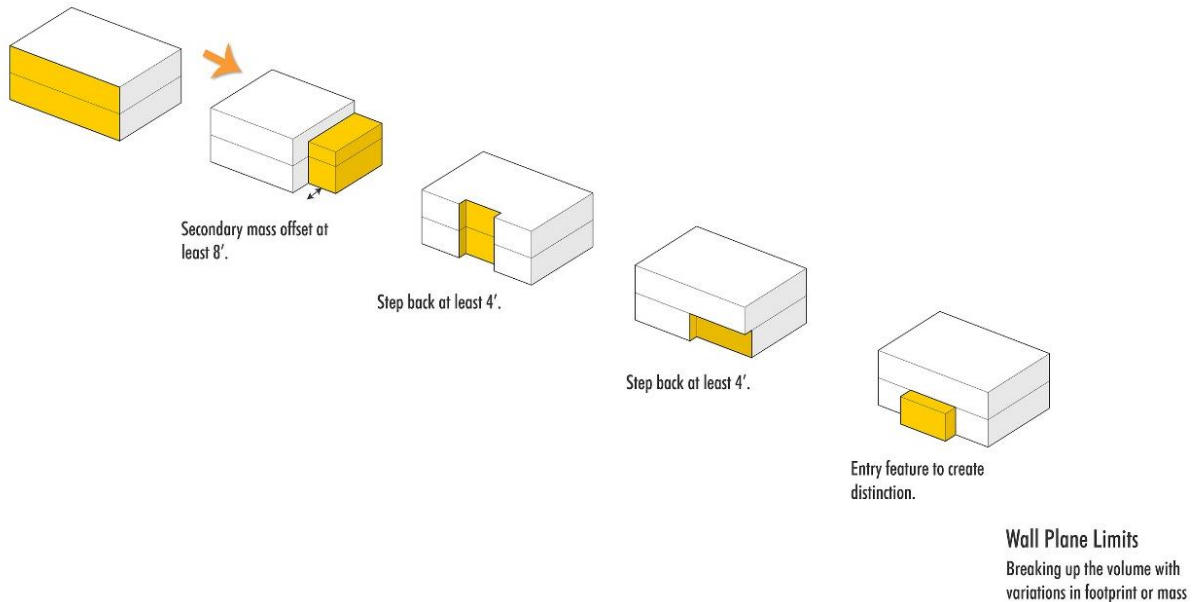


Figure 24-5-12 Wall Plane Limits

Wall planes over the size specified in Table 24-5-9 shall be broken up with a range of techniques so that at least 25% of the elevation is differentiated with distinct wall planes.(24-503.c.3.).

4. **Blank Wall Limits.** Modulation uses materials, ornamental details, and subtle variations in the wall plane to break up blank wall planes. Wall planes that exceed the blank wall limits in Table 24-5-9 shall use one or more of the following techniques so that at least 20% of the facade is distinguished with modulated elements:
 - (a) Create projections in the wall planes with bay windows, balconies, awnings, or canopies that project at least 2 feet from the wall plane.
 - (b) Create voids in the wall plane with step-backs of upper stories or balconies that recess at least 4 feet beyond the wall plane.
 - (c) Differentiate stories, roofs, or other masses with prominent trim materials and/or incorporate material changes on different modules of the building. Significant trim or ornamentation used to break up blank walls or wall planes shall project between 2 inches and 2 feet from the wall and be at least 8 inches wide.
 - (d) Use color changes and accent materials to emphasize distinct components of the facade. Material and color changes should wrap corners and occur at the inside corner of a massing element, or occur in association with a significant trim or ornamentation to give a finished and unified appearance to the element.
 - (e) Break up remaining large expanses of blank walls with facade composition that considers the location and grouping of windows, doors, or architectural details.

Min. 20% of wall plane
has details & variation

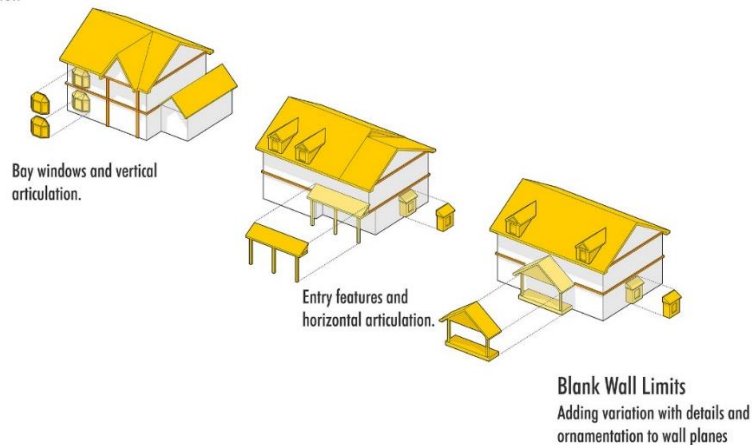


Figure 24-5-13 Blank Wall Limits

Wall planes over the size specified in Table 24-5-9 shall have ornamental details or subtle variations in the wall plane on at least 20% of any wall plane to eliminate large expanses of blank walls. (24-503.c.4).

5. **Transparency.** Windows and doors provide transparency, detail, and visual rhythm on the facade, and they break up blank walls with the location, pattern, and proportions of these openings. The following techniques should be used to achieve the design objectives of this sub-section and to meet the windows and doors requirements of Table 24-5-9, Building Design Standards:
 - (a) Provide transparency with the location, pattern, and proportions of windows and doors, and create relationships to surrounding spaces and buildings.
 - (b) Incorporate distinct and visually significant windows and doors (size, orientation, and ornamentation) to emphasize key locations on the facade or to relate to important outside open spaces.
 - (c) Locate windows doors to create a coordinated facade composition considering the entire facade as a whole, and to break up large expanses into different components with the grouping of windows and doors.
 - (d) Emphasize a hierarchy of doors with different levels of ornamentation and details, particularly to make multi-unit houses compatible with adjacent detached houses and appear as single houses.
 - (e) Locate and design windows strategically in relation to privacy concerns in adjacent spaces and buildings, but maintain consistent exterior patterns; recall that high-bank windows, transom windows, opaque windows, and window treatments that are a adaptable and user-controlled are a better strategy than simply no windows at all.
 - (f) Use windows and doors with projecting trim and ornamentation to create depth, texture, and shadows on the facade; to emphasize openings; or to gang groups of openings. Openings that have projecting trim and casements (at least 1 inch off the facade and 4 inches wide); or otherwise group widows with significant details that clearly differentiate these elements from the main facade may count these features for up to 25% of the window and door requirement.

- (g) The window requirement may be waived on sides of buildings that are closer than 3 feet to the property line, if necessary to meet applicable building code requirements.

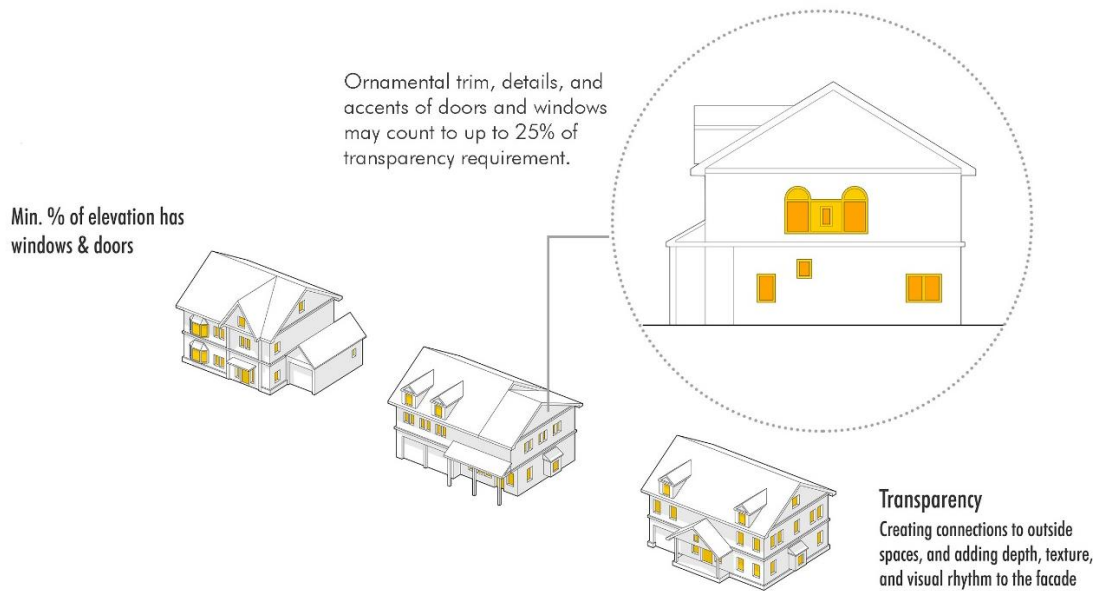


Figure 24-5-14 Transparency

The minimum transparency specified in Table 24-5-9 shall create connections to outside spaces and break up blank walls. Enhancements that emphasize the windows and the location, arrangement, or grouping of windows may count to this requirement. (24-503.c.5).

6. **Materials.** Building materials with texture and patterns create visual interest and signify quality construction and detailing. The following techniques should be used to achieve the design objectives of this section and the materials standards of Table 24-5-9, Building Design Standards:
 - (a) Use natural materials such as painted or natural finish wood siding (horizontal lap, tongue-and-groove, board and batten, or vertical), brick, stone, stucco, ceramic, or terra cotta tile. Synthetic alternatives to these natural materials may be used if manufacturer specifications and/or precedents for application demonstrate that it will perform equally or better than the principal materials in terms of maintenance, design, and aesthetic goals.
 - (b) Siding shall be continued to within 18 inches of finished grade on any side, unless the foundation is stone, stone veneer, or other ornamental finish is applied.
 - (c) Brick, stone, or other ornamental accent materials shall wrap the corner for at least 2 feet on any facade, or otherwise terminate at interior corners to give a finished appearance the architectural element.
 - (d) Coordinate changes in color and materials in association other changes in massing and modulation of the building.
 - (e) Use changes in color or materials to differentiate the ground floor from upper floors and the main body of the building from the top or roof-structure, particularly on buildings 3 stories or more.
 - (e) In multi-building projects, use subtle variations in building materials and colors on different buildings, within a consistent palette of materials and colors.

7. *Variations of Buildings.* All projects involving three or more buildings shall provide variations in the elevation from the two buildings on each adjacent side, and the three nearest buildings on the opposite side of a facing block, with at least two of the following:
- (a) Variations in the front entry features as indicated in 24-503.b.5. Variations should include combinations of at least two of the following changes:
 - (1) Different types of entry features: such as, porch, stoop, or entry court;
 - (2) Different roof styles associated with the entry feature: such as gable, hip, shed, flat, arched, or no roof;
 - (3) Different locations and extent of the entry feature: such as centered, shifted, wrapped; projecting, or embedded; and half or full; and/or
 - (4) Different ornamentation or architectural styles that lead to distinct qualities within a similar scale or pattern.
 - (b) Variations in the facade composition, including massing, modulation, window types and placement, materials and material changes, and details and ornamentation, to the extent that the buildings have a distinct appearance;
 - (c) Variations of the roof forms considering the type of roof, orientation of gables, or use of dormers; or
 - (d) Variations of the model or building type with distinctively different floor plans that lead to different massing. Mirror images of the same model and floor plan shall not be used to meet the variation requirement.
 - (e) In the case of multi-unit buildings:
 - (1) For duplexes / multi-unit houses that are intended to mimic the scale and form of detached houses, a hierarchy of doors and entrances shall be used to create the appearance of a single building, and the variation shall apply between buildings.
 - (2) For row houses and similar buildings that are clearly designed for multiple units, subtle variations in the materials and entry features shall apply to emphasize different units, and the variation shall apply between units in the building.

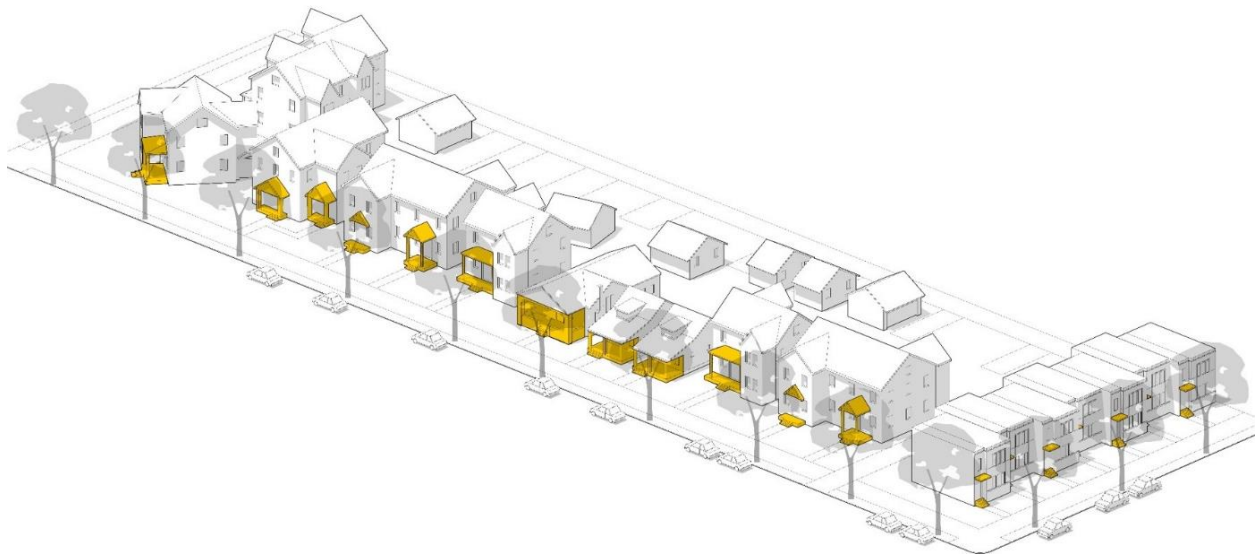


Figure 24-5-15 Front Entry Features - Variety

Using a wide variety of entry feature types, styles and designs is a way to create subtle distinctions between the same or similar building types, and can add common human-scale patterns among different types or scales of buildings. (24-503.b.5 and b.7.)

8. **Alternative Compliance.** Alternative compliance to the building design standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
 - (a) The requirement is not consistent with the particular architectural style selected for the building based on reputable resources documenting the style.
 - (b) The requirement would make the building less compatible with designs or characteristics of other buildings or sites adjacent to the project or that are prevalent throughout the area.
 - (c) Deviations from material standards and any simulated products demonstrate a proven performance in terms of maintenance and quality appearance.
 - (d) In any case, the deviation is the minimum necessary to address the circumstance and does not negatively impact other design standards applicable to the building or site.

- d. **Lot Open Space Design.** Lot open space helps scale buildings properly to the lot and block, create transitions from public streetscapes to private lots, and ensure that residents have usable open space and outside social areas. These spaces also complement the neighborhood features, common areas, and public parks throughout the neighborhood. Open space designed according to the standards and design objectives of this sub-section shall be used to meet the lot open space standard established in Table 24-5-1.
 1. **Design Objective.** The following design objectives shall be used to apply the lot open space standards in this section.
 - (a) Promote the arrangement of neighborhoods, blocks and lots in a way that responds to the existing natural features and ensures access to a variety of open spaces
 - (b) Design all unbuilt areas to serve as valuable neighborhood features, considering the aesthetic, ecological, recreation, or community serving potential of these spaces.
 - (c) Ensure that all lots and buildings have access and proximity to useable open space, whether public, common or private on-lot spaces.

 2. **On-Lot Open Space Design.** On-lot and building open space required for each building type in Table 24-5-1: Residential Building Type & Lot Standards, shall create a common or private amenity for the site and building. Buildings and open spaces on a lot shall be arranged to create usable outdoor spaces that meet one or more of the following types:
 - (a) Private frontage areas designed according to Section 24-503-b., excluding any driveways, parking areas or other automobile space;
 - (b) A front entry feature designed according to Section 25-503.b.3, provided it is at least 80 square feet, and at least 8 feet in all directions – this space is limited to no more than 25% of the requirement for the lot and building.
 - (c) Courtyards, meeting the standards of Section 24-505;
 - (d) Rear or side yards provided they are part of an open area at least 300 square feet and at least 15 feet in all directions.
 - (e) Uncovered decks or patios, provided they are part of an open area at least 120 square feet and at least 10 feet in all directions – this space is limited to no more than 50% of the requirement for the lot and building;
 - (f) For apartment or mixed use buildings:
 - (1) Common rooftop decks provided they are at least 200 square feet, and at least 12 feet in all directions – this space is limited to no more than 25% of the requirement for the lot and building; or

- (2) Private balconies or patios, provided they are at least 6 feet by 10 feet – this space is limited to no more than 25% of the requirement for the lot and building.
3. **Alternative Compliance.** Alternative compliance to the open space design standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
- The lot and building has access to at least two different active open space within 1,320 feet, and meeting the design and service area standards Section 24-504, Neighborhood Features and Common Areas.
 - All buildings and lots shall include at least 1 of the required lot or open space types.
- e. **Exterior Lighting.** All exterior lighting in residential zoning districts shall meet the standards of 24-603.f. Exterior Lighting.

24-504 Neighborhood Features and Common Areas

- a. **Design Objectives.** The following design objectives shall be used to design and locate neighborhood features and common space.
- Arrange neighborhoods, blocks and lots around a connected system of open lands, parks, trails and civic spaces
 - Design and locate unbuilt areas to serve multiple aesthetic, ecological, recreation and social functions
 - Integrate civic spaces and neighborhood features into streetscape designs and create gateways and transitions to unique neighborhoods and districts
 - Design neighborhoods with access to outdoor recreation and opportunities active living.
 - Locate formal civic spaces to serve as gathering places and focal points of compact, walkable neighborhoods
 - Preserve natural features for their aesthetic and ecological value, including groves of trees, prairie, streams, unusual and attractive topography, and similar natural landscape features.
 - Distribute open and civic spaces so that all development has access and proximity to a variety of amenities appropriate to its context.
- b. **Required Features & Common Areas.** Neighborhood features and commons areas shall be required for all residential projects based on the number of dwelling units specified in Table 24-5-10. It may include the types of spaces identified in Table 24-5-11 provided they are designed and located according to the criteria in Section 24-504.c.

Table 24-5-10: Required Neighborhood Features	
Required Features	Dwelling Units
0	<21
1	21-50
2	51 - 100
3	101-200 units
+1	each increment of 100 units

- c. **Neighborhood Feature & Common Area Design.** Neighborhood features and common areas may include the types of spaces identified in Table 24-5-11.

Table 24-5-11 Neighborhood Feature & Common Area Types			
Type	Size	Service Area	Feature Points
Natural Areas	At least 1 acre, but dependent on ecological value of the space and the ability to other coordinated and undisturbed natural areas (ideally 40 acres or more)	n/a	1 – 3 depending on quality / size
Trail System	20' min. width landscape corridor; 8' minimum width paved or crusher fine path; 10' minimum if multi-modal; - At least 1 block length, but sufficient continuity to connect entire project with pedestrian and bicycle systems outside of project.	w/in 1000' of trail, or up to 0.25 mile from trail head.	1
Pocket Park (See 24-302 for larger parks)	1 – 4 acres - At least 100' wide in all directions - Frontage on at least 1 public street OR connections to street by a trail	w/in 0.25 miles	1
Recreation Center	10K s.f. – 4 acres 2K s.f. min. community building and/or 20' x 40' min. community pool	w/in 0.5 miles	2 for building 2 for pool 3 for both
Square / Green	5K s.f. – 1 acre - At least 50' wide in all directions - Frontage on at least 2 public streets	w/in 1,000'	1
Plaza / Courtyard / Community Garden	1K – 5K s.f. - At least 25' wide in all directions - Frontage on at least 1 public street OR connection to street by trail or pedestrian passage	abutting lots or on the same block	1
Enhanced Streetscape	50% minimum increase above pedestrian / amenity area required by 24-301; OR - Median – 12' minimum on collector; 16' minimum on arterial - At least 1 block length	abutting lots on the same block	0.25
Gateways	100 – 1K s.f. at all intersections of collector streets or higher classification OR - Smaller but equivalent monumentation and identify features dispersed at all intersections.	abutting lots on the same block	0.25
Pedestrian Passage	12' – 20' wide corridor 6' wide minimum paved path 150' length min, and through the entire block or connecting from street to other civic space.	abutting lots on the same block	0.25

1. **Design Criteria.** All neighborhood features and common space shall include enhanced landscape design to ensure a distinctive identity and amenity for the neighborhood.
 - a. Natural areas (open lands and trails) shall include large areas of vegetation, native or natural landscape, and undisturbed or restored topography and natural features. These areas shall be located to preserve valuable ecological resources such as riparian corridors, plant or animal habitat, or prominent landscape features.
 - b. Recreation areas (parks, trails, and recreation centers) shall include playgrounds, sport courts, and larger landscape areas designed for un-programmed outdoor recreation. These areas shall be located at highly-visible, central locations and important intersections of the street networks and/or trail systems.
 - c. Formal areas (greens, plazas, squares and courtyards) shall include hardscape, public art, seating areas, ornamental landscape, water features or other

enhancements to serve as focal points and gathering places. These areas shall be located to serve as focal points for compact development patterns or higher density development serving the immediate surrounding area.

2. **Designated Out Lots.** All neighborhood features and common space shall be designated on a plat as out lots under common ownership and reserved for the limited and specified purpose of serving surrounding development with amenities. Except, multi-family projects may include the neighborhood features or common space within the required 30% lot open space in private ownership.
 3. **Coordination with Other Public Space.** All neighborhood features and common areas shall be coordinated, to the greatest extent practical, with the larger system of parks and civic spaces required in Section 24-302.
- d. **Stormwater Facilities.** Stormwater facilities shall be designed and integrated into the street network or open and civic space system in order to avoid redundant and inefficient facilities on individual lots. Any area used for stormwater may be counted towards the neighborhood feature and common areas provided:
1. It is integrated into the design of the space as aesthetic amenity and is consistent with the design, function, and character of the space.
 2. The design does not impact the utility of the space for either purpose (i.e stormwater functions do not compromise the use and value of the space as intended open space, and open space designs do not compromise maintenance and management and performance for stormwater functions according to the design and performance standards of the Design Criteria and Construction Specifications for Stormwater, Volume II).
 3. The maintenance and management of the portion of the facility serving stormwater function is clearly identified, whether that is a public dedication or whether it is an obligation of the owner or property owners' association.
- e. **Ownership and Management.** Neighborhood features and common areas platted as part of a development shall require specific designation on the final plat as a separate out lot. Options for ownership and management include:
1. Creation of or dedication to a non-profit entity capable of carrying out the ownership and management.
 2. Creation of a homeowners', leaseholders' and/or property owners' association that owns the space in common and is capable of carrying out the ownership and management.
 3. Dedication to a public entity as part of the rights-of-way, parks or other community facilities element of the plan. The City may accept dedications of land in its sole discretion, provided it meets other open space and conservation goals of the City indicated in the Comprehensive Plan or other official Culture, Parks, and Recreation Department plans.
- All neighborhood features and common areas shall require documentation recorded with the final plat that outlines the ongoing maintenance plans, as well as administrative and financial management of the space according to these standards. Documents such as covenants for a homeowners' association, bylaws or charter for a non-profit entity, or similar agreements and guarantees, shall be filed with the clerk and records office in association with the plat prior to any building permits.
- f. **Alternative Compliance.** Alternative compliance to the neighborhood feature and common areas standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and the following additional applicable criteria:

1. The location, accessibility and quality of existing publicly dedicated areas, streetscape, or other public realm elements, particularly as it relates to infill development.
2. The extent of lot open space associated with buildings and the opportunity for it to provide usable open space to residents.
3. Alternatives to the neighborhood amenity and common area types that create a distinct identity or preserve a valuable resources.

24-505 Courtyard Pattern

- a. **Applicability.** Residential buildings and lots may be designed to front on a courtyard based on the following design standards. The courtyard pattern is appropriate where:
 1. Courtyards are designed as an extension of the public streetscape and open space system for the project, block or neighborhood.
 2. Blocks and surrounding lots are deep, allowing a different configuration of buildable lots; or
 3. Other developed areas where existing lot patterns in the vicinity warrant use of this pattern to facilitate infill development and compatible building types.
- b. **Eligible Building Types.** The following building types are eligible for this pattern, subject to the limitations stated:
 1. Small Apartments, up to 5 buildings or 36 units, whichever is less.
 2. Row Houses, up to 4 buildings or 24 units, whichever is less.
 3. Multi-unit House or Detached House, up to 8 buildings.
- c. **Design Standards and Exceptions.**
 1. The minimum lot size per building in Table 24-5-1 may be reduced up to 30%, provided the courtyard is owned in common by all lots or otherwise established as a shared-space amenity.
 2. Lots and buildings may front on the courtyard, rather than along a street, provided they otherwise meet the design standards applicable to the front of buildings.
 3. The front setback may be reduced to 5 feet from the courtyard.
 4. Vehicle access and parking for each lot shall be coordinated for all lots and buildings, and designed in a way that minimizes the impact on the public street and the courtyard. Access shall meet all frontage standards applied to the project as a whole.
 5. Any buildings fronting on the street, or the sides of any buildings adjacent to the street shall still meet requirements for public frontages and orientation standards in this section. Corner buildings may need to meet the front building design standards on both the street front and the courtyard.
 6. The courtyard shall meet the following design standards:
 - (a) *Size.* 1,000 to 5,000 square feet.
 - (b) *Proportions.* The courtyard shall be at least 25 feet in all directions and be no wider than 4:1 (length to width).
 - (c) *Frontage & Access.* The courtyard shall be have frontage on a public street, or be visible from and directly connected to the streetscape.
 - (d) *Landscape:* At least 25% of the area shall be allocated to planter beds, seasonal plantings, foundation plants or other landscape amenities, and otherwise meet the landscape standards applicable to Terrace frontages.

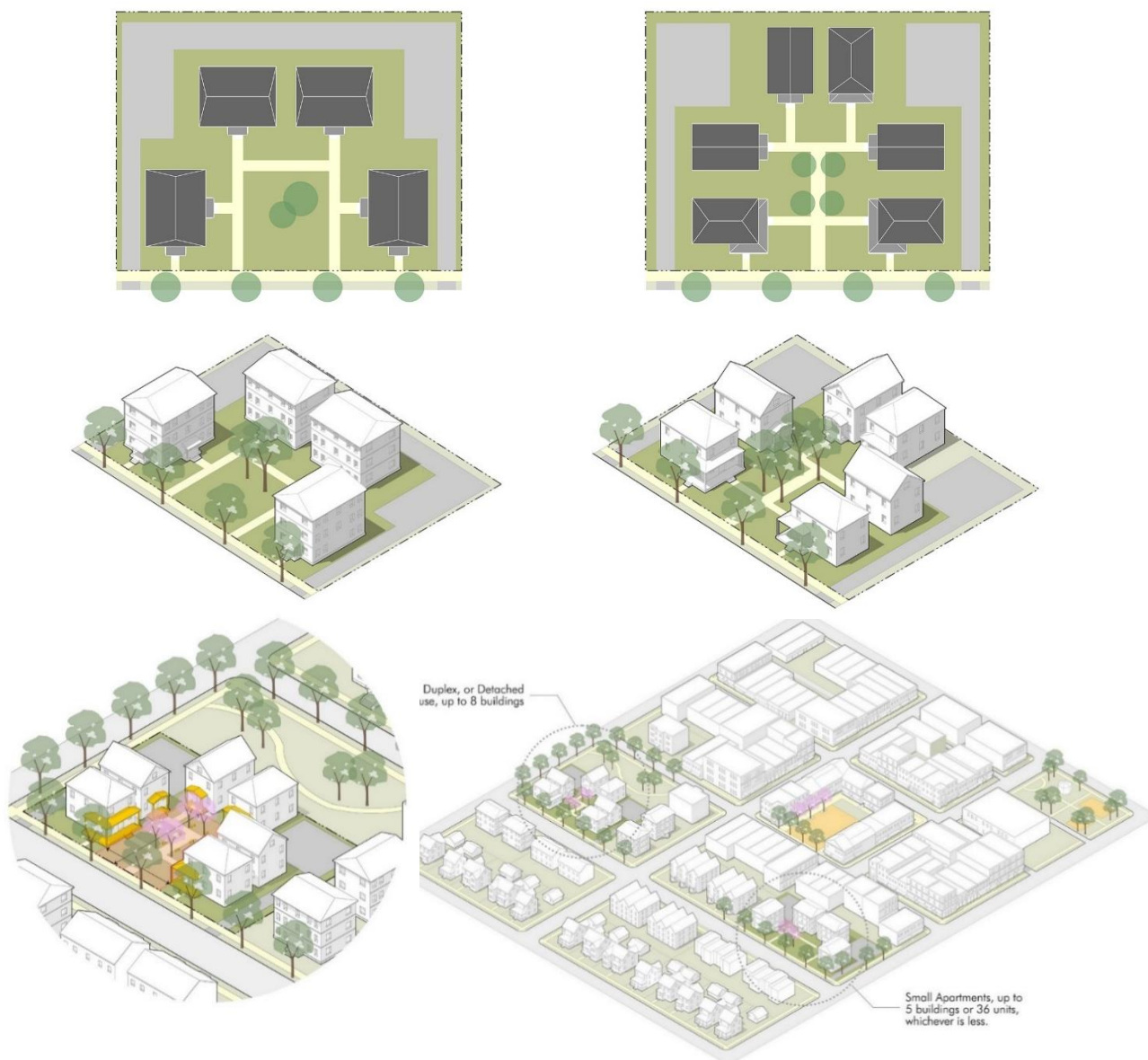


Figure 24-5-16 Courtyard Pattern

Courtyard patterns allow multiple buildings to front on common open spaces with reduced lot sizes and setbacks, provided all open space design standards are met, provided the courtyard and buildings maintain frontage design and streetscape standards on a public street.

24-506 Residential Micro-Housing District

- a. **Intent.** The intent of this section is to provide smaller-format manufactured, mobile or other small homes, in a neighborhood or community that includes common neighborhood amenities, and with site designs that limit impacts on adjacent property and promotes development patterns that are compatible with the surrounding areas.

- b. **Applicability.** Small format home communities are permitted in the Residential Micro-Housing District (R– MH), and implemented through rezoning conditioned on a specific project plan according to Section 24-204, or as a Planned Unit Development according to Section 24-205. These standards shall not apply to:
1. Mobile homes, trailers or similar temporary buildings used as an interim structure associated with an ongoing construction project under valid permit;
 2. A single mobile or manufactured home used as an accessory structure in the H-A district.
 3. Interim or temporary housing strategies to address emergencies; or
 4. Detached houses that are assembled off site and “manufactured,” provided they meet all other standards of the applicable zoning district.
- c. **Development Standards.** Except as otherwise modified through a development plan according to the approval procedures and criteria in Section 24-204, the general development standards for manufactured and other small format home projects are included in Table 24-5-12.

Table 24-5-12: R-MH Development Standards

Project	Amount of Bonus Units Above Base Density
<i>Project Size:</i> 5 acre minimum, 150' minimum frontage an arterial or collector 20% open space	<i>Exception:</i> the Director may recommend a plan for as small as 3 acres and 100 feet of public street frontage if the plan demonstrates exceptional community design and layout for the common areas within the community, a high-quality and well-designed housing concept, and special attention to integrating and relating the project to surrounding areas.
<i>Project Intensity:</i>	10 units per acre, maximum <i>Exception:</i> Up to 18 units per acre for any project with more than 30% of the project area designed as useable open space meeting Open & Civic Space standards in Section 24-302.
<i>Perimeter Setbacks</i>	25' minimum from any street boundary; 20' from any property boundary See Section 24-803 for perimeter landscape standards.
Home Sites	
<i>Lot Size</i>	2,500 s.f. minimum, <i>Exception:</i> 1,200 s.f. minimum for any project with more than 30% of the project areas designed as useable Open & Civic Spaces meeting the types and standards in Section 24-302
<i>Lot Width</i>	25' minimum, and at least 20' frontage on a public street, common internal street, or common open space with street access at the rear of the site.
<i>Setbacks</i>	Front: 10' minimum, or 18' minimum from internal street edge, whichever is greater Side: 5' minimum, or 3' minimum with 10' between buildings on adjacent lots Rear: 10' minimum All buildings shall meet the project perimeter setback.
<i>Height</i>	30' maximum
<i>Site Design</i>	Each home site shall have a private patio, courtyard or similar outdoor amenity of at least 120 square feet. Any structure associated with this outside amenity may be located within 5 feet of the lot or home site boundary. Each home site may have accessory storage up to 120 square feet, up to 8 feet tall. The accessory storage shall be in an accessory building or in an area screened from the internal streets, common

Table 24-5-12: R-MH Development Standards

	areas or adjacent property. An accessory building shall be set back at least 40 feet from any public or internal street, or behind the dwelling unit. Accessory buildings shall be separated by at least 5 feet from any other structure. Where the project provides a community storage area of comparable size for each unit, storage on the site is not required
<i>Parking</i>	Projects shall meet Chapter 7 for required parking. At least one parking space shall be on the home site. However, and additional space and any required guest parking may be located on the internal street or in a common parking lot within 250' of the home site..

- d. **Uses.** In addition to any uses enabled for the R-MH district in Table 24-4-2: Zoning Districts and Uses projects may include the following specific uses:
1. Dwelling units consisting of modular homes, mobile homes, or other similar small detached dwellings.
 2. Accessory buildings and uses incidental to those listed above and which support the residential community, including offices, recreation buildings, storage areas, maintenance and utility facilities, or other community services.
- e. **Common Areas.** All common areas not dedicated as home sites according to the development standards in Section 24-504.c, shall be designed as common spaces according to the development plan. This space shall be allocated to:
1. *Internal Streets.* Internal streets shall laid out to organize the project into blocks and lots so that all home sites and lots are served by streets. Internal streets shall be 20' where no parking is permitted, 24' wide where parking is permitted on one side, and 28' wide where parking is permitted on both sides. Internal streets shall connect to public streets as follows:
 - (a) One connection for projects under 25 dwelling units;
 - (b) Two connections for projects between 25 and 100 dwelling units.
 - (c) One connection per every 50 dwelling units for projects over 100 dwelling units
 2. *Neighborhood Features & Common Areas.* Common areas shall meet one of the design types specified in Section 24-504 at a rate specified in Table 24-5-10. All common areas shall be designed and located in a manner that ensures adequate accessibility for all units in the community.
 3. At least one of these spaces shall include a community building, which is centrally located, for recreation and meeting functions, laundry facilities, or other common amenities. The community building shall be at least 1,000 square feet, or 15 square feet per dwelling unit, whichever is greater.
 4. Other internal circulation or open space such as walkways, landscape perimeters or other site design amenities that improves the quality of the community and its relationship to surrounding areas. Pedestrian connections shall be accounted for on all internal streets or at greater intervals through a trail or path system.
 5. A common storage and utility area shall be provided within the plan including at least 100 square feet per unit. This area may be used for storage of large equipment, recreational vehicles, maintenance or other utility functions for the community. This area shall be screened from the project and from surrounding property according to the landscape standards in Article 8.
- f. **Building Design.**

1. All dwellings shall have a front entry feature, such as a porch, stoop, or outside patio relating the home site to the lot frontage or other common open space upon which the dwelling is located.
 2. Parking spaces on a home site shall be located to the side or rear of the dwelling. Home sites may include a carport, provided it remains open and unenclosed on at least 75% of the perimeter, is no taller than the dwelling unit, is no larger than 400 square feet, but in no case larger than the dwelling unit.
 3. Any mobile home or similar non-foundational dwellings shall:
 - a. Be secured to the ground by tie downs and ground anchors in accordance with the applicable building code;
 - b. Be skirted within 14 days after placement in the community by enclosing the open area under the unit with a material that is compatible with the exterior finish of the dwelling and consistent with the quality of development in the community.
 - e. Be located on a hard surface pad with a minimum of 18-inch concrete ribbons or slabs capable of carrying the weight and of sufficient length to support all blocking points, with a proper surface between to control weeds.
- g. **Landscape and Parking Design.** The standards of Chapters 7 and 8 are generally applicable to R-MH district development plans, except as modified through a development plan based on the approval procedures and criteria in Section 24-204 or 24-205.
- h. **Subdivisions.** Each home site may be individually platted if:
1. All lots shall have public utility access as provided in Chapter 3, including public easements for access to each home site and all other standards and criteria of the subdivision standards are met;
 2. All dwellings are on a permanent foundation or affixed to a permanent slab; and
 3. There are covenants and restrictions assuring that all provisions of this section and the approved development plan, will be maintained through a management entity or common association.

Reserved Sections 24-507 through 24-600

Chapter 1. General Provisions

- 24-101 Overview
- 24-102 Interpretation
- 24-103 Administration
- 24-104 Enforcement
- 24-105 Nonconformities

Chapter 2. Procedures

- 24-201 General – All Applications
- 24-202 Minor Subdivision
- 24-203 Major Subdivision
- 24-204 Rezoning
- 24-205 Planned Unit Development
- 24-206 Use By Special Review
- 24-207 Site Plan
- 24-208 Alternative Compliance
- 24-209 Variance
- 24-210 Appeal of Administrative Decision
- 24-211 Code Amendment
- 24-212 Vacation & Dedication of Easements
- 24-213 Vacation & Dedication Right-of-way
- 24-214 Annexation

Chapter 3. Subdivision Standards

- 24-301 Streets
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- 24-303 Blocks & Lots
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Chapter 4. Zoning Districts & Uses

- 24-401 Zoning Districts
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Chapter 8. Landscape Standards

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Chapter 9. Signs

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- 24-902 Exempt Signs
- 24-903 Prohibited Signs
- 24-904 Standards Applicable to All Signs
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- 24-906 Historic Signs
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Chapter 10. Special Purpose Districts & Areas

- 24-1001 Floodplain Overlay District
- 24-1002 Airport Overlay District
- 24-1003 Historic Preservation
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- 24-1005 Areas of Ecological Significance
- 24-1006 Downtown General Improvement District
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Chapter 11. Supplemental Standards

- 24-1101 Wireless Communication Facilities
- 24-1102 Oil & Gas
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- 24-1104 Marijuana Uses

Chapter 12 Metropolitan Districts**Chapter 13 Definitions & Terms**

- 24-1301 Description of Uses
- 24-1302 Glossary of Architecture & Design Terms
- 24-1303 Definitions

CHAPTER 5 RESIDENTIAL DEVELOPMENT STANDARDS: SECTION MAP

Current Standards	Reorganized	Comment
n/a	24-501 Intent & Applicability	Compiled from various sections to establish the intent and set up the new approach for all residential development standards
18.38 Zoning District Development Standards 19.38.030-070 for residential districts 18.38.100 Performance Options	24-502.a Residential Development Standards	Converted all of the current residential development standards to a complete range of building types. These roughly parallel current district standards or current building-specific standards where they are included in the current code. Some lot sizes, building heights and lot open space requirements were adjusted to better reflect the specific scale of the projects. The most notable changes are: • R-L now includes the cluster option (4,500 s.f. lot) as an allowed type) • R-M includes a much broader range of “missing middle” housing types – specifically multi-unit houses, row houses, and small apartments. • R-H allows the full range of housing types from detached houses to larger apartments (most of these are currently allowed in R-H, but are not clearly called out. • Specific but limited enabling of smaller lot options – Small lot (3K to 4.5K lot) and small format (1.5K t 3K) based on prototypes and precedents studied from other projects.
various sections	24-502.b Dimension exceptions	Incorporation of various exceptions, interpretation rules or additional standards in one section related to the development table. Added an option for a “zero lot line” application through use of easements rather than platted lot lines (b.1.(b))
18.52.030 Accessory Uses & Structures, Accessory Uses & Structures	24-502.c Accessory buildings - residential	Incorporated current standards but refined by type/scale of building and increased some allowances – particularly for larger lot sizes and particularly larger “outbuildings” on larger lot sizes. These are more typical for the types of structures found in these contexts.
New section	24-502.d. Housing diversity	This is a new element. It is added based on 3 considerations in the process: • The advisory committee’s discussion of similar provisions in other communities, and the desire to explore the option but be more lenient and reasonable with the ranges and requirements. • The expansion of the range of housing options in the code, and specifically the addition of more small lot and missing middle options. (This tool can ensure that these are integrated into a mix). • The comprehensive plan policies for housing options and diversity. The standards are based on a combination of context (in relation of planning areas), scale (amount of units being proposed) and range of specific categories and types of housing. The section includes exceptions for alternative compliance and considering projects in their context of established mixes.
18.52.035 Accessory Uses & Structures, Fences and Walls	24-502.e. Fences and walls	Current provisions with no substantive changes
n/a	24-503.a Residential Design Standards, Applicability	Compiled from various sections to establish the intent and set up the new approach for all residential design standards
Various provisions from: • 18.38.100 Performance Options • 18.40.090 Architectural review standards • 18.40.100 Site and building design standards	24-503.b Frontage Design	New approach to a range of standards in current code addressing similar topics. This new approach accomplishes the following: • Allows a more comprehensive approach to the design issues by focusing on the streetscape • Allows adjustments based on context – in this regard, the suburban frontage is relaxed from the current standard and the neighborhood and terrace are increased from the current standard. • Allows more targeted application of “alternative compliance” to allow some flexibility.

CHAPTER 5 RESIDENTIAL DEVELOPMENT STANDARDS: SECTION MAP

Current Standards	Reorganized	Comment
18.46.040 Infill area design standards		
Same as above	24-503.c Building design	New approach focusing on a few key elements of building design – massing (volume of buildable areas); modulation (composition and breaking up blank walls); transparency (connecting to outside with windows and doors); and materials. Using a similar structure this section sets the intent / design objective; establishes a measureable objective standard; identifies a range of design strategies that may be used to meet that standard; and then allows for alternative compliance when something not listed or something not technically meeting the standard would serve the objective equally or better. This section is derived from the similar range of topics in the current regulations.
Same as above	24.503.d. Lot Open Space Design	Several sections in the current code address the topic of “useable open space” and allow elements at various scales to count towards this. This section refines what can count to this requirement at the lot scale and adds more small and formal options for the smaller lot building types (which have lessor on lot open space requirements). It also establishes connections to the next larger scales – Common areas of the neighborhoods (24-504) and parks and trails at the subdivision scale (24-302)
18.40.110 Lighting Standards	24-503.e Exterior Lighting	This is a cross reference to the existing lighting standards, recently updated by staff.
18.40.100(a)(12) and (b) Neighborhood Identity Features	24-504 Neighborhood Features & Common Areas	This is a reorganization of the current “Neighborhood Identity Features” sections; the goal is the reflect better connections of these spaces as the connection between larger scale open space systems (Parks, Trails and Natural Areas, and the block and lot open spaces of individual building sites. There are only minor adjustments to the current standards in the applicability and types of spaces required.
New section	24-505 Courtyard Pattern	This is a new provision combining two elements from the existing code for a specific pattern option – the building types (and particularly new building types) and arranging them around a specific “neighborhood identity feature” – the courtyard. It can be particularly applicable for infill areas and integrating houses on deeper blocks, but also an added neighborhood design feature in new neighborhoods. It offers a reduction in lots sizes for enhanced courtyard designs – essentially “layering” the front yard / frontages of multiple building in a single space with more design amenities.
18.38.050 R-MH Residential Mobile Home District 18.46.150 Mobile homes and land lease communities	24-506 Residential Micros-housing District (R-MH)	This section is a reorganization of the current manufactured housing district to broaden the application to a wider range of small format housing. The changes are in a few key areas: - Allowing a broader range of small housing options (not just a conventional trailer / manufactured house options) to coordinate with the new Detached House – Small format option in 24-502.a. - Allowing smaller project threshold (5 acres rather than 8) and larger densities (10 unit/acre base instead of 8; and up to 18 units per acre with more open space). These densities are more in range with the typical yield from this smaller home site. - Requiring more specific designs for the common amenity areas (similar to Neighborhood Features & Common Areas in 25-504) and allowing the density to escalate at a particular threshold of this space. These actions align with the Council’s strategic housing policy point to explore more manufactured housing opportunities.

Chapter 6 Nonresidential Development Standards

24-601 Intent & Applicability

24-602 Nonresidential Development Standards

24-603 Nonresidential Design Standards

24-601 Intent & Applicability

- a. **Intent.** The Nonresidential Development Standards have the following intent.
 1. Promote good civic design and improve the appearance and vibrancy of commercial districts, employment centers, civic spaces, and other public places.
 2. Design and locate open spaces as an extension of the public realm, and emphasize the different contexts of places throughout the City.
 3. Improve the accessibility of centers and districts throughout the City by arranging development within multi-modal networks, and coordinating site access and internal circulation systems with these networks.
 4. Use buildings to shape streetscapes and public spaces, and design building facades and lot frontages to relate to these spaces.
 5. Refine the design, scale, and details of buildings based on the relationship to the public realm and make distinctions in design based on the context of development.
 6. Improve the value of places, strengthen the economic potential of commercial districts and employment centers, and promote lasting and sustained investment in nonresidential development through good design.
- b. **Applicability**
 1. The standards in this Chapter shall apply to all development in the C-L, C-H, MU-L, MU-H, I-L, I-M, and I-H districts, except where stated that sections only apply to specific districts or specific situations.
 2. All new structures shall comply with these standards.
 3. Modification or additions to existing structures or sites shall meet these standards to the extent of the modification or addition, except that the Director may waive any design standards applied to modifications or additions that:
 - (a) Conflict with the consistent design of an existing building;
 - (b) Conflict with the prevailing character on the block or immediate vicinity of the project; or
 - (c) To otherwise facilitate infill development or adaptive reuse of an existing building.
 4. The standards shall not apply to ordinary maintenance of existing buildings, except that maintenance to any building shall not occur in a manner that brings the building or site to a greater degree of non-conformance with these standards.

24-602 Nonresidential Development Standards

- a. **District Lot and Building Standards.** The lot and building standards for nonresidential districts are specified in Table 24-6-1.

Table 24-6-1: Nonresidential District Lot & Building Standards

Zoning District	Lot Standards			Minimum Setbacks				Building Height
	Size	Frontage Width	Open Space	Front [1]	Interior Side [2]	Corner Side [1]	Rear [2]	
C-L Commercial Low Intensity	n/a	25'+	20%	25'	0'	25'	0'	40'
C-H Commercial High Intensity	n/a	25'+	20%	25'	0'	25'	0'	60'
MU-L Mixed-use Low Intensity	20K s.f. max	25' – 100'	15%	0' – 10'	0'	0' – 10'	0'	40'
MU-H Mixed Use High Intensity	2 ac. max	25' – 300'	15%	0' – 10'	0'	0' – 10'	0'	60'
I-L Industrial Low Intensity	n/a	50' +	10%	25'	0'	25'	0'	40'
I-M Industrial Medium Intensity	n/a	100'+	10%	25'	0'	25'	0'	40'
I-H Industrial High Intensity	n/a	100'+	10%	25'	0'	25'	0'	60'

[1] Front setbacks may be modified according to the frontage type design standards in 2-603.b.

[2] Non-street setbacks shall be as specified by the building code for each class of building. However, greater setbacks may be necessary to meet the building design standards or landscape standards applicable to a particular use or building.

[3] Any district that permits residential uses may allow residential lots and buildings designed according to the residential building type standards in Chapter 5.

b. **Dimension Exceptions.** The following are exceptions to setback and building dimensions standards established in Table 24-6-1: Nonresidential District Building & Lot Standards.

1. **Setback Encroachments.** The following encroachments into the required setback are permitted, except in no case shall this authorize structures that violate the provisions of any easement.
 - (a) Any projections over public rights of way, or any similar area designed for pedestrian circulation, shall be at least 8 feet above the grade, and in no case within 5 feet of any curb for a street, through access drive or other area designed for vehicles.
 - (b) Structural projections such as bay windows, balconies, awnings, canopies, chimneys, eaves, cornices, open fire escapes, egress wells, or other non-foundational overhangs or projections may extend up to 4 feet from the foundation and encroach into the setback, but no closer than 3 feet from any side or rear lot line. This exception shall be limited to no more than 20% of a building elevation.
 - (c) Ground-mounted mechanical equipment, meters, and utility boxes accessory to the building may be located in the side or rear setback provided that it extends no more than 6 feet from the principal building, no closer than 3 feet to the lot line, and is screened from public right-of-way by structures or landscape. These limitations do not apply to any utility structures otherwise authorized to be located according to easements or in the right-of-way, which shall follow the location and design standards of those specific authorizations.
 - (d) A lot may have more than one principal building, provided any accessory, secondary, or principal building shall be located at least 10 feet from any other building on the same or adjacent lots, or be joined by a party wall meeting all aspects of the building code.
 - (e) Any other accessory use or structure within the setback, not specified in Section 24-602.c, shall have a setback of at least 1/3 its height from the property line.
2. **Height Exceptions.** The following are exceptions to the height limits in Table 24-6-2:

- (a) Building elements integral to the design and construction of the building, such as parapet walls, false mansards, or other design elements essential to a quality appearance of the building may extend up to 6 feet above the roof deck of a flat roof.
- (b) Architectural features such as chimneys, ornamental towers or spires, and similar accessory features that are less than 20% of the building footprint may extend up to 15 feet above the maximum building height, but in no case more than 50% above the actual building height.
- (c) Functional and mechanical equipment such as elevator bulkheads, cooling towers, smoke stacks, roof vents, or other equipment may be built up to their necessary height in accordance with building codes provided they are screened according to the standards of this code or otherwise incorporated into the architecture of the building.
- (d) Accessory site structures such as flag poles, monuments, or water towers, may have a height limit of 50 feet, but shall be setback a distance of at least 1/3 its height from the property line.
- (e) 1 foot of additional height may be permitted for each 1 foot in additional setback, up to a maximum of 10 additional feet above the maximum height limit. For any structure using this exception where there is no required setback, and default required setback of 10 feet shall be used for applying this exception. The additional setback area shall be used for landscape areas required by Section 24-803 or open space meeting the standards of Section 24-603.d.
- (f) All height exceptions shall be in conformance with air space regulations relative to the Airport Overlay District in Section 24-1002.

- c. **Accessory Buildings – Nonresidential.** Accessory buildings shall be permitted in association with and on the same lot as a principal building, subject to the standards in Table 24-6-2, Nonresidential Accessory Structures, and to the following additional limitations.

Table 24-6-2: Nonresidential Accessory Structures

Type	Quantity	Size	Height	Setbacks
Minor Structure (small shed, and similar structures)	▪ 1 / lot; ▪ + 1 / each additional 10k s.f.; ▪ Maximum of 3	▪ 120 s.f. max.	▪ 12' max.	▪ 0' side or rear; ▪ 5' if on a concrete slab or similar foundation; and ▪ 25' on any street side lot line ▪ Behind the rear building line of the principle structure
Secondary Building (detached accessory building)	▪ 1 / principal building	▪ 25% max. of principal building footprint, up to 1,200 s.f. max.	▪ 25' max., but no higher than principal structure.	▪ 5' from side and rear; ▪ 10' from street side; and ▪ At least 12' behind the front building line of the principal structure
Any building over 12' high or more than 250 s.f. footprint shall meet the design standards in Section 24-502.c.2.				

1. **Generally.**

- (a) All accessory buildings shall be at least 10 feet from the principal building, or other distance specified by applicable building codes based on fire ratings of adjacent walls.
- (b) Accessory buildings shall be clearly incidental and subordinate to the principal building or use, in terms of scale, location, and orientation.
- (c) Minor accessory structures of 120 square feet or less, and not on a slab or similar foundation do not have a required interior side or rear setback, but should be movable and are otherwise placed "at risk" by the owner with regard to any easements, fence, or screening requirements.

2. **Secondary Building Standards.** In any nonresidential district, secondary buildings over 250 square feet footprint or 12 feet high shall meet the following massing and design standards to ensure compatibility with the principal structure:
- Any portion of the building or structure potentially visible from the street or other public areas shall use materials, colors, scale and forms (roofs and massing), and architectural details that are compatible with the principal structure, or otherwise be screened according Section 24-803.
 - Any building or structure exceeding the limits in Table 24-6-2 shall be treated as a second principal building and meet all lot and building design standards applicable to principal buildings.
- d. **Fences & Walls.** Fences and walls in Nonresidential districts shall be limited to the sizes and locations in Table 24-6-3, Nonresidential Fences & Walls.

Table 24-6-3 Nonresidential Fences & Wall	
Location	
Front <i>In the front setback or any location in front of Front Building Line.</i>	3.5' high 3.5' – 6' if it is ornamental design that is at least 75% open (i.e. wrought iron). - Up to 8' for ornamental features at pedestrian entries.
Side and Rear <i>In the side, street side, or rear yard and behind the Front Building Line.</i>	6' high; 8' in the I-M or I-H district, provided the fence remains open (i.e. wrought iron or chain link) - A fence or wall outside of required setbacks (i.e. in the buildable envelope), and behind front building line can exceed 6', but may be limited by building codes or other general development and design standards.
Perimeter Fences <i>Any fence within 30' of a Collector or Arterial street right-of-way as part of Perimeter Landscape in Section 24-803.</i>	Any fence designed as part of a perimeter landscape area along collector or arterial streets, or otherwise located within 30' of a collector or arterial right-of-way and longer than 100', shall meet the following standards: - All fencing shall be softened with landscape materials on the street side of fences meeting the perimeter landscape standards of Section 24-802. - Expanses of over 100' shall be broken up by either: - Offsets of +/- 3' on 1/3 of length for every 150' span; or - Ornamental designs on at least 50' of every 150' space that is at least 75% open (i.e. wrought iron); or - Architectural pillars or posts (i.e. stone, or masonry) at least every 50'. - Alternatives may be approved by the Director in association with the perimeter landscape plans for in Section 24-803, and Streetscapes in 24-301.

1. **General Height & Location Standards.** The following standards are applicable to fences and walls in all locations.
- All fences or walls along rights-of-way or easements shall be located:
 - At least 1' from any ROW or easement that prohibits structures; otherwise fences in easements shall be permitted only subject to specific easement language and limitations.
 - At least 2' from any sidewalk.
 - At least 3' from the edge of any alley or similar vehicle access.
 - Fences or walls may only be located in the right-of-way or easement by a revocable right-of-way permit from the Public Works Department.
 - All fences or walls located along common lot lines shall be located so:
 - The fence is on the property line; or
 - The fence is at least three feet from the property line. Any areas set back three feet or more, which could become enclosed by other similarly located fences, shall provide at least one gate for access and maintenance equipment.

- (3) The finished side faces adjacent property or any public right-of-way, public space or common areas.
 - (c) Any fence or wall in the floodplain shall also require a floodplain development permit.
 - (d) All fence or walls shall be located and designed to comply with sight distance requirements of 24-301.d.2. Any fence or wall that could potentially create a sight obstruction for vehicles crossing pedestrian areas or entering the street may require greater transparency or additional location restrictions to allow for safe sight distances for the vehicle.
 - (e) Temporary fences for construction may be up to 6 feet or as otherwise specified in construction permits.
 - (f) All fences and walls may be subject to additional standards of the building code, approved drainage plans for the lot, or other design and development standards. In particular, any of the following allowed by these standards, permitted by alternative compliance, or approved by a variance, requires a building permit:
 - (1) Any fence or wall over 6 feet high;
 - (2) Any retaining walls over 4 feet high;
 - (3) Walls in the setbacks over 6 feet high shall only be permitted by alternative compliance in Section 24-208.
2. **Materials.** Fences and walls shall be consistent in architectural character, materials, and appearance of the principal building(s) on the same lot. Fences shall be constructed out of any of the following materials:
- (a) Wood or vinyl simulating wood. Wood shall be either naturally rot resistant (such as cedar), or pressure treated for rot resistance;
 - (b) Wrought iron or aluminum simulating wrought iron;
 - (c) Stone, brick, concrete with stone or brick veneer, pre-cast concrete simulated stone or brick, or decorative concrete textured to simulate masonry; or
 - (d) Chain link or vinyl clad chain link:
 - (1) Chain link is permitted in the side or rear yard only in the C-L, C-H, MU-L and MU-H districts.
 - (2) Chain link with slats is only allowed in the I-M and I-H districts, and proved it is not located along a collector or arterial street.
 - (3) Chain link fences may be up to 12 feet for any security fence around sports facilities, courts, pools or similar facilities, provided it is 20 feet from any lot line and provided all portions over 8' remain free of opaque screens.
 - (e) Barbed wire may be allowed only in the I-M, I-H, C-D and H-A districts, added to the height of chain link fences and located above 6.5 feet. Barbed wire is limited to no more than three bands. Exterior area security lighting, controlled by an automatic light level switch, is installed and maintained in good operating condition.

Section 24-603 Nonresidential Design Standards

- a. **Applicability.** The design standards shall apply to the C-L, C-H, MU-L, MU-H, I-L, I-M, and I-H zoning districts.
- 1. **General Applicability.** The design standards apply based on the context of a particular project, according to the general applicability provisions in Table 24-6-4.

Table 24-6-4: Applicability of Design Standards

Zoning District	Applicability
C-L , C-H, I-L, I-M and I-H	- Frontage C standards preferred and generally applicable; - Frontage D standards may apply on large commercial sites (over 2 acres) or industrial buildings; - Frontage A and B standards by alternative compliance.
MU-L	- Frontage A standards preferred and on at least 2 blocks or at least 50% of a project; - Frontage B standards generally applicable on the remainder; - Frontage C or D standards by alternative compliance.
MU-H.	- Frontage A standards preferred and on at least 4 blocks or at least 50% of a project; - Frontage B standards generally applicable on the remainder; - Frontage C or D standards by alternative compliance.
Residential Development	Where residential building types are permitted in any nonresidential district, they may be developed according to the Residential Development Standards in Chapter 5.

2. **Alternative Compliance.** Alternative compliance to the general applicability of the design standards in Table 24-6-2 may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:

- Streets with pedestrian amenities, on-street parking, or designed according to the Pedestrian or Avenue Street type standards in Section 24-301 are generally appropriate for the Frontage A and Frontage B frontage type and design standards.
- Streets with higher traffic speeds or volumes, that lack pedestrian amenities, or that lack on-street parking are generally appropriate for Frontage C and Frontage D frontage type and design standards.
- Where the context of a specific block or site has a prevalence of development that reflects patterns similar to any particular frontage and design type, the prevailing pattern may be implemented.
- A development plan for an area or project may more specifically map street types and frontage types on a block-by-block basis, and any plan officially approved by the Planning Commission or City Council in association with the development may further specify the applicability of the frontage types and design standards for a particular district, area, or project.

- b. **Frontage Design.** Frontage design determines the relationship between private development and the public realm, and determines the character of different districts. Building placement, parking and access locations, and landscape and streetscape design encompass the design of the frontage. Frontage types designed according to the standards and design objectives of this sub-section may be used to modify the front setback established in Table 24-6-1, as indicated by the applicability provisions of Section 24-603.a.

1. **Design Objectives.** Frontage types in Table 24-6-5: Nonresidential Frontage Design shall be applied to meet the following design objectives:

- Enhance the image of the City by coordinating streetscape investment with private lot and building investment.
- Orient all buildings and lots to the public street, or to common open spaces that serve as an extension of the streetscape and public realm.
- Design frontages based on the context of the area, block, and street, particularly emphasizing landscape areas to screen and separate sites from higher-volume /

higher speed streets and emphasizing social spaces and human-scale architectural features on streets intended for more compact and walkable development.

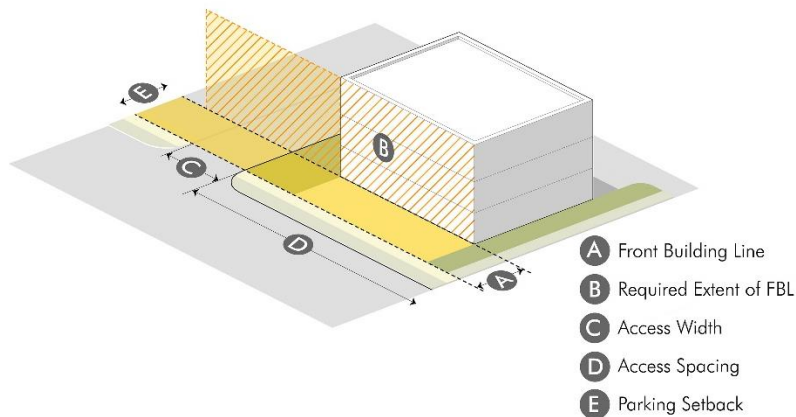
- (d) Coordinate development across multiple lots along block faces, considering access, parking, landscape, and open space design.
- (e) Allow a range of different building types to engage the streetscape in compatible ways along a block through similar frontage designs.
- (f) Strengthen the identity and economic value of distinct places by reinforcing consistent patterns of streetscape, frontage design, and building placement and form.
- (g) Frontages should be similar for all lots on the same block face or gradually transition to different types in contexts that allow multiple frontage types.

2. **Frontage Design Standards.** Frontage types shall be designed according to the standards in Table 24-6-5: Nonresidential Frontage Design. Sub-sections following the table provide specific design strategies and techniques to be used to meet these standards and the design objectives of this sub-section.

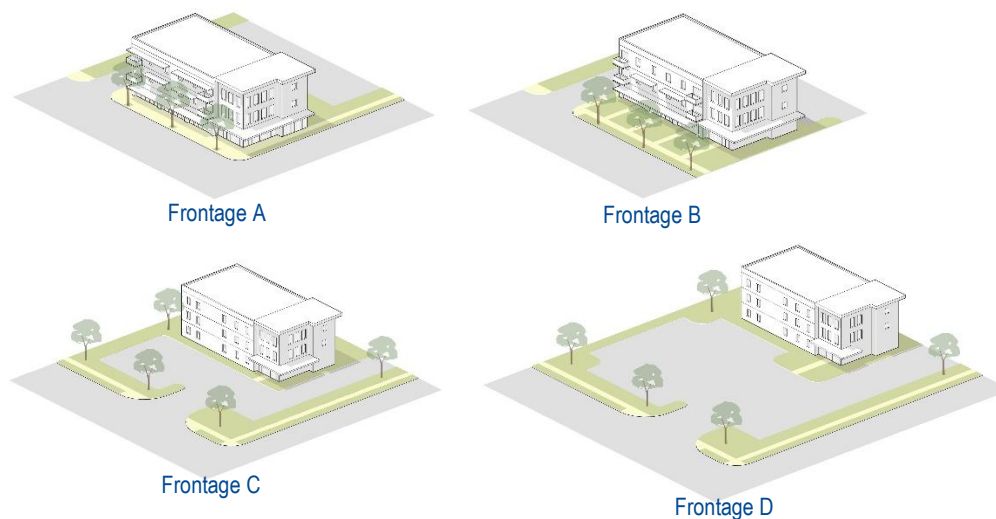
Table 24-6-5: Nonresidential Frontage Design

		Frontage A	Frontage B	Frontage C	Frontage D
<i>Front Building Line (build-to range)</i>		0' – 10'	0' – 25'	25' – 80'	80' +
<i>Required Front Building Line</i>		80%	60%	40%	n/a
<i>Access Width (max.)</i>		20'	24'	32'	40'
<i>Access Spacing (min.)</i>		1 per block	200'	150'	50'
<i>Parking Setback (min.)</i>		Behind rear of building.	Behind front building line	5' – 20' min. See Section 24-704.b. for parking setbacks specific to parking lot size	5' – 20' min.
<i>Extent of Parking Frontage (max.)</i>		0%	30%	n/a	n/a
<i>Landscape</i>		See Sections 24-301 and 24-302		See Section 24-803	
<i>Applicability (See Table 24-6-4)</i>	<i>MU-L, MU-H</i>	■	□	◇	◇
	<i>C-L, C-H</i>	◇	◇	■	□
	<i>I-L, I-M, I-H</i>	◇	◇	■	□

- Preferred
 □ Permitted
 ◇ Limited to Alternative Compliance

**Figure 24-6-1 Frontage Design**

Frontage types are differentiated based on the location of the front building line (FBL), the extent of the front building line occupied by the building (Required FBL), access widths, and parking location and extent along frontage. Coordinating frontage design of multiple buildings and sites along a block impacts the character of the streetscape and the block.

**Figure 24-6-2 Frontage Types**

The relationship between private development and the public realm determines the character of different districts. Building placement, parking and access locations, and landscape and streetscape design distinguish different frontage type designs. Social spaces and human-scale architectural features are emphasized in more pedestrian-oriented contexts, and landscape screens and setbacks are emphasized in more car-oriented areas.

3. **Building Form and Placement.** All buildings shall establish a front building line within the range specified in Table 24-6-5, Nonresidential Frontage Design. The required front building line shall modify the required front setback in Table 6-2 based on the appropriate frontage for the street and block. All buildings shall occupy the minimum percentage specified for required front building line with either of the following:
 - (a) Front building facades meeting the design standards in Table 24-6-6, Nonresidential Building Design; or
 - (b) Open spaces meeting the requirements of Section 24-603.d provided:
 - (1) It is limited to no more than 50 feet or 50% of the lot frontage, whichever is greater;

- (2) There are defining features at the extension of the required front building line, such as decorative walls or fences, landscape features and other human scale details; and
- (3) All building facades fronting the open space meet the standards otherwise applicable along the streetscape.
- (c) Projects designed around internal access streets according to Section 24-301 may use the internal access streets for the purpose of applying frontage standards.

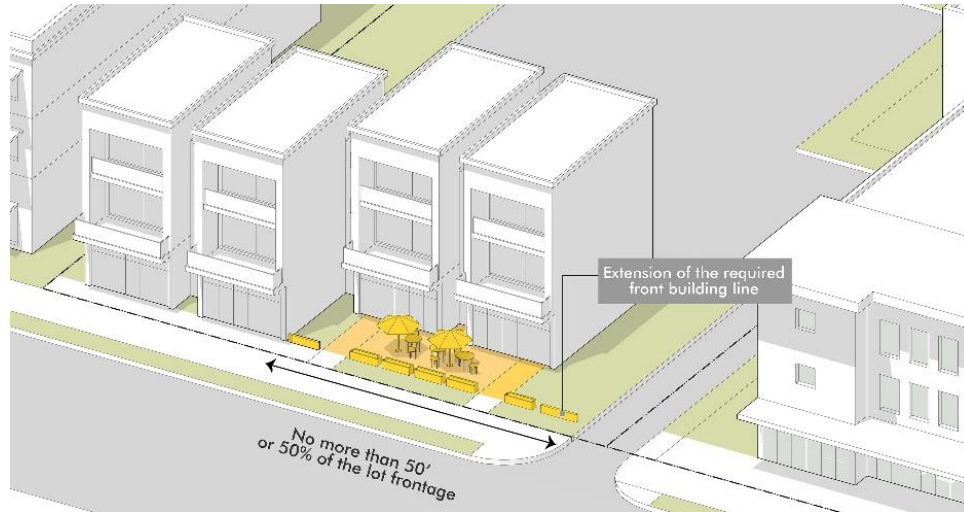


Figure 24-6-3 Required Front Building Line

The required front building line determines the extent of the lot width required to be occupied by building frontage at the front building line. Alternative spaces that activate the streetscape with active social spaces may serve this function provided they establish similar defining elements of this space along the frontage. 24-603.b.3.(a) and (b).

- 4. **Access and Parking Limits.** The following standards apply to the driveway and parking limits in Table 24-6-5, Nonresidential Frontage Design:
 - (a) Access width limits apply to the first 25' of the lot depth, or up to the Front Building Line, whichever is less.
 - (b) Access spacing specifies the minimum distance between edges of driveways or internal access streets. However, the Greeley Design Criteria and Construction Specifications for Streets may specify different access standards on any particular street or lot.
 - (c) In cases where these standards limit access to a particular lot, options that coordinate access to lots on the same block shall be used, including mid-block alleys, internal access streets, common access lanes, or shared drives and cross access easements.
 - (d) All parking shall be setback as specified in Table 24-6-5 and limited only to the extent specified along the frontage, and be screened according to the standards in Chapter 7.

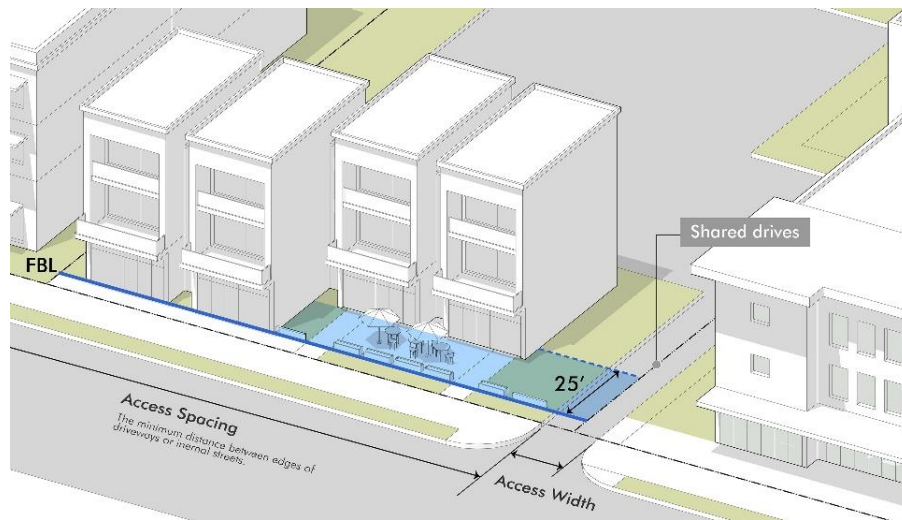


Figure 24-6-4 Access and Parking Limits

Access & parking limits determine the extent of frontages that are designed for cars, including driveways and surface parking. Parking and vehicle access is more limited in the frontage area for pedestrian-oriented contexts, and more permissive in car-oriented areas. 24-603.b.4.(a) and (b).

5. **Landscape.** The remainder of the frontage between the streetscape and front building line shall include landscape and open space designs.
 - (a) For Frontages A and B this area shall be designed to coordinate as an extension of the streetscape according to Sections 24-301.
 - (b) For Frontages B and C this area shall be designed according to the parking setback and landscape design standards in Chapters 7 and 8.
 - (c) On all frontage types, lot open space meeting the standards of Section 24-603.d may be included in this area.

6. **Alternative Compliance.** The appropriate application of frontage types is based upon a combination of the character of the zoning district, the streetscape design on which the development fronts, and the building form and placement on a specific lot. Alternative compliance to the frontage design standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
 - (a) The context presents clear pattern of existing buildings and lots on the same block and opposite block face with a different arrangement in terms of the front building line, driveway access patterns, and extent and placement of parking lots and service areas.
 - (b) An alternative design allows the building, access, and parking to be sited in a way that preserves topography or other natural features on the site, and does so in a way that equally or better meets the design objectives.
 - (c) Parking and access that serves a greater area beyond the site and block may deviate from these standards, provided the location is consistent with development patterns in the vicinity and it is designed to minimize impacts on streetscapes.
 - (d) In all cases the deviation is the minimum necessary to address the circumstance and does not negatively impact other design standards applicable to the building or site.

- c. **Building Design.** Building design refines the scale and form of buildings beyond the basic setback, height, and lot coverage standards by breaking down the volume into smaller-scale

masses, and by adding depth, texture, and variation to surfaces to relate to the spaces around the building.

1. **Design Objectives.** Building design standards in Table 24-6-5, Nonresidential Building Design shall be applied to meet the following objectives:
 - (a) Reinforce the context, patterns, and design character of the zoning district or a particular area.
 - (b) Refine the scale, massing, and details of buildings to a greater degree the closer they are to the public realm and other publicly used spaces.
 - (c) Arrange buildings and vary the massing in a way that defines streetscapes, public spaces, and other valuable active and social spaces on the site.
 - (d) Locate doors and windows in a way that activates spaces, creates connections to important exterior spaces, and promotes economic activity at the interface of buildings and public spaces.
 - (e) Relate buildings to adjacent development by mimicking similar scale, massing and proportions though step-backs and secondary masses that break up larger masses and reduce the volume and perceived size of larger buildings.
 - (f) Use materials and human-scale architectural features to create depth, texture, variation, and visual interest to walls, particularly on larger facades, along streetscapes, or near active open spaces or adjacent lots.
 - (g) Strengthen the identity and economic value of distinct places by reinforcing any prevailing architectural themes or styles; where no prevailing theme or style exists, encourage unique architectural expression and design characteristics inherent in the chosen architectural style for the building to establish distinctive themes and styles.
 - (h) Emphasize the quality and longevity of investments with materials and colors that are attractive, durable, and have low maintenance requirements.
2. **Building Design Standards.** Table 24-6-5, Nonresidential Building Design provides standards for massing and facade design based on the frontage type and the placement of the building. Sub-sections following the table provide specific design strategies and techniques to be used in meeting these standards and the design objectives.

Table 24-6-6: Nonresidential Building Design				
	Frontage A	Frontage B	Frontage C	Frontage D
Front Building Line (from Table 24-6-5)	0' – 10'	0' – 25'	25' – 80'	80' +
Wall Plane Limits	50' / 500 s.f.	100' / 1,000 s.f.	100' / 1,000 s.f.	150' / 2,000 s.f.
Blank Wall Limits	15' / 300 s.f.	30' / 600 s.f.	50' / 1,000 s.f.	50' / 1,000 s.f.
Entry Feature Spacing (max)	50'	75'	1 per building	1 per building
First Story Transparency	60% - 90%	40% - 90%	40% - 90% within 50' of entrance	40% - 90% within 25' of entrance
Upper Story Transparency	15% - 40%	15% - 40%	15% - 40%	n/a
Secondary or Side elevations within 20' of ROW	Meet primary frontage design standards for at least 30' or 30% of elevation of building whichever is greater.			
Secondary Side / Rear elevations between 20' and 100' or otherwise directly visible from ROW	Meet standard at 50% of the requirement for primary elevations, except for required entrance ; OR Have a Type III or higher perimeter landscape within 50' of the building per Section 24-803.			

3. **Wall Plane Limits.** Larger building elevations shall be broken into smaller components by one or a combination of the following techniques to meet the wall plane limits in Table 24-6-5, Nonresidential Building Design:
- (a) Emphasize structural bays and vertical breaks in interior components of the building at regular intervals, with visible features such as columns, pillars, or pilasters, or other details and accents that are between 6 and 48 inches wide, project between 4 and 24 inches off the façade.
 - (b) Differentiate massing with projections, balconies, cantilevers or step backs from the main mass associated with entrance features, different stories, or secondary masses of the building. Massing shall create deviations in the wall plane of at least 2 feet if projecting from the façade and at least 4 feet if recessed from the façade, and encompass at least 20% of the entire elevation.
 - (c) Horizontal differentiation of a base, body and top of buildings.
 - (1) For buildings less than 3 stories, this can be a distinct foundation, a main façade, and an embellished roof structure, such as eaves and fascia for pitched roofs, or cornices and parapets for flat roofs.
 - (2) For buildings 3 stories or more, the first floor should be clearly differentiated from upper stories to establish the base and an embellished roof structure.
 - (3) Any belt course or trim band establishing the break in base, body and top shall use a material or pattern distinct from the primary material, be 6 to 36 inches wide, and off-set from the wall plane 4 to 24 inches; or be a lessor trim associated with a material change.

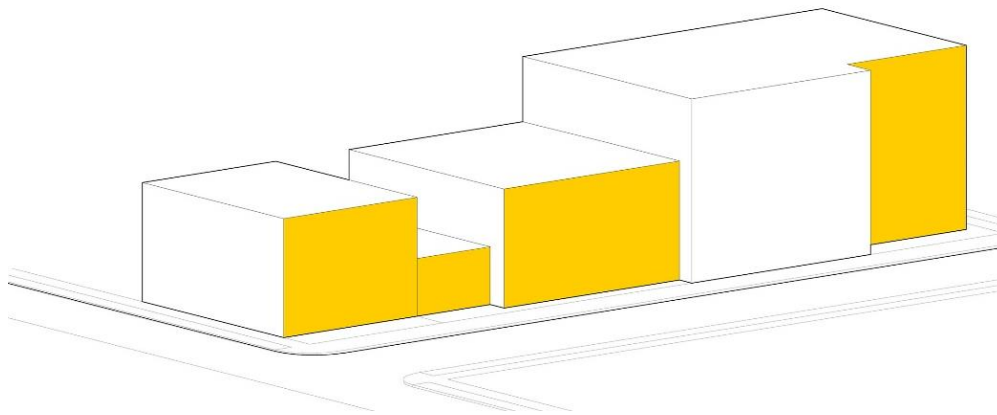


Figure 24-6-5 Wall Plane Limits

Wall planes that exceed either the linear dimension limits or the square foot limits in Table 24-6-4 wall plane limits shall be broken up by massing elements and/or architectural details. 24-603.c.2. / Table 24-6-6

**Figure 24-6-6 Vertical Articulation**

Defining buildings with a distinct structural bays creates a finer grain of buildings, both when viewed from a distance and when experiences on the streetscape. This is particularly important for longer expanses of buildings and can help integrate larger buildings and lots within a pattern of smaller buildings and lots. 24-603.c.3.(a)

**Figure 24-6-7 Horizontal Articulation**

Defining buildings with a distinct base, body and top can help reduce the scale of larger buildings and can create relationships between adjacent buildings with dissimilar scale. 24-603.c.3.(c)

4. **Blank Wall Limits.** Building elevations shall feature interest, variation, depth, and texture by one or a combination of the following techniques to meet the blank wall limits in Table 24-6-5, Nonresidential Building Design:
 - (a) Patterns of windows and doors meeting the transparency requirements in Section 24-603.c.5. and 6.
 - (b) Massing elements meeting the wall plane limits of Section 24-603.c.3
 - (c) Ornamental architectural details complimentary to the materials and architectural style of the building.
 - (d) Color and material changes associated with trim or massing elements of the building.

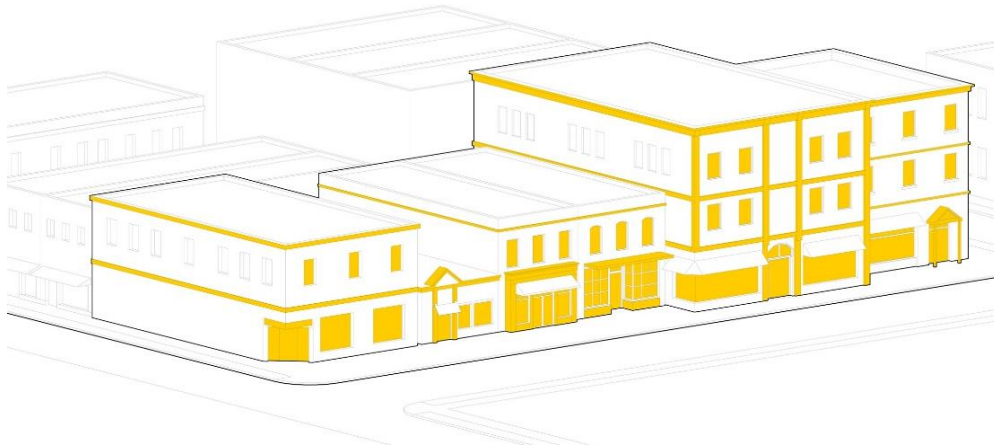


Figure 24-6-8 Blank Wall Limits.

A combination of architectural features, windows and doors breaks up larger expanses of wall plane and allow them to relate better to spaces around the building. More pedestrian-oriented streetscapes or active social spaces limit blank wall areas more strictly than buildings remote from the streetscape or not near active social spaces. 24-603.c.4.

5. **Primary Entrance Features.** Primary public entrances shall be clearly defined on all front facades with at least three of the following elements and be located at intervals specified in Table 24-6-5, Nonresidential Building Design:
 - (a). A single-story architectural emphasis such as raised parapets or gables, canopies, porticos, overhangs, pediments, or arches.
 - (b). Transom or sidelight windows that frame and emphasize the entry.
 - (c). Architectural details such as tile work and moldings, columns, pilasters, or other similar material changes.
 - (d). Integral planters or wing walls associated with a recessed or projecting entry court or plaza that integrates landscape and hardscape designs.
 - (f). For corner buildings, any entrance feature located on the corner may count to both sides, and may be considered located at 25' from each corner for the purpose of the required Primary Entry Feature intervals.

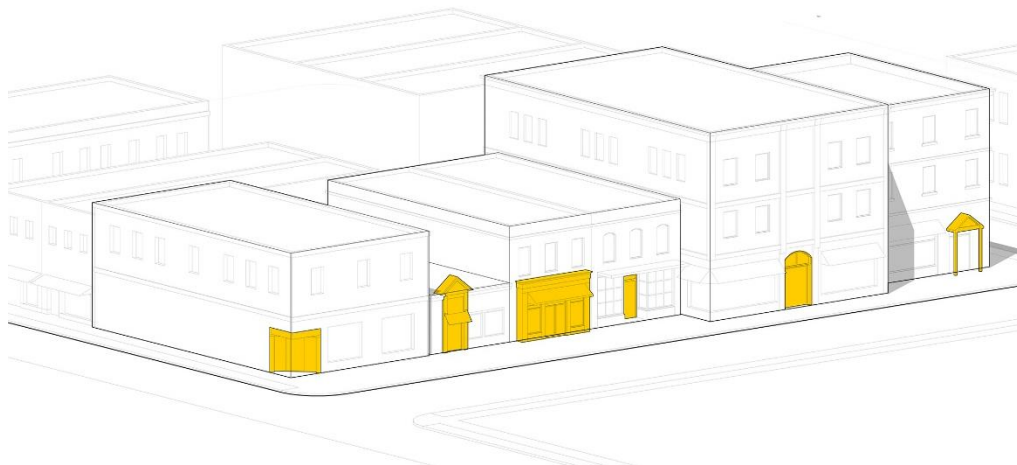


Figure 24-6-9 Primary Entry Features.

Entrances help activate the streetscape and orient buildings to public spaces. More pedestrian-oriented blocks benefit from the activity created by smaller-scale uses and the rhythm created by more frequent entrances. More car-oriented streets may allow less frequent entrances or alternative orientations of buildings to internal access streets or common spaces. 24-603.c.5.

6. **Transparency.** Buildings shall have the percentage of openings specified in Table 24-6-5, Nonresidential Building Design, based on the following:
- Where expressed as a first story requirement the percentage shall be measured between 2 feet and 8 feet above the sidewalk grade, or within 10 feet above the first floor elevation if the building is set back more than 10 feet from the street.
 - Where expressed as an upper story requirement, the percentage shall be measured between the floor level and ceiling of each story.
 - All first story windows required shall provide direct views to the building's interior or to a lit display area extending a minimum of 3 feet behind the window.
 - For industrial and civic buildings setback more than 25 feet from the street, clerestory windows may meet the first or upper story window requirements.

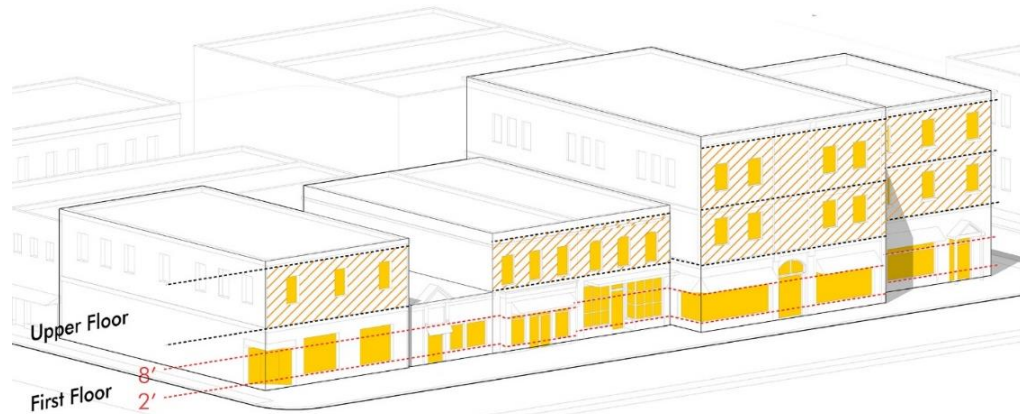


Figure 24-6-10 Transparency.

Transparency requirements eliminate large expanses of blank walls and create physical and perceptual connections to spaces around buildings. Meeting the requirements for each story helps reduce the scale of larger buildings. 24-603.c.6.

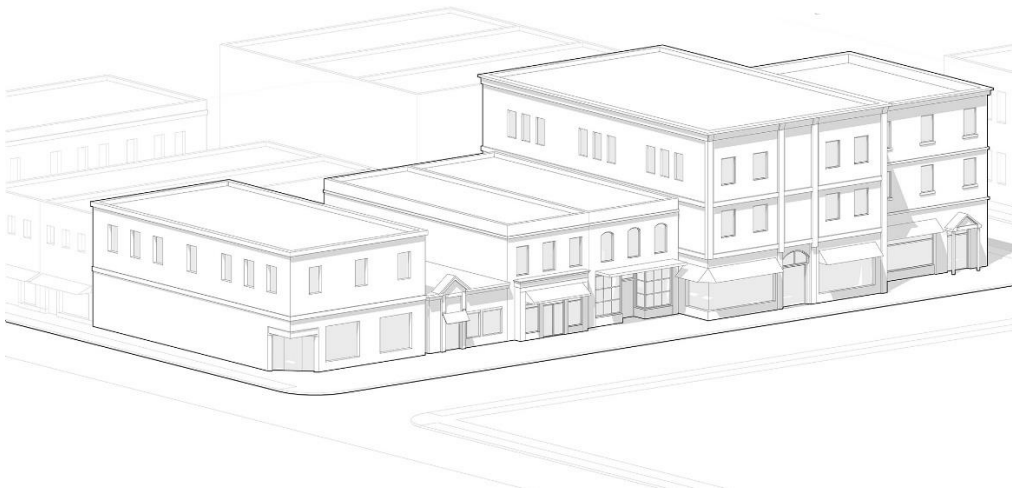


Figure 24-6-11 Facade Composition.

The combination of massing, modulation, entrances, and window transparency determine how a building relates to frontages and adjacent spaces. Building design standards based on the context of the area, type of street, and the position of the building on the block help reinforce the character of distinct districts and places.

7. **Materials.** Use building materials with a texture and pattern that creates visual interest and signifies quality construction and detailing.

- (a) The predominant surfaces on building walls shall be one of the primary materials listed in Table 24-6-6, Nonresidential Building Materials.
- (b) Synthetic alternatives may be approved by the Director if manufacturer specifications and/or precedents for application demonstrate that it will perform equally or better than the principal materials in terms of maintenance, design and aesthetic goals.
- (c) No more than 4 materials should be use, including the use of secondary and accent materials.
- (d) Material changes shall emphasize different elements of the building, in association with the massing and modulation standards.
 - (1) Where material changes are vertical (i.e. different materials stacked one above another), the transition between materials should include a belt course, trim band, sill, cap, frame, roof (if at ceiling height), or similar element to separate the two materials.
 - (2) Where material changes are horizontal (i.e. different materials side-by-side) the transition between materials should occur at interior corners or at the trim line, architectural column, or pilaster in association with a different structural or massing component of the building.
- (e) Material colors shall be used to blend buildings into an area, to coordinate elements of a development, and be drawn from the prevalent color schemes in the surrounding area. Primary material colors should be low-reflectance, subtle, neutral or earth tone colors. Monotonous or monochromatic color palettes are strongly discouraged. The use of high-intensity colors, metallic colors, black or fluorescent colors is limited to accent areas.

Table 24-6-6: Nonresidential Building Materials

Primary Materials (50% to 90%)	Secondary Materials (20% to 40%)	Accent Materials (10% to 30%)
Brick Stone Stucco Slate Exterior Insulation and Finish System (EIFS) – water managed only Concrete Masonry Units (CMU) - colored and textured only Horizontal wood lap siding (50% limit) Architectural metals (prefinished non-corrugated) (50% limit) Corrugated metals (I-H only) Standing seam metal (roofs only)	Any of the primary materials Architectural tiles Glass Color concrete Precast concrete Corrugated metal (I-L, I-M and I-H only)	Any of the primary or secondary materials Precast stone Wood trim

- 8. **4-sided Design.** All buildings shall incorporate 4-sided design, so that that no matter what view you have of the building, the design is not interrupted and all parts are perceived as a coordinated part of a unified whole. Specifically:
 - a. All sides shall exhibit the same quality, continuity, and durability of design including the same primary and secondary materials, although more important sides can reflect priority in the allocation of these materials.
 - b. All sides that are visible from streets, public spaces or active portions of adjacent sites shall have a similar level trim, accent material, details, and ornamentation, although the extent and details may be different to reflect the greater importance

of certain areas closest to the public realm or with greater visibility, and parts not exposed to the public may be designed for utility.

9. **Alternative Compliance.** Alternative compliance to the building design standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
 - (a) The requirement is not consistent with the particular architectural style selected for the building based on reputable resources documenting the style.
 - (b) The requirement would make the building less compatible with designs or characteristics of other buildings or sites adjacent to the project or that are prevalent throughout the area.
 - (c) The requirement is inconsistent with the principal function of the building when applied to industrial buildings in the I-M and I-H districts.
 - (d) Deviations from material standards and any simulated products demonstrate a proven performance in terms of maintenance and quality appearance.
 - (e) In any case, the deviation is the minimum necessary to address the circumstance and does not negatively impact other design standards applicable to the building or site.

- d. **Lot Open Space Design.** The design of open space can reinforce the character of unique districts and distinct places. Lot open space coordinates unbuilt areas with the public realm design of commercial, mixed-use, and industrial areas or uses landscape areas to mitigate undesirable impacts..
 1. **Design Objectives.** The required lot open space in Table 24-6-1 shall be designed and located to meet the following design objectives:
 - (a) Coordinate site design with the larger open space system and public realm design of the area.
 - (b) Use open space as an organizing element for development, creating focal points for buildings or groups of buildings, and creating transitions between distinct building sites or different places.
 - (c) Design a hierarchy of gateways, gathering places, parks, landscape perimeters, and natural features, integrated with streets, internal access streets, trails, and pedestrian passages.
 - (d) Select open space types based on the context of the areas and natural amenities of the site; in general more compact and formal gathering spaces are most appropriate in walkable commercial and mixed use areas, and more spacious and natural areas are most appropriate in large commercial or industrial areas.
 - (e) Use landscape, furnishings, fixtures, art, planters, and other elements of common spaces to complement buildings, coordinate buildings and sites within an area, and distinguish the unique character of different places.
 - (f) Preserve natural features and historical drainage patterns that can serve as amenities for development, maintain views to and from important outside spaces, perform ecological functions, or provide important connecting corridors.

 2. **Lot Open Space Design.** Lot open space required for each building and lot in Table 24-6-1 shall create a common or private amenity for the site and building. Buildings and open spaces on a lot shall be arranged to create usable outdoor spaces that meet one or more of the following types:
 - (a) Private frontage landscape areas designed according to Section 24-603.b., excluding any driveways, parking areas, or other automobile space;

- (b) Courtyards, plazas, patios, or similar outdoor seating areas that are either designed as an extension of the public streetscape on the frontage, or at least 500 square feet and 20 feet in all directions if internal to the site;
- (c) Common rooftop decks provided they are at least 200 square feet, and at least 12 feet in all directions – this space is limited to no more than 25% of the requirement for the lot and building;
- (d) Private balconies or patios, provided they are at least 6 feet by 10 feet – this space is limited to no more than 25% of the requirement for the lot and building; or
- (e) Landscape areas and perimeter treatments designed according to the standards of Chapter 8. These areas shall be limited to:
 - (1) No more than 25% of the requirement for lot open space in mixed-use districts.
 - (2) No more than 50% of the requirement for lot open space in commercial districts; and
 - (3) No limit in industrial districts.

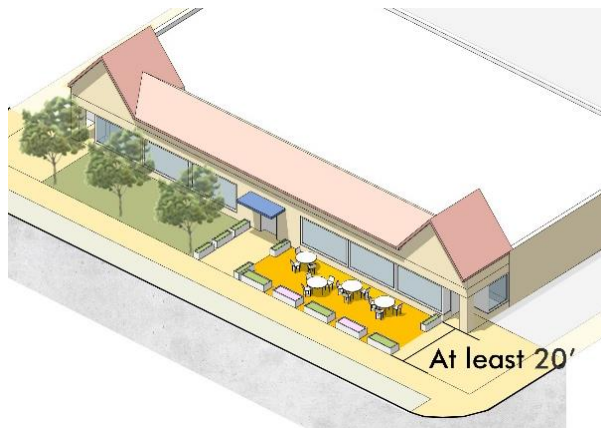


Figure 24-6-12 Courtyards, Patios and Plazas

More compact and walkable places benefit from smaller and more formal social spaces, such as courtyards, patios and plazas. 24-603.d.2.(b).

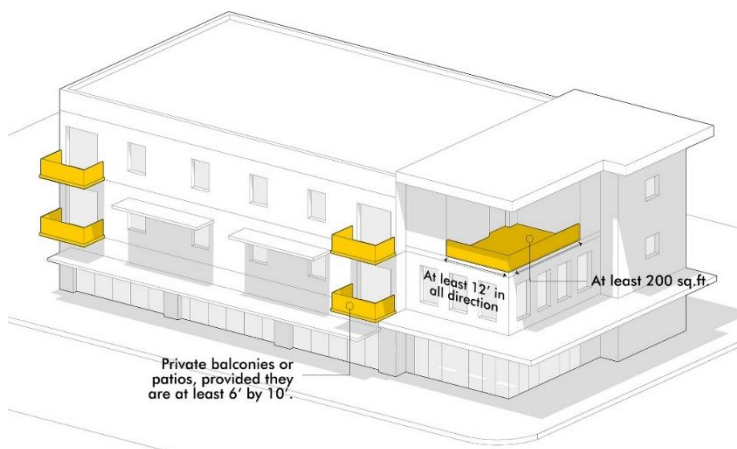


Figure 24-6-13 Private or Common Open Spaces

Private or commons areas incorporated into the building can provide a portion of the useable on-lot open spaces. These elements can also meet design requirements for breaking up the massing or blank wall of buildings 24-603.d.2.(c) and (d)

3. **Alternative Compliance.** Alternative compliance to the lot open space design standards established in this Section may be authorized according to the process and criteria in Section 24-208, Alternative Compliance, and any of the following additional applicable criteria:
- (a) The lot and building has access to at least two different active open space on the same block or abutting block, and meeting the design and service area standards Section 24-302 or 24-504.
 - (b) Other designs that promote infill development or rehabilitation of existing buildings and sites in a compact, and walkable context.

e. **Exterior Lighting.**

1. **Design Objectives.** The following design objectives shall be used in applying the lighting standards in this Section:
- (a) Provide sufficient illumination for security and safety needs in specific areas
 - (b) Ensure lighting does not interfere with the proper and safe function of the rights-of-way, and mitigate any potential negative affects on adjacent property.
 - (c) Protect residential property or other low-intensity uses from unnecessary light impacts from adjacent uses.
 - (d) Maintain adequate lighting for publicly accessible outdoor areas and social spaces.
 - (e) Enable lighting that enhances architectural elements and landscape features, in subtle and attractive ways.
2. **Location & Height.** Exterior lighting shall be located as specified in Table 24-6-7.

Table 24-6-7: Light Location & Height

Location	Maximum Height
Within 50' of any Residential Zoning	▪ 20'
All other locations – free-standing	▪ 30', but no taller than the principal building
Building-mounted	▪ 30' or 3' below the eave, parapet or cornice, whichever is less.

3. **Maximum Lighting Levels.** Maximum lighting levels are provided in Table 24-6-8. Lighting levels are average maintained horizontal levels, measured using a calibrated, color and cosine-corrected portable light meter and taken at a level position not more than six inches above the ground which the subject light source is on.

Table 24-6-8: Maximum Lighting Levels*

Area	Residential Zones	Commercial & Industrial Zones
Building exterior	0.5; (0.0 at property line)	1.0—5.0
Walks, pathways	0.5; (0.0 at property line)	1.0
Parking lots	1.0; (0.0 at property line)	2.0
Street or driveway lighting (internal to site)	0.6; (0.0 at property line)	1.2
Loading docks	N/A	20.0
Auto sales (outdoor display)	N/A	30.0 average, 60.0 spot location

* Information gathered from Illuminating Engineering Society (IES) Lighting Handbook. One footcandle is equal to one lumen uniformly distributed over an area of one square foot.

4. **General Standards.** All lighting shall be the following design and performance standards:
- (a) No lighting shall be used in any way which could interfere with the safe movement of vehicles on public streets, including:
 - (1) Any fixed lighting that is not designed for street illumination that produces light which could interfere with the operation of a vehicle;
 - (2) Any lighting which could be confused with any type of traffic control device, emergency or warning signals; or
 - (3) Any lighting that blinks, flashes, flickers or changes intensity with the exception of temporary holiday displays.
 - (b) No light spillage or glare shall be visible at or beyond the property line of the development. Lighting shall be provided at sidewalks or pathways, common areas or facilities, primary building entrances and in parking areas. All outside lighting shall include fixtures with a dimming interface
 - (c) Outdoor lighting shall be L.E.D (Light emitting Diode) “Dark Sky” compliant, per the International Dark Sky Association requirements for reducing light pollution and minimizing glare. The use of low pressure sodium light fixtures shall be prohibited in the city.
 - (d) The style and materials of light standards and fixtures shall be compatible with the architectural character and materials of buildings on the site, and building mounted lights are encouraged to use ornamental lights rather than wall pack fixtures.
 - (e) All lights shall be directed downward and the light source shall be shielded to direct light away from and not visible from any adjacent property.
 - (1) An exception for accent and flagpole lighting may be permitted for upward lights as long as the light source is shielded and not visible from any adjacent property.
 - (2) Wall lights shall be full cutoff fixtures, with flat lenses, and mounted so the lights are directed downward and the light source shall not go beyond the property line.
 - (3) Fixtures installed under canopies, awnings, and overhangs shall be fully recessed.

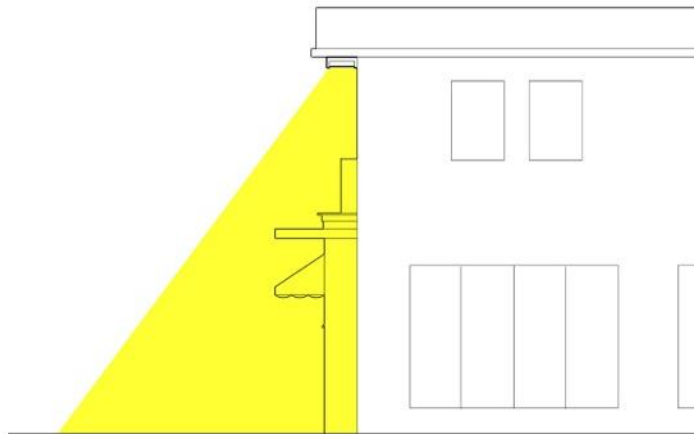


Figure 24-6-14 Lighting Directed Downward onto Site.

Lighting directed downward eliminates negative impacts of lighting on adjacent property and helps to preserve the night sky views.
24-603.e.4.(e).

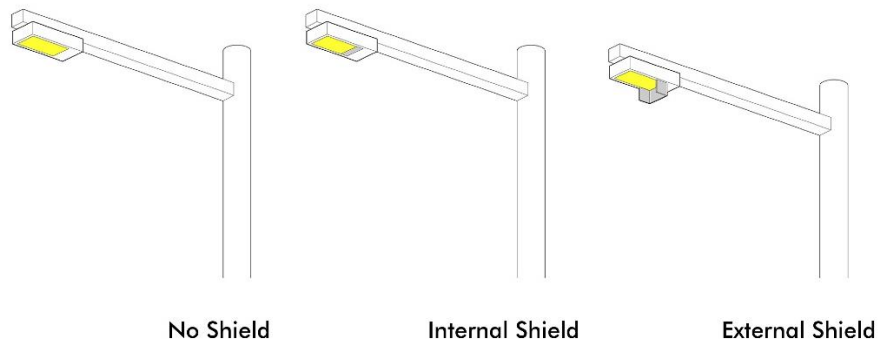


Figure 24-6-15 Light Shielding.

.Light shielding related to the different fixture styles, height, and location helps mitigate the potential negative impacts of specific lights.
24-603.e.4.(e).

- (f) No activity shall be conducted within 500 feet of a residential zone which creates glare exceeding 0.0 footcandle at the property line, except for parking lots, neighborhood recreation and service facilities and streets, which may be illuminated at levels up to 1.0 footcandle.
- (g) All parking lot lighting fixtures and exterior building floodlights, except those required for security purposes, shall be extinguished within one hour after the end of business hours and remain extinguished until one hour prior to the beginning of business hours. If a portion of a parking lot is offered for use after dark, only that portion shall be lighted.
- (h) Lighting within parking structures shall be designed to provide safety and security and be integrated into the architectural character of the structure.
- (i) In addition to all other standards lighting of all outdoor recreational facilities except baseball, softball, soccer, volleyball or football fields; driving ranges; outdoor arenas and amphitheaters shall meet the following:
 - (1) All lighting or illumination units or sources shall be hooded or shielded and directed downward so that they are not visible from any adjacent lot or property; and
 - (2) Lights or illuminating units shall not allow light either directly or through a reflecting device to spill upon any adjacent real property.
- (j) In addition to all other standards, baseball, softball, soccer, volleyball or football fields; driving ranges; or other field recreation facilities shall meet the following:
 - (1) Light fixture or illumination source shall not exceed 90 feet high.
 - (2) Individual lighting of 150 watts or greater shall not be used after 11:00 p.m., or within one hour after the event, whichever is later. Exceptions to this section may be granted by the Director.

Reserved Sections 24-604 through 24-700

Chapter 1. General Provisions

- 24-101 Overview
- 24-102 Interpretation
- 24-103 Administration
- 24-104 Enforcement
- 24-105 Nonconformities

Chapter 2. Procedures

- 24-201 General – All Applications
- 24-202 Minor Subdivision
- 24-203 Major Subdivision
- 24-204 Rezoning
- 24-205 Planned Unit Development
- 24-206 Use By Special Review
- 24-207 Site Plan
- 24-208 Alternative Compliance
- 24-209 Variance
- 24-210 Appeal of Administrative Decision
- 24-211 Code Amendment
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- 24-213 Vacation & Dedication Right-of-way
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Chapter 3. Subdivision Standards

- 24-301 Streets
- 24-302 Parks & Trails
- 24-303 Blocks & Lots
- 34-304 Required Improvements
- 24-305 Adequate Public Facilities

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- 24-402 Allowed Uses
- 24-403 Accessory Uses
- 24-404 Specific Use Standards
- 24-405 Temporary Uses

Chapter 5. Residential Development Standards

- 24-501 Intent & Applicability
- 24-502 Residential Development Standards
- 24-503 Residential Design Standards
- 24-504 Neighborhood Features & Common Areas
- 24-505 Courtyard Pattern
- 24-506 Residential Micro-Housing District

Chapter 6. Nonresidential Development Standards

- 24-601 Intent & Applicability
- 24-602 Nonresidential Development Standards
- 24-603 Nonresidential Design Standards

Chapter 7. Access & Parking Standards

- 24-701 Intent & Applicability
- 24-702 Access & Circulation
- 24-703 Required Parking
- 24-704. Parking Design
- 24-705 Loading Areas
- 24-706 Recreational & Oversized Vehicles
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Chapter 8. Landscape Standards

- 24-801 Intent & Applicability
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Chapter 9. Signs

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- 24-903 Prohibited Signs
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Chapter 10. Special Purpose Districts & Areas

- 24-1001 Floodplain Overlay District
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- 24-1003 Historic Preservation
- 24-1004 Conservation District
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- 24-1101 Wireless Communication Facilities
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- 24-1103 Adult Uses
- 24-1104 Marijuana Uses

Chapter 12 Metropolitan Districts**Chapter 13 Definitions & Terms**

- 24-1301 Description of Uses
- 24-1302 Glossary of Architecture & Design Terms
- 24-1303 Definitions

CHAPTER 6 NONRESIDENTIAL DEVELOPMENT STANDARDS: SECTION MAP

Current Standards	Reorganized	Comment
n/a	24-601 Intent & Applicability	Compiled from various sections to establish the intent and set up the new approach for all residential development standards
18.38.080 Zoning District Development Standards, Commercial District Standards 18.38.090 Zoning District Development Standards, Industrial District Standards 19.38.100 Zoning District Development Standards, Performance Options	24-602.a Nonresidential Development Standards	Converted all of the current commercial and industrial development standards to single table. These match the current district standards, with the exception of a height increase in C-L (30' to 40' or approx. 3-story building) and C-H (40' to 60' or approach 5-story building). Some of the performance options for building height or building placement are converted into other sections (height exceptions in 24-602.b.2; frontage types in 24-603.b.). This section includes two new Mixed Use districts that feature increased heights, maximum lot sizes, and reduced setbacks to ensure compact, walkable building forms.
various sections, plus 18.38.100 Performance Options	24-602.b Dimension exceptions	Incorporation of various exceptions, interpretation rules or additional standards in one section related to the development standards table.
18.52.030 Accessory Uses & Structures, Accessory Uses & Structures	24-602.c Accessory buildings - residential	Incorporated current standards but distinguished between minor and secondary (by size) for the purposes of setbacks and design standards. Additional buildings beyond these sizes on the same lot would be an additional principal building and need to meet all standards for principal buildings
18.52.035 Accessory Uses & Structures, Fences and Walls	24-602.d. Fences and walls	Current provisions with no substantive changes
n/a	24-603.a Nonresidential Design Standards, Applicability	Compiled from various sections to establish the intent and set up the new approach for all nonresidential design standards. This also introduces the "frontage types" in the applicability table. This is a variation of the current performance options for reduced front setbacks (see 24.503.b.below).
Various provisions from: • 18.38.100 Performance options • 18.40.090 Architectural review standards • 18.40.100 Site and building design standards • 18.46.040 Infill area design standards	24-603.b Frontage Design	The frontage types is a new approach to the current performance option for reduced front setbacks. This approach includes the following additional elements • More variations in range of building placement to account for different contexts • Comprehensive standards for the design of the entire frontage, not just the building placement. • Correspondence with building design standards with the principle that the closer to the street the more human-scale design standards apply • Default standards for particular districts (suburban form for C- and I- districts; walkable form for MU- districts) but with criteria for alternative compliance and applying the different frontage types based on street types (from 24-301).
Same as above	24-603.c Building Design	New approach, derived from a similar range of topics in the current regulations. It focuses the standards on a few key elements of building design – massing (volume of buildable areas); modulation (composition and breaking up blank walls); primary entrance features (more massing and emphasizing connections to streetscape); transparency (connecting to outside with windows and doors); and materials. Variations to the standards are based on building placement and proximity to the street (frontage types). Compared to current standards, the standards are increased for frontage types A & B (buildings between 0' and 25' from the street); the standards are comparable for frontage type C (buildings between 25' and 80' from the street; and the standards are reduced for frontage type D (buildings 80'+ from the street). This section uses a similar structure as Frontage Design – stating the intent / design objective; establishing a measureable objective standard; identifying a range of design strategies that may be used to meet that standard; and allowing for alternative compliance when something not listed or something not technically meeting the standard would serve the objective equally or better.

CHAPTER 6 NONRESIDENTIAL DEVELOPMENT STANDARDS: SECTION MAP

Current Standards	Reorganized	Comment
Same as above	24.603.d. Lot Open Space Design	This section refines and presents options how to design and use the non-building portions of lots (setbacks and lot open space %) in different context – more landscape, separation and screening in suburban contexts vs. more hardscape and smaller social spaces for mixed-use or walkable). It coordinates with other sections dealing with these topics (24-603.b – frontage design, Chapter 8 – Landscape Design), but in some cases may require additional open space design if these spaces cannot be designed to meet the objectives of the lot open space standards.
18.40.110 Lighting Standards	24-603.e Exterior Lighting	This reflects the existing lighting standards, recently updated by staff.

Chapter 13. Definitions & Terms

24-1301 Definitions

24-1302 Architecture & Design Terms

24-1301 Definitions

All terms used in this code shall have their plain and commonly accepted meaning, based upon the context of their use in the code. The following terms shall have the meaning given below, unless more specifically described, limited or qualified within the standards of this code. Some Chapters have specific definitions where the terms have the given meaning for interpretation of that chapter.

100-year flood. A flood having a recurrence interval that has a one-percent chance of being equaled or exceeded during any given year (one-percent-annual-chance flood). The terms "one-hundred-year flood" and "one-percent-chance flood" are synonymous with the term "100-year flood."

100-year floodplain. The area of land susceptible to being inundated as a result of the occurrence of a 100-year flood.

Abandoned Sign.

- (1) A sign or sign structure and components, for which no legal owner can be found; and/or
- (2) A sign and structure which are used to identify or advertise a business, tenant, owner, product, service, use, event or activity that has not been located on the premises for a period of 90 consecutive days or longer.

Accessory Building or Structure. A detached building or structure located upon the same lot as the principal building or structure to which it is related, which is incidental to and customarily found in connection with such principal building or structure.

Accessory Use. A use customarily incidental, related and subordinate to the main use of the lot, building or structure which does not alter the principal use.

Adjacent. Close, contiguous, and related to by proximity, sharing a common boundary or otherwise nearby to have a relationship without intervening dissimilar elements. When referring to land, separation caused by a street, alley, sidewalk, railroad right-of-way, utility line, trail, or irrigation ditch, or similarly related land can be considered adjacent.

Abutting. Directly touching elements that share a common edge or boundary.

Alley. A minor way used primarily for vehicular access or service to the back of properties adjacent to a street. An alley shall not be considered a street.

Alteration. Any act or process requiring a building permit, moving permit, demolition permit or sign permit for the reconstruction, moving, improvement or demolition of any designated property or district; or any other action in which a review by either the historic preservation commission or the city's historic preservation specialist is necessary under this article and/or the district designation plan and in accordance with the definitions of major and minor alterations, for the purposes of this article.

American National Standards Institute (ANSI). The standards by said organization that helps development in the use have an equitable and open process that serves industry and the public good, having a consensus in standards development; ANSI's essential requirements.

Animal Unit. A unit of measurement used to determine the animal capacity of a particular site or parcel of land and to establish an equivalency for various species of livestock.

Animated Sign (see *Flashing or animated or Imitating sign*).

Antenna. A device used to transmit and/or receive radio, television or any other transmitted signal and which may be rooftop, wall or ground-mounted.

Appeal. A review of a final decision by a higher authority.

Applicant. The owners or lessees of property, their agent, or persons who have contracted to purchase property, or the city or other quasi-governmental entity that is proposing an action requiring review and approval by one or more of the sections in this title. An applicant may subsequently become the developer once approval is granted and, in this case, the terms shall be interchangeable.

Appurtenances. The visible, functional objects accessory to and part of buildings or structures and which may extend above the height of the roof.

Art. All forms of original creations of visual art, including, but not limited to, sculpture; mosaics; painting, whether portable or permanently fixed, as in the case of murals; photographs; crafts made from clay; fiber and textiles; wood; glass; metal; plastics; or any other material or any combination thereof; calligraphy; mixed media composed of any combination of forms or media; unique architectural styling or embellishment, including architectural crafts, environmental landscaping; or restoration or renovation of existing works of art of historical significance. Works of art are not intended to be used for commercial advertising purposes.

Arterial street (see *Street*).

Artificial turf. Any of the various synthetic fibers made to resemble natural grass.

Awning, Internally Illuminated. Any transparent backlit awning or awning lettering which transmits light from within the awning to the outside surface of the awning.

Awning Sign. A sign that is mounted or painted on or attached to an awning.

Backing. The background area of a sign, which differentiates the total sign display from the background against which it is placed.

Basement. Any level of a building where more than one-half of the vertical distance between floor and ceiling is below the grade of the site.

Beacon (see *Searchlight, strobe light or beacon*).

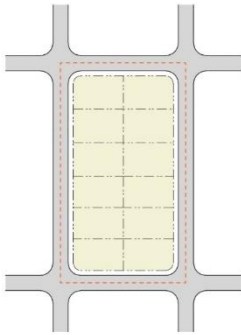
Bedroom. Any room intended and used principally for sleeping purposes.

Berm (see "Earthen berm.")

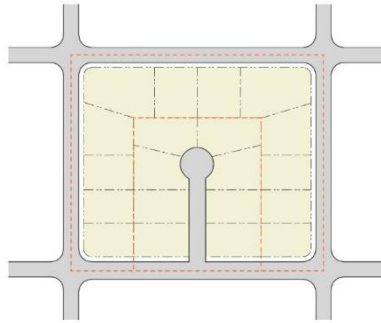
Bioretention Facility. A landscaped stormwater element designed to concentrate or remove debris and pollution from surface water runoff by moving water slowly and horizontally at the surface through vegetation using gently sloped sides that cleanse water from pollutants and soil erosion before it enters the city's stormwater system.

Bioswale. A channeled depression or trench that receives rainwater runoff (as from a parking lot) and has vegetation (such as grasses, flowering herbs, and shrubs) and organic matter (such as mulch) to slow water infiltration and filter out pollutants.

Block. A group of platted lots and outlots surrounded by streets or by other features that interrupt the street network such as parks, railroad rights-of-way, or municipal boundary lines; or the perimeter of all lots fronting on the street in the case of a cul-de-sac.



Standard Block

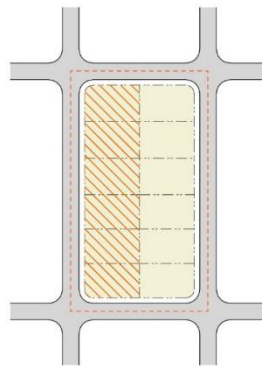


Cul-de-sac Block



Exception

Block face. All lots on one side of a block.



Block Face

Buffer. To promote separation and enhance compatibility between land uses of different intensities.

Building. Any structure built for the shelter or enclosure of persons, animals or property of any kind, excluding fences or walls.

Building Appurtenance. The visible, functional or ornamental object accessory to and part of a building.

Building Code. Any law, ordinance or code which is in force in the city and which pertains to the design and construction of buildings and other structures, or to any components thereof, such as cooling and heating, plumbing, electricity and the like.

Building Envelope. The area in which a building or structure is constructed or placed in a development and in which the land area beyond the envelope is under the single ownership or common ownership of all property owners within the development.

Building Footprint. The outline of the total area which is covered by a building's perimeter at the ground level.

Building Frontage. The area of the lot along the front building line, and when referring to design standards it may include relationship of this area and the primary facade of the building.

Building Frontage, Principal. The horizontal linear dimension which is designated as the primary facade of that portion of a building occupied by a single use or occupancy for the purposes of allocating signs and other design requirements.

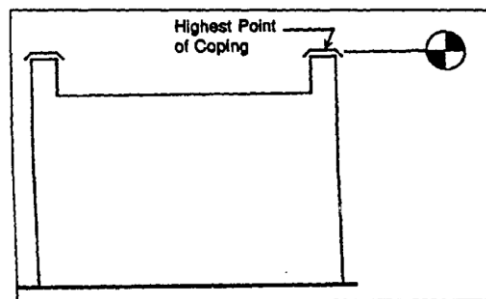
Building Frontage, Secondary. That dimension of a building abutting a public right-of-way other than the principal building frontage for the purposes of allocating signs and other design requirements.

Building or Structure Height. The vertical distance from grade at an exterior wall of a building or structure to the highest point of the coping of a flat roof, to the average height of the highest gable of a hipped roof, or a monitor roof, or to the highest point of a curved roof. This measurement shall be exclusive of church spires, cupulas, chimneys, ventilators, pipes, and similar appurtenances. For the purposes of this definition, grade applies as follows:

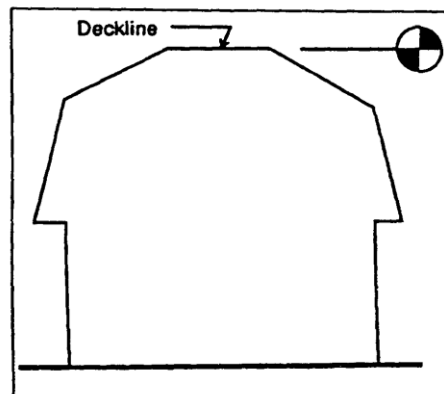
- (1) When there is less than a ten-foot difference between the highest and lowest ground surface within a five-foot horizontal distance from the wall, use the highest elevation.
- (2) When there is greater than a ten-foot difference between the highest and lowest ground surface within a five-foot horizontal distance from the wall, use ten-feet higher than the lowest elevation in this area.

The height of the building is the vertical distance above a reference datum measured to

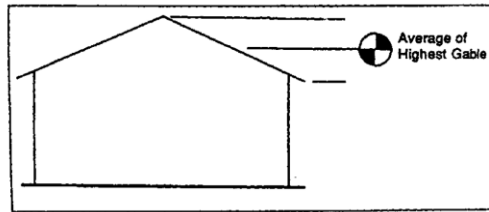
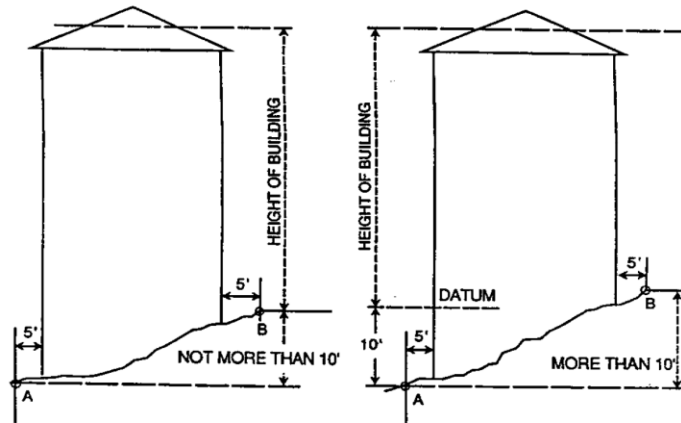
- (a) the highest point on a flat roof;
- (b) the deck line of a mansard roof;
- (c) the average of the highest gable on a hip or gabled roof:



Flat Roof (measured to highest point)



Mansard Roof (measure to deck line)

*Gable roof *(1 gable)**Gable Roof (2 or more gables)**Building height from ground..*

Building, Principal. The primary building on a lot or a building that houses the principal use.

Building Line. The actual line at which a building is constructed, and the location of other elements on the lot or adjacent lots may refer to this line extended outward from the building.

Building Line, Required Front. The portion of the lot frontage required to be occupied by the front facade of a principle structure, or other permitted accessory structures or landscape associated with the frontage design.

Caliper. The diameter or circumference of a tree.

Candela. A unit of luminous intensity, defined as the luminous intensity of a source that emits monochromatic radiation of frequency 540×10^{12} Hertz and that has a radiant intensity of $1/683$ watt/steradian and adopted in 1979 as the international standard of luminous intensity.

Centerline (of Public Right-of-Way). A line running midway between the bounding right-of-way lines of a street or alley. For the purposes of calculating signage, the centerline means the apparent centerline of the road determined by finding the point midway between the outer edges of the road surface.

Certificate of Approval. A certificate issued by the city authorizing the construction, alteration or demolition of property and improvements designated under this article.

Certificate of Occupancy (C.O.). A written certificate provided by the city signifying the subject building/structure (property) has complied with city standards allowing for use and occupancy.

Change of Use. A use that substantially differs from the previous use of a building or land and which may affect such things as parking, drainage, circulation, landscaping, building configuration, noise, or lighting. A change of ownership which does not include any of the factors listed above shall not be considered a change of use.

Changeable Copy Sign (also known as a marquee sign). A sign designed to allow the changing of copy as with individual letters through manual means, without altering the sign backing or structure in any such way.

Channel. A natural or artificial watercourse of perceptible extent, with definite bed and banks to confine and conduct continuous or periodic flowing water.

Channel Letters, Individual Letters, Raceway and Channel Sign. Individual letters, flat cutout letters or symbols constructed to be applied singly in the formation of a wall sign or freestanding sign.

Channelization. The artificial creation, enlargement, or realignment of a stream channel.

Circumference. The perimeter measurement of a building or structure, measured as a continuous line.

Clear Vision Zone or Area. That area which the city requires maintenance of in order to preserve the sight distance and safety of motorists, pedestrians, and bicyclists by requiring an unobstructed line of sight necessary for most drivers stopped at an intersection to see an approaching vehicle, pedestrian or bicyclist to avoid a collision.

Collector Street (see *Street*).

Commercial Mineral Deposit. A natural mineral deposit of limestone used for construction purposes, coal, sand, gravel, and quarry aggregate, for which extraction is or will be commercially feasible and regarding which it can be demonstrated by geologic, mineralogic, or other scientific data that such deposit has significant economic or strategic value to the area, state, or nation.

Common Consumption Area. An area designed as a common area located within a designated Entertainment District and approved by the local licensing authority that uses physical barriers to close the areas to motor vehicle traffic and limit pedestrian access.

Comprehensive Plan. The comprehensive plan of the city, as provided for in the city Charter and which provides for the future growth and improvement of the community, for the preservation of historic and natural resources, and for the general location and coordination of streets and highways, recreation areas, public building sites and other physical development. Comprehensive plan may also include any specific plans, policies, or programs adopted under the guidance of that plan for the purposes of interpreting and applying this code.

Condominium. A form of ownership in which the interior floor space of a unit or area is owned individually, and the structure, common areas and facilities are owned by all of the owners on a proportional, undivided basis.

Coverage. Land area which is covered with impervious surfaces, such as buildings, patios, or decks with roofs, carports, swimming pools, tennis courts, or land area covered by any other type of structure, including parking lots.

Cul-de-sac. A local street with one open end and the other end terminating in a vehicular turn around.

Deciduous. A plant with foliage that is shed annually.

Decision Point Distance. Where the clear vision sight distance triangle begins.

Deck. A floored outdoor area, typically elevated above grade and adjoining a residential dwelling.

Dedication. Setting aside property for a specific purpose, including, but not limited to, streets, utilities, parks, and trails.

Demolition. Any act or process which destroys, in part or in whole, any designated property or property located within a designated historic district.

Density. The number of dwelling units per gross acre of land area.

Detention Area. An area which is designed to capture specific quantities of stormwater and to gradually release the same at a sufficiently slow rate to reduce the risk of flooding.

Developer. Any person, partnership, joint venture, association, or corporation or other legal entity who or which shall participate as owner, promoter, designer, builder, or sales agent in the planning, platting, development, promotion, sale, or lease of a subdivision.

Developing. A lot, or grouping of lots or tracts of land, with less than 60 percent of their perimeter boundary adjacent to existing development. For the purposes of this definition, public parks, natural areas and other such areas which are not eligible for further development shall be considered developed. Areas which were originally platted prior to 1978 and which have at least 75 percent of the lots in the development built on within this 20-year period shall also be considered developed. A replat of the original plat shall not affect the commencement of this 20-year period.

Development. Any construction or activity which changes the basic character or use of land on which construction or activity occurs, including, but not limited to, any non-natural change to improved or unimproved real estate, substantial improvements to buildings or other structures, mining, dredging, filling, grading, paving, extraction, or drilling operations.

Development or Subdivision Improvement Agreement. A written instrument for the purposes of specifying all improvements to be constructed by the developer, as well as the timetable for construction of such improvements, any special conditions of construction, and construction cost estimates.

Direct Lighting. Spot or floodlighting used to illuminate a sign surface.

Directional On-Site. Signs that direct the movement or placement of pedestrian or vehicular traffic on a lot without reference to, or inclusion of, the name or logo of a product sold or services performed on the lot or in a building, structure or business enterprise occupying property, such as "welcome," "entrance," "exit," "restrooms," "parking," "loading area," and "drive-thru."

Dissolve. A mode of message transition on an electronic message display accomplished by varying the light intensity or pattern, where the first message gradually appears to dissipate and lose legibility simultaneously with the gradual appearance and legibility of the second message.

District. A portion of the community within which uniform regulations apply.

Downtown Entertainment District. That area contained within the south curb flow line of 7th Street, the west curb flow line of 8th Avenue, the north curb flow line of 10th Street and the east curb flow line of 9th Avenue.

Drive-in or Drive-through. Accessory site and building features that encourage or permit customers to order and receive food or beverages while remaining in a motor vehicle for consumption on or off the site and which includes a menu board and audio or video speakers.

Drive-up. Accessory site or building features that encourage or permit customers to receive services or obtain or drop off products while remaining in a motor vehicle and which excludes a menu board and/or audio or video speakers.

Driveway. An improved concrete or asphalt path leading directly to one or more city-approved parking spaces constructed with a concrete, asphalt, or similar all-weather surface.

Dry Wash Channel. Natural passageways or depressions of perceptible extent, containing intermittent or low-base flow.

Dust Abatement Plan. A plan intended and designed to control dust during the construction or development of property.

Dwelling Unit. One room, or connected rooms, constituting a separate, independent housekeeping establishment for owner occupancy, or rental or lease as a single unit, on a monthly basis or longer, physically separated from any other room or dwelling units which may be in the same structure and served by no more than one gas meter and one electric meter.

Earthen Berm. A mound of earth, higher than grade, used for screening or buffering, the definition of space, noise attenuation, and decoration in landscaping.

Easement. A right granted by a property owner permitting a designated part of interest in the owner's property to be used by others for a specific use or purpose.

Ecological Character. The natural features and attributes of an area or landscape that, combined, give the area its character.

Electronic Message Display. A sign capable of displaying words, symbols, figures, or images that can be electronically or mechanically changed by remote or automatic means.

Emergency. An unexpected and sudden event that must be dealt with urgently in order to stabilize or protect a structure.

Entertainment District. An area within the city that is designated as an Entertainment District of a size no more than 100 acres and containing at least 20,000 square feet of premises licensed as a tavern, hotel and restaurant, brew pub, retail gaming tavern, or vintner's restaurant at the time the district is created.

Evergreen. A plant with foliage that persists and remains green year-round.

Existing Development. Any development in the city once all public improvements, including water, sewer, streets, curb, gutter, streetlights, fire hydrants, and storm drainage facilities, are installed and completed.

Exposed Incandescent or High intensity Discharge Lighting. Any sign or portion of a sign that utilizes an exposed incandescent or high intensity lamp, with the exception of neon.

Exterior or Perimeter Wall. A wall, elements of a wall, parapet wall or any elements or groups of elements which define the exterior boundaries or courts of a building.

Facade. The exterior face of a building.

Fade. A mode of message transition on an electronic message display accomplished by varying the light intensity, where the first message gradually reduces intensity to the point of not being legible and the subsequent message gradually increases intensity to the point of legibility.

Family. An individual living alone, or any number of persons living together as a single household who are interrelated by blood, marriage, adoption or other legal custodial relationship; or not more than two unrelated adults and any number of persons related to those unrelated adults by blood, adoption, guardianship or other legal custodial relationship. In multifamily units, the number of unrelated adults shall be determined based on the provisions of the city's housing code. For the purposes of this definition, a bona fide employee of the family who resides in the dwelling unit and whose live-in status is required by the nature of his employment shall be considered a member of the family.

Federal Register. The official daily publication for rules, proposed rules, and notices of federal agencies and organizations, as well as executive orders and other presidential documents.

Fence. Any artificially constructed barrier of an approved material or combination of materials erected vertically to enclose or screen areas of land.

Figures. An outline, shape or pattern of numbers, letters or abstract images.

Financial Security or Guarantee. A financial obligation, in a form acceptable to the city, which assures completion and payment for all improvements related to development of property.

Flag. Material attached to or designed to be flown from a flagpole or similar device and which may display the name, insignia, emblem or logo of any nation, state, municipality, or commercial or noncommercial organization (see *Pennants*).

Flashing or Animated. Signs or lighting with flashing, blinking, moving or other animation effects or that give the visual impression of such movement by use of lighting, or intermittent exhibits or sequential flashing of natural or appearance of artificial light or colors, including those signs that rotate, revolve, spin, swing, flap, wave, shimmer, or make any other motion, or illusion of motion, or which imitate official governmental protective or warning devices (see *Imitating sign*).

Flood or Flooding. A general and temporary condition of partial or complete inundation of normally dry land areas from the unusual and rapid accumulation or runoff of surface waters from any source.

Floodplain. An area which is adjacent to a stream or watercourse and which is subject to flooding as a result of the occurrence of an intermediate regional flood and which is so adverse to past, current or foreseeable construction or land use as to constitute a significant hazard to public health and safety or to property. The term "floodplain" includes, but is not limited to, mainstream floodplains, debris fan floodplains, and dry wash channels and floodplains.

Floor Area, Gross. The total area of a building measured by taking the outside dimensions of the building at each floor level, or from the centerlines of walls separating two buildings and excluding areas used exclusively for the service of the building such as mechanical equipment spaces and shafts, elevators, stairways, escalators, ramps, loading docks, cellars, unenclosed porches, attics not used for human occupancy, any floor space in accessory buildings, or areas within the building which are intended for the parking of motor vehicles.

Flow Line. The low point within a street section wherein water is intended to collect and flow, typically the gutters along each edge of pavement.

Foundation Plantings. Live plantings located immediately around the base of the foundation of a building façade that reflects the formal geometry of the structure.

Frame. A complete, static display screen on an electronic message display.

Frame Effect. A visual effect on an electronic message display applied to a single frame to attract the attention of viewers.

Freestanding Sign. A sign which is not attached to any building. A freestanding sign shall include, but is not limited to, a pole, monument, a canopy, and freestanding wall sign. A sign that extends more than four feet from a wall but is attached and/or is part of a canopy or an awning shall be considered a freestanding sign.

Freestanding Wall or Fence. Either a wall that is not attached to a building or a wall attached to a building that projects more than four feet beyond the exterior wall of the habitable portion of the building.

Frontage. The area of a lot between the front building line and the front lot line.

Garage or Yard Sale. The occasional sale of new or used goods at a residence, which may be held outside and/or within a garage or accessory building.

Gas. All natural gases and all hydrocarbons not defined as oil.

General Improvement District #1. That 19-block district bounded by 11th Street to the south, 6th Street to the north, 7th Avenue to the east and 11th Avenue to the west, excluding city Block 35.

Geologic Hazard. A geologic condition which is adverse to current or foreseeable future construction or land use associated therewith, constituting a hazard to public health and safety or property, including, but not limited to, landslide, rock fall, subsidence, expansive soils, slope failure, mudflow, or other unstable surface or subsurface conditions.

Ghost Sign. Old hand-painted signage that has been preserved on a building for an extended period of time, whether by actively keeping it or choosing not to destroy it.

Glare. A sensation of brightness within the visual field that causes annoyance, discomfort, or loss in visual performance and visibility.

Grade. The average elevation of the finished surface of the ground, paving, or sidewalk with a radius of five feet from the base of the structure.

Graphics. Drawings, decals, paint, or illustrations.

Gravel. Inert materials such as loose fragments of rock larger than "pea" size and commonly used as parking surface material.

Gross Floor Area (see *Floor area*).

Gross Leasable Area (GLA). The area of a building that can be leased to tenants, including storage areas and common areas apportioned to the number of tenants sharing the area. Gross leasable area shall be measured in the same manner of gross floor area, but is apportioned to specific uses or tenants in the building.

Gross Land Area. The total land area of a site or property, including land to be dedicated for streets and other public purposes.

Ground Cover. Materials that typically do not exceed one foot in height used to provide cover of the soil in landscaped areas, which may include a combination of, but not limited to river rock, cobble, boulders, concrete pavers, grasses, flowers, low-growing shrubs and vines, and those materials derived from once-living things, such as wood mulch. In no event shall weeds be considered ground cover.

Ground Kites. Freestanding frames usually covered with flexible fabric and designed to be animated by the wind to attract attention.

Guest. A person who is visiting at the principal or primary home of another person for up to 30 days, and which home is not the principal or primary home of the guest.

Habitat. Areas that contain adequate food, water and cover to enable one or more species of wildlife to live in or use the area for part of all of the year and which typically consists of natural or planted vegetation, along with one or more sources of water available in the area or adjacent areas.

Hazard. Any structure or use of land which endangers or obstructs the airspace required for aircraft in landing, take-off and maneuvering at the airport.

Hazardous Material. Any substance or materials that, by reason of their toxic, caustic, corrosive, abrasive or otherwise injurious properties, may be detrimental or deleterious to the health of any person handling or otherwise coming into contact with such material or substance, or which may be detrimental to the natural environment and/or wildlife inhabiting the natural environment.

Height (see *Building height*).

Highest Adjacent Grade. The highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

Hillside Development. Development in areas which contain existing, natural slopes in excess of 15 percent.

Historic District. A geographically definable area with a concentration of buildings, structures, sites, spaces or objects unified by past events, physical development, design, setting, materials, workmanship, sense of cohesiveness or related historical and aesthetic associations, that is recognized through listing in a local, state or national landmarks register.

Historic Preservation. The protection, rehabilitation and/or restoration of districts, buildings, structures, and artifacts which are considered significant in history, architecture, archaeology, or culture.

Historic Sign. A sign that has been officially designated as an historic landmark.

Historic Structure. Any structure that is:

- (1) Listed individually in the National Register of Historic Places (a listing maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
- (2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
- (3) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or
- (4) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:
 - a. By an approved state program as determined by the Secretary of the Interior; or
 - b. Directly by the Secretary of the Interior in states without approved programs.

Holiday Decorations. Temporary decorations, lighting or displays which are clearly incidental and customary and commonly associated with any national, state, local, religious or commonly celebrated holiday and which contain no commercial message.

Home Occupation. An occupation, profession, activity, or use conducted within a residential dwelling unit that is incidental and secondary to the use of a residential dwelling unit, which does not alter the exterior of the property or affect the residential character of the environment and which meets the provisions of this article.

Home Occupation, Rural. An accessory use to a farming operation or a nonfarm household located in a rural area, designed for gainful employment involving the sale of agricultural produce grown on the site, conducted either from within the dwelling and/or from accessory buildings located within 500 feet of the dwelling occupied by those conducting the rural home occupation.

Homeowners' Association. An association of homeowners or property owners within a development, typically organized for the purpose of enforcement of private covenants and/or carrying out the maintenance of common areas, landscaping, parks, building exteriors and streets.

Household Pet. Any nonvenomous species of reptile and any domestic dog, cat, rodent, primate or bird over the age of four months, which is typically kept indoors. For the purposes of this definition, guide or assistance animals shall not be considered household pets.

Illumination. The use of artificial or reflective means for the purpose of lighting a sign.

Imitating Sign. Signs which purport to be, are an imitation of, or resemble an official traffic sign, signal or equipment which attempt to direct the movement of pedestrian or vehicular traffic using such words as "Stop," "Danger" or "Caution" to imply a need or requirement to stop, or a caution for the existence of danger, such as flashing red, yellow and green (see *Flashing or animated*).

Impervious. Any hard-surfaced, man-made area that does not readily absorb or retain water, including but not limited to building roofs, paved parking and driveway areas, compacted areas, sidewalks, and paved recreation areas.

Incidental Sign. Nondescript signs, emblems or decals attached to a permanent structure informing the public only of those facilities or services available on the premises, such as a credit card sign or a sign indicating hours of business.

Indirect Lighting. Reflected light or lighting directed toward or across a surface.

Individual Letters (see *Channel letters*).

Infill. A lot, or grouping of lots or tracts of land, with at least 60 percent of their perimeter boundary adjacent to existing development. If a right-of-way at least 120 feet in width or streets designated on the comprehensive transportation plan, as major collectors or arterial streets are adjacent to the subject lot, lots across such a street shall be excluded for the purposes of determining infill and at least 60 percent of

the remaining boundaries of the site shall be adjacent to existing development for the lot to be determined to be infill.

Inflatable Sign or Inflatable Object. Any object filled with air or other gas, including balloons, which characterize a commercial symbol or contain a message.

Intensity. An expression of the level or nature of development in nonresidential developments, or zones or specific land uses based on combinations of building coverage and height, impervious surfaces, expected traffic, hours of operation, noise, or similar impacts on surrounding areas.

Internal Illumination. A light source that is contained within the sign itself, or where light is visible through a translucent surface.

Irrigation System. An underground, automatic sprinkler system or above-ground drip system explicitly designed for watering vegetation.

Kiosk. A freestanding structure upon which temporary information and/or posters, notices, and announcements are posted.

Landscape Plan. A scaled graphic plan showing the treatment of all open space areas, parking lots, parking areas, areas adjacent to the public right-of-way, perimeter treatment, and other landscaped areas.

Landscaping. Any combination of living plants, such as trees, shrubs, vines, ground covers, flowers, or grass; natural features, such as rock, stone, bark chips, or shavings; and structural features, including but not limited to, fountains, reflecting pools, screening walls, solid fences, and benches.

Lawn. A stretch of open, turf-grass covered land; artificial turf shall not be considered lawn or turf-grass.

Leading Edge. The point of a sign, including its support structure, nearest to the public right-of-way.

Legal Description. A land description recognized by law, including the measurements and boundaries.

Legible. A sign capable of being read with certainty without visual aid by a pedestrian of normal visual acuity.

Live Plantings. Trees, shrubs and organic ground cover which are in healthy condition.

Livestock. Animals typically related to agricultural or farming uses, including, but not limited to, chickens, swine, sheep, goats, horses, cattle, yaks, alpacas, and emus.

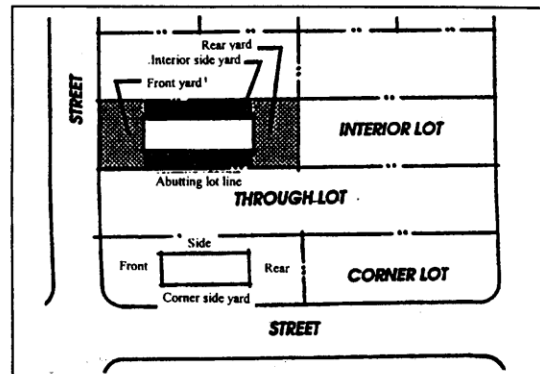
Living Fence. A permanent hedge tight enough and strong enough to serve almost any of the functions of a manufactured fence, but it offers agricultural and biological services.

Living Unit. Any habitable room or group of rooms forming a single habitable unit, used or intended to be used for living and sleeping, but not for cooking or eating.

Loading Space or Zone. An off-street space or berth used for the loading or unloading of cargo, products, or materials from vehicles.

Local street (see Street).

Lot. A parcel of land, established by a subdivision plat, having the required minimum dimensions, which shall be located on either a public right-of-way or on a legal and perpetual access and which is occupied or designed to be occupied by one or more principal buildings, structures, or uses.

*Types of Lots*

Lot Area. The total square footage or acreage contained within lot lines.

Lot, Corner. A lot abutting on and at the intersection of two or more streets.

Lot Coverage (see *Coverage*).

Lot Depth. The average distance between the front and rear lot lines.

Lot, double Frontage or Through. A lot that fronts upon two parallel streets or that fronts upon two streets that do not intersect at the boundaries of the lot. The lot line abutting the street which provides primary access shall be considered the front lot line.

Lot, Interior. A lot other than a corner lot, with frontage on only one street.

Lot Line. A line dividing one lot from another lot or parcel, or from a street or alley.

Lot Line, Front. The property line dividing a lot from a street or public or common space on which the building and lot orients. On a corner lot, generally the shorter street frontage shall be considered as a front lot line, except that the context of the block and abutting lots may allow the following arrangements:

- (1) **Standard Corner.** The building orients to the same front as all other buildings on the same street, and an expanded side setback applies on the other street side of the lot. Side and rear setbacks apply to the remaining sides.
- (2) **Reverse Corner.** The building orients to the end-grain of the block (not the same as other buildings on the interior of the block), and the front setback and frontage design applies to that street. The other street-side setback is the greater of (a) the stated street-side setback for that building type or (b) 10 feet in front of the forward-most point of the front building line of the abutting lot. Side and rear setbacks apply to the remaining sides.
- (3) **Corner Orientation.** The building orients to both streets, with the front setback and frontage design applying on both street sides. The two remaining lot lines are treated as side setbacks and there is no rear setback.

*Standard Corner**Reverse Corner**Corner Orientation*

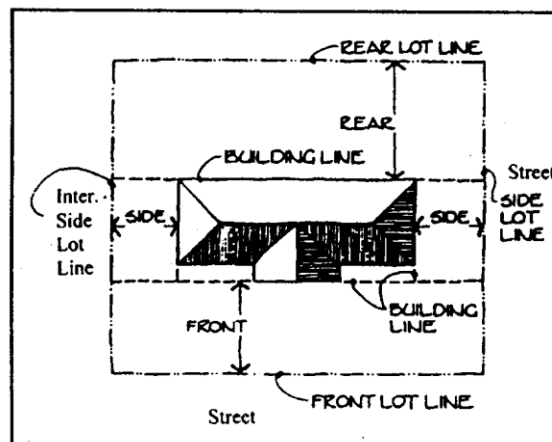


Lot Line, Interior Side. A side lot line which is adjacent to a side lot line of another lot.

Lot Line, Rear. The line opposite the front lot line. Where the side lot lines meet in a point, the rear lot line shall be assumed to be a line not less than ten feet long, lying within the lot and parallel to the front lot line.

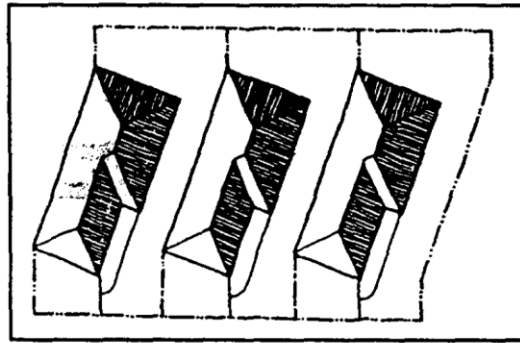
Lot Line, Side. Any lot lines other than the front or rear lot line.

Lot Line, Street Side. A side lot line which separates the lot from a street.



Lot and Building Lines

Lot line, zero. The location of a building on a lot in such a manner that one or more of the building's sides rests directly on a lot line, provided that separations or setbacks between buildings meet all applicable building and fire code provisions.

*Zero Lot Line Development*

Low-water Adaptive Plants. Plants which have or can adapt to low levels of irrigation water.

Maintenance of Landscaping. Regular watering, mowing, pruning, fertilizing, clearing of debris and weeds, removing and replacing of dead plants, and the repair and replacement of irrigation systems.

Maintenance of a Sign. Cleaning, repairing, painting, or replacement of defective parts in a manner that does not alter the dimension, material or structure.

Manufactured Home (see *Dwelling or Residence, Single-Family in the description of uses*).

Mechanical Equipment. Any and all equipment ancillary to the use or function of a building and/or structure, including, but not limited to, heating or cooling equipment, pool pumps and filters, electrical equipment, transformers, exhaust stacks, and roof vents.

Menu Board. A permanently mounted sign which lists the products or services available at a drive-in or drive-thru facility and not legible from the right-of-way.

Mid-range Expected Service Area. The growth area capable of accommodating the estimated increase in development in the city in the next five years.

Mineral Owner. Any person having title or right of ownership in subsurface oil and gas or leasehold interest therein.

Mobile Home. A detached, single-family housing unit that does not meet the definition of single-family dwelling or residence set forth in these definitions and which has all of the following characteristics:

- (1) Designed for a long-term occupancy and containing sleeping accommodations, a flush toilet, a tub or shower bath and kitchen facilities and has plumbing and electrical connections provided for attachment to outside systems;
- (2) Designed to be transported after fabrication on its own wheels, on a flatbed or other trailers or on detachable wheels;
- (3) Arrives at the site where it is to be occupied as a complete unit and is ready for occupancy except for minor and incidental unpacking and assembly operations, location on foundation supports or jacks, underpinned, connections to utilities and the like;
- (4) Exceeding 8 feet in width and 32 feet in length, excluding towing gear and bumpers; and
- (5) Is without motive power.

Mobile Home Accessory Building or Structure. A building or structure that is an addition to or supplements the facilities provided in a mobile home. It is not a self-contained, separate, habitable building or structure. Examples are awnings, cabanas, garages, storage structures, carports, fences, windbreaks, or porches and patios that are open on at least three sides.

Mobile Home Park or Community. A site or tract of land held under one ownership, which is suited for the placement of mobile homes.

Mobile Home Park or Community, Existing. A mobile home park or community for which the construction of facilities for servicing the lots on which the mobile homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets and either final site grading or the pouring of concrete pads) are completed before the effective date of the ordinance codified in this Development Code.

Mobile Home Park or Community, Expansion to. The preparation of additional sites by the construction of facilities for servicing the lots on which the mobile homes are to be affixed (including the installation of utilities, the construction of streets and either final site grading or the pouring of concrete pads).

Mobile or Micro Home Site. A plot of ground within a mobile home community, or other small format housing project, designed for the accommodation of one mobile home or similar small-format dwelling unit and its accessory structures.

Model Home. An unoccupied dwelling unit built on a site in a development for display and/or sales purposes and which may include an office solely for the development in which it is located, and which typifies the units that will be constructed in the development.

Monument Sign. A freestanding sign supported primarily by an internal structural framework or other solid structure features where the base of the sign is in contact with the ground.

Mulch. A natural planting material such as pine straw, coconut fiber, ground pine post peeling, or tree bark used to control weed growth, reduce soil erosion and water loss.

Multiple Use. A site, tract of land or development that contains more than one type of land use, including, but not limited to, residential, office, retail, or industrial uses.

Native Grass. A native Colorado grass.

Natural Area. Aquatic or terrestrial habitats or areas which exist in their natural condition and which have not been significantly altered by human activity.

Natural Area Corridor. An aquatic or terrestrial corridor that connects one or more natural areas or habitats together.

Natural Feature. Features which give an area its general appearance and ecological character and which attract or support the wildlife species that use or inhabit the area.

Neighborhood. The land area which is in the vicinity of the lot, tract, outlot, or parcel of land in question and which will be affected to a greater extent than other land areas in the city by uses which exist on the lot or are proposed for it. A neighborhood also includes lots which are adjacent to one another and have a community of shared interest.

Neon. A sign illuminated by a light source consisting of a neon or gas tube that is bent to form letters, symbols or other shapes.

New Construction. Structures for which the start of construction commenced on or after the effective date of the ordinance codified in this article.

Nits. A unit of measurement of luminance, or the intensity of visible light, where one nit is equal to one candela per square meter.

Nonconforming. Any building, structure, site, or use that does not conform to the regulations of this Development Code, but which was lawfully constructed, established and/or occupied under the regulations in force at the time of construction or initial operation.

Nonconforming Mobile Home Communities. Mobile home communities lawfully established and properly licensed by the city under the 1976 Code, or which were developed and used prior to and as of September 5, 1972, as a place where mobile homes were located for residential occupancy and, as of that date, the area must have been in compliance with any and all applicable city or county ordinances and regulations related to mobile home use of land.

Non-deciduous. Shrubs or trees, also called evergreens that keep their foliage year-round.

Official Map. The map establishing the zoning classifications of all land in the city and showing all amendments to zoning classifications as they may be adopted.

Off-premises Sign. A sign or device that advertises a business establishment, good, facility, service, or product which is not sold or conducted on the premises on which the sign or device is located and which may be designed to change copy on a periodic basis.

Off-street Parking Areas (see *Parking*).

Oil. Crude petroleum oil and any other hydrocarbons, regardless of gravities, which are produced at the well in liquid form by ordinary production methods, and which are not the result of condensation of gas before or after it leaves the reservoir.

Opacity. The degree or extent that light is obscured.

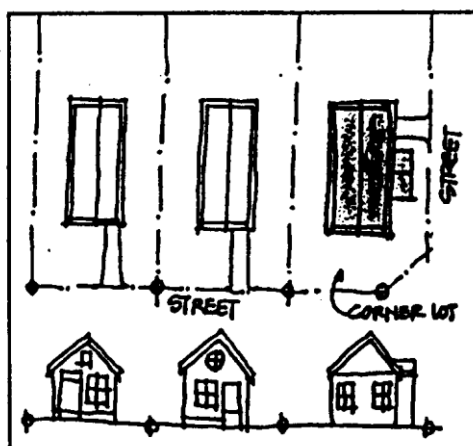
Open Space, Common. A common area permanently set aside for the common use and enjoyment of residents or occupants of a development or members of a homeowners' association, which open area may be landscaped and/or left with natural vegetation cover and which may include swimming pools and other recreational leisure facilities; areas of scenic or natural beauty and habitat areas; hiking, riding, or off-street bicycle trails; and landscape areas adjacent to roads which are in excess of minimum required rights-of-way.

Open Space, Private or On-lot. An outdoor area not intended for habitation, directly adjoining a dwelling unit or building, which is intended for the private enjoyment of the residents or occupants of the adjacent dwelling unit or building and which is defined in such a manner that its boundaries are evident. Private or on-lot open space may include lawn area, decks, balconies, and/or patios.

Open Space, Required. That portion or percentage defined by the zoning standards of a lot required to be open and unobstructed. The area must not be covered by any structure or impervious surface, such as sidewalks or driveways, with the exception of required amenities, identity features, or useable open space required pursuant to this code.

Open Space, Usable. That portion of a lot or site available to all occupants of the building or site for recreational and other leisure activities that are customarily carried on outdoors.

Oriented. To locate or place a building or structure in a particular direction on a lot or site which shall generally be parallel to the adjacent street.



Buildings Oriented to the Street

Ornamental Tree. A deciduous tree planted primarily for its ornamental value or for screening and which will typically be smaller than a shade tree approximately 15 to 25 feet in height.

Outdoor Display. The display of products for sale outside a building or structure in areas to which customers have access..

Outdoor Storage. The keeping, outside a building, of any goods, material, merchandise, or vehicles in the same place for more than 24 hours. Outdoor storage shall not include the storing of junk or the parking of inoperable motor vehicles. Storage of commercial recreational vehicles/equipment, boat, and personal vehicles are excluded from this definition.

Outlot. A tract of land platted in a subdivision for a specific purpose, which shall be shown on the face of the plat. Specific purposes may include, but are not limited to, drainage areas, stormwater detention or retention areas, parks, open space, or land areas reserved for other public facilities.

Overlay District. A zoning district classification which encompasses a defined geographic area and imposes additional requirements above that required by the underlying zoning. Overlay districts may be combining, where they join property included in two or more adjoining districts based on common attributes or policies; or overlay districts may be separating, where they distinguish property in a single district based on a specific attribute or context that requires different regulations.

Parcel. A unit or contiguous units of land in the possession of, or recorded as the property of one person, partnership, joint venture, association or corporation, or other legal entity.

Park. Any dedicated and accepted public or private land available for recreational or scenic purposes.

Parking. The parking or leaving of an operable, licensed vehicle, current in its registration, for a temporary period.

Parking Areas or Lots. Areas designed, used, required, or intended to be used for the parking of motor vehicles, including driveways or access ways in and to such areas but excluding public streets and rights-of-way.

Parking Bay. A group of parking stalls or vehicle parking spaces to accommodate 15 or more vehicles.

Parking Block. A group of parking bays surrounded by landscape edges, internal access streets, public streets or buildings and sidewalks, typically used to break larger parking areas into smaller distinct components. Parking blocks are used to minimize the visual impact of parking, improve organization of the development and circulation within the site, and/or preserve opportunities for the site to accept infill or redevelopment in a more logical pattern without disruption of streets and utilities.

Parking, Shared. The development and use of parking areas on two or more separate properties for joint use by those properties.

Parking Slab. A paved parking space located off-street and designed to accommodate standard-sized motor vehicles as provided in the off-street parking and loading requirements chapter of this Development Code.

Parking Space. A space or stall within a parking area established in conformance with this Development Code.

Parking Space, Storage. A space for the storage of operable, licensed vehicles, current in registration, including recreational vehicles or equipment, for a period of 30 days or longer.

Parkway. The strip of land typically located between the sidewalk and the curb, also referred to as a *tree lawn*.

Path or Pathway. A designated route or path for non-motorized use such as for walking or bicycling. Paths may include both sidewalks and trails.

Pennants. Any long, narrow, usually triangular flag typically made of lightweight plastic, fabric, or other material, and not containing a message, image or representative symbol, usually found in a series on a line and designed to move in the wind.

Perennials. Non-woody plants, which may die back to the ground each year but continue to grow on an annual basis. Perennials shall also include cold weather bulbs and tubers and ornamental grasses that grow each year and shall count toward ground cover requirements.

Perimeter Treatment Plan. A plan intended to provide visual and noise protection for the outer edges of developments, which border arterial streets, major collector streets, or other sensitive borders. Perimeter treatment also provides an attractive and varied streetscape for people traveling along thoroughfares.

Permanent Sign. A sign attached to a building, structure or the ground in a manner that precludes ready removal or relocation of the sign.

Permeable. A material that allows liquids or gases to pass through it.

Permitted Sign. A sign having a legal permit issued in accordance with the provisions of this title.

Permitted Use. A use allowed in a zoning district and subject to the restrictions and review procedures which apply to that district.

Person. Any person, firm, association, organization, partnership, business, trust, corporation, company, contractor, supplier, installer, user, or owner or any representative, officer or employee thereof.

Pervious. A surface that allows water to pass through; a surface that presents an opportunity for precipitation to infiltrate into the ground.

Planned Unit Development (PUD). A development planned, designed, and constructed with specific standards as an integral unit and which typically consists of a combination of uses district, and provides for an equivalent level of standards, and broader community benefits in exchange for flexibility in the standards.

Planting Median. An area in the approximate center of a city street, road, or state highway that is used to separate the directional flow of traffic or the center of two parking bays that provide vegetation and pedestrian accessibility to the principal building or structure by way of a paved sidewalk.

Plat. A subdivision map or plan of property.

Plat, Final. A completed map of a subdivision setting forth fully and accurately all legal and engineering information, survey certification and any accompanying materials as required by this title.

Plat, Preliminary. A proposed subdivision map and any accompanying materials as required by this title, which provide sufficiently detailed information so that preliminary agreement as to the form and content of the plat, coordinating the planning, design, and engineering standards of this title, may be reached between the developer and the city.

Pole Sign. A sign that is affixed, attached, or mounted on a freestanding pole or structure that is not itself an integral part of or attached to a building or structure.

Pollinator Gardens. Gardens designed for the purpose of providing habitat for or attracting bees, butterflies, moths, hummingbirds, or other beneficial creatures that transfer pollen from flower to flower, or in some cases, within flowers.

Portable Sign. A sign that is not permanently affixed to a building, structure or the ground and that is easily moved, such as a sandwich board sign.

Practicable. Capable of being done within existing constraints including environmental, economic, technological, or other pertinent considerations.

Premises. The land, site or lot at which, or from which, a principal land use and activity is conducted.

Primary Entrance. The entrance to a building or structure which is intended to be the main pedestrian or public entrance and which shall typically be located on the front of the building or structure, and therefore includes enhancements and human-scale details to show the priority and importance of the space to the public.

Principal Building or Structure (see *Building*).

Prohibited Activities Sign. Signs located on a property posting said property for warning or prohibition, such as "no hunting," "no swimming," or "no parking."

Projecting Wall Sign. Any sign attached to a building and that extends more than 20 inches from the surface to which it is attached, but no more than four feet from the wall of the building. Signs projecting more than four feet from the building shall be considered freestanding signs.

Promotional Association. An association that is incorporated within the state that organizes and promotes entertainment activities within a common consumption area and is organized or authorized by two or more people who own or lease property within an Entertainment District.

Public. A person, structure, activity, or purpose owned or operated by a governmental agency or by a public nonprofit corporation with tax-exempt status under the federal Internal Revenue Code.

Public Hearing. A hearing held to allow interested persons to present their views before the zoning board of appeals, planning commission or city council. A public hearing is different from an open meeting which does not allow participation by the public.

Public Improvement. Any improvement required by title for which the city or a quasi-public agency agrees to assume responsibility for maintenance and operation, or which may affect an improvement for which the city or a quasi-public agency is already responsible. Such facilities include, but are not limited to, streets, parks, trails, drainage facilities, water and sewer facilities, gas, electricity, telephone, cable television, and other utility facilities.

Public Sign. Signs required or specifically authorized for a public purpose by any law, statute, or ordinance, including public directional signs on the right-of-way; signs which identify the city by name; signs that direct travelers to public buildings, parks or attractions; interpretative signs; way-finding signs, municipal uniform traffic control devices; and the like.

Rain Garden. A soil absorption or filter system designed to be depression storage or a planted hole that allows water filtration and absorption of rainwater runoff from impervious urban areas, such as roofs, driveways, walkways, parking lots, and turf-grass or sod areas. It is a type of bioretention facility designed to provide stormwater infrastructure improvements with vegetation. Typically shallow vegetative depressions with gentle slide slopes designed as individual stormwater receiving areas or linked to conveyance systems. Soils may or may not be amended in these facilities.

Recreational Equipment. Equipment intended for outdoor recreational use, including, but not limited to, snowmobiles, jet skis, all-terrain vehicles (ATVs), canoes and boats, and including the trailers for transporting such equipment.

Recreational Vehicle. A vehicle which is designed, intended and used for the purposes of temporary living accommodation for recreation, camping and travel use, including, but not limited to, travel trailers, truck campers, camping trailers and self-propelled motor homes, horse trailers and bus campers. For the purposes of this definition, neither a pop-up trailer nor a truck topper accessory (also known as a camper shell) which is not higher than eight inches above the truck cab when installed shall be considered a recreational vehicle. A horse trailer used primarily for transport of horses and/or livestock to or from the site it is stored upon shall not be considered a recreational vehicle under this definition.

Recyclable Material. Reusable material, including, but not limited to, metals, glass, plastic, and paper, which are intended for reuse or reconstitution for the purpose of using the altered form. The term "recyclable material" shall not include refuse or hazardous materials or the processing of recyclable materials.

Redevelopment District. All land located within the boundaries of the urban renewal area of the city, as it may be amended from time to time by the city council.

Residential Complex, Subdivision or Multi-family Entry Sign. An on-site sign that identifies a specific residential complex or subdivision.

Right-of-way. A right granted by a property owner and which is intended to be occupied by a street, sidewalk, railroad, utilities, and other similar uses.

Right-of-way Landscaping. Landscaping located within the public or private rights-of-way adjacent to a privately owned lot, outlot, or tract, including parkways.

Riparian Zone. An area where the presence of a surface and/or high subsurface water level permits the existence of increased vegetative diversity and abundance as contrasted to surrounding areas.

Roof Sign. A sign that is mounted on the roof of a building or structure such as a portico which is wholly dependent upon a building for support and which projects above the parapet of a building with a flat roof, or above the peak of the roof on that portion of the roof on which the sign is placed.

Satellite & Communication Equipment. A reflective surface configured in the shape of a shallow dish, cone, horn, or cornucopia which shall be used to transmit and/or receive radio or electromagnetic waves between terrestrially and/or orbitally based uses, including, but not limited to, satellite earth stations, television reception only satellite dish antennas, and satellite microwave antennas.

Screening. A method of reducing the impact of visual and/or noise intrusions through the use of plant materials, earthen berms, solid fences, and/or walls, or any combination thereof, intended to block that which is unsightly or offensive with a more harmonious element.

Searchlight, Strobe Light or Beacon. A stationary or revolving light that flashes or projects illumination, single color or multicolored, in any manner that is intended to attract or divert attention; excluding any device required or necessary under the safety regulations described by the Federal Aviation Administration or similar agencies.

Seasonal Use. A use intended for a period of limited duration, including, but not limited to, the sale of seasonal goods and products such as pumpkins, Christmas trees, produce and living plants.

Setback. The minimum distance a building, structure or use may be erected from a street, alley, or property line. Setbacks are also called required yards.

Setback, Front. The area extending across the full width of the lot, between the front lot line and the nearest line or point of the area allowed for construction or establishment of the building, structure, or use. Where expressed as a range, the front setback shall be interpreted as a “build to range,” within which distance the front building line of the principal building shall be established.

Setback, Interior Side. The area extending from the front yard to the rear yard, between the side lot line adjacent to another lot and the nearest line or point of the area allowed for construction or establishment of the building, structure, or use.

Setback, Oil and Gas (see Section 24-1102 of this title).

Setback, Rear. The area extending across the full width of the lot between the rear lot line and the nearest line or point of the area allowed for construction or establishment of the building, structure, or use.

Setback, Side. The area extending from the front yard to the rear yard, between the side lot line and the nearest line or point of the area allowed for construction or establishment of the building, structure or use.

Setback, Street Side. The area extending from the front yard to the rear yard, which separates the lot from an adjacent street.

Shade Tree. A large woody plant, usually deciduous, that normally grows with one main trunk and has a mature height at least 30 feet, a canopy height above 12 feet, and screens and filters the sun.

Shrub. A woody plant which consists of a number of small stems from the ground or small branches near the ground and which may be deciduous or evergreen.

Sidewalk. A paved, surfaced or leveled area, paralleling and usually separated from the street, used as a pedestrian path.

Sign. Any device, surface, object, structure, building architecture or part thereof using graphics, symbols or written copy for the purpose of advertising, identifying or announcing or drawing attention to any

establishment, product, goods, facilities, services or idea, whether of a commercial or noncommercial nature.

Sign Allowance. The amount of signage that is allowable under the provisions of this article.

Sign Alteration. Any change of copy (excluding changeable copy signs), sign face, color, size, shape, illumination, position, location, construction, or supporting structure of any sign.

Sign Area. The entire face of a sign and any backing, frame, trim or molding and which may include the supportive structure.

Sign Backing. The surface, pattern or color of which any sign is displayed upon, against or through and that forms an integral part of such display and differentiates the total display from the background against which it is placed.

Sign, Exposed Incandescent or High Intensity Discharge Lighting. Any sign or portion of a sign that utilizes an exposed incandescent or high intensity lamp, with the exception of neon, in such a fashion as to project light directly onto adjoining property or right-of-way.

Sign Face. The area of a sign on which the copy is placed, or, for individual cutout letters, painted letters, channel letters or symbols, the perimeter of the individual elements shall be considered the area of the sign.

Sign Frame. A sign cabinet or that portion of the sign that holds the sign face in place.

Sign Height. The vertical distance measured from the grade, as defined herein, to the highest point of the sign or sign structure.

Sign, Interior to a Building. Signs inside buildings that are not legible from the public right-of-way or other publicly accessible exterior areas of the building. .

Sign, Interior to Development. Any sign that is located so that it is not legible from any adjoining property or the public right-of-way and not oriented in such a way as to attract the attention of those traveling along the right-of-way.

Sign Permit. A permit issued by a building official and which is required for any sign specified by this code.

Sign Setback. The minimum distance required from the apparent centerline of the right-of-way, to any portion of a sign or sign structure.

Sign Structure. The supports, uprights, bracing or framework of any structure for the purposes of displaying a sign.

Sign, Wall. A sign attached parallel to and extending less than 20 inches from the wall of a building. The definition of the term "wall sign" includes painted, individual letter, cabinet signs and those signs located on the roof of a building which are not roof signs as defined herein.

Sign, Window. Any type of sign that is painted or attached to or within 12 inches of any exterior window.

Site Plan. A set of drawings that the property owner, builder, or contractor uses to make improvements to a property through graphic representation, whether computer-generated or hand-drawn, of the arrangement of buildings, parking, drives, landscaping, and any other structure that is part of a development project.

Sky Dancers. Freestanding tubes which often simulate the shape of a person into which air is forced to inflate and animate and which do not characterize a commercial message or contain a message.

Slope. The ratio between elevation change to horizontal distance, expressed as a percentage.

Soil Amendments. Elements added to the soil, such as compost, natural fertilizer, manure, or chemical fertilizer, to improve its capacity to support plant life.

Solid Fence. A fence that is opaque and provided the fence is composed of solid wood, composite, vinyl, or masonry.

Species of Special Concern. Species of wildlife and plants which the state division of wildlife has identified and listed as state species of special concern.

Stacking Space. An area for motor vehicles to line up in while waiting to go through a drive-thru facility, a designated passenger drop-off/pick-up area or a parking lot or area.

Stormwater Management Plan. A plan for the management of stormwater drainage and control prepared in conformance with the regulations for stormwater management, adopted by the state department of public health and environment; and further, including a plan for erosion and sediment control pursuant to the requirements of chapter 12 of title 3 of this Code, including its references.

Story. That portion of a building included between the surface of any floor and the surface of the floor next above it or, if there is no floor above it, the space between the floor and the ceiling above it.

Street. A way for vehicular, pedestrian or bicycle traffic whether designated as a street, highway, thoroughfare, parkway, throughway, road, avenue, boulevard, lane, place or however otherwise designated.

Street, Arterial. Streets that permit relatively unimpeded traffic movement throughout the city and connecting to outside communities.

Street, Arterial Major. Arterial streets which generally carry traffic volumes greater than 20,000 vehicles per day when the property which the arterial street serves is fully developed and which permit rapid and relatively unimpeded traffic movement throughout the city, connecting major land use elements as well as connecting to outside communities.

Street, Arterial Minor. Arterial streets which generally carry traffic volumes greater than 10,000 vehicles per day when the property which the arterial street serves is fully developed and which permit relatively unimpeded traffic movement and are intended for use on routes where four moving lanes and one turn lane are required but where a major arterial cross-section is not warranted.

Street, Collector. Streets that collect and distribute traffic between arterial and local streets and serve as main connectors within the city, linking one neighborhood with another and which carry traffic with an origin or destination within the community.

Street, Collector Major. Collector streets which generally carry traffic volumes greater than 7,000 vehicles per day when the property which the collector serves is fully developed and which permit relatively unimpeded traffic movement and are intended for use on those routes where four moving lanes are required but where a larger classified street is not warranted.

Street, Collector Minor. Collector streets which generally carry traffic volumes up to 7,000 vehicles per day and collect and distribute traffic between arterial and local streets and which serve as main connectors within communities, linking one neighborhood with another.

Street, Design Type. A reference to the design attributes of a specific segment of the street, regardless of the functional class, and including lane widths, number of lanes, parking, streetscape, and sidewalks. Street design types allow the design of segments of streets to transition and relate better to the context and anticipated abutting land uses, without disrupting the overall role of the street in the functional classification system.

Street, Functional Classification. A system of categorizing streets based on their role in the overall street network, considering traffic volumes, traffic speeds, and continuity of the street.

Street, Local. Streets that provide direct access to adjacent property and which carry traffic with an origin or destination within the immediate neighborhood.

Street, Local Low Volume. Local streets which carry traffic volumes of up to 500 vehicles per day and which provide direct access to adjacent property.

Street, Private. A private roadway used to provide vehicular and emergency access.

Street Tree. A tree planted in close proximity to a street in order to provide shade over the street and to soften the street environment.

Streetscape. The scene that may be observed along a street, including both natural and non-natural components, including vegetation, buildings, paving, plantings, lighting fixtures and miscellaneous structures.

Structure. Anything constructed or erected on or in the ground, the use of which requires a more or less permanent location on or in the ground, and, including, but not limited to, walls, retaining walls, fences, parking lots, parking slabs and oil and gas production facilities.

Subdivision. The division of a lot, tract or parcel of land into two or more lots, tracts or parcels, or other division of land in compliance with the requirements of this title.

Symbol. A graphic device which stands for a concept or object.

Temporary Sign. Any sign, not intended for permanent installation such as, but not limited to, a banner, balloon, pennant, searchlight or beacon. Generally, these signs are intended to be used for a limited period of time or for a purpose announcing a special event or presenting other miscellaneous or incidental information or instructions.

Temporary Structure. A structure without any foundation or footings and which is intended to be removed at some point in the future.

Temporary Use. A use which shall generally be permitted to exist and be operated for no longer than 90 days in 12 consecutive months and which may occur as an accessory or principal use.

Time or Temperature Sign. A sign or portion thereof on which the only copy that is capable of being changed is an electronic or mechanical indication of time and/or temperature.

Tract. A parcel or parcels of land designated on a plat and intended to be further subdivided before development at some point in the future, but which may be initially created under single ownership through a subdivision process.

Travel Trailer or Recreational Vehicle. A portable structure, mounted on wheels and designed to be towed by a motor vehicle, or propelled by its own motive power, that may contain cooking or sleeping facilities and is intended to provide temporary living quarters for recreational camping or travel. A travel trailer also does not comply with either the National Manufactured Housing Construction and Safety Standards Act of 1974 or the uniform building code standards. Travel trailers are not permitted in residential zones as living quarters except as guest quarters for no longer than seven consecutive days.

Tree. A large woody plant with one or several self-supporting stems or trunks and numerous branches and may be deciduous or evergreen.

Turf-grass. A blend or mix of grasses most tolerant to the Colorado climate, whether in sod or seed form when planted, intended to be regularly maintained as a lawn in urbanized areas. Artificial turf shall not be considered lawn or turf-grass.

Universal Design. The design of buildings, products, or environments, to make them accessible to all people, regardless of age, disability, or other factors. The term "universal design" was coined by the architect Ronald Mace to describe the concept of designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their age, ability, or status in life.

Urban Heat Island. An urban area that is significantly warmer than its surrounding rural areas due to modifications of land surfaces such as development and other human activities. The temperature difference is usually more significant at night than during the day.

Use. The type of activity for which land or a building or structure is designated, arranged or intended and also means the activity which regularly takes place upon the land or in a building or structure on the land. Not all uses shall be considered legal or permitted uses.

Use, Principal. The primary use of a building, structure or lot.

Utility Box or Pedestal. Devices designed and intended to house equipment necessary for the delivery of utility services to commercial and/or industrial customers, including, but not limited to, electric transformers, switch boxes, telephone pedestals and boxes, cable television boxes, traffic control boxes and similar devices.

Utility Line Clearance Zones. The minimum clearance horizontal or vertical standard determined by the utility holder. Obstructions and encroachments are prohibited.

Utility Stand. Part of a mobile home space which is used for the placement of the utility connections.

Vacant means a site or area that is not put to any use other than gardening.

Vacation. The legal abandonment of a right granted by a property owner, which was intended for a particular purpose, such as for streets or utility lines.

Variance. A modification of the strict terms of this Development Code as provided in this code.

Vehicle Signs. Signs which are attached to or located on licensed vehicles, trailers or semi-trailers and contain or display signage for the primary purpose of advertisement, excluding bumper stickers on the bumper and similar-sized adhesive decals.

Vested Property Right. The right to undertake and complete a development and use of property under the terms and conditions of an approved site specific development plan.

Weed. Any plant not typically propagated by the horticultural trades and not typically installed for the purposes of landscaping; or which presents a particularly noxious allergenic or growth characteristic. Weed does not include native and naturalized plants, other than designated noxious weeds, grown in areas managed primarily for ecological services.

Wildlife. Wild, native vertebrates (including fish), mollusks and crustaceans and any species introduced or released by the division of wildlife, whether alive or dead, including any part, egg or offspring thereof.

Wind Sign (see *Pennants, Ground kites and Sky dancers*).

Work Vehicle. A vehicle outfitted with equipment such as, but not limited to, storage racks, hoists, cranes, vises, heavy equipment or other business and construction equipment, whether attached or removable, or which may have attached trailers carrying such work equipment. A horse trailer used primarily for transport of horses and/or livestock shall not be considered a work vehicle under this definition.

Xeric Landscaping or Xeriscape. A landscape design strategy coined by Denver Water in 1981 to help make water-efficient landscaping an easily recognized concept. Xeriscape is a combination of the word "landscape" and the Greek word "xeros," which means dry. For the purposes this code, it shall mean the use of low-water or very low-water plants in place of plants that typically require more water to survive. Xeric landscaping does not mean the same as hardscaping or the use of rocks or rock mulch.

Yard. The area of a lot between the property line and the foundation of a building, structure or use. The term "required yard" means that area also described as a required setback area where construction of buildings, structures and uses is limited in placement.

Yard, Front. The portion of a lot between the front façade of a primary structure and the right-of-way. A yard may contain more land area than a setback area.

Yard, Interior Side. An open-space area between the interior side property line and the building setback line, extending between the front building setback line and the rear building setback line.

Yard, Rear. The space or area of a lot between the rear property line and the principal building, extending the lot's full width, and measured perpendicular to the building at the closest point to the rear property line.

Yard, Street-side. The area extending between the front yard and the rear yard or rear street yard and situated between the side street property line and the face of the principal building which is parallel to, or most nearly parallel to, the side street property line.

24-1302 Architecture & Design Terms

This glossary of architecture and design terms explains concepts, strategies, and techniques that are used to affect building and site design.

a. Architectural Style.

When used generally, architectural style refers to a distinctive manner of expression, fashion or composition of building elements at a specific time.

When used specifically, architectural style refers to a prevalent or historical style that is documented with common or typical patterns in assembling building elements and form, and where variations within the style follow common rules of application for materials, massing or composition of the details. (i.e. Art Deco, Colonial Revival, Craftsman, Mid-Century Modern, Mission, Spanish Colonial Revival, Tudor Revival, Victorian, etc. See *Colorado's Historic Architecture & Engineering Guide*, www.historycolorado.org/colorados-historic-architecture-engineering-guide)

b. Building Elements.

Buildings are made up of vertical elements, horizontal elements, details, and ornamentation that break up the building elevations into distinct components and establish the form and scale of the building. Building elements include:

1. **Awning.** A sloped or rounded framed projection attached to a wall and extended over a window or door to provide protection from the elements.
2. **Bay (window).** A bump out in the facade typically associated with an element of the interior floor plan but located to provide balance and relief to the massing on the exterior facade. A bay is usually associated with a window.
3. **Belt Course.** A continuous row or layer of stones, brick or other primary building material set in a wall and in line with changes in stories, changes in materials, or window sills. Belt courses make a visually prominent horizontal line to break up a wall plane by using a distinct material and/or implementing a pronounced and distinct pattern of the material.
4. **Bracket.** A projecting support placed under an eave or other projection with design qualities and details that add emphasis to the roof structure or massing element.
5. **Canopy.** A flat roofed projection attached to a wall and extended over a window, door, or walkway, or a freestanding structure over walkway or service area that gives protection from the elements.
6. **Clerestory Window.** A window high on a wall section above eye level and used to permit light or air into areas that otherwise do not have windows due to functional constraints of the building.
7. **Column.** A supporting pillar, especially one consisting of design qualities and details that add emphasis and ornamentation to a portion of the facade, or any roof structure or area it supports.
8. **Cornice.** An ornamental topping projecting from the wall with design qualities and details that crowns a structure along the top near the roof, with an emphasis that is compatible with but more elaborate than other similar details and ornamentation on the building.

9. *Eaves.* An overhang of the roof structure, where larger eaves can increase the prominence of the roof as a “cap” to the building and protect portions of the facade (particularly windows) from the elements.
 10. *Entry Feature.* A structural component of the building or building footprint used to emphasize and add interest to the entry into the building, provide active social space protected from elements, contribute human scale to the building elevation, and create transitions from public to private space.
 11. *Facia.* The exposed vertical edge of the roof often with design qualities and details that add emphasis and ornamentation to the roof structure.
 12. *Foundation.* The base upon which the entire structure sits, designed with stronger, heavier materials, and often includes details and ornamentation to emphasize a building's connection to the ground, a sense of permanence, and transition to the main wall plane for vertical articulation.
 13. *Gable.* The triangular and vertical portion of a wall plane between intersecting roof pitches.
 14. *Lintel.* A horizontal beam, typically over a door, window or storefront to support the structure above it and add accent to the door, window, or storefront.
 15. *Parapet.* A vertical extension of the wall plane above the roof, typically used to hide a flat or low-sloped roof and the rooftop equipment, or function as a firewall for attached structures, and usually including ornamentation to provide a visually prominent “cap” to the building.
 16. *Pediment.* A gable or ornamental tablet or panel, typically triangular or arched, placed above a point of emphasis on a facade and often supported by columns or pilasters.
 17. *Pilaster.* A projecting vertical element on a wall plane used to give the appearance of a supporting column and used to articulate the extent of a wall plane or other component of a facade.
 18. *Sidelight.* A window with a vertical orientation along an opening (door or window) that is narrower than the opening but provides emphasis to the importance of the opening with expanded transparency, additional trim and ornamentation, or other architectural details.
 19. *Transom.* A window above an opening (door or window) built on a horizontal crossbar that may provide light and/or swing open to add ventilation.
- c. **Building Form.** Building form refers to the outward three dimensional envelope of a building or space affected by the mass, shape, composition, and articulation of building elements.
1. *Mass.* Mass is the volume (height x width x depth or height x building footprint) defined by a structure relative to its surroundings.
 2. *Shape.* Shape affects the massing and refers to the simplicity or complexity of the outer dimensions of surface planes (wall planes or roof planes), and their orientation (horizontal / vertical; symmetrical / asymmetrical).
 3. *Composition.* Composition is how the different building elements or materials are arranged to either distinguish or coordinate a particular shape or mass.
 4. *Articulation.* Articulation is using architectural elements to clearly call out a different portion of the composition, shape, or mass and break the building form into smaller, identifiable pieces.
 - (a) *Horizontal Articulation.* Breaking the mass down through different levels of height on the building, particularly for taller buildings, or by a step back or other voids in the massing.
 - (b) *Vertical Articulation.* Breaking the mass down through different bays or structural components along the length of the building elevation, particularly for longer, larger footprint buildings.
 5. *Altering Form.* Techniques to alter the form of a building and affect the scale include:
 - (a) Main mass and wing or secondary masses;

- (b) Stepping back in the wall plane, usually larger differences (i.e. 4 feet +) at upper story(ies);
- (c) Cantilever or overhangs, usually a smaller distance (i.e. 1 to 4 feet) over a lower story;
- (d) Off-sets or breaks in a wall plane in relation to interior floor plan or outside space, not to the level of creating a wing or secondary mass;
- (e) Dormers, including a window and sub-roof within roof structure;
- (f) Projections of an element of the facade composition such as a bay window, entry feature, or eaves; and
- (g) Articulation and composition of the facade in relation to, or in addition to any of the above techniques.

d. **Scale.**

Scale refers to the perceived or relative size of a form in relation to something else – usually a person, a social space (courtyard, lot, streetscape, etc.), or another building. For example, “human scale” refers to how spaces or objects relate to and are experienced or perceived by people at a close range and a slow pace. Scale can be affected by the mass, shape, composition, or articulation of the form to make an otherwise larger form seem smaller or more relatable based on how the components are perceived.

e. **Compatibility.** Compatibility refers to the similarity of buildings and sites to adjacent properties or to prevalent patterns and themes in an area. In general, the elements of compatibility will include combinations of the following:

1. Similar proportions of building masses, particularly nearest the property lines and other adjacent buildings;
2. Similar orientation of the building including the relationship to streetscapes, the shaping of open spaces, and the locations and arrangements of the building footprint;
3. Similar window and door patterns, including location, size, and proportions;
4. Similar roof lines (planes, pitches, profiles and details);
5. Similar building materials, particularly primary building materials, or where materials differ they share common textures or color palates;
6. A common architecture style, including the facade composition and materials; however, many styles can allow differences in design within the style.

Note: Compatibility does not necessarily mean the same, but rather a sensitivity to the context, adjacencies, and character of the area. While not all of the above elements are necessary for compatibility, the greater the number that are similar, the greater the compatibility will be; significant departures from any one element should be compensated with either greater similarity of other elements or by similarity of more elements. Where things are not compatible, transitions should occur through space and landscape buffer designs.

City of Greeley, Colorado
PLANNING COMMISSION PROCEEDINGS

July 27, 2021

I. Call to Order

Chair Yeater called the remote meeting to order at 1:15 p.m. via the city's Zoom platform.

II. Roll Call

The hearing clerk called the roll.

PRESENT

Chair Justin Yeater
Commissioner Louisa Andersen
Commissioner Larry Modlin
Commissioner Chelsie Romulo
Commissioner Christian Schulte

ABSENT

Commissioner Erik Briscoe
Commissioner Brian Franzen

III. Approval of Agenda

Commissioner Andersen moved to approve the Planning Commission and Zoning Board of Appeals agendas. Commissioner Romulo seconded the motion. Motion carried 5-0.

IV. Approval of July 13, 2021 Minutes

Commissioner Andersen moved to approve the minutes dated July 13, 2021. Commissioner Romulo seconded the motion. Motion carried 5-0.

V. Public hearing to consider City of Greeley Water and Sewer Department Sanitary Sewer Master Plan and Water Transmission & Distribution Master Plan from 2018 to 2021

Presenters: Adam Prior, Chief Engineer, Water & Sewer
Sean Chambers, Director, Water & Sewer

Adam Prior addressed the Commission and introduced Sean Chambers. Mr. Chambers described the issue before the Commission and discussed its importance to the long-range growth of the city. Mr. Prior explained the two and a half year process to integrate all three master plans and began the presentation by providing a background of the wastewater system as well as a map of the existing wastewater system master plan area.

Mr. Prior described the process to evaluate flow on individual interceptors, using nine permanent flow meters and two rain gauges that were monitored for 60 days. Staff also evaluated demand projections using the existing model pushed into the future. Mr. Prior explained that the plan is to update the design criteria to match new standards. He added that non-residential flow was also calculated as well as groundwater infiltration and rain dependent infiltration and inflow, using a 5-year storm event in the modeling.

Staff looked at the existing system under dry weather conditions and identified areas with potential issues along 47th Avenue based on existing sewer system capacity. A similar exercise under wet weather conditions identified seven potential issue areas that Mr. Prior highlighted. He identified areas that will continue to be monitored to determine any necessary future improvements.

Mr. Prior presented several graphs showing flood events, flow, load and population from 1970 to 2020. He described how growth in the system was estimated and pointed out the location of existing developments that were incorporated into the master plans. Mr. Prior advised that staff also looked at the 2018 Comprehensive Plan and worked with the Planning division to look at growth and determine how future developments might be zoned.

Mr. Prior described the long-term project to accommodate sewer capacity to the year 2040. He presented a map showing buildout of the sewer system, adding that it will be necessary to add or replace major interceptors throughout the city to accommodate growth. He stated that staff looked at 5-year and 20-year planned city capital improvement projects and presented a map showing the recommended capital improvements.

Mr. Prior advised that there is an existing intergovernmental agreement between the city and the Town of Windsor. He added that staff had looked into taking water that flows from West Greeley to Windsor and bringing back to Greeley for treatment. It was determined that the additional lift stations, infrastructure and operational costs were deciding factors in taking chunks of water from west Greeley to the Windsor water treatment plant.

Upon question by Chair Yeater, Mr. Prior advised that he would discuss the water treatment plant and its lifespan during the next presentation about water. He added that staff was not seeing increases in water demand due to efforts to convert potable demands to non-potable for irrigation. Mr. Prior stated that base flow in winter for water demand is approximately 12-14 million gallons per day that can peak as high as 46 million gallons per day in the summer. He noted that work continues with conservation groups to switch residents from potable to non-potable for irrigation. He noted that the 2003 master plan projected water demand of 100 million gallons per day by 2020 when, in fact, it is 46 million. Mr. Prior noted that the Bellvue Treatment Plant has a capacity of 35 million gallons per day and that Boyd Lake has a capacity of 38 million gallons per day, allowing for increased capacity. He noted that there is planning for the late 2020s or early 2030s for additional capacity based on growth and need.

Commissioner Modlin asked whether the sewer plant has capacity to recycle potable water as well as non-potable. Mr. Prior responded that Greeley has the benefit of multiple non-potable irrigation ditches and the future plan is to use non-potable water from those ditches. He added that wastewater effluent could be exchanged with Poudre Ponds and can be used for non-potable purposes.

Commissioner Schulte mentioned previous presentations where grey water was part of the discussion for flushing toilets and other uses. Mr. Prior stated that grey water was not considered, as toilet flushing is relatively low, adding that more benefit is derived from irrigation flows.

Referring to a recent developer roundtable, Commissioner Andersen asked if there were any notes from that meeting that might summarize the questions and discussion that took place. Brad Mueller, Community Development Director, advised that there were not many questions posed and that there are no notes from the meeting.

Moving to the next presentation about water, Mr. Prior provided a map of the water master plan area and highlighted existing pump stations, storage, distribution mains, transmission mains and lines coming from the Bellvue and Boyd water treatment plants. He described how the model was developed and presented a map showing the recommended capital improvements to accommodate long-term growth. He stated that staff also conducted a fire flow evaluation for future areas to ensure that pipes are of sufficient size.

Mr. Prior summarized that the city has a robust distribution system without significant system deficiencies. He noted that areas with topographic challenges might require more detailed studies as they develop.

Commissioner Modlin asked whether metropolitan districts would be required to install non-potable water sources for residential use. Mr. Prior advised that a final decision had not been made and that staff would want to bring that discussion through with proposed policy changes.

Mr. Prior described the stakeholder engagement and community engagement processes and stated that staff collaborated with different municipalities and water districts to look into reducing infrastructure and costs. He noted that citizens were invited to an interactive workshop and that staff invited engineers, planners, developers and citizens to participate in a review of master plans and asked for comment and input. He advised that the next step is approval of the Wastewater Utility Plan, finalization of capital improvement plan budgets, and Master Plan acceptance by City Council in September, with the date of a non-potable master plan to be determined.

Chair Yeater opened the public hearing at 2:05 p.m. There being no comments, the public hearing was closed at 2:05 p.m.

Commissioner Andersen moved that, based on public comment, the project summary and accompanying analysis, the Planning Commission recommends to City Council adoption of the enclosed 2021 Wastewater Collections Infrastructure Master Plan and 2021 Water Distribution Infrastructure Master Plan and incorporation of the same by reference as an amendment to the 2018 Comprehensive Plan. Commissioner Schulte seconded the motion.

Commissioner Schulte thanked Water & Sewer staff for their hard work on this, adding that it was very important for the city. Commissioner Modlin added that it was well thought out and one of the best presentations for future growth since he has been on the Planning Commission. Motion carried 5-0.

VI. Public hearing to consider amendments to Title 24 of the 2021 Greeley Municipal Code to adopt Chapters 3-6 and 13

Project: Development Code Update

Case No.: CU2021-0005

Presenter: Carol Kuhn, Chief Planner

Ms. Kuhn addressed the Commission and introduced the final amendments to Title 24 of the Greeley Municipal Code, describing each chapter and the key revisions. She referenced a memorandum provided to the Commission before the hearing including a revised table 24-5-4 in Chapter 5. Ms. Kuhn advised that notice of the hearing was published in the newspaper, drafts of the revisions were posted on the city website, and referrals were sent to surrounding communities for comment. Staff recommended approval and Ms. Kuhn noted a proposed motion in the staff report.

Commissioner Andersen asked whether there was any update about addressing items added to the punch list and the timeline for further discussion and possible addition to the new Code language. Ms. Kuhn responded that she believed the punch list items would be addressed during the next phase of the Code update and deferred to Mr. Mueller. Mr. Mueller confirmed that a punch list with several items from Planning Commission discussions is being maintained. He added that once the Code is adopted by City Council, staff planned to bring those items back to Planning Commission at a worksession to discuss further.

Referring to the Residential Development Standards and a notation that fences "shall be constructed" of various materials, Commissioner Andersen expressed that it seemed to be too specific, restrictive and that the option of wrought iron fencing seemed to be outdated. She asked that consideration be given to deleting that portion or revise the language. She also asked about the prohibition of chain link fences and asked whether other chain link fences throughout the city had been grandfathered in. Mr. Mueller advised that any fencing currently in place, if done within the guidelines of the current Code, is grandfathered in. He suggested adding Commissioner Andersen's concerns about fencing to the punch list.

Chair Yeater opened the public hearing at 2:29 p.m. There being no public comment, the public hearing was closed at 2:29 p.m.

Commissioner Andersen raised a minor point of discussion regarding the timeline for City Council adoption. She noted the first reading on August 17 and asked whether there would be a public hearing at that time. Ms. Kuhn advised that at the August 17 meeting, the Council public hearing would be set for September 7. Commissioner Andersen asked whether the September 7 meeting would be considered second reading. Ms. Kuhn advised that in this instance, the meetings will be broken into three steps: first reading on August 17, a public hearing on September 7 and second/final reading on September 21 to adopt all code chapters. Mr. Mueller advised that the public hearing and second reading meetings do not necessarily need to take place at the same time. Upon question by Commissioner Andersen, Mr. Mueller stated that the punch list items would be brought back to Planning Commission for discussion at worksessions following final adoption by Council. Ms. Kuhn stated that staff planned to begin a series of Planning Commission worksessions after October 1 to go through the punch list items. Mr. Mueller added that if any items determined by Planning Commission should be brought back to Council for consideration, they could be brought back in the future as separate Code updates.

Commissioner Andersen sought to ensure that Council receives feedback from citizens and the Planning Commission and asked how often and in what format City Council receives information regarding discussions at Planning Commission meetings and worksessions. Upon further question, Mr. Mueller advised that Council receives copies of Planning Commission minutes. Commissioner Andersen again expressed concerns about philosophical questions raised at last week's special meeting and asked how she could be assured that Council will receive the information and questions raised, especially regarding affordable housing. Chair Yeater requested to address the item at hand. Commissioner Andersen was reluctant to move forward and approve the matter before addressing the philosophical questions raised at the previous worksession.

Assistant City Attorney, Michael Axelrad requested the floor and was recognized by Chair Yeater. Mr. Axelrad noted that last week's special meeting was a worksession and upon question by Mr. Axelrad, Ms. Kuhn confirmed that the items on the agenda today were discussed at the special meeting/worksession last week. Mr. Axelrad advised that this is the Planning Commission's opportunity to consider the ramifications of the items being proposed, adding that if the Commission votes and decides to pass along a recommendation of approval to City Council, any comments made during the process will be included in the Council packet. He stated that it is important to make sure that every commissioner has a full chance to air any concerns about the substance of the proposed ordinance. Mr. Mueller added that the punch list items identified would be included in Council packets so that they are made aware. Chair Yeater stated his understanding that a recommendation by the Planning Commission today and later adoption by City Council can still be cleaned up at a later date with another Code update. Mr. Mueller acknowledged that to be the case, adding that discussions would be memorialized in the minutes.

Commissioner Andersen asked whether the discussions would be included in the staff report or limited to the minutes presented to Council prior to September 7. Mr. Mueller stated that the minutes would be part of the Council packet. Specifically, Commissioner Andersen asked whether the philosophical discussion about affordable housing would be addressed in the staff report. Ms. Kuhn advised that it would be captured in the minutes that are part of the Council agenda packet. Commissioner Andersen explained that in the previous week, she had an opportunity to refine her thoughts about requiring homeowner's associations (HOA) for new developments. She stated that the fees were similar to charging rent in addition to a house payment that made it more difficult for homeowners to put more money toward equity. Commissioner Andersen expressed that including this in the Code denies the missing middle that is being encouraged. Mr. Mueller provided assurance that Commissioner Andersen's concerns would be captured in the minutes. Chair Yeater expressed appreciation for Commissioner Andersen's sentiments and offered another point of view by stating that HOAs protect homeowners' property values and offer another level of protection and regulation that might go beyond the city Code. He added that the Commission would have an opportunity to address the issue in the future as a punch list item. Mr. Mueller advised that it was not currently on the punch list, but could be added.

Commissioner Schulte sought to clarify that minutes of Planning Commission proceedings will be provided to Council prior to September 7. Mr. Mueller advised that either draft or signed minutes would be provided. Ms. Kuhn added that one of the reasons the schedule was adjusted was to provide time to create minutes and provide an adequate record for Council. Commissioner Andersen asked whether there was an opportunity to write a dissent. Ms. Kuhn advised that it could be done through the motion and follow-up discussion. Chair Yeater requested to vote on the update. Commissioner Andersen again expressed concern as she has problems with Chapter 5 and was not sure how to leave that out of a proposed motion. Chair Yeater asked another member to make the motion.

Commissioner Romulo moved that, based on the project summary and attached drafts of Chapters 3-6 and 13, including the revised table in 24-5-4 in Chapter 5, the Planning Commission finds that the proposed revisions to Chapters 3-6 and 13 are consistent with the City's Comprehensive Plan and are necessary and appropriate in meeting the intent of the Comprehensive Plan and to clarify administration of the Development Code. Planning Commission recommends that the City Council adopt Chapters 3-6, including the revised table 24-5-4 in Chapter 5, and 13 of Title 24 as shown in Attachments A, C, E, G and I. Commissioner Modlin seconded the motion.

During discussion, Commissioner Andersen requested to pull Chapter 5 from the motion to meet the intent of providing affordable housing as stated in the Comprehensive Plan. As a point of order, Mr. Axelrad noted that a motion was on the table and that Commissioner Andersen had proposed a second motion to exclude one chapter being forwarded to Council. He advised that the appropriate procedure would be for a motion to consider Commissioner Andersen's request, take a vote, and then return to the original motion made by Commissioner Romulo. Mr. Mueller stated that, alternatively, the Commission

could informally consider the motion proposed by Commissioner Andersen and see if there is a second. Chair Yeater considered Commissioner Andersen's discussion as a motion and asked whether there was a second to the motion. There being none, the motion failed.

The motion posed by Commissioner Romulo carried 4-1, with Commissioner Andersen voting against the motion.

VII. Staff Report

Mr. Mueller asked to present the staff report following the Zoning Board of Appeals meeting and noted that the 2nd quarter odor report was included in the packet.

VIII. Adjournment

With no further business before the Commission, Chair Yeater adjourned the meeting at 2:59 p.m.

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Justin Yeater

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Justin Yeater, Chair

DocuSigned by:

Becky Safarik

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Becky Safarik, for Brad Mueller, Secretary

City of Greeley, Colorado
PLANNING COMMISSION PROCEEDINGS
Special Meeting

July 20, 2021

I. Call to Order

Chair Yeater called the remote meeting to order at 1:15 p.m. via the City's Zoom platform.

II. Roll Call

The hearing clerk called the roll.

PRESENT

Chair Justin Yeater
Commissioner Louisa Andersen
Commissioner Erik Briscoe
Commissioner Brian Franzen
Commissioner Larry Modlin
Commissioner Chelsie Romulo

ABSENT

Commissioner Christian Schulte

III. Approval of Agenda

Commissioner Andersen moved to approve the agenda. Commissioner Romulo seconded the motion. Motion carried 7-0.

IV. Worksession: Code Update, Chapters 3, 4, 5 & 6 (Part II) and Chapter 13

Presenter: Carol Kuhn, Chief Planner

Ms. Kuhn explained the plan for discussion for the day, which was to go over high-level topics for each of the chapters. She advised that there has been a slight shift in the third set of chapters, but the overall schedule remains. Ms. Kuhn gave an overview of how the section maps show the relationship of the current code to proposed changes and reorganization.

Ms. Kuhn started with Chapter 3 – Subdivision Standards – and discussed the key changes. Commissioner Modlin asked if roundabouts should be found in the code. Ms. Kuhn explained that these would be found in the Streets Manual. Ms. Andersen expressed appreciation for alternative compliance options that are proposed. She also expressed value in the “this/not this” set of language and illustrations in the code, particularly in clarifying intent.

Ms. Kuhn presented Chapter 4 – Zoning Districts and Uses – and discussed the narrow focus of this chapter and the key changes. Among the changes are two new zoning districts options for Mixed Use, as well as others as outlined in the staff report. Most of Chapter 4 is a re-grouping and organizing of uses, with some minimal refining.

Ms. Andersen noted the change of mobile homes to micro-housing and expressed support for that general approach. She asked about the specific intent of that zone district. Ms. Kuhn discussed the refinement of these being integrated into subdivisions. Brad Mueller, Department Director, discussed the relationship of micro-housing to the adopted Strategic Housing Plan.

Chapter 5 – Residential Development Standards – was next introduced by Ms. Kuhn. She discussed the various key changes for this chapter, emphasizing an increase in the housing type options available and ensuring variety in housing to avoid monoculture of architecture and housing types in subdivisions. Garage size standards were increased slightly for typical suburban neighborhoods, but tightened in neighborhoods that are more dense and characterized by smaller lots.

Chair Yeater asked about impermeable surface in the context of small lots, specifically if there is code that accounts for adequate runoff and detention. Ms. Kuhn indicated that the review process would account for those through engineering standards. She explained the role of the criteria manuals and the relationship of those to code.

Commissioner Franzen asked if the diversity requirement in type and mix of housing type would limit market activity. Ms. Kuhn responded that this concept came out of the advisory committee conversations and that homebuilders in those settings likely only expressed support for this if they see positive impacts in the community. Consultant Chris Brewster explained that the proposed amount and frequency of the proposed code is conservative enough to not create a burden in meeting that requirement.

Commissioner Andersen asked about perimeter landscaping and fencing and commented that it created the necessity of some entity to maintain such as homeowner's associations (HOA). Chair Yeater offered the observation that common areas often function as easements, and that having an HOA or similar creates accountability for keeping these areas nice and clean. He also offered the opinion that common streets and arterials are better when there is neighborhood accountability.

Mr. Brewster confirmed that what Commissioner Andersen described is not the intended outcome, adding that staff committed to looking at where unintended consequences could be created by the proposed code. He pointed to the alternative compliance as one safeguard against that.

Commissioner Andersen spoke to the monthly cost of HOAs and common areas, and talked about the offset of amenities, such as on-site storage. Commissioner Briscoe agreed about the importance of sense of place, but felt that there have been changes in development technology over time discussing the role of scale

in modern development. Chair Yeater expressed the function of these proposed criteria as minimum standards, pointing out the unanswered areas that occurred in the past without such standards, such as the back-of-fence area along 35th Avenue. Commissioner Andersen indicated that if affordable housing is a goal, some of these policies do not support it. Chair Yeater disagreed and observed that this a way to maintain minimum standards.

Commissioner Romulo asked Mr. Brewster about a chart she recalled from past presentations showing housing types, and asked if it would be beneficial to review that to see if those concerns are addressed. Ms. Kuhn showed the charts in question. Mr. Brewster restated his understanding of Ms. Andersen's point as being a concern with an HOA being required of every project. In the case of micro-housing, it would be an expectation that there would be a common area manager out of necessity, though points about storage and similar would still be relevant. He thinks that the code provides options and would not necessarily require significant common area management.

Commissioner Franzen and Chair Yeater shared ways they experienced or envisioned alternatives to HOAs. Commissioner Andersen discussed the goal sought, such as avoiding "ugly" back areas, and discussion about requiring each property owner to manage that. Chair Yeater described a challenge of trying to mow a back-of-fence location that was not accessible to the owner. Commissioner Modlin discussed the positive role of representation of owners in HOAs and metro districts.

Commissioner Romulo asked about adding language into the alternative compliance section as a way to account for the non-HOA scenario. Mr. Brewster indicated that he felt that could be done, and that some may already in the draft.

Chair Yeater asked whether there are alternatives to HOAs. Mr. Brewster shared a recent example he is familiar with where the detention requirement is in the plat, and that the owners are all responsible. The question was discussed about whether and how owners become aware of that.

Chair Yeater asked for a straw poll on the code as it is currently proposed regarding these matters. A majority of commissioners expressed comfort with the current proposed language.

Ms. Kuhn next reviewed Chapter 6, Non-Residential Design Standards – and discussed the key parts and changes associated with this topic and chapter.

Commissioner Andersen asked about design standards for industrial buildings, citing the 40-90% transparency within a specific number of feet in the draft code in Table 24-66 on page 186 of the packet. There was discussion about the applicability of this to industrial. Mr. Brewster described the setback/gradual application of this, and the adjustment with the proposed versus current to have it relate to the entryway only. Examples of warehouses or a meat packing plant were discussed.

Comm. Briscoe expressed concern with the large massing of Leprino without any respect to giant walls. He cited Windsor's recent examples of industrial buildings where this transparency standard similar to the proposed seems to be met with good effect. Commissioner Andersen said the nature of certain industries requires such buildings and did not want to stymie such construction.

Chair Yeater asked if there is a desire to accept the current proposed language regarding the proposed transparency standards. A majority of commissioners expressed comfort with the language as proposed. Chair Yeater asked if there was any other discussion. Mr. Mueller thanked the Commission for their time and the special session.

V. Adjournment

With no further business before the Commission, Chair Yeater adjourned the meeting at 2:49 p.m.

DocuSigned by:

Justin Yeater

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Justin Yeater, Chair

DocuSigned by:

Becky Safarik

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Becky Safarik, for Brad Mueller, Secretary

From: [Amanda Meek](#)
To: [Carol Kuhn](#)
Subject: [EXTERNAL] Follow-up
Date: Tuesday, July 27, 2021 6:28:52 PM
Attachments: [image001.png](#)
[image007.png](#)

Hi Carol,

I just wanted to follow up with my previous email and let you know that those comments were suggestions meant to be helpful, not intended for immediate action. We certainly didn't mean to undermine any of the hard work your team has been doing or upend the process that is well on the way to implementation. I think we can table these comments until we review at the 6-month mark and again, they are simply suggestions with the intent to be helpful from one of our knowledgeable staff members who wanted to contribute to the conversation. We are incredibly grateful for the opportunity to participate since we are very invested in Greeley. Thank you ALL for the hard work you have been and continue to do. We are headed in the right direction for sure!!!



Amanda Meek

Vice President of Purchasing

256.656.8455 (mobile)



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From: [Amanda Meek](#)
To: [Carol Kuhn](#)
Subject: [EXTERNAL] FW: Residential Design Standards
Date: Tuesday, July 27, 2021 2:54:03 PM
Attachments: [image001.png](#)
[image007.png](#)

Hi Carol,

I apologize for not attending today's meeting. We are having some significant challenges with a few trades today and I just couldn't get away in time. I asked Dave Thorpe to review the section we're working on. He's a former City Planner who works in our Land Development Department (and a rockstar in my opinion). He's provided the comments below which are from the perspective of a Planner. I hope you find this useful.

Again, I'm really sorry I missed the meeting. Dave has offered to jump in and help, too, if you could benefit from his expertise.

Thanks,



Amanda Meek

Vice President of Purchasing

256.656.8455 (mobile)



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From: David Thorpe <dthorpe@hartfordco.com>
Sent: Tuesday, July 27, 2021 12:13 PM
To: Amanda Meek <Amanda@hartfordco.com>; Landon Hoover <landon@hartfordco.com>
Cc: Patrick McMeekin <patrick@hartfordco.com>
Subject: RE: Residential Design Standards

All,

I've read through it and have a number of thoughts and concerns. Where it applies to Amanda's questions, I've responded to her below in red.

- This is a hybrid code – half Form-Based and half Euclidian. One of my major concerns with it is that the uses are built around building types (like a FBC) but those types are not defined anywhere. Denver's code has extensive definitions of each building type and then regulates

where they can be. That fuzziness is concerning to me here. Outside of a lack of graphic definition, there is no actual definitions section here (maybe it just was excluded from this PDF), but either way it needs to be in the code. The only thing that explains what these terms are are those small thumbnail images and that is far too vague.

- I can't really tell what the difference is between a "Detached House – Small Format" and a "Detached House – Small Lot" is. I think they should both have the same setbacks (3' sides). If they're building types, then why is one defined by the lot?
 - All their examples of home types on page 5-2 are rear-loaded, which concerns me.
- 24-502 b 2 d (page 5-4) reads as if meters have to be 3' from the property line, but if we have them mounted on the side of a home with a 3' side setback that's a bust.
- On 5-6, I'm concerned about the diversity standards. Fort Collins has a similar standard but allows two types of front-load homes if there is a significant difference in the size of the lot. The same is true for rear-load (2,000sf, I think). This code should at least accommodate that.
- I agree with your 60 unit threshold. I think 40 is the minimum number of townhomes any developer could build and that is really pushing it. We may want to make it closer to 80.
- I think their accessory parking spot is too small. I'd say 200sf min (p. 5-14).
- I think their driveway code is really confusing and is not likely to produce a consistent product. Maybe simply say that driveways can be 2' wider than the door opening all the way to the curb (for 2-car garages) and that the third door has to be offset by at least 2' forward or backward and that its driveway has to return to the main one before the curb..... just an idea.
- Are you concerned about the building materials code? I think it's decently flexible and doesn't appear to require a minimum amount of masonry or another expensive material.
- On 5-16 I don't love the code about stepping the height of larger buildings next to smaller buildings, especially where there is no definition or context for that. In Denver, there are areas where that kind of step back is required (it's tied to the zoning map, I think).
- 5(g) on 5-17 appears to allow you to waive the side window requirement for homes less than 3' from the property line. That seems like a good idea to me and probably helps if we want to do Sidehill out there at some point.
- 5-18 includes the building variation standards and I think this is potentially harder to meet than Fort Collins. If each unit has to be different from the units on either side and the three across the street, I think we could (worst case) need six total designs per product line for condos or townhomes. Some of their proposed variations are not too complicated (modifying the entryway), but in general I think this is clunky and incentivizes doing a lot of little changes but nothing actually substantive.
- To be fully honest, I think the code on 5-19 about on-lot open space is way too prescriptive. First, this is too detailed to practically regulate. Who checks this and at what point? Plot plan, potentially, but that is really late in the process. I think it would be much simpler to say that x% percent has to be open space. I'd like it to include driveways in pass-by configurations or in rear-load conditions where there is an extra slab that could function as a patio, too. The standard would ideally let the developer reduce that standard for cityscape or sidehill type products. I think the overall trend in housing is toward smaller housing with less maintenance, so this code needs to have a meaningful and easy to obtain out when that is the objective. I think in other cases it should be super easy to regulate and I don't think this does that.
 - Additionally, the rooftop code maxes out a rooftop patio at 25% of the requirement, so Cityscapes are a bust.

I think having an alternative compliance option is good (5-20), but having to have two active open spaces within a quarter mile of each unit will also be a pain to regulate.

- This also doesn't accommodate for-rent residential detached units or fee-simple patio homes. It assumes the homeowner has private outdoor space on their lot.
- The open space amenity code is again highly prescriptive, which concerns me. It is based on points, but the alternative compliance for the previous code about on-lot open space is based on distance to and number of green spaces. The incentives don't line up.
- It's a little thing, but I'm concerned about the language used in the code. They use "shall" a lot but don't provide any "or similar elements". Thus, there are phrases like "recreation areas (parks, trails, and recreation centers) shall include playgrounds, sport courts, and larger landscape areas design for un-programmed outdoor recreation" (5-21 – 5-22). If the planner is being a stickler, that literally reads as if trail corridors have to have playgrounds, sport courts, and larger open space, which doesn't make sense.
- All product on medium to small lots should be allowed to go to 3' side setbacks if it complies with fire code. Maybe set the cap at 5500sf. I'm specifically looking at 5-25 where manufactured units have to have 10' building separation even if they have 3' side setbacks. They allow a 2500sf lot, but then this arbitrarily pushing the units farther apart. I realize this is the mobile home section, but I think the world is only going to get denser, so let's push for small setbacks wherever we think we could want them.

My overall impression of this code is that Greeley has been burned in the past and wants to get a better product in the future, but this is so prescriptive that I think it will be a challenge to follow and a challenge to regulate. It's overly complex in many ways and would be frustrating to try to follow if I was the planner on a project. I almost want to sit down with them and find out what the problem is that they are trying to avoid.

I hope that helps. Feel free to let me know if you have any other questions,



Dave Thorpe

Sr. Land Development Project Lead

D: 970.674.1109 Ext. 109 C: 719.244.6088



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From: Amanda Meek <Amanda@hartfordco.com>
Sent: Thursday, July 22, 2021 10:32 AM
To: Landon Hoover <landon@hartfordco.com>; David Thorpe <dthorpe@hartfordco.com>
Cc: Patrick McMeekin <patrick@hartfordco.com>
Subject: RE: Residential Design Standards

We have specifically been “negotiating” with them over windows on the sides of the houses and I believe they will be creating language that permits a blank wall on the sides if the side setbacks are really small and increasing the requirement for windows/architectural detailing on the side of the home as the setbacks increase. This was a hard-fought battle. The mix of materials has been tricky since they are attempting to allow flexibility in achieving compliance but it seems to muddy the actual minimums.

Table 24-5-4 on sheet 5-6 needs to be addressed. Everyone agreed that the Project Scale bands are too narrow and should be larger spreads, so instead of < 40 Units, maybe this is < 60 Units and for the others maybe 60-200 (as an example). What are other municipalities doing with this? I think Fort Collins does it by acreage, but as I mentioned above, they define what their types are. We’re writing the PUD for Bloom to do this for the project as a whole, not just each filing. That is also critical so we don’t have to build additional product lines with each filing.

Page 5-11 #3: I still don’t feel comfortable with their language on the driveway width because our houses are typically positioned nearer to the street than in the illustration given. I brought up the point that there should be more flexibility to taper the driveway within the first 25 feet of the lot since a large car/truck cannot turn sharply enough out of their garage to stay on pavement based on their illustration applied to our conditions. I’d love your thoughts on this.

I totally agree with your assessment here. For Bloom we’re proposing the following: “Garage doors shall not comprise more than fifty (50) percent of the ground floor street-facing linear building frontage. If a home has a three-car garage, a single door, or set of two doors in the same plain) shall not comprise more than 50% of the ground floor street-facing linear building footage than what the home would have if it had a 2-car garage. A 3rd garage stall is permitted if the stall is recessed behind the other two stalls a minimum of 2’. The total of these 3 stalls may exceed the total 50% of ground floor street-facing linear building footage when configured as described above. Alleys and corner lots are exempt from this standard.”

Also, I don’t see how their example picture complies with their code. I don’t know about windows, etc... but that porch appears to be more than 4’ back from the front plane.

Are we OK with 50% landscaping in the front yard on 3-car garage lots?

In regards to garage design (Page 5-12, #4), the square footages for the garage plane don’t work (200 sf of wall is a small 2-car garage with no gable or living space above). This section should be revised, but I think they could use some additional language to insert in this section. I agree.

Page 5-12 #5: Front Entry Features – this section was intended to make compliance easier but I’m not convinced that it did. In my opinion, the language really only applies to very traditional homes

and hard to achieve in contemporary architecture. Do you have other examples we could propose? I agree with your assessment but I don't have any other good examples. Simpler is better, in my opinion, so could they say something like each home has to have an entry feature that extends out (side or forward) from the main door at least 4'? That kind of standard is easy to know if you're meeting or not.

There are sections in the Residential Development Standards that might be of particular interest to you that are outside my scope of expertise, such as the Neighborhood Feature & Common Area Design, Stormwater, etc.

Thanks so much for your input! You are much more versed in these standards than I, so I welcome any comments you have.



Amanda Meek

Vice President of Purchasing

256.656.8455 (mobile)



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From: Landon Hoover <landon@hartfordco.com>

Sent: Thursday, July 22, 2021 8:28 AM

To: Amanda Meek <Amanda@hartfordco.com>; David Thorpe <dthorpe@hartfordco.com>

Cc: Patrick McMeekin <patrick@hartfordco.com>

Subject: RE: Residential Design Standards

Amanda – I am sending this to Dave, as he could provide great perspective. Can you give guidance on what type of feedback would be helpful?

Dave – Things are busy, so if there isn't capacity to look at this, no worries. It is not a priority!

Thank you.

Landon

Landon Hoover



Owner / CEO

970-286-3329



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From: Amanda Meek <Amanda@hartfordco.com>

Sent: Thursday, July 15, 2021 8:41 AM

To: Mike Welty <mikew@hartfordco.com>; Patrick McMeekin patrick@hartfordco.com; Landon Hoover landon@hartfordco.com; Jon Tschetter jon@hartfordco.com; Charlie Atwood charlie@hartfordco.com; Dan Werner <Dan@hartfordco.com>

Cc: Jason Stansberry <jasons@hartfordco.com>

Subject: FW: Residential Design Standards

Importance: High

Please see attached for your review.

Thanks,



Amanda Meek

Vice President of Purchasing

256.656.8455 (mobile)



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From: Carol Kuhn <Carol.Kuhn@Greeleygov.com>

Sent: Monday, July 12, 2021 9:13 AM

To: Mike Garrott <Michael.Garrott@Greeleygov.com>; Brad Mueller <Bradford.Mueller@Greeleygov.com>; Caleb Jackson <Caleb.Jackson@Greeleygov.com>; Rob Sabin <Rob.Sabin@aspenhomesco.com>; Chris Brewster <Chris.Brewster@GouldEvans.com>;

maheiliger@drhorton.com; Amanda Meek <Amanda@hartfordco.com>; Morgan Kidder <Morgan@crow-creek.com>; dbartran@bartran.com; Jon Tschetter <jon@hartfordco.com>; Mike C Loiacono <MCLoiacono@drhorton.com>; Jamie@baesslerhomes.com

Cc: Carol Kuhn <Carol.Kuhn@Greeleygov.com>

Subject: Residential Design Standards

Importance: High

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Hello, everyone. It has taken some time, but we have finally worked through the residential design standards and have attached the revised draft of Chapter 5 – Residential Design Standards.

The proposed regulations increase the allowances for garage door openings and allow for additional design features to contribute to the % openings for windows and doors on the front façade. In this chapter and throughout the entire code, we have added additional guidance for alternative compliance for projects that can meet the intent of the revisions through innovative and creative means.

We have a couple of options for our follow-up discussion and hope that at least one of these times/dates will work for your busy schedules:

Friday, July 16th at 3:00

Monday, July 19th at 2:00

Tuesday, July 20th at 1:00

Please use the Doodle Poll link below to cast your vote for the meeting time that best works for your schedule:

https://doodle.com/poll/dcf62qcwryqffctb?utm_source=poll&utm_medium=link

We look forward to talking to all of you soon.

Thank you for your time,



Carol Kuhn, AICP

Chief Planner

Community Development | Planning

1100 10th Street

Greeley, CO 80631

970.350.9276 | carol.kuhn@greeleygov.com

www.greeleygov.com

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Amending Title 24 to Adopt Chapters 3-6 & 13 to be Adopted by Ordinance

CU2021-0005

**City Council Public Hearing
September 7, 2021**

Chapters 3-6 & 13 – Process

**Technical Committee Review
Work Session**

PC – June 22, 2021 & July 20, 2021

**Planning Commission
July 27, 2021**

City Council

1st Reading – August 17, 2021

➤ **Public Hearing – September 7, 2021**

2nd Reading – September 21, 2021

Effective Date – October 1, 2021

Chapter 3 – Subdivision Standards

24-301

Streets

24-302

Parks & Trails

24-303

Blocks & Lots

24-304

Required Improvements

24-305

Adequate Public Facilities

Chapter 3 – Key Revisions

- **Reorganize & consolidate all subdivision and street standards**
- **Refine standards related to street connectivity**
- **Distinguish between different contexts**
 - **Walkable**
 - **Car-oriented**
- **Make the current narrow street option applicable to all neighborhoods**
- **Add walkable mixed-use commercial street options**

Chapter 4 – Zoning Districts & Uses

24-401	District Intent & Applicability
24-402	Allowed Uses
24-403	Accessory Uses
24-404	Specific Use Standards
24-405	District Performance Standards

Chapter 4 – Key Revisions

- **Focus on land uses within each zoning district**
- **Consolidate land uses**
- **Refine intensity of uses by square footage**
- **Encourage Village Concept through 2 new mixed-use zone districts**
 - **MU-L**
 - **MU-H**
 - **For new development; not rezoning properties**

Chapter 5 – Residential Development Standards

24-501	Intent & Applicability
24-502	Residential Development Standards
24-503	Residential Design Standards
24-504	Neighborhood Features & Common Areas
24-505	Courtyard Pattern
24-506	Residential Micro-Housing District

Chapter 5 – Key Revisions

- **Focus on a greater variety of housing options to address demand for missing-middle & smaller-scale housing:**
 - **Reduce minimum lot size in R-L from 6,000 to 4,500 square feet**
 - **Add options for smaller lots in R-M & R-H**
 - **Add an option for Accessory Dwelling Units in R-M**
 - **Provide more options for 3-car garages**
 - **Promote a courtyard pattern design for single family**
 - **Expand options for small format housing such as micro housing, tiny homes & mobile homes**

Chapter 6 – Nonresidential Development Standards

24-601	Intent & Applicability
24-602	Nonresidential Development Standards
24-603	Nonresidential Design Standards

Chapter 6 – Key Revisions

- **Expanded alternatives and options in the Commercial & Industrial Zone Districts**
 - **Build on existing topics already regulated in the current code**
 - **Focus standards on public spaces & surrounding character**
 - **Emphasize key design elements as the buildings move closer to the street**
 - **Create a simplified building form & design standards**

Chapter 13 – Definitions & Terms

24-1301 Definitions

24-1302 Architecture & Design Terms

Chapters 3-6 & 13– Notice & Comments

Notice published in the Greeley Tribune

Information Sheets posted on the City's website

Drafts posted on the City's website

Referrals were sent to neighboring communities

No comments received from the public or referral agencies

Planning Commission Recommendation

- **Recommend approval of the proposed revisions to Title 24, Chapters 3-6 & 13**
- **Recommended Motion:**

A motion to direct staff to bring back the revised ordinance as presented for a second reading on September 21, 2021.

Council Agenda Summary

September 7, 2021

Key Staff Contact: Becky Safarik, Interim Community Development Director, 970-350-9786
Brittany Hathaway, Planner III, 970-350-9823

Title:

A public hearing to consider a resolution for approval of a Colorado Revised Statutes Title 32 Special District Consolidated Service Plan precedent to formation of five interrelated metropolitan districts known as Poudre Heights Metropolitan Districts Nos. 1-5 that would provide public facilities financing, operations, and maintenance

Summary:

The City of Greeley is considering a request for the approval of a Colorado Revised Statutes Title 32 Special District Service Plan and related Intergovernmental Agreement (IGA) precedent to formation of five interrelated metropolitan districts that would provide public facilities financing, operations and maintenance. The 292.652-acre property is proposed for mixed-use development. This item requires a public hearing and noticing in accordance with the requirements of C.R.S §32-1-204.

The ultimate service area of the district is contemplated to include approximately 1,200 residential units, 35 acres of commercial space, 70 acres of industrial, and an estimated 35 acres of open space (see Attachment C). Five districts are being requested in order to ensure that future taxpayers of each district are paying for the public improvements and services being provided therein; to ensure coordinated administration of construction and operation of public improvements and delivery of those improvements in a timely manner; and assure that improvements are constructed in a timely and cost-effective manner.

Additional information is provided in the attached Staff Report, and the proposed Service Plan has been reviewed by the Planning Division, Finance Department, and City Attorney's Office.

Fiscal Impact:

Does this item create a fiscal impact on the City of Greeley?	No
If yes, what is the initial, or, onetime impact?	
What is the annual impact?	
What fund of the City will provide Funding?	
What is the source of revenue within the fund?	
Is there grant funding for this item?	N/A
If yes, does this grant require a match?	
Is this grant onetime or ongoing?	

Additional Comments:	Approval of the proposed Service Plan and creation of the Districts does not create financial obligations for the City, and may actually relieve it of some, depending on future proposed development in the area.
----------------------	--

Legal Issues:

None. The proposed Service Plan was reviewed by City Attorney staff.

Other Issues and Considerations:

None noted.

Strategic Work Program Item or Applicable Council Priority and Goal:

Consistency with the Comprehensive Plan, Strategic Housing Plan, and Development Code Standards.

Decision Options:

- 1) Adopt the resolution as presented; or
- 2) Amend the resolution and adopt as amended; or
- 3) Deny the resolution; or
- 4) Continue consideration of the resolution to a date certain.

Council's Recommended Action:

1. Based on the application received and the preceding analysis, the City Council finds that the request for the approval of a Colorado Revised Statutes Title 32 Special District Service Plan for Poudre Heights Metropolitan Districts Nos. 1-5 is in conformance with the City of Greeley's Municipal Code Chapter 9; and therefore, approves the request and adopts the Resolution.
2. A motion to adopt the Resolution approving the Intergovernmental Agreement between the City of Greeley and Poudre Heights Metropolitan District Nos. 1-5, regarding the Service Plan for the Districts.

Attachments:

Approval Resolution

Staff Report

Attachment A – Vicinity Map

Attachment B – Service Plan

Attachment C – Executive Summary

Attachment D – Proposed PUD Plan Map

Attachment E – Greeley 2018 Metropolitan District Model Service Plan

Attachment F – Resolution – Intergovernmental Agreement

PowerPoint

**CITY OF GREELEY, COLORADO
RESOLUTION NO. ___, 2021**

A RESOLUTION APPROVING A COLORADO REVISED STATUTES TITLE 32 SPECIAL DISTRICT CONSOLIDATED SERVICE PLAN PRECEDENT TO FORMATION OF FIVE INTERRELATED METROPOLITAN DISTRICTS KNOWN AS Poudre HEIGHTS METROPOLITAN DISTRICTS NOS. 1-5 THAT WOULD PROVIDE PUBLIC FACILITIES FINANCING, OPERATIONS, AND MAINTENANCE

WHEREAS, pursuant to 32-1-204.5, C.R.S., and City of Greeley Ordinance 2-529, the City Council of the City of Greeley, Colorado, has considered the Service Plan for Poudre Heights Metropolitan Districts Nos. 1-5 (hereinafter referred to as "the Districts"); and

WHEREAS, the public hearing required by 32-1-204 C.R.S., and 2-528 of the City of Greeley Code of Ordinances was conducted regarding the Service Plan of the Districts on September 7, 2021; and

WHEREAS, after said public hearing, City Council has found that the Service Plan of the Districts comply with the provisions of Greeley Ordinance 2-528 and the requirements of Colorado Statutes regarding metropolitan districts contained in Title 32 of the Colorado Statutes.

NOW THEREFORE, BE IT RESOLVED BY THE GREELEY CITY COUNCIL OF GREELEY, COLORADO:

Section 1. The City Council of the City of Greeley, Colorado, a home rule municipality, does hereby determine that the applicable requirements of Title 32, Article I, Part 2, C.R.S., as amended, relating to the requirements for Service Plan for the Districts have been met.

Section 2. The City Council finds that the Service Plan contents are in compliance with the information required by Section 32-1-202(2), C.R.S., and Sections 24-1055 and 2-526 of the Greeley Code of Ordinances.

Section 3. Further, the City Council does hereby determine that the provisions of Greeley Municipal Code Section 2-528 have been met and does hereby find as follows:

- a. There is a sufficient existing and projected need for organized service in the area to be serviced by the proposed Districts;
- b. The existing service in the area to be served by the proposed Districts is inadequate for present and projected needs;
- c. The proposed Districts are capable of providing economical and sufficient service to the area within its proposed boundaries;
- d. The area to be included in the proposed Districts has, or will have, the financial ability to discharge the proposed indebtedness on a reasonable basis;
- e. Adequate service is not, or will not be, available to the area through the City or other existing quasi-municipal corporations, including existing Districts, within a reasonable time and on a comparable basis;

- f. The facility and service standards of the proposed Districts are compatible with the facility and service standards of the City;
- g. The proposal is in substantial compliance with the City's Comprehensive Plan;
- h. The proposal is in substantial compliance with the county, regional or state long-range water quality management plans and wastewater plans for the area;
- i. The creation of the Districts will be in the best interests of the area proposed to be served;
- j. The creation of the Districts will be in the best interests of the residents or future residents of the area proposed to be served;
- k. The proposed Service Plan is in substantial compliance with Chapter 9 of Greeley Code of Ordinances; and
- l. The creation of the Districts will not foster urban development that is remote from, or incapable of being integrated with, existing urban areas, or place a burden on the City or adjacent jurisdictions to provide urban services to residents of the proposed Districts.

Section 4. The City Council hereby determines that the Service Plans for the Districts are hereby approved.

Section 5. A certified copy of this Resolution shall be filed in the records of the City and shall be submitted by the petitioners to the District Court for the purpose of filing with the Weld County District Court as required by State law.

Section 6. Nothing contained herein limits the City's powers with respect to the Districts, the property within the Districts, or the improvements to be constructed by the Districts.

Section 7. This Resolution shall become effective immediately upon its passage as provided by the Greeley City Charter.

PASSED, AND ADOPTED, SIGNED AND APPROVED this 7th day of September, 2021.

ATTEST:

THE CITY OF GREELEY, COLORADO

City Clerk

Mayor

CITY COUNCIL STAFF REPORT

ITEM: Metropolitan District Service Plan and Intergovernmental Agreement (IGA) Approval

CASE NO: MD2021-0001

PROJECT: Poudre Heights Metropolitan District Nos. 1-5 Service Plan

LOCATION: North of U.S. 34 Business (10th Street) and west of 101st Avenue, representing approximately 292.652 acres

APPLICANT: Todd Johnson on behalf of Poudre Bay Partners

CASE PLANNER: Brittany Hathaway, Planner III

CITY COUNCIL PUBLIC HEARING DATE: September 7, 2021

CITY COUNCIL FUNCTION:

Review the proposal for compliance with Section 2-528 of the City of Greeley Municipal Code and approve, approve with conditions, or deny the request.

EXECUTIVE SUMMARY

The City of Greeley is considering a request for the approval of a Colorado Revised Statutes Title 32 Special District Service Plan and related Intergovernmental Agreement (IGA) precedent to formation of five interrelated metropolitan districts that would provide public facilities financing, operations and maintenance. The 292.652-acre property is proposed for mixed-use development. This item requires a public hearing and noticing in accordance with the requirements of C.R.S §32-1-204.

The ultimate service area of the district is contemplated to include approximately 1,200 residential units, 35 acres of commercial space, 70 acres of industrial, and an estimated 35 acres of open space (see Attachment C). Five districts are being requested in order to ensure that future taxpayers of each district are paying for the public improvements and services being provided therein; to ensure coordinated administration of construction and operation of public improvements and delivery of those improvements in a timely manner; and assure that improvements are constructed in a timely and cost-effective manner.

Council's review and potential approval of a Metropolitan District Service Plan does not imply approval of the planned and proposed zoning, which Council would separately consider at a future date.

The applicant has provided a Capital Plan (see Attachment B) as an element of the Service Plan that indicates the anticipated costs associated with designing, installing, and constructing the infrastructure necessary to serve the development. According to the Capital Plan, the anticipated

infrastructure cost would be approximately \$96,619,105. The applicant is requesting an aggregate maximum amount of debt that the districts could issue in the amount of \$110,000,000.

The district, as proposed, would have the capacity to finance the necessary public facility improvements through the issuance of general obligation and/or revenue bonds, along with imposing facility fees on the residential and commercial properties. The bonds are anticipated to be retired in 30 years with a maximum debt mill levy imposition term for residential districts at 40 years.

As proposed, the Service Plan includes a Maximum Mill Levy cap of sixty (60) mills, which is supported within the City's approved "Model Service Plan," that allows for an aggregate total of up to seventy (70) mills.

The proposed district may also collect a one-time "District Facility Fee" for capital improvements. These fees would be collected by the Developer prior to issuance of any building permit. The fees of which shall not exceed the following limits:

- \$5,000.00 per single-family detached residential unit.
- \$2,500.00 per single-family attached or multi-family residential unit
- \$2.00 per square foot for commercial.

Staff has identified concerns as it relates to the proximity to necessary public facilities, such as sewer and stormwater infrastructure, but notes that without the developer's ability to create districts, development in this area in the foreseeable future is less likely. A trend in Northern Colorado, particularly for pre-planned and larger development areas, is to have metropolitan districts as a key funding tool.

Per Section 2-510 of the City of Greeley Municipal Code, the City Council finds that the determination of whether to use districts to provide for development of capital facilities and incurring of debt to finance such facilities, is purely a matter of local concern and shall determine the merits of allowing the formation of a district for development of municipal infrastructure to allow a district on a case-by-case basis.

A. REQUEST

Approval of a Colorado Revised Statutes Title 32 Special District Services Plan for Poudre Heights Metropolitan District Nos. 1-5 and a resolution approving the related Intergovernmental Agreement between the City and the Poudre Heights Metropolitan District Nos. 1-5.

B. STAFF RECOMMENDATION

Approval of the proposed Service Plan and IGA as presented.

C. LOCATION

Abutting Zoning/Land Use:

North: Weld County A - AG (Agriculture)

South: US Highly 34 Business, PUD (Planned Unit Development – Tri-Pointe), and R-L (Residential Low Density)

East: PUD (Planned Unit Development – Lake Bluff)

West: PUD (Planned Unit Development – Golden Triangle)

Site Characteristics The site is zoned PUD and is relatively flat to the south with bluff areas to the north. The property is currently undeveloped and being utilized for agricultural.

Surrounding Land Uses

North: Agricultural/undeveloped land

South: Highway, single family residential, agricultural, and undeveloped land

East: Agricultural/undeveloped land

West: Rural single family residential, agricultural, and undeveloped land

D. BACKGROUND

In July 2009, the Lake Bluff Preliminary PUD (PUD 2:08) was approved by the City Council. The 2009 Lake Bluff PUD included this subject site. The Preliminary PUD was not finalized through a Final PUD process and therefore expired. On February 11, 2020, City Council approved an updated Lake Bluff Preliminary PUD of which excluded this property, leaving the property with an expired PUD designation.

On June 25, 2019, the City received the first application for a Preliminary PUD “Poudre Heights”, which would establish urban-scale zoning on the subject property. An updated request was received on May 24, 2021, and includes the area and uses described in the Executive Summary. The proposal is currently under review by City Staff.

E. PURPOSE OF A METROPOLITAN DISTRICT

Metropolitan districts can provide a funding mechanism for public infrastructure and amenities that may otherwise not be feasible given the restrictions of “TABOR” (Taxpayers Bill of Rights) laws [Article X, Section 20 of the Colorado Constitution]. TABOR limits the amount of revenue that can be collected and retained by local governments with all tax increases requiring approval by voters in a ballot initiative process. This can prove difficult in itself. As of 2019, the 20-year average passing of tax related ballot measures was approximately 42%.

TABOR also sets a new revenue limit each year for local governments based on inflation rates and local growth. Any revenue collected that exceeds these limits must be returned to the citizens. These restrictions may cause a municipality issues with funding growth and to finance public improvements, such as large scale infrastructure projects. These constraints have given rise to the creation of metropolitan districts.

A metropolitan district is an independent unit of local government typically formed by developers, created to finance, construct and maintain public improvements related to a development. State statutes enable the formation of the districts under C.R.S. Title 32, Special District Act. Districts have the ability to levy ad valorem property taxes, charge fees, and also have condemnation authority. Districts can be formed to finance the costs of needed infrastructure construction among other improvements. Bonds can be financed publicly,

through a municipality, or through private investors. The bonds are repaid through an additional property tax by the metropolitan district on individual property owners within the district, typically at a mill levy not to exceed 70 mills. This proposal has a max mill levy of 60 mills.

Metropolitan Districts have become a popular financing tool for infrastructure development within many municipalities and have been used for most new larger development proposals throughout most of Northern Colorado. Rather than securing a bank loan to finance infrastructure with recovery of the capital outlay from the sale and development of the property, a metro district shifts the development costs to the owner of the developed property via an additional property tax mill levy of which has a typical expiration of 30-40 years. An example of how these taxes would apply is below:

- \$400,000 (market value of home in a metro district) x 7.15% (residential assessment ratio) = \$28,600 (assessed value)
- \$28,600 x 60 mills (\$28,880 x .06) = \$1,716 in additional property taxes paid to the metro district (per year).

It should be noted that due to metro districts' ability to levy higher property taxes in order to repay bonds, the result is higher long-term costs for owners than those not subject to a metro district as demonstrated above.

City staff and Council reviewed the role of Metropolitan Districts in 2017 and 2018 as a mechanism for potentially supporting the creation of additional housing within Greeley. This discussion was prompted by the development community, which asserted that prior Council denials of metropolitan districts was starting to create a competitive disadvantage for Greeley. City staff independently reviewed housing starts in the region, and also confirmed the growing prominence of metropolitan districts in Northern Colorado, and concluded that this assertion might have merits. Recognizing this, staff reviewed the City's Model Service Plan with expert legal counsel to ensure that it provides appropriate maximum protections to future residents living within a metropolitan district.

F. ELIGIBLE IMPROVEMENTS

Special districts in general can provide a funding mechanism for a variety of public improvements including, but not limited to the following: street improvements, parks and recreation improvements, water improvements, sanitary sewer, storm sewer (drainage) improvements, transportation improvements, libraries, schools, public art, landscaping improvements, and ongoing maintenance. Metropolitan districts are a subset of special districts and can provide only a limited set of services and improvements.

The Poudre Heights Metropolitan Districts, if approved, would specifically provide funding for the construction, operation and maintenance of the following: water, sanitary sewer, stormwater, streets and safety protection, parks and recreation, and other powers described in the Service Plan and the Special District Act or other applicable statutes, as necessary. The City would have the option to assume the responsibility of ownership and/or maintenance of the facilities, once accepted in the City's infrastructure system.

G. HISTORY OF METROPOLITAN DISTRICTS IN GREELEY

In April of 2007, City Council adopted an ordinance creating Chapter 13.50 (*Currently Chapter 9*) of the Greeley Municipal Code creating requirements for metropolitan districts. The City Council adopted the ordinance, in part, to provide a policy base from which to offer consistent guidance to developers who inquire about this type of financing tool in Greeley. Promontory (aka Tri-Pointe), Lake Bluff, Northridge Estates, Triple Creek, Westgate, Cobblestone, City Center West, and The Cache are existing sets of metropolitan districts within the City of Greeley.

In January 2018, the City approved revisions to the Model Service Plan, which updated the service plan to meet current state regulations, along with best management practices. This 2018 Model Service Plan has been utilized with this request.

Once a local government approves a Service Plan, the newly-formed metropolitan district remains independent as a quasi-governmental entity. However, if the district proposes to amend the scope of the plan (e.g., add land not otherwise noted, change mill limits, make material changes to the terms), then the City Council would again review a revised Service Plan for approval or denial.

H. LAND USE PLAN

Development Plan

The Poudre Heights development, as proposed by the recent-submitted new PUD plan, would offer variety of land uses along with the preservation of ecologically significant features, such as the bluffs. The development would consist of residential land uses (low-density to high-density), commercial and light industrial land uses, and a potential school site. The proposal includes recreational opportunities such as open space, pocket parks, and a trail system throughout the development.

Adequate Public Facility Service Area (APFS)

The subject site is located inside the Long-Range Expected Growth Area (LREGA). At the time development is proposed, subsequent plans would be required to comply with the City's Development Code, as amended. Future development of these properties would be required to comply with all APFS requirements found in Section 24-1055 of the Code. Some areas for determination include a sanitary sewer connection via the Poudre Trunk Line extension at 83rd Avenue, major road connections, and parks and trails.

I. SERVICE PLAN CRITERIA FOR APPROVAL (Chapter 9, Section 2-528)

MUNICIPAL CODE COMPLIANCE

The City's Metropolitan District Ordinance calls for the City Council to consider a proposed Service Plan against the following provisions and determine whether or not the Plan meets the required criteria in granting approval. These plan elements were reviewed by City staff and the application was revised by the applicant to address staff questions and concerns, resulting in the version provided to you for review and final approval.

- a. There is a sufficient existing and projected need for organized service in the area to be serviced by the proposed Districts;**

Staff comment: In order to achieve an orderly and planned development of the proposed PUD on what is currently undeveloped land, there would need to be coordinated installation of site infrastructure, as well as platting to assure cross access, drainage conveyance, perimeter landscaping, and other related site improvements. The Metropolitan District Service Plan provides an option for filling these needs.

The Service Plan includes provisions that would not allow any debt to be occurred from the district prior to an approved Development Plan (Preliminary Plat or Preliminary PUD). The districts would have the ability to collect fees and property taxes in advance of development.

The Service Plan complies with this criterion.

b. The existing service in the area to be served by the proposed District is inadequate for present and projected needs;

Staff comment: The proposed districts are located within the Long-Range Expected Growth Area.

At the time any development activity on the properties commences, Staff would review the development subject to the requirements of APFSA (Adequate Public Facility Service Area). Presently, the properties lie in an area that is underserved by the City's public facilities, including those for wastewater, transportation, storm water, and parks.

The City would be unlikely to extend services to the area in the near future, absent a service plan; as such, the existing services would not be adequate to support the development of the properties within the Service Area and as anticipated by the proposed Planned Unit Development Plan, and the site is unlikely to develop.

However, within the applicant's Service Plan, the districts would have the ability to extend necessary services, especially sewer services, from the intersection of County Road 62 and 83rd for sanitary sewer with coordination from neighboring developments (Lake Bluff and The Cache). The district would also provide improvements to roadways, storm drainage, non-potable water, and amenities including parks and open space.

As part of the districts' Capital Plans, extension and upgrades to inadequate service capacity would be constructed by the Metropolitan Districts.

The Service Plan complies with this criterion.

c. The proposed District is capable of providing economical and sufficient service to the areas within its proposed boundaries;

Staff comment: Included in the Service Plan is an engineer’s cost estimate of the infrastructure installation requirements that demonstrates that the districts would be capable of providing economical and sufficient services to the area within the boundaries of the Service Area. The districts, as proposed, would have the financing capacity to finance the necessary public facilities improvements thorough the issuance of general obligation and/or revenue bonds, along with imposing facility fees on the residential and commercial properties.

Staff (including the Finance Department) and City Attorney’s Office carefully reviewed the financial assumptions proposed with the Plans and have concluded that it is realistic in terms of potential build-out, construction timeframes, and debt load. As proposed, the Service Plan includes a maximum debt mill levy cap of 60 mills. The Service Plan as submitted also includes limitations on the districts’ issuance of debt; this would ensure that sufficient services could be provided by the districts.

The Service Plan complies with this criterion.

d. The area to be included in the proposed District has, or will have, the financial ability to discharge the proposed indebtedness on a reasonable basis;

Staff comment: Within the Service Plan, the applicant has proposed that the debt mill levy shall not exceed 60 mills. As a result, the expected revenue calculation to retire the proposed debt service appears to be within realistic means. Section VI.F of the Plan (Security for Debt) notes, “The District shall not pledge any revenue, property, or other assets of the City as security for any District indebtedness.”

Using the engineer’s estimate, the total costs for overall site work and infrastructure would be approximately \$96,619,105.

According to Attachment B (Service Plan – Exhibit F “Financial Plan”), the debt service mill levy target is 50 mills beginning in 2024 with operations and maintenance levy at 10 mills. Total proposed bond issuances amounts to \$85,660,207.88.

Per the “Bond Summary Statistics” the average annual debt service is estimated to be about \$3,882,033 with a maximum annual debt service of \$9,402,750 and a last maturity date of December 2052. Over the life of the bond repayment, the financing would cost approximately \$62,081,000 in interest for a total debt service of \$116,461,000.

The debt service analysis reflects property tax and specific ownership revenue streams starting in 2022, which would only happen if the development activities commence in time to be included in the property values for 2022. Residential development is also anticipated to commence in 2023, with commercial/industrial development expected in 2022.

Regardless of whether development happens as anticipated or not, the City would not be legally liable if a default in the district's bonds occurs. Bondholders are the party most liable in this circumstance.

It should be noted that approval of the metropolitan district is valid for one year; either the public improvements must be commenced or the sale of bonds must occur no later than one year from the date of the City Council's approval. If either the public improvements have not commenced or the sale of the bonds has not occurred, the City Council may impose sanctions in accordance with Section 2-537 of the Municipal Code (such as withholding any permits and exercise legal remedies).

As a part of the administrative review, the City's Finance Department has reviewed the Capital Plans and Financial Plans. Staff finds that the proposed Financial Plans demonstrate that, at various projected levels of development, the districts would have the ability to finance the facilities identified in the Capital Plans, and would be capable of discharging the proposed indebtedness on a reasonable basis. This is provided that everything in the district happens according to the developer's projections, in which case the district will be able to repay the bonds. In the event the districts were to default on their debt, Section VI.B of the Service Plan, provides a maximum interest rate on any debt, which cannot exceed 18%.

The Service Plan complies with this criterion.

- e. Adequate service is not, or will not be, available to the area through the City or other existing quasi-municipal corporations, including existing Districts within a reasonable time and on a comparable basis;**

Staff comment: As noted in section (b) above, the properties lie in an area that is underserved by the City's public facilities, including those for wastewater, transportation, stormwater, and parks. As such, the existing services are not adequate to support the development of the properties within the Service Area of the proposed Planned Unit Development Plan. As the City is unlikely to extend services to the area in the near future unprompted, a metropolitan district in this area would be a way to facilitate development that may otherwise not be possible. As part of the districts' Capital Plans, extension and upgrades to inadequate service capacity would be constructed by the Metropolitan Districts.

The obligation to complete infrastructure necessary for the further development of the site rests exclusively with the developer(s). No other entity is currently available to meet the internal infrastructure obligations besides the developer(s).

The Service Plan complies with this criterion.

- f. The facility and service standards of the proposed Districts are compatible with the facility and service standards of the City;**

Staff comment: The development is obligated to construct all infrastructure consistent with Municipal Code standards and will, therefore, be compatible with the surrounding existing municipal systems and services.

The Service Plan complies with this criterion.

g. The proposal is in substantial compliance with the City's Comprehensive Plan;

Staff comment: The developer has submitted a Preliminary PUD Development Plan (PUD2019-0007), which is currently under review by the City staff.

The Service Plan supports the general goal of a healthy economy stated in the Imagine Greeley Comprehensive Plan by utilizing a financial tool to stimulate new developments. The Imagine Greeley Land Use Guidance Map identifies the subject site suitable for mixed-use development.

The Service Plan complies with this criterion.

h. The proposal is in substantial compliance with the county, regional or state long-range water quality management plans and wastewater plans for the area;

Staff comment: Staff is unaware at this time if approving the Service Plan would negatively impact any county, regional, or state long range water quality management plans or wastewater plans for the area. The site must conform to all development standards to obtain service from these systems. There are no exceptions to these standards proposed.

The Service Plan complies with this criterion.

i. The creation of the District will be in the best interests of the area proposed to be served;

Staff comment: The area requires installation of infrastructure at municipal levels in order to be developed. The applicant has the option to arrange traditional bank financing to complete the necessary improvements, but it would require significant up-front financing for the developer, which may be a factor in the delay of development of this area.

City Council has authorized the use of metropolitan districts as an alternative financial tool for the installation of such infrastructure, which includes a number of safeguards and disclosures to purchasers of land within the district regarding the additional property tax burden assumed by property owners therein. The creation of the districts may be the most expedient tool to facilitate development of the area, though at a higher tax rate for future residents.

The Service Plan complies with this criterion.

j. The creation of the Districts will be in the best interests of the residents or future residents of the area proposed to be served;

Staff comment: The metropolitan district financing essentially shifts the cost of infrastructure from that recovered in the initial cost of a lot to that paid for by bonds assumed in the tax burden borne by the purchaser over 30+ years.

Both a traditional mortgage and a metropolitan district are incorporated into the cost of owning the property: one via a mortgage, the other in the form of an additional tax. It should be considered that when paid for via a mortgage, the initial home purchase cost is stagnant with purchase price and interest rate, if financed. With an additional tax, it is based off of the assessed home value, which may fluctuate over the course of ownership and the additional tax in affect after a home mortgage is paid off resulting in higher carrying costs. The particulars of metropolitan district financing must be disclosed to purchasers and there is a cap on the total number of mills a property owner is obligated to assume as part of a district.

However, as discussed in Section (d) above, the financial plan indicates that the proposed bonds to service the capital improvements may not be repaid until the year 2052 per the financial plan. As mentioned in the Executive Summary and Section VI.D, the applicant is requesting a mill levy cap of sixty (60) mills. Also, as mentioned in the Executive Summary, residents would have a higher tax burden than residents that own homes in areas that are not encumbered by a metropolitan district. As such, the long-term burden for the residences of the Poudre Heights Development is a situation worth noting.

In an effort to provide adequate notice for potential homebuyers within a metropolitan district, the City requires a written disclosure statement that accompanies the sale of a property (per Section 2-518). The City also requires the district(s) to provide the City Clerk's office an annual report by September 1st each year. The annual report is required to provide the City information about the development activities and financial events within the district(s) from the previous year (per Section 2-522).

The Service Plan complies with this criterion.

k. The proposed Service Plan is in substantial compliance with Chapter 9 of Greeley Code of Ordinances; and

Staff comment: The proposed Service Plan complies with the criteria of Chapter 9.

The Service Plan complies with this criterion.

l. The creation of the Districts will not foster urban development that is remote from or incapable of being integrated with existing urban areas or place a

burden on the City or adjacent jurisdictions to provide urban services to residents of the proposed Districts.

Staff comment: As proposed, the districts would be authorized to provide statutorily authorized public infrastructure to an area zoned for urban-scale development. The provision to provide services would be consistent with the City's APFS requirements, which also encourages new development to pay for itself without placing an undue burden on the City's existing infrastructure. As mentioned in (g) above, the site is anticipated for mixed-use urban development. The district's structure of financing and constructing the required services to support development would ensure that sufficient services would be available at the time of development and that sufficient funding is available, consistent with the requirement of Section 24-1055 of the City of Greeley's Development Code.

The Service Plan complies with this criterion.

J. PUBLIC NOTICE AND COMMENT

Pursuant to Section 2-519 of the City of Greeley's Municipal Code, the City shall send a written notice to each special district located within the proposed district's boundary at least thirty (30) calendar days prior to the public hearing. The purpose of the notice is to afford the special districts the opportunity to provide comment about the proposed district and any adverse impacts, including the district's proposed financing and mill levy, which the existing special district anticipates may arise from the district due to its anticipated development and its proposed location. Notices were sent on August 6, 2021. No comments have been received at the time of writing this report.

Pursuant to C.R.S. §32-1-204, the metropolitan district was noticed by the applicant to all the petitioners, service districts, and jurisdictions within a three-mile radius on August 6, 2021. Notices were sent to the following: Aims Junior College, Big Thompson Conservation, Cache Metro Districts Nos 1-8, City Center West Commercial Metro, City Center West Residential Metro, City Center West Residential Metro 2, Clearview Library, Eaton Area Park and Recreation District, Eaton Fire, City of Evans, Evans Fire, Front Range Fire Rescue Fire Protection District, Future Legends Sports Park Metro District Nos. 1-2, Future Legends Sports Park Bid, Great Western Metro Nos. 1-7, City of Greeley, High Plains Library, Iron Mountain Metro Nos. 2-3, Lake Bluff Metro District Nos. 1-3, Little Thompson Water, Milliken Fire (Bond 2024), North Weld County Water, Northern Colorado Water, Northridge Estates Metro District 3, Poudre Tech Metro, School District 6- Greeley, School District RE2- Eaton, School District RE4- Windsor, School District RE5J- Johnstown, Thompson River Rec, Triple Creek Metro District Nos. 1-2, Tri-Pointe Commercial Metro, Tri-Pointe Residential Metro, Water Valley Metro Nos.1-2, Weld County, West Greeley Conservation, Western Hills Fire, Westgate Metro District Nos. 1-3, Town of Windsor, Windsor-Severance Fire, and Windsor-Severance Fire (Bond 2023).

K. CITY COUNCIL RECOMMENDED MOTIONS

- Based on the application received and the preceding analysis, the City Council finds that the request for the approval of a Colorado Revised Statutes Title 32 Special District Service Plan for Poudre Heights Metropolitan Districts Nos. 1-5 is in conformance with the City of Greeley's Municipal Code Chapter 9, Section 2-528; and therefore, approves the request.
- A motion to adopt the Resolution approving the Intergovernmental Agreement between the City of Greeley and Poudre Heights Metropolitan District Nos. 1-5, regarding the Service Plan for the Districts.

L. ATTACHMENTS

Attachment A –Vicinity Map

Attachment B – Poudre Heights MD Nos. 1-5 Service Plan

Attachment C – Poudre Heights MD Nos. 1-5 Executive Summary

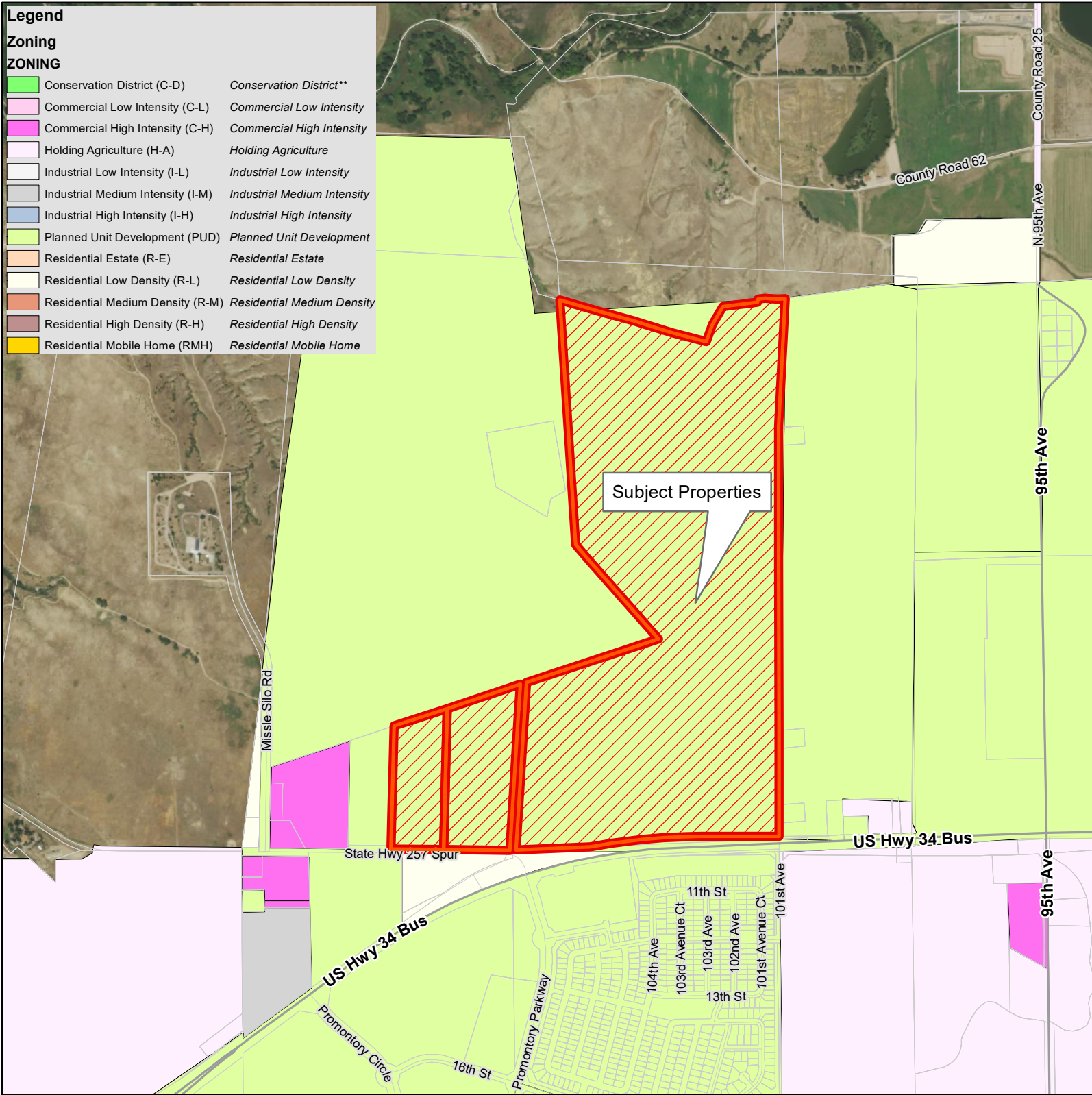
Attachment D – Proposed “Poudre Heights” Planned Unit Development Plan Map

Attachment E – City's 2018 Metropolitan District Model Service Plan

Attachment F – Resolution - Intergovernmental Agreement (IGA)

Vicinity Map

Poudre Heights Metropolitan District Nos. 1-5



MD2021-0001

**CONSOLIDATED SERVICE PLAN
FOR**

POUDRE HEIGHTS METROPOLITAN DISTRICT NO. 1

POUDRE HEIGHTS METROPOLITAN DISTRICT NO. 2

POUDRE HEIGHTS METROPOLITAN DISTRICT NO. 3

POUDRE HEIGHTS METROPOLITAN DISTRICT NO. 4

POUDRE HEIGHTS METROPOLITAN DISTRICT NO. 5

CITY OF GREELEY, COLORADO

Prepared

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August 6, 2021

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LIST OF EXHIBITS

EXHIBIT A	Legal Descriptions
EXHIBIT B	Greeley Vicinity Map
EXHIBIT C-1	Initial District Boundary Map
EXHIBIT C-2	Inclusion Area Boundary Map
EXHIBIT C-3	Proof of Ownership and Consents for all Properties within Districts
EXHIBIT D	Capital Plan and Engineer's Certificate
EXHIBIT E	Map Depicting Public Improvements
EXHIBIT F	Financial Plan
EXHIBIT G	Indemnification Letters
EXHIBIT H	Intergovernmental Agreement

I. INTRODUCTION

A. Purpose and Intent.

The Districts are independent units of local government, separate and distinct from the City, and, except as may otherwise be provided for by State or local law or this Service Plan, their activities are subject to review by the City only insofar as they may deviate in a material matter from the requirements of the Service Plan. Districts shall strictly comply with the Municipal Code and the Intergovernmental Agreement. It is intended that the Districts will provide a part or all of the Public Improvements for the use and benefit of all anticipated inhabitants, taxpayers of the Districts, and the general public. The primary purpose of the Districts will be to finance the construction of these Public Improvements.

The Districts are also being created to provide ongoing operations and maintenance services as specifically set forth in this Service Plan and as may be stated in any applicable Intergovernmental Agreement.

B. Need for the Districts.

There are currently no other governmental entities, including the City, located in the immediate vicinity of the Districts that consider it desirable, feasible or practical to undertake the planning, design, acquisition, construction, installation, relocation, redevelopment, and financing of the Public Improvements needed for the Project. Formation of the Districts is therefore necessary in order for the Public Improvements required for the Project to be provided in the most economic manner possible.

C. Objective of the City Regarding Districts' Service Plan.

The City's objective in approving the Service Plan for the Districts is to authorize the Districts to provide for the planning, design, acquisition, construction, installation, relocation, redevelopment and financing of the Public Improvements from the proceeds of Debt to be issued by the Districts. All Debt is expected to be repaid by *ad valorem* property taxes and District Facility Fees imposed and collected for no longer than the Maximum Debt Mill Levy Imposition Term for Residential Districts and at a tax mill levy no higher than the Maximum Debt Mill Levy. Debt which is issued within these parameters (as further described in the Financial Plan) will insulate property owners from excessive tax burdens to support the servicing of the Debt and will result in a timely and reasonable discharge of the Debt.

This Service Plan is intended to establish a limited purpose for the Districts and explicit financial constraints that are not to be violated under any circumstances. The primary purpose of the Districts is to provide for the Public Improvements associated with the Project, including those regional improvements necessitated by the Project. The Districts shall be authorized to operate and maintain all of the Public Improvements at a level equal to or greater than City standards, unless such authorization is specifically limited in the Intergovernmental Agreement.

It is the intent of the Districts to dissolve upon payment or defeasance of all Debt incurred or upon a court determination that adequate provision has been made for the payment of all Debt, and if any District has authorized operating functions under an intergovernmental

agreement with the City, to retain only the power necessary to impose and collect taxes or fees to pay for these costs.

It is a requirement of this Service Plan that all property classified as “residential” shall be located in a Residential District, and that all property classified as “commercial” shall be located within the boundaries of the Commercial District. Mixed uses, as defined by the Municipal Code, shall be classified as “commercial” and shall be located only within the boundaries of the Commercial District. For purposes of this distinction “commercial property” shall mean all property other than “residential property” as that term is defined in Article X, Section 3(1)(b) of the Colorado Constitution. The goal of this distinction is to have similarly situated properties governed by common interests. As such, no commercial property shall be located in a Residential District, and no residential property, other than mixed uses, shall be located in a Commercial District. The foregoing shall not prohibit the Residential and Commercial Districts from sharing the costs of Public Improvement in compliance with the provisions of this Service Plan and applicable law.

The Districts shall be authorized to finance the Public Improvements that can be funded from Debt to be repaid from tax revenues collected from a mill levy which shall not exceed the Maximum Debt Mill Levy. It is the intent of this Service Plan to assure to the extent possible that no property in any District bear an economic burden that is greater in amount than that associated with the Maximum Aggregate Mill Levy, and that no property in a Residential District bears an economic burden that is longer in duration than that associated with the Maximum Debt Mill Levy Imposition Term in duration, even under bankruptcy or other unusual situations. Generally, the cost of Public Improvements that cannot be funded within these parameters and the financing capacity of the Districts are not costs to be paid by the Districts. Costs of required Public Improvements that cannot be financed by the District are expected to be financed by the developer of the Project.

II. DEFINITIONS

In this Service Plan, the following terms shall have the meanings indicated below, unless the context hereof clearly requires otherwise:

Approved Development Plan: means a development plan or other process established by the City (including but not limited to approval of a final plat, development plat or site plan by the City planning commission or by the City Council) identifying, among other things, the Public Improvements necessary for facilitating development for property within the Service Area as approved by the City pursuant to the Municipal Code and as amended pursuant to the Municipal Code from time to time. An Approved Development Plan does not include any plan, process or approval denoted as preliminary under the Municipal Code. (To the extent the type of Development Plan has been determined for the Project, this definition should be revised accordingly.)

Board: means the board of directors of one District or the boards of directors of all Districts, in the aggregate, as the context may require.

Bond, Bonds or Debt: means bonds or other obligations for the payment of which the District has promised to impose an *ad valorem* property tax mill levy.

Capital Plan: means the Capital Plan described in Section V.B., which includes: (a) a comprehensive list of the Public Improvements to be developed by the Districts; (b) an engineer's estimate of the cost of the Public Improvements; and (c) a pro forma capital expenditure plan correlating expenditures with development.

City: means the City of Greeley, Colorado.

City Council: means the City Council of the City of Greeley, Colorado.

Commercial District: means the Poudre Heights Metropolitan District No. 4 and any other District that may in the future contain commercial property.

District: means any one of the Poudre Heights Metropolitan District Nos. 1 through 5.

District No. 1: means the Poudre Heights Metropolitan District No. 1.

District No. 2: means the Poudre Heights Metropolitan District No. 2.

District No. 3: means the Poudre Heights Metropolitan District No. 3.

District No. 4: means the Poudre Heights Metropolitan District No. 4.

District No. 5: means the Poudre Heights Metropolitan District No. 5.

Districts: means District No. 1, District No. 2, District No. 3, District No. 4, and District No. 5, collectively.

District Facility Fee: means the one-time development or system development fee imposed by the Districts on a per-unit (*residential*) or per square-foot (*non-residential*) basis at or any time prior to the issuance of a building permit for the unit or structure to assist with the planning and development of the Public Improvements, subject to the limitations set forth in Section VI.E. of the Service Plan. The District Facility Fee may be used to finance, plan, acquire, and construct the Public Improvements, and pay debt service.

Financial Plan: means the Financial Plan described in Section VI which describes (a) how the Public Improvements are to be financed; (b) the total amount of Debt anticipated to be issued by the Districts based on estimated buildout projections; (c) the estimated operating revenue and expenses for the Districts for the term of the Debt; (d) the estimated debt service revenue sources and payment requirements on all Debt anticipated to be issued by the Districts; and (e) the assumptions regarding all such information.

Inclusion Area Boundaries: means the boundaries of the area described in the Inclusion Area Boundary Map.

Inclusion Area Boundary Map: means the map attached hereto as **Exhibit C-2**, if applicable, describing the property proposed for inclusion within one, but not any more

than one, of the boundaries of the Districts after organization, if any.

Initial District Boundary: means the boundary of the area described in the Initial District Boundary Map.

Initial District Boundary Map: means the map attached hereto as **Exhibit C-1**, describing the initial boundary of the Districts.

Intergovernmental Agreement: means the intergovernmental agreement required by Municipal Code section 13.50.170(5), and attached hereto as **Exhibit G**.

Map Depicting Public Improvements: means the map attached hereto as **Exhibit E**, showing the location(s) of the Public Improvements listed in the Capital Plan.

Maximum Aggregate Mill Levy: means the maximum aggregate mill levy the District is permitted to impose for the payment of Debt, operations and maintenance, administrative or any other costs, which shall not exceed sixty (60) mills subject to adjustment as set forth in Sections VI.C.1 and VI.G. below.

Maximum Debt Mill Levy: means the maximum mill levy a District is permitted to impose for payment of Debt, as set forth in Section VI.C. below.

Maximum Debt Mill Levy Imposition Term: means the maximum term for imposition of a mill levy for payment of Debt on property within a Residential District as set forth in Section VI.D., below.

Municipal Code: means the City of Greeley Municipal Code, as may be amended and in effect from time to time.

Privately Placed Debt: means Debt which is sold or placed directly with an investor without being underwritten by an underwriter or an investment banker.

Project: means the development or property commonly referred to as Poudre Heights.

Proof of Ownership: means a current title commitment showing ownership and all encumbrances on all properties within the Initial District Boundaries, or other documentation acceptable to the City Attorney.

Public Improvements: means a part or all of the improvements authorized to be planned, designed, acquired, constructed, installed, relocated, redeveloped as part of an Approved Development Plan and financed as generally described in the Special District Act, except as specifically limited in Section V below to serve the future taxpayers and inhabitants of the Service Area as determined by the Board of the District.

Residential District: means any one of the Poudre Heights Metropolitan District Nos. 1-5 that does not contain commercial property.

Residential Districts: means any of District Nos. 1-5 (provided none of the foregoing contain commercial property), collectively.

Service Area: means the property within the Initial District Boundary Map and the Inclusion Area Boundary Map.

Service Plan: means this service plan for the Districts approved by City Council.

Service Plan Amendment: means an amendment to the Service Plan approved by City Council in accordance with Chapter 13.50 of the Municipal Code and the applicable state law.

Special District Act: means Section 32-1-101, et seq., of the Colorado Revised Statutes, as amended from time to time.

State: means the State of Colorado.

III. **BOUNDARIES**

The area of the Initial District Boundaries includes approximately 2.515 acres and the total area proposed to be included in the Inclusion Area Boundaries is approximately 292.652 acres. A legal description of the Initial District Boundaries and the Inclusion Area Boundaries is attached hereto as **Exhibit A**. A map of the Initial District Boundaries is attached hereto as **Exhibit C-1**, and a map of the Inclusion Area Boundaries is attached hereto as **Exhibit C-2**. Proof of Ownership and consents of the owners to organization of the District for all properties within the Initial District Boundaries is attached hereto as **Exhibit C-3**. A vicinity map is attached hereto as **Exhibit B**. It is anticipated that the boundaries of the Districts may change from time to time as the Project is developed and as the Districts undergo inclusions and exclusions pursuant to Section 32-1-401, et seq., C.R.S., and Section 32-1-501, et seq., C.R.S., subject to the limitations set forth in Article V below.

IV. **PROPOSED LAND USE/POPULATION PROJECTIONS/ASSESSED VALUATION**

The Service Area consists of approximately 292.652 acres of undeveloped land with farming and plugged and abandoned oil and gas operations. The current assessed valuation of the Service Area is assumed to be \$0.00 for purposes of this Service Plan and, at build out, is expected to be sufficient to reasonably discharge the Debt under the Financial Plan. The residential population of the District at build-out is estimated to be approximately 2,900 persons.

Approval of this Service Plan by the City does not imply approval of the development of a specific area within the Districts, nor does it imply approval of the number of residential units or the total site/floor area of commercial or industrial buildings which may be identified in this Service Plan or any of the exhibits attached thereto. The permitted level of development within the Project is as contained within an Approved Development Plan.

Approval of this Service Plan by the City in no way releases or relieves the developer of the Project, or the landowner or any subdivider of the Project property, or any of their respective successors or assigns, of obligations to construct public improvements for the Project or of obligations to provide to the City such financial guarantees as may be required by the City to ensure the completion of the Public Improvements, or of any other obligations to the City under the Municipal Code or any applicable annexation agreement, subdivision agreement, or other

agreements affecting the Project property or development thereof.

V. DESCRIPTION OF PROPOSED POWERS, IMPROVEMENTS AND SERVICES

A. Powers of the Districts and Service Plan Amendment.

The Districts shall have the power and authority to provide the Public Improvements within and without the boundaries of the Districts as such power and authority is described in the Special District Act, and other applicable statutes, common law and the Constitution, subject to the limitations set forth in this Service Plan and the Intergovernmental Agreement.

1. Operations and Maintenance Limitation. The purpose of the Districts is to plan for, design, acquire, construct, install, relocate, redevelop and finance the Public Improvements. The Districts shall maintain the Public Improvements in a manner consistent with the Approved Development Plan, other rules and regulations of the City, and applicable provisions of the Municipal Code, all as directed by the City. The City may consider whether to accept dedication of Public Improvements to the City upon 50% build-out of the development of each phase of the Project as identified in the Approved Development Plan. The Districts shall be authorized to operate and maintain all of the Public Improvements at a level equal to or greater than City standards, unless such authorization is specifically limited in the Intergovernmental Agreement.

2. Fire Protection Limitation. The Districts shall not be authorized to plan for, design, acquire, construct, install, relocate, redevelop, finance, operate or maintain fire protection facilities or services, unless such facilities and services are provided pursuant to an intergovernmental agreement with the City and Union Colony Fire and Rescue Authority. The authority to plan for, design, acquire, construct, install, relocate, redevelop or finance fire hydrants and related improvements installed as part of the water system shall not be limited by this provision.

3. Television Relay and Translation Limitation. The Districts shall not be authorized to plan for, design, acquire, construct, install, relocate, redevelop, finance, operate or maintain television relay and translation facilities and services, other than for the installation of conduit as a part of a street construction project, unless such facilities and services are provided for use by City-authorized franchise operators pursuant to an intergovernmental agreement with the City.

4. Construction Standards Limitation. The Districts will ensure that the Public Improvements are designed and constructed in accordance with the standards and specifications of the City and of federal and state governmental entities having proper jurisdiction and of those special districts that qualify as “interested persons” under Section 32-1- 204(1), C.R.S., as applicable. The Districts will obtain the City’s approval of civil engineering plans and will obtain applicable permits for construction and installation of Public Improvements prior to performing such work. Additionally, the District will permit City inspectors to inspect the infrastructure during construction.

5. Property Acquisition Limitation; Transfer Requirement. The Districts shall not exercise any power of eminent domain without the prior written consent of the City. If the City decides the proposed improvement is needed, at the time of dedication the District shall

at no expense to the City, transfer to the City all rights-of-way, fee interests and easements that the City determines are necessary for access to and operation and maintenance of the Public Improvements, consistent with the Approved Development Plan and to the extent such interests have not been acquired by the City through such Development Plan process.

6. Privately Placed Debt Limitation. Prior to the issuance of any Privately Placed Debt, the Districts shall obtain the certification by the District's Investment Banker for such Debt substantially as follows:

We [I] certify that (1) the net effective interest rate (calculated as defined in Section 32-1-103(12), C.R.S.) to be borne by the District for the [insert the designation of the Debt] does not exceed a market [tax-exempt] [taxable] interest rate, using criteria deemed appropriate by us [me] and based upon our [my] analysis of comparable high yield securities; and (2) the structure of [insert designation of the Debt], including maturities and early redemption provisions, is reasonable considering the financial circumstances of the District.

7. Inclusion and Exclusion Limitations. The Districts shall not include within any of their boundaries any property outside the Service Area without the prior written consent of the City Council. Each District shall not exclude any property from the District if such exclusion will result, or is reasonably anticipated to result, in detriment to the remaining residents and taxpayers within the District, or to the District's bondholders.

8. Initial Debt Limitation. On or before the effective date of approval of an Approved Development Plan, the Districts shall not: (a) issue any Debt; nor (b) impose a mill levy for the payment of Debt by direct imposition or by transfer of funds from the operating fund to the Debt service funds; nor (c) impose or collect any fees or revenues from any other source for the purpose of repayment of Debt.

9. Total Debt Issuance Limitation. The Districts shall not issue Debt in excess of \$110,000,000 total aggregate principal amount.

10. Monies from Other Governmental Sources. The Districts shall not apply for or accept Conservation Trust Funds, Great Outdoors Colorado Funds, or other funds available from or through governmental or non-profit entities for which the City is eligible to apply for, except as may be specifically authorized in an intergovernmental agreement with the City pursuant to Section 13.50.080 of the Municipal Code. This Section shall not apply to specific ownership taxes which shall be distributed to and constitute a revenue source for the Districts without any limitation.

11. Consolidation Limitation. No District shall not file a request with any Court to consolidate with any other Title 32 district, whether one of Districts or otherwise, without the prior written consent of the City.

12. Bankruptcy Limitation. All of the limitations contained in this Service Plan, including, but not limited to, those pertaining to the Maximum Debt Mill Levy, the total

debt issuance limitation, and the Maximum Debt Mill Levy Imposition Term have been established under the authority of the City to approve a Service Plan with conditions pursuant to Section 32-1-204.5, C.R.S. It is expressly intended that such limitations:

(a) shall not be subject to set-aside for any reason or by any court of competent jurisdiction, absent a Service Plan Amendment; and

(b) are, together with all other requirements of Colorado law, included in the “political or governmental powers” reserved to the State under the U.S. Bankruptcy Code (11 U.S.C.) Section 903, and are also included in the “regulatory or electoral approval necessary under applicable nonbankruptcy law” as required for confirmation of a Chapter 9 Bankruptcy Plan under Bankruptcy Code Section 943(b)(6).

Any Debt, issued with a pledge or which results in a pledge, that exceeds the Maximum Debt Mill Levy or the Maximum Debt Mill Levy Imposition Term, shall be deemed a material modification of this Service Plan pursuant to Section 32-1-207, C.R.S. and shall not be an authorized issuance of Debt unless and until such material modification has been approved by the City as part of a Service Plan Amendment.

13. Revenue Bond Limitation. The Districts shall not issue revenue bonds, except as set forth in this Section. Prior to issuing any revenue bonds, the District or Districts proposing to issue such revenue bonds shall submit all relevant details of such issuance to the City Council, which may elect to treat the issuance of revenue bonds as a material modification of the Service Plan. If the City Council determines that the issuance of revenue bonds constitutes a material modification of the Service Plan, the Districts shall proceed to amend the Service Plan in accordance with Section 32-1-207, C.R.S. prior to issuing any revenue bonds.

14. Service Plan Amendment Requirement. This Service Plan is general in nature and does not include specific detail in some instances because development plans have not been finalized. The Service Plan has been designed with sufficient flexibility to enable the Districts to provide required Public Improvements under evolving circumstances without the need for numerous amendments. Modification of the general types of services and facilities making up the Public Improvements, and changes in proposed configurations, locations or dimensions of the Public Improvements shall be permitted to accommodate development needs consistent with the then-current Approved Development Plan(s) for the Project, subject to the limitations of this Service Plan and the Intergovernmental Agreement.

The Districts are independent units of local government, separate and distinct from the City, and their activities are subject to review by the City only insofar as they may deviate in a material manner from the requirements of the Service Plan, the Municipal Code, or the Intergovernmental Agreement. Any District may amend this Service Plan without the permission or consent of the remaining Districts, to the extent that the Service Plan amendment affects only that District initiating the statutory amendment process. However, actions of any District which: (1) violate the limitations set forth in Sections V.A.1-14 above; (2) violate the limitations set forth in Section VI.B.; (3) constitute a material modification of the Service Plan; or (4) constitutes a failure to comply with the Intergovernmental Agreement or other agreement with the City, which non-compliance has not been waived in writing by the City, shall be deemed to be a material modification to this Service Plan and the City shall be entitled to all remedies available under State and local law to enjoin such action(s) of the Districts.

Any City approval requirements contained in this Service Plan (including, without limitation, any provisions requiring that a change, request, occurrence, act or omission be treated as a Service Plan Amendment or be deemed a “material modification” of the Service Plan) shall remain in full force and effect, and, unless otherwise provided by resolution of the City Council, such City approval shall continue to be required, notwithstanding any future change in law modifying or repealing any statutory provision concerning service plans, amendments thereof or modifications thereto.

B. Capital Plan.

The Districts shall have authority to provide for the planning, design, acquisition, construction, installation, relocation, redevelopment, maintenance, and financing of the Public Improvements within and without the boundaries of the Districts, to be more specifically defined in an Approved Development Plan. A Capital Plan, including: (1) a comprehensive list of the Public Improvements to be developed by the Districts; (2) an estimate of the cost of the Public Improvements, together with a letter from a Colorado professional registered engineer certifying that such costs are reasonable in the engineer’s opinion and that such estimates were prepared based upon City construction standards; and (3) a pro forma capital expenditure plan correlating expenditures with development is attached hereto as **Exhibit D**. A Map depicting the Public Improvements is attached hereto as **Exhibit E**. As shown in the Capital Plan, the estimated cost of the Public Improvements which may be planned for, designed, acquired, constructed, installed, relocated, redeveloped, maintained or financed by the Districts is approximately \$96,619,105. Costs of required Public Improvements that cannot be financed by the Districts within the parameters of this Service Plan and the financial capability of the District are expected to be financed by the developer of the Project.

The Districts shall be permitted to allocate costs between such categories of the Public Improvements as deemed necessary in their discretion.

All of the Public Improvements described herein will be designed in such a way as to assure that the Public Improvements standards will be compatible with those of the City and shall be in accordance with the requirements of City standards and the Approved Development Plan. All descriptions of the Public Improvements to be constructed, and their related costs, are estimates only and are subject to modification as engineering, development plans, economics, the City’s requirements, and construction scheduling may require. Upon approval of this Service Plan, the Districts will continue to develop and refine the Capital Plan and the Map Depicting Public Improvements, as necessary, and prepare for issuance of Debt. All cost estimates will be inflated to then-current dollars at the time of the issuance of Debt and construction. All construction cost estimates contained in **Exhibit D** assume construction to applicable standards and specifications of the City and state or federal requirements.

C. Multiple District Structure.

It is anticipated that the Districts, collectively, will undertake the financing and construction of the Public Improvements. It is generally anticipated that the Districts will undertake the financing and construction of Public Improvements in sequential order (i.e., District No. 1 will proceed with initial construction, then District No. 2, etc.), share certain Public Improvement costs. The nature of the functions and services to be provided by each District, and

the mechanisms by which the Districts may cooperatively fund Public Improvement costs, shall be clarified in an intergovernmental agreement among the Districts. The intergovernmental agreement among the Districts, and all amendments thereto, shall be designed to help assure the orderly development of the Public Improvements and essential services in accordance with the requirements of this Service Plan. Implementation of such intergovernmental agreement is essential to the orderly implementation of this Service Plan. The foregoing intergovernmental agreement and all amendments thereto, as well as all other intergovernmental agreements and amendments thereto proposed between or among the Districts regarding the subject matter of this Service Plan, shall be subject to review and approval of the City prior to their execution by the Districts.

VI. FINANCIAL PLAN

A. General.

The Districts shall be authorized to provide for the planning, design, acquisition, construction, installation, relocation and/or redevelopment of the Public Improvements from their revenues and by and through the proceeds of Debt to be issued by the Districts. The Financial Plan for the Districts shall be to issue such Debt as the Districts can reasonably pay from revenues derived from the Maximum Debt Mill Levy and other legally available revenues. All bonds and other Debt issued by the Districts may be payable from any and all legally available revenues of the Districts, including general *ad valorem* taxes to be imposed upon all taxable property within the Districts. The Districts will also rely upon various other revenue sources authorized by law, such as interest, specific ownership taxes, advances from the Project developer and grants. The District is also authorized to assess and collect a District Facility Fee as set forth in Section VI.E., below. Unless specifically authorized in the Intergovernmental Agreement, the District shall not impose or assess any fees, rates, tolls, penalties, or charges other than the District Facility Fee without first obtaining City approval of an amendment to this Service Plan, which amendment shall be deemed to be a material modification hereof.

The total Debt that the Districts shall be permitted to issue shall not exceed \$110,000,000 in aggregate principal amount. Debt is permitted to be issued on a schedule and in such year or years as the issuing District determines shall meet the needs of the Capital Plan referenced above and the progression of the development, subject to compliance with this Service Plan. The \$110,000,000 that the Districts shall be permitted to issue is supported by the Financial Plan prepared by Piper Sandler & Co., attached hereto as **Exhibit F**. The City may obtain an independent certification at the District's sole cost from an independent CPA or other financial consultant of the City's choosing, experienced in advising governmental entities on matters relating to the issuance of securities in Colorado regarding the financial plan and the reasonableness of the projections contained in the financial plan.

B. Maximum Voted Interest Rate and Maximum Underwriting Discount.

The interest rate on any Debt is limited to the market rate at the time the Debt is issued. In the event of a default, the proposed maximum interest rate on any Debt shall not exceed eighteen percent (18%). The proposed maximum underwriting discount will be five percent (5%). Debt, when issued, will comply with all relevant requirements of this Service Plan, State law and Federal law as then applicable to the issuance of public securities.

C. Maximum Debt Mill Levy.

The Maximum Debt Mill Levy shall be the maximum mill levy a District is permitted to impose upon the taxable property within such District for payment of Debt imposed by the District, and shall be determined as follows:

1. The Maximum Debt Mill Levy is sixty (60) mills less the number of mills imposed by the District for operations and maintenance purposes, such that the Maximum Aggregate Mill Levy is not exceeded; provided that if, on or after January 1, 2007, there are changes in the method of calculating assessed valuation or any constitutionally mandated tax credit, cut or abatement; the mill levy limitation applicable to such Debt may be increased or decreased to reflect such changes, such increases or decreases to be determined by the Board in good faith (such determination to be binding and final) so that to the extent possible, the actual tax revenues generated by the mill levy, as adjusted for changes occurring after January 1, 2007, are neither diminished nor enhanced as a result of such changes. For purposes of the foregoing, a change in the ratio of actual valuation shall be deemed to be a change in the method of calculating assessed valuation.

2. All Debt issued by the Districts must be issued in compliance with all requirements of State law.

To the extent that the Districts are composed of or subsequently organized into one or more subdistricts as permitted under Section 32-1-1101, C.R.S., the term "District" as used in this Section shall be deemed to refer to the District and to each such subdistrict separately, so that each of the subdistricts shall be treated as a separate, independent district for purposes of the application of this definition.

Nothing herein shall prevent the Districts from covenanting with Debt holders or others to limit the amount of its operations and maintenance mill levy, as long as all district operations and maintenance requirements are met as required by VI.H. below.

D. Maximum Debt Mill Levy Imposition Term for Residential Districts.

No Residential District shall impose a levy for repayment of any and all Debt (or use the proceeds of any mill levy for repayment of Debt) which exceeds forty (40) years after the year of the initial imposition of such mill levy unless a majority of the Board of Directors of the District imposing the mill levy, which Board of Directors shall include at least three homeowners or residents of the District, have voted in favor of a refunding of a part or all of the Debt and such refunding will result in a net present value savings as set forth in Section 11-56-101, C.R.S. et seq.

E. Debt Repayment Sources.

Each of the Districts may impose a mill levy on taxable property within its boundaries as a primary source of revenue for repayment of debt service and for operations and maintenance. In no event shall the debt service mill levy in any District exceed the Maximum Debt Mill Levy or, in any Residential District, the Maximum Debt Mill Levy Imposition Term.

The Districts may also collect a one-time District Facility Fee for capital improvements,

provided that such fee does not exceed the following limits:

1. For each single-family detached residential unit, the District Facility Fee shall not exceed Five Thousand Dollars (\$5,000.00).
2. For each single-family attached or multi-family residential unit, the District Facility Fee shall not exceed Two Thousand Five-Hundred Dollars (\$2,500.00).
3. For a structure other than a single-family or multi-family residential structure, the District Facility Fee shall not exceed Two Dollars (\$2.00) per square foot of the structure.
4. The District Facility Fee set forth in this Service Plan may increase by up to the Consumer Price Index for Greeley, all items, all urban consumers (or its successor index for any years for which Consumer Price Index is not available) each year thereafter (as an inflation adjustment) commencing on January 1, 2022. The District Facility Fee shall be collected by the Districts any time prior to issuance of a Building Permit. Unless specifically authorized in the Intergovernmental Agreement, the Districts shall not impose or assess any fees, rates, tolls, penalties, or charges other than the District Facility Fee, as limited above, without first obtaining City approval of an amendment to this Service Plan, which amendment shall be deemed to be a material modification hereof.

F. Security for Debt.

The Districts shall not pledge any revenue, property or other assets of the City as security for any District indebtedness. Approval of this Service Plan shall not be construed as a guarantee by the City of payment of any of the District's obligations; nor shall anything in the Service Plan be construed so as to create any responsibility or liability on the part of the City in the event of default by the Districts in the payment of any such obligation.

G. TABOR Compliance.

The Districts will comply with the provisions of TABOR. In the discretion of the Board, the Districts may set up enterprises or nonprofit entities to manage, fund, construct and operate facilities, services and programs. To the extent allowed by law, any entity created by the Districts will remain under the control of the District's Boards. The activities of such enterprises and entities shall comply with the provisions of this Service Plan.

H. Districts' Organizational Costs.

The estimated cost of engineering services, legal services and administrative services, in connection with the Districts' organization, are anticipated to be \$125,000.00, which will be eligible for reimbursement from Debt proceeds.

In addition to the capital costs of the Public Improvements, the Districts will require operating funds for administration and to plan and cause the Public Improvements to be constructed and maintained, if such maintenance is addressed in the Intergovernmental Agreement. The first year's operating budget is estimated to be \$50,000.00, which is anticipated to be derived from funding advances by the developer of the Project until such time as the Districts' operating mill levy revenues are sufficient to operate the Districts.

The Districts may impose an operations mill levy as necessary to operate the Districts and for provision of operation and maintenance services to their taxpayers and/or service users at a level equal to or greater than City standards. The authorized mill levy for operations and maintenance activities shall be included within the Maximum Aggregate Mill Levy.

I. Subdistricts.

Any District may organize subdistricts or areas as allowed by Section 32-1-1101(1)(f), C.R.S., with the prior approval of the City Council. In accordance with Section 32-1-1101(1)(f)(I), C.R.S., such District shall notify the City prior to establishing any such subdistrict(s) or area(s), and shall provide the City with details regarding the purpose, location, and relationship of the subdistrict(s) or area(s). The City Council may elect to treat the organization of any such subdistrict(s) or area(s) as a material modification of the Service Plan.

VII. ANNUAL REPORT

A. General. Each of the Districts shall file an annual report with the City Clerk not later than September 1 of each calendar year, which annual report shall reflect activity and financial events of the District through the preceding December 31 (the “report year”).

B. Reporting of Significant Events.

The annual report shall include the following:

1. A narrative summary of the progress of the District in implementing its Service Plan for the report year;

2. Except when exemption from audit has been granted for the report year under the Local Government Audit Law, the audited financial statements of the District for the report year including a statement of financial condition (i.e., balance sheet) as of December 31 of the report year and the statement of operations (i.e., revenues and expenditures) for the report year or a copy of the audit exemption application;

3. Unless disclosed within a separate schedule to the financial statements, a summary of the capital expenditures incurred by the District in development of Public Improvements in the report year, as well as any Public Improvements proposed to be undertaken in the five (5) years following the report year;

4. Unless disclosed within a separate schedule to the financial statements, a summary of the financial obligations of the District at the end of the report year, including the amount of outstanding Debt, the amount and terms of any new Debt issued in the report year, the amount of payment or retirement of existing Debt of the District in the report year, the total assessed valuation of all taxable properties within the District as of January 1 of the report year and the current mill levy of the District pledged to Debt retirement in the report year;

5. A summary of the residential and commercial development in the District for the report year;

6. A summary of all fees, charges and assessments imposed by the District as of January 1 of the report year;

7. Certification of the Board that no action, event or condition has occurred in the report year, or certification that such event has occurred but that an amendment to the Service Plan that allows such event has been approved by City Council; and

8. The name, business address and telephone number of each member of the Board and its chief administrative officer and general counsel, together with the date, place and time of the regular meetings of the Board.

In addition, the Districts shall submit to the City, by January 15 of each year, the District's budget for the then current calendar year.

VIII. DISTRICT INDEMNIFICATION OF THE CITY: DISSOLUTION OF THE DISTRICT

Upon an independent determination of the City Council and written notice to the Districts that the purposes for which the Districts were created have been accomplished, the Districts agree to file petitions in the District Court for and in Weld County, Colorado, for dissolution, pursuant to the applicable State statutes. In no event shall dissolution occur until the Districts have provided for the payment or discharge of all of their outstanding indebtedness and other financial obligations as required pursuant to State statutes.

There is attached hereto as **Exhibit G** the Project Developer's Indemnification Letter, which is submitted to the City by the Developer as part of this Service Plan. Each District shall approve and execute the Indemnification Letter at its first Board meeting after its organizational election, in the same form as the Indemnification Letter set forth in **Exhibit G** and shall promptly deliver an executed original to the City.

IX. DISCLOSURES REQUIRED TO PURCHASERS OF PROPERTY WITHIN THE DISTRICT

The City wants purchasers of property within the Districts to be aware of the additional tax burden to be imposed. The City mandates early written and recorded notice of the total (overlapping) tax burden, including the Maximum Debt Mill Levy, the District Facility Fee and the Maximum Debt Mill Levy Imposition Term, as applicable. The City will review the type and timing of the disclosure, which the proponents of the Districts are proposing. The notice shall be recorded against all property within the Districts prior to the Districts' certification of the formation of the Districts to the Colorado Division of Local Government as required by Section 32-1-306, C.R.S.

In addition to the above notice and the requirements of Ordinance 13.50.090, each District shall annually provide a written disclosure to all land owners within the District that describes the tax levies, fees and costs that have been assessed to each property in the District as a result of implementation of the District's Financial Plan stated in Article VI or this Service Plan. A copy of such disclosure sent to each landowner shall also be forwarded to the City of Greeley to be included in its public records related to the District.

X. INTERGOVERNMENTAL AGREEMENT

The form of the intergovernmental agreement relating to the limitations imposed on the Districts' activities, is attached hereto as **Exhibit H**. The Districts shall approve and execute the Intergovernmental Agreement at their first Board meeting following their organizational election, in the same form as the Intergovernmental Agreement approved by the City Council, and shall promptly deliver an executed original to the City. Failure of the Districts to execute the Intergovernmental Agreement as required herein shall constitute a material modification. The City Council shall approve an intergovernmental agreement at the public hearing approving the Service Plan.

As limited by this Article X, the Districts may enter into an intergovernmental agreement regarding the functions and services to be provided by each District, and the mechanisms to be used by the Districts for the sharing of costs of Public Improvements. Such intergovernmental agreement and all amendments thereto, as well as all other intergovernmental agreements and amendments thereto proposed between or among the Districts regarding the subject matter of this Service Plan, shall be subject to review and comment by the city prior to their execution by the Districts. If entered into by the Districts, the Districts shall cause any intergovernmental agreements to be delivered to the City as soon as practicable upon formation of the Districts.

The Districts shall also deliver promptly the Districts' execution fully executed and complete copies of all amendments to such intergovernmental agreement, and of all other intergovernmental agreements and amendments thereto between or among the Districts regarding the subject matter of this Service Plan.

No intergovernmental agreements other than the City Intergovernmental Agreement and the Districts' intergovernmental agreements are anticipated. The District(s) shall use all City provided infrastructure services, including but not limited to, water and sewer service, unless the City is unable or unwilling to provide such services. In the event the City is unable or unwilling to provide such services, the, in that event, the District(s) may seek such infrastructure services from other providers. Except for such Intergovernmental Agreement with the City, any intergovernmental agreement proposed regarding the subject matter of this Service Plan shall be subject to review and comment by the City prior to its execution by a District.

XI. NON-COMPLIANCE WITH SERVICE PLAN

In the event it is determined that any District has undertaken any act or omission which violates the Service Plan or constitutes a material departure from the Service Plan collectively, "**Material Departure**"), the City may impose any of the sanctions set forth in the Municipal Code, including but not limited to affirmative injunctive relief to require said District to act in accordance with the provisions of this Service Plan. Except as it would relate to the sale or refinancing of bonds, said District hereby waives the provisions of Section 32-1-207(3)(b), C.R.S. and agrees it will not rely on such provisions as a bar to the enforcement by the City of any provisions of this Service Plan. The City will provide such District with written notice of any Material Departure from the Service Plan. The District shall have sixty (60) days to provide the City with written evidence that no Material Departure occurred, which evidence must be reasonably satisfactory to the City or to commence to cure such Material Departure. If the District is diligently pursuing the cure of such Material Departure, the City shall not take any action to

enjoin the District. In the event the District fails to complete the cure or take any action to cure the Material Departure, the City may impose any sanctions allowed by municipal code or statute.

XII. CONCLUSION

It is submitted that this Service Plan for the Districts, as required by Section 32-1-203(2), C.R.S., and the Municipal Code, establishes that:

1. There is sufficient existing and projected need for organized service in the area to be serviced by the Districts;
2. The existing service in the area to be served by the Districts is inadequate for present and projected needs;
3. The Districts are capable of providing economical and sufficient service to the area within their proposed boundaries; and
4. The area to be included in the Districts does have, and will have, the financial ability to discharge the proposed indebtedness on a reasonable basis.
5. Adequate service is not, and will not be, available to the area through the City or County or other existing municipal or quasi-municipal corporations, including existing special districts, within a reasonable time and on a comparable basis.
6. The facility and service standards of the Districts are compatible with the facility and service standards of the City.
7. The proposal is in substantial compliance the City's Comprehensive Plan.
8. The proposal is in compliance with any duly adopted City, regional or state long-range water quality management plan for the area.
9. The creation of the Districts is in the best interests of the area proposed to be served.
10. The creation of the Districts is in the best interests of the residents and future residents of the area proposed to be served.
11. The proposal is in substantial compliance with the Municipal Code.
12. The proposal will not foster urban development that is remote or incapable of being integrated with existing urban areas, and will not place a burden on the City or adjacent jurisdictions to provide urban services to residents of the Districts.

EXHIBIT A
Legal Descriptions

EXHIBIT A
DISTRICT NO. 1

A PARCEL OF LAND LOCATED WITHIN TRACT 2, JACKSON SUBDIVISION, RECORDED AT RECEPTION NUMBER 3347377, IN THE OFFICIAL RECORDS OF THE CLERK AND RECORDER'S OFFICE, COUNTY OF WELD, STATE OF COLORADO, SITUATED IN THE NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 5 NORTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF GREELEY, SAID COUNTY AND STATE, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID TRACT 2, WHENCE THE WEST LINE OF SAID TRACT 2 BEARS SOUTH 03°52'55" EAST, A DISTANCE OF 2375.77 FEET, WITH ALL BEARINGS REFERENCED HEREIN RELATIVE THERETO;

THENCE SOUTH 05°10'33" EAST, A DISTANCE OF 442.86 FEET TO A LINE PARALLEL WITH AND DISTANT 10.00 FEET EASTERLY TO THE WEST LINE OF SAID TRACT 2, AND THE **POINT OF BEGINNING**;

THENCE ALONG SAID PARALLEL LINE, SOUTH 03°52'55" EAST, A DISTANCE OF 148.00 FEET;

THENCE DEPARTING SAID PARALLEL LINE, NORTH 86°07'05" EAST, A DISTANCE OF 148.00 FEET TO A LINE PARALLEL WITH AND DISTANT 158.00 FEET EASTERLY TO THE WEST LINE OF SAID TRACT 2;

THENCE ALONG SAID PARALLEL LINE, NORTH 03°52'55" WEST, A DISTANCE OF 148.00 FEET;

THENCE DEPARTING SAID PARALLEL LINE, SOUTH 86°07'05" WEST, A DISTANCE OF 148.00 FEET TO THE **POINT OF BEGINNING**.

CONTAINING AN AREA OF 0.503 ACRES, (21,904 SQUARE FEET), MORE OR LESS.

ALL LINEAL DISTANCES ARE REPRESENTED IN U.S. SURVEY FEET.

EXHIBIT ATTACHED AND MADE A PART HEREOF.

DANIEL E. DAVIS,
COLORADO P.L.S. NO. 38256
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 E. MINERAL AVENUE, SUITE 1
LITTLETON, COLORADO 80122
303-713-1898

EXHIBIT A
DISTRICT NO. 2

A PARCEL OF LAND LOCATED WITHIN TRACT 2, JACKSON SUBDIVISION, RECORDED AT RECEPTION NUMBER 3347377, IN THE OFFICIAL RECORDS OF THE CLERK AND RECORDER'S OFFICE, COUNTY OF WELD, STATE OF COLORADO, SITUATED IN THE NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 5 NORTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF GREELEY, SAID COUNTY AND STATE, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID TRACT 2, WHENCE THE WEST LINE OF SAID TRACT 2 BEARS SOUTH 03°52'55" EAST, A DISTANCE OF 2375.77 FEET, WITH ALL BEARINGS REFERENCED HEREIN RELATIVE THERETO;

THENCE SOUTH 05°10'33" EAST, A DISTANCE OF 442.86 FEET TO A LINE PARALLEL WITH AND DISTANT 10.00 FEET EASTERLY TO THE WEST LINE OF SAID TRACT 2;

THENCE ALONG SAID PARALLEL LINE, SOUTH 03°52'55" EAST, A DISTANCE OF 148.00 FEET TO THE **POINT OF BEGINNING**;

THENCE CONTINUING ALONG SAID PARALLEL LINE, SOUTH 03°52'55" EAST, A DISTANCE OF 148.00 FEET;

THENCE DEPARTING SAID PARALLEL LINE, NORTH 86°07'05" EAST, A DISTANCE OF 148.00 FEET TO A LINE PARALLEL WITH AND DISTANT 158.00 FEET EASTERLY TO THE WEST LINE OF SAID TRACT 2;

THENCE ALONG SAID PARALLEL LINE, NORTH 03°52'55" WEST, A DISTANCE OF 148.00 FEET;

THENCE DEPARTING SAID PARALLEL LINE, SOUTH 86°07'05" WEST, A DISTANCE OF 148.00 FEET TO THE **POINT OF BEGINNING**.

CONTAINING AN AREA OF 0.503 ACRES, (21,904 SQUARE FEET), MORE OR LESS.

ALL LINEAL DISTANCES ARE REPRESENTED IN U.S. SURVEY FEET.

EXHIBIT ATTACHED AND MADE A PART HEREOF.

DANIEL E. DAVIS,
COLORADO P.L.S. NO. 38256
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 E. MINERAL AVENUE, SUITE 1
LITTLETON, COLORADO 80122
303-713-1898

EXHIBIT A
DISTRICT NO. 3

A PARCEL OF LAND LOCATED WITHIN TRACT 2, JACKSON SUBDIVISION, RECORDED AT RECEPTION NUMBER 3347377, IN THE OFFICIAL RECORDS OF THE CLERK AND RECORDER'S OFFICE, COUNTY OF WELD, STATE OF COLORADO, SITUATED IN THE NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 5 NORTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERDIAN, CITY OF GREELEY, SAID COUNTY AND STATE, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID TRACT 2, WHENCE THE WEST LINE OF SAID TRACT 2 BEARS SOUTH 03°52'55" EAST, A DISTANCE OF 2375.77 FEET, WITH ALL BEARINGS REFERENCED HEREIN RELATIVE THERETO;

THENCE SOUTH 05°10'33" EAST, A DISTANCE OF 442.86 FEET TO A LINE PARALLEL WITH AND DISTANT 10.00 FEET EASTERLY TO THE WEST LINE OF SAID TRACT 2;

THENCE ALONG SAID PARALLEL LINE, SOUTH 03°52'55" EAST, A DISTANCE OF 296.00 FEET TO THE **POINT OF BEGINNING**;

THENCE CONTINUING ALONG SAID PARALLEL LINE, SOUTH 03°52'55" EAST, A DISTANCE OF 148.00 FEET;

THENCE DEPARTING SAID PARALLEL LINE, NORTH 86°07'05" EAST, A DISTANCE OF 148.00 FEET TO A LINE PARALLEL WITH AND DISTANT 158.00 FEET EASTERLY TO THE WEST LINE OF SAID TRACT 2;

THENCE ALONG SAID PARALLEL LINE, NORTH 03°52'55" WEST, A DISTANCE OF 148.00 FEET;

THENCE DEPARTING SAID PARALLEL LINE, SOUTH 86°07'05" WEST, A DISTANCE OF 148.00 FEET TO THE **POINT OF BEGINNING**.

CONTAINING AN AREA OF 0.503 ACRES, (21,904 SQUARE FEET), MORE OR LESS.

ALL LINEAL DISTANCES ARE REPRESENTED IN U.S. SURVEY FEET.

EXHIBIT ATTACHED AND MADE A PART HEREOF.

DANIEL E. DAVIS,
COLORADO P.L.S. NO. 38256
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 E. MINERAL AVENUE, SUITE 1
LITTLETON, COLORADO 80122
303-713-1898

EXHIBIT A
DISTRICT NO. 4

A PARCEL OF LAND LOCATED WITHIN TRACT 2, JACKSON SUBDIVISION, RECORDED AT RECEPTION NUMBER 3347377, IN THE OFFICIAL RECORDS OF THE CLERK AND RECORDER'S OFFICE, COUNTY OF WELD, STATE OF COLORADO, SITUATED IN THE NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 5 NORTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF GREELEY, SAID COUNTY AND STATE, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID TRACT 2, WHENCE THE WEST LINE OF SAID TRACT 2 BEARS SOUTH 03°52'55" EAST, A DISTANCE OF 2375.77 FEET, WITH ALL BEARINGS REFERENCED HEREIN RELATIVE THERETO;

THENCE SOUTH 05°10'33" EAST, A DISTANCE OF 442.86 FEET TO A LINE PARALLEL WITH AND DISTANT 10.00 FEET EASTERLY TO THE WEST LINE OF SAID TRACT 2;

THENCE ALONG SAID PARALLEL LINE, SOUTH 03°52'55" EAST, A DISTANCE OF 444.00 FEET TO THE **POINT OF BEGINNING**;

THENCE CONTINUING ALONG SAID PARALLEL LINE, SOUTH 03°52'55" EAST, A DISTANCE OF 148.00 FEET;

THENCE DEPARTING SAID PARALLEL LINE, NORTH 86°07'05" EAST, A DISTANCE OF 148.00 FEET TO A LINE PARALLEL WITH AND DISTANT 158.00 FEET EASTERLY TO THE WEST LINE OF SAID TRACT 2;

THENCE ALONG SAID PARALLEL LINE, NORTH 03°52'55" WEST, A DISTANCE OF 148.00 FEET;

THENCE DEPARTING SAID PARALLEL LINE, SOUTH 86°07'05" WEST, A DISTANCE OF 148.00 FEET TO THE **POINT OF BEGINNING**.

CONTAINING AN AREA OF 0.503 ACRES, (21,904 SQUARE FEET), MORE OR LESS.

ALL LINEAL DISTANCES ARE REPRESENTED IN U.S. SURVEY FEET.

EXHIBIT ATTACHED AND MADE A PART HEREOF.

DANIEL E. DAVIS,
COLORADO P.L.S. NO. 38256
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 E. MINERAL AVENUE, SUITE 1
LITTLETON, COLORADO 80122
303-713-1898

EXHIBIT A
DISTRICT NO. 5

A PARCEL OF LAND LOCATED WITHIN TRACT 2, JACKSON SUBDIVISION, RECORDED AT RECEPTION NUMBER 3347377, IN THE OFFICIAL RECORDS OF THE CLERK AND RECORDER'S OFFICE, COUNTY OF WELD, STATE OF COLORADO, SITUATED IN THE NORTHWEST QUARTER OF SECTION 1, TOWNSHIP 5 NORTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF GREELEY, SAID COUNTY AND STATE, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID TRACT 2, WHENCE THE WEST LINE OF SAID TRACT 2 BEARS SOUTH 03°52'55" EAST, A DISTANCE OF 2375.77 FEET, WITH ALL BEARINGS REFERENCED HEREIN RELATIVE THERETO;

THENCE SOUTH 05°10'33" EAST, A DISTANCE OF 442.86 FEET TO A LINE PARALLEL WITH AND DISTANT 10.00 FEET EASTERLY TO THE WEST LINE OF SAID TRACT 2;

THENCE ALONG SAID PARALLEL LINE, SOUTH 03°52'55" EAST, A DISTANCE OF 592.00 FEET TO THE **POINT OF BEGINNING**;

THENCE CONTINUING ALONG SAID PARALLEL LINE, SOUTH 03°52'55" EAST, A DISTANCE OF 148.00 FEET;

THENCE DEPARTING SAID PARALLEL LINE, NORTH 86°07'05" EAST, A DISTANCE OF 148.00 FEET TO A LINE PARALLEL WITH AND DISTANT 158.00 FEET EASTERLY TO THE WEST LINE OF SAID TRACT 2;

THENCE ALONG SAID PARALLEL LINE, NORTH 03°52'55" WEST, A DISTANCE OF 148.00 FEET;

THENCE DEPARTING SAID PARALLEL LINE, SOUTH 86°07'05" WEST, A DISTANCE OF 148.00 FEET TO THE **POINT OF BEGINNING**.

CONTAINING AN AREA OF 0.503 ACRES, (21,904 SQUARE FEET), MORE OR LESS.

ALL LINEAL DISTANCES ARE REPRESENTED IN U.S. SURVEY FEET.

EXHIBIT ATTACHED AND MADE A PART HEREOF.

DANIEL E. DAVIS,
COLORADO P.L.S. NO. 38256
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 E. MINERAL AVENUE, SUITE 1
LITTLETON, COLORADO 80122
303-713-1898

EXHIBIT A
"INCLUSION AREA"

THAT CERTAIN PARCEL OF LAND DESCRIBED IN WARRANTY DEED RECORDED AT RECEPTION NUMBER 4369421, IN THE OFFICIAL RECORDS OF THE CLERK AND RECORDER'S OFFICE, COUNTY OF WELD, STATE OF COLORADO, SITUATED IN THE WEST HALF OF SECTION 1 AND THE SOUTHEAST QUARTER OF SECTION 2, TOWNSHIP 5 NORTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF GREELEY, SAID COUNTY AND STATE, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID WEST HALF, WHENCE THE EAST LINE OF THE WEST HALF OF SAID SECTION 1 BEARS NORTH 01°41'09" EAST, A DISTANCE OF 5233.90 FEET, WITH ALL BEARINGS REFERENCED HEREIN RELATIVE THERETO;

THENCE ALONG SAID EAST LINE, NORTH 01°34'38" WEST, A DISTANCE OF 65.05 FEET TO THE NORTHERLY RIGHT-OF-WAY OF US 34 BUSINESS, AS DESCRIBED IN WARRANTY DEED RECORDED AT RECEPTION NUMBER 3508373, IN SAID OFFICIAL RECORDS AND THE **POINT OF BEGINNING**;

THENCE ALONG SAID NORTHERLY RIGHT-OF-WAY, THE FOLLOWING TWO (2) COURSES:

1. SOUTH 89°51'14" WEST, A DISTANCE OF 762.98 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHERLY HAVING A RADIUS OF 5,875.00 FEET;
2. WESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 10°31'12", AN ARC LENGTH OF 1,078.70 FEET TO THE NORTHERLY RIGHT-OF-WAY OF US 34 BUSINESS AS DESCRIBED IN RIGHT-OF-WAY DEED RECORDED AT BOOK 918 PAGE 465 IN SAID OFFICIAL RECORDS;

THENCE ALONG SAID NORTHERLY RIGHT-OF-WAY, SOUTH 87°32'57" WEST, A DISTANCE OF 745.89 FEET TO THE WEST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 1;

THENCE CONTINUING ALONG SAID NORTHERLY RIGHT-OF-WAY, ALONG THE WEST LINE OF SAID SOUTHWEST QUARTER, SOUTH 04°08'49" WEST, A DISTANCE OF 0.19 FEET TO THE NORTHERLY RIGHT-OF-WAY OF STATE HIGHWAY 257 SPUR, AS DESCRIBED IN QUIT-CLAIM DEED RECORDED AT RECEPTION NUMBER 741532 IN SAID OFFICIAL RECORDS;

THENCE ALONG SAID NORTHERLY RIGHT-OF-WAY, NORTH 89°30'07" WEST, A DISTANCE OF 1,184.22 FEET TO THE WESTERLY BOUNDARY OF TRACT 2, JACKSON SUBDIVISION, RECORDED AT RECEPTION NUMBER 3347377 IN SAID OFFICIAL RECORDS;

THENCE ALONG SAID WESTERLY BOUNDARY AND THE NORTHERLY BOUNDARY OF SAID TRACT 2 THE FOLLOWING SEVENTEEN (17) COURSES:

1. NORTH 01°24'45" EAST, A DISTANCE OF 1,190.86 FEET;
2. NORTH 71°39'24" EAST, A DISTANCE OF 2,697.86 FEET;
3. NORTH 41°25'22" WEST, A DISTANCE OF 1,214.31 FEET;
4. NORTH 03°52'55" WEST, A DISTANCE OF 2,375.77 FEET;
5. SOUTH 74°26'17" EAST, A DISTANCE OF 428.29 FEET;
6. SOUTH 74°20'30" EAST, A DISTANCE OF 323.81 FEET;

7. SOUTH 72°00'45" EAST, A DISTANCE OF 111.51 FEET;
8. SOUTH 73°45'25" EAST, A DISTANCE OF 277.33 FEET;
9. SOUTH 74°59'39" EAST, A DISTANCE OF 335.15 FEET;
10. NORTH 19°26'18" EAST, A DISTANCE OF 177.59 FEET;
11. NORTH 30°44'56" EAST, A DISTANCE OF 201.48 FEET;
12. NORTH 82°22'46" EAST, A DISTANCE OF 338.90 FEET;
13. NORTH 06°10'33" EAST, A DISTANCE OF 31.99 FEET;
14. NORTH 84°36'54" EAST, A DISTANCE OF 70.65 FEET;
15. NORTH 87°59'53" EAST, A DISTANCE OF 50.09 FEET;
16. SOUTH 79°28'41" EAST, A DISTANCE OF 71.41 FEET;
17. NORTH 82°09'43" EAST, A DISTANCE OF 182.08 FEET TO THE EAST LINE OF THE WEST HALF OF SAID SECTION 1 AND THE EAST LINE OF SAID TRACT 2;

THENCE ALONG THE EAST LINE OF SAID TRACT 2 AND THE EAST LINE OF SAID WEST HALF, SOUTH 01°41'09" WEST, A DISTANCE OF 5,233.90 FEET TO THE **POINT OF BEGINNING**.

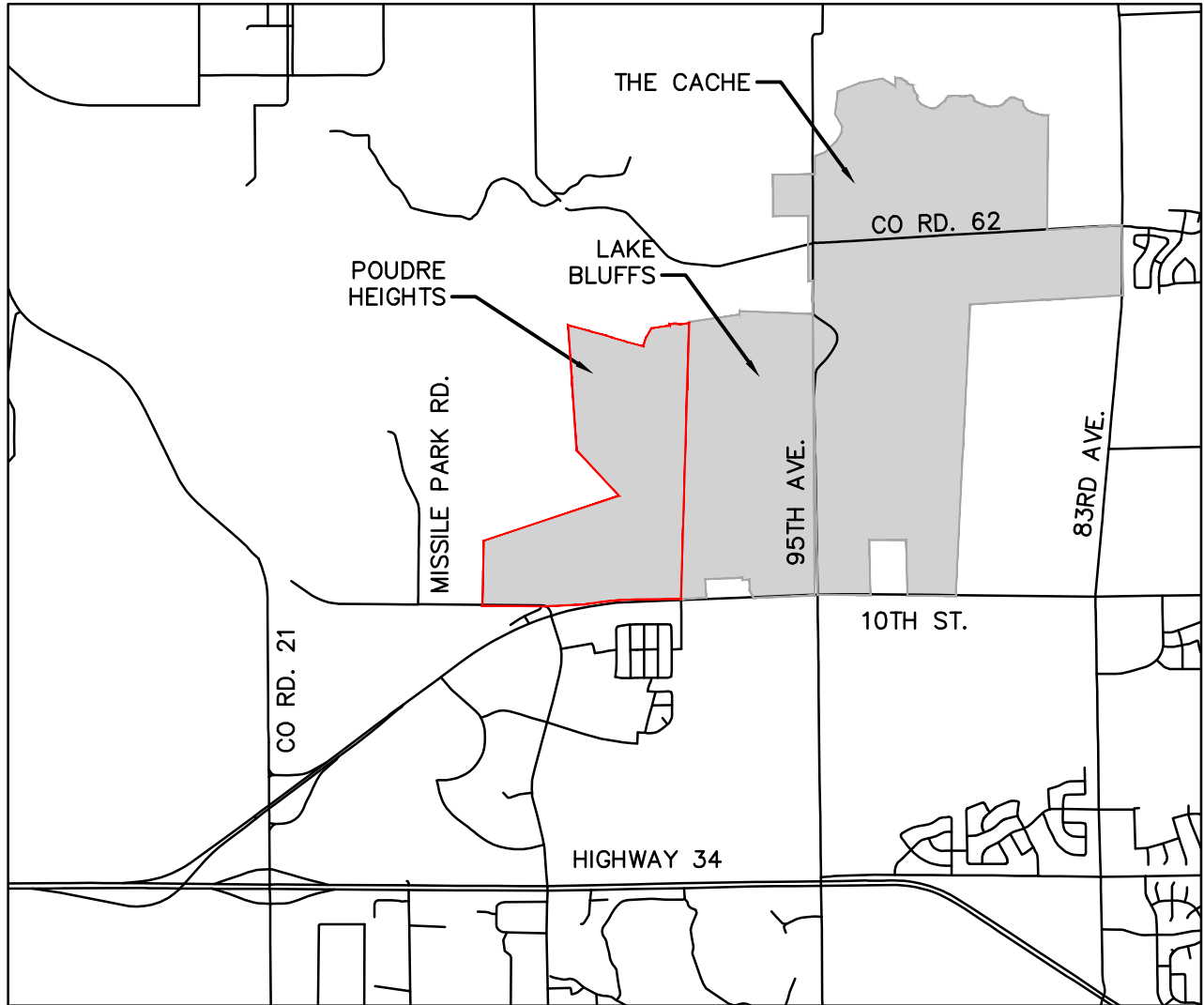
CONTAINING AN AREA OF 292.652 ACRES, (12,747,927 SQUARE FEET), MORE OR LESS.

ALL LINEAL DISTANCES ARE REPRESENTED IN U.S. SURVEY FEET.

EXHIBIT ATTACHED AND MADE A PART HEREOF.

DANIEL E. DAVIS,
COLORADO P.L.S. NO. 38256
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 E. MINERAL AVENUE, SUITE 1
LITTLETON, COLORADO 80122
303-713-1898

EXHIBIT B
Greeley Vicinity Map



HRGreen.com

POUDRE HEIGHTS
VICINITY MAP
PRELIM. REPORT

SHEET

VM

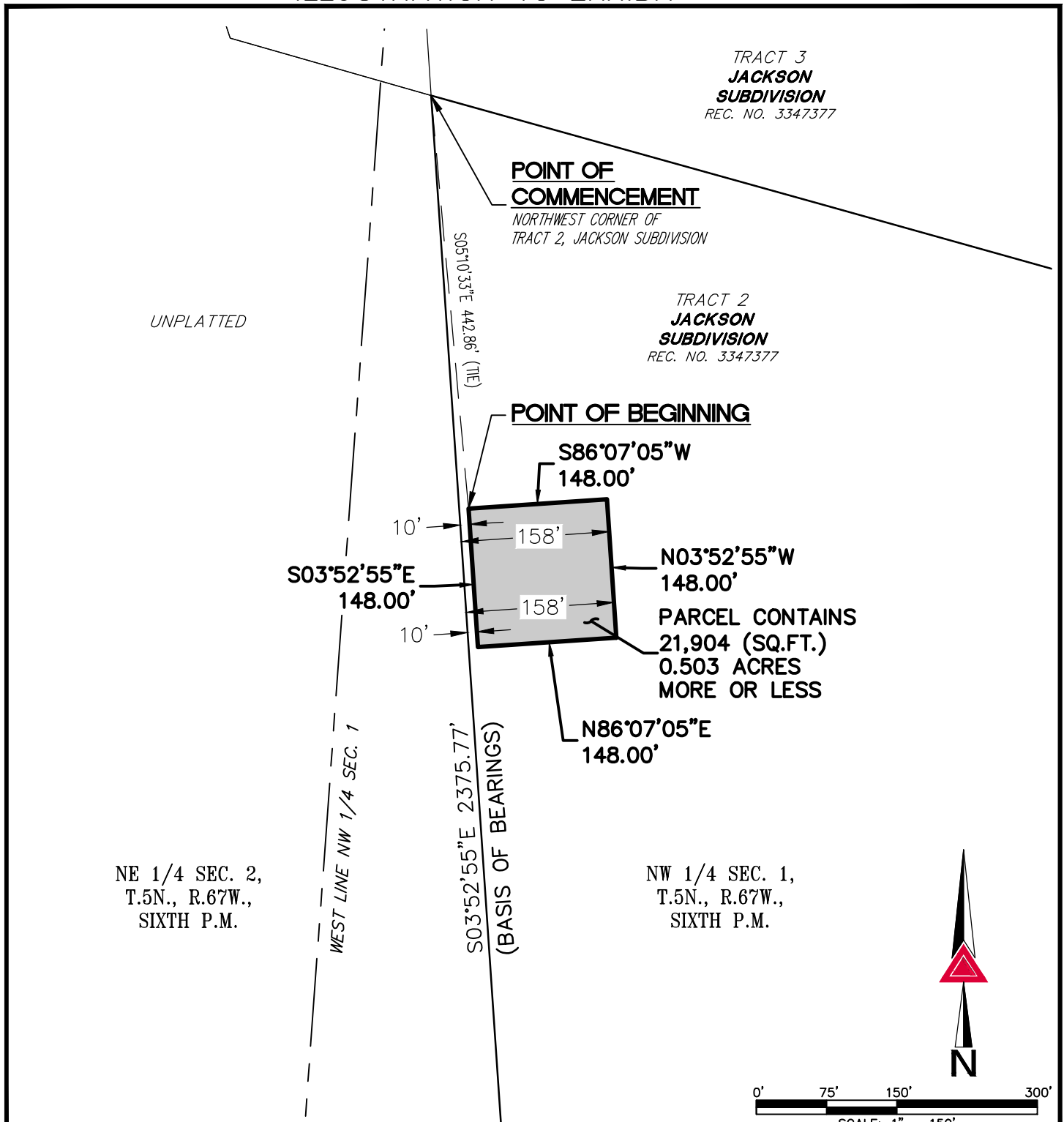
SCALE: 1" = 3000'
DATE: 3/12/2021

Xrefs:

EXHIBIT C-1
Initial District Boundary Map

EXHIBIT C-1

ILLUSTRATION TO EXHIBIT



NOTE: THIS DRAWING DOES NOT REPRESENT A MONUMENTED LAND SURVEY AND IS ONLY INTENDED TO DEPICT THE ATTACHED LEGAL DESCRIPTION.

PATH: _____
 DWG NAME: _____
 DWG: AMB CHK: DED
 DATE: 03/18/2021
 SCALE: 1" = 150'

POUDRE HEIGHTS DISTRICT PARCEL 1.DWG



AZTEC
CONSULTANTS, INC.

300 East Mineral Ave,
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Littleton, Colorado 80122
Phone: (303)713-1898
Fax: (303)713-1897
www.aztecconsultants.com

Q:\165721-01 - Poudre Heights\Dwg\EXHIBITS\DISTRICT PARCELS

JOB NUMBER 165721-01

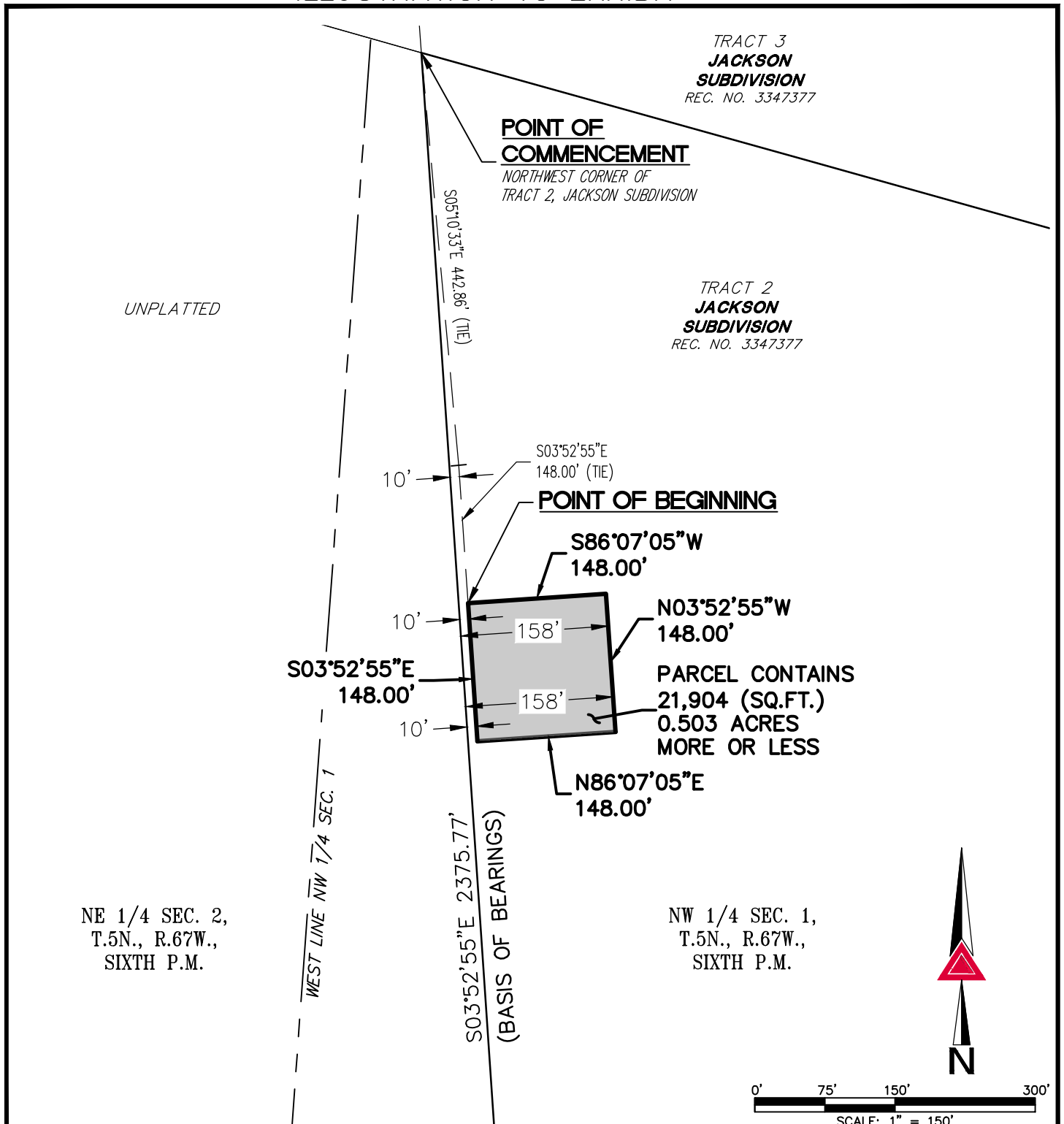
DISTRICT NO. 1
POUDRE HEIGHTS
GREELEY, COLORADO

2

Page 523

EXHIBIT C-1

ILLUSTRATION TO EXHIBIT



NOTE: THIS DRAWING DOES NOT REPRESENT A MONUMENTED LAND SURVEY AND IS ONLY INTENDED TO DEPICT THE ATTACHED LEGAL DESCRIPTION.

PATH: _____
 DWG NAME: _____
 DWG: AMB CHK: DED
 DATE: 03/18/2021
 SCALE: 1" = 150'

POUDRE HEIGHTS DISTRICT PARCEL 2.DWG



AZTEC
CONSULTANTS, INC.

300 East Mineral Ave,
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Littleton, Colorado 80122
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Fax: (303)713-1897
www.aztecconsultants.com

Q:\165721-01 - Poudre Heights\Draw\EXHIBITS\DISTRICT PARCELS

JOB NUMBER 165721-01

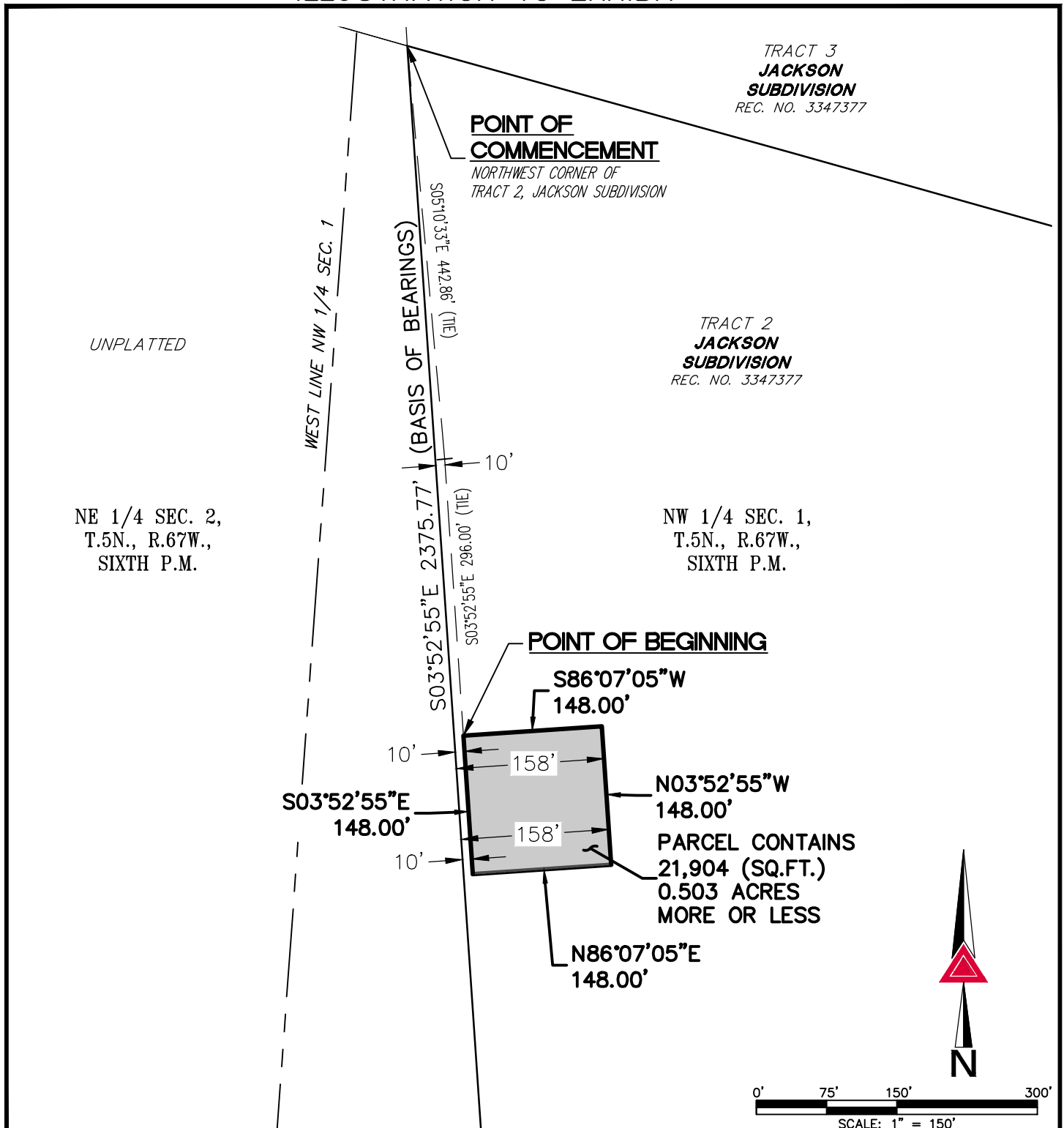
DISTRICT NO. 2
POUDRE HEIGHTS
GREELEY, COLORADO

2

Page 524

EXHIBIT C-1

ILLUSTRATION TO EXHIBIT



NOTE: THIS DRAWING DOES NOT REPRESENT A MONUMENTED LAND SURVEY AND IS ONLY INTENDED TO DEPICT THE ATTACHED LEGAL DESCRIPTION.

PATH: _____
 DWG NAME: _____
 DWG: AMB CHK: DED
 DATE: 03/18/2021
 SCALE: 1" = 150'

POUDRE HEIGHTS DISTRICT PARCEL 3.DWG



AZTEC
CONSULTANTS, INC.

300 East Mineral Ave,
Suite 1
Littleton, Colorado 80122
Phone: (303)713-1898
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www.aztecconsultants.com

Q:\165721-01 - Poudre Heights\Drawings\EXHIBITS\DISTRICT PARCELS

JOB NUMBER 165721-01

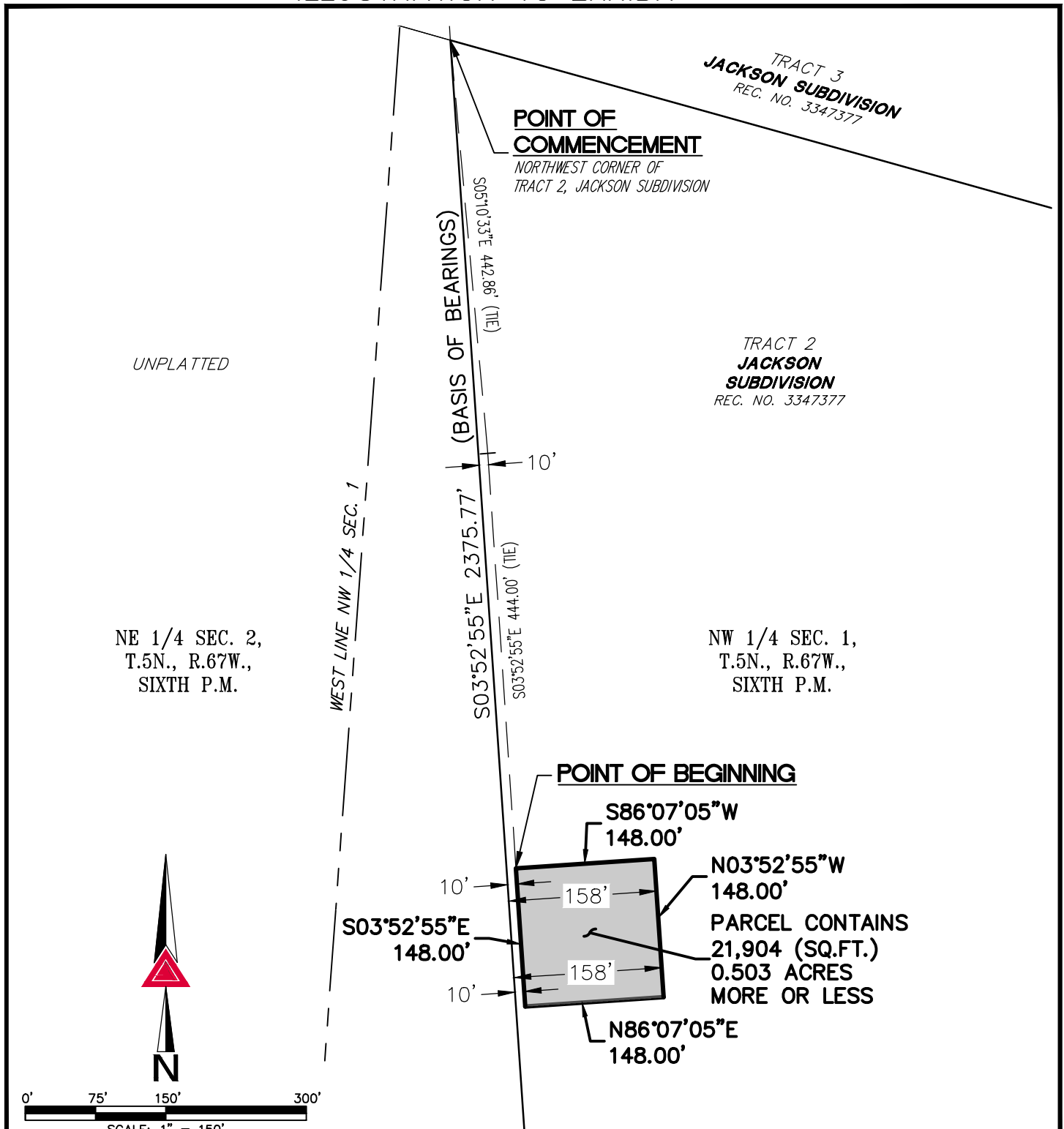
DISTRICT NO. 3
POUDRE HEIGHTS
GREELEY, COLORADO

2

Page 525

EXHIBIT C-1

ILLUSTRATION TO EXHIBIT



NOTE: THIS DRAWING DOES NOT REPRESENT A MONUMENTED LAND SURVEY AND IS ONLY INTENDED TO DEPICT THE ATTACHED LEGAL DESCRIPTION.

PATH: _____
 DWG NAME: _____
 DWG: AMB CHK: DED
 DATE: 03/18/2021
 SCALE: 1" = 150'

POUDRE HEIGHTS DISTRICT PARCEL 4.DWG



AZTEC
 CONSULTANTS, INC.

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Q:\165721-01 - Poudre Heights\Dwg\EXHIBITS\DISTRICT PARCELS

DISTRICT NO. 4
 POUDRE HEIGHTS
 GREELEY, COLORADO

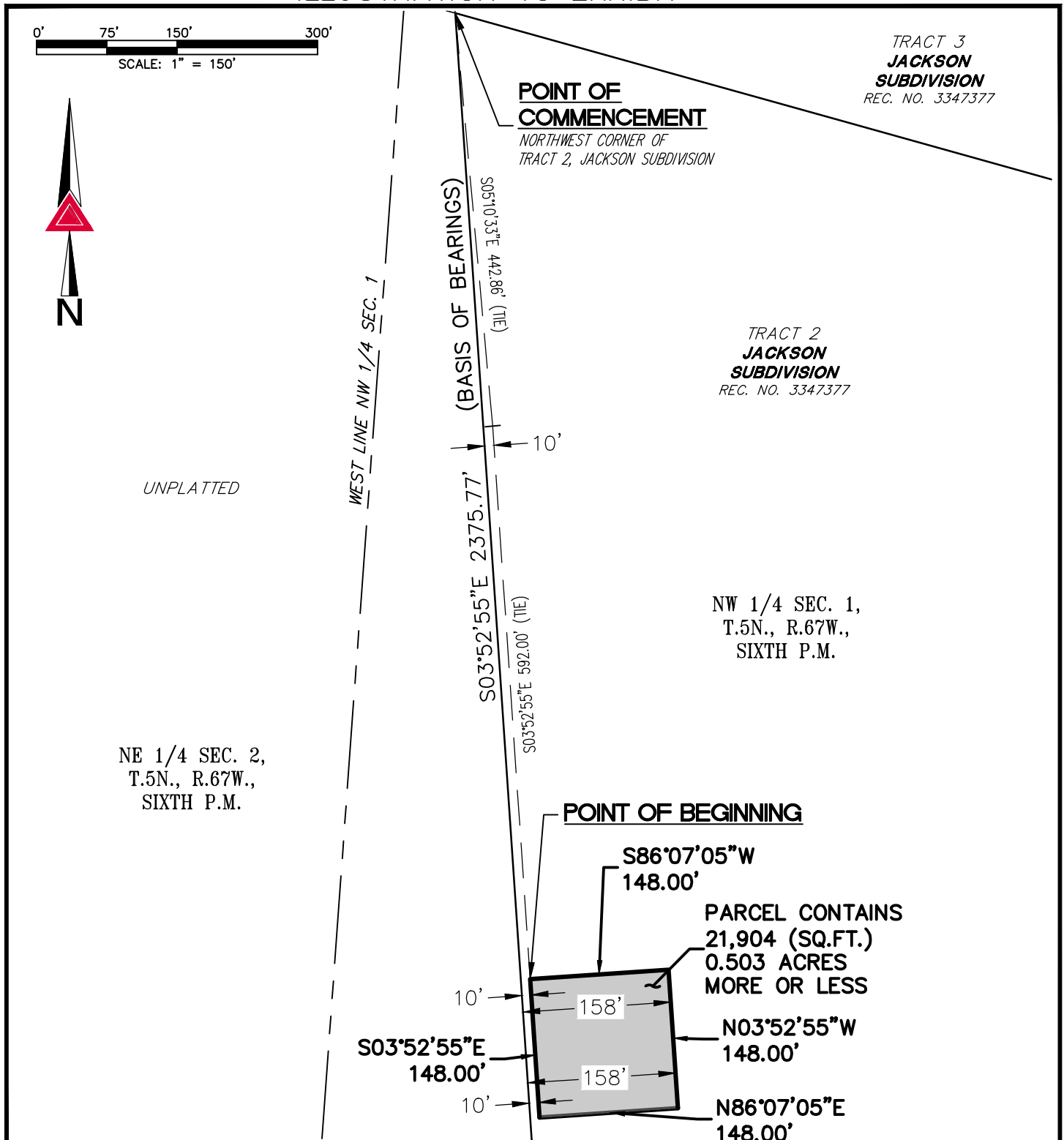
JOB NUMBER 165721-01

2

Page 526

EXHIBIT C-1

ILLUSTRATION TO EXHIBIT



NOTE: THIS DRAWING DOES NOT REPRESENT A MONUMENTED LAND SURVEY AND IS ONLY INTENDED TO DEPICT THE ATTACHED LEGAL DESCRIPTION.

PATH: _____
 DWG NAME: _____
 DWG: **AMB** CHK: **DED**
 DATE: **03/18/2021**
 SCALE: **1" = 150'**

POUDRE HEIGHTS DISTRICT PARCEL 5.DWG



AZTEC
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DISTRICT NO. 5
POUDRE HEIGHTS
GREELEY, COLORADO

JOB NUMBER 165721-01

2

Page 527

EXHIBIT C-2
Inclusion Area Boundary Map

EXHIBIT C-2
"INCLUSION AREA"

THAT CERTAIN PARCEL OF LAND DESCRIBED IN WARRANTY DEED RECORDED AT RECEPTION NUMBER 4369421, IN THE OFFICIAL RECORDS OF THE CLERK AND RECORDER'S OFFICE, COUNTY OF WELD, STATE OF COLORADO, SITUATED IN THE WEST HALF OF SECTION 1 AND THE SOUTHEAST QUARTER OF SECTION 2, TOWNSHIP 5 NORTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF GREELEY, SAID COUNTY AND STATE, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID WEST HALF, WHENCE THE EAST LINE OF THE WEST HALF OF SAID SECTION 1 BEARS NORTH 01°41'09" EAST, A DISTANCE OF 5233.90 FEET, WITH ALL BEARINGS REFERENCED HEREIN RELATIVE THERETO;

THENCE ALONG SAID EAST LINE, NORTH 01°34'38" WEST, A DISTANCE OF 65.05 FEET TO THE NORTHERLY RIGHT-OF-WAY OF US 34 BUSINESS, AS DESCRIBED IN WARRANTY DEED RECORDED AT RECEPTION NUMBER 3508373, IN SAID OFFICIAL RECORDS AND THE **POINT OF BEGINNING**;

THENCE ALONG SAID NORTHERLY RIGHT-OF-WAY, THE FOLLOWING TWO (2) COURSES:

1. SOUTH 89°51'14" WEST, A DISTANCE OF 762.98 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHERLY HAVING A RADIUS OF 5,875.00 FEET;
2. WESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 10°31'12", AN ARC LENGTH OF 1,078.70 FEET TO THE NORTHERLY RIGHT-OF-WAY OF US 34 BUSINESS AS DESCRIBED IN RIGHT-OF-WAY DEED RECORDED AT BOOK 918 PAGE 465 IN SAID OFFICIAL RECORDS;

THENCE ALONG SAID NORTHERLY RIGHT-OF-WAY, SOUTH 87°32'57" WEST, A DISTANCE OF 745.89 FEET TO THE WEST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 1;

THENCE CONTINUING ALONG SAID NORTHERLY RIGHT-OF-WAY, ALONG THE WEST LINE OF SAID SOUTHWEST QUARTER, SOUTH 04°08'49" WEST, A DISTANCE OF 0.19 FEET TO THE NORTHERLY RIGHT-OF-WAY OF STATE HIGHWAY 257 SPUR, AS DESCRIBED IN QUIT-CLAIM DEED RECORDED AT RECEPTION NUMBER 741532 IN SAID OFFICIAL RECORDS;

THENCE ALONG SAID NORTHERLY RIGHT-OF-WAY, NORTH 89°30'07" WEST, A DISTANCE OF 1,184.22 FEET TO THE WESTERLY BOUNDARY OF TRACT 2, JACKSON SUBDIVISION, RECORDED AT RECEPTION NUMBER 3347377 IN SAID OFFICIAL RECORDS;

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1. NORTH 01°24'45" EAST, A DISTANCE OF 1,190.86 FEET;
2. NORTH 71°39'24" EAST, A DISTANCE OF 2,697.86 FEET;
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4. NORTH 03°52'55" WEST, A DISTANCE OF 2,375.77 FEET;
5. SOUTH 74°26'17" EAST, A DISTANCE OF 428.29 FEET;
6. SOUTH 74°20'30" EAST, A DISTANCE OF 323.81 FEET;

7. SOUTH 72°00'45" EAST, A DISTANCE OF 111.51 FEET;
8. SOUTH 73°45'25" EAST, A DISTANCE OF 277.33 FEET;
9. SOUTH 74°59'39" EAST, A DISTANCE OF 335.15 FEET;
10. NORTH 19°26'18" EAST, A DISTANCE OF 177.59 FEET;
11. NORTH 30°44'56" EAST, A DISTANCE OF 201.48 FEET;
12. NORTH 82°22'46" EAST, A DISTANCE OF 338.90 FEET;
13. NORTH 06°10'33" EAST, A DISTANCE OF 31.99 FEET;
14. NORTH 84°36'54" EAST, A DISTANCE OF 70.65 FEET;
15. NORTH 87°59'53" EAST, A DISTANCE OF 50.09 FEET;
16. SOUTH 79°28'41" EAST, A DISTANCE OF 71.41 FEET;
17. NORTH 82°09'43" EAST, A DISTANCE OF 182.08 FEET TO THE EAST LINE OF THE WEST HALF OF SAID SECTION 1 AND THE EAST LINE OF SAID TRACT 2;

THENCE ALONG THE EAST LINE OF SAID TRACT 2 AND THE EAST LINE OF SAID WEST HALF, SOUTH 01°41'09" WEST, A DISTANCE OF 5,233.90 FEET TO THE **POINT OF BEGINNING**.

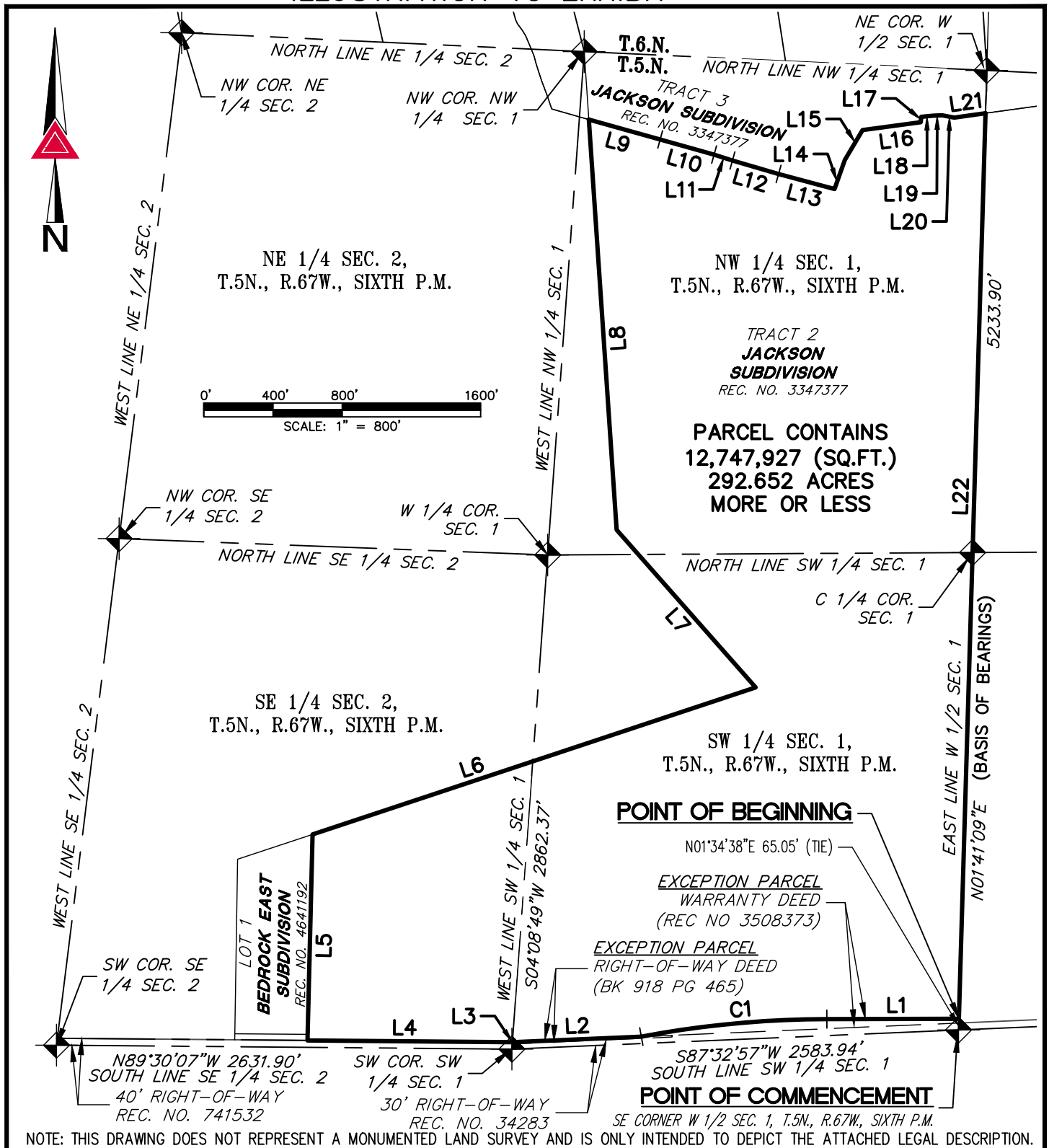
CONTAINING AN AREA OF 292.652 ACRES, (12,747,927 SQUARE FEET), MORE OR LESS.

ALL LINEAL DISTANCES ARE REPRESENTED IN U.S. SURVEY FEET.

EXHIBIT ATTACHED AND MADE A PART HEREOF.

DANIEL E. DAVIS,
COLORADO P.L.S. NO. 38256
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 E. MINERAL AVENUE, SUITE 1
LITTLETON, COLORADO 80122
303-713-1898

ILLUSTRATION TO EXHIBIT



PATH: _____
 DWG NAME: _____
 DWG: **AMB** CHK: **DED**
 DATE: **03/18/2021**
 SCALE: **1" = 800'**

Q:\165721-01 - Poudre Heights\Dwg\EXHIBITS



AZTEC
 CONSULTANTS, INC.

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www.aztecconsultants.com

POUDRE HEIGHTS INCLUSION EXHIBIT 165721-01

JOB NUMBER 165721-01

INCLUSION AREA
POUDRE HEIGHTS
GREELEY, COLORADO

3

Page 531

ILLUSTRATION TO EXHIBIT

LINE TABLE		
LINE	BEARING	LENGTH
L1	S89°51'14"W	762.98'
L2	S87°32'57"W	745.89'
L3	S04°08'49"W	0.19'
L4	N89°30'07"W	1184.22'
L5	N01°24'45"E	1190.86'
L6	N71°39'24"E	2697.86'
L7	N41°25'22"W	1214.31'
L8	N03°52'55"W	2375.77'
L9	S74°26'17"E	428.29'
L10	S74°20'30"E	323.81'
L11	S72°00'45"E	111.51'
L12	S73°45'25"E	277.33'
L13	S74°59'39"E	335.15'
L14	N19°26'18"E	177.59'
L15	N30°44'56"E	201.48'
L16	N82°22'46"E	338.90'
L17	N06°10'33"E	31.99'
L18	N84°36'54"E	70.65'
L19	N87°59'53"E	50.09'
L20	S79°28'41"E	71.41'
L21	N82°09'43"E	182.08'
L22	S01°41'09"W	5233.90'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	10°31'12"	5875.00'	1078.70'

NOTE: THIS DRAWING DOES NOT REPRESENT A MONUMENTED LAND SURVEY AND IS ONLY INTENDED TO DEPICT THE ATTACHED LEGAL DESCRIPTION.

PATH: _____
 DWG NAME: _____
 DWG: AMB CHK: DED
 DATE: 03/18/2021
 SCALE: 1" = 800'

Q:\165721-01 - Poudre Heights\Dwg\EXHIBITS



AZTEC
 CONSULTANTS, INC.

300 East Mineral Ave,
 Suite 1
 Littleton, Colorado 80122
 Phone: (303)713-1898
 Fax: (303)713-1897
www.aztecconsultants.com

POUDRE HEIGHTS INCLUSION EXHIBIT 165721-01

INCLUSION AREA
 POUDRE HEIGHTS
 GREELEY, COLORADO

JOB NUMBER 165721-01

4

Page 532

EXHIBIT C-3

Proof of Ownership and Consents

Unified Title Company of Northern Colorado, LLC
1275 58th Avenue, Unit C
Greeley, CO 80634
Phone: 970-356-3551
Fax: 970-356-2063

Transmittal Information

Date: 01/21/2021

File No: 21515UTG

Property Address: 10925 Highway 257 Spur, Greeley, CO 80634

Buyer\Borrower: Poudre Bay Partners, LLC, a Colorado limited liability company
Poudre Bay Capital, LLC, a Colorado limited liability company
DPR Greeley, LLC, a Colorado limited liability company
Ali's Rentals, LLC, a Colorado limited liability company

Seller:

For changes and updates please contact your Escrow officer(s):

Escrow Officer:	Title Officer:
Not Applicable	Melissa Scherer
Unified Title Company of Northern Colorado, LLC	Unified Title Company of Northern Colorado, LLC
1275 58th Avenue, Unit C	1275 58th Avenue, Unit C
Greeley, CO 80634	Greeley, CO 80634
Phone: 970-356-3551	Phone: 970-356-3551
Direct Phone:	Fax: 970-356-2063
Fax: 970-356-2063	Email: mscherer@unifiedtitle.com
Email:	

Escrow Processor:

E-Mail:
Direct Phone:

Copies Sent to:

Customer:
Poudre Bay Partners, LLC
212 Poudre Bay
Windsor, CO 80550
Phone: 970-415-0538 Fax:
Attn: Brian Smerud
DELIVERED VIA: E-MAIL

Buyer:
Poudre Bay Partners, LLC, a Colorado limited liability company

Seller:

DELIVERED VIA: AGENT

Poudre Bay Capital, LLC, a Colorado limited liability company

DELIVERED VIA: AGENT

DPR Greeley, LLC, a Colorado limited liability company

DELIVERED VIA: AGENT

Ali's Rentals, LLC, a Colorado limited liability company

DELIVERED VIA: AGENT

Buyer's Agent:

Seller's Agent:

Buyer's Attorney:

Seller's Attorney:

Lender:

Mortgage Broker:

**Phone: Fax:
Attn:**

**Phone: Fax:
Attn:**

**Misc:
Poudre Bay Partners, LLC
212 Poudre Bay
Windsor, CO 80550
Phone: 970-415-0538
Contact: Brian Smerud
Email: brian.smerud@wheelerpropertiesinc.com**

COMMITMENT FOR TITLE INSURANCE

Issued by

*Stewart Title Guaranty Company***SCHEDULE A**1. Effective Date: **January 15, 2021, 8:00 am**

2. Policy to be issued:

(a) 2006 ALTA® Owner's Policy
Proposed Insured:
Proposed Policy Amount:(b) 2006 ALTA® Loan Policy
Proposed Insured:
Proposed Policy Amount:

<i>To Be Determined End</i>	\$	300.00
Total:	\$	300.00

3. The estate or interest in the land described or referred to in this Commitment is **Fee Simple**.4. The Title is, at the Commitment Date, vested in:
Poudre Bay Partners, LLC, a Colorado limited liability company, and Poudre Bay Capital, LLC, a Colorado limited liability company, and DPR Greeley, LLC, a Colorado limited liability company, and Ali's Rentals, LLC, a Colorado limited liability company

5. The land referred to in this Commitment is described as follows:

SEE ATTACHED EXHIBIT "A"For Informational Purposes Only: **10925 Highway 257 Spur, Greeley, CO 80634**

Countersigned

Unified Title Company of Northern Colorado, LLCBy: 
Melissa Scherer

EXHIBIT "A"

**Tract 2,
JACKSON SUBDIVISION,
Part of the West half of Section 1 and part of the Southeast quarter of Section 2, Township 5
North, Range 67 West of the 6th P.M., City of Greeley, County of Weld, State of Colorado,
Except any portion conveyed to Weld County in Deed recorded August 24, 1931 in [Book 918 at
Page 465](#).
Except any portion conveyed to Department of Transportation, State of Colorado in Warranty
Deed recorded October 3, 2007 at [Reception No. 3508373](#).
Except any portion conveyed to Ed Orr and Susie Ann Orr in Quit-Claim Deed recorded July 18,
2006 at [Reception No. 3403870](#).**

COMMITMENT FOR TITLE INSURANCE

Issued by

Stewart Title Guaranty Company

SCHEDULE B, PART I Requirements

Effective Date: January 15, 2021 at 8:00am

All of the following Requirements must be met:

1. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.
2. Pay the agreed amount for the estate or interest to be insured.
3. Pay the premiums, fees, and charges for the Policy to the Company.
4. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.

NOTE: This commitment has been issued for information purposes only and there are no requirements. The liability of the Company in terms of this Commitment is limited to the charges paid for the Commitment.

FOR INFORMATIONAL PURPOSES ONLY:

24-month Chain of Title: The only conveyance(s) affecting said land recorded within the 24 months preceding the date of this commitment is (are) as follows:

Deed recorded January 22, 2018 as [Reception No. 4369421](#).

NOTE: If no conveyances were found in that 24 month period, the last recorded conveyance is reported. If the subject land is a lot in a subdivision plat less than 24 months old, only the conveyances subsequent to the plat are reported.

Stewart Title Guaranty Company*Stewart Title Guaranty Company***SCHEDULE B, PART II
Exceptions****Effective Date: January 15, 2021 at 8:00am**

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, GENDER IDENTITY, HANDICAP, FAMILIAL STATUS, OR NATIONAL ORIGIN.

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

1. Rights or claims of parties in possession not shown by the Public Records.
2. Easements or claims of easements not shown in the Public Records.
3. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, and any facts which a correct survey and inspection of the land would disclose, and which are not shown by the public record.
4. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.
5. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the public records or attaching subsequent to the effective date hereof but prior to the date the proposed insured acquires of record for value the estate or interest or mortgage thereon covered by this Commitment.
6. Unpatented mining claims; reservations or exceptions in patents or in Acts authorizing the issuance thereof.
7. Any water rights or claims or title to water, in or under the land, whether or not shown by the public records.
8. Taxes due and payable; and any tax, special assessments, charge or lien imposed for water or sewer service, or for any other special taxing district. Note: Upon verification of payment of all taxes the above exception will be amended to read, "Taxes and assessments for the current year, and subsequent years, a lien not yet due and payable."
9. **Right of way for county roads 30 feet on either side of section and township lines, as established by the Board of County Commissioners for Weld County, recorded October 14, 1889 in [Book 86 at Page 273](#).**
10. **Reservations made by the Union Pacific Railway Company in Deed recorded November 18, 1895 in Book 145 at Page 240 at [Reception No. 58179](#), providing substantially as follows: Reserving unto the Company and its assigns all coal that may be found underneath the**

face of the land herein described and the exclusive right to prospect and mine for same, such right of way and other grounds as may appear necessary for proper working of any coal mines that may be developed upon said premises, and for transportation of coal from same; and any and all assignments thereof or interest therein.

11. Reserving to said Union Pacific Railroad Company, its successors and assigns, (1) all oil, coal and other minerals, within or underlying said lands; (2) the exclusive right to prospect in and upon said land, for oil, coal and other minerals therein or which may be supposed to be therein and to mine for and remove from said land, all oil, coal, and other minerals which may be found thereon by anyone; (3) the right of ingress and egress upon said land to prospect for, mine and remove any and all such oil, coal and other minerals, and the right to use so much of said land as may be convenient or necessary for the right of way to and from such prospect places or mines, and for the convenient and proper operation of such prospect places, mines, and for roads, and approaches thereto or for removal therefrom of oil and coal, mineral, machinery, or other material; (4) the right of said Union Pacific Railroad Company to maintain and operate its railroad in its present form of construction, and to make any change in the form of construction, and to make any change in the form of construction, or method of operation of said railroad all as reserved in Deed recorded August 17, 1905 in Book 233 at Page 3 at [Reception No. 104450](#). (affects N1/2 SW1/4 Sec 1)
12. One-half interest in all oil, gas and/or other minerals as reserved by Deed recorded January 13, 1942 in [Book 1088 at Page 560](#), and any and all assignments thereof or interests therein.
13. The coal and other minerals as conveyed to Union Pacific Railroad Company by Deed recorded September 28, 1948 in [Book 1234 at Page 539](#), and any and all assignments thereof or interests therein.
14. One-half interest in all minerals and mineral rights as conveyed by Deed recorded February 21, 1949 in [Book 1242 at Page 312](#), and any and all assignments thereof or interests therein.
15. Terms, conditions, provisions, agreements and easement specified under the Contract and Grant of Easement recorded April 23, 1949 in [Book 1246 at Page 136 at Reception No. 1057157](#).
16. Terms, conditions, provisions, agreements and easement specified under the Contract and Grant of Easement recorded May 4, 1949 in [Book 1246 at Page 511 at Reception No. 1058066](#).
17. One-half interest in all minerals and mineral rights as conveyed by Deed recorded June 21, 1949 in [Book 1249 at Page 154](#), and any and all assignments thereof or interests therein.
18. One-half interest in all oil, gas and/or other minerals as reserved by Deed recorded December 31, 1949 in [Book 1124 at Page 126](#), and any and all assignments thereof or interests therein.
19. Terms, conditions, provisions, agreements and easement specified under the Grant of Easement for ingress and egress recorded February 14, 1950 in [Book 1263 at Page 2 at Reception No. 1076164](#).
20. An easement and right of way for electric line or system and incidental purposes granted to Poudre Valley Rural Electric Association, Inc., by the instrument recorded May 16, 1977 in Book 797 at [Reception No. 1719280](#).
21. An easement and right of way for electric line or system and incidental purposes granted to Poudre Valley Rural Electric Association, Inc., by the instrument recorded May 16, 1977 in Book 797 at [Reception No. 1719281](#).

ms, conditions, provisions, agreements and easement specified under the Right of Way Easement and License recorded June 3, 1977 in Book 799 at [Reception No. 1720916](#).

23. Terms, conditions, provisions, agreements and easement specified under the Grant of Easement recorded April 3, 1978 in Book 827 at [Reception No. 1749274](#).
24. Terms, conditions, provisions, agreements and easement specified under the Grant of Easement for ingress and egress recorded April 3, 1978 in Book 827 at [Reception No. 1749275](#).
25. An easement and right of way for electric line or system and incidental purposes granted to Poudre Valley Rural Electric Association, Inc., by the instrument recorded November 5, 1979 in Book 886 at [Reception No. 1808306](#) and at [Reception No. 1808307](#).
26. Terms, conditions, provisions and easement specified under the Right of Way Grant recorded December 14, 1983 in Book 1015 at [Reception No. 1949961](#).
27. Terms, conditions, provisions and easement specified under the Easement for Tank Battery recorded December 14, 1983 in Book 1015 at [Reception No. 1949962](#) and at [Reception No. 1949963](#).
28. Terms, conditions, provisions and agreements specified under the Golden Triangle Second Annexation map recorded February 7, 1985 at [Reception No. 1997982](#).
29. Terms, conditions, provisions and easement specified under the Easement Consent Roadway Access recorded September 1, 1989 in Book 1243 at [Reception No. 2190706](#) and at [Reception No. 2190707](#).
30. Terms, conditions and provisions specified under the Restrictive Covenant recorded November 13, 1989 in Book 1248 at [Reception No. 2197187](#).
31. The effect of the inclusion of the subject property in the Northern Colorado Water Conservancy District, as disclosed by the instrument recorded May 9, 1990 in Book 1263 at [Reception No. 2213201](#) and recorded September 29, 2010 at [Reception No. 3721790](#).
32. Terms, conditions, provisions, agreements and easement specified under the Grant of Easement recorded October 22, 1990 in Book 1280 at [Reception No. 2230718](#).
33. Terms, conditions, provisions, agreements and easement specified under the Grant of Easement recorded October 22, 1990 in Book 1280 at [Reception No. 2230719](#).
34. Terms, conditions, provisions, agreements and easement specified under the Right-of-Way Grant recorded June 17, 1998 at [Reception No. 2620133](#) and at [Reception No. 2620134](#).
35. Terms, conditions, provisions, agreements and obligations specified under the Surface Owner's Agreement recorded August 7, 2000 at [Reception No. 2785402](#).
36. Terms, conditions, provisions, agreements and obligations specified under the Surface Owner's Agreement recorded September 29, 2000 at [Reception No. 2797094](#).
37. An easement and right of way for electric line or system and incidental purposes granted to Poudre Valley Rural Electric Association, Inc., by the instrument recorded December 11, 2000 at [Reception No. 2812644](#).
38. Notice of Oil and Gas Interests and Surface Use recorded February 26, 2001 at [Reception No. 2827989](#).

ms, conditions, provisions, agreements and easement specified under the Pipeline Right-of-Way Grant recorded February 26, 2001 at [Reception No. 2828146](#).

40. Request for Notification recorded April 1, 2002 at [Reception No. 2938267](#).
41. Request for Notification of Surface Development recorded May 28, 2002 at [Reception No. 2955155](#).
42. Terms, conditions, provisions, agreements and easement specified under the Road Right-of-Way Agreement recorded May 21, 2003 at [Reception No. 3065145](#).
43. Terms, conditions, provisions, agreements and easement specified under the Pipeline Right-of-Way Grant recorded May 21, 2003 at [Reception No. 3065146](#).
44. All items as shown on ALTA / ACSM Land Title Survey recorded June 13, 2003 at [Reception No. 3072920](#).
45. Easements, notes, terms, conditions, provisions, agreements and obligations as shown on the plat of Jackson Subdivision recorded December 14, 2005 at [Reception No. 3347377](#).
46. Request for Notification of Pending Surface Development recorded June 12, 2007 at [Reception No. 3482891](#).
47. Request for Notification of Pending Surface Development recorded August 6, 2007 at [Reception No. 3495293](#).
48. Terms, conditions, provisions and easement specified under the Permanent Easement recorded October 3, 2007 at [Reception No. 3508374](#).
49. Terms, conditions, provisions and easement specified under the Permanent Easement recorded October 3, 2007 at [Reception No. 3508375](#).
50. Request for Notification of Surface Development recorded October 15, 2007 at [Reception No. 3511023](#).
51. Request for Notification (Mineral Estate Owner) recorded December 21, 2007 at [Reception No. 3525268](#).
52. Terms, conditions, provisions, agreements and easement specified under the Pipeline Right-of-Way Grant recorded May 27, 2008 at [Reception No. 3556406](#).
53. Terms, conditions, provisions and agreements specified under the Ordinance No. 17, 2009 Case No. A 4:08 recorded May 29, 2009 at [Reception No. 3626304](#).
54. Terms, conditions, provisions and agreements specified under the Ordinance No. 18, 2009 Case No. A 5:08 recorded May 29, 2009 at [Reception No. 3626305](#).
55. Terms, conditions, provisions and agreements specified under the Ordinance No. 19, 2009 Case No. A 6:08 recorded May 29, 2009 at [Reception No. 3626306](#).
56. Terms, conditions, provisions and agreements specified under the Golden Triangle Fifth, Sixth and Seventh Annexation maps recorded May 29, 2009 at [Reception No. 3626307](#), at [Reception No. 3626308](#) and at [Reception No. 3626309](#).
57. Terms, conditions, provisions and agreements specified under the Ordinance No. 29, 2009 Case No. Z 4:09 recorded July 27, 2009 at [Reception No. 3638656](#).

ms, conditions, provisions and agreements specified under the Ordinance No. 29, 2009
e No. Z 5:09 recorded July 27, 2009 at [Reception No. 3638657](#).

59. Terms, conditions, provisions and agreements specified under the Ordinance No. 29, 2009 Case No. Z 6:09 recorded July 27, 2009 at [Reception No. 3638658](#).
60. All items as shwon on Land Survey Plat recoded March 19, 2014 at [Reception No. 4003223](#).
61. Terms, conditions, provisions and agreements specified under the Ordinance No. 10, 2014 Case No. PUD 8:13 recorded June 5, 2014 at [Reception No. 4021300](#).
62. Colorado Ground Water Commission Findings and Order recorded January 20, 2016 at [Reception No. 4174196](#).
63. Terms, conditions, provisions and easements specified under the Memorandum Regarding History of Easement Contracts recorded May 8, 2017 at [Reception No. 4300133](#).
64. Terms, conditions, provisions, agreements and obligations specified under the Easement Agreement recorded August 9, 2017 at [Reception No. 4325631](#).
65. All items as shown on Land Survey Plat prepared by Thomas Land Surveying, LLC, dated 12-12-2017, Project 1711.018, recorded January 17, 2018 at [Reception No. 4368215](#).
66. Request for Notification of Application for Development recorded August 2, 2018 at [Reception No. 4420477](#).
67. Terms, agreements, provisions, conditions, obligations and easements as contained in Easement Agreement & Grant, recorded July 7, 2020 at [Reception No. 4605537](#).
68. Any and all unrecorded leases or tenancies and any and all parties claiming by, through, or under such leases or tenancies.
69. Financing Statement from Hertzke Holsteins, Ltd, Debtor, to Farmers Bank, Secured Party, recorded January 23, 2017 at [Reception No. 4272014](#).
70. Deed of Trust from Poudre Bay Partners, LLC, a Colorado limited liability company, and Poudre Bay Capital, LLC, a Colorado limited liability company, and DPR Greeley, LLC, a Colorado limited liability company, and Ali's Rentals, LLC, a Colorado limited liability company, to the Public Trustee of the County of Weld, State of Colorado, for the use of Bank of Colorado to secure \$705,520.00, dated January 19, 2018 and recorded January 22, 2018 at [Reception No. 4369422](#).

NOTE: The policy(s) of insurance may contain a clause permitting arbitration of claims at the request of either the Insured or the Company. Upon request, the Company will provide a copy of this clause and the accompanying arbitration rules prior to the closing of the transaction.

EXHIBIT D
Capital Plan



August 6, 2021

RE: Poudre Heights – Capital Plan & Projection of Probable Metropolitan District Infrastructure Costs

To whom it may concern:

This Capital Plan summarizes the attached projection of probable metropolitan district infrastructure costs associated with Poudre Heights project generally located at the northwest of 101st Avenue and 10th Street in Greeley, CO. Terra Forma Solutions, Inc. (TFS) has been retained to provide the aforementioned projection in association with the formation of Metropolitan District(s) for the project.

This projection satisfies the requirements of the City of Greeley request for a Colorado Professional Registered Engineer certifying that such projections were prepared upon the City's construction standards and that such costs are reasonable.

General Conditions and Notes:

- This projection is for the Poudre Heights property.
- Site is generally bound on the south by 10th Street/Hwy 34 Business Route and 257 Spur, on the west by existing industrial uses, east by 101st Avenue and north boundary approximately 5300 feet north of 10th street, see phasing map below.
- Project is currently non-developed other than past oil/gas production, farming, and ranching operations.
- The project is anticipated to be broken into six to eight (6-8) major phases, see plan below (subject to change).
- Offsite infrastructure includes potential connections of roadways, sanitary sewer, domestic water and non-potable water.
- TFS has reviewed project information provided by the owner, HR Green, Aldridge Transportation Services and the City of Greeley.
- TFS has utilized 2020 and 2021 cost projections with the region as a basis for this projection of costs.

Description of Possible Public Improvements:***Streets generally include:***

Curbs, gutters, culverts, storm drainage conveyance facilities, sidewalks, bridges, parking facilities, paving, lighting, grading, grading stabilization, utility relocations required for public right-of-way, monumentation, signage, pavement markings, traffic control devices, intersection control (traffic signals, roundabouts, or others deemed necessary), snow removal, streetscapes and related landscaping, irrigation improvements, together with all necessary, incidental and appurtenances facilities, equipment, land and easements and extensions of and improvements to such facilities. Cost of obtain necessary easements are not included in this projection.

Water:

Potable and non-potable water supply improvements, including water rights, storage facilities, transmission and distribution lines, pumping stations, fire hydrants, meters, facilities, equipment, and related landscaping and irrigation improvements, together with all necessary, incidental and appurtenant facilities, equipment, land and easements, and extensions of and improvements to such facilities. Cost of obtain necessary easements are not included in this projection.

Storm and Sanitary Sewer:

Storm and sanitary sewer collection and transmission improvements, including storage facilities, collection mains and laterals, pumping stations, lift stations, transmission lines, storm sewer, flood, water quality and surface drainage facilities and systems, and related landscaping and irrigation improvements, together with all necessary, incidental and appurtenant facilities, equipment, land and easements, and extensions of and improvements to such facilities. Cost of obtain necessary easements are not included in this projection.

Amenities, Parks and Recreation:

Public park, open space and recreation facilities or services, including parks, bike paths, pedestrian ways, public plazas and courtyards, water features, signage, monumentation, art, gardens, picnic areas, recreational facilities, playground equipment/areas, park shelters, public area landscaping and weed control, streetscaping, outdoor lighting of all types, and related landscaping and irrigation improvements, together with all necessary, incidental and appurtenant facilities, equipment, land and easements, and extensions of and improvements to such facilities. Cost of obtain necessary easements are not included in this projection.

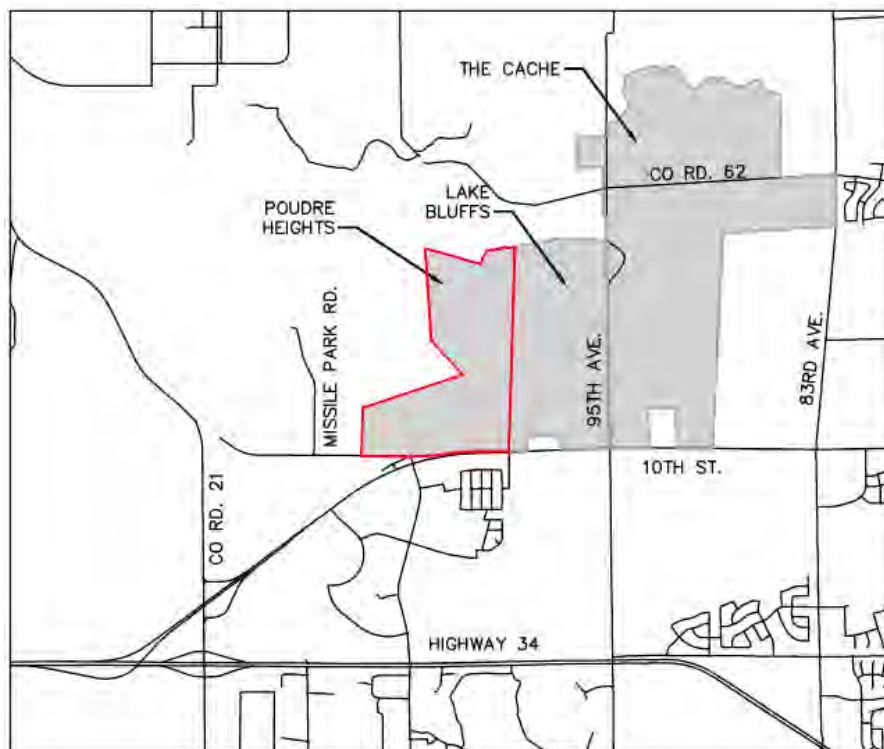
Timing:

Construction of infrastructure improvements and incurrence of the projected costs is anticipated to commence in late 2021 and continue through 2040 or as adjusted for market conditions.

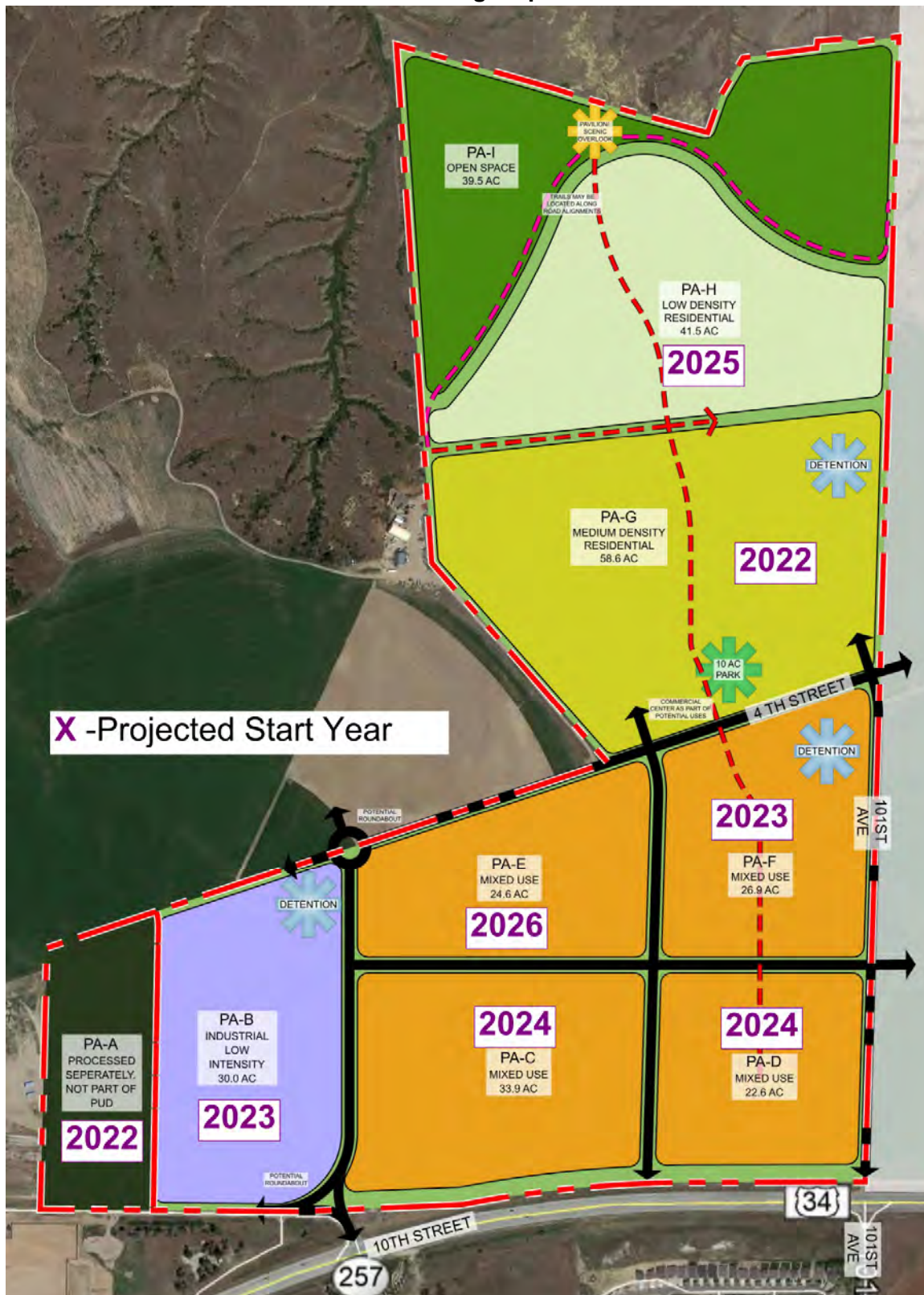
Matrix of Ownership and Maintenance

Item	District	HOA*	Greeley
Internal Pocket Parks	O	M	
Neighborhood and Community Parks (Until City Acceptance)	O	M	
Recreation Amenities/Facility	O	M	
Roadway Landscape and Tracts	O	M	
Open Space			OM
Detention Ponds	O	M	
Private Storm Drainage	O	M	
Non Potable Infrastructure			OM
Public Roadways			OM
Public Water, Non Potable Water, Sanitary Sewer, Storm Drainage			OM
Median Landscaping in Arterial Roadways			OM
Traffic Signals, Lighting, Signage			OM
O = Ownership M = Maintenance OM = Ownership and Maintenance * If HOA is not incorporated then the District will take the responsibilities shown.			

Vicinity Map (PUD Area)



Phasing Map





Please feel free to contact me at 303-257-7653 or todd@terraformas.com with any questions or comments related to this document.



Todd A. Johnson, P.E., President
For and on behalf of:
Terra Forma Solutions, Inc.

Attachments/Exhibits
cc: Jennifer Ivey, ISP Law
Brian Smerud, Poudre Bay Partners

POUDRE HEIGHTS				
Metropolitan District Infrastructure Projection of Probable Costs				
March 13, 2021				
Overall Summary 1189 \$ 96,619,105				
Overall Project		Cost	Start	Comments
257 Spur	\$	4,000,173	2022	50% Share PP Signal
10th Street	\$	4,104,392	2023	50% Share 101st Inters.
8th Street	\$	5,253,631	2024	
4th Street	\$	12,583,225	2022	50% Share N Property
4th Street (West Portion)	\$	1,707,197	2024	50% Share N Property
C/D/E/F Collector	\$	2,006,256	2024	
101st Avenue	\$	4,579,405	2023	50% Share w/Lake Bluff
Sanitary Sewer Trunkline & Outfall	\$	6,411,824	2022	PH 30% Share
Storm Drainage	\$	5,000,000	2022	Miscellaneous
Non-Potable (Projection Only, No Plan)	\$	3,500,000	2023	Miscellaneous
Amenities/Parks/Open Space	\$	9,500,000	2022	Miscellaneous
\$ 58,646,103 Overall Total				
Planning Areas	Units	Cost	Start	Comments
A	0	\$ 1,317,723	2022	Industrial
B	0	\$ 2,661,102	2023	Industrial
C	0	\$ 4,478,726	2024	Commercial
D	392	\$ 4,924,887	2024	Residential MF/TH
E	0	\$ 1,964,264	2026	Industrial
F	320	\$ 4,660,077	2023	Residential MF/TH
G	352	\$ 12,367,628	2022	Residential SFA/SFD
H	125	\$ 4,728,595	2025	Residential SFA
I	0	\$ 870,000	2027	Open Space
1189 \$ 37,973,002 Planning Area Totals				



POUDRE HEIGHTS 257 Spur					
March 13, 2021					
PROJECT TOTAL	UNIT PRICE	UNITS	QTY	COST	COMMENTS
PROFESSIONAL SERVICES				4,000.173	
AGENCY REVIEW FEES	\$ 27,587.40	LS	1	\$ 27,587.40	1.00%
PLANNING	\$ 27,587.40	LS	1	\$ 27,587.40	1.00%
ENGINEERING	\$ 165,524.39	LS	1	\$ 165,524.39	6.00%
LANDSCAPE ARCHITECTURE	\$ 68,968.49	LS	1	\$ 68,968.49	2.50%
STAKING	\$ 68,968.49	LS	1	\$ 68,968.49	2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 68,968.49	LS	1	\$ 68,968.49	2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 20,690.55	LS	1	\$ 20,690.55	0.75%
SUBTOTAL	#DIV/0!			\$ 448,295	
GRADING					
TOPSOIL	\$ 2.10	CY	2667	\$ 5,600.00	10%
OVERLOT GRADING	\$ 2.25	CY	26667	\$ 60,000.00	3
SUBEXCAVATION	\$ 2.25	CY	0	\$ -	
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -	0%
SUBTOTAL	#DIV/0!			\$ 65,600	
EROSION CONTROL					
EROSION CONTROL	\$ 45.00	LF	2000	\$ 90,000.00	
SUBTOTAL	#DIV/0!			\$ 90,000	
UTILITY TRENCHING					
UTILITY TRENCHING	\$ -	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ -	
UTILITY CHARGES					
ELECTRIC DISTRIBUTION	\$ 25.00	LF	2000	\$ 50,000.00	Street Lights
GAS DISTRIBUTION	\$ -	LF	2000	\$ -	Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$ -	LF	2000	\$ -	Bury/Relocations
TRAFFIC SIGNAL	\$ 350,000.00	LS	1.0	\$ 350,000.00	4th St Intersection
STREET LIGHTS	\$ 10,250.00	EA	12	\$ 123,000.00	175
SUBTOTAL	#DIV/0!			\$ 523,000	
SANITARY SEWER IMPROVEMENTS					
4" SDR UD	\$ 22.00	LF	0	\$ -	
8" SDR UD	\$ 28.00	LF	0	\$ -	
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	0	\$ -	0%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	0	\$ -	0%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -	0%
6" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -	0%
EXTRA DEPTH 10' - 12'	\$ 2.25	LF	0	\$ -	20%
EXTRA DEPTH 12' - 14'	\$ 7.10	LF	0	\$ -	10%
EXTRA DEPTH 14' - 16'	\$ 12.36	LF	0	\$ -	5%
EXTRA DEPTH 16' - 18'	\$ 13.23	LF	0	\$ -	5%
EXTRA DEPTH 18' - 20'	\$ 52.50	LF	0	\$ -	0%
EXTRA DEPTH 20' - 22'	\$ 64.60	LF	0	\$ -	0%
ROCK CUT	\$ 47.15	CY	0	\$ -	0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -	
M.H. - 4" DIA (0-10')	\$ 4,300.00	EA	0	\$ -	300
M.H. - 5" DIA (0-10')	\$ 7,100.00	EA	0	\$ -	300
M.H. - EXTRA DEPTH	\$ 118.00	VF	0	\$ -	5
6" CLEANOUT ASSEMBLY	\$ 940.00	EA	0	\$ -	
4" PVC SERVICE (40" AVG)	\$ 1,760.00	EA	0	\$ -	
MARKER POSTS	\$ 180.00	EA	0	\$ -	0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -	
AIR TEST MAIN	\$ 0.70	LF	0	\$ -	
DEFLECTION TEST MAIN	\$ 0.86	LF	0	\$ -	
JETT SEWER MAINLINE	\$ 0.81	LF	0	\$ -	
TV SEWER LINE	\$ 0.91	LS	0	\$ -	
SPECIAL	\$ -	LS	0.00	\$ -	
SUBTOTAL	#DIV/0!			\$ -	
STORM DRAINAGE IMPROVEMENTS					
15" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 80.25	LF	0	\$ -	0%
18" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 102.15	LF	500	\$ 51,075.00	25%
21" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 109.65	LF	0	\$ -	0%
24" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 123.65	LF	200	\$ 24,730.00	10%
30" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 149.45	LF	0	\$ -	0%
36" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 176.30	LF	0	\$ -	0%
42" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 213.93	LF	0	\$ -	0%
48" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 250.50	LF	0	\$ -	0%
54" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 295.63	LF	0	\$ -	0%
60" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 277.00	LF	0	\$ -	0%
72" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 376.40	LF	0	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 424.63	LF	0	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 510.63	LF	0	\$ -	0%
96" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 695.00	LF	0	\$ -	0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -	0%
EXTRA DEPTH 12'-14'	\$ 14.96	VF	0	\$ -	0%
EXTRA DEPTH 14'-16'	\$ 25.00	VF	0	\$ -	0%
EXTRA DEPTH 16'-18'	\$ 36.01	VF	0	\$ -	0%
ROCK CUT	\$ 48.54	CY	0	\$ -	0%
24" FES	\$ 3,635.00	EA	0	\$ -	
30" FES	\$ 5,375.00	EA	0	\$ -	
36" FES	\$ 6,235.00	EA	0	\$ -	
42" FES	\$ 6,450.00	EA	0	\$ -	
48" FES	\$ 7,310.00	EA	0	\$ -	
54" FES	\$ 7,740.00	EA	0	\$ -	
60" FES	\$ 9,785.00	EA	0	\$ -	
4" Diameter MH (0-8') w/24" Cover	\$ 4,975.00	EA	2	\$ 9,950.00	400
5" Diameter MH (0-8') w/24" Cover	\$ 6,020.00	EA	0	\$ -	200
6" MH (0-8' depth) & 24" Cover	\$ 7,740.00	EA	0	\$ -	200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -	200
Riprap, Grouted (Type M/L/H)	\$ 300.00	CY	0	\$ -	
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -	
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -	
Riprap, Placed (Type M/L/H)	\$ 87.50	TN	0	\$ -	
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -	
Soil Riprap Placed	\$ 80.90	TN	0	\$ -	
5' Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	2	\$ 15,440.00	
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -	
10' Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	2	\$ 20,140.00	
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -	
15' Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	0	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -	
20' Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	0	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -	
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -	
Extra depth	\$ 362.00	EA	0	\$ -	



POUDRE HEIGHTS 257 Spur					
March 13, 2021					
PROJECT TOTAL					\$ -4,000,173
Double No. 13 & 16	\$ 5,130.00	EA	0	\$ -	
Extra depth	\$ 525.00	EA	0	\$ -	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	
Extra depth	\$ 726.00	EA	0	\$ -	
Type C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	
Extra Depth	\$ 355.00	EA	0	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	
SPECIAL	\$ 25,000.00	LS	0.00	\$ -	Pond
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 121,335	
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	0	\$ -	0%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	2000	\$ 147,234.15	100%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	0	\$ -	250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	2.666667	\$ 52,223.50	750
20" BFV Valve W/Box & Restraints	\$ 15,102.68	EA	0	\$ -	750
24" BFV Valve W/Box & Restraints	\$ 19,753.13	EA	0	\$ -	750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	750
Vaults for BFV	\$ 23,703.75	EA	3	\$ 63,210.00	
Fire Hydrants	\$ 9,030.00	EA	4	\$ 36,120.00	500
8" Fittings	\$ 671.88	EA	0	\$ -	500
10" Fittings	\$ 836.50	EA	0	\$ -	750
12" Fittings	\$ 1,290.00	EA	0	\$ -	250
16" Fittings	\$ 1,667.48	EA	3	\$ 5,062.44	750
20" Fittings	\$ 3,724.88	EA	0	\$ -	750
24" Fittings	\$ 4,265.86	EA	0	\$ -	750
30" Fittings	\$ 4,910.06	EA	0	\$ -	750
Remove Plug & Tie In	\$ 2,031.75	EA	0	\$ -	
Tie in after testing	\$ 1,612.50	EA	0	\$ -	
Clear Water & Pressure Test	\$ 4,837.50	EA	0.0	\$ -	
MARKER POSTS	\$ 145.13	EA	0	\$ -	100
WATER SERVICE	\$ 2,821.88	EA	0	\$ -	
SPECIAL	\$ 75,000.00	LS	1.00	\$ 75,000.00	Bore
SUBTOTAL	#DIV/0!			\$ 378,850	
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ -	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
ROAD BASE - 6"	\$ 6.80	SY	15111	\$ 99,733.33	68.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	-
PAVING - 6"	\$ 25.50	SY	0	\$ -	-
PAVING - 10"	\$ 42.50	SY	13333	\$ 566,666.57	60.0
PAVING - SUBGRADE PREPARATION	\$ 4.60	SY	13333	\$ 61,333.33	
SUBEXCAVATION	\$ 2.52	CY	13333	\$ 33,600.00	3.0
PAVING 2	\$ 11.30	SY	3000	\$ 33,900.00	2" Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	10000	\$ 10,700.00	5.0
SIGNAGE	\$ 450.00	EA	8	\$ 3,600.00	250
TRAFFIC CONTROL	\$ 35,000.00	LS	1	\$ 35,000.00	4
SLEEVES	\$ 16.85	LF	1260	\$ 21,568.00	
RAISE WATER VALVES	\$ 250.00	EA	0	\$ -	
RAISE MANHOLES	\$ 800.00	EA	5	\$ 3,733.33	
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 869,835	
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
GUN CLUB ROAD CURB & GUTTER - 30"	\$ 7.95	LF	0	\$ -	
CURB & GUTTER - 1' GUTTER	\$ 19.75	LF	4000	\$ 79,000.00	2
CURB & GUTTER - 2' GUTTER	\$ 20.70	LF	4000	\$ 82,800.00	2
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	
ALLEYS - 8" CONCRETE	\$ 10.13	SF	0	\$ -	16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	8000	\$ 18,000.00	
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	3.0
CROSS PANS	\$ 10.15	SF	0	\$ -	
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	8	\$ 30,320.00	
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	0	\$ -	
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	
5' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	
8' SIDEWALK - 6"	\$ 5.25	SF	32000	\$ 168,000.00	
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 378,120	
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
OPEN SPACE	\$ 3.20	SF	0	\$ -	
FORMAL - STREETS	\$ 8.30	SF	40000	\$ 332,000.00	20
FORMAL - PARKS	\$ 8.30	SF	0	\$ -	
MONUMENTS	\$ -	LS	0	\$ -	
FENCING	\$ 14.50	SF	0	\$ -	
TRAILS	\$ 5.25	SF	0	\$ -	
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	
AMENITY	\$ -	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 332,000	
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
EXPECTED REPAIRS AND MAINTENANCE		LOT			
LETTERS OF CREDIT/BONDS	\$ 2,758,740	LS	0.8%	\$ 20,691	
WARRANTY	\$ 2,758,740	LS	3.0%	\$ 82,762	
MOBILIZATION	\$ 2,758,740	LS	5.0%	\$ 137,937	
CONTINGENCY	\$ 2,758,740	LS	20.0%	\$ 551,748	
SUBTOTAL	#DIV/0!			\$ 793,138	
PROJECT TOTAL	#DIV/0!			\$ -4,000,173	



POUDRE HEIGHTS 10th Street						
March 13, 2021						
PROJECT TOTAL				\$	4,104,382	
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST		COMMENTS
AGENCY REVIEW FEES	\$ 28,306.15	LS	1	\$ 28,306.15		1.00%
PLANNING	\$ 28,306.15	LS	1	\$ 28,306.15		1.00%
ENGINEERING	\$ 169,836.90	LS	1	\$ 169,836.90		6.00%
LANDSCAPE ARCHITECTURE	\$ 70,765.38	LS	1	\$ 70,765.38		2.50%
STAKING	\$ 70,765.38	LS	1	\$ 70,765.38		2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 70,765.38	LS	1	\$ 70,765.38		2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 21,229.61	LS	1	\$ 21,229.61		0.75%
SUBTOTAL	#DIV/0!			\$ 459,975		
GRADING	UNIT PRICE	UNITS	QTY	COST		COMMENTS
TOPSOIL	\$ 2.10	CY	778	\$ 1,633.33		10%
OVERLOT GRADING	\$ 2.25	CY	7778	\$ 17,500.00		1
SUBEXCAVATION	\$ 2.25	CY	0	\$ -		
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -		0%
SUBTOTAL	#DIV/0!			\$ 19,133		
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST		COMMENTS
EROSION CONTROL	\$ 10.00	LF	3500	\$ 35,000.00		
SUBTOTAL	#DIV/0!			\$ 35,000		
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST		COMMENTS
UTILITY TRENCHING	\$ -	LF	0	\$ -		
SUBTOTAL	#DIV/0!			\$ -		
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST		COMMENTS
ELECTRIC DISTRIBUTION	\$ 25.00	LF	3500	\$ 87,500.00		Street Lights
GAS DISTRIBUTION	\$ -	LF	3500	\$ -		Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$ -	LF	3500	\$ -		Bury/Relocations
TRAFFIC SIGNAL	\$ 1,200,000.00	LS	1.0	\$ 1,200,000.00		PP & 10st Signal
STREET LIGHTS	\$ 10,250.00	EA	20	\$ 205,000.00		175
SUBTOTAL	#DIV/0!			\$ 1,492,500		
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST		COMMENTS
4" SDR UD	\$ 22.00	LF	0	\$ -		
8" SDR UD	\$ 28.00	LF	0	\$ -		
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	0	\$ -		0%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	0	\$ -		0%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -		0%
6" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -		0%
EXTRA DEPTH 10'-12'	\$ 2.25	LF	0	\$ -		20%
EXTRA DEPTH 12'-14'	\$ 7.10	LF	0	\$ -		10%
EXTRA DEPTH 14'-16'	\$ 12.36	LF	0	\$ -		5%
EXTRA DEPTH 16'-18'	\$ 13.23	LF	0	\$ -		5%
EXTRA DEPTH 18'-20'	\$ 52.50	LF	0	\$ -		0%
EXTRA DEPTH 20'-22'	\$ 64.60	LF	0	\$ -		0%
ROCK CUT	\$ 47.15	CY	0	\$ -		0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -		
M.H. - 4" DIA (0-10')	\$ 4,300.00	EA	0	\$ -		300
M.H. - 5" DIA (0-10')	\$ 7,100.00	EA	0	\$ -		300
M.H. - EXTRA DEPTH	\$ 118.00	VF	0	\$ -		5
6" CLEANOUT ASSEMBLY	\$ 940.00	EA	0	\$ -		
MARKER POSTS	\$ 180.00	EA	0	\$ -		0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -		
AIR TEST MAIN	\$ 0.70	LF	0	\$ -		
DEFLECTION TEST MAIN	\$ 0.86	LF	0	\$ -		
JETT SEWER MAINLINE	\$ 0.81	LF	0	\$ -		
TV SEWER LINE	\$ 0.91	LS	0	\$ -		
SPECIAL	\$ -	LS	0.00	\$ -		
SUBTOTAL	#DIV/0!			\$ -		
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST		COMMENTS
15" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 80.25	LF	0	\$ -		0%
18" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 102.15	LF	525	\$ 53,628.75		15%
21" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 109.85	LF	0	\$ -		0%
24" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 123.65	LF	525	\$ 64,916.25		15%
30" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 149.45	LF	0	\$ -		0%
36" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 176.30	LF	0	\$ -		0%
42" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 213.93	LF	0	\$ -		0%
48" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 250.50	LF	0	\$ -		0%
54" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 295.63	LF	0	\$ -		0%
60" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 277.00	LF	0	\$ -		0%
72" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 375.40	LF	0	\$ -		0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 424.63	LF	0	\$ -		0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 510.63	LF	0	\$ -		0%
96" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 695.00	LF	0	\$ -		0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -		0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -		0%
EXTRA DEPTH 12'-14'	\$ 14.96	VF	0	\$ -		0%
EXTRA DEPTH 14'-16'	\$ 25.00	VF	0	\$ -		0%
EXTRA DEPTH 16'-18'	\$ 36.01	VF	0	\$ -		0%
ROCK CUT	\$ 48.54	CY	0	\$ -		0%
24" FES	\$ 3,635.00	EA	0	\$ -		
30" FES	\$ 5,375.00	EA	0	\$ -		
36" FES	\$ 6,235.00	EA	0	\$ -		
42" FES	\$ 6,450.00	EA	0	\$ -		
48" FES	\$ 7,310.00	EA	0	\$ -		
54" FES	\$ 7,740.00	EA	0	\$ -		
60" FES	\$ 9,785.00	EA	0	\$ -		
4" Diameter MH (0-8') w/24" Cover	\$ 4,975.00	EA	3	\$ 14,925.00		400
5" Diameter MH (0-8') w/24" Cover	\$ 6,020.00	EA	0	\$ -		200
6" MH (0-8' depth) & 24" Cover	\$ 7,740.00	EA	0	\$ -		200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -		200
Riprap, Grouted (Type ML/H)	\$ 300.00	CY	0	\$ -		
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -		
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -		
Riprap, Placed (Type ML/H)	\$ 97.50	TN	0	\$ -		
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -		
Soil Riprap Placed	\$ 80.90	TN	0	\$ -		
5" Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	2	\$ 15,440.00		
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -		
10" Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	2	\$ 20,140.00		
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -		
15" Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	0	\$ -		
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -		
20" Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	0	\$ -		
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -		
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -		
Extra depth	\$ 362.00	EA	0	\$ -		
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -		



POUDRE HEIGHTS 10th Street					
March 13, 2021					
PROJECT TOTAL					\$ 4,104,392
Extra depth	\$ 525.00	EA	0	\$ -	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	
Extra depth	\$ 728.00	EA	0	\$ -	
Type - C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	
Extra Depth	\$ 365.00	EA	0	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	
SPECIAL	\$ 25,000.00	LS	0.00	\$ -	Pond
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 169,050	
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	0	\$ -	0%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	0	\$ -	250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	0	\$ -	750
20" BFV Valve W/Box & Restraints	\$ 15,102.68	EA	0	\$ -	750
24" BFV Valve W/Box & Restraints	\$ 19,763.13	EA	0	\$ -	750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	750
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	
8" Hydrants	\$ 9,030.00	EA	0	\$ -	500
8" Fittings	\$ 671.88	EA	0	\$ -	500
10" Fittings	\$ 838.50	EA	0	\$ -	750
12" Fittings	\$ 1,290.00	EA	0	\$ -	250
16" Fittings	\$ 1,667.48	EA	0	\$ -	750
20" Fittings	\$ 3,724.88	EA	0	\$ -	750
24" Fittings	\$ 4,265.86	EA	0	\$ -	750
30" Fittings	\$ 4,910.06	EA	0	\$ -	750
Remove Plug & Tie In	\$ 2,031.75	EA	0	\$ -	
Tie in after testing	\$ 1,612.50	EA	0	\$ -	
CI Clear Water & Pressure Test	\$ 4,837.50	EA	0.0	\$ -	
MARKER POSTS	\$ 145.13	EA	0	\$ -	100
SPECIAL	\$ 75,000.00	LS	0.00	\$ -	Bore
SUBTOTAL	#DIV/0!			\$ -	
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ -	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
ROAD BASE - 6"	\$ 6.80	SY	9333	\$ 61,800.00	24.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	-
PAVING - 6"	\$ 25.50	SY	0	\$ -	-
PAVING - 10"	\$ 42.50	SY	6222	\$ 264,444.44	16.0
PAVING - SUBGRADE PREPARATION	\$ 4.80	SY	6222	\$ 28,622.22	
SUBEXCAVATION	\$ 2.52	CY	6222	\$ 15,680.00	3.0
PAVING 2	\$ 11.30	SY	0	\$ -	2' Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	7000	\$ 7,490.00	2.0
SIGNAGE	\$ 450.00	EA	14	\$ 6,300.00	250
TRAFFIC CONTROL	\$ 35,000.00	LS	1	\$ 35,000.00	
SLEEVES	\$ 16.85	LF	0	\$ -	-
RAISE WATER VALVES	\$ 250.00	EA	0	\$ -	
RAISE MANHOLES	\$ 800.00	EA	3	\$ 2,400.00	
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 421,537	
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
CURB & GUTTER - 1' GUTTER	\$ 19.75	LF	0	\$ -	-
CURB & GUTTER - 2' GUTTER	\$ 20.70	LF	3500	\$ 72,450.00	1
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	-
ALLEYS - 6" CONCRETE	\$ 10.43	SF	0	\$ -	16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	3500	\$ 7,675.00	
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	3.0
CROSS PANS	\$ 10.15	SF	0	\$ -	
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	8	\$ 30,320.00	
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	0	\$ -	
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	
5' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	
8' SIDEWALK - 6"	\$ 5.25	SF	28000	\$ 147,000.00	
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 257,645	
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
OPEN SPACE	\$ 3.20	SF	0	\$ -	
FORMAL - STREETS	\$ 8.30	SF	52500	\$ 435,750.00	15
FORMAL - PARKS	\$ 8.30	SF	0	\$ -	
MONUMENTS	-	LS	0	\$ -	
FENCING	\$ 14.50	SF	0	\$ -	
TRAILS	\$ 5.25	SF	0	\$ -	
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	
AMENITY	-	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 435,750	
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
LETTERS OF CREDIT/BONDS	\$ 2,830.615	LS	0.6%	\$ 21,230	
WARRANTY	\$ 2,830.615	LS	3.0%	\$ 84,918	
MOBILIZATION	\$ 2,830.615	LS	5.0%	\$ 141,531	
CONTINGENCY	\$ 2,830.615	LS	20.0%	\$ 566,123	
SUBTOTAL	#DIV/0!			\$ 813,802	
PROJECT TOTAL	#DIV/0!			\$ 4,104,392	



POUDRE HEIGHTS 8th Street						
March 13, 2021						
PROJECT TOTAL				\$	5,253,631	
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
AGENCY REVIEW FEES	\$ 36,231.94	LS	1	\$ 36,231.94		1.00%
PLANNING	\$ 36,231.94	LS	1	\$ 36,231.94		1.00%
ENGINEERING	\$ 217,391.65	LS	1	\$ 217,391.65		6.00%
LANDSCAPE ARCHITECTURE	\$ 90,579.85	LS	1	\$ 90,579.85		2.50%
STAKING	\$ 90,579.85	LS	1	\$ 90,579.85		2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 90,579.85	LS	1	\$ 90,579.85		2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 27,173.96	LS	1	\$ 27,173.96		0.75%
SUBTOTAL	#DIV/0!			\$ 588,769		
GRADING	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
TOPSOIL	\$ 2.10	CY	3200	\$ 6,720.00		10%
OVERLOT GRADING	\$ 2.25	CY	32000	\$ 72,000.00		3
SUBEXCAVATION	\$ 2.25	CY	0	\$ -		
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -		0%
SUBTOTAL	#DIV/0!			\$ 78,720		
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
EROSION CONTROL	\$ 30.00	LF	2400	\$ 72,000.00		
SUBTOTAL	#DIV/0!			\$ 72,000		
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
UTILITY TRENCHING	\$ -	LF	0	\$ -		
SUBTOTAL	#DIV/0!			\$ -		
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
ELECTRIC DISTRIBUTION	\$ 25.00	LF	2400	\$ 60,000.00	Street Lights	
GAS DISTRIBUTION	\$ -	LF	2400	\$ -	Bury/Relocations	
TELECOMMUNICATION DISTRIBUTION	\$ -	LF	2400	\$ -	Bury/Relocations	
TRAFFIC SIGNAL	\$ 425,000.00	LS	1.0	\$ 425,000.00	Collector/Collector signal	
STREET LIGHTS	\$ 10,250.00	EA	14	\$ 143,500.00		17%
SUBTOTAL	#DIV/0!			\$ 628,500		
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
4" SDR UD	\$ 22.00	LF	2400	\$ 52,800.00		
8" SDR UD	\$ 28.00	LF	0	\$ -		
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	0	\$ -		0%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	2400	\$ 146,400.00		100%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -		0%
6" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -		0%
EXTRA DEPTH 10' - 12'	\$ 2.25	LF	480	\$ 1,080.00		20%
EXTRA DEPTH 12' - 14'	\$ 7.10	LF	240	\$ 1,704.00		10%
EXTRA DEPTH 14' - 16'	\$ 12.36	LF	120	\$ 1,483.20		5%
EXTRA DEPTH 16' - 18'	\$ 13.23	LF	120	\$ 1,587.60		5%
EXTRA DEPTH 18' - 20'	\$ 52.50	LF	0	\$ -		0%
EXTRA DEPTH 20' - 22'	\$ 64.60	LF	0	\$ -		0%
ROCK CUT	\$ 47.15	CY	0	\$ -		0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -		
M.H. - 4" DIA (0-10')	\$ 4,300.00	EA	0	\$ -		300
M.H. - 5" DIA (0-10')	\$ 7,100.00	EA	8	\$ 56,800.00		300
M.H. - EXTRA DEPTH	\$ 118.00	VF	40	\$ 4,720.00		5
6" CLEANOUT ASSEMBLY	\$ 940.00	EA	8	\$ 7,520.00		
MARKER POSTS	\$ 180.00	EA	0	\$ -		0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -		
AIR TEST MAIN	\$ 0.70	LF	2400	\$ 1,680.00		
DEFLECTION TEST MAIN	\$ 0.86	LF	2400	\$ 2,064.00		
JETT SEWER MAINLINE	\$ 0.81	LF	2400	\$ 1,944.00		
TV SEWER LINE	\$ 0.91	LS	2400	\$ 2,184.00		
SPECIAL	\$ -	LS	0.00	\$ -		
SUBTOTAL	#DIV/0!			\$ 281,967		
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
15" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 80.25	LF	0	\$ -		0%
18" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 102.15	LF	120	\$ 12,258.00		5%
21" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 109.55	LF	0	\$ -		0%
24" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 123.65	LF	240	\$ 29,676.00		10%
30" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 149.45	LF	0	\$ -		0%
36" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 176.30	LF	240	\$ 42,312.00		10%
42" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 213.93	LF	120	\$ 25,671.60		5%
48" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 250.50	LF	120	\$ 30,060.00		5%
54" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 295.63	LF	120	\$ 35,475.60		5%
60" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 277.00	LF	120	\$ 33,240.00		5%
72" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 375.40	LF	0	\$ -		0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 424.63	LF	0	\$ -		0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 510.63	LF	0	\$ -		0%
96" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 695.00	LF	0	\$ -		0%
EXTRA DEPTH 8' - 10'	\$ 2.88	VF	0	\$ -		0%
EXTRA DEPTH 10' - 12'	\$ 7.59	VF	0	\$ -		0%
EXTRA DEPTH 12' - 14'	\$ 14.96	VF	0	\$ -		0%
EXTRA DEPTH 14' - 16'	\$ 25.00	VF	0	\$ -		0%
EXTRA DEPTH 16' - 18'	\$ 36.01	VF	0	\$ -		0%
ROCK CUT	\$ 48.54	CY	0	\$ -		0%
24" FES	\$ 3,635.00	EA	0	\$ -		
30" FES	\$ 5,375.00	EA	0	\$ -		
36" FES	\$ 6,235.00	EA	0	\$ -		
42" FES	\$ 6,450.00	EA	0	\$ -		
48" FES	\$ 7,310.00	EA	0	\$ -		
54" FES	\$ 7,740.00	EA	0	\$ -		
60" FES	\$ 9,785.00	EA	0	\$ -		
4" Diameter MH (0-8') w/24" Cover	\$ 4,975.00	EA	1	\$ 4,975.00		400
5" Diameter MH (0-8') w/24" Cover	\$ 6,020.00	EA	2	\$ 12,040.00		200
6" MH (0-8' depth) & 24" Cover	\$ 7,740.00	EA	2	\$ 15,480.00		200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -		200
Riprap, Grouted (Type MLH)	\$ 300.00	CY	0	\$ -		
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -		
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -		
Riprap, Placed (Type MLH)	\$ 97.50	TN	0	\$ -		
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -		
Soil Riprap Placed	\$ 80.90	TN	0	\$ -		
5" Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	2	\$ 15,440.00		
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -		
10" Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	2	\$ 20,140.00		
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -		
15" Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	2	\$ 26,270.00		
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -		
20" Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	2	\$ 35,000.00		
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -		
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -		
Extra depth	\$ 362.00	EA	0	\$ -		
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -		



POUDRE HEIGHTS 8th Street					
March 13, 2021					
PROJECT TOTAL					\$ 5,253,631
Extra depth	\$ 525.00	EA	0	\$ -	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	
Extra depth	\$ 728.00	EA	0	\$ -	
Type C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	
Extra Depth	\$ 365.00	EA	0	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	
SPECIAL	\$ 50,000.00	LS	1.00	\$ 50,000.00	
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 366,490	
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	0	\$ -	0%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	2400	\$ 176,680.98	100%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	0	\$ -	250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	3.2	\$ 62,688.20	750
20" BFV Valve W/Box & Restraints	\$ 15,102.68	EA	0	\$ -	750
24" BFV Valve W/Box & Restraints	\$ 19,763.13	EA	0	\$ -	750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	750
Vaults for BFV	\$ 23,703.75	EA	3	\$ 75,862.00	
Fine Hydrants	\$ 9,030.00	EA	5	\$ 45,150.00	500
8" Fittings	\$ 671.88	EA	0	\$ -	500
10" Fittings	\$ 838.50	EA	0	\$ -	750
12" Fittings	\$ 1,260.00	EA	0	\$ -	250
16" Fittings	\$ 1,667.48	EA	4	\$ 6,749.93	750
20" Fittings	\$ 3,724.88	EA	0	\$ -	750
24" Fittings	\$ 4,265.86	EA	0	\$ -	750
30" Fittings	\$ 4,910.06	EA	0	\$ -	750
Remove Plug & Tie In	\$ 2,031.75	EA	0	\$ -	
Tie in after testing	\$ 1,612.50	EA	0	\$ -	
CI Clear Water & Pressure Test	\$ 4,837.50	EA	0.0	\$ -	
MARKER POSTS	\$ 145.13	EA	0	\$ -	100
SPECIAL	\$ 75,000.00	LS	0.00	\$ -	
SUBTOTAL	#DIV/0!			\$ 367,101	
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ -	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
ROAD BASE - 6"	\$ 6.80	SY	14933	\$ 98,560.00	56.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	-
PAVING - 6"	\$ 25.50	SY	0	\$ -	-
PAVING - 10"	\$ 42.50	SY	12800	\$ 544,000.00	48.0
PAVING - SUBGRADE PREPARATION	\$ 4.80	SY	12800	\$ 58,880.00	
SUBEXCAVATION	\$ 2.52	CY	12800	\$ 32,256.00	3.0
PAVING 2"	\$ 11.30	SY	0	\$ -	2" Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	9600	\$ 10,272.00	4.0
SIGNAGE	\$ 450.00	EA	10	\$ 4,520.00	250
TRAFFIC CONTROL	\$ 15,000.00	LS	1	\$ 15,000.00	
SLEEVES	\$ 16.85	LF	1280	\$ 21,568.00	4
RAISE WATER VALVES	\$ 250.00	EA	8	\$ 2,000.00	
RAISE MANHOLES	\$ 800.00	EA	16	\$ 12,800.00	
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 799,656	
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
CURB & GUTTER - 1" GUTTER	\$ 19.75	LF	0	\$ -	-
CURB & GUTTER - 2" GUTTER	\$ 20.70	LF	4800	\$ 99,360.00	2
CURB & GUTTER - 2" MOUNTABLE	\$ 27.55	LF	0	\$ -	-
ALLEYS - 6" CONCRETE	\$ 10.43	SF	0	\$ -	16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	4800	\$ 10,800.00	
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	3.0
CROSS PANS	\$ 10.15	SF	0	\$ -	
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	24	\$ 90,960.00	
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	4	\$ 6,400.00	
4" SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	
5" SIDEWALK - 6"	\$ 5.25	SF	12000	\$ 63,000.00	
8" SIDEWALK - 6"	\$ 5.25	SF	19200	\$ 100,800.00	
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 371,320	
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
OPEN SPACE	\$ 3.20	SF	0	\$ -	
FORMAL - STREETS	\$ 8.30	SF	78800	\$ 637,440.00	32
FORMAL - PARKS	\$ 8.30	SF	0	\$ -	
MONUMENTS	-	LS	0	\$ -	
FENCING	\$ 14.50	SF	0	\$ -	
TRAILS	\$ 5.25	SF	0	\$ -	
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	
AMENITY	-	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 637,440	
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
LETTERS OF CREDIT/BONDS	\$ 3,623.194	LS	0.8%	\$ 27,174	
WARRANTY	\$ 3,623.194	LS	3.0%	\$ 108,696	
MOBILIZATION	\$ 3,623.194	LS	5.0%	\$ 181,160	
CONTINGENCY	\$ 3,623.194	LS	20.0%	\$ 724,639	
SUBTOTAL	#DIV/0!			\$ 1,041,668	
PROJECT TOTAL	#DIV/0!			\$ 5,253,631	



POUDRE HEIGHTS 4th Street						
March 13, 2021						
PROJECT TOTAL				\$ 12,583,225		
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
AGENCY REVIEW FEES	\$ 86,780.86	LS	1	\$ 86,780.86		1.00%
PLANNING	\$ 86,780.86	LS	1	\$ 86,780.86		1.00%
ENGINEERING	\$ 520,685.18	LS	1	\$ 520,685.18		6.00%
LANDSCAPE ARCHITECTURE	\$ 216,952.16	LS	1	\$ 216,952.16		2.50%
STAKING	\$ 216,952.16	LS	1	\$ 216,952.16		2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 216,952.16	LS	1	\$ 216,952.16		2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 65,085.65	LS	1	\$ 65,085.65		0.75%
SUBTOTAL	#DIV/0!			\$ 1,410,189		
GRADING	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
TOPSOIL	\$ 2.10	CY	9556	\$ 20,066.67		10%
OVERLOT GRADING	\$ 2.25	CY	95556	\$ 215,000.00		3
SUBEXCAVATION	\$ 2.25	CY	0	\$ -		
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -		0%
SUBTOTAL	#DIV/0!			\$ 235,067		
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
EROSION CONTROL	\$ 35.00	LF	4300	\$ 150,500.00		
SUBTOTAL	#DIV/0!			\$ 150,500		
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
UTILITY TRENCHING	\$ -	LF	0	\$ -		
SUBTOTAL	#DIV/0!			\$ -		
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
ELECTRIC DISTRIBUTION	\$ 25.00	LF	4300	\$ 107,500.00	Street Lights	
GAS DISTRIBUTION	\$ -	LF	4300	\$ -	Bury/Relocations	
TELECOMMUNICATION DISTRIBUTION	\$ -	LF	4300	\$ -	Bury/Relocations	
TRAFFIC SIGNAL	\$ 450,000.00	LS	4	\$ 1,800,000.00	8th/4th W/Collector Int Control	
STREET LIGHTS	\$ 10,250.00	EA	25	\$ 256,250.00		175
SUBTOTAL	#DIV/0!			\$ 2,163,750		
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
4" SDR UD	\$ 22.00	LF	0	\$ -		
8" SDR UD	\$ 28.00	LF	0	\$ -		
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	0	\$ -		0%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	0	\$ -		0%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -		0%
6" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -		0%
EXTRA DEPTH 10' - 12'	\$ 2.25	LF	0	\$ -		20%
EXTRA DEPTH 12' - 14'	\$ 7.10	LF	0	\$ -		10%
EXTRA DEPTH 14' - 16'	\$ 12.36	LF	0	\$ -		5%
EXTRA DEPTH 16' - 18'	\$ 13.23	LF	0	\$ -		5%
EXTRA DEPTH 18' - 20'	\$ 52.50	LF	0	\$ -		0%
EXTRA DEPTH 20' - 22'	\$ 64.60	LF	0	\$ -		0%
ROCK CUT	\$ 47.15	CY	0	\$ -		0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -		
M.H. - 4" DIA (0-10')	\$ 4,300.00	EA	0	\$ -		300
M.H. - 5" DIA (0-10')	\$ 7,100.00	EA	0	\$ -		300
M.H. - EXTRA DEPTH	\$ 118.00	VF	0	\$ -		5
6" CLEANOUT ASSEMBLY	\$ 940.00	EA	0	\$ -		
MARKER POSTS	\$ 180.00	EA	0	\$ -		0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -		
AIR TEST MAIN	\$ 0.70	LF	0	\$ -		
DEFLECTION TEST MAIN	\$ 0.86	LF	0	\$ -		
JETT SEWER MAINLINE	\$ 0.81	LF	0	\$ -		
TV SEWER LINE	\$ 0.91	LS	0	\$ -		
SPECIAL	\$ -	LS	0.00	\$ -		
SUBTOTAL	#DIV/0!			\$ -		
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
15" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 80.25	LF	0	\$ -		0%
18" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 102.15	LF	215	\$ 21,962.25		5%
21" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 109.85	LF	0	\$ -		0%
24" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 123.65	LF	430	\$ 53,169.50		10%
30" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 149.45	LF	0	\$ -		0%
36" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 176.30	LF	430	\$ 75,809.00		10%
42" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 213.93	LF	215	\$ 45,994.95		5%
48" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 250.50	LF	215	\$ 53,857.50		5%
54" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 295.63	LF	215	\$ 63,560.45		5%
60" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 277.00	LF	215	\$ 59,555.00		5%
72" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 375.40	LF	0	\$ -		0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 424.63	LF	0	\$ -		0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 510.63	LF	0	\$ -		0%
96" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 695.00	LF	0	\$ -		0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -		0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -		0%
EXTRA DEPTH 12' - 14'	\$ 14.96	VF	0	\$ -		0%
EXTRA DEPTH 14' - 16'	\$ 25.00	VF	0	\$ -		0%
EXTRA DEPTH 16' - 18'	\$ 36.01	VF	0	\$ -		0%
ROCK CUT	\$ 48.54	CY	0	\$ -		0%
24" FES	\$ 3,635.00	EA	0	\$ -		
30" FES	\$ 5,375.00	EA	0	\$ -		
36" FES	\$ 6,235.00	EA	0	\$ -		
42" FES	\$ 6,450.00	EA	0	\$ -		
48" FES	\$ 7,310.00	EA	0	\$ -		
54" FES	\$ 7,740.00	EA	0	\$ -		
60" FES	\$ 9,785.00	EA	0	\$ -		
4" Diameter MH (0-8') w/24" Cover	\$ 4,975.00	EA	2	\$ 9,950.00		400
5" Diameter MH (0-8') w/24" Cover	\$ 6,020.00	EA	4	\$ 24,080.00		200
6" MH (0-8' depth) & 24" Cover	\$ 7,740.00	EA	3	\$ 24,961.50		200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -		200
Riprap, Grouted (Type MLH)	\$ 300.00	CY	0	\$ -		
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -		
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -		
Riprap, Placed (Type MLH)	\$ 97.50	TN	0	\$ -		
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -		
Soil Riprap Placed	\$ 80.90	TN	0	\$ -		
5" Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	2	\$ 15,440.00		
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -		
10" Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	2	\$ 20,140.00		
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -		
15" Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	2	\$ 26,270.00		
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -		
20" Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	2	\$ 35,000.00		
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -		
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -		
Extra depth	\$ 362.00	EA	0	\$ -		
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -		



POUDRE HEIGHTS 4th Street					
March 13, 2021					
PROJECT TOTAL					\$ 12,583,225
Extra depth	\$ 525.00	EA	0	\$ -	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	
Extra depth	\$ 728.00	EA	0	\$ -	
Type - C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	
Extra Depth	\$ 365.00	EA	0	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	
SPECIAL	\$ 100,000.00	LS	1.00	\$ 100,000.00	
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 629,750	
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	2150	\$ 129,430.00	50%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	2150	\$ 158,276.71	50%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	500
10" MJ Gate Valve W/Box & Restraints	\$ 3,606.15	EA	0	\$ -	750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	9	\$ 40,787.38	250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	2,866.67	\$ 56,140.26	750
20" BFV Valve W/Box & Restraints	\$ 15,102.68	EA	0	\$ -	750
24" BFV Valve W/Box & Restraints	\$ 19,763.13	EA	0	\$ -	750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	750
Vaults for BFV	\$ 23,703.75	EA	3	\$ 67,950.75	
Fine Hydrants	\$ 9,030.00	EA	9	\$ 81,270.00	500
8" Fittings	\$ 671.88	EA	0	\$ -	500
10" Fittings	\$ 838.50	EA	0	\$ -	750
12" Fittings	\$ 1,260.00	EA	9	\$ 11,610.00	250
16" Fittings	\$ 1,667.48	EA	3	\$ 5,062.44	750
20" Fittings	\$ 3,724.88	EA	0	\$ -	750
24" Fittings	\$ 4,265.86	EA	0	\$ -	750
30" Fittings	\$ 4,910.06	EA	0	\$ -	750
Remove Plug & Tie In	\$ 2,031.75	EA	0	\$ -	
Tie in after testing	\$ 1,612.50	EA	0	\$ -	
CI Clear Water & Pressure Test	\$ 4,837.50	EA	0.0	\$ -	
MARKER POSTS	\$ 145.13	EA	0	\$ -	100
SPECIAL	\$ 75,000.00	LS	0.00	\$ -	
SUBTOTAL	#DIV/0!			\$ 550,528	
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ -	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
ROAD BASE - 6"	\$ 6.80	SY	32489	\$ 214,426.67	58.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	-
PAVING - 6"	\$ 25.50	SY	0	\$ -	-
PAVING - 10"	\$ 42.50	SY	28667	\$ 1,218,333.33	60.0
PAVING - SUBGRADE PREPARATION	\$ 4.60	SY	28667	\$ 131,866.67	
SUBEXCAVATION	\$ 2.52	CY	28667	\$ 72,240.00	3.0
PAVING 2"	\$ 11.30	SY	0	\$ -	2" Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	17200	\$ 18,404.00	4.0
SIGNAGE	\$ 450.00	EA	17	\$ 7,740.00	250
TRAFFIC CONTROL	\$ 25,000.00	LS	1	\$ 25,000.00	
SLEEVES	\$ 16.85	LF	1280	\$ 21,568.00	4
RAISE WATER VALVES	\$ 250.00	EA	9	\$ 2,250.00	
RAISE MANHOLES	\$ 800.00	EA	12	\$ 9,673.33	
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 1,721,502	
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
CURB & GUTTER - 1" GUTTER	\$ 19.75	LF	8600	\$ 169,850.00	2
CURB & GUTTER - 2" GUTTER	\$ 20.70	LF	8600	\$ 178,020.00	2
CURB & GUTTER - 2" MOUNTABLE	\$ 27.55	LF	0	\$ -	-
ALLEYS - 8" CONCRETE	\$ 10.13	SF	0	\$ -	16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	17200	\$ 38,700.00	
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	3.0
CROSS PANS	\$ 10.15	SF	0	\$ -	
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	48	\$ 181,920.00	
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	8	\$ 12,800.00	
4" SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	
5" SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	
8" SIDEWALK - 6"	\$ 5.25	SF	68800	\$ 361,200.00	
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 942,490	
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
OPEN SPACE	\$ 3.20	SF	0	\$ -	
FORMAL - STREETS	\$ 8.30	SF	215000	\$ 1,784,500.00	50
FORMAL - PARKS	\$ 8.30	SF	0	\$ -	
MONUMENTS	-	LS	0	\$ -	
FENCING	\$ 14.50	SF	0	\$ -	
TRAILS	\$ 5.25	SF	0	\$ -	
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	
AMENITY	\$ 500,000.00	LS	1	\$ 500,000.00	Entry Monument
SUBTOTAL	#DIV/0!			\$ 2,284,500	
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
LETTERS OF CREDIT/BONDS	\$ 8,678.086	LS	0.6%	\$ 55,086	
WARRANTY	\$ 8,678.086	LS	3.0%	\$ 260,343	
MOBILIZATION	\$ 8,678.086	LS	5.0%	\$ 433,904	
CONTINGENCY	\$ 8,678.086	LS	20.0%	\$ 1,735,617	
SUBTOTAL	#DIV/0!			\$ 2,494,950	
PROJECT TOTAL	#DIV/0!			\$ 12,583,225	



POUDRE HEIGHTS 4th Street (West Portion)						
March 13, 2021						
PROJECT TOTAL				\$	1,797,197	
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
AGENCY REVIEW FEES	\$ 11,773.77	LS	1	\$ 11,773.77		1.00%
PLANNING	\$ 11,773.77	LS	1	\$ 11,773.77		1.00%
ENGINEERING	\$ 70,642.68	LS	1	\$ 70,642.68		6.00%
LANDSCAPE ARCHITECTURE	\$ 29,434.43	LS	1	\$ 29,434.43		2.50%
STAKING	\$ 29,434.43	LS	1	\$ 29,434.43		2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 29,434.43	LS	1	\$ 29,434.43		2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 8,630.33	LS	1	\$ 8,630.33		0.75%
SUBTOTAL	#DIV/0!			\$ 191,324		
GRADING	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
TOPSOIL	\$ 2.10	CY	2000	\$ 4,200.00		10%
OVERLOT GRADING	\$ 2.25	CY	20000	\$ 45,000.00		3
SUBEXCAVATION	\$ 2.25	CY	0	\$ -		
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -		0%
SUBTOTAL	#DIV/0!			\$ 49,200		
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
EROSION CONTROL	\$ 30.00	LF	1500	\$ 45,000.00		
SUBTOTAL	#DIV/0!			\$ 45,000		
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
UTILITY TRENCHING	\$ -	LF	0	\$ -		
SUBTOTAL	#DIV/0!			\$ -		
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
ELECTRIC DISTRIBUTION	\$ 25.00	LF	1500	\$ 37,500.00	Street Lights	
GAS DISTRIBUTION	\$ -	LF	1500	\$ -	Bury/Relocations	
TELECOMMUNICATION DISTRIBUTION	\$ -	LF	1500	\$ -	Bury/Relocations	
TRAFFIC SIGNAL	\$ 500,000.00	LS	0.0	\$ -		
STREET LIGHTS	\$ 10,250.00	EA	9	\$ 92,250.00		175
SUBTOTAL	#DIV/0!			\$ 129,750		
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
4" SDR UD	\$ 22.00	LF	0	\$ -		
8" SDR UD	\$ 28.00	LF	0	\$ -		
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	0	\$ -		0%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	0	\$ -		0%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -		0%
6" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -		0%
EXTRA DEPTH 10'-12'	\$ 2.25	LF	0	\$ -		20%
EXTRA DEPTH 12'-14'	\$ 7.10	LF	0	\$ -		10%
EXTRA DEPTH 14'-16'	\$ 12.36	LF	0	\$ -		5%
EXTRA DEPTH 16'-18'	\$ 13.23	LF	0	\$ -		5%
EXTRA DEPTH 18'-20'	\$ 52.50	LF	0	\$ -		0%
EXTRA DEPTH 20'-22'	\$ 64.60	LF	0	\$ -		0%
ROCK CUT	\$ 47.15	CY	0	\$ -		0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -		
M.H. - 4" DIA (0-10')	\$ 4,300.00	EA	0	\$ -		300
M.H. - 5" DIA (0-10')	\$ 7,100.00	EA	0	\$ -		300
M.H. - EXTRA DEPTH	\$ 118.00	VF	0	\$ -		5
6" CLEANOUT ASSEMBLY	\$ 940.00	EA	0	\$ -		
MARKER POSTS	\$ 180.00	EA	0	\$ -		0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -		
AIR TEST MAIN	\$ 0.70	LF	0	\$ -		
DEFLECTION TEST MAIN	\$ 0.86	LF	0	\$ -		
JETT SEWER MAINLINE	\$ 0.81	LF	0	\$ -		
TV SEWER LINE	\$ 0.91	LS	0	\$ -		
SPECIAL	\$ -	LS	0.00	\$ -		
SUBTOTAL	#DIV/0!			\$ -		
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS	
15" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 80.25	LF	0	\$ -		0%
18" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 102.15	LF	225	\$ 22,983.75		15%
21" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 109.85	LF	0	\$ -		0%
24" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 123.65	LF	225	\$ 27,821.25		15%
30" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 149.45	LF	0	\$ -		0%
36" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 176.30	LF	225	\$ 39,667.50		15%
42" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 213.93	LF	0	\$ -		0%
48" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 250.50	LF	0	\$ -		0%
54" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 295.63	LF	0	\$ -		0%
60" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 277.00	LF	0	\$ -		0%
72" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 375.40	LF	0	\$ -		0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 424.63	LF	0	\$ -		0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 510.63	LF	0	\$ -		0%
96" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 695.00	LF	0	\$ -		0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -		0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -		0%
EXTRA DEPTH 12'-14'	\$ 14.96	VF	0	\$ -		0%
EXTRA DEPTH 14'-16'	\$ 25.00	VF	0	\$ -		0%
EXTRA DEPTH 16'-18'	\$ 36.01	VF	0	\$ -		0%
ROCK CUT	\$ 48.54	CY	0	\$ -		0%
24" FES	\$ 3,635.00	EA	0	\$ -		
30" FES	\$ 5,375.00	EA	0	\$ -		
36" FES	\$ 6,235.00	EA	0	\$ -		
42" FES	\$ 6,450.00	EA	0	\$ -		
48" FES	\$ 7,310.00	EA	0	\$ -		
54" FES	\$ 7,740.00	EA	0	\$ -		
60" FES	\$ 9,785.00	EA	0	\$ -		
4" Diameter MH (0-8') w/24" Cover	\$ 4,975.00	EA	2	\$ 9,950.00		400
5" Diameter MH (0-8') w/24" Cover	\$ 6,020.00	EA	2	\$ 12,040.00		200
6" MH (0-8' depth) & 24" Cover	\$ 7,740.00	EA	0	\$ -		200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -		200
Riprap, Grouted (Type M/L/H)	\$ 300.00	CY	0	\$ -		
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -		
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -		
Riprap, Placed (Type M/L/H)	\$ 97.50	TN	0	\$ -		
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -		
Soil Riprap Placed	\$ 80.90	TN	0	\$ -		
5" Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	2	\$ 15,440.00		
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -		
10" Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	2	\$ 20,140.00		
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -		
15" Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	0	\$ -		
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -		
20" Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	0	\$ -		
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -		
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -		
Extra depth	\$ 362.00	EA	0	\$ -		
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -		



POUDRE HEIGHTS 4th Street (West Portion)					
March 13, 2021					
PROJECT TOTAL					\$ 1,707,197
Extra depth	\$ 525.00	EA	0	\$ -	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	
Extra depth	\$ 728.00	EA	0	\$ -	
Type - C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	
Extra Depth	\$ 365.00	EA	0	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	
SPECIAL	\$ 25,000.00	LS	1.00	\$ 25,000.00	
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 173,043	
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	1500	\$ 90,300.00	100%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	6	\$ 27,191.59	250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	0	\$ -	750
20" BFV Valve W/Box & Restraints	\$ 15,102.68	EA	0	\$ -	750
24" BFV Valve W/Box & Restraints	\$ 19,763.13	EA	0	\$ -	750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	750
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	
Fine Hydrants	\$ 9,030.00	EA	3	\$ 27,090.00	500
8" Fittings	\$ 671.88	EA	0	\$ -	500
10" Fittings	\$ 838.50	EA	0	\$ -	750
12" Fittings	\$ 1,290.00	EA	6	\$ 7,740.00	250
16" Fittings	\$ 1,667.48	EA	0	\$ -	750
20" Fittings	\$ 3,724.88	EA	0	\$ -	750
24" Fittings	\$ 4,265.86	EA	0	\$ -	750
30" Fittings	\$ 4,910.06	EA	0	\$ -	750
Remove Plug & Tie In	\$ 2,031.75	EA	0	\$ -	
Tie in after testing	\$ 1,612.50	EA	0	\$ -	
CI Clear Water & Pressure Test	\$ 4,837.50	EA	0.0	\$ -	
MARKER POSTS	\$ 145.13	EA	0	\$ -	100
SPECIAL	\$ 75,000.00	LS	0.00	\$ -	
SUBTOTAL	#DIV/0!			\$ 152,322	
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ -	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
ROAD BASE - 6"	\$ 6.80	SY	7333	\$ 48,400.00	44.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	
PAVING - 6"	\$ 25.50	SY	6000	\$ 153,000.00	36.0
PAVING - 10"	\$ 42.50	SY	0	\$ -	
PAVING - SUBGRADE PREPARATION	\$ 4.60	SY	6000	\$ 27,600.00	
SUBEXCAVATION	\$ 2.52	CY	0	\$ -	3.0
PAVING 2"	\$ 11.30	SY	0	\$ -	2' Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	4500	\$ 4,815.00	3.0
SIGNAGE	\$ 450.00	EA	6	\$ 2,700.00	250
TRAFFIC CONTROL	\$ 10,000.00	LS	1	\$ 10,000.00	
SLEEVES	\$ 16.85	LF	1280	\$ 21,568.00	4
RAISE WATER VALVES	\$ 250.00	EA	6	\$ 1,500.00	
RAISE MANHOLES	\$ 800.00	EA	4	\$ 3,200.00	
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 272,783	
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
CURB & GUTTER - 1' GUTTER	\$ 19.75	LF	0	\$ -	
CURB & GUTTER - 2' GUTTER	\$ 20.70	LF	3000	\$ 62,100.00	2
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	
ALLEYS - 6" CONCRETE	\$ 10.43	SF	0	\$ -	16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	3000	\$ 6,750.00	
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	3.0
CROSS PANS	\$ 10.15	SF	0	\$ -	
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	12	\$ 45,480.00	
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	8	\$ 12,800.00	
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	
5' SIDEWALK - 6"	\$ 5.25	SF	15000	\$ 78,750.00	
8' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 265,880	
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
OPEN SPACE	\$ 3.20	SF	0	\$ -	
FORMAL - STREETS	\$ 8.30	SF	18000	\$ 149,400.00	12
FORMAL - PARKS	\$ 8.30	SF	0	\$ -	
MONUMENTS	-	LS	0	\$ -	
FENCING	\$ 14.50	SF	0	\$ -	
TRAILS	\$ 5.25	SF	0	\$ -	
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	
AMENITY	-	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 149,400	
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
LETTERS OF CREDIT/BONDS	\$ 1,177.377	LS	0.8%	\$ 8,830	
WARRANTY	\$ 1,177.377	LS	3.0%	\$ 35,321	
MOBILIZATION	\$ 1,177.377	LS	5.0%	\$ 58,869	
CONTINGENCY	\$ 1,177.377	LS	20.0%	\$ 235,475	
SUBTOTAL	#DIV/0!			\$ 338,496	
PROJECT TOTAL	#DIV/0!			\$ 1,707,197	



POUDRE HEIGHTS C/D/E/F Collector						
March 13, 2021						
PROJECT TOTAL		UNIT PRICE	UNITS	QTY	COST	COMMENTS
PROFESSIONAL SERVICES						
AGENCY REVIEW FEES	\$	13,836.25	LS	1	\$ 13,836.25	1.00%
PLANNING	\$	13,836.25	LS	1	\$ 13,836.25	1.00%
ENGINEERING	\$	83,017.48	LS	1	\$ 83,017.48	6.00%
LANDSCAPE ARCHITECTURE	\$	34,590.61	LS	1	\$ 34,590.61	2.50%
STAKING	\$	34,590.61	LS	1	\$ 34,590.61	2.50%
SOILS AND ENVIRONMENTAL TESTING	\$	34,590.61	LS	1	\$ 34,590.61	2.50%
RECORD DRAWINGS/CLOSE OUT	\$	10,377.18	LS	1	\$ 10,377.18	0.75%
SUBTOTAL	#DIV/0!				\$ 224,839	
GRADING						
TOPSOIL	\$	2.10	CY	2000	\$ 4,200.00	10%
OVERLOT GRADING	\$	2.25	CY	20000	\$ 45,000.00	3
SUBEXCAVATION	\$	2.25	CY	0	\$ -	
ROCK EXCAVATION	\$	7.50	CY	0	\$ -	0%
SUBTOTAL	#DIV/0!				\$ 49,200	
EROSION CONTROL						
EROSION CONTROL	\$	30.00	LF	1500	\$ 45,000.00	
SUBTOTAL	#DIV/0!				\$ 45,000	
UTILITY TRENCHING						
UTILITY TRENCHING	\$	-	LF	0	\$ -	
SUBTOTAL	#DIV/0!				\$ -	
UTILITY CHARGES						
ELECTRIC DISTRIBUTION	\$	25.00	LF	1500	\$ 37,500.00	Street Lights
GAS DISTRIBUTION	\$	-	LF	1500	\$ -	Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$	-	LF	1500	\$ -	Bury/Relocations
TRAFFIC SIGNAL	\$	500,000.00	LS	0.0	\$ -	
STREET LIGHTS	\$	10,250.00	EA	9	\$ 92,250.00	175
SUBTOTAL	#DIV/0!				\$ 129,750	
SANITARY SEWER IMPROVEMENTS						
4" SDR UD	\$	22.00	LF	0	\$ -	
8" SDR UD	\$	28.00	LF	0	\$ -	
PIPE 8" PVC W/BEDDING	\$	55.00	LF	0	\$ -	0%
PIPE 10" PVC W/BEDDING	\$	61.00	LF	0	\$ -	0%
PIPE 12" PVC W/BEDDING	\$	80.00	LF	0	\$ -	0%
6" PVC FORCEMAIN	\$	80.25	LF	0	\$ -	0%
EXTRA DEPTH 10'-12'	\$	2.25	LF	0	\$ -	20%
EXTRA DEPTH 12'-14'	\$	7.10	LF	0	\$ -	10%
EXTRA DEPTH 14'-16'	\$	12.36	LF	0	\$ -	5%
EXTRA DEPTH 16'-18'	\$	13.23	LF	0	\$ -	5%
EXTRA DEPTH 18'-20'	\$	52.50	LF	0	\$ -	0%
EXTRA DEPTH 20'-22'	\$	64.60	LF	0	\$ -	0%
ROCK CUT	\$	47.15	CY	0	\$ -	0%
8" X 4" WYE, BEND, CAP	\$	110.25	EA	0	\$ -	
M.H. - 4" DIA (0-10')	\$	4,300.00	EA	0	\$ -	300
M.H. - 5" DIA (0-10')	\$	7,100.00	EA	0	\$ -	300
M.H. - EXTRA DEPTH	\$	118.00	VF	0	\$ -	5
6" CLEANOUT ASSEMBLY	\$	940.00	EA	0	\$ -	
MARKER POSTS	\$	180.00	EA	0	\$ -	0%
TIE TO EXISTING STUB	\$	3,000.00	EA	0	\$ -	
AIR TEST MAIN	\$	0.70	LF	0	\$ -	
DEFLECTION TEST MAIN	\$	0.86	LF	0	\$ -	
JETT SEWER MAINLINE	\$	0.81	LF	0	\$ -	
TV SEWER LINE	\$	0.91	LS	0	\$ -	
SPECIAL	\$	-	LS	0.00	\$ -	
SUBTOTAL	#DIV/0!				\$ -	
STORM DRAINAGE IMPROVEMENTS						
15" RCP CL III TG/ C-443 0-8' w/squeegae	\$	80.25	LF	0	\$ -	0%
18" RCP CL III TG/ C-443 0-8' w/squeegae	\$	102.15	LF	150	\$ 15,322.50	10%
21" RCP CL III TG/ C-443 0-8' w/squeegae	\$	109.85	LF	0	\$ -	0%
24" RCP CL III TG/ C-443 0-8' w/squeegae	\$	123.65	LF	150	\$ 18,547.50	10%
30" RCP CL III TG/ C-443 0-8' w/squeegae	\$	149.45	LF	0	\$ -	0%
36" RCP CL III TG/ C-443 0-8' w/squeegae	\$	176.30	LF	150	\$ 26,445.00	10%
42" RCP CL III TG/ C-443 0-8' w/squeegae	\$	213.93	LF	0	\$ -	0%
48" RCP CL III TG/ C-443 0-8' w/squeegae	\$	250.50	LF	0	\$ -	0%
54" RCP CL III TG/ C-443 0-8' w/squeegae	\$	295.63	LF	0	\$ -	0%
60" RCP CL III TG/ C-443 0-8' w/squeegae	\$	277.00	LF	0	\$ -	0%
72" RCP CL III TG/ C-443 0-8' w/squeegae	\$	375.40	LF	0	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$	424.63	LF	0	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$	510.63	LF	0	\$ -	0%
96" RCP CL III TG/ C-443 0-8' w/squeegae	\$	695.00	LF	0	\$ -	0%
EXTRA DEPTH 8'-10'	\$	2.88	VF	0	\$ -	0%
EXTRA DEPTH 10'-12'	\$	7.59	VF	0	\$ -	0%
EXTRA DEPTH 12'-14'	\$	14.96	VF	0	\$ -	0%
EXTRA DEPTH 14'-16'	\$	25.00	VF	0	\$ -	0%
EXTRA DEPTH 16'-18'	\$	36.01	VF	0	\$ -	0%
ROCK CUT	\$	48.54	CY	0	\$ -	0%
24" FES	\$	3,635.00	EA	0	\$ -	
30" FES	\$	5,375.00	EA	0	\$ -	
36" FES	\$	6,235.00	EA	0	\$ -	
42" FES	\$	6,450.00	EA	0	\$ -	
48" FES	\$	7,310.00	EA	0	\$ -	
54" FES	\$	7,740.00	EA	0	\$ -	
60" FES	\$	9,785.00	EA	0	\$ -	
4" Diameter MH (0-8') w/24" Cover	\$	4,975.00	EA	1	\$ 4,975.00	400
5" Diameter MH (0-8') w/24" Cover	\$	6,020.00	EA	1	\$ 6,020.00	200
6" MH (0-8' depth) & 24" Cover	\$	7,740.00	EA	0	\$ -	200
Box Base Manhole	\$	24,187.00	EA	0	\$ -	200
Riprap, Grouted (Type M/L/H)	\$	300.00	CY	0	\$ -	
Riprap, Grouted 2' Boulders	\$	395.00	CY	0	\$ -	
Riprap, Grouted 3' Boulders	\$	432.00	CY	0	\$ -	
Riprap, Placed (Type M/L/H)	\$	97.50	TN	0	\$ -	
Riprap, Placed Type VH	\$	104.30	TN	0	\$ -	
Soil Riprap Placed	\$	80.90	TN	0	\$ -	
5" Type 'R' Inlet Up to 5' Deep	\$	7,720.00	EA	2	\$ 15,440.00	
Extra Depth Inlet Over 5' Deep	\$	507.94	VF	0	\$ -	
10" Type 'R' Inlet Up to 5' Deep	\$	10,070.00	EA	2	\$ 20,140.00	
Extra Depth Inlet Over 5' Deep	\$	846.00	VF	0	\$ -	
15" Type 'R' Inlet Up to 5' Deep	\$	13,135.00	EA	0	\$ -	
Extra Depth Inlet Over 5' Deep	\$	1,100.00	VF	0	\$ -	
20" Type 'R' Inlet Up to 5' Deep	\$	17,500.00	EA	0	\$ -	
Extra Depth Inlet Over 5' Deep	\$	1,495.00	VF	0	\$ -	
Single No. 13 & 16	\$	3,925.00	EA	0	\$ -	
Extra depth	\$	362.00	EA	0	\$ -	
Double No. 13 & 16	\$	6,130.00	EA	0	\$ -	



POUDRE HEIGHTS C/D/E/F Collector					
March 13, 2021					
PROJECT TOTAL					\$ 2,006,256
Extra depth	\$ 525.00	EA	0	\$ -	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	
Extra depth	\$ 728.00	EA	0	\$ -	
Type - C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	
Extra Depth	\$ 365.00	EA	0	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	
SPECIAL	\$ 25,000.00	LS	1.00	\$ 25,000.00	
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 131,890	
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	1500	\$ 90,300.00	100%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	6	\$ 27,191.59	250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	0	\$ -	750
20" BFV Valve W/Box & Restraints	\$ 15,102.68	EA	0	\$ -	750
24" BFV Valve W/Box & Restraints	\$ 19,763.13	EA	0	\$ -	750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	750
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	
Fine Hydrants	\$ 9,030.00	EA	3	\$ 27,090.00	500
8" Fittings	\$ 671.88	EA	0	\$ -	500
10" Fittings	\$ 838.50	EA	0	\$ -	750
12" Fittings	\$ 1,290.00	EA	6	\$ 7,740.00	250
16" Fittings	\$ 1,667.48	EA	0	\$ -	750
20" Fittings	\$ 3,724.68	EA	0	\$ -	750
24" Fittings	\$ 4,265.86	EA	0	\$ -	750
30" Fittings	\$ 4,910.06	EA	0	\$ -	750
Remove Plug & Tie In	\$ 2,031.75	EA	0	\$ -	
Tie in after testing	\$ 1,612.50	EA	0	\$ -	
CI Clear Water & Pressure Test	\$ 4,837.50	EA	0.0	\$ -	
MARKER POSTS	\$ 145.13	EA	0	\$ -	100
SPECIAL	\$ 75,000.00	LS	0.00	\$ -	
SUBTOTAL	#DIV/0!			\$ 152,322	
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ -	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
ROAD BASE - 6"	\$ 6.80	SY	7333	\$ 48,400.00	44.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	-
PAVING - 6"	\$ 25.50	SY	6000	\$ 153,000.00	36.0
PAVING - 10"	\$ 42.50	SY	0	\$ -	-
PAVING - SUBGRADE PREPARATION	\$ 4.60	SY	6000	\$ 27,600.00	
SUBEXCAVATION	\$ 2.52	CY	0	\$ -	3.0
PAVING 2	\$ 11.30	SY	0	\$ -	2' Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	4500	\$ 4,815.00	3.0
SIGNAGE	\$ 450.00	EA	6	\$ 2,700.00	250
TRAFFIC CONTROL	\$ 10,000.00	LS	1	\$ 10,000.00	
SLEEVES	\$ 16.85	LF	1280	\$ 21,568.00	4
RAISE WATER VALVES	\$ 250.00	EA	8	\$ 1,500.00	
RAISE MANHOLES	\$ 800.00	EA	2	\$ 1,600.00	
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 271,183	
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
CURB & GUTTER - 1' GUTTER	\$ 19.75	LF	0	\$ -	-
CURB & GUTTER - 2' GUTTER	\$ 20.70	LF	3000	\$ 62,100.00	2
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	-
ALLEYS - 6" CONCRETE	\$ 10.43	SF	0	\$ -	16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	3000	\$ 6,750.00	
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	3.0
CROSS PANS	\$ 10.15	SF	0	\$ -	
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	12	\$ 45,480.00	
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	8	\$ 12,800.00	
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	
5' SIDEWALK - 6"	\$ 5.25	SF	15000	\$ 78,750.00	
8' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 265,880	
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
OPEN SPACE	\$ 3.20	SF	0	\$ -	
FORMAL - STREETS	\$ 8.30	SF	46000	\$ 398,400.00	32
FORMAL - PARKS	\$ 8.30	SF	0	\$ -	
MONUMENTS	-	LS	0	\$ -	
FENCING	\$ 14.50	SF	0	\$ -	
TRAILS	\$ 5.25	SF	0	\$ -	
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	
AMENITY	-	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 398,400	
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
LETTERS OF CREDIT/BONDS	\$ 1,383.625	LS	0.8%	\$ 10,377	
WARRANTY	\$ 1,383.625	LS	3.0%	\$ 41,509	
MOBILIZATION	\$ 1,383.625	LS	5.0%	\$ 89,181	
CONTINGENCY	\$ 1,383.625	LS	20.0%	\$ 276,725	
SUBTOTAL	#DIV/0!			\$ 397,792	
PROJECT TOTAL	#DIV/0!			\$ 2,006,256	



POUDRE HEIGHTS 101st Avenue						
March 13, 2021						
PROJECT TOTAL				\$	4,579,405	
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST		COMMENTS
AGENCY REVIEW FEES	\$ 31,582.11	LS	1	\$ 31,582.11		1.00%
PLANNING	\$ 31,582.11	LS	1	\$ 31,582.11		1.00%
ENGINEERING	\$ 189,492.64	LS	1	\$ 189,492.64		6.00%
LANDSCAPE ARCHITECTURE	\$ 78,955.27	LS	1	\$ 78,955.27		2.50%
STAKING	\$ 78,955.27	LS	1	\$ 78,955.27		2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 78,955.27	LS	1	\$ 78,955.27		2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 23,686.58	LS	1	\$ 23,686.58		0.75%
SUBTOTAL	#DIV/0!			\$ 513,209		
GRADING	UNIT PRICE	UNITS	QTY	COST		COMMENTS
TOPSOIL	\$ 2.10	CY	3200	\$ 6,720.00		10%
OVERLOT GRADING	\$ 2.25	CY	32000	\$ 72,000.00		3
SUBEXCAVATION	\$ 2.25	CY	0	\$ -		
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -		0%
SUBTOTAL	#DIV/0!			\$ 78,720		
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST		COMMENTS
EROSION CONTROL	\$ 30.00	LF	2400	\$ 72,000.00		
SUBTOTAL	#DIV/0!			\$ 72,000		
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST		COMMENTS
UTILITY TRENCHING	\$ -	LF	0	\$ -		
SUBTOTAL	#DIV/0!			\$ -		
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST		COMMENTS
ELECTRIC DISTRIBUTION	\$ 25.00	LF	2400	\$ 60,000.00		Street Lights
GAS DISTRIBUTION	\$ -	LF	2400	\$ -		Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$ -	LF	2400	\$ -		Bury/Relocations
TRAFFIC SIGNAL	\$ 250,000.00	LS	1.0	\$ 250,000.00		Misc
STREET LIGHTS	\$ 10,250.00	EA	14	\$ 143,500.00		175
SUBTOTAL	#DIV/0!			\$ 453,500		
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST		COMMENTS
4" SDR UD	\$ 22.00	LF	1800	\$ 39,600.00		
8" SDR UD	\$ 28.00	LF	0	\$ -		
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	600	\$ 33,000.00		25%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	1200	\$ 73,200.00		50%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -		0%
6" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -		0%
EXTRA DEPTH 10'-12'	\$ 2.25	LF	360	\$ 810.00		20%
EXTRA DEPTH 12'-14'	\$ 7.10	LF	180	\$ 1,278.00		10%
EXTRA DEPTH 14'-16'	\$ 12.36	LF	90	\$ 1,112.40		5%
EXTRA DEPTH 16'-18'	\$ 13.23	LF	90	\$ 1,190.70		5%
EXTRA DEPTH 18'-20'	\$ 52.50	LF	0	\$ -		0%
EXTRA DEPTH 20'-22'	\$ 64.60	LF	0	\$ -		0%
ROCK CUT	\$ 47.15	CY	0	\$ -		0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -		
M.H. - 4" DIA (0-10')	\$ 4,300.00	EA	2	\$ 8,600.00		300
M.H. - 5" DIA (0-10')	\$ 7,100.00	EA	4	\$ 28,400.00		300
M.H. - EXTRA DEPTH	\$ 118.00	VF	30	\$ 3,540.00		5
5" CLEANOUT ASSEMBLY	\$ 940.00	EA	6	\$ 5,640.00		
MARKER POSTS	\$ 180.00	EA	0	\$ -		0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -		
AIR TEST MAIN	\$ 0.70	LF	1800	\$ 1,260.00		
DEFLECTION TEST MAIN	\$ 0.86	LF	1800	\$ 1,548.00		
JETT SEWER MAINLINE	\$ 0.81	LF	1800	\$ 1,458.00		
TV SEWER LINE	\$ 0.91	LS	1800	\$ 1,638.00		
SPECIAL	\$ -	LS	0.00	\$ -		
SUBTOTAL	#DIV/0!			\$ 202,275		
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST		COMMENTS
15" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 80.25	LF	0	\$ -		0%
18" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 102.15	LF	120	\$ 12,258.00		5%
21" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 109.55	LF	0	\$ -		0%
24" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 123.65	LF	240	\$ 29,676.00		10%
30" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 149.45	LF	0	\$ -		0%
36" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 176.30	LF	240	\$ 42,312.00		10%
42" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 213.93	LF	120	\$ 25,671.60		5%
48" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 250.50	LF	120	\$ 30,060.00		5%
54" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 295.63	LF	120	\$ 35,475.60		5%
60" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 277.00	LF	120	\$ 33,240.00		5%
72" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 375.40	LF	0	\$ -		0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 424.63	LF	0	\$ -		0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 510.63	LF	0	\$ -		0%
96" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 695.00	LF	0	\$ -		0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -		0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -		0%
EXTRA DEPTH 12'-14'	\$ 14.96	VF	0	\$ -		0%
EXTRA DEPTH 14'-16'	\$ 25.00	VF	0	\$ -		0%
EXTRA DEPTH 16'-18'	\$ 36.01	VF	0	\$ -		0%
ROCK CUT	\$ 48.54	CY	0	\$ -		0%
24" FES	\$ 3,635.00	EA	0	\$ -		
30" FES	\$ 5,375.00	EA	0	\$ -		
36" FES	\$ 6,235.00	EA	0	\$ -		
42" FES	\$ 6,450.00	EA	0	\$ -		
48" FES	\$ 7,310.00	EA	0	\$ -		
54" FES	\$ 7,740.00	EA	0	\$ -		
60" FES	\$ 9,785.00	EA	0	\$ -		
4" Diameter MH (0-8') w/24" Cover	\$ 4,975.00	EA	1	\$ 4,975.00		400
5" Diameter MH (0-8') w/24" Cover	\$ 6,020.00	EA	2	\$ 12,040.00		200
6" MH (0-8' depth) & 24" Cover	\$ 7,740.00	EA	2	\$ 15,480.00		200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -		200
Riprap, Grouted (Type M/L/H)	\$ 300.00	CY	0	\$ -		
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -		
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -		
Riprap, Placed (Type M/L/H)	\$ 97.50	TN	0	\$ -		
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -		
Soil Riprap Placed	\$ 80.90	TN	0	\$ -		
5" Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	2	\$ 15,440.00		
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -		
10" Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	2	\$ 20,140.00		
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -		
15" Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	2	\$ 26,270.00		
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -		
20" Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	2	\$ 35,000.00		
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -		
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -		
Extra depth	\$ 362.00	EA	0	\$ -		
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -		



POUDRE HEIGHTS 101st Avenue					
March 13, 2021					
PROJECT TOTAL					\$ 4,579,405
Extra depth	\$ 525.00	EA	0	\$ -	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	
Extra depth	\$ 728.00	EA	0	\$ -	
Type - C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	
Extra Depth	\$ 365.00	EA	0	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	
SPECIAL	\$ 75,000.00	LS	1.00	\$ 75,000.00	
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 411,490	
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	2400	\$ 144,480.00	100%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	10	\$ 45,319.31	250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	0	\$ -	750
20" BFV Valve W/Box & Restraints	\$ 15,102.68	EA	0	\$ -	750
24" BFV Valve W/Box & Restraints	\$ 19,763.13	EA	0	\$ -	750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	750
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	
Fine Hydrants	\$ 9,030.00	EA	5	\$ 45,150.00	500
8" Fittings	\$ 671.88	EA	0	\$ -	500
10" Fittings	\$ 838.50	EA	0	\$ -	750
12" Fittings	\$ 1,290.00	EA	10	\$ 12,900.00	250
16" Fittings	\$ 1,667.48	EA	0	\$ -	750
20" Fittings	\$ 3,724.88	EA	0	\$ -	750
24" Fittings	\$ 4,265.86	EA	0	\$ -	750
30" Fittings	\$ 4,910.06	EA	0	\$ -	750
Remove Plug & Tie In	\$ 2,031.75	EA	0	\$ -	
Tie in after testing	\$ 1,612.50	EA	0	\$ -	
CI Clear Water & Pressure Test	\$ 4,837.50	EA	0.0	\$ -	
MARKER POSTS	\$ 145.13	EA	0	\$ -	100
SPECIAL	\$ 75,000.00	LS	0.00	\$ -	
SUBTOTAL	#DIV/0!			\$ 247,849	
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ -	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
ROAD BASE - 6"	\$ 6.80	SY	14933	\$ 98,550.00	56.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	-
PAVING - 6"	\$ 25.50	SY	0	\$ -	-
PAVING - 10"	\$ 42.50	SY	12800	\$ 544,000.00	48.0
PAVING - SUBGRADE PREPARATION	\$ 4.80	SY	12800	\$ 58,880.00	
SUBEXCAVATION	\$ 2.52	CY	12800	\$ 32,256.00	3.0
PAVING 2"	\$ 11.30	SY	0	\$ -	2" Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	9600	\$ 10,272.00	4.0
SIGNAGE	\$ 450.00	EA	10	\$ 4,520.00	250
TRAFFIC CONTROL	\$ 15,000.00	LS	1	\$ 15,000.00	
SLEEVES	\$ 16.85	LF	1280	\$ 21,568.00	4
RAISE WATER VALVES	\$ 250.00	EA	16	\$ 4,000.00	
RAISE MANHOLES	\$ 800.00	EA	11	\$ 8,640.00	
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 797,496	
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
CURB & GUTTER - 1" GUTTER	\$ 19.75	LF	0	\$ -	-
CURB & GUTTER - 2" GUTTER	\$ 20.70	LF	4800	\$ 99,360.00	2
CURB & GUTTER - 2" MOUNTABLE	\$ 27.55	LF	0	\$ -	-
ALLEYS - 6" CONCRETE	\$ 10.43	SF	0	\$ -	16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	4800	\$ 10,800.00	
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	3.0
CROSS PANS	\$ 10.15	SF	0	\$ -	
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	36	\$ 136,440.00	
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	4	\$ 6,400.00	
4" SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	
5" SIDEWALK - 6"	\$ 5.25	SF	12000	\$ 63,000.00	
8" SIDEWALK - 6"	\$ 5.25	SF	19200	\$ 100,800.00	
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 416,800	
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
OPEN SPACE	\$ 3.20	SF	0	\$ -	
FORMAL - STREETS	\$ 8.30	SF	57600	\$ 478,080.00	24
FORMAL - PARKS	\$ 8.30	SF	0	\$ -	
MONUMENTS	-	LS	0	\$ -	
FENCING	\$ 14.50	SF	0	\$ -	
TRAILS	\$ 5.25	SF	0	\$ -	
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	
AMENITY	-	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 478,080	
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
LETTERS OF CREDIT/BONDS	\$ 3,158.211	LS	0.8%	\$ 23,687	
WARRANTY	\$ 3,158.211	LS	3.0%	\$ 94,746	
MOBILIZATION	\$ 3,158.211	LS	5.0%	\$ 157,811	
CONTINGENCY	\$ 3,158.211	LS	20.0%	\$ 631,642	
SUBTOTAL	#DIV/0!			\$ 907,986	
PROJECT TOTAL	#DIV/0!			\$ 4,579,405	



POUDRE HEIGHTS Sanitary Sewer Trunkline & Outfall						
March 13, 2021						
PROJECT TOTAL					\$ 6,411,824	
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST		COMMENTS
AGENCY REVIEW FEES	\$ 44,219.47	LS	1	\$ 44,219.47		1.00%
PLANNING	\$ 44,219.47	LS	1	\$ 44,219.47		1.00%
ENGINEERING	\$ 265,316.84	LS	1	\$ 265,316.84		6.00%
LANDSCAPE ARCHITECTURE	\$ 110,548.68	LS	1	\$ 110,548.68		2.50%
STAKING	\$ 110,548.68	LS	1	\$ 110,548.68		2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 110,548.68	LS	1	\$ 110,548.68		2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 33,164.61	LS	1	\$ 33,164.61		0.75%
SUBTOTAL	#DIV/0!			\$ 718,566		
GRADING	UNIT PRICE	UNITS	QTY	COST		COMMENTS
TOPSOIL	\$ 2.10	CY	0	\$ -		10%
OVERLOT GRADING	\$ 2.25	CY	0	\$ -		0
SUBEXCAVATION	\$ 2.25	CY	0	\$ -		
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -		0%
SUBTOTAL	#DIV/0!			\$ -		
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST		COMMENTS
EROSION CONTROL	\$ 27.00	LF	17000	\$ 459,000.00		
SUBTOTAL	#DIV/0!			\$ 459,000		
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST		COMMENTS
UTILITY TRENCHING	\$ -	LF	0	\$ -		
SUBTOTAL	#DIV/0!			\$ -		
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST		COMMENTS
ELECTRIC DISTRIBUTION	\$ -	LF	17000	\$ -		Street Lights
GAS DISTRIBUTION	\$ -	LF	17000	\$ -		Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$ -	LF	17000	\$ -		Bury/Relocations
TRAFFIC SIGNAL	\$ -	LS	0.0	\$ -		
STREET LIGHTS	\$ -	EA	1	\$ -		20000
SUBTOTAL	#DIV/0!			\$ -		
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST		COMMENTS
4" SDR UD	\$ 22.00	LF	0	\$ -		
8" SDR UD	\$ 28.00	LF	0	\$ -		
PIPE 15" PVC W/BEDDING	\$ 115.00	LF	4250	\$ 488,750.00		25%
PIPE 24" PVC W/BEDDING	\$ 175.00	LF	2550	\$ 446,250.00		15%
PIPE 30" PVC W/BEDDING	\$ 225.00	LF	10200	\$ 2,285,000.00		60%
6" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -		0%
EXTRA DEPTH 10'-12'	\$ 2.25	LF	3400	\$ 7,650.00		20%
EXTRA DEPTH 12'-14'	\$ 7.10	LF	1700	\$ 12,070.00		10%
EXTRA DEPTH 14'-16'	\$ 12.36	LF	850	\$ 10,506.00		5%
EXTRA DEPTH 16'-18'	\$ 13.23	LF	850	\$ 11,245.50		5%
EXTRA DEPTH 18'-20'	\$ 52.50	LF	0	\$ -		0%
EXTRA DEPTH 20'-22'	\$ 64.60	LF	0	\$ -		0%
ROCK CUT	\$ 47.15	CY	0	\$ -		0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -		
M.H. - 4" DIA (0-10')	\$ 4,300.00	EA	13	\$ 55,900.00		350
M.H. - 5" DIA (0-10')	\$ 7,100.00	EA	37	\$ 262,700.00		350
M.H. - EXTRA DEPTH	\$ 118.00	VF	500	\$ 59,000.00		10
6" CLEANOUT ASSEMBLY	\$ 940.00	EA	0	\$ -		
MARKER POSTS	\$ 180.00	EA	0	\$ -		0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	1	\$ 3,000.00		
AIR TEST MAIN	\$ 0.70	LF	17000	\$ 11,900.00		
DEFLECTION TEST MAIN	\$ 0.86	LF	17000	\$ 14,820.00		
JETT SEWER MAINLINE	\$ 0.81	LF	17000	\$ 13,770.00		
TV SEWER LINE	\$ 0.91	LS	17000	\$ 15,470.00		
SPECIAL	\$ -	LS	0.00	\$ -		
SUBTOTAL	#DIV/0!			\$ 3,707,832		
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST		COMMENTS
15" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 80.25	LF	0	\$ -		0%
18" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 102.15	LF	0	\$ -		0%
21" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 109.85	LF	0	\$ -		0%
24" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 123.65	LF	0	\$ -		0%
30" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 149.45	LF	0	\$ -		0%
36" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 176.30	LF	0	\$ -		0%
42" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 213.93	LF	0	\$ -		0%
48" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 250.50	LF	0	\$ -		0%
54" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 295.63	LF	0	\$ -		0%
60" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 277.00	LF	0	\$ -		0%
72" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 375.40	LF	0	\$ -		0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 424.63	LF	0	\$ -		0%
84" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 510.63	LF	0	\$ -		0%
96" RCP CL III TG/ C-443 0-8' w/squeegae	\$ 695.00	LF	0	\$ -		0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -		0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -		0%
EXTRA DEPTH 12'-14'	\$ 14.96	VF	0	\$ -		0%
EXTRA DEPTH 14'-16'	\$ 25.00	VF	0	\$ -		0%
EXTRA DEPTH 16'-18'	\$ 36.01	VF	0	\$ -		0%
ROCK CUT	\$ 48.54	CY	0	\$ -		0%
24" FES	\$ 3,635.00	EA	0	\$ -		
30" FES	\$ 5,375.00	EA	0	\$ -		
36" FES	\$ 6,235.00	EA	0	\$ -		
42" FES	\$ 6,450.00	EA	0	\$ -		
48" FES	\$ 7,310.00	EA	0	\$ -		
54" FES	\$ 7,740.00	EA	0	\$ -		
60" FES	\$ 9,785.00	EA	0	\$ -		
4" Diameter MH (0-8') w/24" Cover	\$ 4,975.00	EA	0	\$ -		400
5" Diameter MH (0-8') w/24" Cover	\$ 6,020.00	EA	0	\$ -		200
6" MH (0-8' depth) & 24" Cover	\$ 7,740.00	EA	0	\$ -		200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -		200
Riprap, Grouted (Type M/L/H)	\$ 300.00	CY	0	\$ -		
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -		
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -		
Riprap, Placed (Type M/L/H)	\$ 97.50	TN	0	\$ -		
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -		
Soil Riprap Placed	\$ 80.90	TN	0	\$ -		
5" Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	0	\$ -		
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -		
10" Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	0	\$ -		
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -		
15" Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	0	\$ -		
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -		
20" Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	0	\$ -		
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -		
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -		
Extra depth	\$ 362.00	EA	0	\$ -		
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -		



POUDRE HEIGHTS Sanitary Sewer Trunkline & Outfall					
March 13, 2021					
PROJECT TOTAL				\$ 6,411,824	
Extra depth	\$ 525.00	EA	0	\$ -	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	
Extra depth	\$ 728.00	EA	0	\$ -	
Type - C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	
Extra Depth	\$ 365.00	EA	0	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	
SPECIAL	\$ 50,000.00	LS	1.00	\$ 50,000.00	
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	
SUBTOTAL	#DIV/0!			\$ 50,000	
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	0	\$ -	0%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	500
10" MJ Gate Valve W/Box & Restraints	\$ 3,606.15	EA	0	\$ -	750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	0	\$ -	250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	0	\$ -	750
20" BFV Valve W/Box & Restraints	\$ 15,102.68	EA	0	\$ -	750
24" BFV Valve W/Box & Restraints	\$ 19,763.13	EA	0	\$ -	750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	750
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	
Fine Hydrants	\$ 9,030.00	EA	0	\$ -	500
8" Fittings	\$ 671.88	EA	0	\$ -	500
10" Fittings	\$ 836.50	EA	0	\$ -	750
12" Fittings	\$ 1,260.00	EA	0	\$ -	250
16" Fittings	\$ 1,667.48	EA	0	\$ -	750
20" Fittings	\$ 3,724.68	EA	0	\$ -	750
24" Fittings	\$ 4,265.86	EA	0	\$ -	750
30" Fittings	\$ 4,910.06	EA	0	\$ -	750
Remove Plug & Tie In	\$ 2,031.75	EA	0	\$ -	
Tie in after testing	\$ 1,612.50	EA	0	\$ -	
CI Clear Water & Pressure Test	\$ 4,837.50	EA	0.0	\$ -	
MARKER POSTS	\$ 145.13	EA	0	\$ -	100
SPECIAL	\$ 75,000.00	LS	0.00	\$ -	
SUBTOTAL	#DIV/0!			\$ -	
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	
SUBTOTAL	#DIV/0!			\$ -	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
ROAD BASE - 6"	\$ 6.80	SY	15111	\$ 99,733.33	8.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	-
PAVING - 6"	\$ 25.50	SY	0	\$ -	-
PAVING - 10"	\$ 42.50	SY	0	\$ -	-
PAVING - SUBGRADE PREPARATION	\$ 4.80	SY	0	\$ -	-
SUBEXCAVATION	\$ 2.52	CY	0	\$ -	3.0
PAVING 2	\$ 11.30	SY	0	\$ -	2' Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	0	\$ -	-
SIGNAGE	\$ 450.00	EA	1	\$ 450.00	20,000
TRAFFIC CONTROL	\$ 85,000.00	LS	1	\$ 85,000.00	-
SLEEVES	\$ 16.85	LF	0	\$ -	-
RAISE WATER VALVES	\$ 250.00	EA	0	\$ -	-
RAISE MANHOLES	\$ 800.00	EA	50	\$ 40,000.00	-
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	-
SUBTOTAL	#DIV/0!			\$ 205,116	
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COMMENTS
CURB & GUTTER - 1' GUTTER	\$ 19.75	LF	0	\$ -	-
CURB & GUTTER - 2' GUTTER	\$ 20.70	LF	0	\$ -	-
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	-
ALLEYS - 6" CONCRETE	\$ 10.13	SF	0	\$ -	16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	0	\$ -	-
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	3.0
CROSS PANS	\$ 10.15	SF	0	\$ -	-
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	0	\$ -	-
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	0	\$ -	-
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	-
5' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	-
8' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	-
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	-
SUBTOTAL	#DIV/0!			\$ -	
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
OPEN SPACE	\$ 3.20	SF	0	\$ -	-
FORMAL - STREETS	\$ 8.30	SF	0	\$ -	-
FORMAL - PARKS	\$ 8.30	SF	0	\$ -	-
MONUMENTS	\$ -	LS	0	\$ -	-
FENCING	\$ 14.50	SF	0	\$ -	-
TRAILS	\$ 5.25	SF	0	\$ -	-
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	-
AMENITY	\$ 250,000.00	LS	0	\$ -	-
SUBTOTAL	#DIV/0!			\$ -	
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COMMENTS
LETTERS OF CREDIT/BONDS	\$ 4,421.947	LS	0.5%	\$ 33,165	-
WARRANTY	\$ 4,421.947	LS	3.0%	\$ 132,658	-
MOBILIZATION	\$ 4,421.947	LS	5.0%	\$ 221,097	-
CONTINGENCY	\$ 4,421.947	LS	20.0%	\$ 884,389	-
SUBTOTAL	#DIV/0!			\$ 1,271,310	
PROJECT TOTAL	#DIV/0!			\$ 6,411,824	



POUDRE HEIGHTS A									
March 13, 2021				Infrac		Infrastructure			
PROJECT TOTAL					\$ 1,027,723	\$ 290,000			
PROFESSIONAL SERVICES		UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS	
AGENCY REVIEW FEES		\$ 7,087.74	LS	1	\$ 7,087.74	\$ 2,000.00			1.00%
PLANNING		\$ 7,087.74	LS	1	\$ 7,087.74	\$ 2,000.00			1.00%
ENGINEERING		\$ 42,526.45	LS	1	\$ 42,526.45	\$ 12,000.00			6.00%
LANDSCAPE ARCHITECTURE		\$ 17,719.36	LS	1	\$ 17,719.36	\$ 5,000.00			2.50%
STAKING		\$ 17,719.36	LS	1	\$ 17,719.36	\$ 5,000.00			2.50%
SOILS AND ENVIRONMENTAL TESTING		\$ 17,719.36	LS	1	\$ 17,719.36	\$ 5,000.00			2.50%
RECORD DRAWINGS/CLOSE OUT		\$ 5,315.81	LS	1	\$ 5,315.81	\$ 1,500.00			0.75%
SUBTOTAL		#DIV/0!			\$ 115,176	\$ 32,500			
GRADING		UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS	
TOPSOIL		\$ 2.10	CY	0	\$ -	\$ -			10%
OVERLOT GRADING		\$ 2.25	CY	0	\$ -	\$ -			3000
SUBEXCAVATION		\$ 2.25	CY	0	\$ -	\$ -			
ROCK EXCAVATION		\$ 7.50	CY	0	\$ -	\$ -			
SUBTOTAL		#DIV/0!			\$ -	\$ -			
EROSION CONTROL		UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS	
EROSION CONTROL		\$ 25.00	LF	800	\$ 20,000.00	\$ -			
SUBTOTAL		#DIV/0!			\$ 20,000	\$ -			
UTILITY TRENCHING		UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS	
UTILITY TRENCHING		\$ -	LF	0	\$ -	\$ -			
SUBTOTAL		#DIV/0!			\$ -	\$ -			
UTILITY CHARGES		UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS	
ELECTRIC DISTRIBUTION		\$ 3,500.00	LOT	0	\$ -	\$ -			Street Lights
GAS DISTRIBUTION		\$ 1,000.00	LOT	0	\$ -	\$ -			Bury/Relocation
TELECOMMUNICATION DISTRIBUTION		\$ 500.00	LOT	0	\$ -	\$ -			Bury/Relocation
TRAFFIC SIGNAL		\$ 50,000.00	LS	0.0	\$ -	\$ 50,000.00			Misc
STREET LIGHTS		\$ 10,250.00	EA	5	\$ 51,250.00	\$ -			175
SUBTOTAL		#DIV/0!			\$ 51,250	\$ 50,000			
SANITARY SEWER IMPROVEMENTS		UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS	
4" SDR 10		\$ 22.00	LF	800	\$ 17,600.00	\$ -			
8" SDR 10		\$ 28.00	LF	0	\$ -	\$ -			
PIPE 8" PVC W/BEDDING		\$ 55.00	LF	800	\$ 44,000.00	\$ -			100%
PIPE 10" PVC W/BEDDING		\$ 61.00	LF	0	\$ -	\$ -			0%
PIPE 12" PVC W/BEDDING		\$ 80.00	LF	0	\$ -	\$ -			0%
8" PVC FORCEMAIN		\$ 80.25	LF	0	\$ -	\$ -			0%
EXTRA DEPTH 10'-12'		\$ 2.25	LF	180	\$ 360.00	\$ -			20%
EXTRA DEPTH 12' - 14'		\$ 7.10	LF	80	\$ 568.00	\$ -			10%
EXTRA DEPTH 14' - 16'		\$ 12.36	LF	40	\$ 494.40	\$ -			5%
EXTRA DEPTH 16' - 18'		\$ 13.23	LF	40	\$ 529.20	\$ -			5%
EXTRA DEPTH 18' - 20'		\$ 62.50	LF	0	\$ -	\$ -			0%
EXTRA DEPTH 20' - 22'		\$ 64.60	LF	0	\$ -	\$ -			0%
ROCK CUT		\$ 47.15	CY	0	\$ -	\$ -			0%
8" X 4" WYE, BEND, CAP		\$ 110.25	EA	0	\$ -	\$ -			
M.H. - 4' DIA (0-10')		\$ 4,300.00	EA	3	\$ 12,900.00	\$ -			300
M.H. - 5' DIA (0-10')		\$ 7,100.00	EA	0	\$ -	\$ -			300
M.H. - EXTRA DEPTH		\$ 116.00	VF	15	\$ 1,770.00	\$ -			5
8" CLEANOUT ASSEMBLY		\$ 940.00	EA	3	\$ 2,820.00	\$ -			
MARKER POSTS		\$ 180.00	EA	0	\$ -	\$ -			0%
TIE TO EXISTING STUB		\$ 3,000.00	EA	0	\$ -	\$ -			
AIR TEST MAIN		\$ 0.70	LF	800	\$ 560.00	\$ -			
DEFLECTION TEST MAIN		\$ 0.86	LF	800	\$ 688.00	\$ -			
JETT SEWER MAINLINE		\$ 0.81	LF	800	\$ 648.00	\$ -			
TV SEWER LINE		\$ 0.91	LS	800	\$ 728.00	\$ -			
SPECIAL		\$ 50,000.00	LS	0.00	\$ -	\$ 50,000.00			Misc
SUBTOTAL		#DIV/0!			\$ 83,666	\$ 50,000			
STORM DRAINAGE IMPROVEMENTS		UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS	
15" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 80.25	LF	0	\$ -	\$ -			0%
18" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 102.15	LF	200	\$ 20,430.00	\$ -			25%
21" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 109.65	LF	0	\$ -	\$ -			0%
24" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 123.65	LF	200	\$ 24,730.00	\$ -			25%
30" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 149.45	LF	0	\$ -	\$ -			0%
36" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 176.30	LF	40	\$ 7,052.00	\$ -			5%
42" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 213.93	LF	0	\$ -	\$ -			0%
48" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 260.50	LF	0	\$ -	\$ -			0%
54" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 295.63	LF	0	\$ -	\$ -			0%
60" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 277.00	LF	0	\$ -	\$ -			0%
72" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 378.40	LF	0	\$ -	\$ -			0%
84" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 424.63	LF	0	\$ -	\$ -			0%
84" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 510.63	LF	0	\$ -	\$ -			0%
96" RCP CL III TG/ C-443 0-8' w/squeegee		\$ 695.00	LF	0	\$ -	\$ -			0%
EXTRA DEPTH 8'-10'		\$ 2.88	VF	0	\$ -	\$ -			0%
EXTRA DEPTH 10'-12'		\$ 7.59	VF	0	\$ -	\$ -			0%
EXTRA DEPTH 12' - 14'		\$ 14.96	VF	0	\$ -	\$ -			0%
EXTRA DEPTH 14' - 16'		\$ 25.00	VF	0	\$ -	\$ -			0%
EXTRA DEPTH 16' - 18'		\$ 36.01	VF	0	\$ -	\$ -			0%
ROCK CUT		\$ 48.54	CY	0	\$ -	\$ -			0%
24" FES		\$ 3,635.00	EA	0	\$ -	\$ -			
30" FES		\$ 5,375.00	EA	0	\$ -	\$ -			
36" FES		\$ 6,235.00	EA	0	\$ -	\$ -			
42" FES		\$ 6,450.00	EA	0	\$ -	\$ -			
48" FES		\$ 7,310.00	EA	0	\$ -	\$ -			
54" FES		\$ 7,740.00	EA	0	\$ -	\$ -			
60" FES		\$ 9,785.00	EA	0	\$ -	\$ -			
4" Diameter MH (0-8) w/24" Cover		\$ 4,975.00	EA	1	\$ 4,975.00	\$ -			400
5" Diameter MH (0-8) w/24" Cover		\$ 6,020.00	EA	1	\$ 6,020.00	\$ -			200
6" MH (0-8 depth) & 24" Cover		\$ 7,740.00	EA	0	\$ -	\$ -			200
Box Base Manhole		\$ 24,187.00	EA	0	\$ -	\$ -			200
Riprap, Grouted (Type M/L/H)		\$ 300.00	CY	0	\$ -	\$ -			
Riprap, Grouted 2' Boulders		\$ 395.00	CY	0	\$ -	\$ -			
Riprap, Grouted 3' Boulders		\$ 432.00	CY	0	\$ -	\$ -			
Riprap, Placed (Type M/L/H)		\$ 97.50	TN	0	\$ -	\$ -			
Riprap, Placed Type VH		\$ 104.30	TN	0	\$ -	\$ -			
Soil Riprap Placed		\$ 80.90	TN	0	\$ -	\$ -			
5" Type 'R' Inlet Up to 5' Deep		\$ 7,720.00	EA	0	\$ -	\$ -			
Extra Depth Inlet Over 5' Deep		\$ 507.94	VF	0	\$ -	\$ -			
10" Type 'R' Inlet Up to 5' Deep		\$ 10,070.00	EA	0	\$ -	\$ -			
Extra Depth Inlet Over 5' Deep		\$ 846.00	VF	0	\$ -	\$ -			
15" Type 'R' Inlet Up to 5' Deep		\$ 13,135.00	EA	0	\$ -	\$ -			
Extra Depth Inlet Over 5' Deep		\$ 1,100.00	VF	0	\$ -	\$ -			
20" Type 'R' Inlet Up to 5' Deep		\$ 17,500.00	EA	0	\$ -	\$ -			
Extra Depth Inlet Over 5' Deep		\$ 1,495.00	VF	0	\$ -	\$ -			
Single No. 13 & 16		\$ 3,925.00	EA	0	\$ -	\$ -			
Extra depth		\$ 362.00	EA	0	\$ -	\$ -			
Double No. 13 & 16		\$ 6,130.00	EA	0	\$ -	\$ -			



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PROJECT TOTAL				Intract	Infrastructure		
Extra depth	\$ 525.00	EA	0	\$ 1,027,723	\$ 290,000		
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	\$ -		
Extra depth	\$ 728.00	EA	0	\$ -	\$ -		
Type: C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	\$ -		
Extra Depth	\$ 355.00	EA	0	\$ -	\$ -		
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	\$ -		
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 50,000.00		Misc
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ 63,207	\$ 50,000		
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	\$ -		0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	\$ -		0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	800	\$ 48,160.00	\$ -		100%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	\$ -		0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	\$ -		0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	\$ -		0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	\$ -		0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	\$ -		500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	\$ -		750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	4	\$ 18,127.73	\$ -		250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	0	\$ -	\$ -		750
20" BFV Valve W/Box & Restraints	\$ 19,102.88	EA	0	\$ -	\$ -		750
24" BFV Valve W/Box & Restraints	\$ 19,753.13	EA	0	\$ -	\$ -		750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	\$ -		750
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	\$ -		
Fire Hydrants	\$ 9,030.00	EA	2	\$ 18,060.00	\$ -		500
8" Fittings	\$ 671.86	EA	0	\$ -	\$ -		500
10" Fittings	\$ 836.50	EA	0	\$ -	\$ -		750
12" Fittings	\$ 1,290.00	EA	4	\$ 5,160.00	\$ -		250
16" Fittings	\$ 1,687.46	EA	0	\$ -	\$ -		750
20" Fittings	\$ 3,724.86	EA	0	\$ -	\$ -		750
24" Fittings	\$ 4,285.86	EA	0	\$ -	\$ -		750
30" Fittings	\$ 4,910.06	EA	0	\$ -	\$ -		750
Remove Plug & Tie in	\$ 2,031.75	EA	0	\$ -	\$ -		
Tie in after testing	\$ 1,612.50	EA	0	\$ -	\$ -		
CI Clear Water & Presure Test	\$ 4,837.50	EA	0.0	\$ -	\$ -		
MARKER POSTS	\$ 145.13	EA	0	\$ -	\$ -		100
WATER SERVICE	\$ 2,821.88	EA	0	\$ -	\$ -		
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 50,000.00		
SUBTOTAL	#DIV/0!			\$ 89,508	\$ 50,000		
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
RETAINING WALLS	\$ 31.75	LF	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ -	\$ -		
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
ROAD BASE - 6"	\$ 6.60	SY	2844	\$ 18,773.33	\$ -		32.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	\$ -		-
PAVING - 6"	\$ 25.50	SY	0	\$ -	\$ -		-
PAVING - 10"	\$ 42.50	SY	2133	\$ 90,866.67	\$ -		24.0
PAVING - SUBGRADE PREPARATION	\$ 4.60	SY	2133	\$ 9,813.33	\$ -		
SUBEXCAVATION	\$ 2.52	CY	2133	\$ 5,376.00	\$ -		3.0
PAVING 2	\$ 11.30	SY	0	\$ -	\$ -		2" Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	800	\$ 856.00	\$ -		1.0
SIGNAGE	\$ 450.00	EA	2	\$ 1,028.57	\$ -		350
TRAFFIC CONTROL	\$ 5,000.00	LS	0	\$ -	\$ -		
SLEEVES	\$ 16.85	LF	0	\$ -	\$ -		-
RAISE WATER VALVES	\$ 250.00	EA	7	\$ 1,750.00	\$ -		
RAISE MANHOLES	\$ 800.00	EA	5	\$ 4,000.00	\$ -		
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ 132,264	\$ -		
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
CURB & GUTTER - 1' CUTTER	\$ 19.75	LF	0	\$ -	\$ -		-
CURB & GUTTER - 2' CUTTER	\$ 20.70	LF	1600	\$ 33,120.00	\$ -		2
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	\$ -		-
ALLEYS - 6" CONCRETE	\$ 10.13	SF	0	\$ -	\$ -		16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	1600	\$ 3,600.00	\$ -		
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	\$ -		3.0
CROSS PANS	\$ 10.15	SF	0	\$ -	\$ -		
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	0	\$ -	\$ -		
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	0	\$ -	\$ -		
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -		
6' SIDEWALK - 6"	\$ 5.25	SF	8000	\$ 42,000.00	\$ -		
8' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -		
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ 78,720	\$ -		
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
OPEN SPACE	\$ 3.20	SF	8400	\$ 20,480.00	\$ -		8
FORMAL - STREETS	\$ 8.30	SF	8000	\$ 66,400.00	\$ -		10
FORMAL - PARKS	\$ 6.30	SF	1600	\$ 13,280.00	\$ -		2
MONUMENTS	\$ 30,000.00	LS	3	\$ 90,000.00	\$ -		
FENCING	\$ 14.50	SF	0	\$ -	\$ -		
TRAILS	\$ 5.25	SF	0	\$ -	\$ -		
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	\$ -		
AMENITY	\$ 35,000.00	LS	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ 190,160	\$ -		
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
LETTERS OF CREDIT/BONDS	\$ 708,774	LS	0.8%	\$ 5,316	\$ 1,500.00		
WARRANTY	\$ 708,774	LS	3.0%	\$ 21,263	\$ 6,000.00		
MOBILIZATION	\$ 708,774	LS	5.0%	\$ 35,439	\$ 10,000.00		
CONTINGENCY	\$ 708,774	LS	20.0%	\$ 141,755	\$ 40,000.00		
SUBTOTAL	#DIV/0!			\$ 203,773	\$ 57,500		
PROJECT TOTAL	#DIV/0!			\$ 1,027,723	\$ 290,000		



POUDRE HEIGHTS B						
March 13, 2021						
PROJECT TOTAL			Intracit	Infrastructure		
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
AGENCY REVIEW FEES	\$ 12,352.43	LS	1	\$ 12,352.43	\$ 6,000.00	1.00%
PLANNING	\$ 12,352.43	LS	1	\$ 12,352.43	\$ 6,000.00	1.00%
ENGINEERING	\$ 74,114.57	LS	1	\$ 74,114.57	\$ 36,000.00	6.00%
LANDSCAPE ARCHITECTURE	\$ 30,881.07	LS	1	\$ 30,881.07	\$ 15,000.00	2.50%
STAKING	\$ 30,881.07	LS	1	\$ 30,881.07	\$ 15,000.00	2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 30,881.07	LS	1	\$ 30,881.07	\$ 15,000.00	2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 9,264.32	LS	1	\$ 9,264.32	\$ 4,500.00	0.75%
SUBTOTAL	#DIV/0!			\$ 200,727	\$ 97,500	
GRADING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
TOPSOIL	\$ 2.10	CY	0	\$ -	\$ -	10%
OVERLOT GRADING	\$ 2.25	CY	0	\$ -	\$ -	3000
SUBEXCAVATION	\$ 2.25	CY	0	\$ -	\$ -	
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -	\$ -	0%
SUBTOTAL	#DIV/0!			\$ -	\$ -	
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
EROSION CONTROL	\$ 25.00	LF	1800	\$ 45,000.00	\$ -	
SUBTOTAL	#DIV/0!			\$ 45,000	\$ -	
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
UTILITY TRENCHING	\$ -	LF	0	\$ -	\$ -	
SUBTOTAL	#DIV/0!			\$ -	\$ -	
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
ELECTRIC DISTRIBUTION	\$ 3,500.00	LOT	0	\$ -	\$ -	Street Lights
GAS DISTRIBUTION	\$ 5,000.00	LOT	0	\$ -	\$ -	Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$ 500.00	LOT	0	\$ -	\$ -	Bury/Relocations
TRAFFIC SIGNAL	\$ 50,000.00	LS	0.0	\$ -	\$ 150,000.00	Misc
STREET LIGHTS	\$ 10,250.00	EA	11	\$ 112,750.00	\$ -	175
SUBTOTAL	#DIV/0!			\$ 112,750	\$ 150,000	
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
4" SDR 10	\$ 22.00	LF	1800	\$ 39,600.00	\$ -	
8" SDR 10	\$ 28.00	LF	0	\$ -	\$ -	
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	1800	\$ 99,000.00	\$ -	100%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	0	\$ -	\$ -	0%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -	\$ -	0%
8" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 2.25	LF	380	\$ 810.00	\$ -	20%
EXTRA DEPTH 12'-14'	\$ 7.10	LF	180	\$ 1,278.00	\$ -	10%
EXTRA DEPTH 14'-16'	\$ 12.36	LF	90	\$ 1,112.40	\$ -	5%
EXTRA DEPTH 16'-18'	\$ 13.23	LF	90	\$ 1,190.70	\$ -	5%
EXTRA DEPTH 18'-20'	\$ 52.50	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 20'-22'	\$ 64.80	LF	0	\$ -	\$ -	0%
ROCK CUT	\$ 47.15	CY	0	\$ -	\$ -	0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -	\$ -	
M.H. - 4' DIA (0-10')	\$ 4,300.00	EA	6	\$ 25,800.00	\$ -	300
M.H. - 5' DIA (0-10')	\$ 7,100.00	EA	0	\$ -	\$ -	300
M.H. - EXTRA DEPTH	\$ 118.00	VF	30	\$ 3,540.00	\$ -	5
8" CLEANOUT ASSEMBLY	\$ 940.00	EA	6	\$ 5,640.00	\$ -	
MARKER POSTS	\$ 180.00	EA	0	\$ -	\$ -	0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -	\$ -	
AIR TEST MAIN	\$ 0.70	LF	1800	\$ 1,260.00	\$ -	
DEFLECTION TEST MAIN	\$ 0.86	LF	1800	\$ 1,548.00	\$ -	
JETT SEWER MAINLINE	\$ 0.81	LF	1800	\$ 1,458.00	\$ -	
TV SEWER LINE	\$ 0.91	LS	1800	\$ 1,638.00	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 150,000.00	Misc
SUBTOTAL	#DIV/0!			\$ 183,875	\$ 150,000	
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
15" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 80.25	LF	0	\$ -	\$ -	0%
18" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 102.15	LF	450	\$ 45,967.50	\$ -	25%
21" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 109.65	LF	0	\$ -	\$ -	0%
24" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 123.65	LF	450	\$ 55,642.50	\$ -	25%
30" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 149.45	LF	0	\$ -	\$ -	0%
36" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 176.30	LF	90	\$ 15,867.00	\$ -	5%
42" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 213.93	LF	0	\$ -	\$ -	0%
48" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 260.50	LF	0	\$ -	\$ -	0%
54" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 295.63	LF	0	\$ -	\$ -	0%
60" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 277.00	LF	0	\$ -	\$ -	0%
72" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 378.40	LF	0	\$ -	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 424.63	LF	0	\$ -	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 510.63	LF	0	\$ -	\$ -	0%
96" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 695.00	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 12'-14'	\$ 14.96	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 14'-16'	\$ 25.00	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 16'-18'	\$ 36.01	VF	0	\$ -	\$ -	0%
ROCK CUT	\$ 48.54	CY	0	\$ -	\$ -	0%
24" FES	\$ 3,635.00	EA	0	\$ -	\$ -	
30" FES	\$ 6,375.00	EA	0	\$ -	\$ -	
36" FES	\$ 6,235.00	EA	0	\$ -	\$ -	
42" FES	\$ 6,450.00	EA	0	\$ -	\$ -	
48" FES	\$ 7,310.00	EA	0	\$ -	\$ -	
54" FES	\$ 7,740.00	EA	0	\$ -	\$ -	
60" FES	\$ 9,785.00	EA	0	\$ -	\$ -	
4" Diameter MH (0-8) w/24" Cover	\$ 4,975.00	EA	3	\$ 14,925.00	\$ -	400
5" Diameter MH (0-8) w/24" Cover	\$ 6,020.00	EA	1	\$ 6,020.00	\$ -	200
6" MH (0-8 depth) & 24" Cover	\$ 7,740.00	EA	0	\$ -	\$ -	200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -	\$ -	200
Riprap, Grouted (Type M/L/H)	\$ 300.00	CY	0	\$ -	\$ -	
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -	\$ -	
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -	\$ -	
Riprap, Placed (Type M/L/H)	\$ 97.50	TN	0	\$ -	\$ -	
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -	\$ -	
Soil Riprap Placed	\$ 80.90	TN	0	\$ -	\$ -	
5" Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -	\$ -	
10" Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -	\$ -	
15" Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -	\$ -	
20" Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -	\$ -	
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -	\$ -	
Extra depth	\$ 362.00	EA	0	\$ -	\$ -	
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -	\$ -	



POUDRE HEIGHTS B									
March 13, 2021									
				Intracit	Infrastrucutre				
PROJECT TOTAL				\$	1,791,102	\$	870,000		
Extra depth	\$	525.00	EA	0	\$	-	\$	-	
Triple No. 13 & 16	\$	8,922.00	EA	0	\$	-	\$	-	
Extra depth	\$	728.00	EA	0	\$	-	\$	-	
Type C Inlet (close mesh grate)	\$	6,895.00	EA	0	\$	-	\$	-	
Extra Depth	\$	355.00	EA	0	\$	-	\$	-	
OUTLET STRUCTURE	\$	25,000.00	EA	0	\$	-	\$	-	
SPECIAL	\$	50,000.00	LS	0.00	\$	-	\$	150,000.00	Misc
CONNECT TO EXISTING PIPE	\$	3,000.00	LS	0	\$	-	\$	-	
SUBTOTAL	#DIV/0!				\$	138,422	\$	150,000	
WATER IMPROVEMENTS									
				UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$	43.50	LF	0	\$	-	\$	-	0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$	54.18	LF	0	\$	-	\$	-	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$	60.20	LF	1800	\$	108,360.00	\$	-	100%
16" PVC w/Bedding & 12ga Tracer wire	\$	73.62	LF	0	\$	-	\$	-	0%
20" PVC w/Bedding & 12ga Tracer wire	\$	132.06	LF	0	\$	-	\$	-	0%
24" PVC w/Bedding & 12ga Tracer wire	\$	137.73	LF	0	\$	-	\$	-	0%
30" PVC w/Bedding & 12ga Tracer wire	\$	355.84	LF	0	\$	-	\$	-	0%
8" MJ Gate Valve W/Box & Restraints	\$	2,483.25	EA	0	\$	-	\$	-	500
10" MJ Gate Valve W/Box & Restraints	\$	3,806.15	EA	0	\$	-	\$	-	750
12" MJ Gate Valve W/Box & Restraints	\$	4,531.93	EA	8	\$	36,255.45	\$	-	250
16" BFV Valve W/Box & Restraints	\$	19,583.81	EA	0	\$	-	\$	-	750
20" BFV Valve W/Box & Restraints	\$	15,102.88	EA	0	\$	-	\$	-	750
24" BFV Valve W/Box & Restraints	\$	19,753.13	EA	0	\$	-	\$	-	750
30" BFV Valve W/Box & Restraints	\$	33,904.26	EA	0	\$	-	\$	-	750
Vaults for BFV	\$	23,703.75	EA	0	\$	-	\$	-	
Fire Hydrants	\$	9,030.00	EA	4	\$	36,120.00	\$	-	500
8" Fittings	\$	671.86	EA	0	\$	-	\$	-	500
10" Fittings	\$	836.50	EA	0	\$	-	\$	-	750
12" Fittings	\$	1,290.00	EA	8	\$	10,320.00	\$	-	250
16" Fittings	\$	1,687.46	EA	0	\$	-	\$	-	750
20" Fittings	\$	3,724.86	EA	0	\$	-	\$	-	750
24" Fittings	\$	4,285.86	EA	0	\$	-	\$	-	750
30" Fittings	\$	4,910.06	EA	0	\$	-	\$	-	750
Remove Plug & Tie in	\$	2,031.75	EA	0	\$	-	\$	-	
Tie in after testing	\$	1,612.50	EA	0	\$	-	\$	-	
CI Clear Water & Presure Test	\$	4,837.50	EA	0.0	\$	-	\$	-	
MARKER POSTS	\$	145.13	EA	0	\$	-	\$	-	100
WATER SERVICE	\$	2,821.88	EA	0	\$	-	\$	-	
SPECIAL	\$	50,000.00	LS	0.00	\$	-	\$	150,000.00	
SUBTOTAL	#DIV/0!				\$	191,055	\$	150,000	
RETAINING WALLS									
				UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
RETAINING WALLS	\$	31.75	LF	0	\$	-	\$	-	
SUBTOTAL	#DIV/0!				\$	-	\$	-	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)									
				UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
ROAD BASE - 6"	\$	6.60	SY	6400	\$	42,240.00	\$	-	32.0
PAVING - 4"	\$	17.00	SY	4800	\$	81,600.00	\$	-	24.0
PAVING - 6"	\$	25.50	SY	0	\$	-	\$	-	-
PAVING - 10"	\$	42.50	SY	0	\$	-	\$	-	-
PAVING - SUBGRADE PREPARATION	\$	4.60	SY	4800	\$	22,080.00	\$	-	
SUBEXCAVATION	\$	2.52	CY	0	\$	-	\$	-	3.0
PAVING 2	\$	11.30	SY	0	\$	-	\$	-	2" Mill/Overlay
PAVEMENT MARKINGS	\$	1.07	LF	1800	\$	1,926.00	\$	-	1.0
SIGNAGE	\$	460.00	EA	5	\$	2,314.29	\$	-	350
TRAFFIC CONTROL	\$	5,000.00	LS	0	\$	-	\$	-	
SLEEVES	\$	16.85	LF	0	\$	-	\$	-	-
RAISE WATER VALVES	\$	250.00	EA	14	\$	3,500.00	\$	-	
RAISE MANHOLES	\$	800.00	EA	10	\$	8,000.00	\$	-	
RAISE RANGEBOXES	\$	375.00	EA	0	\$	-	\$	-	
SUBTOTAL	#DIV/0!				\$	161,660	\$	-	
CONCRETE IMPROVEMENTS (INTERNAL)									
				UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
CURB & GUTTER - 1' CUTTER	\$	19.75	LF	0	\$	-	\$	-	-
CURB & GUTTER - 2' CUTTER	\$	20.70	LF	3600	\$	74,520.00	\$	-	2
CURB & GUTTER - 2' MOUNTABLE	\$	27.55	LF	0	\$	-	\$	-	-
ALLEYS - 6" CONCRETE	\$	10.13	SF	0	\$	-	\$	-	16
CURB AND GUTTER SUB GRADE PREPARATION	\$	2.25	LF	3600	\$	8,100.00	\$	-	
SUBEXCAVATION ALLEYS	\$	3.35	CY	0	\$	-	\$	-	3.0
CROSS PANS	\$	10.15	SF	0	\$	-	\$	-	
HANDICAP RAMPS (CORNER)	\$	3,790.00	EA	0	\$	-	\$	-	
MIDBLOCK HANDICAP RAMPS	\$	1,600.00	EA	0	\$	-	\$	-	
4' SIDEWALK - 6"	\$	5.25	SF	0	\$	-	\$	-	
6' SIDEWALK - 6"	\$	5.25	SF	18000	\$	94,500.00	\$	-	
8' SIDEWALK - 6"	\$	5.25	SF	0	\$	-	\$	-	
SIDEWALK SUB GRADE PREP	\$	1.85	LF	0	\$	-	\$	-	
SUBTOTAL	#DIV/0!				\$	177,120	\$	-	
LANDSCAPING IMPROVEMENTS									
				UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
OPEN SPACE	\$	3.20	SF	14400	\$	46,080.00	\$	-	8
FORMAL - STREETS	\$	8.30	SF	18000	\$	149,400.00	\$	-	10
FORMAL - PARKS	\$	6.30	SF	3600	\$	22,680.00	\$	-	2
MONUMENTS	\$	30,000.00	LS	0	\$	-	\$	-	
FENCING	\$	14.50	SF	0	\$	-	\$	-	
TRAILS	\$	5.25	SF	0	\$	-	\$	-	
MAIL BOXES	\$	2,500.00	EA	0	\$	-	\$	-	
AMENITY	\$	35,000.00	LS	0	\$	-	\$	-	
SUBTOTAL	#DIV/0!				\$	225,360	\$	-	
ADDITIONAL COSTS									
				UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
LETTERS OF CREDIT/BONDS	\$	1,235.243	LS	0.8%	\$	9,264	\$	4,500.00	
WARRANTY	\$	1,235.243	LS	3.0%	\$	37,057	\$	18,000.00	
MOBILIZATION	\$	1,235.243	LS	5.0%	\$	61,762	\$	30,000.00	
CONTINGENCY	\$	1,235.243	LS	20.0%	\$	247,049	\$	120,000.00	
SUBTOTAL	#DIV/0!				\$	355,132	\$	172,500	
PROJECT TOTAL	#DIV/0!				\$	1,791,102	\$	870,000	



POUDRE HEIGHTS C						
March 13, 2021						
PROJECT TOTAL			Intract		Infrastructure	
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
AGENCY REVIEW FEES	\$ 18,887.77	LS	1	\$ 18,887.77	\$ 12,000.00	1.00%
PLANNING	\$ 18,887.77	LS	1	\$ 18,887.77	\$ 12,000.00	1.00%
ENGINEERING	\$ 113,326.58	LS	1	\$ 113,326.58	\$ 72,000.00	8.00%
LANDSCAPE ARCHITECTURE	\$ 47,219.41	LS	1	\$ 47,219.41	\$ 30,000.00	2.50%
STAKING	\$ 47,219.41	LS	1	\$ 47,219.41	\$ 30,000.00	2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 47,219.41	LS	1	\$ 47,219.41	\$ 30,000.00	2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 14,165.82	LS	1	\$ 14,165.82	\$ 9,000.00	0.75%
SUBTOTAL	#DIV/0!			\$ 306,926	\$ 195,000	
GRADING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
TOPSOIL	\$ 2.10	CY	0	\$ -	\$ -	10%
OVERLOT GRADING	\$ 2.25	CY	0	\$ -	\$ -	3000
SUBEXCAVATION	\$ 2.25	CY	0	\$ -	\$ -	
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -	\$ -	0%
SUBTOTAL	#DIV/0!			\$ -	\$ -	
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
EROSION CONTROL	\$ 25.00	LF	2500	\$ 62,500.00	\$ -	
SUBTOTAL	#DIV/0!			\$ 62,500	\$ -	
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
UTILITY TRENCHING	\$ -	LF	0	\$ -	\$ -	
SUBTOTAL	#DIV/0!			\$ -	\$ -	
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
ELECTRIC DISTRIBUTION	\$ 3,500.00	LOT	0	\$ -	\$ -	Street Lights
GAS DISTRIBUTION	\$ 5,000.00	LOT	0	\$ -	\$ -	Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$ 500.00	LOT	0	\$ -	\$ -	Bury/Relocations
TRAFFIC SIGNAL	\$ 50,000.00	LS	0.0	\$ -	\$ 300,000.00	Misc
STREET LIGHTS	\$ 10,250.00	EA	15	\$ 153,750.00	\$ -	175
SUBTOTAL	#DIV/0!			\$ 153,750	\$ 300,000	
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
4" SDR 10	\$ 22.00	LF	2500	\$ 55,000.00	\$ -	
8" SDR 10	\$ 28.00	LF	0	\$ -	\$ -	
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	2500	\$ 137,500.00	\$ -	100%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	0	\$ -	\$ -	0%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -	\$ -	0%
8" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 2.25	LF	500	\$ 1,125.00	\$ -	20%
EXTRA DEPTH 12'-14'	\$ 7.10	LF	250	\$ 1,775.00	\$ -	10%
EXTRA DEPTH 14'-16'	\$ 12.36	LF	125	\$ 1,545.00	\$ -	5%
EXTRA DEPTH 16'-18'	\$ 13.23	LF	125	\$ 1,653.75	\$ -	5%
EXTRA DEPTH 18'-20'	\$ 62.50	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 20'-22'	\$ 64.80	LF	0	\$ -	\$ -	0%
ROCK CUT	\$ 47.15	CY	0	\$ -	\$ -	0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -	\$ -	
M.H. - 4' DIA (0-10')	\$ 4,300.00	EA	9	\$ 38,700.00	\$ -	300
M.H. - 5' DIA (0-10')	\$ 7,100.00	EA	0	\$ -	\$ -	300
M.H. - EXTRA DEPTH	\$ 118.00	VF	45	\$ 5,310.00	\$ -	5
8" CLEANOUT ASSEMBLY	\$ 940.00	EA	9	\$ 8,460.00	\$ -	
MARKER POSTS	\$ 180.00	EA	0	\$ -	\$ -	0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -	\$ -	
AIR TEST MAIN	\$ 0.70	LF	2600	\$ 1,760.00	\$ -	
DEFLECTION TEST MAIN	\$ 0.86	LF	2500	\$ 2,150.00	\$ -	
JETT SEWER MAINLINE	\$ 0.81	LF	2500	\$ 2,025.00	\$ -	
TV SEWER LINE	\$ 0.91	LS	2500	\$ 2,275.00	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 300,000.00	Misc
SUBTOTAL	#DIV/0!			\$ 259,269	\$ 300,000	
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
15" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 80.25	LF	0	\$ -	\$ -	0%
18" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 102.15	LF	625	\$ 63,843.75	\$ -	25%
21" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 109.65	LF	0	\$ -	\$ -	0%
24" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 123.65	LF	625	\$ 77,281.25	\$ -	25%
30" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 149.45	LF	0	\$ -	\$ -	0%
36" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 176.30	LF	125	\$ 22,037.50	\$ -	5%
42" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 213.93	LF	0	\$ -	\$ -	0%
48" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 260.50	LF	0	\$ -	\$ -	0%
54" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 295.63	LF	0	\$ -	\$ -	0%
60" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 277.00	LF	0	\$ -	\$ -	0%
72" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 378.40	LF	0	\$ -	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 424.63	LF	0	\$ -	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 510.63	LF	0	\$ -	\$ -	0%
96" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 695.00	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 12'-14'	\$ 14.96	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 14'-16'	\$ 25.00	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 16'-18'	\$ 36.01	VF	0	\$ -	\$ -	0%
ROCK CUT	\$ 45.54	CY	0	\$ -	\$ -	0%
24" FES	\$ 3,635.00	EA	0	\$ -	\$ -	
30" FES	\$ 5,375.00	EA	0	\$ -	\$ -	
36" FES	\$ 6,235.00	EA	0	\$ -	\$ -	
42" FES	\$ 6,450.00	EA	0	\$ -	\$ -	
48" FES	\$ 7,310.00	EA	0	\$ -	\$ -	
54" FES	\$ 7,740.00	EA	0	\$ -	\$ -	
60" FES	\$ 9,785.00	EA	0	\$ -	\$ -	
4" Diameter MH (0-8) w/24" Cover	\$ 4,975.00	EA	4	\$ 19,900.00	\$ -	400
5" Diameter MH (0-8) w/24" Cover	\$ 6,020.00	EA	1	\$ 6,020.00	\$ -	200
6" MH (0-8 depth) & 24" Cover	\$ 7,740.00	EA	0	\$ -	\$ -	200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -	\$ -	200
Riprap, Grouted (Type M/L/H)	\$ 300.00	CY	0	\$ -	\$ -	
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -	\$ -	
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -	\$ -	
Riprap, Placed (Type M/L/H)	\$ 97.50	TN	0	\$ -	\$ -	
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -	\$ -	
Soil Riprap Placed	\$ 80.90	TN	0	\$ -	\$ -	
5" Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -	\$ -	
10" Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -	\$ -	
15" Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -	\$ -	
20" Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -	\$ -	
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -	\$ -	
Extra depth	\$ 362.00	EA	0	\$ -	\$ -	
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -	\$ -	



POUDRE HEIGHTS C						
March 13, 2021						
			Intract	Infrastructure		
PROJECT TOTAL				\$ 2,738,728	\$ 1,740,000	
Extra depth	\$ 525.00	EA	0	\$ -	\$ -	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	\$ -	
Extra depth	\$ 728.00	EA	0	\$ -	\$ -	
Type: C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	\$ -	
Extra Depth	\$ 355.00	EA	0	\$ -	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 300,000.00	Misc
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	\$ -	
SUBTOTAL	#DIV/0!			\$ 189,083	\$ 300,000	
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	\$ -	0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	\$ -	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	2500	\$ 150,500.00	\$ -	100%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	\$ -	0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	\$ -	0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	\$ -	0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	\$ -	0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	\$ -	500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	\$ -	750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	10	\$ 45,319.31	\$ -	250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	0	\$ -	\$ -	750
20" BFV Valve W/Box & Restraints	\$ 19,102.88	EA	0	\$ -	\$ -	750
24" BFV Valve W/Box & Restraints	\$ 19,753.13	EA	0	\$ -	\$ -	750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	\$ -	750
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	\$ -	
Fire Hydrants	\$ 9,030.00	EA	5	\$ 45,150.00	\$ -	500
8" Fittings	\$ 671.86	EA	0	\$ -	\$ -	500
10" Fittings	\$ 836.50	EA	0	\$ -	\$ -	750
12" Fittings	\$ 1,290.00	EA	10	\$ 12,900.00	\$ -	250
16" Fittings	\$ 1,687.46	EA	0	\$ -	\$ -	750
20" Fittings	\$ 3,724.86	EA	0	\$ -	\$ -	750
24" Fittings	\$ 4,285.86	EA	0	\$ -	\$ -	750
30" Fittings	\$ 4,910.06	EA	0	\$ -	\$ -	750
Remove Plug & Tie in	\$ 2,031.75	EA	0	\$ -	\$ -	
Tie in after testing	\$ 1,612.50	EA	0	\$ -	\$ -	
CI Clear Water & Presure Test	\$ 4,837.50	EA	0.0	\$ -	\$ -	
MARKER POSTS	\$ 145.13	EA	0	\$ -	\$ -	100
WATER SERVICE	\$ 2,821.88	EA	0	\$ -	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 300,000.00	
SUBTOTAL	#DIV/0!			\$ 253,869	\$ 300,000	
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	\$ -	
SUBTOTAL	#DIV/0!			\$ -	\$ -	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
ROAD BASE - 6"	\$ 6.60	SY	8889	\$ 58,686.87	\$ -	32.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	\$ -	-
PAVING - 6"	\$ 25.50	SY	0	\$ -	\$ -	-
PAVING - 10"	\$ 42.50	SY	6667	\$ 283,333.33	\$ -	24.0
PAVING - SUBGRADE PREPARATION	\$ 4.60	SY	6667	\$ 30,886.67	\$ -	
SUBEXCAVATION	\$ 2.52	CY	6667	\$ 16,800.00	\$ -	3.0
PAVING 2	\$ 11.30	SY	0	\$ -	\$ -	2" Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	2500	\$ 2,675.00	\$ -	1.0
SIGNAGE	\$ 460.00	EA	7	\$ 3,214.29	\$ -	350
TRAFFIC CONTROL	\$ 5,000.00	LS	0	\$ -	\$ -	
SLEEVES	\$ 16.85	LF	0	\$ -	\$ -	-
RAISE WATER VALVES	\$ 250.00	EA	19	\$ 4,750.00	\$ -	
RAISE MANHOLES	\$ 800.00	EA	14	\$ 11,200.00	\$ -	
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	\$ -	
SUBTOTAL	#DIV/0!			\$ 411,308	\$ -	
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
CURB & GUTTER - 1' CUTTER	\$ 19.75	LF	0	\$ -	\$ -	-
CURB & GUTTER - 2' CUTTER	\$ 20.70	LF	5000	\$ 103,500.00	\$ -	2
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	\$ -	-
ALLEYS - 6" CONCRETE	\$ 10.13	SF	0	\$ -	\$ -	16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	5000	\$ 11,250.00	\$ -	
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	\$ -	3.0
CROSS PANS	\$ 10.15	SF	0	\$ -	\$ -	
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	0	\$ -	\$ -	
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	0	\$ -	\$ -	
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -	
6' SIDEWALK - 6"	\$ 5.25	SF	25000	\$ 131,250.00	\$ -	
8' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -	
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	\$ -	
SUBTOTAL	#DIV/0!			\$ 246,000	\$ -	
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
OPEN SPACE	\$ 3.20	SF	20000	\$ 64,000.00	\$ -	8
FORMAL - STREETS	\$ 8.30	SF	25000	\$ 207,500.00	\$ -	10
FORMAL - PARKS	\$ 6.30	SF	5000	\$ 41,500.00	\$ -	2
MONUMENTS	\$ 30,000.00	LS	0	\$ -	\$ -	
FENCING	\$ 14.50	SF	0	\$ -	\$ -	
TRAILS	\$ 5.25	SF	0	\$ -	\$ -	
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	\$ -	
AMENITY	\$ 35,000.00	LS	0	\$ -	\$ -	
SUBTOTAL	#DIV/0!			\$ 313,000	\$ -	
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
LETTERS OF CREDIT/BONDS	\$ 1,888,777	LS	0.8%	\$ 14,166	\$ 9,000.00	
WARRANTY	\$ 1,888,777	LS	3.0%	\$ 56,663	\$ 36,000.00	
MOBILIZATION	\$ 1,888,777	LS	5.0%	\$ 94,439	\$ 60,000.00	
CONTINGENCY	\$ 1,888,777	LS	20.0%	\$ 377,755	\$ 240,000.00	
SUBTOTAL	#DIV/0!			\$ 543,023	\$ 345,000	
PROJECT TOTAL	#DIV/0!			\$ 2,738,728	\$ 1,740,000	



POUDRE HEIGHTS D						
March 13, 2021						
PROJECT TOTAL			Intract	Infrastructure		
			\$ 4,431,887	\$ 493,000		
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
AGENCY REVIEW FEES	\$ 30,564.74	LS	1	\$ 30,564.74	\$ 3,400.00	1.00%
PLANNING	\$ 30,564.74	LS	1	\$ 30,564.74	\$ 3,400.00	1.00%
ENGINEERING	\$ 183,388.44	LS	1	\$ 183,388.44	\$ 20,400.00	8.00%
LANDSCAPE ARCHITECTURE	\$ 76,411.85	LS	1	\$ 76,411.85	\$ 8,500.00	2.50%
STAKING	\$ 76,411.85	LS	1	\$ 76,411.85	\$ 8,500.00	2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 76,411.85	LS	1	\$ 76,411.85	\$ 8,500.00	2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 22,823.55	LS	1	\$ 22,823.55	\$ 2,550.00	0.75%
SUBTOTAL	\$ 1,267			\$ 496,677	\$ 55,250	
GRADING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
TOPSOIL	\$ 2.10	CY	7840	\$ 16,464.00	\$ -	10%
OVERLOT GRADING	\$ 2.25	CY	78400	\$ 176,400.00	\$ -	200
SUBEXCAVATION	\$ 2.25	CY	0	\$ -	\$ -	
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -	\$ -	0%
SUBTOTAL	\$ 492			\$ 192,864	\$ -	
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
EROSION CONTROL	\$ 75.00	LF	1960	\$ 147,000.00	\$ -	
SUBTOTAL	\$ 375			\$ 147,000	\$ -	
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
UTILITY TRENCHING	\$ -	LF	0	\$ -	\$ -	
SUBTOTAL	\$ -			\$ -	\$ -	
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
ELECTRIC DISTRIBUTION	\$ 200.00	LOT	392	\$ 78,400.00	\$ -	Street Lights
GAS DISTRIBUTION	\$ -	LOT	392	\$ -	\$ -	Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$ -	LOT	392	\$ -	\$ -	Bury/Relocations
TRAFFIC SIGNAL	\$ 50,000.00	LS	0.0	\$ -	\$ 85,000.00	Misc
STREET LIGHTS	\$ 10,250.00	EA	12	\$ 123,000.00	\$ -	175
SUBTOTAL	\$ 514			\$ 201,400	\$ 85,000	
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
4" SDR 10	\$ 22.00	LF	1960	\$ 43,120.00	\$ -	
8" SDR 10	\$ 28.00	LF	0	\$ -	\$ -	
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	1960	\$ 107,800.00	\$ -	100%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	0	\$ -	\$ -	0%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -	\$ -	0%
8" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 2.25	LF	392	\$ 882.00	\$ -	20%
EXTRA DEPTH 12'-14'	\$ 7.10	LF	196	\$ 1,391.60	\$ -	10%
EXTRA DEPTH 14'-16'	\$ 12.36	LF	96	\$ 1,211.28	\$ -	5%
EXTRA DEPTH 16'-18'	\$ 13.23	LF	96	\$ 1,296.54	\$ -	5%
EXTRA DEPTH 18'-20'	\$ 52.50	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 20'-22'	\$ 64.80	LF	0	\$ -	\$ -	0%
ROCK CUT	\$ 47.15	CY	0	\$ -	\$ -	0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -	\$ -	
M.H. - 4" DIA (0-10')	\$ 4,300.00	EA	7	\$ 30,100.00	\$ -	300
M.H. - 5" DIA (0-10')	\$ 7,100.00	EA	0	\$ -	\$ -	300
M.H. - EXTRA DEPTH	\$ 118.00	VF	35	\$ 4,130.00	\$ -	5
8" CLEANOUT ASSEMBLY	\$ 940.00	EA	7	\$ 6,580.00	\$ -	
MARKER POSTS	\$ 180.00	EA	0	\$ -	\$ -	0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -	\$ -	
AIR TEST MAIN	\$ 0.70	LF	1960	\$ 1,372.00	\$ -	
DEFLECTION TEST MAIN	\$ 0.86	LF	1960	\$ 1,685.60	\$ -	
JETT SEWER MAINLINE	\$ 0.81	LF	1960	\$ 1,587.60	\$ -	
TV SEWER LINE	\$ 0.91	LS	1960	\$ 1,783.60	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 85,000.00	Misc
SUBTOTAL	\$ 2,278			\$ 892,860	\$ 85,000	
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
15" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 80.25	LF	0	\$ -	\$ -	0%
18" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 102.15	LF	490	\$ 50,053.50	\$ -	25%
21" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 109.65	LF	0	\$ -	\$ -	0%
24" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 123.65	LF	490	\$ 60,588.50	\$ -	25%
30" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 149.45	LF	0	\$ -	\$ -	0%
36" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 176.30	LF	98	\$ 17,277.40	\$ -	5%
42" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 213.93	LF	0	\$ -	\$ -	0%
48" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 250.50	LF	0	\$ -	\$ -	0%
54" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 295.63	LF	0	\$ -	\$ -	0%
60" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 277.00	LF	0	\$ -	\$ -	0%
72" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 378.40	LF	0	\$ -	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 424.63	LF	0	\$ -	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 510.63	LF	0	\$ -	\$ -	0%
96" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 695.00	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 12'-14'	\$ 14.96	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 14'-16'	\$ 25.00	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 16'-18'	\$ 36.01	VF	0	\$ -	\$ -	0%
ROCK CUT	\$ 48.54	CY	0	\$ -	\$ -	0%
24" FES	\$ 3,635.00	EA	0	\$ -	\$ -	
30" FES	\$ 5,375.00	EA	0	\$ -	\$ -	
36" FES	\$ 6,235.00	EA	0	\$ -	\$ -	
42" FES	\$ 6,450.00	EA	0	\$ -	\$ -	
48" FES	\$ 7,310.00	EA	0	\$ -	\$ -	
54" FES	\$ 7,740.00	EA	0	\$ -	\$ -	
60" FES	\$ 9,785.00	EA	0	\$ -	\$ -	
4" Diameter MH (0-8') w/24" Cover	\$ 4,975.00	EA	3	\$ 14,925.00	\$ -	400
5" Diameter MH (0-8') w/24" Cover	\$ 6,020.00	EA	1	\$ 6,020.00	\$ -	200
6" MH (0-8' depth) & 24" Cover	\$ 7,740.00	EA	0	\$ -	\$ -	200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -	\$ -	200
Riprap, Grouted (Type M/L/H)	\$ 300.00	CY	0	\$ -	\$ -	
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -	\$ -	
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -	\$ -	
Riprap, Placed (Type M/L/H)	\$ 97.50	TN	0	\$ -	\$ -	
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -	\$ -	
Soil Riprap Placed	\$ 80.90	TN	0	\$ -	\$ -	
5" Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	2	\$ 15,440.00	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -	\$ -	
10" Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	2	\$ 20,140.00	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -	\$ -	
15" Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -	\$ -	
20" Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -	\$ -	
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -	\$ -	
Extra depth	\$ 362.00	EA	0	\$ -	\$ -	
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -	\$ -	



POUDRE HEIGHTS D						
March 13, 2021						
PROJECT TOTAL			Intracit		Infrastructure	
Extra depth	\$ 525.00	EA	0	\$ -	\$ -	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	\$ -	
Extra depth	\$ 728.00	EA	0	\$ -	\$ -	
Type C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	\$ -	
Extra Depth	\$ 355.00	EA	0	\$ -	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 85,000.00	Misc
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	\$ -	
SUBTOTAL	\$ 471			\$ 164,444	\$ 85,000	
WATER IMPROVEMENTS		UNIT PRICE	UNITS	QTY	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	\$ -	0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	\$ -	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	1950	\$ 117,992.00	\$ -	100%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	\$ -	0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	\$ -	0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	\$ -	0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	\$ -	0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	\$ -	500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	\$ -	750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	8	\$ 36,255.45	\$ -	250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	0	\$ -	\$ -	750
20" BFV Valve W/Box & Restraints	\$ 15,102.88	EA	0	\$ -	\$ -	750
24" BFV Valve W/Box & Restraints	\$ 19,753.13	EA	0	\$ -	\$ -	750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	\$ -	750
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	\$ -	
Fire Hydrants	\$ 9,030.00	EA	4	\$ 36,120.00	\$ -	500
8" Fittings	\$ 671.86	EA	0	\$ -	\$ -	500
10" Fittings	\$ 836.50	EA	0	\$ -	\$ -	750
12" Fittings	\$ 1,290.00	EA	8	\$ 10,320.00	\$ -	250
16" Fittings	\$ 1,687.46	EA	0	\$ -	\$ -	750
20" Fittings	\$ 3,724.86	EA	0	\$ -	\$ -	750
24" Fittings	\$ 4,285.86	EA	0	\$ -	\$ -	750
30" Fittings	\$ 4,910.06	EA	0	\$ -	\$ -	750
Remove Plug & Tie in	\$ 2,031.75	EA	0	\$ -	\$ -	
Tie in after testing	\$ 1,612.50	EA	0	\$ -	\$ -	
CI Clear Water & Presure Test	\$ 4,837.50	EA	0.0	\$ -	\$ -	
MARKER POSTS	\$ 145.13	EA	0	\$ -	\$ -	100
WATER SERVICE	\$ 2,821.88	EA	0	\$ -	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 85,000.00	
SUBTOTAL	\$ 512			\$ 200,687	\$ 85,000	
RETAINING WALLS		UNIT PRICE	UNITS	QTY	COST	COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	\$ -	
SUBTOTAL	\$ -			\$ -	\$ -	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)		UNIT PRICE	UNITS	QTY	COST	COMMENTS
ROAD BASE - 6"	\$ 6.60	SY	9582	\$ 63,242.67	\$ -	44.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	\$ -	-
PAVING - 6"	\$ 25.50	SY	7840	\$ 199,820.00	\$ -	36.0
PAVING - 10"	\$ 42.50	SY	0	\$ -	\$ -	-
PAVING - SUBGRADE PREPARATION	\$ 4.60	SY	7840	\$ 36,064.00	\$ -	
SUBEXCAVATION	\$ 2.52	CY	0	\$ -	\$ -	3.0
PAVING 2	\$ 11.30	SY	0	\$ -	\$ -	2" Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	1960	\$ 2,097.20	\$ -	1.0
SIGNAGE	\$ 450.00	EA	5	\$ 2,520.00	\$ -	350
TRAFFIC CONTROL	\$ 5,000.00	LS	1	\$ 5,000.00	\$ -	
SLEEVES	\$ 16.85	LF	0	\$ -	\$ -	-
RAISE WATER VALVES	\$ 250.00	EA	15	\$ 3,750.00	\$ -	
RAISE MANHOLES	\$ 800.00	EA	11	\$ 8,800.00	\$ -	
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	\$ -	
SUBTOTAL	\$ 820			\$ 321,394	\$ -	
CONCRETE IMPROVEMENTS (INTERNAL)		UNIT PRICE	UNITS	QTY	COST	COMMENTS
CURB & GUTTER - 1' CUTTER	\$ 19.75	LF	0	\$ -	\$ -	-
CURB & GUTTER - 2' CUTTER	\$ 20.70	LF	3920	\$ 81,144.00	\$ -	2
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	\$ -	-
ALLEYS - 6" CONCRETE	\$ 10.13	SF	0	\$ -	\$ -	16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	3920	\$ 8,820.00	\$ -	
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	\$ -	3.0
CROSS PANS	\$ 10.15	SF	1600	\$ 16,240.00	\$ -	
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	0	\$ -	\$ -	
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	0	\$ -	\$ -	
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -	
6' SIDEWALK - 6"	\$ 5.25	SF	19600	\$ 102,900.00	\$ -	
8' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -	
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	\$ -	
SUBTOTAL	\$ 533			\$ 209,104	\$ -	
LANDSCAPING IMPROVEMENTS		UNIT PRICE	UNITS	QTY	COST	COMMENTS
OPEN SPACE	\$ 3.20	SF	9800	\$ 31,360.00	\$ -	5
FORMAL - STREETS	\$ 8.30	SF	29400	\$ 244,020.00	\$ -	15
FORMAL - PARKS	\$ 6.30	SF	9800	\$ 81,340.00	\$ -	5
MONUMENTS	\$ 30,000.00	LS	3	\$ 90,000.00	\$ -	
FENCING	\$ 14.50	SF	0	\$ -	\$ -	
TRAILS	\$ 5.25	SF	0	\$ -	\$ -	
MAIL BOXES	\$ 2,500.00	EA	4	\$ 10,000.00	\$ -	
AMENITY	\$ 250,000.00	LS	1	\$ 250,000.00	\$ -	
SUBTOTAL	\$ 1,803			\$ 706,720	\$ -	
ADDITIONAL COSTS		UNIT PRICE	UNITS	QTY	COST	COMMENTS
LETTERS OF CREDIT/BONDS	\$ 3,056,474	LS	0.8%	\$ 22,924	\$ 2,550.00	
WARRANTY	\$ 3,056,474	LS	3.0%	\$ 91,694	\$ 10,200.00	
MOBILIZATION	\$ 3,056,474	LS	5.0%	\$ 152,824	\$ 17,000.00	
CONTINGENCY	\$ 3,056,474	LS	20.0%	\$ 611,295	\$ 68,000.00	
SUBTOTAL	\$ 2,242			\$ 878,736	\$ 97,750	
PROJECT TOTAL	\$ 11,206			\$ 4,431,887	\$ 493,000	



POUDRE HEIGHTS E						
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PROJECT TOTAL		Intract		Infrastructure		
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
AGENCY REVIEW FEES	\$ 8,546.65	LS	1	\$ 8,546.65	\$ 5,000.00	1.00%
PLANNING	\$ 8,546.65	LS	1	\$ 8,546.65	\$ 5,000.00	1.00%
ENGINEERING	\$ 51,279.68	LS	1	\$ 51,279.68	\$ 30,000.00	6.00%
LANDSCAPE ARCHITECTURE	\$ 21,366.62	LS	1	\$ 21,366.62	\$ 12,500.00	2.50%
STAKING	\$ 21,366.62	LS	1	\$ 21,366.62	\$ 12,500.00	2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 21,366.62	LS	1	\$ 21,366.62	\$ 12,500.00	2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 6,409.98	LS	1	\$ 6,409.98	\$ 3,750.00	0.75%
SUBTOTAL	#DIV/0!			\$ 138,883	\$ 81,250	
GRADING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
TOPSOIL	\$ 2.10	CY	0	\$ -	\$ -	10%
OVERLOT GRADING	\$ 2.25	CY	0	\$ -	\$ -	3000
SUBEXCAVATION	\$ 2.25	CY	0	\$ -	\$ -	
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -	\$ -	0%
SUBTOTAL	#DIV/0!			\$ -	\$ -	
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
EROSION CONTROL	\$ 25.00	LF	1000	\$ 25,000.00	\$ -	
SUBTOTAL	#DIV/0!			\$ 25,000	\$ -	
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
UTILITY TRENCHING	\$ -	LF	0	\$ -	\$ -	
SUBTOTAL	#DIV/0!			\$ -	\$ -	
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
ELECTRIC DISTRIBUTION	\$ 3,500.00	LOT	0	\$ -	\$ -	Street Lights
GAS DISTRIBUTION	\$ 3,000.00	LOT	0	\$ -	\$ -	Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$ 500.00	LOT	0	\$ -	\$ -	Bury/Relocations
TRAFFIC SIGNAL	\$ 50,000.00	LS	0.0	\$ -	\$ 125,000.00	Misc
STREET LIGHTS	\$ 10,250.00	EA	6	\$ 61,500.00	\$ -	175
SUBTOTAL	#DIV/0!			\$ 61,500	\$ 125,000	
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
4" SDR 10	\$ 22.00	LF	1000	\$ 22,000.00	\$ -	
8" SDR 10	\$ 28.00	LF	0	\$ -	\$ -	
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	1000	\$ 55,000.00	\$ -	100%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	0	\$ -	\$ -	0%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -	\$ -	0%
8" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 2.25	LF	200	\$ 450.00	\$ -	20%
EXTRA DEPTH 12' - 14'	\$ 7.10	LF	100	\$ 710.00	\$ -	10%
EXTRA DEPTH 14' - 16'	\$ 12.36	LF	50	\$ 618.00	\$ -	5%
EXTRA DEPTH 16' - 18'	\$ 13.23	LF	50	\$ 661.50	\$ -	5%
EXTRA DEPTH 18' - 20'	\$ 62.50	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 20' - 22'	\$ 64.80	LF	0	\$ -	\$ -	0%
ROCK CUT	\$ 47.15	CY	0	\$ -	\$ -	0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -	\$ -	
M.H. - 4' DIA (0-10')	\$ 4,300.00	EA	4	\$ 17,200.00	\$ -	300
M.H. - 5' DIA (0-10')	\$ 7,100.00	EA	0	\$ -	\$ -	300
M.H. - EXTRA DEPTH	\$ 118.00	VF	20	\$ 2,360.00	\$ -	5
8" CLEANOUT ASSEMBLY	\$ 940.00	EA	4	\$ 3,760.00	\$ -	
MARKER POSTS	\$ 180.00	EA	0	\$ -	\$ -	0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -	\$ -	
AIR TEST MAIN	\$ 0.70	LF	1000	\$ 700.00	\$ -	
DEFLECTION TEST MAIN	\$ 0.86	LF	1000	\$ 860.00	\$ -	
JETT SEWER MAINLINE	\$ 0.81	LF	1000	\$ 810.00	\$ -	
TV SEWER LINE	\$ 0.91	LS	1000	\$ 910.00	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 125,000.00	Misc
SUBTOTAL	#DIV/0!			\$ 106,040	\$ 125,000	
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
15" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 80.25	LF	0	\$ -	\$ -	0%
18" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 102.15	LF	250	\$ 25,537.50	\$ -	25%
21" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 109.65	LF	0	\$ -	\$ -	0%
24" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 123.65	LF	250	\$ 30,912.50	\$ -	25%
30" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 149.45	LF	0	\$ -	\$ -	0%
36" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 176.30	LF	50	\$ 8,815.00	\$ -	5%
42" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 213.93	LF	0	\$ -	\$ -	0%
48" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 260.50	LF	0	\$ -	\$ -	0%
54" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 295.63	LF	0	\$ -	\$ -	0%
60" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 277.00	LF	0	\$ -	\$ -	0%
72" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 378.40	LF	0	\$ -	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 424.63	LF	0	\$ -	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 510.63	LF	0	\$ -	\$ -	0%
96" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 695.00	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 12' - 14'	\$ 14.96	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 14' - 16'	\$ 25.00	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 16' - 18'	\$ 36.01	VF	0	\$ -	\$ -	0%
ROCK CUT	\$ 48.54	CY	0	\$ -	\$ -	0%
24" FES	\$ 3,635.00	EA	0	\$ -	\$ -	
30" FES	\$ 5,375.00	EA	0	\$ -	\$ -	
36" FES	\$ 6,235.00	EA	0	\$ -	\$ -	
42" FES	\$ 6,450.00	EA	0	\$ -	\$ -	
48" FES	\$ 7,310.00	EA	0	\$ -	\$ -	
54" FES	\$ 7,740.00	EA	0	\$ -	\$ -	
60" FES	\$ 9,785.00	EA	0	\$ -	\$ -	
4' Diameter MH (0-8) w/24" Cover	\$ 4,975.00	EA	2	\$ 9,950.00	\$ -	400
5' Diameter MH (0-8) w/24" Cover	\$ 6,020.00	EA	1	\$ 6,020.00	\$ -	200
6' MH (0-8 depth) & 24" Cover	\$ 7,740.00	EA	0	\$ -	\$ -	200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -	\$ -	200
Riprap, Grouted (Type M/L/H)	\$ 300.00	CY	0	\$ -	\$ -	
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -	\$ -	
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -	\$ -	
Riprap, Placed (Type M/L/H)	\$ 97.50	TN	0	\$ -	\$ -	
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -	\$ -	
Soil Riprap Placed	\$ 80.90	TN	0	\$ -	\$ -	
5' Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -	\$ -	
10' Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -	\$ -	
15' Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -	\$ -	
20' Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -	\$ -	
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -	\$ -	
Extra depth	\$ 362.00	EA	0	\$ -	\$ -	
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -	\$ -	



POUDRE HEIGHTS E							
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				Intract	Infrastructure		
PROJECT TOTAL				\$ 1,239,264	\$ 725,000		
Extra depth	\$ 525.00	EA	0	\$ -	\$ -		
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	\$ -		
Extra depth	\$ 728.00	EA	0	\$ -	\$ -		
Type: C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	\$ -		
Extra Depth	\$ 355.00	EA	0	\$ -	\$ -		
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	\$ -		
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 125,000.00		Misc
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ 81,235	\$ 125,000		
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	\$ -		0%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	\$ -		0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	1000	\$ 60,200.00	\$ -		100%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	\$ -		0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	\$ -		0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	\$ -		0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	\$ -		0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	\$ -		500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	\$ -		750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	4	\$ 18,127.73	\$ -		250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	0	\$ -	\$ -		750
20" BFV Valve W/Box & Restraints	\$ 15,102.88	EA	0	\$ -	\$ -		750
24" BFV Valve W/Box & Restraints	\$ 19,753.13	EA	0	\$ -	\$ -		750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	\$ -		750
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	\$ -		
Fire Hydrants	\$ 9,030.00	EA	2	\$ 18,060.00	\$ -		500
8" Fittings	\$ 671.86	EA	0	\$ -	\$ -		500
10" Fittings	\$ 836.50	EA	0	\$ -	\$ -		750
12" Fittings	\$ 1,290.00	EA	4	\$ 5,160.00	\$ -		250
16" Fittings	\$ 1,687.46	EA	0	\$ -	\$ -		750
20" Fittings	\$ 3,724.86	EA	0	\$ -	\$ -		750
24" Fittings	\$ 4,285.86	EA	0	\$ -	\$ -		750
30" Fittings	\$ 4,910.06	EA	0	\$ -	\$ -		750
Remove Plug & Tie in	\$ 2,031.75	EA	0	\$ -	\$ -		
Tie in after testing	\$ 1,612.50	EA	0	\$ -	\$ -		
CI Clear Water & Presure Test	\$ 4,837.50	EA	0.0	\$ -	\$ -		
MARKER POSTS	\$ 145.13	EA	0	\$ -	\$ -		100
WATER SERVICE	\$ 2,821.88	EA	0	\$ -	\$ -		
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 125,000.00		
SUBTOTAL	#DIV/0!			\$ 101,548	\$ 125,000		
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
RETAINING WALLS	\$ 31.75	LF	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ -	\$ -		
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
ROAD BASE - 6"	\$ 6.60	SY	3556	\$ 23,466.87	\$ -		32.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	\$ -		-
PAVING - 6"	\$ 25.50	SY	0	\$ -	\$ -		-
PAVING - 10"	\$ 42.50	SY	2667	\$ 113,333.33	\$ -		24.0
PAVING - SUBGRADE PREPARATION	\$ 4.60	SY	2667	\$ 12,266.67	\$ -		
SUBEXCAVATION	\$ 2.52	CY	2667	\$ 6,720.00	\$ -		3.0
PAVING 2	\$ 11.30	SY	0	\$ -	\$ -		2" Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	1000	\$ 1,070.00	\$ -		1.0
SIGNAGE	\$ 450.00	EA	3	\$ 1,285.71	\$ -		350
TRAFFIC CONTROL	\$ 5,000.00	LS	0	\$ -	\$ -		
SLEEVES	\$ 16.85	LF	0	\$ -	\$ -		-
RAISE WATER VALVES	\$ 250.00	EA	8	\$ 2,000.00	\$ -		
RAISE MANHOLES	\$ 800.00	EA	7	\$ 5,600.00	\$ -		
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ 165,742	\$ -		
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
CURB & GUTTER - 1' CUTTER	\$ 19.75	LF	0	\$ -	\$ -		-
CURB & GUTTER - 2' CUTTER	\$ 20.70	LF	2000	\$ 41,400.00	\$ -		2
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	\$ -		-
ALLEYS - 6" CONCRETE	\$ 10.13	SF	0	\$ -	\$ -		16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	2000	\$ 4,500.00	\$ -		
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	\$ -		3.0
CROSS PANS	\$ 10.15	SF	0	\$ -	\$ -		
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	0	\$ -	\$ -		
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	0	\$ -	\$ -		
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -		
6' SIDEWALK - 6"	\$ 5.25	SF	10000	\$ 52,500.00	\$ -		
8' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -		
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ 98,400	\$ -		
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
OPEN SPACE	\$ 3.20	SF	8000	\$ 25,600.00	\$ -		8
FORMAL - STREETS	\$ 8.30	SF	10000	\$ 83,000.00	\$ -		10
FORMAL - PARKS	\$ 6.30	SF	2000	\$ 12,600.00	\$ -		2
MONUMENTS	\$ 30,000.00	LS	3	\$ 90,000.00	\$ -		
FENCING	\$ 14.50	SF	0	\$ -	\$ -		
TRAILS	\$ 5.25	SF	0	\$ -	\$ -		
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	\$ -		
AMENITY	\$ 35,000.00	LS	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ 215,200	\$ -		
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
LETTERS OF CREDIT/BONDS	\$ 854.865	LS	0.8%	\$ 6,410	\$ 3,750.00		
WARRANTY	\$ 854.865	LS	3.0%	\$ 25,640	\$ 15,000.00		
MOBILIZATION	\$ 854.865	LS	5.0%	\$ 42,733	\$ 25,000.00		
CONTINGENCY	\$ 854.865	LS	20.0%	\$ 170,933	\$ 100,000.00		
SUBTOTAL	#DIV/0!			\$ 245,716	\$ 143,750		
PROJECT TOTAL	#DIV/0!			\$ 1,239,264	\$ 725,000		



POUDRE HEIGHTS F						
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PROJECT TOTAL			Intract		Infrastructure	
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
AGENCY REVIEW FEES	\$ 29,138.47	LS	1	\$ 29,138.47	\$ 3,000.00	1.00%
PLANNING	\$ 29,138.47	LS	1	\$ 29,138.47	\$ 3,000.00	1.00%
ENGINEERING	\$ 174,830.79	LS	1	\$ 174,830.79	\$ 18,000.00	8.00%
LANDSCAPE ARCHITECTURE	\$ 72,846.16	LS	1	\$ 72,846.16	\$ 7,500.00	2.50%
STAKING	\$ 72,846.16	LS	1	\$ 72,846.16	\$ 7,500.00	2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 72,846.16	LS	1	\$ 72,846.16	\$ 7,500.00	2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 21,853.85	LS	1	\$ 21,853.85	\$ 2,250.00	0.75%
SUBTOTAL	\$ 1,480			\$ 473,500	\$ 48,750	
GRADING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
TOPSOIL	\$ 2.10	CY	6400	\$ 13,440.00	\$ -	10%
OVERLOT GRADING	\$ 2.25	CY	64000	\$ 144,000.00	\$ -	200
SUBEXCAVATION	\$ 2.25	CY	0	\$ -	\$ -	
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -	\$ -	0%
SUBTOTAL	\$ 492			\$ 157,440	\$ -	
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
EROSION CONTROL	\$ 25.00	LF	2400	\$ 60,000.00	\$ -	
SUBTOTAL	\$ 168			\$ 60,000	\$ -	
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
UTILITY TRENCHING	\$ -	LF	0	\$ -	\$ -	
SUBTOTAL	\$ -			\$ -	\$ -	
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
ELECTRIC DISTRIBUTION	\$ 260.00	LOT	320	\$ 80,000.00	\$ -	Street Lights
GAS DISTRIBUTION	\$ -	LOT	320	\$ -	\$ -	Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$ -	LOT	320	\$ -	\$ -	Bury/Relocations
TRAFFIC SIGNAL	\$ 50,000.00	LS	0.0	\$ -	\$ 75,000.00	Misc
STREET LIGHTS	\$ 10,250.00	EA	14	\$ 143,500.00	\$ -	175
SUBTOTAL	\$ 698			\$ 223,500	\$ 75,000	
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
4" SDR 10	\$ 22.00	LF	2400	\$ 52,800.00	\$ -	
8" SDR 10	\$ 28.00	LF	0	\$ -	\$ -	
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	2400	\$ 132,000.00	\$ -	100%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	0	\$ -	\$ -	0%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -	\$ -	0%
8" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 2.25	LF	480	\$ 1,080.00	\$ -	20%
EXTRA DEPTH 12'-14'	\$ 7.10	LF	240	\$ 1,704.00	\$ -	10%
EXTRA DEPTH 14'-16'	\$ 12.36	LF	120	\$ 1,483.20	\$ -	5%
EXTRA DEPTH 16'-18'	\$ 13.23	LF	120	\$ 1,587.60	\$ -	5%
EXTRA DEPTH 18'-20'	\$ 52.50	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 20'-22'	\$ 64.60	LF	0	\$ -	\$ -	0%
ROCK CUT	\$ 47.15	CY	0	\$ -	\$ -	0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -	\$ -	
M.H. - 4' DIA (0-10')	\$ 4,300.00	EA	8	\$ 34,400.00	\$ -	300
M.H. - 5' DIA (0-10')	\$ 7,100.00	EA	0	\$ -	\$ -	300
M.H. - EXTRA DEPTH	\$ 116.00	VF	40	\$ 4,720.00	\$ -	5
8" CLEANOUT ASSEMBLY	\$ 940.00	EA	8	\$ 7,520.00	\$ -	
MARKER POSTS	\$ 180.00	EA	0	\$ -	\$ -	0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -	\$ -	
AIR TEST MAIN	\$ 0.70	LF	2400	\$ 1,680.00	\$ -	
DEFLECTION TEST MAIN	\$ 0.86	LF	2400	\$ 2,064.00	\$ -	
JETT SEWER MAINLINE	\$ 0.81	LF	2400	\$ 1,944.00	\$ -	
TV SEWER LINE	\$ 0.91	LS	2400	\$ 2,184.00	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 75,000.00	Misc
SUBTOTAL	\$ 2,526			\$ 608,367	\$ 75,000	
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
15" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 80.25	LF	0	\$ -	\$ -	0%
18" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 102.15	LF	600	\$ 61,290.00	\$ -	25%
21" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 109.65	LF	0	\$ -	\$ -	0%
24" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 123.65	LF	600	\$ 74,190.00	\$ -	25%
30" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 149.45	LF	0	\$ -	\$ -	0%
36" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 176.30	LF	120	\$ 21,156.00	\$ -	5%
42" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 213.93	LF	0	\$ -	\$ -	0%
48" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 260.50	LF	0	\$ -	\$ -	0%
54" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 295.63	LF	0	\$ -	\$ -	0%
60" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 277.00	LF	0	\$ -	\$ -	0%
72" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 378.40	LF	0	\$ -	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 424.63	LF	0	\$ -	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 510.63	LF	0	\$ -	\$ -	0%
96" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 695.00	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 12'-14'	\$ 14.96	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 14'-16'	\$ 25.00	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 16'-18'	\$ 36.01	VF	0	\$ -	\$ -	0%
ROCK CUT	\$ 48.54	CY	0	\$ -	\$ -	0%
24" FES	\$ 3,635.00	EA	0	\$ -	\$ -	
30" FES	\$ 8,375.00	EA	0	\$ -	\$ -	
36" FES	\$ 6,235.00	EA	0	\$ -	\$ -	
42" FES	\$ 6,450.00	EA	0	\$ -	\$ -	
48" FES	\$ 7,310.00	EA	0	\$ -	\$ -	
54" FES	\$ 7,740.00	EA	0	\$ -	\$ -	
60" FES	\$ 9,785.00	EA	0	\$ -	\$ -	
4" Diameter MH (0-8) w/24" Cover	\$ 4,975.00	EA	3	\$ 14,925.00	\$ -	400
5" Diameter MH (0-8) w/24" Cover	\$ 6,020.00	EA	1	\$ 6,020.00	\$ -	200
6" MH (0-8 depth) & 24" Cover	\$ 7,740.00	EA	0	\$ -	\$ -	200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -	\$ -	200
Riprap, Grouted (Type M/L/H)	\$ 300.00	CY	0	\$ -	\$ -	
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -	\$ -	
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -	\$ -	
Riprap, Placed (Type M/L/H)	\$ 97.50	TN	0	\$ -	\$ -	
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -	\$ -	
Soil Riprap Placed	\$ 80.90	TN	0	\$ -	\$ -	
5" Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	2	\$ 15,440.00	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -	\$ -	
10" Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	2	\$ 20,140.00	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -	\$ -	
15" Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -	\$ -	
20" Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -	\$ -	
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -	\$ -	
Extra depth	\$ 362.00	EA	0	\$ -	\$ -	
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -	\$ -	



POUDRE HEIGHTS F							
March 13, 2021							
PROJECT TOTAL				Intracit	Infrastrucutre		
Extra depth	\$ 525.00	EA	0	\$ 4,225.077	\$ 435.000		
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	\$ -		
Extra depth	\$ 728.00	EA	0	\$ -	\$ -		
Type: C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	\$ -		
Extra Depth	\$ 355.00	EA	0	\$ -	\$ -		
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	\$ -		
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 75,000.00		Misc
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	\$ -		
SUBTOTAL	\$ 666			\$ 213,161	\$ 75,000		
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	1200	\$ 52,200.00	\$ -		50%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	\$ -		0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	1200	\$ 72,240.00	\$ -		50%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	\$ -		0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	\$ -		0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	\$ -		0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	\$ -		0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	3	\$ 7,449.75	\$ -		50%
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	\$ -		75%
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	5	\$ 22,659.66	\$ -		25%
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	0	\$ -	\$ -		75%
20" BFV Valve W/Box & Restraints	\$ 15,102.88	EA	0	\$ -	\$ -		75%
24" BFV Valve W/Box & Restraints	\$ 19,753.13	EA	0	\$ -	\$ -		75%
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	\$ -		75%
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	\$ -		
Fire Hydrants	\$ 9,030.00	EA	5	\$ 45,150.00	\$ -		50%
8" Fittings	\$ 671.86	EA	3	\$ 2,015.63	\$ -		50%
10" Fittings	\$ 836.50	EA	0	\$ -	\$ -		75%
12" Fittings	\$ 1,290.00	EA	5	\$ 6,450.00	\$ -		25%
16" Fittings	\$ 1,687.46	EA	0	\$ -	\$ -		75%
20" Fittings	\$ 3,724.86	EA	0	\$ -	\$ -		75%
24" Fittings	\$ 4,285.86	EA	0	\$ -	\$ -		75%
30" Fittings	\$ 4,910.06	EA	0	\$ -	\$ -		75%
Remove Plug & Tie in	\$ 2,031.75	EA	0	\$ -	\$ -		
Tie in after testing	\$ 1,612.50	EA	0	\$ -	\$ -		
CI Clear Water & Presure Test	\$ 4,837.50	EA	0.0	\$ -	\$ -		
MARKER POSTS	\$ 145.13	EA	0	\$ -	\$ -		100
WATER SERVICE	\$ 2,821.88	EA	0	\$ -	\$ -		
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 75,000.00		
SUBTOTAL	\$ 651			\$ 208,165	\$ 75,000		
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
RETAINING WALLS	\$ 31.75	LF	0	\$ -	\$ -		
SUBTOTAL	\$ -			\$ -	\$ -		
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
ROAD BASE - 6"	\$ 6.60	SY	11200	\$ 73,920.00	\$ -		42.0
PAVING - 4"	\$ 17.00	SY	9067	\$ 154,133.33	\$ -		34.0
PAVING - 6"	\$ 25.50	SY	0	\$ -	\$ -		-
PAVING - 10"	\$ 42.50	SY	0	\$ -	\$ -		-
PAVING - SUBGRADE PREPARATION	\$ 4.60	SY	9067	\$ 41,706.67	\$ -		
SUBEXCAVATION	\$ 2.52	CY	0	\$ -	\$ -		3.0
PAVING 2	\$ 11.30	SY	0	\$ -	\$ -		2" Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	2400	\$ 2,568.00	\$ -		1.0
SIGNAGE	\$ 450.00	EA	7	\$ 3,085.71	\$ -		350
TRAFFIC CONTROL	\$ 5,000.00	LS	1	\$ 5,000.00	\$ -		
SLEEVES	\$ 16.85	LF	0	\$ -	\$ -		-
RAISE WATER VALVES	\$ 250.00	EA	16	\$ 4,000.00	\$ -		
RAISE MANHOLES	\$ 800.00	EA	12	\$ 9,600.00	\$ -		
RAISE RANGEBOKS	\$ 375.00	EA	0	\$ -	\$ -		
SUBTOTAL	\$ 919			\$ 294,014	\$ -		
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
CURB & GUTTER - 1' GUTTER	\$ 19.75	LF	0	\$ -	\$ -		-
CURB & GUTTER - 2' GUTTER	\$ 20.70	LF	4800	\$ 99,360.00	\$ -		2
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	\$ -		-
ALLEYS - 6" CONCRETE	\$ 10.13	SF	0	\$ -	\$ -		16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	4800	\$ 10,800.00	\$ -		
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	\$ -		3.0
CROSS PANS	\$ 10.15	SF	1600	\$ 16,240.00	\$ -		-
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	0	\$ -	\$ -		
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	0	\$ -	\$ -		
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -		-
6' SIDEWALK - 6"	\$ 5.25	SF	24000	\$ 126,000.00	\$ -		-
8' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -		-
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	\$ -		
SUBTOTAL	\$ 789			\$ 252,400	\$ -		
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
OPEN SPACE	\$ 3.20	SF	12000	\$ 38,400.00	\$ -		5
FORMAL - STREETS	\$ 8.30	SF	36000	\$ 298,800.00	\$ -		15
FORMAL - PARKS	\$ 6.30	SF	12000	\$ 99,600.00	\$ -		5
MONUMENTS	\$ 30,000.00	LS	2	\$ 60,000.00	\$ -		
FENCING	\$ 14.50	SF	0	\$ -	\$ -		-
TRAILS	\$ 5.25	SF	0	\$ -	\$ -		-
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	\$ -		-
AMENITY	\$ 200,000.00	LS	1	\$ 200,000.00	\$ -		
SUBTOTAL	\$ 2,178			\$ 696,800	\$ -		
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS	
LETTERS OF CREDIT/BONDS	\$ 2,913.847	LS	0.8%	\$ 21,854	\$ 2,250.00		
WARRANTY	\$ 2,913.847	LS	3.0%	\$ 67,415	\$ 9,000.00		
MOBILIZATION	\$ 2,913.847	LS	5.0%	\$ 145,692	\$ 15,000.00		
CONTINGENCY	\$ 2,913.847	LS	20.0%	\$ 582,769	\$ 60,000.00		
SUBTOTAL	\$ 2,618			\$ 837,731	\$ 86,250		
PROJECT TOTAL	\$ 12,293			\$ 4,225,077	\$ 435,000		



POUDRE HEIGHTS G						
March 13, 2021						
PROJECT TOTAL			Intract		Infrastructure	
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
AGENCY REVIEW FEES	\$ 66,921.78	LS	1	\$ 66,921.78	\$ 18,372.21	1.00%
PLANNING	\$ 66,921.78	LS	1	\$ 66,921.78	\$ 18,372.21	1.00%
ENGINEERING	\$ 401,530.65	LS	1	\$ 401,530.65	\$ 110,233.27	6.00%
LANDSCAPE ARCHITECTURE	\$ 167,304.44	LS	1	\$ 167,304.44	\$ 45,930.53	2.50%
STAKING	\$ 167,304.44	LS	1	\$ 167,304.44	\$ 45,930.53	2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 167,304.44	LS	1	\$ 167,304.44	\$ 45,930.53	2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 50,191.33	LS	1	\$ 50,191.33	\$ 13,779.16	0.75%
SUBTOTAL	\$ 3,089			\$ 1,087,479	\$ 298,548	
GRADING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
TOPSOIL	\$ 2.10	CY	7040	\$ 14,784.00	\$ 4,200.00	10%
OVERLOT GRADING	\$ 2.25	CY	70400	\$ 158,400.00	\$ 45,000.00	200
SUBEXCAVATION	\$ 2.25	CY	0	\$ -	\$ -	
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -	\$ -	0%
SUBTOTAL	\$ 492			\$ 173,184	\$ 49,200	
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
EROSION CONTROL	\$ 40.00	LF	6160	\$ 246,400.00	\$ 45,000.00	
SUBTOTAL	\$ 700			\$ 246,400	\$ 45,000	
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
UTILITY TRENCHING	\$ -	LF	0	\$ -	\$ -	
SUBTOTAL	\$ -			\$ -	\$ -	
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
ELECTRIC DISTRIBUTION	\$ 200.00	LOT	352	\$ 70,400.00	\$ 37,500.00	Street Lights
GAS DISTRIBUTION	\$ -	LOT	352	\$ -	\$ -	Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$ -	LOT	352	\$ -	\$ -	Bury/Relocations
TRAFFIC SIGNAL	\$ 50,000.00	LS	0.0	\$ -	\$ 50,000.00	Misc
STREET LIGHTS	\$ 10,250.00	EA	36	\$ 369,000.00	\$ 71,750.00	175
SUBTOTAL	\$ 1,248			\$ 439,400	\$ 159,250	
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
4" SDR LD	\$ 22.00	LF	6160	\$ 135,520.00	\$ 24,750.00	
8" SDR LD	\$ 28.00	LF	0	\$ -	\$ -	
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	6160	\$ 338,800.00	\$ 20,625.00	100%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	0	\$ -	\$ 45,750.00	0%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -	\$ -	0%
8" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 2.25	LF	1232	\$ 2,772.00	\$ 506.25	20%
EXTRA DEPTH 12'-14'	\$ 7.10	LF	616	\$ 4,373.60	\$ 798.75	10%
EXTRA DEPTH 14'-16'	\$ 12.36	LF	308	\$ 3,806.88	\$ 695.25	5%
EXTRA DEPTH 16'-18'	\$ 13.23	LF	308	\$ 4,074.84	\$ 744.19	5%
EXTRA DEPTH 18'-20'	\$ 52.50	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 20'-22'	\$ 64.60	LF	0	\$ -	\$ -	0%
ROCK CUT	\$ 47.15	CY	0	\$ -	\$ -	0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -	\$ -	
M.H. - 4' DIA (0-10')	\$ 4,300.00	EA	21	\$ 90,300.00	\$ 8,600.00	300
M.H. - 5' DIA (0-10')	\$ 7,100.00	EA	0	\$ -	\$ 21,300.00	300
M.H. - EXTRA DEPTH	\$ 116.00	VF	105	\$ 12,390.00	\$ 2,950.00	5
8" CLEANOUT ASSEMBLY	\$ 940.00	EA	21	\$ 19,740.00	\$ 4,700.00	
MARKER POSTS	\$ 180.00	EA	0	\$ -	\$ -	0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -	\$ -	
AIR TEST MAIN	\$ 0.70	LF	6160	\$ 4,312.00	\$ 787.50	
DEFLECTION TEST MAIN	\$ 0.86	LF	6160	\$ 5,297.60	\$ 967.50	
JETT SEWER MAINLINE	\$ 0.81	LF	6160	\$ 4,989.60	\$ 911.25	
TV SEWER LINE	\$ 0.91	LS	6160	\$ 5,605.60	\$ 1,023.75	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 50,000.00	Misc
SUBTOTAL	\$ 3,555			\$ 1,251,502	\$ 185,109	
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
15" RCP CL III TGV C-443 0-8' w/squeegee	\$ 80.25	LF	0	\$ -	\$ -	0%
18" RCP CL III TGV C-443 0-8' w/squeegee	\$ 102.15	LF	1848	\$ 188,773.20	\$ 7,661.25	30%
21" RCP CL III TGV C-443 0-8' w/squeegee	\$ 109.65	LF	0	\$ -	\$ -	0%
24" RCP CL III TGV C-443 0-8' w/squeegee	\$ 123.65	LF	1540	\$ 190,421.00	\$ 18,547.50	25%
30" RCP CL III TGV C-443 0-8' w/squeegee	\$ 149.45	LF	0	\$ -	\$ -	0%
36" RCP CL III TGV C-443 0-8' w/squeegee	\$ 176.30	LF	308	\$ 54,300.40	\$ 26,445.00	5%
42" RCP CL III TGV C-443 0-8' w/squeegee	\$ 213.93	LF	0	\$ -	\$ 16,044.75	0%
48" RCP CL III TGV C-443 0-8' w/squeegee	\$ 250.50	LF	0	\$ -	\$ 18,787.50	0%
54" RCP CL III TGV C-443 0-8' w/squeegee	\$ 295.63	LF	0	\$ -	\$ 22,172.25	0%
60" RCP CL III TGV C-443 0-8' w/squeegee	\$ 277.00	LF	0	\$ -	\$ 20,775.00	0%
72" RCP CL III TGV C-443 0-8' w/squeegee	\$ 378.40	LF	0	\$ -	\$ -	0%
84" RCP CL III TGV C-443 0-8' w/squeegee	\$ 424.63	LF	0	\$ -	\$ -	0%
84" RCP CL III TGV C-443 0-8' w/squeegee	\$ 510.63	LF	0	\$ -	\$ -	0%
96" RCP CL III TGV C-443 0-8' w/squeegee	\$ 695.00	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 12'-14'	\$ 14.96	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 14'-16'	\$ 25.00	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 16'-18'	\$ 36.01	VF	0	\$ -	\$ -	0%
ROCK CUT	\$ 48.54	CY	0	\$ -	\$ -	0%
24" FES	\$ 3,635.00	EA	0	\$ -	\$ -	
30" FES	\$ 5,375.00	EA	0	\$ -	\$ -	
36" FES	\$ 6,235.00	EA	0	\$ -	\$ -	
42" FES	\$ 6,450.00	EA	0	\$ -	\$ -	
48" FES	\$ 7,310.00	EA	0	\$ -	\$ -	
54" FES	\$ 7,740.00	EA	0	\$ -	\$ -	
60" FES	\$ 9,785.00	EA	0	\$ -	\$ -	
4' Diameter MH (0-8') w/24" Cover	\$ 4,975.00	EA	9	\$ 44,775.00	\$ 4,975.00	400
5' Diameter MH (0-8') w/24" Cover	\$ 6,020.00	EA	2	\$ 12,040.00	\$ 12,040.00	200
6' MH (0-8' depth) & 24" Cover	\$ 7,740.00	EA	0	\$ -	\$ 8,707.50	200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -	\$ -	200
Riprap, Grouted (Type M/L/H)	\$ 300.00	CY	0	\$ -	\$ -	
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -	\$ -	
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -	\$ -	
Riprap, Placed (Type M/L/H)	\$ 97.50	TN	0	\$ -	\$ -	
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -	\$ -	
Soil Riprap Placed	\$ 80.90	TN	0	\$ -	\$ -	
5' Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	8	\$ 61,760.00	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -	\$ -	
10' Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	8	\$ 80,560.00	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -	\$ -	
15' Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	0	\$ 105,080.00	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -	\$ -	
20' Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	8	\$ 140,000.00	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -	\$ -	
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -	\$ -	
Extra depth	\$ 362.00	EA	0	\$ -	\$ -	
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -	\$ -	



POUDRE HEIGHTS G						
March 13, 2021						
PROJECT TOTAL			Intracut		Infrastructre	
Extra depth	\$ 525.00	EA	0	\$ -	\$ -	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	\$ -	
Extra depth	\$ 728.00	EA	0	\$ -	\$ -	
Type: C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	\$ -	
Extra Depth	\$ 355.00	EA	0	\$ -	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 50,000.00	Misc
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	\$ -	
SUBTOTAL	\$ 2,493			\$ 877,710	\$ 206,156	
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	6180	\$ 267,960.00	\$ -	100%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	\$ 81,270.00	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	0	\$ -	\$ -	0%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	\$ -	0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	\$ -	0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	\$ -	0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	\$ -	0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	13	\$ 32,282.25	\$ -	500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	\$ 7,612.29	750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	0	\$ -	\$ -	250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	0	\$ -	\$ -	750
20" BFV Valve W/Box & Restraints	\$ 15,102.88	EA	0	\$ -	\$ -	750
24" BFV Valve W/Box & Restraints	\$ 17,753.13	EA	0	\$ -	\$ -	750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	\$ -	750
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	\$ -	
Fire Hydrants	\$ 9,030.00	EA	13	\$ 117,390.00	\$ 27,090.00	500
8" Fittings	\$ 671.86	EA	13	\$ 8,734.38	\$ -	500
10" Fittings	\$ 836.50	EA	0	\$ -	\$ 1,677.00	750
12" Fittings	\$ 1,290.00	EA	0	\$ -	\$ -	250
16" Fittings	\$ 1,687.48	EA	0	\$ -	\$ -	750
20" Fittings	\$ 3,724.88	EA	0	\$ -	\$ -	750
24" Fittings	\$ 4,285.86	EA	0	\$ -	\$ -	750
30" Fittings	\$ 4,910.08	EA	0	\$ -	\$ -	750
Remove Plug & Tie in	\$ 2,031.75	EA	0	\$ -	\$ -	
Tie in after testing	\$ 1,612.50	EA	0	\$ -	\$ -	
CI Clear Water & Presure Test	\$ 4,837.50	EA	0.0	\$ -	\$ -	
MARKER POSTS	\$ 145.13	EA	0	\$ -	\$ -	100
WATER SERVICE	\$ 2,821.88	EA	0	\$ -	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 50,000.00	
SUBTOTAL	\$ 1,211			\$ 426,367	\$ 167,649	
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	\$ -	
SUBTOTAL	\$ -			\$ -	\$ -	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
ROAD BASE - 6"	\$ 6.60	SY	28747	\$ 189,728.00	\$ 46,200.00	42.0
PAVING - 4"	\$ 17.00	SY	23271	\$ 395,608.89	\$ -	34.0
PAVING - 6"	\$ 25.50	SY	0	\$ -	\$ 144,500.00	-
PAVING - 10"	\$ 42.50	SY	0	\$ -	\$ -	-
PAVING - SUBGRADE PREPARATION	\$ 4.60	SY	23271	\$ 107,047.11	\$ 26,066.67	
SUBEXCAVATION	\$ 2.52	CY	0	\$ -	\$ -	3.0
PAVING 2	\$ 11.30	SY	0	\$ -	\$ -	2" Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	6160	\$ 6,591.20	\$ 6,420.00	1.0
SIGNAGE	\$ 450.00	EA	18	\$ 7,920.00	\$ 2,700.00	350
TRAFFIC CONTROL	\$ 5,000.00	LS	1	\$ 5,000.00	\$ -	
SLEEVES	\$ 16.85	LF	0	\$ -	\$ -	-
RAISE WATER VALVES	\$ 250.00	EA	34	\$ 8,500.00	\$ 1,750.00	
RAISE MANHOLES	\$ 800.00	EA	32	\$ 25,600.00	\$ 7,300.00	
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	\$ -	
SUBTOTAL	\$ 2,118			\$ 745,995	\$ 234,937	
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
CURB & GUTTER - 1' CUTTER	\$ 19.75	LF	0	\$ -	\$ -	-
CURB & GUTTER - 2' CUTTER	\$ 20.70	LF	12320	\$ 255,024.00	\$ 82,100.00	2
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	\$ -	-
ALLEYS - 6" CONCRETE	\$ 10.13	SF	0	\$ -	\$ -	16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	12320	\$ 27,720.00	\$ 6,750.00	
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	\$ -	3.0
CROSS PANS	\$ 10.15	SF	1600	\$ 16,240.00	\$ -	-
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	70	\$ 265,300.00	\$ 68,220.00	
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	20	\$ 32,000.00	\$ 6,400.00	
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -	-
8' SIDEWALK - 6"	\$ 5.25	SF	61600	\$ 323,400.00	\$ 78,750.00	2
8' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -	-
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	\$ -	-
SUBTOTAL	\$ 2,613			\$ 919,684	\$ 222,220	
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
OPEN SPACE	\$ 3.20	SF	61600	\$ 197,120.00	\$ -	10
FORMAL - STREETS	\$ 8.30	SF	73920	\$ 613,536.00	\$ 199,200.00	12
FORMAL - PARKS	\$ 6.30	SF	61600	\$ 511,280.00	\$ -	10
MONUMENTS	\$ 30,000.00	LS	4	\$ 120,000.00	\$ -	-
FENCING	\$ 14.50	SF	10000	\$ 145,000.00	\$ 43,500.00	-
TRAILS	\$ 5.25	SF	0	\$ -	\$ -	-
MAIL BOXES	\$ 2,500.00	EA	10	\$ 25,000.00	\$ -	-
AMENITY	\$ 35,000.00	LS	0	\$ -	\$ 325,000.00	-
SUBTOTAL	\$ 4,579			\$ 1,611,936	\$ 567,700	
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
LETTERS OF CREDIT/BONDS	\$ 6,692.178	LS	0.8%	\$ 50.191	\$ 13,779.16	
WARRANTY	\$ 6,692.178	LS	3.0%	\$ 200.765	\$ 55,116.63	
MOBILIZATION	\$ 6,692.178	LS	5.0%	\$ 334.609	\$ 91,861.06	
CONTINGENCY	\$ 6,692.178	LS	20.0%	\$ 1,338.436	\$ 367,444.23	
SUBTOTAL	\$ 5,466			\$ 1,924,001	\$ 526,201	
PROJECT TOTAL	\$ 27,567			\$ 9,703,657	\$ 2,863,971	



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PROJECT TOTAL			Intracut		Infrastructure	
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
AGENCY REVIEW FEES	\$ 29,861.00	LS	1	\$ 29,861.00	\$ 2,750.00	1.00%
PLANNING	\$ 29,861.00	LS	1	\$ 29,861.00	\$ 2,750.00	1.00%
ENGINEERING	\$ 179,166.00	LS	1	\$ 179,166.00	\$ 16,500.00	8.00%
LANDSCAPE ARCHITECTURE	\$ 74,652.50	LS	1	\$ 74,652.50	\$ 6,875.00	2.50%
STAKING	\$ 74,652.50	LS	1	\$ 74,652.50	\$ 6,875.00	2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ 74,652.50	LS	1	\$ 74,652.50	\$ 6,875.00	2.50%
RECORD DRAWINGS/CLOSE OUT	\$ 22,395.75	LS	1	\$ 22,395.75	\$ 2,062.50	0.75%
SUBTOTAL	\$ 3,882			\$ 485,241	\$ 44,688	
GRADING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
TOPSOIL	\$ 2.10	CY	6250	\$ 13,125.00	\$ -	10%
OVERLOT GRADING	\$ 2.25	CY	62500	\$ 140,625.00	\$ -	500
SUBEXCAVATION	\$ 2.25	CY	0	\$ -	\$ -	
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -	\$ -	0%
SUBTOTAL	\$ 1,230			\$ 153,750	\$ -	
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
EROSION CONTROL	\$ 40.00	LF	2813	\$ 112,500.00	\$ -	
SUBTOTAL	\$ 900			\$ 112,500	\$ -	
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
UTILITY TRENCHING	\$ -	LF	0	\$ -	\$ -	
SUBTOTAL	\$ -			\$ -	\$ -	
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
ELECTRIC DISTRIBUTION	\$ 500.00	LOT	125	\$ 62,500.00	\$ -	Street Lights
GAS DISTRIBUTION	\$ -	LOT	125	\$ -	\$ -	Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$ -	LOT	125	\$ -	\$ -	Bury/Relocations
TRAFFIC SIGNAL	\$ 50,000.00	LS	0.0	\$ -	\$ 25,000.00	Misc
STREET LIGHTS	\$ 10,250.00	EA	10	\$ 102,500.00	\$ -	300
SUBTOTAL	\$ 1,320			\$ 165,000	\$ 25,000	
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
4" SDR 10	\$ 22.00	LF	2813	\$ 61,875.00	\$ -	
8" SDR 10	\$ 28.00	LF	0	\$ -	\$ -	
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	2813	\$ 154,687.50	\$ -	100%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	0	\$ -	\$ -	0%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -	\$ -	0%
8" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 2.25	LF	583	\$ 1,265.63	\$ -	20%
EXTRA DEPTH 12'-14'	\$ 7.10	LF	281	\$ 1,996.88	\$ -	10%
EXTRA DEPTH 14'-16'	\$ 12.36	LF	141	\$ 1,738.13	\$ -	5%
EXTRA DEPTH 16'-18'	\$ 13.23	LF	141	\$ 1,860.47	\$ -	5%
EXTRA DEPTH 18'-20'	\$ 52.50	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 20'-22'	\$ 64.60	LF	0	\$ -	\$ -	0%
ROCK CUT	\$ 47.15	CY	0	\$ -	\$ -	0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -	\$ -	
M.H. - 4' DIA (0-10')	\$ 4,300.00	EA	10	\$ 43,000.00	\$ -	300
M.H. - 5' DIA (0-10')	\$ 7,100.00	EA	0	\$ -	\$ -	300
M.H. - EXTRA DEPTH	\$ 116.00	VF	50	\$ 5,900.00	\$ -	5
8" CLEANOUT ASSEMBLY	\$ 940.00	EA	10	\$ 9,400.00	\$ -	
MARKER POSTS	\$ 180.00	EA	0	\$ -	\$ -	0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -	\$ -	
AIR TEST MAIN	\$ 0.70	LF	2813	\$ 1,968.75	\$ -	
DEFLECTION TEST MAIN	\$ 0.86	LF	2813	\$ 2,418.75	\$ -	
JETT SEWER MAINLINE	\$ 0.81	LF	2813	\$ 2,278.13	\$ -	
TV SEWER LINE	\$ 0.91	LS	2813	\$ 2,559.38	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 25,000.00	Misc
SUBTOTAL	\$ 4,068			\$ 510,949	\$ 25,000	
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
15" RCP CL III TGV C-443 0-8' w/squeegee	\$ 80.25	LF	0	\$ -	\$ -	0%
18" RCP CL III TGV C-443 0-8' w/squeegee	\$ 102.15	LF	544	\$ 86,189.06	\$ -	30%
21" RCP CL III TGV C-443 0-8' w/squeegee	\$ 109.65	LF	0	\$ -	\$ -	0%
24" RCP CL III TGV C-443 0-8' w/squeegee	\$ 123.65	LF	703	\$ 86,941.41	\$ -	25%
30" RCP CL III TGV C-443 0-8' w/squeegee	\$ 149.45	LF	0	\$ -	\$ -	0%
36" RCP CL III TGV C-443 0-8' w/squeegee	\$ 176.30	LF	141	\$ 24,792.19	\$ -	5%
42" RCP CL III TGV C-443 0-8' w/squeegee	\$ 213.93	LF	0	\$ -	\$ -	0%
48" RCP CL III TGV C-443 0-8' w/squeegee	\$ 250.50	LF	0	\$ -	\$ -	0%
54" RCP CL III TGV C-443 0-8' w/squeegee	\$ 295.63	LF	0	\$ -	\$ -	0%
60" RCP CL III TGV C-443 0-8' w/squeegee	\$ 277.00	LF	0	\$ -	\$ -	0%
72" RCP CL III TGV C-443 0-8' w/squeegee	\$ 378.40	LF	0	\$ -	\$ -	0%
84" RCP CL III TGV C-443 0-8' w/squeegee	\$ 424.63	LF	0	\$ -	\$ -	0%
84" RCP CL III TGV C-443 0-8' w/squeegee	\$ 510.63	LF	0	\$ -	\$ -	0%
96" RCP CL III TGV C-443 0-8' w/squeegee	\$ 695.00	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 12'-14'	\$ 14.96	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 14'-16'	\$ 25.00	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 16'-18'	\$ 36.01	VF	0	\$ -	\$ -	0%
ROCK CUT	\$ 48.54	CY	0	\$ -	\$ -	0%
24" FES	\$ 3,635.00	EA	0	\$ -	\$ -	
30" FES	\$ 5,375.00	EA	0	\$ -	\$ -	
36" FES	\$ 6,235.00	EA	0	\$ -	\$ -	
42" FES	\$ 6,450.00	EA	0	\$ -	\$ -	
48" FES	\$ 7,310.00	EA	0	\$ -	\$ -	
54" FES	\$ 7,740.00	EA	0	\$ -	\$ -	
60" FES	\$ 9,785.00	EA	0	\$ -	\$ -	
4' Diameter MH (0-8) w/24" Cover	\$ 4,975.00	EA	4	\$ 19,900.00	\$ -	400
5' Diameter MH (0-8) w/24" Cover	\$ 6,020.00	EA	1	\$ 6,020.00	\$ -	200
6' MH (0-8 depth) & 24" Cover	\$ 7,740.00	EA	0	\$ -	\$ -	200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -	\$ -	200
Riprap, Grouted (Type M/L/H)	\$ 300.00	CY	0	\$ -	\$ -	
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -	\$ -	
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -	\$ -	
Riprap, Placed (Type M/L/H)	\$ 97.50	TN	0	\$ -	\$ -	
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -	\$ -	
Soil Riprap Placed	\$ 80.90	TN	0	\$ -	\$ -	
5' Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	6	\$ 46,320.00	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -	\$ -	
10' Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	6	\$ 60,420.00	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -	\$ -	
15' Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	4	\$ 52,540.00	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -	\$ -	
20' Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	2	\$ 35,000.00	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -	\$ -	
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -	\$ -	
Extra depth	\$ 362.00	EA	0	\$ -	\$ -	
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -	\$ -	



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				Intracut	Infrastrucutre	
PROJECT TOTAL				\$ 4,329,845	\$ 388,750	
Extra depth	\$ 525.00	EA	0	\$ -	\$ -	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	\$ -	
Extra depth	\$ 728.00	EA	0	\$ -	\$ -	
Type: C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	\$ -	
Extra Depth	\$ 355.00	EA	0	\$ -	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 25,000.00	Misc
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	\$ -	
SUBTOTAL	\$ 3,345			\$ 418,123	\$ 25,000	
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	2813	\$ 122,343.75	\$ -	100%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	\$ -	0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	0	\$ -	\$ -	0%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	\$ -	0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	\$ -	0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	\$ -	0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	\$ -	0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ 14,899.50	\$ -	500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	\$ -	750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	0	\$ -	\$ -	250
16" BFV Valve W/Box & Restraints	\$ 18,583.81	EA	0	\$ -	\$ -	750
20" BFV Valve W/Box & Restraints	\$ 15,102.88	EA	0	\$ -	\$ -	750
24" BFV Valve W/Box & Restraints	\$ 19,753.13	EA	0	\$ -	\$ -	750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	\$ -	750
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	\$ -	
Fire Hydrants	\$ 9,030.00	EA	5	\$ 54,180.00	\$ -	500
8" Fittings	\$ 671.86	EA	6	\$ 4,031.25	\$ -	500
10" Fittings	\$ 836.50	EA	0	\$ -	\$ -	750
12" Fittings	\$ 1,290.00	EA	0	\$ -	\$ -	250
16" Fittings	\$ 1,687.46	EA	0	\$ -	\$ -	750
20" Fittings	\$ 3,724.86	EA	0	\$ -	\$ -	750
24" Fittings	\$ 4,285.86	EA	0	\$ -	\$ -	750
30" Fittings	\$ 4,910.06	EA	0	\$ -	\$ -	750
Remove Plug & Tie in	\$ 2,031.75	EA	0	\$ -	\$ -	
Tie in after testing	\$ 1,612.50	EA	0	\$ -	\$ -	
CI Clear Water & Presure Test	\$ 4,837.50	EA	0.0	\$ -	\$ -	
MARKER POSTS	\$ 145.13	EA	0	\$ -	\$ -	100
WATER SERVICE	\$ 2,821.88	EA	0	\$ -	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 25,000.00	
SUBTOTAL	\$ 1,564			\$ 195,455	\$ 25,000	
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	\$ -	
SUBTOTAL	\$ -			\$ -	\$ -	
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
ROAD BASE - 6"	\$ 6.60	SY	13125	\$ 86,625.00	\$ -	42.0
PAVING - 4"	\$ 17.00	SY	10625	\$ 180,625.00	\$ -	34.0
PAVING - 6"	\$ 25.50	SY	0	\$ -	\$ -	-
PAVING - 10"	\$ 42.50	SY	0	\$ -	\$ -	-
PAVING - SUBGRADE PREPARATION	\$ 4.60	SY	10625	\$ 48,875.00	\$ -	
SUBEXCAVATION	\$ 2.52	CY	0	\$ -	\$ -	3.0
PAVING 2	\$ 11.30	SY	0	\$ -	\$ -	2" Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	2813	\$ 3,009.38	\$ -	1.0
SIGNAGE	\$ 450.00	EA	3	\$ 3,615.07	\$ -	350
TRAFFIC CONTROL	\$ 5,000.00	LS	1	\$ 5,000.00	\$ -	
SLEEVES	\$ 16.85	LF	0	\$ -	\$ -	-
RAISE WATER VALVES	\$ 250.00	EA	16	\$ 4,000.00	\$ -	
RAISE MANHOLES	\$ 800.00	EA	15	\$ 12,000.00	\$ -	
RAISE RANDBOXES	\$ 375.00	EA	0	\$ -	\$ -	
SUBTOTAL	\$ 2,150			\$ 343,750	\$ -	
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
CURB & GUTTER - 1' GUTTER	\$ 19.75	LF	0	\$ -	\$ -	-
CURB & GUTTER - 2' GUTTER	\$ 20.70	LF	5625	\$ 116,437.50	\$ -	2
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	\$ -	-
ALLEYS - 6" CONCRETE	\$ 10.13	SF	0	\$ -	\$ -	16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	5625	\$ 12,856.25	\$ -	
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	\$ -	3.0
CROSS PANS	\$ 10.15	SF	1600	\$ 16,240.00	\$ -	
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	36	\$ 136,440.00	\$ -	
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	8	\$ 12,800.00	\$ -	
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -	
8' SIDEWALK - 6"	\$ 5.25	SF	28125	\$ 147,856.25	\$ -	
8' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -	
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	\$ -	
SUBTOTAL	\$ 3,538			\$ 442,230	\$ -	
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
OPEN SPACE	\$ 3.20	SF	14063	\$ 45,000.00	\$ -	5
FORMAL - STREETS	\$ 8.30	SF	33750	\$ 280,125.00	\$ -	12
FORMAL - PARKS	\$ 6.30	SF	14063	\$ 116,718.75	\$ -	5
MONUMENTS	\$ 30,000.00	LS	4	\$ 120,000.00	\$ -	
FENCING	\$ 14.50	SF	5000	\$ 72,500.00	\$ -	
TRAILS	\$ 5.25	SF	0	\$ -	\$ -	
MAIL BOXES	\$ 2,500.00	EA	4	\$ 10,000.00	\$ -	
AMENITY	\$ 35,000.00	LS	0	\$ -	\$ 175,000.00	
SUBTOTAL	\$ 5,155			\$ 644,344	\$ 175,000	
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
LETTERS OF CREDIT/BONDS	\$ 2,886.100	LS	0.8%	\$ 22,396	\$ 2,062.50	
WARRANTY	\$ 2,886.100	LS	3.0%	\$ 89,583	\$ 8,250.00	
MOBILIZATION	\$ 2,886.100	LS	5.0%	\$ 149,305	\$ 13,750.00	
CONTINGENCY	\$ 2,886.100	LS	20.0%	\$ 597,220	\$ 55,000.00	
SUBTOTAL	\$ 6,868			\$ 858,504	\$ 79,063	
PROJECT TOTAL	\$ 34,639			\$ 4,329,845	\$ 388,750	



POUDRE HEIGHTS I						
March 13, 2021						
PROJECT TOTAL			Intracit	Infrastructure		
PROFESSIONAL SERVICES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
AGENCY REVIEW FEES	\$ -	LS	1	\$ -	\$ 6,000.00	1.00%
PLANNING	\$ -	LS	1	\$ -	\$ 6,000.00	1.00%
ENGINEERING	\$ -	LS	1	\$ -	\$ 36,000.00	6.00%
LANDSCAPE ARCHITECTURE	\$ -	LS	1	\$ -	\$ 15,000.00	2.50%
STAKING	\$ -	LS	1	\$ -	\$ 15,000.00	2.50%
SOILS AND ENVIRONMENTAL TESTING	\$ -	LS	1	\$ -	\$ 15,000.00	2.50%
RECORD DRAWINGS/CLOSE OUT	\$ -	LS	1	\$ -	\$ 4,500.00	0.75%
SUBTOTAL	#DIV/0!			\$ -	\$ 97,500	
GRADING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
TOPSOIL	\$ 2.10	CY	0	\$ -	\$ -	10%
OVERLOT GRADING	\$ 2.25	CY	0	\$ -	\$ -	3000
SUBEXCAVATION	\$ 2.25	CY	0	\$ -	\$ -	
ROCK EXCAVATION	\$ 7.50	CY	0	\$ -	\$ -	0%
SUBTOTAL	#DIV/0!			\$ -	\$ -	
EROSION CONTROL	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
EROSION CONTROL	\$ 25.00	LF	0	\$ -	\$ -	
SUBTOTAL	#DIV/0!			\$ -	\$ -	
UTILITY TRENCHING	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
UTILITY TRENCHING	\$ -	LF	0	\$ -	\$ -	
SUBTOTAL	#DIV/0!			\$ -	\$ -	
UTILITY CHARGES	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
ELECTRIC DISTRIBUTION	\$ 3,500.00	LOT	0	\$ -	\$ -	Street Lights
GAS DISTRIBUTION	\$ 1,000.00	LOT	0	\$ -	\$ -	Bury/Relocations
TELECOMMUNICATION DISTRIBUTION	\$ 500.00	LOT	0	\$ -	\$ -	Bury/Relocations
TRAFFIC SIGNAL	\$ 50,000.00	LS	0.0	\$ -	\$ 150,000.00	Misc
STREET LIGHTS	\$ 10,250.00	EA	0	\$ -	\$ -	300
SUBTOTAL	#DIV/0!			\$ -	\$ 150,000	
SANITARY SEWER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
4" SDR 10	\$ 22.00	LF	0	\$ -	\$ -	
8" SDR 10	\$ 28.00	LF	0	\$ -	\$ -	
PIPE 8" PVC W/BEDDING	\$ 55.00	LF	0	\$ -	\$ -	100%
PIPE 10" PVC W/BEDDING	\$ 61.00	LF	0	\$ -	\$ -	0%
PIPE 12" PVC W/BEDDING	\$ 80.00	LF	0	\$ -	\$ -	0%
6" PVC FORCEMAIN	\$ 80.25	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 2.25	LF	0	\$ -	\$ -	20%
EXTRA DEPTH 12' - 14'	\$ 7.10	LF	0	\$ -	\$ -	10%
EXTRA DEPTH 14' - 16'	\$ 12.36	LF	0	\$ -	\$ -	5%
EXTRA DEPTH 16' - 18'	\$ 13.23	LF	0	\$ -	\$ -	5%
EXTRA DEPTH 18' - 20'	\$ 52.50	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 20' - 22'	\$ 64.80	LF	0	\$ -	\$ -	0%
ROCK CUT	\$ 47.15	CY	0	\$ -	\$ -	0%
8" X 4" WYE, BEND, CAP	\$ 110.25	EA	0	\$ -	\$ -	
M.H. - 4' DIA (0-10')	\$ 4,300.00	EA	0	\$ -	\$ -	300
M.H. - 5' DIA (0-10')	\$ 7,100.00	EA	0	\$ -	\$ -	300
M.H. - EXTRA DEPTH	\$ 118.00	VF	0	\$ -	\$ -	5
6" CLEANOUT ASSEMBLY	\$ 940.00	EA	0	\$ -	\$ -	
MARKER POSTS	\$ 180.00	EA	0	\$ -	\$ -	0%
TIE TO EXISTING STUB	\$ 3,000.00	EA	0	\$ -	\$ -	
AIR TEST MAIN	\$ 0.70	LF	0	\$ -	\$ -	
DEFLECTION TEST MAIN	\$ 0.86	LF	0	\$ -	\$ -	
JETT SEWER MAINLINE	\$ 0.81	LF	0	\$ -	\$ -	
TV SEWER LINE	\$ 0.91	LS	0	\$ -	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ 150,000.00	Misc
SUBTOTAL	#DIV/0!			\$ -	\$ 150,000	
STORM DRAINAGE IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST	COMMENTS
15" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 80.25	LF	0	\$ -	\$ -	0%
18" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 102.15	LF	0	\$ -	\$ -	25%
21" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 109.65	LF	0	\$ -	\$ -	0%
24" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 123.65	LF	0	\$ -	\$ -	25%
30" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 149.45	LF	0	\$ -	\$ -	0%
36" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 176.30	LF	0	\$ -	\$ -	5%
42" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 213.93	LF	0	\$ -	\$ -	0%
48" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 250.50	LF	0	\$ -	\$ -	0%
54" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 295.63	LF	0	\$ -	\$ -	0%
60" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 277.00	LF	0	\$ -	\$ -	0%
72" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 378.40	LF	0	\$ -	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 424.63	LF	0	\$ -	\$ -	0%
84" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 510.63	LF	0	\$ -	\$ -	0%
96" RCP CL III TG/ C-443 0-8' w/squeegee	\$ 695.00	LF	0	\$ -	\$ -	0%
EXTRA DEPTH 8'-10'	\$ 2.88	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 10'-12'	\$ 7.59	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 12' - 14'	\$ 14.96	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 14' - 16'	\$ 25.00	VF	0	\$ -	\$ -	0%
EXTRA DEPTH 16' - 18'	\$ 36.01	VF	0	\$ -	\$ -	0%
ROCK CUT	\$ 48.54	CY	0	\$ -	\$ -	0%
24" FES	\$ 3,635.00	EA	0	\$ -	\$ -	
30" FES	\$ 5,375.00	EA	0	\$ -	\$ -	
36" FES	\$ 6,235.00	EA	0	\$ -	\$ -	
42" FES	\$ 6,450.00	EA	0	\$ -	\$ -	
48" FES	\$ 7,310.00	EA	0	\$ -	\$ -	
54" FES	\$ 7,740.00	EA	0	\$ -	\$ -	
60" FES	\$ 9,785.00	EA	0	\$ -	\$ -	
4" Diameter MH (0-8) w/24" Cover	\$ 4,975.00	EA	0	\$ -	\$ -	400
5" Diameter MH (0-8) w/24" Cover	\$ 6,020.00	EA	0	\$ -	\$ -	200
6" MH (0-8 depth) & 24" Cover	\$ 7,740.00	EA	0	\$ -	\$ -	200
Box Base Manhole	\$ 24,187.00	EA	0	\$ -	\$ -	200
Riprap, Grouted (Type M/L/H)	\$ 300.00	CY	0	\$ -	\$ -	
Riprap, Grouted 2' Boulders	\$ 395.00	CY	0	\$ -	\$ -	
Riprap, Grouted 3' Boulders	\$ 432.00	CY	0	\$ -	\$ -	
Riprap, Placed (Type M/L/H)	\$ 97.50	TN	0	\$ -	\$ -	
Riprap, Placed Type VH	\$ 104.30	TN	0	\$ -	\$ -	
Soil Riprap Placed	\$ 80.90	TN	0	\$ -	\$ -	
5" Type 'R' Inlet Up to 5' Deep	\$ 7,720.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 507.94	VF	0	\$ -	\$ -	
10" Type 'R' Inlet Up to 5' Deep	\$ 10,070.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 846.00	VF	0	\$ -	\$ -	
15" Type 'R' Inlet Up to 5' Deep	\$ 13,135.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,100.00	VF	0	\$ -	\$ -	
20" Type 'R' Inlet Up to 5' Deep	\$ 17,500.00	EA	0	\$ -	\$ -	
Extra Depth Inlet Over 5' Deep	\$ 1,495.00	VF	0	\$ -	\$ -	
Single No. 13 & 16	\$ 3,925.00	EA	0	\$ -	\$ -	
Extra depth	\$ 362.00	EA	0	\$ -	\$ -	
Double No. 13 & 16	\$ 6,130.00	EA	0	\$ -	\$ -	



POUDRE HEIGHTS I							
March 13, 2021							
PROJECT TOTAL				Intracit	Infrastructure		
Extra depth	\$ 525.00	EA	0	\$ -	\$ -	\$ 870,000	
Triple No. 13 & 16	\$ 8,922.00	EA	0	\$ -	\$ -	\$ -	
Extra depth	\$ 728.00	EA	0	\$ -	\$ -	\$ -	
Type C Inlet (close mesh grate)	\$ 6,895.00	EA	0	\$ -	\$ -	\$ -	
Extra Depth	\$ 355.00	EA	0	\$ -	\$ -	\$ -	
OUTLET STRUCTURE	\$ 25,000.00	EA	0	\$ -	\$ -	\$ -	
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ -	\$ 150,000.00	Misc
CONNECT TO EXISTING PIPE	\$ 3,000.00	LS	0	\$ -	\$ -	\$ -	
SUBTOTAL	#DIV/0!			\$ -	\$ -	\$ 150,000	
WATER IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS
8" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 43.50	LF	0	\$ -	\$ -		100%
10" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 54.18	LF	0	\$ -	\$ -		0%
12" PVC C-200 w/Bedding & 12ga Tracer wire	\$ 60.20	LF	0	\$ -	\$ -		0%
16" PVC w/Bedding & 12ga Tracer wire	\$ 73.62	LF	0	\$ -	\$ -		0%
20" PVC w/Bedding & 12ga Tracer wire	\$ 132.06	LF	0	\$ -	\$ -		0%
24" PVC w/Bedding & 12ga Tracer wire	\$ 137.73	LF	0	\$ -	\$ -		0%
30" PVC w/Bedding & 12ga Tracer wire	\$ 355.84	LF	0	\$ -	\$ -		0%
8" MJ Gate Valve W/Box & Restraints	\$ 2,483.25	EA	0	\$ -	\$ -		500
10" MJ Gate Valve W/Box & Restraints	\$ 3,806.15	EA	0	\$ -	\$ -		750
12" MJ Gate Valve W/Box & Restraints	\$ 4,531.93	EA	0	\$ -	\$ -		250
16" BFV Valve W/Box & Restraints	\$ 19,583.81	EA	0	\$ -	\$ -		750
20" BFV Valve W/Box & Restraints	\$ 19,102.88	EA	0	\$ -	\$ -		750
24" BFV Valve W/Box & Restraints	\$ 19,753.13	EA	0	\$ -	\$ -		750
30" BFV Valve W/Box & Restraints	\$ 33,904.26	EA	0	\$ -	\$ -		750
Vaults for BFV	\$ 23,703.75	EA	0	\$ -	\$ -		
Fire Hydrants	\$ 9,030.00	EA	0	\$ -	\$ -		500
8" Fittings	\$ 671.86	EA	0	\$ -	\$ -		500
10" Fittings	\$ 836.50	EA	0	\$ -	\$ -		750
12" Fittings	\$ 1,290.00	EA	0	\$ -	\$ -		250
16" Fittings	\$ 1,687.48	EA	0	\$ -	\$ -		750
20" Fittings	\$ 3,724.88	EA	0	\$ -	\$ -		750
24" Fittings	\$ 4,285.86	EA	0	\$ -	\$ -		750
30" Fittings	\$ 4,910.08	EA	0	\$ -	\$ -		750
Remove Plug & Tie in	\$ 2,031.75	EA	0	\$ -	\$ -		
Tie in after testing	\$ 1,612.50	EA	0	\$ -	\$ -		
CI Clear Water & Presure Test	\$ 4,837.50	EA	0.0	\$ -	\$ -		
MARKER POSTS	\$ 145.13	EA	0	\$ -	\$ -		100
WATER SERVICE	\$ 2,821.88	EA	0	\$ -	\$ -		
SPECIAL	\$ 50,000.00	LS	0.00	\$ -	\$ -	\$ 150,000.00	
SUBTOTAL	#DIV/0!			\$ -	\$ -	\$ 150,000	
RETAINING WALLS	UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS
RETAINING WALLS	\$ 31.75	LF	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ -	\$ -		
ASPHALT PAVING IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS
ROAD BASE - 6"	\$ 6.60	SY	0	\$ -	\$ -		42.0
PAVING - 4"	\$ 17.00	SY	0	\$ -	\$ -		34.0
PAVING - 6"	\$ 25.50	SY	0	\$ -	\$ -		-
PAVING - 10"	\$ 42.50	SY	0	\$ -	\$ -		-
PAVING - SUBGRADE PREPARATION	\$ 4.60	SY	0	\$ -	\$ -		
SUBEXCAVATION	\$ 2.52	CY	0	\$ -	\$ -		3.0
PAVING 2	\$ 11.30	SY	0	\$ -	\$ -		2" Mill/Overlay
PAVEMENT MARKINGS	\$ 1.07	LF	0	\$ -	\$ -		1.0
SIGNAGE	\$ 450.00	EA	0	\$ -	\$ -		350
TRAFFIC CONTROL	\$ 5,000.00	LS	0	\$ -	\$ -		
SLEEVES	\$ 16.85	LF	0	\$ -	\$ -		-
RAISE WATER VALVES	\$ 250.00	EA	0	\$ -	\$ -		
RAISE MANHOLES	\$ 800.00	EA	0	\$ -	\$ -		
RAISE RANGEBOXES	\$ 375.00	EA	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ -	\$ -		
CONCRETE IMPROVEMENTS (INTERNAL)	UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS
CURB & GUTTER - 1' CUTTER	\$ 19.75	LF	0	\$ -	\$ -		-
CURB & GUTTER - 2' CUTTER	\$ 20.70	LF	0	\$ -	\$ -		2
CURB & GUTTER - 2' MOUNTABLE	\$ 27.55	LF	0	\$ -	\$ -		-
ALLEYS - 6" CONCRETE	\$ 10.13	SF	0	\$ -	\$ -		16
CURB AND GUTTER SUB GRADE PREPARATION	\$ 2.25	LF	0	\$ -	\$ -		
SUBEXCAVATION ALLEYS	\$ 3.35	CY	0	\$ -	\$ -		3.0
CROSS PANS	\$ 10.15	SF	0	\$ -	\$ -		
HANDICAP RAMPS (CORNER)	\$ 3,790.00	EA	0	\$ -	\$ -		
MIDBLOCK HANDICAP RAMPS	\$ 1,600.00	EA	0	\$ -	\$ -		
4' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -		
6' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -		2
8' SIDEWALK - 6"	\$ 5.25	SF	0	\$ -	\$ -		
SIDEWALK SUB GRADE PREP	\$ 1.85	LF	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ -	\$ -		
LANDSCAPING IMPROVEMENTS	UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS
OPEN SPACE	\$ 3.20	SF	0	\$ -	\$ -		5
FORMAL - STREETS	\$ 8.30	SF	0	\$ -	\$ -		24
FORMAL - PARKS	\$ 6.30	SF	0	\$ -	\$ -		5
MONUMENTS	\$ 30,000.00	LS	0	\$ -	\$ -		
FENCING	\$ 14.50	SF	0	\$ -	\$ -		
TRAILS	\$ 5.25	SF	0	\$ -	\$ -		
MAIL BOXES	\$ 2,500.00	EA	0	\$ -	\$ -		
AMENITY	\$ 35,000.00	LS	0	\$ -	\$ -		
SUBTOTAL	#DIV/0!			\$ -	\$ -		
ADDITIONAL COSTS	UNIT PRICE	UNITS	QTY	COST	COST		COMMENTS
LETTERS OF CREDIT/BONDS	\$ -	LS	0.8%	\$ -	\$ -	\$ 4,500.00	
WARRANTY	\$ -	LS	3.0%	\$ -	\$ -	\$ 18,000.00	
MOBILIZATION	\$ -	LS	5.0%	\$ -	\$ -	\$ 30,000.00	
CONTINGENCY	\$ -	LS	20.0%	\$ -	\$ -	\$ 120,000.00	
SUBTOTAL	#DIV/0!			\$ -	\$ -	\$ 172,500	
PROJECT TOTAL	#DIV/0!			\$ -	\$ -	\$ 870,000	

EXHIBIT E
Map Depicting Public Improvements



EXHIBIT E

POUDRE HEIGHTS

EXHIBIT F
Financial Plan

March 17, 2021

Proposed Poudre Heights Metropolitan District Nos. 1-5
Attention: Jennifer Ivey
Icenogle Seaver Pogue
4725 South Monaco Street, Suite 360
Denver, Colorado 80237

RE: Proposed Poudre Heights Metropolitan District Nos. 1-5

We have analyzed the bonding capacity for the proposed Poudre Heights Metropolitan District Nos. 1-5 (collectively “the District”). The analysis presented summarizes and presents information provided on behalf of the Poudre Bay Partners (“the Developer”) and does not include independently verifying the accuracy of the information or assumptions.

Residential Plan Assumptions

The following assumptions have been provided by the Developer and form the basis of the analysis. All prices below reflect 2021 market values.

1. The residential development is intended to be broken out into four different product types. In all cases, it is assumed home prices will increase at a rate of 2% per annum prior to construction.
 - a. 320 multifamily/townhome style homes which are projected to be completed at an average pace of 60 per year from 2024 through 2029. The average price is modeled at \$310,000.
 - b. 352 single family attached/detached homes which are projected to be completed at an average pace of 48 per year from 2023 through 2030. The average price is modeled at \$435,000.
 - c. 125 single family detached homes which are projected to be completed at an average pace of 24 per year from 2026 through 2031. The average price is modeled at \$675,000.
 - d. 392 multifamily units which are projected to be completed at an average pace of 150 per year from 2027 through 2029. The average price is modeled at \$250,000.
2. The combined total statutory actual market value is projected to be \$434,695,000. The assessed value is calculated by multiplying this by the current 7.15% residential assessment rate for a total of \$31,080,693 in projected assessed value. It is assumed the levy would Gallagher adjust from the current 7.15% rate when/if the rate changes in the future.

Commercial Plan Assumptions

1. The development is comprised of 365,904 square feet of commercial property expected to be completed

between 2025 and 2028, with a base value of \$225 per square foot. An additional 608,097 square feet of industrial property is expected to be completed between 2022 and 2032. The base year price is modeled at \$125 per square foot. Both types of commercial property are modeled with a 2% annual inflation rate.

2. The assessed value is calculated by taking the statutory actual value of \$158,340,525 and multiplying it by the 29% commercial assessment rate for a total of \$45,918,752 in projected assessed values.

Bond Assumptions

1. The debt service mill levy target is 50 mills beginning in tax collection year 2024. The operations levy is shown as 10 mills starting in tax collection year 2024. Facility fees will be collected on all development consisting of \$5,000 per single family detached home, \$2,500 per single family attached home, \$2,500 per multi-family unit and \$2.00 per square foot for commercial development.
2. The District is modeled to issue senior and subordinate bonds in December 2022; senior bonds with a par of \$54,380,000 and an interest rate of 5.0% and subordinate bonds with a par of \$9,198,000 and an interest rate of 8.0%. At issuance, it is projected that the District will fund \$300,000 in costs of issuance, \$8,157,000 in capitalized interest, and \$4,852,000 in Surplus Funds from bond proceeds. The Underwriter's discount is modeled as 2% of par for senior bonds and 3% of par for subordinated bonds. The remaining \$48,905,460 is projected to be deposited to the District's project fund (\$39,983,400 in the senior project fund and \$8,922,060 in the subordinate project fund) to reimburse the Developer for eligible expenses.
 - a. The Surplus Fund is sized to a maximum of \$10,876,000, which constitutes 20% of the 2022 senior bonds par amount.
 - b. Specific Ownership Tax revenues have been calculated based on applying a factor of 6% to annual property tax revenues.
 - c. It is projected that 99.5% of property taxes levied will be collected and available to the District.
 - d. It is projected that there will be a 6% biennial inflation rate on assessments. The bonding capacity could be higher if the rate of assessment inflation is greater, or conversely lower if the inflation rate is below 6%.
 - e. Total senior bond par amount is sized to 130x coverage.
 - f. Maximum assumed interest rate and underwriting discounts as described in the Service Plan.

Refinance Assumptions

1. The District is modeled to issue refunding bonds in December 2032; senior bonds with a par of \$82,960,000, subordinate bonds with a par amount of \$10,350,000, funds on hand of \$10,885,000 and an interest rate of 4.0% and 7.5% for the senior and subordinate bonds,

respectively. At issuance, it is projected that the District will fund \$72,227,792 to refund the Series 2022 bonds, \$250,000 in costs of issuance and \$6,220,000 to fund the debt service reserve fund. The Underwriter's discount is modeled as 0.50% of par for investment grade rated senior bonds and 3% of par for subordinated bonds. The remaining \$24,771,908 is projected to be deposited to the District's project fund (\$14,732,409 in the senior project fund and \$10,039,500 in the subordinate project fund) to reimburse the Developer for additional eligible expenses.

- a. The Surplus Fund is sized to a maximum of \$8,296,000, which constitutes 10% of the 2032 senior bonds par amount.
- b. Specific Ownership Tax revenues have been calculated based on applying a factor of 6% to annual property tax revenues.
- c. It is projected that 99.5% of property taxes levied will be collected and available to the District.
- d. It is projected that there will be a 6% biennial inflation rate on assessments. The bonding capacity could be higher if the rate of assessment inflation is greater, or conversely lower if the inflation rate is below 6%.
- e. It is projected that the senior bonds will include an investment grade rating
- f. Total senior bond par amount is sized to 120x coverage
- g. Maximum assumed interest rate and underwriting discounts as described in the Service Plan

Estimate of Revenue Projections for first 10 years

The debt service mill levy collection revenues over the first 10 years total \$20,907,265 plus an additional \$1,254,436 in specific ownership taxes associated with the debt levy for a total of \$22,161,701.

The total facility fee revenues over the first 10 years total \$5233,002 including \$91,476 generated prior to the initial issuance of the bonds from homes built in the first year of the development plan.

The operations mill levy collection revenues total \$4,035,308 plus an additional \$242,118 in specific ownership taxes associated with the Operations levy for a total of \$4,277,426.

Based upon the development assumptions provided and the financial assumptions contained in the attached projected Financing Plan for the proposed Poudre Heights Metropolitan District, the projected revenue is sufficient to retire all Debt referenced in the Financing Plan within the restrictions set forth in the District's Service Plan, including but not limited to the maximum debt mill levies and mill levy imposition terms permitted.

Risks Associated with the Bond Financing

Risks to Tax Payers:

- Development is slower than anticipated
- Biennial inflation on assessed values is less than 6%

- District imposes Maximum Debt Mill Levy as described in the Service Plan

The primary risk to tax payers is that the Districts issue bonds to finance infrastructure and then the absorption of additional property, or its valuation by the Assessor, lags modeled expectations. If that occurs, then the Districts may need to levy the Maximum Debt Mill Levy as described in the Service Plan and would not be able to reduce the levy for a longer period of time.

Risks to Bondholders:

- Development is slower than anticipated
- Biennial inflation on assessed values is less than 6%
- Assurance of the continuation of development is not assured
- Reliance on Federal Tax Code and State laws governing municipal finance and special districts

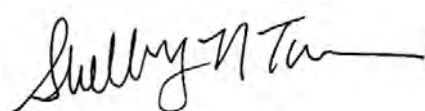
The primary risk to bondholders is the development does not occur as fast as originally projected and that the revenues generated from the Maximum Debt Mill Levy as described in the Service Plan are not sufficient to meet the Districts' financial obligations. These risks are mitigated by funding a capitalized interest and surplus fund at closing. In addition, these bonds are anticipated to be marketed only to sophisticated investors who understand the risks involved in the transaction.

The assumptions disclosed in the Financial Plan are those of the Developer and have not been independently reviewed by Piper Sandler. Those assumptions identified are believed to be the significant factors in determining financial feasibility; however, they are likely not to be all-inclusive. There will usually be differences between forecasted and actual results, because events and circumstances frequently do not occur as projected, and those differences may be material. Key assumptions, including those relating to market values of real property improvements and the build out schedule of such property, are particularly sensitive in terms of the timing necessary to create the tax base for the District. A small variation in these variables, and to their timing, can have a large effect on the forecasted results. There is a high probability that the forecasted results will differ from realized future tax base factors and such variations can be material. Additionally, other key assumptions relating to inflation, assessment ratios, interest rates, and infrastructure, administrative, and operating costs may, and likely will, vary from those projected.

Because Piper Sandler has not independently evaluated or reviewed the assumptions that the financial model is based upon, we do not vouch for the achievability (and disclaim any opinion) of the information provided. Furthermore, because of the inherent nature of future events, which are subject to change and variation as events and circumstances change, the actual results may vary materially from the results presented here. Piper Sandler has no responsibility or obligation to update this information or this financial model for events occurring after the date of this report.

Respectfully submitted,

Piper Sandler & Co.



Shelby Turner

Vice President, Public Finance Investment Banker

**Poudre Heights Metropolitan District Nos. 1-5
Weld County, Colorado**

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**General Obligation Bonds, Series 2022A**  
**Subordinate Cash Flow Bonds, Series 2022B(3)**  
**General Obligation Refunding Bonds, Series 2032A**  
**Subordinate Cash Flow Bonds, Series 2032B(3)**  
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Service Plan

Bond Assumptions	Series 2022A	Series 2022B(3)	Series 2032A	Series 2032B(3)	Total
Closing Date	12/1/2022	12/15/2022	12/1/2032	12/15/2032	
First Call Date	12/1/2027	12/15/2027	12/1/2042	12/15/2042	
Final Maturity	12/1/2052	12/15/2052	12/1/2062	12/15/2062	
Discharge Date	12/15/2062	12/15/2062	12/15/2062	12/15/2062	
Sources of Funds					
Par Amount	54,380,000	9,198,000	82,960,000	10,350,000	156,888,000
Funds on Hand	0	0	10,885,000	0	10,885,000
Total	54,380,000	9,198,000	93,845,000	10,350,000	167,773,000
Uses of Funds					
Project Fund	39,983,400	8,922,060	14,732,408	10,039,500	73,677,368
Refunding Escrow	0	0	72,227,792	0	72,227,792
Capitalized Interest	8,157,000	0	0	0	8,157,000
Reserve Fund	0	0	6,220,000	0	6,220,000
Surplus Deposit	4,852,000	0	0	0	4,852,000
Cost of Issuance	1,387,600	275,940	664,800	310,500	2,638,840
Total	54,380,000	9,198,000	93,845,000	10,350,000	167,773,000
Debt Features					
Projected Coverage at Mill Levy Cap	1.30x	1.00x	1.20x	1.00x	
Tax Status	Tax-Exempt	Tax-Exempt	Tax-Exempt	Tax-Exempt	
Rating	Non-Rated	Non-Rated	Investment Grade	Non-Rated	
Average Coupon	5.000%	8.000%	4.000%	7.500%	
Annual Trustee Fee	\$4,000	\$3,000	\$4,000	\$3,000	
Biennial Reassessment					
Residential	2.00%	6.00%	2.00%	6.00%	
Commercial	2.00%	2.00%	2.00%	2.00%	
Tax Authority Assumptions					
Metropolitan District Revenue					
Residential Assessment Ratio					
Service Plan Gallagherization Base	7.96%				
Current Assumption	7.15%				
Debt Service Mills					
Target Debt Service Mill Levy	50.000				
Maximum Adjusted Cap	55.664				
Target Mill Levy	55.664				
Average Mill Levy through Maturity	52.157				
Specific Ownership Tax	6.00%				
County Treasurer Fee	1.50%				
Fee Revenue					
SFD Facility Fee	\$5,000				
SFA Facility Fee	\$2,500				
MF Facility Fee	\$2,500				
Commercial Facility Fee	\$2.00				

**Poudre Heights Metropolitan District Nos. 1-5
Development Summary**

Statutory Actual Value (2021)	Residential							Total
	Multifamily	F	G	H	-	-	-	
	\$250,000	\$310,000	\$435,000	\$675,000	-	-	-	
2019	-	-	-	-	-	-	-	-
2020	-	-	-	-	-	-	-	-
2021	-	-	-	-	-	-	-	-
2022	-	-	-	-	-	-	-	-
2023	-	-	48	-	-	-	-	48
2024	-	60	48	-	-	-	-	108
2025	-	60	48	-	-	-	-	108
2026	-	60	48	24	-	-	-	132
2027	200	60	48	24	-	-	-	332
2028	-	60	48	24	-	-	-	132
2029	192	20	48	24	-	-	-	284
2030	-	-	16	24	-	-	-	40
2031	-	-	-	5	-	-	-	5
2032	-	-	-	-	-	-	-	-
2033	-	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-	-
2039	-	-	-	-	-	-	-	-
2040	-	-	-	-	-	-	-	-
2041	-	-	-	-	-	-	-	-
2042	-	-	-	-	-	-	-	-
2043	-	-	-	-	-	-	-	-
2044	-	-	-	-	-	-	-	-
2045	-	-	-	-	-	-	-	-
2046	-	-	-	-	-	-	-	-
2047	-	-	-	-	-	-	-	-
2048	-	-	-	-	-	-	-	-
2049	-	-	-	-	-	-	-	-
2050	-	-	-	-	-	-	-	-
2051	-	-	-	-	-	-	-	-
2052	-	-	-	-	-	-	-	-
2053	-	-	-	-	-	-	-	-
2054	-	-	-	-	-	-	-	-
2055	-	-	-	-	-	-	-	-
2056	-	-	-	-	-	-	-	-
2057	-	-	-	-	-	-	-	-
2058	-	-	-	-	-	-	-	-
2059	-	-	-	-	-	-	-	-
2060	-	-	-	-	-	-	-	-
2061	-	-	-	-	-	-	-	-
2062	-	-	-	-	-	-	-	-
Total Units	392	320	352	125	-	-	-	1,189
Total Statutory Actual Value	\$98,000,000	\$99,200,000	\$153,120,000	\$84,375,000	-	-	-	\$434,695,000

**Poudre Heights Metropolitan District Nos. 1-5
Development Summary**

Statutory Actual Value (2021)	Commercial							Total
	C	-	-	-	-	-	-	
	\$225	-	-	-	-	-	-	
2019	-	-	-	-	-	-	-	-
2020	-	-	-	-	-	-	-	-
2021	-	-	-	-	-	-	-	-
2022	-	-	-	-	-	-	-	-
2023	-	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-	-
2025	128,066	-	-	-	-	-	-	128,066
2026	128,066	-	-	-	-	-	-	128,066
2027	-	-	-	-	-	-	-	-
2028	109,771	-	-	-	-	-	-	109,771
2029	-	-	-	-	-	-	-	-
2030	-	-	-	-	-	-	-	-
2031	-	-	-	-	-	-	-	-
2032	-	-	-	-	-	-	-	-
2033	-	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-	-
2039	-	-	-	-	-	-	-	-
2040	-	-	-	-	-	-	-	-
2041	-	-	-	-	-	-	-	-
2042	-	-	-	-	-	-	-	-
2043	-	-	-	-	-	-	-	-
2044	-	-	-	-	-	-	-	-
2045	-	-	-	-	-	-	-	-
2046	-	-	-	-	-	-	-	-
2047	-	-	-	-	-	-	-	-
2048	-	-	-	-	-	-	-	-
2049	-	-	-	-	-	-	-	-
2050	-	-	-	-	-	-	-	-
2051	-	-	-	-	-	-	-	-
2052	-	-	-	-	-	-	-	-
2053	-	-	-	-	-	-	-	-
2054	-	-	-	-	-	-	-	-
2055	-	-	-	-	-	-	-	-
2056	-	-	-	-	-	-	-	-
2057	-	-	-	-	-	-	-	-
2058	-	-	-	-	-	-	-	-
2059	-	-	-	-	-	-	-	-
2060	-	-	-	-	-	-	-	-
2061	-	-	-	-	-	-	-	-
2062	-	-	-	-	-	-	-	-
Total Units	365,904	-	-	-	-	-	-	365,904
Total Statutory Actual Value	\$82,328,400	-	-	-	-	-	-	\$82,328,400

**Poudre Heights Metropolitan District Nos. 1-5
Development Summary**

Statutory Actual Value (2021)	Industrial							Total
	A	B	E	-	-	-	-	
	\$125	\$125	\$125	-	-	-	-	
2019	-	-	-	-	-	-	-	-
2020	-	-	-	-	-	-	-	-
2021	-	-	-	-	-	-	-	-
2022	45,738	-	-	-	-	-	-	45,738
2023	-	117,612	-	-	-	-	-	117,612
2024	-	-	-	-	-	-	-	-
2025	45,738	-	-	-	-	-	-	45,738
2026	-	117,612	-	-	-	-	-	117,612
2027	39,204	-	-	-	-	-	-	39,204
2028	-	-	75,620	-	-	-	-	75,620
2029	-	-	75,620	-	-	-	-	75,620
2030	-	26,136	-	-	-	-	-	26,136
2031	-	-	-	-	-	-	-	-
2032	-	-	64,817	-	-	-	-	64,817
2033	-	-	-	-	-	-	-	-
2034	-	-	-	-	-	-	-	-
2035	-	-	-	-	-	-	-	-
2036	-	-	-	-	-	-	-	-
2037	-	-	-	-	-	-	-	-
2038	-	-	-	-	-	-	-	-
2039	-	-	-	-	-	-	-	-
2040	-	-	-	-	-	-	-	-
2041	-	-	-	-	-	-	-	-
2042	-	-	-	-	-	-	-	-
2043	-	-	-	-	-	-	-	-
2044	-	-	-	-	-	-	-	-
2045	-	-	-	-	-	-	-	-
2046	-	-	-	-	-	-	-	-
2047	-	-	-	-	-	-	-	-
2048	-	-	-	-	-	-	-	-
2049	-	-	-	-	-	-	-	-
2050	-	-	-	-	-	-	-	-
2051	-	-	-	-	-	-	-	-
2052	-	-	-	-	-	-	-	-
2053	-	-	-	-	-	-	-	-
2054	-	-	-	-	-	-	-	-
2055	-	-	-	-	-	-	-	-
2056	-	-	-	-	-	-	-	-
2057	-	-	-	-	-	-	-	-
2058	-	-	-	-	-	-	-	-
2059	-	-	-	-	-	-	-	-
2060	-	-	-	-	-	-	-	-
2061	-	-	-	-	-	-	-	-
2062	-	-	-	-	-	-	-	-
Total Units	130,680	261,360	216,057	-	-	-	-	608,097
Total Statutory Actual Value	\$16,335,000	\$32,670,000	\$27,007,125	-	-	-	-	\$76,012,125

Poudre Heights Metropolitan District Nos. 1-5
Assessed Value

	Vacant and Improved Land		Residential				Commercial				Total
	Cumulative Story	Assessed Value in	Residential Units Delivered	Biennial Reassessment	Cumulative Story	Assessed Value in	Commercial SF Delivered	Biennial Reassessment	Cumulative Story	Assessed Value in	Assessed Value in Collection Year 2 Year Lag
	Actual Value ¹	Collection Year 2 Year Lag 29.00%			Actual Value	Collection Year 2 Year Lag 7.15%			Actual Value	Collection Year 2 Year Lag 29.00%	
2019	0		-	-	0		-	-	0		
2020	0		-	-	0		-	-	0		
2021	571,725	0	-	-	0	0	-	-	0	0	0
2022	3,558,150	0	-	-	0	0	45,738	-	5,831,595	0	0
2023	3,948,000	165,800	48	-	21,723,552	0	117,612	-	21,127,036	0	165,800
2024	7,401,219	1,031,864	108	1,303,413	64,923,457	0	-	422,541	21,549,576	1,691,163	2,723,026
2025	9,919,644	1,144,920	108	-	107,657,879	1,553,234	173,804	-	58,928,329	6,126,840	8,824,994
2026	11,058,050	2,146,354	132	6,459,473	175,592,570	4,642,027	245,678	1,178,567	108,152,562	6,249,377	13,037,758
2027	8,983,101	2,876,697	332	-	294,605,415	7,697,538	39,204	-	113,671,321	17,089,216	27,663,451
2028	10,073,249	3,206,835	132	17,676,325	376,240,558	12,554,869	185,391	2,273,426	155,173,527	31,364,243	47,125,946
2029	2,642,700	2,605,099	284	-	483,189,626	21,064,287	75,620	-	166,248,630	32,964,683	56,634,070
2030	337,500	2,921,242	40	28,991,378	539,859,348	26,901,200	26,136	3,324,973	173,477,970	45,000,323	74,822,765
2031	810,214	766,383	5	-	543,973,454	34,548,058	-	-	173,477,970	48,212,103	83,526,544
2032	0	97,875	-	32,638,407	576,611,861	38,599,943	64,817	3,469,559	187,021,519	50,308,611	89,006,430
2033	0	234,962	-	-	576,611,861	38,894,102	-	-	187,021,519	50,308,611	89,437,675
2034	0	0	-	34,596,712	611,208,573	41,227,748	-	3,740,430	190,761,950	54,236,241	95,463,989
2035	0	0	-	-	611,208,573	41,227,748	-	-	190,761,950	54,236,241	95,463,989
2036	0	0	-	36,672,514	647,881,087	43,701,413	-	3,815,239	194,577,189	55,320,965	99,022,378
2037	0	0	-	-	647,881,087	43,701,413	-	-	194,577,189	55,320,965	99,022,378
2038	0	0	-	38,872,865	686,753,952	46,323,498	-	3,891,544	198,468,732	56,427,385	102,750,882
2039	0	0	-	-	686,753,952	46,323,498	-	-	198,468,732	56,427,385	102,750,882
2040	0	0	-	41,205,237	727,959,189	49,102,908	-	3,969,375	202,438,107	57,555,932	106,658,840
2041	0	0	-	-	727,959,189	49,102,908	-	-	202,438,107	57,555,932	106,658,840
2042	0	0	-	43,677,551	771,636,741	52,049,082	-	4,048,762	206,486,869	58,707,051	110,756,133
2043	0	0	-	-	771,636,741	52,049,082	-	-	206,486,869	58,707,051	110,756,133
2044	0	0	-	46,298,204	817,934,945	55,172,027	-	4,129,737	210,616,607	59,881,192	115,053,219
2045	0	0	-	-	817,934,945	55,172,027	-	-	210,616,607	59,881,192	115,053,219
2046	0	0	-	49,076,097	867,011,042	58,482,349	-	4,212,332	214,828,939	61,078,816	119,561,165
2047	0	0	-	-	867,011,042	58,482,349	-	-	214,828,939	61,078,816	119,561,165
2048	0	0	-	52,020,663	919,031,704	61,991,289	-	4,296,579	219,125,518	62,300,392	124,291,682
2049	0	0	-	-	919,031,704	61,991,289	-	-	219,125,518	62,300,392	124,291,682
2050	0	0	-	55,141,902	974,173,607	65,710,767	-	4,382,510	223,508,028	63,546,400	129,257,167
2051	0	0	-	-	974,173,607	65,710,767	-	-	223,508,028	63,546,400	129,257,167
2052	0	0	-	58,450,416	1,032,624,023	69,653,413	-	4,470,161	227,978,188	64,817,328	134,470,741
2053	0	0	-	-	1,032,624,023	69,653,413	-	-	227,978,188	64,817,328	134,470,741
2054	0	0	-	61,957,441	1,094,581,464	73,832,618	-	4,559,564	232,537,752	66,113,675	139,946,292
2055	0	0	-	-	1,094,581,464	73,832,618	-	-	232,537,752	66,113,675	139,946,292
2056	0	0	-	65,674,888	1,160,256,352	78,262,575	-	4,650,755	237,188,507	67,435,948	145,698,523
2057	0	0	-	-	1,160,256,352	78,262,575	-	-	237,188,507	67,435,948	145,698,523
2058	0	0	-	69,615,381	1,229,871,733	82,958,329	-	4,743,770	241,932,277	68,784,667	151,742,996
2059	0	0	-	-	1,229,871,733	82,958,329	-	-	241,932,277	68,784,667	151,742,996
2060	0	0	-	73,792,304	1,303,664,037	87,935,829	-	4,838,646	246,770,923	70,160,360	158,096,189
2061	0	0	-	-	1,303,664,037	87,935,829	-	-	246,770,923	70,160,360	158,096,189
2062	0	0	-	-	1,303,664,037	93,211,979	-	-	246,770,923	71,563,568	164,775,546
Total			1,189	814,121,172			974,001	70,418,469			

1. Vacant land value calculated in year prior to construction as 10% build-out market value

**Poudre Heights Metropolitan District Nos. 1-5
Revenue**

	Total		District Mill Levy Revenue			Fee Revenue			Fee Revenue		
	Assessed Value in Collection Year	% Residential	Debt Mill Levy	Debt Mill Levy Collections	Specific Ownership Taxes	Units Delivered	Facility Fee per Unit	Fees Collected	Units Delivered	Facility Fee per Unit	Fees Collected
			55.664 Cap 55.664 Target	99.50%	6.00%	SFD	\$5,000 Inflated at 0.00%		SFA	\$2,500 Inflated at 0.00%	
2021	0	0%	50.000	0	0	-	0	0	-	0	0
2022	0	0%	50.000	0	0	-	0	0	-	0	0
2023	165,800	0%	50.000	8,249	495	-	0	0	48	2,500	120,000
2024	2,723,026	0%	50.000	135,471	8,128	-	0	0	48	2,500	120,000
2025	8,824,994	18%	50.997	447,797	26,868	-	0	0	48	2,500	120,000
2026	13,037,758	36%	52.017	674,789	40,487	24	5,000	120,000	48	2,500	120,000
2027	27,663,451	28%	51.576	1,419,638	85,178	24	5,000	120,000	48	2,500	120,000
2028	47,125,946	27%	51.509	2,415,271	144,916	24	5,000	120,000	48	2,500	120,000
2029	56,634,070	37%	52.107	2,936,257	176,175	24	5,000	120,000	48	2,500	120,000
2030	74,822,765	36%	52.036	3,874,039	232,442	24	5,000	120,000	16	2,500	40,000
2031	83,526,544	41%	52.343	4,350,147	261,009	5	5,000	25,000	-	0	0
2032	89,006,430	43%	52.456	4,645,607	278,736	-	0	0	-	0	0
2033	89,437,675	43%	52.463	4,668,719	280,123	-	0	0	-	0	0
2034	95,463,989	43%	52.446	4,981,680	298,901	-	0	0	-	0	0
2035	95,463,989	43%	52.446	4,981,680	298,901	-	0	0	-	0	0
2036	99,022,378	44%	52.500	5,172,651	310,359	-	0	0	-	0	0
2037	99,022,378	44%	52.500	5,172,651	310,359	-	0	0	-	0	0
2038	102,750,882	45%	52.554	5,372,921	322,375	-	0	0	-	0	0
2039	102,750,882	45%	52.554	5,372,921	322,375	-	0	0	-	0	0
2040	106,658,840	46%	52.608	5,583,006	334,980	-	0	0	-	0	0
2041	106,658,840	46%	52.608	5,583,006	334,980	-	0	0	-	0	0
2042	110,756,133	47%	52.662	5,803,450	348,207	-	0	0	-	0	0
2043	110,756,133	47%	52.662	5,803,450	348,207	-	0	0	-	0	0
2044	115,053,219	48%	52.716	6,034,830	362,090	-	0	0	-	0	0
2045	115,053,219	48%	52.716	6,034,830	362,090	-	0	0	-	0	0
2046	119,561,165	49%	52.770	6,277,756	376,665	-	0	0	-	0	0
2047	119,561,165	49%	52.770	6,277,756	376,665	-	0	0	-	0	0
2048	124,291,682	50%	52.825	6,532,874	391,972	-	0	0	-	0	0
2049	124,291,682	50%	52.825	6,532,874	391,972	-	0	0	-	0	0
2050	129,257,167	51%	52.879	6,800,869	408,052	-	0	0	-	0	0
2051	129,257,167	51%	52.879	6,800,869	408,052	-	0	0	-	0	0
2052	134,470,741	52%	52.934	7,082,464	424,948	-	0	0	-	0	0
2053	134,470,741	52%	52.934	7,082,464	424,948	-	0	0	-	0	0
2054	139,946,292	53%	52.988	7,378,425	442,706	-	0	0	-	0	0
2055	139,946,292	53%	52.988	7,378,425	442,706	-	0	0	-	0	0
2056	145,698,523	54%	53.042	7,689,564	461,374	-	0	0	-	0	0
2057	145,698,523	54%	53.042	7,689,564	461,374	-	0	0	-	0	0
2058	151,742,996	55%	53.097	8,016,741	481,004	-	0	0	-	0	0
2059	151,742,996	55%	53.097	8,016,741	481,004	-	0	0	-	0	0
2060	158,096,189	56%	53.150	8,360,864	501,652	-	0	0	-	0	0
2061	158,096,189	56%	53.150	8,360,864	501,652	-	0	0	-	0	0
2062	164,775,546	57%	53.204	8,722,896	523,374	-	0	0	-	0	0
Total				216,475,064	12,988,504	125		625,000	352		880,000

Poudre Heights Metropolitan District Nos. 1-5
Revenue

	Fee Revenue			Fee Revenue			Expense		Total
	Units Delivered	Facility Fee per Unit \$2,500 Inflated at 0.00%	Fees Collected	Units Delivered	Facility Fee per Unit \$2 Inflated at 0.00%	Fees Collected	County Treasurer Fee 1.50%	Annual Trustee Fee \$7,000	
	<i>MF</i>			<i>Commercial</i>					Revenue Available for Debt Service
2021	-	0	0	-	0	0	0	0	0
2022	-	0	0	45,738	2	91,476	0	0	91,476
2023	-	0	0	117,612	2	235,224	(124)	(7,000)	356,844
2024	60	2,500	150,000	-	0	0	(2,032)	(7,000)	404,567
2025	60	2,500	150,000	173,804	2	347,609	(6,717)	(7,000)	1,078,557
2026	60	2,500	150,000	245,678	2	491,357	(10,122)	(7,000)	1,579,512
2027	260	2,500	650,000	39,204	2	78,408	(21,295)	(7,000)	2,444,929
2028	60	2,500	150,000	185,391	2	370,782	(36,229)	(7,000)	3,277,741
2029	212	2,500	530,000	75,620	2	151,240	(44,044)	(7,000)	3,982,628
2030	-	0	0	26,136	2	52,272	(58,111)	(7,000)	4,253,643
2031	-	0	0	-	0	0	(65,252)	(7,000)	4,563,904
2032	-	0	0	64,817	2	129,634	(69,684)	(7,000)	4,977,293
2033	-	0	0	-	0	0	(70,031)	(7,000)	4,871,811
2034	-	0	0	-	0	0	(74,725)	(7,000)	5,198,855
2035	-	0	0	-	0	0	(74,725)	(7,000)	5,198,855
2036	-	0	0	-	0	0	(77,590)	(7,000)	5,398,420
2037	-	0	0	-	0	0	(77,590)	(7,000)	5,398,420
2038	-	0	0	-	0	0	(80,594)	(7,000)	5,607,702
2039	-	0	0	-	0	0	(80,594)	(7,000)	5,607,702
2040	-	0	0	-	0	0	(83,745)	(7,000)	5,827,241
2041	-	0	0	-	0	0	(83,745)	(7,000)	5,827,241
2042	-	0	0	-	0	0	(87,052)	(7,000)	6,057,605
2043	-	0	0	-	0	0	(87,052)	(7,000)	6,057,605
2044	-	0	0	-	0	0	(90,522)	(7,000)	6,299,397
2045	-	0	0	-	0	0	(90,522)	(7,000)	6,299,397
2046	-	0	0	-	0	0	(94,166)	(7,000)	6,553,255
2047	-	0	0	-	0	0	(94,166)	(7,000)	6,553,255
2048	-	0	0	-	0	0	(97,993)	(7,000)	6,819,854
2049	-	0	0	-	0	0	(97,993)	(7,000)	6,819,854
2050	-	0	0	-	0	0	(102,013)	(7,000)	7,099,908
2051	-	0	0	-	0	0	(102,013)	(7,000)	7,099,908
2052	-	0	0	-	0	0	(106,237)	(7,000)	7,394,175
2053	-	0	0	-	0	0	(106,237)	(7,000)	7,394,175
2054	-	0	0	-	0	0	(110,676)	(7,000)	7,703,454
2055	-	0	0	-	0	0	(110,676)	(7,000)	7,703,454
2056	-	0	0	-	0	0	(115,343)	(7,000)	8,028,595
2057	-	0	0	-	0	0	(115,343)	(7,000)	8,028,595
2058	-	0	0	-	0	0	(120,251)	(7,000)	8,370,494
2059	-	0	0	-	0	0	(120,251)	(7,000)	8,370,494
2060	-	0	0	-	0	0	(125,413)	(7,000)	8,730,102
2061	-	0	0	-	0	0	(125,413)	(7,000)	8,730,102
2062	-	0	0	-	0	0	(130,843)	(7,000)	9,108,427
Total	712		1,780,000	974,001		1,948,002	(3,247,126)	(280,000)	231,169,443

Poudre Heights Metropolitan District Nos. 1-5
Debt Service

	Total Revenue Available for Debt Service	Net Debt Service		Total	Funds On Hand Used as a Source	Surplus Fund			Ratio Analysis	
		Series 2022A	Series 2032A			Annual Surplus	Cumulative Balance \$16,592,000	Released Revenue	Debt Service Coverage	Senior Debt to Assessed Value
		Dated: 12/1/2022	Dated: 12/1/2032							
		Par: \$54,380,000 Proj: \$39,983,400 Escr: \$0	Par: \$82,960,000 Proj: \$14,732,408 Escr: \$72,227,792							
2021	0			0		0	0	0	n/a	n/a
2022	91,476	0		0		91,476	4,943,476	0	n/a	n/a
2023	356,844	0		0		356,844	5,300,320	0	n/a	n/a
2024	404,567	0		0		404,567	5,704,886	0	n/a	32799%
2025	1,078,557	0		0		1,078,557	6,783,443	0	n/a	1997%
2026	1,579,512	2,719,000		2,719,000		(1,139,488)	5,643,955	0	58%	616%
2027	2,444,929	2,719,000		2,719,000		(274,071)	5,369,884	0	90%	417%
2028	3,277,741	2,719,000		2,719,000		558,741	5,928,625	0	121%	197%
2029	3,982,628	2,719,000		2,719,000		1,263,628	7,192,253	0	146%	115%
2030	4,253,643	3,054,000		3,054,000		1,199,643	8,391,896	0	139%	95%
2031	4,563,904	3,432,250		3,432,250		1,131,654	9,523,550	0	133%	71%
2032	4,977,293	3,610,750	0	3,610,750	10,885,000	1,366,543	5,093	0	138%	162%
2033	4,871,811	Refunded in '32	4,058,400	4,058,400		813,411	818,504	0	120%	150%
2034	5,198,855		4,328,800	4,328,800		870,055	1,688,560	0	120%	147%
2035	5,198,855		4,332,200	4,332,200		866,655	2,555,215	0	120%	135%
2036	5,398,420		4,418,800	4,418,800		979,620	3,534,835	0	122%	132%
2037	5,398,420		4,415,200	4,415,200		983,220	4,518,055	0	122%	125%
2038	5,607,702		4,504,800	4,504,800		1,102,902	5,620,957	0	124%	122%
2039	5,607,702		4,503,800	4,503,800		1,103,902	6,724,859	0	125%	114%
2040	5,827,241		4,595,600	4,595,600		1,231,641	7,956,500	0	127%	111%
2041	5,827,241		4,596,400	4,596,400		1,230,841	9,187,341	0	127%	103%
2042	6,057,605		4,689,600	4,689,600		1,368,005	10,555,346	0	129%	99%
2043	6,057,605		4,686,400	4,686,400		1,371,205	11,926,550	0	129%	92%
2044	6,299,397		4,780,400	4,780,400		1,518,997	13,445,547	0	132%	88%
2045	6,299,397		4,782,600	4,782,600		1,516,797	14,962,344	0	132%	80%
2046	6,553,255		4,876,400	4,876,400		1,676,855	16,592,000	47,199	134%	76%
2047	6,553,255		4,878,000	4,878,000		1,675,255	16,592,000	1,675,255	134%	68%
2048	6,819,854		4,975,800	4,975,800		1,844,054	16,592,000	1,844,054	137%	64%
2049	6,819,854		4,975,800	4,975,800		1,844,054	16,592,000	1,844,054	137%	56%
2050	7,099,908		4,976,600	4,976,600		2,123,308	16,592,000	2,123,308	143%	51%
2051	7,099,908		4,973,000	4,973,000		2,126,908	16,592,000	2,126,908	143%	44%
2052	7,394,175		4,975,000	4,975,000		2,419,175	16,592,000	2,419,175	149%	34%
2053	7,394,175		4,977,200	4,977,200		2,416,975	16,592,000	2,416,975	149%	31%
2054	7,703,454		4,974,400	4,974,400		2,729,054	16,592,000	2,729,054	155%	28%
2055	7,703,454		4,976,600	4,976,600		2,726,854	16,592,000	2,726,854	155%	25%
2056	8,028,595		4,973,400	4,973,400		3,055,195	16,592,000	3,055,195	161%	22%
2057	8,028,595		4,974,800	4,974,800		3,053,795	16,592,000	3,053,795	161%	19%
2058	8,370,494		4,975,400	4,975,400		3,395,094	16,592,000	3,395,094	168%	16%
2059	8,370,494		4,975,000	4,975,000		3,395,494	16,592,000	3,395,494	168%	13%
2060	8,730,102		4,973,400	4,973,400		3,756,702	16,592,000	3,756,702	176%	10%
2061	8,730,102		4,975,400	4,975,400		3,754,702	16,592,000	3,754,702	175%	7%
2062	9,108,427		4,975,600	4,975,600		4,132,827	0	20,724,827	183%	0%
Total	231,169,443	20,973,000	143,074,800	164,047,800	10,885,000	67,121,643	423,753,992	61,088,643		

1. Assumes \$4,852,000 Deposit to Surplus Fund at Closing

**Poudre Heights Metropolitan District Nos. 1-5
Subordinate Debt Service**

	Revenue Available for Debt Service	Refunding Proceeds	Interest Payment 8.000%	Balance of Accrued Interest	Principal Payment	Principal Balance	Debt Service	Released Revenue
							Series 2022B(3)	
							Dated: 12/15/2022 Par: \$9,198,000 Proj: \$8,922,060	
2020						9,198,000		
2021						9,198,000		
2022						9,198,000		
2023	-		-	735,840	-	9,198,000	-	-
2024	-		-	1,530,547	-	9,198,000	-	-
2025	-		-	2,388,831	-	9,198,000	-	-
2026	-		-	3,315,777	-	9,198,000	-	-
2027	-		-	4,316,880	-	9,198,000	-	-
2028	-		-	5,398,070	-	9,198,000	-	-
2029	-		-	6,565,756	-	9,198,000	-	-
2030	-		-	7,826,856	-	9,198,000	-	-
2031	-		-	9,188,845	-	9,198,000	-	-
2032		19,857,792	10,659,792	-	9,198,000	-	19,857,792	
2033							Refunded	
2034								
2035								
2036								
2037								
2038								
2039								
2040								
2041								
2042								
2043								
2044								
2045								
2046								
2047								
2048								
2049								
2050								
2051								
2052								
2053								
2054								
2055								
2056								
2057								
2058								
2059								
2060								
2061								
2062								
Total	-		10,659,792		9,198,000		19,857,792	-

**Poudre Heights Metropolitan District Nos. 1-5
Subordinate Debt Service**

	Revenue Available for Debt Service	Interest Payment 7.500%	Balance of Accrued Interest	Principal Payment	Principal Balance	Debt Service	Released Revenue
						Series 2032B(3)	
						Dated: 12/15/2032 Par: \$10,350,000 Proj: \$10,039,500	
2032					10,350,000		
2033	-	-	776,250	-	10,350,000	-	-
2034	-	-	1,610,719	-	10,350,000	-	-
2035	-	-	2,507,773	-	10,350,000	-	-
2036	-	-	3,472,106	-	10,350,000	-	-
2037	-	-	4,508,764	-	10,350,000	-	-
2038	-	-	5,623,171	-	10,350,000	-	-
2039	-	-	6,821,159	-	10,350,000	-	-
2040	-	-	8,108,995	-	10,350,000	-	-
2041	-	-	9,493,420	-	10,350,000	-	-
2042	-	-	10,981,677	-	10,350,000	-	-
2043	-	-	12,581,552	-	10,350,000	-	-
2044	-	-	14,301,419	-	10,350,000	-	-
2045	-	-	16,150,275	-	10,350,000	-	-
2046	47,199	47,199	18,090,597	-	10,350,000	47,199	-
2047	1,675,255	1,675,255	18,548,387	-	10,350,000	1,675,255	-
2048	1,844,054	1,844,054	18,871,712	-	10,350,000	1,844,054	-
2049	1,844,054	1,844,054	19,219,287	-	10,350,000	1,844,054	-
2050	2,123,308	2,123,308	19,313,676	-	10,350,000	2,123,308	-
2051	2,126,908	2,126,908	19,411,544	-	10,350,000	2,126,908	-
2052	2,419,175	2,419,175	19,224,485	-	10,350,000	2,419,175	-
2053	2,416,975	2,416,975	19,025,597	-	10,350,000	2,416,975	-
2054	2,729,054	2,729,054	18,499,712	-	10,350,000	2,729,054	-
2055	2,726,854	2,726,854	17,936,586	-	10,350,000	2,726,854	-
2056	3,055,195	3,055,195	17,002,886	-	10,350,000	3,055,195	-
2057	3,053,795	3,053,795	16,000,557	-	10,350,000	3,053,795	-
2058	3,395,094	3,395,094	14,581,755	-	10,350,000	3,395,094	-
2059	3,395,494	3,395,494	13,056,143	-	10,350,000	3,395,494	-
2060	3,756,702	3,756,702	11,054,901	-	10,350,000	3,756,702	-
2061	3,754,702	3,754,702	8,905,566	-	10,350,000	3,754,702	-
2062	20,724,827	10,349,733	-	10,350,000	-	20,699,733	25,093
Total	61,088,643	50,713,550		10,350,000		61,063,550	25,093

**Poudre Heights Metropolitan District Nos. 1-5
Revenue**

	Total	Operations Mill Levy Revenue			Expense	Total
	Assessed Value in Collection Year	Debt Mill Levy 10.000 Cap 10.000 Target	Debt Mill Levy Collections 99.50%	Specific Ownership Taxes 6.00%	County Treasurer Fee 1.50%	Revenue Available for Operations
2021	0	10.000	0	0	0	0
2022	0	10.000	0	0	0	0
2023	165,800	10.000	1,658	99	(25)	1,732
2024	2,723,026	10.000	27,230	1,626	(408)	28,447
2025	8,824,994	10.000	88,250	5,269	(1,324)	92,195
2026	13,037,758	10.000	130,378	7,784	(1,956)	136,205
2027	27,663,451	10.000	276,635	16,515	(4,150)	289,000
2028	47,125,946	10.000	471,259	28,134	(7,069)	492,325
2029	56,634,070	10.000	566,341	33,811	(8,495)	591,656
2030	74,822,765	10.000	748,228	44,669	(11,223)	781,673
2031	83,526,544	10.000	835,265	49,865	(12,529)	872,602
2032	89,006,430	10.000	890,064	53,137	(13,351)	929,850
2033	89,437,675	10.000	894,377	53,394	(13,416)	934,355
2034	95,463,989	10.000	954,640	56,992	(14,320)	997,312
2035	95,463,989	10.000	954,640	56,992	(14,320)	997,312
2036	99,022,378	10.000	990,224	59,116	(14,853)	1,034,487
2037	99,022,378	10.000	990,224	59,116	(14,853)	1,034,487
2038	102,750,882	10.000	1,027,509	61,342	(15,413)	1,073,438
2039	102,750,882	10.000	1,027,509	61,342	(15,413)	1,073,438
2040	106,658,840	10.000	1,066,588	63,675	(15,999)	1,114,265
2041	106,658,840	10.000	1,066,588	63,675	(15,999)	1,114,265
2042	110,756,133	10.000	1,107,561	66,121	(16,613)	1,157,069
2043	110,756,133	10.000	1,107,561	66,121	(16,613)	1,157,069
2044	115,053,219	10.000	1,150,532	68,687	(17,258)	1,201,961
2045	115,053,219	10.000	1,150,532	68,687	(17,258)	1,201,961
2046	119,561,165	10.000	1,195,612	71,378	(17,934)	1,249,055
2047	119,561,165	10.000	1,195,612	71,378	(17,934)	1,249,055
2048	124,291,682	10.000	1,242,917	74,202	(18,644)	1,298,475
2049	124,291,682	10.000	1,242,917	74,202	(18,644)	1,298,475
2050	129,257,167	10.000	1,292,572	77,167	(19,389)	1,350,350
2051	129,257,167	10.000	1,292,572	77,167	(19,389)	1,350,350
2052	134,470,741	10.000	1,344,707	80,279	(20,171)	1,404,816
2053	134,470,741	10.000	1,344,707	80,279	(20,171)	1,404,816
2054	139,946,292	10.000	1,399,463	83,548	(20,992)	1,462,019
2055	139,946,292	10.000	1,399,463	83,548	(20,992)	1,462,019
2056	145,698,523	10.000	1,456,985	86,982	(21,855)	1,522,112
2057	145,698,523	10.000	1,456,985	86,982	(21,855)	1,522,112
2058	151,742,996	10.000	1,517,430	90,591	(22,761)	1,585,259
2059	151,742,996	10.000	1,517,430	90,591	(22,761)	1,585,259
2060	158,096,189	10.000	1,580,962	94,383	(23,714)	1,651,631
2061	158,096,189	10.000	1,580,962	94,383	(23,714)	1,651,631
2062	164,775,546	10.000	1,647,755	98,371	(24,716)	1,721,410
Total			41,232,844	2,461,601	(618,493)	43,075,952

SOURCES AND USES OF FUNDS

POUDRE HEIGHTS METROPOLITAN DISTRICT Nos. 1-5 Weld County, Colorado

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#### GENERAL OBLIGATION BONDS, SERIES 2022A SUBORDINATE CASH FLOW BONDS, SERIES 2022B(3)

Dated Date                      12/01/2022  
Delivery Date                 12/01/2022

| <i>Sources:</i>              | <i>Series 2022A</i> | <i>Series 2022B(3)</i> | <i>Total</i>  |
|------------------------------|---------------------|------------------------|---------------|
| Bond Proceeds:               |                     |                        |               |
| Par Amount                   | 54,380,000.00       | 9,198,000.00           | 63,578,000.00 |
|                              | 54,380,000.00       | 9,198,000.00           | 63,578,000.00 |
| <hr/>                        |                     |                        |               |
| <i>Uses:</i>                 | <i>Series 2022A</i> | <i>Series 2022B(3)</i> | <i>Total</i>  |
| Project Fund Deposits:       |                     |                        |               |
| Project Fund                 | 39,983,400.00       | 8,922,060.00           | 48,905,460.00 |
| Other Fund Deposits:         |                     |                        |               |
| Capitalized Interest Fund    | 8,157,000.00        |                        | 8,157,000.00  |
| Surplus Deposit              | 4,852,000.00        |                        | 4,852,000.00  |
|                              | 13,009,000.00       |                        | 13,009,000.00 |
| Cost of Issuance:            |                     |                        |               |
| Other Cost of Issuance       | 300,000.00          |                        | 300,000.00    |
| Underwriter's Discount:      |                     |                        |               |
| Other Underwriter's Discount | 1,087,600.00        | 275,940.00             | 1,363,540.00  |
|                              | 54,380,000.00       | 9,198,000.00           | 63,578,000.00 |

BOND SUMMARY STATISTICS

POUDRE HEIGHTS METROPOLITAN DISTRICT Nos. 1-5  
Weld County, Colorado

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GENERAL OBLIGATION BONDS, SERIES 2022A
50.000 Debt Service Mills
Non-Rated, 1.30x, 30-yr. Maturity

Dated Date	12/01/2022
Delivery Date	12/01/2022
Last Maturity	12/01/2052
Arbitrage Yield	5.000000%
True Interest Cost (TIC)	5.153692%
Net Interest Cost (NIC)	5.087595%
All-In TIC	5.196888%
Average Coupon	5.000000%
Average Life (years)	22.832
Duration of Issue (years)	13.423
Par Amount	54,380,000.00
Bond Proceeds	54,380,000.00
Total Interest	62,081,000.00
Net Interest	63,168,600.00
Total Debt Service	116,461,000.00
Maximum Annual Debt Service	9,402,750.00
Average Annual Debt Service	3,882,033.33
Underwriter's Fees (per \$1000)	
Average Takedown	
Other Fee	20.000000
Total Underwriter's Discount	20.000000
Bid Price	98.000000

<i>Bond Component</i>	<i>Par Value</i>	<i>Price</i>	<i>Average Coupon</i>	<i>Average Life</i>
Term Bond due 2052	54,380,000.00	100.000	5.000%	22.832
	54,380,000.00			22.832

	TIC	All-In TIC	Arbitrage Yield
Par Value	54,380,000.00	54,380,000.00	54,380,000.00
+ Accrued Interest			
+ Premium (Discount)			
- Underwriter's Discount	-1,087,600.00	-1,087,600.00	
- Cost of Issuance Expense		-300,000.00	
- Other Amounts			
Target Value	53,292,400.00	52,992,400.00	54,380,000.00
Target Date	12/01/2022	12/01/2022	12/01/2022
Yield	5.153692%	5.196888%	5.000000%

NET DEBT SERVICE

POUDRE HEIGHTS METROPOLITAN DISTRICT Nos. 1-5
Weld County, Colorado

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GENERAL OBLIGATION BONDS, SERIES 2022A  
50.000 Debt Service Mills  
Non-Rated, 1.30x, 30-yr. Maturity

| <i>Period<br/>Ending</i> | <i>Principal</i> | <i>Coupon</i> | <i>Interest</i> | <i>Total<br/>Debt Service</i> | <i>Capitalized<br/>Interest<br/>Fund</i> | <i>Surplus<br/>Deposit</i> | <i>Net<br/>Debt Service</i> |
|--------------------------|------------------|---------------|-----------------|-------------------------------|------------------------------------------|----------------------------|-----------------------------|
| 12/01/2023               |                  |               | 2,719,000       | 2,719,000                     | 2,719,000                                |                            |                             |
| 12/01/2024               |                  |               | 2,719,000       | 2,719,000                     | 2,719,000                                |                            |                             |
| 12/01/2025               |                  |               | 2,719,000       | 2,719,000                     | 2,719,000                                |                            |                             |
| 12/01/2026               |                  |               | 2,719,000       | 2,719,000                     |                                          |                            | 2,719,000                   |
| 12/01/2027               |                  |               | 2,719,000       | 2,719,000                     |                                          |                            | 2,719,000                   |
| 12/01/2028               |                  |               | 2,719,000       | 2,719,000                     |                                          |                            | 2,719,000                   |
| 12/01/2029               |                  |               | 2,719,000       | 2,719,000                     |                                          |                            | 2,719,000                   |
| 12/01/2030               | 335,000          | 5.000%        | 2,719,000       | 3,054,000                     |                                          |                            | 3,054,000                   |
| 12/01/2031               | 730,000          | 5.000%        | 2,702,250       | 3,432,250                     |                                          |                            | 3,432,250                   |
| 12/01/2032               | 945,000          | 5.000%        | 2,665,750       | 3,610,750                     |                                          |                            | 3,610,750                   |
| 12/01/2033               | 1,010,000        | 5.000%        | 2,618,500       | 3,628,500                     |                                          |                            | 3,628,500                   |
| 12/01/2034               | 1,240,000        | 5.000%        | 2,568,000       | 3,808,000                     |                                          |                            | 3,808,000                   |
| 12/01/2035               | 1,300,000        | 5.000%        | 2,506,000       | 3,806,000                     |                                          |                            | 3,806,000                   |
| 12/01/2036               | 1,445,000        | 5.000%        | 2,441,000       | 3,886,000                     |                                          |                            | 3,886,000                   |
| 12/01/2037               | 1,515,000        | 5.000%        | 2,368,750       | 3,883,750                     |                                          |                            | 3,883,750                   |
| 12/01/2038               | 1,670,000        | 5.000%        | 2,293,000       | 3,963,000                     |                                          |                            | 3,963,000                   |
| 12/01/2039               | 1,755,000        | 5.000%        | 2,209,500       | 3,964,500                     |                                          |                            | 3,964,500                   |
| 12/01/2040               | 1,920,000        | 5.000%        | 2,121,750       | 4,041,750                     |                                          |                            | 4,041,750                   |
| 12/01/2041               | 2,015,000        | 5.000%        | 2,025,750       | 4,040,750                     |                                          |                            | 4,040,750                   |
| 12/01/2042               | 2,195,000        | 5.000%        | 1,925,000       | 4,120,000                     |                                          |                            | 4,120,000                   |
| 12/01/2043               | 2,305,000        | 5.000%        | 1,815,250       | 4,120,250                     |                                          |                            | 4,120,250                   |
| 12/01/2044               | 2,505,000        | 5.000%        | 1,700,000       | 4,205,000                     |                                          |                            | 4,205,000                   |
| 12/01/2045               | 2,630,000        | 5.000%        | 1,574,750       | 4,204,750                     |                                          |                            | 4,204,750                   |
| 12/01/2046               | 2,845,000        | 5.000%        | 1,443,250       | 4,288,250                     |                                          |                            | 4,288,250                   |
| 12/01/2047               | 2,990,000        | 5.000%        | 1,301,000       | 4,291,000                     |                                          |                            | 4,291,000                   |
| 12/01/2048               | 3,225,000        | 5.000%        | 1,151,500       | 4,376,500                     |                                          |                            | 4,376,500                   |
| 12/01/2049               | 3,385,000        | 5.000%        | 990,250         | 4,375,250                     |                                          |                            | 4,375,250                   |
| 12/01/2050               | 3,640,000        | 5.000%        | 821,000         | 4,461,000                     |                                          |                            | 4,461,000                   |
| 12/01/2051               | 3,825,000        | 5.000%        | 639,000         | 4,464,000                     |                                          |                            | 4,464,000                   |
| 12/01/2052               | 8,955,000        | 5.000%        | 447,750         | 9,402,750                     |                                          | 4,852,000                  | 4,550,750                   |
|                          | 54,380,000       |               | 62,081,000      | 116,461,000                   | 8,157,000                                | 4,852,000                  | 103,452,000                 |

## BOND SOLUTION

### POUDRE HEIGHTS METROPOLITAN DISTRICT Nos. 1-5 Weld County, Colorado

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GENERAL OBLIGATION BONDS, SERIES 2022A

50.000 Debt Service Mills

Non-Rated, 1.30x, 30-yr. Maturity

Period Ending	Proposed Principal	Proposed Debt Service	CAPI & DSRF Adjustments	Total Adj Debt Service	Revenue Constraints	Unused Revenues	Debt Serv Coverage
12/01/2023		2,719,000	-2,719,000		1,620	1,620	
12/01/2024		2,719,000	-2,719,000		134,567	134,567	
12/01/2025		2,719,000	-2,719,000		460,948	460,948	
12/01/2026		2,719,000		2,719,000	694,559	-2,024,441	25.54465%
12/01/2027		2,719,000		2,719,000	1,472,925	-1,246,075	54.17158%
12/01/2028		2,719,000		2,719,000	2,495,470	-223,530	91.77895%
12/01/2029		2,719,000		2,719,000	3,039,900	320,900	111.80212%
12/01/2030	335,000	3,054,000		3,054,000	3,970,686	916,686	130.01592%
12/01/2031	730,000	3,432,250		3,432,250	4,468,219	1,035,969	130.18339%
12/01/2032	945,000	3,610,750		3,610,750	4,695,578	1,084,828	130.04439%
12/01/2033	1,010,000	3,628,500		3,628,500	4,719,730	1,091,230	130.07386%
12/01/2034	1,240,000	3,808,000		3,808,000	4,953,688	1,145,688	130.08634%
12/01/2035	1,300,000	3,806,000		3,806,000	4,953,688	1,147,688	130.15470%
12/01/2036	1,445,000	3,886,000		3,886,000	5,052,902	1,166,902	130.02835%
12/01/2037	1,515,000	3,883,750		3,883,750	5,052,902	1,169,152	130.10368%
12/01/2038	1,670,000	3,963,000		3,963,000	5,154,100	1,191,100	130.05550%
12/01/2039	1,755,000	3,964,500		3,964,500	5,154,100	1,189,600	130.00630%
12/01/2040	1,920,000	4,041,750		4,041,750	5,257,322	1,215,572	130.07538%
12/01/2041	2,015,000	4,040,750		4,040,750	5,257,322	1,216,572	130.10757%
12/01/2042	2,195,000	4,120,000		4,120,000	5,362,608	1,242,608	130.16039%
12/01/2043	2,305,000	4,120,250		4,120,250	5,362,608	1,242,358	130.15249%
12/01/2044	2,505,000	4,205,000		4,205,000	5,470,000	1,265,000	130.08324%
12/01/2045	2,630,000	4,204,750		4,204,750	5,470,000	1,265,250	130.09097%
12/01/2046	2,845,000	4,288,250		4,288,250	5,579,540	1,291,290	130.11229%
12/01/2047	2,990,000	4,291,000		4,291,000	5,579,540	1,288,540	130.02890%
12/01/2048	3,225,000	4,376,500		4,376,500	5,691,271	1,314,771	130.04161%
12/01/2049	3,385,000	4,375,250		4,375,250	5,691,271	1,316,021	130.07876%
12/01/2050	3,640,000	4,461,000		4,461,000	5,805,236	1,344,236	130.13307%
12/01/2051	3,825,000	4,464,000		4,464,000	5,805,236	1,341,236	130.04562%
12/01/2052	8,955,000	9,402,750	-4,852,000	4,550,750	5,921,481	1,370,731	130.12100%
	54,380,000	116,461,000	-13,009,000	103,452,000	128,729,016	25,277,016	

SOURCES AND USES OF FUNDS**POUDRE HEIGHTS METROPOLITAN DISTRICT Nos. 1-5
Weld County, Colorado**

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**GENERAL OBLIGATION REFUNDING BONDS, SERIES 2032A  
SUBORDINATE CASH FLOW BONDS, SERIES 2032B(3)**Dated Date 12/01/2032  
Delivery Date 12/01/2032

| <i>Sources:</i>         | <i>Series 2032A</i> | <i>Series 2032B(3)</i> | <i>Total</i>   |
|-------------------------|---------------------|------------------------|----------------|
| Bond Proceeds:          |                     |                        |                |
| Par Amount              | 82,960,000.00       | 10,350,000.00          | 93,310,000.00  |
| Other Sources of Funds: |                     |                        |                |
| Funds on Hand (est.)    | 10,885,000.00       |                        | 10,885,000.00  |
|                         | 93,845,000.00       | 10,350,000.00          | 104,195,000.00 |

| <i>Uses:</i>                 | <i>Series 2032A</i> | <i>Series 2032B(3)</i> | <i>Total</i>   |
|------------------------------|---------------------|------------------------|----------------|
| Project Fund Deposits:       |                     |                        |                |
| Project Fund                 | 14,732,407.88       | 10,039,500.00          | 24,771,907.88  |
| Refunding Escrow Deposits:   |                     |                        |                |
| Cash Deposit                 | 72,227,792.12       |                        | 72,227,792.12  |
| Other Fund Deposits:         |                     |                        |                |
| Debt Service Reserve Fund    | 6,220,000.00        |                        | 6,220,000.00   |
| Cost of Issuance:            |                     |                        |                |
| Other Cost of Issuance       | 250,000.00          |                        | 250,000.00     |
| Underwriter's Discount:      |                     |                        |                |
| Other Underwriter's Discount | 414,800.00          | 310,500.00             | 725,300.00     |
|                              | 93,845,000.00       | 10,350,000.00          | 104,195,000.00 |

BOND SUMMARY STATISTICS

POUDRE HEIGHTS METROPOLITAN DISTRICT Nos. 1-5  
Weld County, Colorado

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GENERAL OBLIGATION REFUNDING BONDS, SERIES 2032A
50.000 Debt Service Mills
Non-Rated, 1.20x, 30-yr. Maturity

Dated Date	12/01/2032
Delivery Date	12/01/2032
Last Maturity	12/01/2062
Arbitrage Yield	4.000000%
True Interest Cost (TIC)	4.038493%
Net Interest Cost (NIC)	4.025013%
All-In TIC	4.061831%
Average Coupon	4.000000%
Average Life (years)	19.990
Duration of Issue (years)	13.269
Par Amount	82,960,000.00
Bond Proceeds	82,960,000.00
Total Interest	66,334,800.00
Net Interest	66,749,600.00
Total Debt Service	149,294,800.00
Maximum Annual Debt Service	11,195,600.00
Average Annual Debt Service	4,976,493.33
Underwriter's Fees (per \$1000)	
Average Takedown	
Other Fee	5.000000
Total Underwriter's Discount	5.000000
Bid Price	99.500000

<i>Bond Component</i>	<i>Par Value</i>	<i>Price</i>	<i>Average Coupon</i>	<i>Average Life</i>
Term Bond due 2062	82,960,000.00	100.000	4.000%	19.990
	82,960,000.00			19.990

	TIC	All-In TIC	Arbitrage Yield
Par Value	82,960,000.00	82,960,000.00	82,960,000.00
+ Accrued Interest			
+ Premium (Discount)			
- Underwriter's Discount	-414,800.00	-414,800.00	
- Cost of Issuance Expense		-250,000.00	
- Other Amounts			
Target Value	82,545,200.00	82,295,200.00	82,960,000.00
Target Date	12/01/2032	12/01/2032	12/01/2032
Yield	4.038493%	4.061831%	4.000000%

NET DEBT SERVICE

POUDRE HEIGHTS METROPOLITAN DISTRICT Nos. 1-5 Weld County, Colorado

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### GENERAL OBLIGATION REFUNDING BONDS, SERIES 2032A 50.000 Debt Service Mills Non-Rated, 1.20x, 30-yr. Maturity

| <i>Period<br/>Ending</i> | <i>Principal</i> | <i>Coupon</i> | <i>Interest</i> | <i>Total Debt Service</i> | <i>Debt Service<br/>Reserve Fund</i> | <i>Net<br/>Debt Service</i> |
|--------------------------|------------------|---------------|-----------------|---------------------------|--------------------------------------|-----------------------------|
| 12/01/2033               | 740,000          | 4.000%        | 3,318,400       | 4,058,400                 |                                      | 4,058,400                   |
| 12/01/2034               | 1,040,000        | 4.000%        | 3,288,800       | 4,328,800                 |                                      | 4,328,800                   |
| 12/01/2035               | 1,085,000        | 4.000%        | 3,247,200       | 4,332,200                 |                                      | 4,332,200                   |
| 12/01/2036               | 1,215,000        | 4.000%        | 3,203,800       | 4,418,800                 |                                      | 4,418,800                   |
| 12/01/2037               | 1,260,000        | 4.000%        | 3,155,200       | 4,415,200                 |                                      | 4,415,200                   |
| 12/01/2038               | 1,400,000        | 4.000%        | 3,104,800       | 4,504,800                 |                                      | 4,504,800                   |
| 12/01/2039               | 1,455,000        | 4.000%        | 3,048,800       | 4,503,800                 |                                      | 4,503,800                   |
| 12/01/2040               | 1,605,000        | 4.000%        | 2,990,600       | 4,595,600                 |                                      | 4,595,600                   |
| 12/01/2041               | 1,670,000        | 4.000%        | 2,926,400       | 4,596,400                 |                                      | 4,596,400                   |
| 12/01/2042               | 1,830,000        | 4.000%        | 2,859,600       | 4,689,600                 |                                      | 4,689,600                   |
| 12/01/2043               | 1,900,000        | 4.000%        | 2,786,400       | 4,686,400                 |                                      | 4,686,400                   |
| 12/01/2044               | 2,070,000        | 4.000%        | 2,710,400       | 4,780,400                 |                                      | 4,780,400                   |
| 12/01/2045               | 2,155,000        | 4.000%        | 2,627,600       | 4,782,600                 |                                      | 4,782,600                   |
| 12/01/2046               | 2,335,000        | 4.000%        | 2,541,400       | 4,876,400                 |                                      | 4,876,400                   |
| 12/01/2047               | 2,430,000        | 4.000%        | 2,448,000       | 4,878,000                 |                                      | 4,878,000                   |
| 12/01/2048               | 2,625,000        | 4.000%        | 2,350,800       | 4,975,800                 |                                      | 4,975,800                   |
| 12/01/2049               | 2,730,000        | 4.000%        | 2,245,800       | 4,975,800                 |                                      | 4,975,800                   |
| 12/01/2050               | 2,840,000        | 4.000%        | 2,136,600       | 4,976,600                 |                                      | 4,976,600                   |
| 12/01/2051               | 2,950,000        | 4.000%        | 2,023,000       | 4,973,000                 |                                      | 4,973,000                   |
| 12/01/2052               | 3,070,000        | 4.000%        | 1,905,000       | 4,975,000                 |                                      | 4,975,000                   |
| 12/01/2053               | 3,195,000        | 4.000%        | 1,782,200       | 4,977,200                 |                                      | 4,977,200                   |
| 12/01/2054               | 3,320,000        | 4.000%        | 1,654,400       | 4,974,400                 |                                      | 4,974,400                   |
| 12/01/2055               | 3,455,000        | 4.000%        | 1,521,600       | 4,976,600                 |                                      | 4,976,600                   |
| 12/01/2056               | 3,590,000        | 4.000%        | 1,383,400       | 4,973,400                 |                                      | 4,973,400                   |
| 12/01/2057               | 3,735,000        | 4.000%        | 1,239,800       | 4,974,800                 |                                      | 4,974,800                   |
| 12/01/2058               | 3,885,000        | 4.000%        | 1,090,400       | 4,975,400                 |                                      | 4,975,400                   |
| 12/01/2059               | 4,040,000        | 4.000%        | 935,000         | 4,975,000                 |                                      | 4,975,000                   |
| 12/01/2060               | 4,200,000        | 4.000%        | 773,400         | 4,973,400                 |                                      | 4,973,400                   |
| 12/01/2061               | 4,370,000        | 4.000%        | 605,400         | 4,975,400                 |                                      | 4,975,400                   |
| 12/01/2062               | 10,765,000       | 4.000%        | 430,600         | 11,195,600                | 6,220,000                            | 4,975,600                   |
|                          | 82,960,000       |               | 66,334,800      | 149,294,800               | 6,220,000                            | 143,074,800                 |



# SUMMARY OF BONDS REFUNDED

POUDRE HEIGHTS METROPOLITAN DISTRICT Nos. 1-5  
Weld County, Colorado

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GENERAL OBLIGATION REFUNDING BONDS, SERIES 2032A
50.000 Debt Service Mills
Non-Rated, 1.20x, 30-yr. Maturity

<i>Bond</i>	<i>Maturity Date</i>	<i>Interest Rate</i>	<i>Par Amount</i>	<i>Call Date</i>	<i>Call Price</i>
NR A1 - Early Stage, 22NRA, TERM52:	12/01/2052	5.000%	52,370,000.00	12/01/2032	100.000
			52,370,000.00		

ESCROW REQUIREMENTS

POUDRE HEIGHTS METROPOLITAN DISTRICT Nos. 1-5
Weld County, Colorado

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GENERAL OBLIGATION REFUNDING BONDS, SERIES 2032A  
50.000 Debt Service Mills  
Non-Rated, 1.20x, 30-yr. Maturity

Pay & Cancel Series 2022A (PC22A)

| <i>Period<br/>Ending</i> | <i>Principal<br/>Redeemed</i> | <i>Total</i>  |
|--------------------------|-------------------------------|---------------|
| 12/01/2032               | 52,370,000.00                 | 52,370,000.00 |
|                          | 52,370,000.00                 | 52,370,000.00 |

ESCROW REQUIREMENTS

POUDRE HEIGHTS METROPOLITAN DISTRICT Nos. 1-5  
Weld County, Colorado

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GENERAL OBLIGATION REFUNDING BONDS, SERIES 2032A
50.000 Debt Service Mills
Non-Rated, 1.20x, 30-yr. Maturity

Pay & Cancel Series 2022B(3) (PC22B)

<i>Period Ending</i>	<i>Principal</i>	<i>Interest</i>	<i>Total</i>
12/01/2032	9,198,000.00	10,659,792.12	19,857,792.12
	9,198,000.00	10,659,792.12	19,857,792.12

PRIOR BOND DEBT SERVICE

POUDRE HEIGHTS METROPOLITAN DISTRICT Nos. 1-5
Weld County, Colorado

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**GENERAL OBLIGATION REFUNDING BONDS, SERIES 2032A**  
**50.000 Debt Service Mills**  
**Non-Rated, 1.20x, 30-yr. Maturity**

### Pay & Cancel Series 2022A (PC22A)

| <i>Period<br/>Ending</i> | <i>Principal</i> | <i>Coupon</i> | <i>Interest</i> | <i>Debt<br/>Service</i> | <i>Annual<br/>Debt<br/>Service</i> |
|--------------------------|------------------|---------------|-----------------|-------------------------|------------------------------------|
| 06/01/2033               |                  |               | 1,309,250       | 1,309,250               |                                    |
| 12/01/2033               | 1,010,000        | 5.000%        | 1,309,250       | 2,319,250               | 3,628,500                          |
| 06/01/2034               |                  |               | 1,284,000       | 1,284,000               |                                    |
| 12/01/2034               | 1,240,000        | 5.000%        | 1,284,000       | 2,524,000               | 3,808,000                          |
| 06/01/2035               |                  |               | 1,253,000       | 1,253,000               |                                    |
| 12/01/2035               | 1,300,000        | 5.000%        | 1,253,000       | 2,553,000               | 3,806,000                          |
| 06/01/2036               |                  |               | 1,220,500       | 1,220,500               |                                    |
| 12/01/2036               | 1,445,000        | 5.000%        | 1,220,500       | 2,665,500               | 3,886,000                          |
| 06/01/2037               |                  |               | 1,184,375       | 1,184,375               |                                    |
| 12/01/2037               | 1,515,000        | 5.000%        | 1,184,375       | 2,699,375               | 3,883,750                          |
| 06/01/2038               |                  |               | 1,146,500       | 1,146,500               |                                    |
| 12/01/2038               | 1,670,000        | 5.000%        | 1,146,500       | 2,816,500               | 3,963,000                          |
| 06/01/2039               |                  |               | 1,104,750       | 1,104,750               |                                    |
| 12/01/2039               | 1,755,000        | 5.000%        | 1,104,750       | 2,859,750               | 3,964,500                          |
| 06/01/2040               |                  |               | 1,060,875       | 1,060,875               |                                    |
| 12/01/2040               | 1,920,000        | 5.000%        | 1,060,875       | 2,980,875               | 4,041,750                          |
| 06/01/2041               |                  |               | 1,012,875       | 1,012,875               |                                    |
| 12/01/2041               | 2,015,000        | 5.000%        | 1,012,875       | 3,027,875               | 4,040,750                          |
| 06/01/2042               |                  |               | 962,500         | 962,500                 |                                    |
| 12/01/2042               | 2,195,000        | 5.000%        | 962,500         | 3,157,500               | 4,120,000                          |
| 06/01/2043               |                  |               | 907,625         | 907,625                 |                                    |
| 12/01/2043               | 2,305,000        | 5.000%        | 907,625         | 3,212,625               | 4,120,250                          |
| 06/01/2044               |                  |               | 850,000         | 850,000                 |                                    |
| 12/01/2044               | 2,505,000        | 5.000%        | 850,000         | 3,355,000               | 4,205,000                          |
| 06/01/2045               |                  |               | 787,375         | 787,375                 |                                    |
| 12/01/2045               | 2,630,000        | 5.000%        | 787,375         | 3,417,375               | 4,204,750                          |
| 06/01/2046               |                  |               | 721,625         | 721,625                 |                                    |
| 12/01/2046               | 2,845,000        | 5.000%        | 721,625         | 3,566,625               | 4,288,250                          |
| 06/01/2047               |                  |               | 650,500         | 650,500                 |                                    |
| 12/01/2047               | 2,990,000        | 5.000%        | 650,500         | 3,640,500               | 4,291,000                          |
| 06/01/2048               |                  |               | 575,750         | 575,750                 |                                    |
| 12/01/2048               | 3,225,000        | 5.000%        | 575,750         | 3,800,750               | 4,376,500                          |
| 06/01/2049               |                  |               | 495,125         | 495,125                 |                                    |
| 12/01/2049               | 3,385,000        | 5.000%        | 495,125         | 3,880,125               | 4,375,250                          |
| 06/01/2050               |                  |               | 410,500         | 410,500                 |                                    |
| 12/01/2050               | 3,640,000        | 5.000%        | 410,500         | 4,050,500               | 4,461,000                          |
| 06/01/2051               |                  |               | 319,500         | 319,500                 |                                    |
| 12/01/2051               | 3,825,000        | 5.000%        | 319,500         | 4,144,500               | 4,464,000                          |
| 06/01/2052               |                  |               | 223,875         | 223,875                 |                                    |
| 12/01/2052               | 8,955,000        | 5.000%        | 223,875         | 9,178,875               | 9,402,750                          |
|                          | 52,370,000       |               | 34,961,000      | 87,331,000              | 87,331,000                         |

## BOND SOLUTION

### POUDRE HEIGHTS METROPOLITAN DISTRICT Nos. 1-5 Weld County, Colorado

~~~

GENERAL OBLIGATION REFUNDING BONDS, SERIES 2032A 50.000 Debt Service Mills Non-Rated, 1.20x, 30-yr. Maturity

<i>Period Ending</i>	<i>Proposed Principal</i>	<i>Proposed Debt Service</i>	<i>Debt Service Adjustments</i>	<i>Total Adj Debt Service</i>	<i>Revenue Constraints</i>	<i>Unused Revenues</i>	<i>Debt Serv Coverage</i>
12/01/2033	740,000	4,058,400		4,058,400	4,059,843	1,443	100.03555%
12/01/2034	1,040,000	4,328,800		4,328,800	4,332,380	3,580	100.08269%
12/01/2035	1,085,000	4,332,200		4,332,200	4,332,380	180	100.00414%
12/01/2036	1,215,000	4,418,800		4,418,800	4,419,144	344	100.00778%
12/01/2037	1,260,000	4,415,200		4,415,200	4,419,144	3,944	100.08932%
12/01/2038	1,400,000	4,504,800		4,504,800	4,507,643	2,843	100.06312%
12/01/2039	1,455,000	4,503,800		4,503,800	4,507,643	3,843	100.08534%
12/01/2040	1,605,000	4,595,600		4,595,600	4,597,913	2,313	100.05033%
12/01/2041	1,670,000	4,596,400		4,596,400	4,597,913	1,513	100.03291%
12/01/2042	1,830,000	4,689,600		4,689,600	4,689,988	388	100.00827%
12/01/2043	1,900,000	4,686,400		4,686,400	4,689,988	3,588	100.07656%
12/01/2044	2,070,000	4,780,400		4,780,400	4,783,904	3,504	100.07330%
12/01/2045	2,155,000	4,782,600		4,782,600	4,783,904	1,304	100.02727%
12/01/2046	2,335,000	4,876,400		4,876,400	4,879,699	3,299	100.06765%
12/01/2047	2,430,000	4,878,000		4,878,000	4,879,699	1,699	100.03483%
12/01/2048	2,625,000	4,975,800		4,975,800	4,977,293	1,493	100.03001%
12/01/2049	2,730,000	4,975,800		4,975,800	4,977,293	1,493	100.03001%
12/01/2050	2,840,000	4,976,600		4,976,600	4,977,293	693	100.01393%
12/01/2051	2,950,000	4,973,000		4,973,000	4,977,293	4,293	100.08633%
12/01/2052	3,070,000	4,975,000		4,975,000	4,977,293	2,293	100.04610%
12/01/2053	3,195,000	4,977,200		4,977,200	4,977,293	93	100.00187%
12/01/2054	3,320,000	4,974,400		4,974,400	4,977,293	2,893	100.05816%
12/01/2055	3,455,000	4,976,600		4,976,600	4,977,293	693	100.01393%
12/01/2056	3,590,000	4,973,400		4,973,400	4,977,293	3,893	100.07828%
12/01/2057	3,735,000	4,974,800		4,974,800	4,977,293	2,493	100.05012%
12/01/2058	3,885,000	4,975,400		4,975,400	4,977,293	1,893	100.03805%
12/01/2059	4,040,000	4,975,000		4,975,000	4,977,293	2,293	100.04610%
12/01/2060	4,200,000	4,973,400		4,973,400	4,977,293	3,893	100.07828%
12/01/2061	4,370,000	4,975,400		4,975,400	4,977,293	1,893	100.03805%
12/01/2062	10,765,000	11,195,600	-6,220,000	4,975,600	4,977,293	1,693	100.03403%
	82,960,000	149,294,800	-6,220,000	143,074,800	143,140,583	65,783	

EXHIBIT G

Indemnification Letters

1. Developer's Letter

{date – on or after date of Service Plan approval}

City of Greeley
1000 10th Street
Greeley, CO 80631

RE: [_____] **Metropolitan District**

To the City Council:

This Indemnification Letter (the “**Letter**”) is delivered by the undersigned (the “**Developer**”) in connection with the review by the City of Greeley (the “**City**”) of the Service Plan, including all amendments heretofore or hereafter made thereto (the “**Service Plan**”) for the [_____] Metropolitan District (the “**District**”). Developer, for and on behalf of itself and its transferees, successors and assigns, represents, warrants, covenants and agrees to and for the benefit of the City as follows:

1. Developer hereby waives and releases any present or future claims it might have against the City or the City's elected or appointed officers, employees, agents, contractors or insurers (the “**Released Persons**”) in any manner related to or connected with the Service Plan or any action or omission with respect thereto. Developer further hereby agrees to indemnify and hold harmless the Released Persons from and against any and all liabilities resulting from any and all claims, demands, suits, actions or other proceedings of whatsoever kind or nature made or brought by any third party, including attorneys' fees and expenses and court costs, which directly or indirectly or purportedly arise out of or are in any manner related to or connected with any of the following: (a) the Service Plan or any document or instrument contained or referred to therein; or (b) the formation of the District; or (c) any actions or omissions of the Developer or the District, or their agents, in connection with the District, including, without limitation, any actions or omissions of the Developer or District, or their agents, in relation to any bonds or other financial obligations of the District or any offering documents or other disclosures made in connection therewith. Developer further agrees to investigate, handle, respond to and to provide defense for and defend against, or at the City's option to pay the attorneys' fees and expenses for counsel of the City's choice for any such liabilities, claims, demands, suits, actions or other proceedings.

2. Developer hereby consents to the Debt Instrument Disclosure Requirements as set forth Section VI.F of the Service Plan, acknowledges the City's right to modify the required disclosures, and waives and releases the City from any claims Developer might have based on or relating to the use of or any statements made or to be made in such disclosures (including any modifications thereto).

3. This Letter has been duly authorized and executed on behalf of Developer.

Very truly yours,

Developer

By: _____
Title: _____

2. District's Letter

{date – date of organizational meeting}

City of Greeley
1000 10th Street
Greeley, CO 80631

RE: [] Metropolitan District

To the City Council:

This Indemnification Letter (the “**Letter**”) is delivered by the [] Metropolitan District (the “**District**”) in order to comply with the Service Plan, including all amendments heretofore or hereafter made thereto (the “**Service Plan**”) for the District. The District, for and on behalf of itself and its transferees, successors and assigns, represents, warrants, covenants and agrees to and for the benefit of the City as follows:

1. The District hereby waives and releases any present or future claims it might have against the City or the City's elected or appointed officers, employees, agents, contractors or insurers (the “**Released Persons**”) in any manner related to or connected with the Service Plan or any action or omission with respect thereto. To the fullest extent permitted by law, the District hereby agrees to indemnify and hold harmless the Released Persons from and against any and all liabilities resulting from any and all claims, demands, suits, actions or other proceedings of whatsoever kind or nature made or brought by any third party, including attorneys' fees and expenses and court costs, which directly or indirectly or purportedly arise out of or are in any manner related to or connected with any of the following: (a) the Service Plan or any document or instrument contained or referred to therein; or (b) the formation of the District; or (c) any actions or omissions of the District, [] (the “**Developer**”), or their agents, in connection with the District, including, without limitation, any actions or omissions of the District or Developer, or their agents, in relation to any bonds or other financial obligations of the District or any offering documents or other disclosures made in connection therewith. The District further agrees to investigate, handle, respond to and to provide defense for and defend against, or at the City's option to pay the attorneys' fees and expenses for counsel of the City's choice for any such liabilities, claims, demands, suits, actions or other proceedings.

2. It is understood and agreed that neither the District nor the City waives or intends to waive the monetary limits ((\$387,000 for any injury to any one person in any single occurrence; and \$1,093,000 for any injury to two or more persons in any single occurrence, except that in such instance no one person may recover more than \$387,000)) or any other rights, immunities and protections provided by the Colorado Governmental Immunity Act, § 24 10 101, et seq., C.R.S., as from time to time amended, or otherwise available to the City, the District, its officers, or its employees.

3. The District hereby consents to the Debt Instrument Disclosure Requirements as set forth Section VI.F of the Service Plan, acknowledges the City's right to modify the required disclosures, and waives and releases the City from any claims the District might have based on or relating to the use of or any statements made or to be made in such disclosures (including any modifications thereto).

4. This Letter has been duly authorized and executed on behalf of the
District.

Very truly yours,

[_____] Metropolitan District

By: _____
President

Attest:

Secretary

EXHIBIT H
Intergovernmental Agreement

**INTERGOVERNMENTAL AGREEMENT
BY AND BETWEEN
THE CITY OF GREELEY, COLORADO
AND
[] METROPOLITAN DISTRICT**

THIS **AGREEMENT** is made and entered into as of this [] day of [], [], by and between the **CITY OF GREELEY, COLORADO**, a home-rule municipal corporation of the State of Colorado (“**City**”), and [] **METROPOLITAN DISTRICT**, a quasi-municipal corporation and political subdivision of the State of Colorado (“**District**”). The City and the District are collectively referred to as the Parties.

RECITALS

WHEREAS, the District was organized to provide those services and to exercise powers as are more specifically set forth in the Districts’ Service Plan approved by the City on [], 20[] (“**Service Plans**”); and

WHEREAS, the Service Plans make reference to the execution of an intergovernmental agreement between the City and the District; and

WHEREAS, the City and the District have determined it to be in the best interests of their respective taxpayers, residents and property owners to enter into this Intergovernmental Agreement (“**Agreement**”).

NOW, THEREFORE, in consideration of the covenants and mutual agreements herein contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereto agree as follows:

COVENANTS AND AGREEMENTS

1. Service Plan. The District will not take any action, including, without limitation, the issuance of any obligations or the imposition of any tax, which would constitute a material departure from the terms of the Service Plan and a material modification thereof as set forth in §32-1-207(2), C.R.S. Actions of the District which constitute a material departure from the terms of the Service Plan and a material modification thereof as set forth in §32-1-207(2), C.R.S., shall be a default hereunder, and shall entitle the City to protect and enforce its rights hereunder by such suit, action, or special proceedings as the City shall deem appropriate, including, without limitation, an action for specific performance or damages. It is intended that the remedies hereof shall be in addition to any remedies the City may have or actions the City may bring under §32-1-207, C.R.S., or any other applicable statute. The District shall have sixty (60) days to provide the City with written evidence that no Material Departure occurred, which evidence must be reasonably satisfactory to the City or to commence to cure such Material Departure. If the District is diligently pursuing the cure of such Material Departure, the City shall not take any action to enjoin the District. In the event the District fails to complete the cure or take any action to cure the Material Departure, the City may impose any sanctions allowed by municipal code or statute. Nothing herein is intended to modify or prevent the use of the

provisions of §32-1-207(3)(b), C.R.S, however, the time limits of §32-1-207(3)(b) are expressly waived by the District.

2. Notices. All notices, demands, requests or other communications to be sent by one party to the other hereunder or required by law shall be in writing and shall be deemed to have been validly given or served by delivery of same in person to the address or by courier delivery, via United Parcel Service or other nationally recognized overnight air courier service, or by depositing same in the United States mail, postage prepaid, addressed as follows:

To the Districts:	[] Metropolitan District [] [] Attention: [] Phone: [] Fax: []
To the City:	[] [] [] Attention: [] Phone: [] Fax: []

All notices, demands, requests or other communications shall be effective upon such personal delivery or one (1) business day after being deposited with United Parcel Service or other nationally recognized overnight air courier service or three (3) business days after deposit in the United States mail. By giving the other party hereto at least ten (10) days written notice thereof in accordance with the provisions hereof, each of the Parties shall have the right from time to time to change its address.

3. Entire Agreement of the Parties. This written Agreement constitutes the entire agreement between the Parties and supersedes all prior written or oral agreements, negotiations, or representations and understandings of the Parties with respect to the subject matter contained herein.

4. Amendment. This Agreement may be amended, modified, changed, or terminated in whole or in part only by a written agreement duly authorized and executed by the Parties hereto and without amendment to the Service Plan.

5. Assignment. No Party hereto shall assign any of its rights nor delegate any of its duties hereunder to any person or entity without having first obtained the prior written consent of all other Parties, which consent will not be unreasonably withheld. Any purported assignment or delegation in violation of the provisions hereof shall be void and ineffectual.

6. Default/Remedies. In the event of a breach or default of this Agreement by any Party, the non-defaulting Parties shall be entitled to exercise all remedies available at law or in equity, specifically including suits for specific performance and/or monetary damages. In

the event of any proceeding to enforce the terms, covenants or conditions hereof, the prevailing Party/Parties in such proceeding shall be entitled to obtain as part of its judgment or award its reasonable attorneys' fees.

7. Governing Law and Venue. This Agreement shall be governed and construed under the laws of the State of Colorado.

8. Inurement. Each of the terms, covenants and conditions hereof shall be binding upon and inure to the benefit of the Parties hereto and their respective successors and assigns.

9. Integration. This Agreement constitutes the entire agreement between the Parties with respect to the matters addressed herein. All prior discussions and negotiations regarding the subject matter hereof are merged herein.

10. Parties Interested Herein. Nothing expressed or implied in this Agreement is intended or shall be construed to confer upon, or to give to, any person other than the Districts and the City any right, remedy, or claim under or by reason of this Agreement or any covenants, terms, conditions, or provisions thereof, and all the covenants, terms, conditions, and provisions in this Agreement by and on behalf of the Districts and the City shall be for the sole and exclusive benefit of the Districts and the City.

11. Severability. If any covenant, term, condition, or provision under this Agreement shall, for any reason, be held to be invalid or unenforceable, the invalidity or unenforceability of such covenant, term, condition, or provision shall not affect any other provision contained herein, the intention being that such provisions are severable.

12. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall constitute an original and all of which shall constitute one and the same document.

13. Paragraph Headings. Paragraph headings are inserted for convenience of reference only.

14. Defined Terms. Capitalized terms used herein and not otherwise defined shall have the meanings ascribed to them in the Service Plan.

IN WITNESS WHEREOF, the Districts and the City have caused this Agreement to be duly executed to be effective as of the day first above written.

[_____] **METROPOLITAN
DISTRICT**

By: _____
President

Attest:

Secretary

CITY OF GREELEY, COLORADO

By: _____

Attest:

By: ____
Its: ____

APPROVED AS TO FORM:

EXECUTIVE SUMMARY

POUDRE HEIGHTS METROPOLITAN DISTRICT NOS. 1, 2, 3, 4, and 5 (the “Districts”)

Acreage/Location: Approximately 292.652 acres generally located northwest of 101st Avenue and 10th Street, generally bound on the south by 10th Street/Highway 34 Business Route and 257 Spur, on the west by existing industrial uses, and on the east by 101st Avenue, in the City of Greeley, Weld County, Colorado.

Type of Development: Currently zoned PUD (Agricultural Site Use) and proposed PUD (Mixed Use: Industrial, Commercial and Residential)

- Residential: Approximately 150 acres of residential space, consisting of approximately 1,200 residential units at full build-out, broken down as follows:
 - Approximately 40 acres of low-density residential space
 - Approximately 60 acres of medium density residential space
 - Approximately 25 acres of medium-high density residential space
 - Approximately 25 acres of high density/mixed-use residential space
- Commercial: Approximately 35 acres of commercial space
- Industrial: Approximately 70 acres of industrial space
- Other: Approximately 35 acres of open space
Approximately 2 detention ponds

Initial District Boundaries: Upon organization, the Districts will contain a total of 2.515 acres, broken down as follows:

District 1	.503 acres
District 2	.503 acres
District 3	.503 acres
District 4	.503 acres
District 5	.503 acres

The total area proposed to be included in the Inclusion Area Boundaries is approximately 292.652 acres. It is anticipated that the Districts’ boundaries will change from time to time as the Districts undergo inclusions and exclusions of property within the Inclusion Area Boundaries.

Powers of the Districts: To finance, construct and (if not otherwise conveyed to another governmental entity) operate and maintain water, storm and sanitary sewer, street and safety protection, park and recreation and other statutorily authorized improvements and powers described in the Special District Act.

Estimated Infrastructure Costs: \$96,619,105

Debt Limit: \$110,000,000

Maximum Aggregate Mill Levy: 60.00 mills, subject to adjustment if there are changes in the method of calculating assessed valuation or any constitutionally mandated tax credit, cut or abatement

Proposed Bond Issuances:

	<u>Par Amount</u>
2022A G.O. Bonds	\$54,380,000
2022B(3) Sub. Cash Flow Bonds	\$ 9,198,000
2032A G.O. Refunding Bonds	\$82,960,000
	(\$10,732,207.88 in new money and \$72,227,792.12 refunding)
2032B(3) Sub. Cash Flow Bonds	\$10,350,000
TOTAL:	\$84,660,207.88 (excluding refunding amount)

Additional Revenue Sources:

District Facility Fees	Residential (Single-Family Detached)	\$5,000 / unit
	Residential (Single-Family Attached/Multi-Family)	\$2,500/ unit
	Commercial	\$2.00/square foot

The District may not impose or assess any other form of fees, rates, tolls, penalties, or charges (other than the Facility Fees) without first obtaining City approval of a Service Plan amendment.

Pertinent Service Plan Limitations & Requirements:

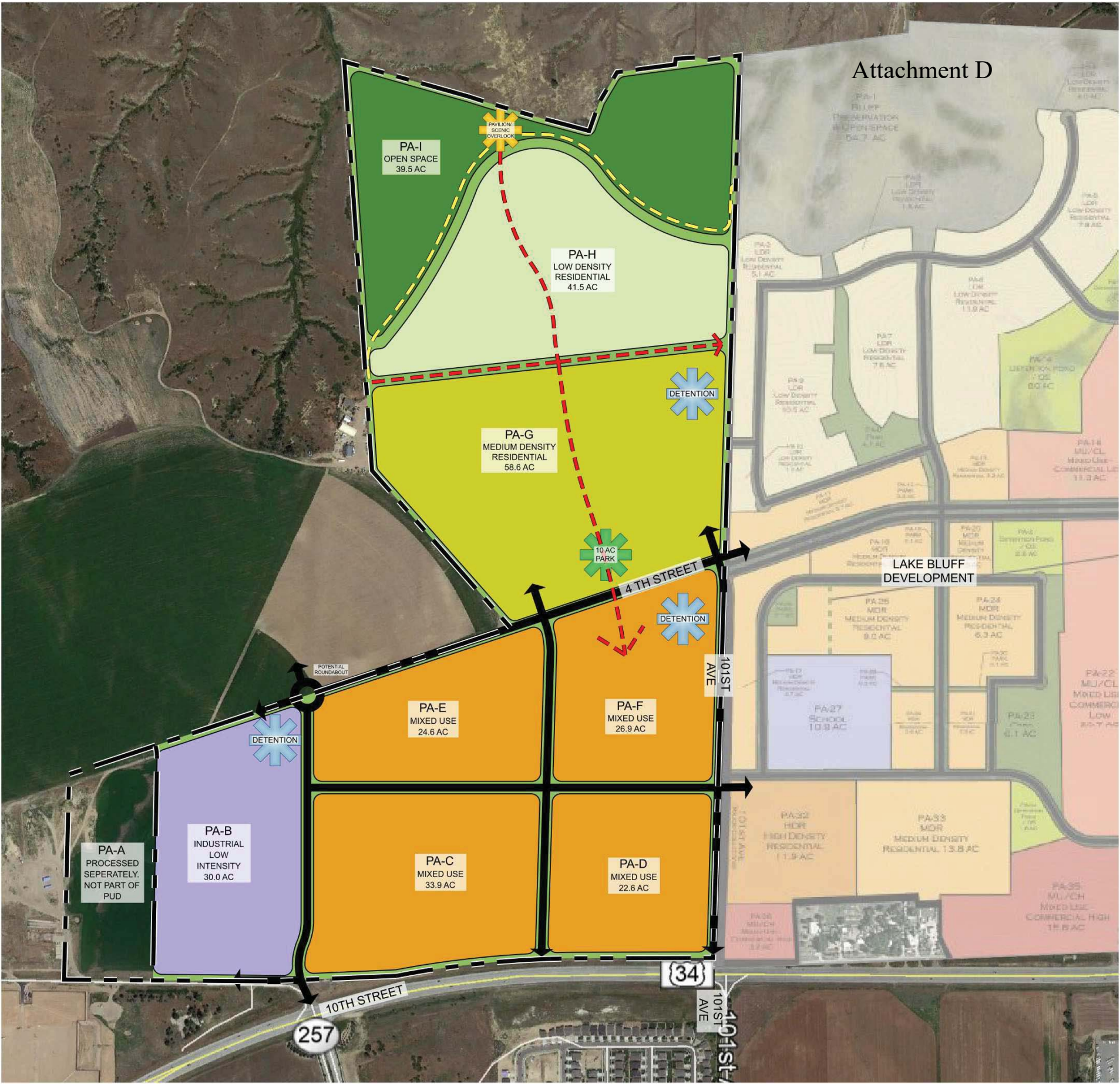
- Section V.A.4 – Public Improvements to be constructed to City and other applicable standards and specifications
- Section V.A.6 – Prior to issuance of any Privately Placed Debt, the District shall obtain a certification from the District’s Investment Banker for the Debt
- Section V.A.7 – No inclusions of any property outside of the Districts’ Service Area without City consent
- Section V.A.8 – Prior to having an Approved Development Plan, the Districts will not issue debt, impose mills or collect fees for Debt
- Section V.A.13 – Submit proposed revenue bond documents to the City for review. The City may elect to treat the issuance of revenue bonds as a material modification to the Service Plan
- Section VI.C.1 – Maximum Debt Mill Levy of sixty (60) mills less such number of mills as is or may be imposed by the District for any other purpose such that the Maximum Aggregate Mill Levy is not exceeded
- Section VII – Submit annual reports to the City regarding the Districts’ activities, and periodic reports as necessary relative to significant events
- Section IX – Submit proposed written notice to purchasers of property of total tax burden to City for review and for recordation against all property in the Districts prior to Districts’ certification of formation to DOLA

- Section X – Submit proposed intergovernmental agreements to the City for review prior to execution

PROPOSED MASTER PLAN APPROACH
Item No. 19. THE MASTER PLAN FOR THE PROPERTY DEMONSTRATES A WELL PLANNED COMMUNITY THAT WILL ENHANCE AND INTEGRATE INTO THE CITY OF GREELEY. THIS SUBMITTAL INCLUDES GENERAL DEVELOPMENT STANDARDS AND PROVISIONS AND SETS THE CORNERSTONES FOR A VIBRANT COMMUNITY WITHIN THE CITY OF GREELEY. THE ACREAGE, PROPOSED USES, RESIDENTIAL DENSITIES, AND FLOOR AREA RATIOS (FARS) HAVE BEEN IDENTIFIED FOR EACH PLANNING AREA AS DEPICTED ON THE PRELIMINARY PUD SITE MASTER PLAN. THIS PLAN HAS BEEN DESIGNED TO PROMOTE CREATIVITY AND FLEXIBILITY FOR THE OVERALL CACHE COMMUNITY AND ALSO PROVIDING DENSITY TRANSITIONS FROM THE MIXED USE AND INDUSTRIAL AREAS ALONG 10 TH STREET TO THE NORTH WHERE RESIDENTIAL AND OPEN SPACE AREAS WILL EXIST.

LEGEND

-  PRESERVED OPEN SPACE
-  GENERAL OPEN SPACE
-  LOW DENSITY RESIDENTIAL
-  MEDIUM DENSITY RESIDENTIAL
-  MIXED USE
-  INDUSTRIAL LOW INTENSITY
-  PROPOSED ROADWAY
-  SITE BOUNDARY
-  PROPOSED TRAIL THROUGH OPEN SPACE OR MULTI-MODAL ALONG ROADWAY
-  PROPOSED NATURE TRAIL
-  PROPOSED PARK
-  PROPOSED DETENTION
-  PROPOSED COMMUNITY FEATURE



PRELIMINARY PUD SITE MASTER PLAN

POUDRE HEIGHTS

CLEAN DRAFT

[DRAFT MODEL MULTIPLE DISTRICT SERVICE PLAN]

**CONSOLIDATED SERVICE PLAN
FOR**

[] METROPOLITAN DISTRICT NO. []

[] METROPOLITAN DISTRICT NO. []

[] METROPOLITAN DISTRICT NO. []

[REPEAT AS NECESSARY]

CITY OF GREELEY, COLORADO

Prepared

by

[NAME OF PERSON OR ENTITY]

[ADDRESS]

[ADDRESS]

[DATE]

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I. INTRODUCTION

A. Purpose and Intent.

The Districts are independent units of local government, separate and distinct from the City, and, except as may otherwise be provided for by State or local law or this Service Plan, their activities are subject to review by the City only insofar as they may deviate in a material matter from the requirements of the Service Plan. Districts shall strictly comply with the Municipal Code and the Intergovernmental Agreement. It is intended that the Districts will provide a part or all of the Public Improvements for the use and benefit of all anticipated inhabitants, taxpayers of the Districts, and the general public. The primary purpose of the Districts will be to finance the construction of these Public Improvements.

The District is also being created to provide ongoing operations and maintenance services as specifically set forth in this Service Plan and as may be stated in any applicable Intergovernmental Agreement.

B. Need for the Districts.

There are currently no other governmental entities, including the City, located in the immediate vicinity of the Districts that consider it desirable, feasible or practical to undertake the planning, design, acquisition, construction, installation, relocation, redevelopment, and financing of the Public Improvements needed for the Project. Formation of the Districts is therefore necessary in order for the Public Improvements required for the Project to be provided in the most economic manner possible.

C. Objective of the City Regarding Districts' Service Plan.

The City's objective in approving the Service Plan for the Districts is to authorize the Districts to provide for the planning, design, acquisition, construction, installation, relocation, redevelopment and financing of the Public Improvements from the proceeds of Debt to be issued by the Districts. All Debt is expected to be repaid by *ad valorem* property taxes and District Facility Fees imposed and collected for no longer than the Maximum Debt Mill Levy Imposition Term for Residential Districts and at a tax mill levy no higher than the Maximum Debt Mill Levy. Debt which is issued within these parameters (as further described in the Financial Plan) will insulate property owners from excessive tax burdens to support the servicing of the Debt and will result in a timely and reasonable discharge of the Debt.

This Service Plan is intended to establish a limited purpose for the Districts and explicit financial constraints that are not to be violated under any circumstances. The primary purpose of the Districts is to provide for the Public Improvements associated with the Project, including those regional improvements necessitated by the Project. The Districts shall be authorized to operate and maintain all of the Public Improvements at a level equal to or greater than City standards, unless such authorization is specifically limited in the Intergovernmental Agreement.

It is the intent of the Districts to dissolve upon payment or defeasance of all Debt incurred or upon a court determination that adequate provision has been made for the payment of all Debt, and if any District has authorized operating functions under an intergovernmental

agreement with the City, to retain only the power necessary to impose and collect taxes or fees to pay for these costs.

It is a requirement of this Service Plan that all property classified as “residential” shall be located in a Residential District, and that all property classified as “commercial” shall be located within the boundaries of the Commercial District. Mixed uses, as defined by the Municipal Code, shall be classified as “commercial” and shall be located only within the boundaries of the Commercial District. For purposes of this distinction “commercial property” shall mean all property other than “residential property” as that term is defined in Article X, Section 3(1)(b) of the Colorado Constitution. The goal of this distinction is to have similarly situated properties governed by common interests. As such, no commercial property shall be located in a Residential District, and no residential property, other than mixed uses, shall be located in a Commercial District. The foregoing shall not prohibit the Residential and Commercial Districts from sharing the costs of Public Improvement in compliance with the provisions of this Service Plan and applicable law.

The Districts shall be authorized to finance the Public Improvements that can be funded from Debt to be repaid from tax revenues collected from a mill levy which shall not exceed the Maximum Debt Mill Levy. It is the intent of this Service Plan to assure to the extent possible that no property in any District bear an economic burden that is greater in amount than that associated with the Maximum Debt Mill Levy, and that no property in a Residential District bears an economic burden that is longer in duration than that associated with the Maximum Debt Mill Levy Imposition Term in duration, even under bankruptcy or other unusual situations. Generally, the cost of Public Improvements that cannot be funded within these parameters and the financing capacity of the Districts are not costs to be paid by the Districts. Costs of required Public Improvements that cannot be financed by the District are expected to be financed by the developer of the Project.

II. DEFINITIONS

In this Service Plan, the following terms shall have the meanings indicated below, unless the context hereof clearly requires otherwise:

Approved Development Plan: means a development plan or other process established by the City (including but not limited to approval of a final plat, development plat or site plan by the City planning commission or by the City Council) identifying, among other things, the Public Improvements necessary for facilitating development for property within the Service Area as approved by the City pursuant to the Municipal Code and as amended pursuant to the Municipal Code from time to time. An Approved Development Plan does not include any plan, process or approval denoted as preliminary under the Municipal Code. (To the extent the type of Development Plan has been determined for the Project, this definition should be revised accordingly.)

Board: means the board of directors of one District or the boards of directors of all Districts, in the aggregate, as the context may require.

Bond, Bonds or Debt: means bonds or other obligations for the payment of which the District has promised to impose an *ad valorem* property tax mill levy.

Capital Plan: means the Capital Plan described in Section V.B., which includes: (a) a comprehensive list of the Public Improvements to be developed by the Districts; (b) an engineer's estimate of the cost of the Public Improvements; and (c) a pro forma capital expenditure plan correlating expenditures with development.

City: means the City of Greeley, Colorado.

City Council: means the City Council of the City of Greeley, Colorado.

Commercial District: means the [_____] Metropolitan District No. [_____].

District: means any one of the [_____] Metropolitan District No. [_____] through No. [_____].

District No. 1: means the [_____] Metropolitan District No. 1

District No. 2: means the [_____] Metropolitan District No. 2.

District No. 3: means the [_____] Metropolitan District No. 3.

[repeat as necessary]

Districts: means District No. 1 and District No. [_____] and [_____] , collectively.

District Facility Fee: means the one-time development or system development fee imposed by the Districts on a per-unit (*residential*) or per square-foot (*non-residential*) basis at or prior to the issuance of a building permit for the unit or structure to assist with the planning and development of the Public Improvements, subject to the limitations set forth in Section VI.E. of the Service Plan. The District Facility Fee may be used to finance, plan, acquire, and construct the Public Improvements, and pay debt service.

Financial Plan: means the Financial Plan described in Section VI which describes (a) how the Public Improvements are to be financed; (b) the total amount of Debt anticipated to be issued by the Districts based on estimated buildout projections; (c) the estimated operating revenue and expenses for the Districts for the term of the Debt; (d) the estimated debt service revenue sources and payment requirements on all Debt anticipated to be issued by the Districts; and (e) the assumptions regarding all such information.

Inclusion Area Boundaries: means the boundaries of the area described in the Inclusion Area Boundary Map.

Inclusion Area Boundary Map: means the map attached hereto as **Exhibit C-2**, describing the property proposed for inclusion within one, but not any more than one, of the boundaries of the Districts after organization, if any.

Initial District Boundary: means the boundary of the area described in the Initial District Boundary Map.

Initial District Boundary Map: means the map attached hereto as **Exhibit C-1**, describing the initial boundary of the Districts.

Intergovernmental Agreement: means the intergovernmental agreement required by Municipal Code section 13.50.170(5), and attached hereto as **Exhibit G**.

Map Depicting Public Improvements: means the map attached hereto as **Exhibit E**, showing the location(s) of the Public Improvements listed in the Capital Plan.

Maximum Debt Mill Levy: means the maximum mill levy a District is permitted to impose for payment of Debt, as set forth in Section VI.C. below.

Maximum Debt Mill Levy Imposition Term: means the maximum term for imposition of a mill levy on property within a Residential District as set forth in Section VI.D., below.

Municipal Code: means the City of Greeley Municipal Code, as may be amended and in effect from time to time.

Operating District: means District No. 1.

Privately Placed Debt: means Debt which is sold or placed directly with an investor without being underwritten by an underwriter or an investment banker.

Project: means the development or property commonly referred to as [_____].

Proof of Ownership: means a current title commitment showing ownership and all encumbrances on all properties within the Initial District Boundaries, or other documentation acceptable to the City Attorney.

Public Improvements: means a part or all of the improvements authorized to be planned, designed, acquired, constructed, installed, relocated, redeveloped as part of an Approved Development Plan and financed as generally described in the Special District Act, except as specifically limited in Section V below to serve the future taxpayers and inhabitants of the Service Area as determined by the Board of the District.

Residential District: means any one of the [_____] Metropolitan District Nos. [_____].

Residential Districts: means District Nos. [____], collectively.

Service Area: means the property within the Initial District Boundary Map and the Inclusion Area Boundary Map.

Service Plan: means this service plan for the Districts approved by City Council.

Service Plan Amendment: means an amendment to the Service Plan approved by City Council in accordance with Chapter 13.50 of the Municipal Code and the applicable state law.

Special District Act: means Section 32-1-101, et seq., of the Colorado Revised Statutes, as amended from time to time.

State: means the State of Colorado.

Taxing Districts: means District Nos. [____].

III. **BOUNDARIES**

The area of the Initial District Boundaries includes approximately [____] acres [*and the total area proposed to be included in the Inclusion Area Boundaries is approximately [____] acres*]. A legal description of the Initial District Boundaries [*and the Inclusion Area Boundaries*] is attached hereto as **Exhibit A**. A map of the Initial District Boundaries is attached hereto as **Exhibit C-1**, [*and a map of the Inclusion Area Boundaries is attached hereto as Exhibit C-2*]. Proof of Ownership and consents of the owners to organization of the District for all properties within the Initial District Boundaries is attached hereto as **Exhibit C-3**. A vicinity map is attached hereto as **Exhibit B**. It is anticipated that the boundaries of the Districts may change from time to time as the Project is developed and as the Districts undergo inclusions and exclusions pursuant to Section 32-1-401, et seq., C.R.S., and Section 32-1-501, et seq., C.R.S., subject to the limitations set forth in Article V below.

IV. **PROPOSED LAND USE/POPULATION PROJECTIONS/ASSESSED VALUATION**

The Service Area consists of approximately [____] acres of [_____] land. The current assessed valuation of the Service Area is assumed to be \$0.00 for purposes of this Service Plan and, at build out, is expected to be sufficient to reasonably discharge the Debt under the Financial Plan. The residential population of the District at build-out is estimated to be approximately [____] persons. (OR) The non-residential density of the District at build-out estimated to be approximately [_____] square feet.

Approval of this Service Plan by the City does not imply approval of the development of a specific area within the Districts, nor does it imply approval of the number of residential units or the total site/floor area of commercial or industrial buildings which may be identified in this Service Plan or any of the exhibits attached thereto. The permitted level of development within the Project is as contained within an Approved Development Plan.

Approval of this Service Plan by the City in no way releases or relieves the developer of the Project, or the landowner or any subdivider of the Project property, or any of their respective successors or assigns, of obligations to construct public improvements for the Project or of obligations to provide to the City such financial guarantees as may be required by the City to ensure the completion of the Public Improvements, or of any other obligations to the City under the Municipal Code or any applicable annexation agreement, subdivision agreement, or other agreements affecting the Project property or development thereof.

V. DESCRIPTION OF PROPOSED POWERS, IMPROVEMENTS AND SERVICES

A. Powers of the Districts and Service Plan Amendment.

The Districts shall have the power and authority to provide the Public Improvements within and without the boundaries of the Districts as such power and authority is described in the Special District Act, and other applicable statutes, common law and the Constitution, subject to the limitations set forth in this Service Plan and the Intergovernmental Agreement.

1. **Operations and Maintenance Limitation.** The purpose of the Districts is to plan for, design, acquire, construct, install, relocate, redevelop and finance the Public Improvements. The Districts shall maintain the Public Improvements in a manner consistent with the Approved Development Plan, other rules and regulations of the City, and applicable provisions of the Municipal Code, all as directed by the City. The City may consider whether to accept dedication of Public Improvements to the City upon 50% build-out of the development of each phase of the Project as identified in the Approved Development Plan. The Districts shall be authorized to operate and maintain all of the Public Improvements at a level equal to or greater than City standards, unless such authorization is specifically limited in the Intergovernmental Agreement.

2. **Fire Protection Limitation.** The Districts shall not be authorized to plan for, design, acquire, construct, install, relocate, redevelop, finance, operate or maintain fire protection facilities or services, unless such facilities and services are provided pursuant to an intergovernmental agreement with the City and Union Colony Fire and Rescue Authority. The authority to plan for, design, acquire, construct, install, relocate, redevelop or finance fire hydrants and related improvements installed as part of the water system shall not be limited by this provision.

3. **Television Relay and Translation Limitation.** The Districts shall not be authorized to plan for, design, acquire, construct, install, relocate, redevelop, finance, operate or maintain television relay and translation facilities and services, other than for the installation of conduit as a part of a street construction project, unless such facilities and services are provided for use by City-authorized franchise operators pursuant to an intergovernmental agreement with the City.

4. **Construction Standards Limitation.** The Districts will ensure that the Public Improvements are designed and constructed in accordance with the standards and specifications of the City and of federal and state governmental entities having proper jurisdiction and of those special districts that qualify as “interested persons” under Section 32-1-204(1), C.R.S., as applicable. The Districts will obtain the City’s approval of civil engineering plans and will obtain applicable permits for construction and installation of Public Improvements prior to performing such work. Additionally, the District will permit City inspectors to inspect the infrastructure during construction.

5. **Property Acquisition Limitation; Transfer Requirement.** The District shall not exercise any power of eminent domain without the prior written consent of the City. If the City decides the proposed improvement is needed, at the time of dedication the District shall at

no expense to the City, transfer to the City all rights-of-way, fee interests and easements that the City determines are necessary for access to and operation and maintenance of the Public Improvements, consistent with the Approved Development Plan and to the extent such interests have not been acquired by the City through such Development Plan process.

6. Privately Placed Debt Limitation. Prior to the issuance of any Privately Placed Debt, the Districts shall obtain the certification by the District's Investment Banker for such Debt substantially as follows:

We [I] certify that (1) the net effective interest rate (calculated as defined in Section 32-1-103(12), C.R.S.) to be borne by the District for the [insert the designation of the Debt] does not exceed a market [tax-exempt] [taxable] interest rate, using criteria deemed appropriate by us [me] and based upon our [my] analysis of comparable high yield securities; and (2) the structure of [insert designation of the Debt], including maturities and early redemption provisions, is reasonable considering the financial circumstances of the District.

7. Inclusion and Exclusion Limitations. The Districts shall not include within any of their boundaries any property outside the Service Area without the prior written consent of the City Council. The District shall not exclude any property from the District if such exclusion will result, or is reasonably anticipated to result, in detriment to the remaining residents and taxpayers within the District, or to the District's bondholders.

8. Initial Debt Limitation. On or before the effective date of approval of an Approved Development Plan, the Districts shall not: (a) issue any Debt; nor (b) impose a mill levy for the payment of Debt by direct imposition or by transfer of funds from the operating fund to the Debt service funds; nor (c) impose or collect any fees or revenues from any other source for the purpose of repayment of Debt.

9. Total Debt Issuance Limitation. The Districts shall not issue Debt in excess of \$[] total aggregate principal amount.

10. Monies from Other Governmental Sources. The Districts shall not apply for or accept Conservation Trust Funds, Great Outdoors Colorado Funds, or other funds available from or through governmental or non-profit entities for which the City is eligible to apply for, except as may be specifically authorized in an intergovernmental agreement with the City pursuant to Section 13.50.080 of the Municipal Code. This Section shall not apply to specific ownership taxes which shall be distributed to and constitute a revenue source for the Districts without any limitation.

11. Consolidation Limitation. No District shall not file a request with any Court to consolidate with any other Title 32 district, whether one of Districts or otherwise, without the prior written consent of the City.

12. Bankruptcy Limitation. All of the limitations contained in this Service Plan, including, but not limited to, those pertaining to the Maximum Debt Mill Levy, the total

debt issuance limitation, and the Maximum Debt Mill Levy Imposition Term have been established under the authority of the City to approve a Service Plan with conditions pursuant to Section 32-1-204.5, C.R.S. It is expressly intended that such limitations:

(a) shall not be subject to set-aside for any reason or by any court of competent jurisdiction, absent a Service Plan Amendment; and

(b) are, together with all other requirements of Colorado law, included in the “political or governmental powers” reserved to the State under the U.S. Bankruptcy Code (11 U.S.C.) Section 903, and are also included in the “regulatory or electoral approval necessary under applicable nonbankruptcy law” as required for confirmation of a Chapter 9 Bankruptcy Plan under Bankruptcy Code Section 943(b)(6).

Any Debt, issued with a pledge or which results in a pledge, that exceeds the Maximum Debt Mill Levy or the Maximum Debt Mill Levy Imposition Term, shall be deemed a material modification of this Service Plan pursuant to Section 32-1-207, C.R.S. and shall not be an authorized issuance of Debt unless and until such material modification has been approved by the City as part of a Service Plan Amendment.

13. Revenue Bond Limitation. The Districts shall not issue revenue bonds, except as set forth in this Section. Prior to issuing any revenue bonds, the District or Districts proposing to issue such revenue bonds shall submit all relevant details of such issuance to the City Council, which may elect to treat the issuance of revenue bonds as a material modification of the Service Plan. If the City Council determines that the issuance of revenue bonds constitutes a material modification of the Service Plan, the Districts shall proceed to amend the Service Plan in accordance with Section 32-1-207, C.R.S. prior to issuing any revenue bonds.

14. Service Plan Amendment Requirement. This Service Plan is general in nature and does not include specific detail in some instances because development plans have not been finalized. The Service Plan has been designed with sufficient flexibility to enable the Districts to provide required Public Improvements under evolving circumstances without the need for numerous amendments. Modification of the general types of services and facilities making up the Public Improvements, and changes in proposed configurations, locations or dimensions of the Public Improvements shall be permitted to accommodate development needs consistent with the then-current Approved Development Plan(s) for the Project, subject to the limitations of this Service Plan and the Intergovernmental Agreement.

The Districts are independent units of local government, separate and distinct from the City, and their activities are subject to review by the City only insofar as they may deviate in a material manner from the requirements of the Service Plan, the Municipal Code, or the Intergovernmental Agreement. Any District may amend this Service Plan without the permission or consent of the remaining Districts, to the extent that the Service Plan amendment affects only that District initiating the statutory amendment process. However, actions of any District which: (1) violate the limitations set forth in Sections V.A.1-14 above; (2) violate the limitations set forth in Section VI.B.; (3) constitute a material modification of the Service Plan; or (4) constitutes a failure to comply with the Intergovernmental Agreement or other agreement with the City, which non-compliance has not been waived in writing by the City, shall be

deemed to be a material modification to this Service Plan and the City shall be entitled to all remedies available under State and local law to enjoin such action(s) of the Districts.

Any City approval requirements contained in this Service Plan (including, without limitation, any provisions requiring that a change, request, occurrence, act or omission be treated as a Service Plan Amendment or be deemed a “material modification” of the Service Plan) shall remain in full force and effect, and, unless otherwise provided by resolution of the City Council, such City approval shall continue to be required, notwithstanding any future change in law modifying or repealing any statutory provision concerning service plans, amendments thereof or modifications thereto.

B. Capital Plan.

The Districts shall have authority to provide for the planning, design, acquisition, construction, installation, relocation, redevelopment, maintenance, and financing of the Public Improvements within and without the boundaries of the Districts, to be more specifically defined in an Approved Development Plan. A Capital Plan, including: (1) a comprehensive list of the Public Improvements to be developed by the Districts; (2) an estimate of the cost of the Public Improvements, together with a letter from a Colorado professional registered engineer certifying that such costs are reasonable in the engineer’s opinion and that such estimates were prepared based upon City construction standards; and (3) a pro forma capital expenditure plan correlating expenditures with development is attached hereto as **Exhibit D**. A Map depicting the Public Improvements is attached hereto as **Exhibit E**. As shown in the Capital Plan, the estimated cost of the Public Improvements which may be planned for, designed, acquired, constructed, installed, relocated, redeveloped, maintained or financed by the Districts is approximately \$[_____]. Costs of required Public Improvements that cannot be financed by the Districts within the parameters of this Service Plan and the financial capability of the District are expected to be financed by the developer of the Project.

The Districts shall be permitted to allocate costs between such categories of the Public Improvements as deemed necessary in their discretion.

All of the Public Improvements described herein will be designed in such a way as to assure that the Public Improvements standards will be compatible with those of the City and shall be in accordance with the requirements of City standards and the Approved Development Plan. All descriptions of the Public Improvements to be constructed, and their related costs, are estimates only and are subject to modification as engineering, development plans, economics, the City’s requirements, and construction scheduling may require. Upon approval of this Service Plan, the Districts will continue to develop and refine the Capital Plan and the Map Depicting Public Improvements, as necessary, and prepare for issuance of Debt. All cost estimates will be inflated to then-current dollars at the time of the issuance of Debt and construction. All construction cost estimates contained in **Exhibit D** assume construction to applicable standards and specifications of the City and state or federal requirements.

C. Multiple District Structure.

It is anticipated that the Districts, collectively, will undertake the financing and construction of the Public Improvements. It is generally anticipated that the Districts will undertake the financing and construction of Public Improvements in sequential order (i.e., District No. 1 will proceed with initial construction, then District No. 2, etc.), share certain Public Improvement costs. The nature of the functions and services to be provided by each District, and the mechanisms by which the Districts may cooperatively fund Public Improvement costs, shall be clarified in an intergovernmental agreement among the Districts. The intergovernmental agreement among the Districts, and all amendments thereto, shall be designed to help assure the orderly development of the Public Improvements and essential services in accordance with the requirements of this Service Plan. Implementation of such intergovernmental agreement is essential to the orderly implementation of this Service Plan. The foregoing intergovernmental agreement and all amendments thereto, as well as all other intergovernmental agreements and amendments thereto proposed between or among the Districts regarding the subject matter of this Service Plan, shall be subject to review and approval of the City prior to their execution by the Districts.

VI. FINANCIAL PLAN

A. General.

The Districts shall be authorized to provide for the planning, design, acquisition, construction, installation, relocation and/or redevelopment of the Public Improvements from their revenues and by and through the proceeds of Debt to be issued by the Districts. The Financial Plan for the Districts shall be to issue such Debt as the Districts can reasonably pay from revenues derived from the Maximum Debt Mill Levy and other legally available revenues. All bonds and other Debt issued by the Districts may be payable from any and all legally available revenues of the Districts, including general *ad valorem* taxes to be imposed upon all taxable property within the Districts. The Districts will also rely upon various other revenue sources authorized by law, such as interest, specific ownership taxes, advances from the Project developer and grants. The District is also authorized to assess and collect a District Facility Fee as set forth in Section VI.E., below. Unless specifically authorized in the Intergovernmental Agreement, the District shall not impose or assess any fees, rates, tolls, penalties, or charges other than the District Facility Fee without first obtaining City approval of an amendment to this Service Plan, which amendment shall be deemed to be a material modification hereof.

The total Debt that the Districts shall be permitted to issue shall not exceed \$[] in aggregate principal amount. Debt is permitted to be issued on a schedule and in such year or years as the issuing District determines shall meet the needs of the Capital Plan referenced above and the progression of the development, subject to compliance with this Service Plan. The \$[] that the Districts shall be permitted to issue is supported by the Financial Plan prepared by [] (*name of District's Underwriter or certified public accountant*), attached hereto as **Exhibit F**. The City may obtain an independent certification at the District's sole cost from an independent CPA or other financial consultant of the City's choosing, experienced in advising governmental entities on matters

relating to the issuance of securities in Colorado regarding the financial plan and the reasonableness of the projections contained in the financial plan.

B. Maximum Voted Interest Rate and Maximum Underwriting Discount.

The interest rate on any Debt is limited to the market rate at the time the Debt is issued. In the event of a default, the proposed maximum interest rate on any Debt shall not exceed eighteen percent (18%). The proposed maximum underwriting discount will be five percent (5%). Debt, when issued, will comply with all relevant requirements of this Service Plan, State law and Federal law as then applicable to the issuance of public securities.

C. Maximum Debt Mill Levy.

The Maximum Debt Mill Levy shall be the maximum mill levy a District is permitted to impose upon the taxable property within such District for payment of Debt imposed by the District, and shall be determined as follows:

1. The Maximum Debt Mill Levy seventy (70) mills less the number of mills imposed by the District for operations and maintenance purposes; provided that if, on or after January 1, 2007, there are changes in the method of calculating assessed valuation or any constitutionally mandated tax credit, cut or abatement; the mill levy limitation applicable to such Debt may be increased or decreased to reflect such changes, such increases or decreases to be determined by the Board in good faith (such determination to be binding and final) so that to the extent possible, the actual tax revenues generated by the mill levy, as adjusted for changes occurring after January 1, 2007, are neither diminished nor enhanced as a result of such changes. For purposes of the foregoing, a change in the ratio of actual valuation shall be deemed to be a change in the method of calculating assessed valuation.

2. All Debt issued by the Districts must be issued in compliance with all requirements of State law.

To the extent that the Districts are composed of or subsequently organized into one or more subdistricts as permitted under Section 32-1-1101, C.R.S., the term “**District**” as used in this Section shall be deemed to refer to the District and to each such subdistrict separately, so that each of the subdistricts shall be treated as a separate, independent district for purposes of the application of this definition.

Nothing herein shall prevent the District from covenanting with Debt holders or others to limit the amount of its operations and maintenance mill levy, as long as all district operations and maintenance requirements are met as required by VI.H. below.

D. Maximum Debt Mill Levy Imposition Term for Residential Districts.

No Residential District shall impose a levy for repayment of any and all Debt (or use the proceeds of any mill levy for repayment of Debt) which exceeds forty (40) years after the year of the initial imposition of such mill levy unless a majority of the Board of Directors of the District imposing the mill levy, which Board of Directors shall include at least three homeowners residing in the District, have voted in favor of a refunding of a part or all of the Debt and such

refunding will result in a net present value savings as set forth in Section 11-56-101, C.R.S. et seq.

E. Debt Repayment Sources.

Each of the Districts may impose a mill levy on taxable property within its boundaries as a primary source of revenue for repayment of debt service and for operations and maintenance. In no event shall the debt service mill levy in any District exceed the Maximum Debt Mill Levy or, in any Residential District, the Maximum Debt Mill Levy Imposition Term.

The Districts may also collect a one-time District Facility Fee for capital improvements, provided that such fee does not exceed the following limits:

1. For each single-family detached residential unit, the District Facility Fee shall not exceed [] Dollars (\$[]).
2. For each single-family attached or multi-family residential unit, the District Facility Fee shall not exceed [] Dollars (\$[]).
3. For a structure other than a single-family or multi-family residential structure, the District Facility Fee shall not exceed [] (\$[]) per square foot of the structure.
4. The District Facility Fee set forth in this Service Plan may increase by up to the Consumer Price Index for Greeley, all items, all urban consumers (or its successor index for any years for which Consumer Price Index is not available) each year thereafter (as an inflation adjustment) commencing on January 1, 20[]. The District Facility Fee shall be collected by the District prior to issuance of a Building Permit. Unless specifically authorized in the Intergovernmental Agreement, the District shall not impose or assess any fees, rates, tolls, penalties, or charges other than the District Facility Fee, as limited above, without first obtaining City approval of an amendment to this Service Plan, which amendment shall be deemed to be a material modification hereof.

F. Security for Debt.

The Districts shall not pledge any revenue, property or other assets of the City as security for any District indebtedness. Approval of this Service Plan shall not be construed as a guarantee by the City of payment of any of the District's obligations; nor shall anything in the Service Plan be construed so as to create any responsibility or liability on the part of the City in the event of default by the Districts in the payment of any such obligation.

G. TABOR Compliance.

The Districts will comply with the provisions of TABOR. In the discretion of the Board, the Districts may set up enterprises or nonprofit entities to manage, fund, construct and operate facilities, services and programs. To the extent allowed by law, any entity created by the

Districts will remain under the control of the District's Boards. The activities of such enterprises and entities shall comply with the provisions of this Service Plan.

H. Districts' Organizational Costs.

The estimated cost of engineering services, legal services and administrative services, in connection with the District's organization, are anticipated to be \$[_____], which will be eligible for reimbursement from Debt proceeds.

In addition to the capital costs of the Public Improvements, the Districts will require operating funds for administration and to plan and cause the Public Improvements to be constructed and maintained, if such maintenance is addressed in the Intergovernmental Agreement. The first year's operating budget is estimated to be \$[_____], which is anticipated to be derived from funding advances by the developer of the Project until such time as the District's operating mill levy revenues are sufficient to operate the District.

The Districts may impose an operations mill levy as necessary to operate the Districts and for provision of operation and maintenance services to their taxpayers and/or service users at a level equal to or greater than City standards. The authorized mill levy for operations and maintenance activities shall be included within the Maximum Debt Mill Levy.

I. Subdistricts.

Any District may organize subdistricts or areas as allowed by Section 32-1-1101(1)(f), C.R.S., with the prior approval of the City Council. In accordance with Section 32-1-1101(1)(f)(I), C.R.S., the District shall notify the City prior to establishing any such subdistrict(s) or area(s), and shall provide the City with details regarding the purpose, location, and relationship of the subdistrict(s) or area(s). The City Council may elect to treat the organization of any such subdistrict(s) or area(s) as a material modification of the Service Plan.

VII. ANNUAL REPORT

A. General. Each of the Districts shall file an annual report with the City Clerk not later than September 1 of each calendar year, which annual report shall reflect activity and financial events of the District through the preceding December 31 (the "report year").

B. Reporting of Significant Events.

The annual report shall include the following:

1. A narrative summary of the progress of the District in implementing its Service Plan for the report year;
2. Except when exemption from audit has been granted for the report year under the Local Government Audit Law, the audited financial statements of the District for the report year including a statement of financial condition (i.e., balance sheet) as of December 31 of the report year and the statement of operations (i.e., revenues and expenditures) for the report year or a copy of the audit exemption application;

3. Unless disclosed within a separate schedule to the financial statements, a summary of the capital expenditures incurred by the District in development of Public Improvements in the report year, as well as any Public Improvements proposed to be undertaken in the five (5) years following the report year;

4. Unless disclosed within a separate schedule to the financial statements, a summary of the financial obligations of the District at the end of the report year, including the amount of outstanding Debt, the amount and terms of any new Debt issued in the report year, the amount of payment or retirement of existing Debt of the District in the report year, the total assessed valuation of all taxable properties within the District as of January 1 of the report year and the current mill levy of the District pledged to Debt retirement in the report year;

5. A summary of the residential and commercial development in the District for the report year;

6. A summary of all fees, charges and assessments imposed by the District as of January 1 of the report year;

7. Certification of the Board that no action, event or condition has occurred in the report year, or certification that such event has occurred but that an amendment to the Service Plan that allows such event has been approved by City Council; and

8. The name, business address and telephone number of each member of the Board and its chief administrative officer and general counsel, together with the date, place and time of the regular meetings of the Board.

In addition, the Districts shall submit to the City, by January 15 of each year, the District's budget for the then current calendar year.

VIII. DISTRICT INDEMNIFICATION OF THE CITY; DISSOLUTION OF THE DISTRICT

Upon an independent determination of the City Council and written notice to the Districts that the purposes for which the Districts were created have been accomplished, the Districts agree to file petitions in the District Court for and in Weld County, Colorado, for dissolution, pursuant to the applicable State statutes. In no event shall dissolution occur until the Districts have provided for the payment or discharge of all of their outstanding indebtedness and other financial obligations as required pursuant to State statutes.

There is attached hereto as **Exhibit G** the Project Developer's Indemnification Letter, which is submitted to the City by the Developer as part of this Service Plan. The District shall approve and execute the Indemnification Letter at its first Board meeting after its organizational election, in the same form as the Indemnification Letter set forth in **Exhibit G** and shall promptly deliver an executed original to the City.

IX. DISCLOSURES REQUIRED TO PURCHASERS OF PROPERTY WITHIN THE DISTRICT

The City wants purchasers of property within the District to be aware of the additional tax burden to be imposed. The City mandates early written and recorded notice of the total (overlapping) tax burden, including the Maximum Debt Mill Levy, the District Facility Fee and the Maximum Debt Mill Levy Imposition Term, as applicable. The City will review the type and timing of the disclosure, which the proponents of the Districts are proposing. The notice shall be recorded against all property within the Districts prior to the Districts' certification of the formation of the District to the Colorado Division of Local Government as required by Section 32-1-306, C.R.S.

In addition to the above notice and the requirements of Ordinance 13.50.090, the District shall annually provide a written disclosure to all land owners within the District that describes the tax levies, fees and costs that have been assessed to each property in the District as a result of implementation of the District's Financial Plan stated in Article VI or this Service Plan. A copy of such disclosure sent to each landowner shall also be forwarded to the City of Greeley to be included in its public records related to the District.

X. INTERGOVERNMENTAL AGREEMENT

The form of the intergovernmental agreement relating to the limitations imposed on the Districts' activities, is attached hereto as **Exhibit H**. The Districts shall approve and execute the Intergovernmental Agreement at their first Board meeting following their organizational election, in the same form as the Intergovernmental Agreement approved by the City Council, and shall promptly deliver an executed original to the City. Failure of the Districts to execute the Intergovernmental Agreement as required herein shall constitute a material modification. The City Council shall approve an intergovernmental agreement at the public hearing approving the Service Plan.

As limited by this Article X, the Districts may enter into an intergovernmental agreement regarding the functions and services to be provided by each District, and the mechanisms to be used by the Districts for the sharing of costs of Public Improvements. Such intergovernmental agreement and all amendments thereto, as well as all other intergovernmental agreements and amendments thereto proposed between or among the Districts regarding the subject matter of this Service Plan, shall be subject to review and comment by the city prior to their execution by the Districts. If entered into by the Districts, the Districts shall cause any intergovernmental agreements to be delivered to the City as soon as practicable upon formation of the Districts. The Districts shall also deliver promptly the Districts' execution fully executed and complete copies of all amendments to such intergovernmental agreement, and of all other intergovernmental agreements and amendments thereto between or among the Districts regarding the subject matter of this Service Plan.

No intergovernmental agreements other than the City Intergovernmental Agreement and the Districts' intergovernmental agreements are anticipated. The District(s) shall use all City provided infrastructure services, including but not limited to, water and sewer service, unless the City is unable or unwilling to provide such services. In the event the City is unable or unwilling

to provide such services, the, in that event, the District(s) may seek such infrastructure services from other providers. Except for such Intergovernmental Agreement with the City, any intergovernmental agreement proposed regarding the subject matter of this Service Plan shall be subject to review and comment by the City prior to its execution by a District.

XI. NON-COMPLIANCE WITH SERVICE PLAN

In the event it is determined that any District has undertaken any act or omission which violates the Service Plan or constitutes a material departure from the Service Plan collectively, “**Material Departure**”), the City may impose any of the sanctions set forth in the Municipal Code, including but not limited to affirmative injunctive relief to require the Districts to act in accordance with the provisions of this Service Plan. Except as it would relate to the sale or refinancing of bonds, the District hereby waives the provisions of Section 32-1-207(3)(b), C.R.S. and agrees it will not rely on such provisions as a bar to the enforcement by the City of any provisions of this Service Plan. The City will provide such District with written notice of any Material Departure from the Service Plan. The District shall have sixty (60) days to provide the City with written evidence that no Material Departure occurred, which evidence must be reasonably satisfactory to the City or to commence to cure such Material Departure. If the District is diligently pursuing the cure of such Material Departure, the City shall not take any action to enjoin the District. In the event the District fails to complete the cure or take any action to cure the Material Departure, the City may impose any sanctions allowed by municipal code or statute.

XII. CONCLUSION

It is submitted that this Service Plan for the Districts, as required by Section 32-1-203(2), C.R.S., and the Municipal Code, establishes that:

1. There is sufficient existing and projected need for organized service in the area to be serviced by the Districts;
2. The existing service in the area to be served by the Districts is inadequate for present and projected needs;
3. The Districts are capable of providing economical and sufficient service to the area within their proposed boundaries; and
4. The area to be included in the Districts does have, and will have, the financial ability to discharge the proposed indebtedness on a reasonable basis.
5. Adequate service is not, and will not be, available to the area through the City or County or other existing municipal or quasi-municipal corporations, including existing special districts, within a reasonable time and on a comparable basis.
6. The facility and service standards of the Districts are compatible with the facility and service standards of the City.
7. The proposal is in substantial compliance the City’s Comprehensive Plan.

8. The proposal is in compliance with any duly adopted City, regional or state long-range water quality management plan for the area.
9. The creation of the Districts is in the best interests of the area proposed to be served.
10. The creation of the Districts is in the best interests of the residents and future residents of the area proposed to be served.
11. The proposal is in substantial compliance with the Municipal Code.
12. The proposal will not foster urban development that is remote or incapable of being integrated with existing urban areas, and will not place a burden on the City or adjacent jurisdictions to provide urban services to residents of the Districts.

EXHIBIT A
Legal Descriptions

EXHIBIT B
Greeley Vicinity Map

EXHIBIT C-1
Initial District Boundary Map

EXHIBIT C-2
Inclusion Area Boundary Map

EXHIBIT C-3
Proof of Ownership and Consents

EXHIBIT D

Capital Plan

EXHIBIT E
Map Depicting Public Improvements

EXHIBIT F
Financial Plan

EXHIBIT G

Indemnification Letters

1. Developer's Letter

{date – on or after date of Service Plan approval}

City of Greeley
1000 10th Street
Greeley, CO 80631

RE: [] Metropolitan District

To the City Council:

This Indemnification Letter (the “**Letter**”) is delivered by the undersigned (the “**Developer**”) in connection with the review by the City of Greeley (the “**City**”) of the Service Plan, including all amendments heretofore or hereafter made thereto (the “**Service Plan**”) for the [] Metropolitan District (the “**District**”). Developer, for and on behalf of itself and its transferees, successors and assigns, represents, warrants, covenants and agrees to and for the benefit of the City as follows:

1. Developer hereby waives and releases any present or future claims it might have against the City or the City's elected or appointed officers, employees, agents, contractors or insurers (the “**Released Persons**”) in any manner related to or connected with the Service Plan or any action or omission with respect thereto. Developer further hereby agrees to indemnify and hold harmless the Released Persons from and against any and all liabilities resulting from any and all claims, demands, suits, actions or other proceedings of whatsoever kind or nature made or brought by any third party, including attorneys' fees and expenses and court costs, which directly or indirectly or purportedly arise out of or are in any manner related to or connected with any of the following: (a) the Service Plan or any document or instrument contained or referred to therein; or (b) the formation of the District; or (c) any actions or omissions of the Developer or the District, or their agents, in connection with the District, including, without limitation, any actions or omissions of the Developer or District, or their agents, in relation to any bonds or other financial obligations of the District or any offering documents or other disclosures made in connection therewith. Developer further agrees to investigate, handle, respond to and to provide defense for and defend against, or at the City's option to pay the attorneys' fees and expenses for counsel of the City's choice for any such liabilities, claims, demands, suits, actions or other proceedings.

2. Developer hereby consents to the Debt Instrument Disclosure Requirements as set forth Section VI.F of the Service Plan, acknowledges the City's right to modify the required disclosures, and waives and releases the City from any claims Developer might have based on or relating to the use of or any statements made or to be made in such disclosures (including any modifications thereto).

3. This Letter has been duly authorized and executed on behalf of Developer.

Very truly yours,

Developer

By: _____
Title: _____

2. District's Letter

{date – date of organizational meeting}

City of Greeley
1000 10th Street
Greeley, CO 80631

RE: [] Metropolitan District

To the City Council:

This Indemnification Letter (the “**Letter**”) is delivered by the [] Metropolitan District (the “**District**”) in order to comply with the Service Plan, including all amendments heretofore or hereafter made thereto (the “**Service Plan**”) for the District. The District, for and on behalf of itself and its transferees, successors and assigns, represents, warrants, covenants and agrees to and for the benefit of the City as follows:

1. The District hereby waives and releases any present or future claims it might have against the City or the City's elected or appointed officers, employees, agents, contractors or insurers (the “**Released Persons**”) in any manner related to or connected with the Service Plan or any action or omission with respect thereto. To the fullest extent permitted by law, the District hereby agrees to indemnify and hold harmless the Released Persons from and against any and all liabilities resulting from any and all claims, demands, suits, actions or other proceedings of whatsoever kind or nature made or brought by any third party, including attorneys' fees and expenses and court costs, which directly or indirectly or purportedly arise out of or are in any manner related to or connected with any of the following: (a) the Service Plan or any document or instrument contained or referred to therein; or (b) the formation of the District; or (c) any actions or omissions of the District, [] (the “**Developer**”), or their agents, in connection with the District, including, without limitation, any actions or omissions of the District or Developer, or their agents, in relation to any bonds or other financial obligations of the District or any offering documents or other disclosures made in connection therewith. The District further agrees to investigate, handle, respond to and to provide defense for and defend against, or at the City's option to pay the attorneys' fees and expenses for counsel of the City's choice for any such liabilities, claims, demands, suits, actions or other proceedings.

2. It is understood and agreed that neither the District nor the City waives or intends to waive the monetary limits (presently \$150,000 per person and \$600,000 per occurrence) or any other rights, immunities and protections provided by the Colorado Governmental Immunity Act, § 24 10 101, et seq., C.R.S., as from time to time amended, or otherwise available to the City, the District, its officers, or its employees.

3. The District hereby consents to the Debt Instrument Disclosure Requirements as set forth Section VI.F of the Service Plan, acknowledges the City's right to modify the required disclosures, and waives and releases the City from any claims the District might have based on or relating to the use of or any statements made or to be made in such disclosures (including any modifications thereto).

4. This Letter has been duly authorized and executed on behalf of the District.

Very truly yours,

[_____] Metropolitan District

By: _____
President

Attest:

Secretary

EXHIBIT H
Intergovernmental Agreement

**INTERGOVERNMENTAL AGREEMENT
BY AND BETWEEN
THE CITY OF GREELEY, COLORADO
AND
[] METROPOLITAN DISTRICT**

THIS **AGREEMENT** is made and entered into as of this [] day of [], [], by and between the **CITY OF GREELEY, COLORADO**, a home-rule municipal corporation of the State of Colorado (“**City**”), and [] **METROPOLITAN DISTRICT**, a quasi-municipal corporation and political subdivision of the State of Colorado (“**District**”). The City and the District are collectively referred to as the Parties.

RECITALS

WHEREAS, the District was organized to provide those services and to exercise powers as are more specifically set forth in the Districts’ Service Plan approved by the City on [], 20[] (“**Service Plans**”); and

WHEREAS, the Service Plans make reference to the execution of an intergovernmental agreement between the City and the District; and

WHEREAS, the City and the District have determined it to be in the best interests of their respective taxpayers, residents and property owners to enter into this Intergovernmental Agreement (“**Agreement**”).

NOW, THEREFORE, in consideration of the covenants and mutual agreements herein contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereto agree as follows:

COVENANTS AND AGREEMENTS

1. Service Plan. The District will not take any action, including, without limitation, the issuance of any obligations or the imposition of any tax, which would constitute a material departure from the terms of the Service Plan and a material modification thereof as set forth in §32-1-207(2), C.R.S. Actions of the District which constitute a material departure from the terms of the Service Plan and a material modification thereof as set forth in §32-1-207(2), C.R.S., shall be a default hereunder, and shall entitle the City to protect and enforce its rights hereunder by such suit, action, or special proceedings as the City shall deem appropriate, including, without limitation, an action for specific performance or damages. It is intended that the remedies hereof shall be in addition to any remedies the City may have or actions the City may bring under §32-1-207, C.R.S., or any other applicable statute. The District shall have sixty (60) days to provide the City with written evidence that no Material Departure occurred, which evidence must be reasonably satisfactory to the City or to commence to cure such Material Departure. If the District is diligently pursuing the cure of such Material Departure, the City shall not take any action to enjoin the District. In the event the District fails to complete the cure or take any action to cure the Material Departure, the City may impose any sanctions allowed by municipal code or statute. Nothing herein is intended to modify or prevent the use of the

provisions of §32-1-207(3)(b), C.R.S, however, the time limits of §32-1-207(3)(b) are expressly waived by the District.

2. Notices. All notices, demands, requests or other communications to be sent by one party to the other hereunder or required by law shall be in writing and shall be deemed to have been validly given or served by delivery of same in person to the address or by courier delivery, via United Parcel Service or other nationally recognized overnight air courier service, or by depositing same in the United States mail, postage prepaid, addressed as follows:

To the Districts: [] Metropolitan District
[]
[]
Attention: []
Phone: []
Fax: []

To the City: []
[]
[]
Attention: []
Phone: []
Fax: []

All notices, demands, requests or other communications shall be effective upon such personal delivery or one (1) business day after being deposited with United Parcel Service or other nationally recognized overnight air courier service or three (3) business days after deposit in the United States mail. By giving the other party hereto at least ten (10) days written notice thereof in accordance with the provisions hereof, each of the Parties shall have the right from time to time to change its address.

3. Entire Agreement of the Parties. This written Agreement constitutes the entire agreement between the Parties and supersedes all prior written or oral agreements, negotiations, or representations and understandings of the Parties with respect to the subject matter contained herein.

4. Amendment. This Agreement may be amended, modified, changed, or terminated in whole or in part only by a written agreement duly authorized and executed by the Parties hereto and without amendment to the Service Plan.

5. Assignment. No Party hereto shall assign any of its rights nor delegate any of its duties hereunder to any person or entity without having first obtained the prior written consent of all other Parties, which consent will not be unreasonably withheld. Any purported assignment or delegation in violation of the provisions hereof shall be void and ineffectual.

6. Default/Remedies. In the event of a breach or default of this Agreement by any Party, the non-defaulting Parties shall be entitled to exercise all remedies available at law or in equity, specifically including suits for specific performance and/or monetary damages. In

the event of any proceeding to enforce the terms, covenants or conditions hereof, the prevailing Party/Parties in such proceeding shall be entitled to obtain as part of its judgment or award its reasonable attorneys' fees.

7. Governing Law and Venue. This Agreement shall be governed and construed under the laws of the State of Colorado.

8. Inurement. Each of the terms, covenants and conditions hereof shall be binding upon and inure to the benefit of the Parties hereto and their respective successors and assigns.

9. Integration. This Agreement constitutes the entire agreement between the Parties with respect to the matters addressed herein. All prior discussions and negotiations regarding the subject matter hereof are merged herein.

10. Parties Interested Herein. Nothing expressed or implied in this Agreement is intended or shall be construed to confer upon, or to give to, any person other than the Districts and the City any right, remedy, or claim under or by reason of this Agreement or any covenants, terms, conditions, or provisions thereof, and all the covenants, terms, conditions, and provisions in this Agreement by and on behalf of the Districts and the City shall be for the sole and exclusive benefit of the Districts and the City.

11. Severability. If any covenant, term, condition, or provision under this Agreement shall, for any reason, be held to be invalid or unenforceable, the invalidity or unenforceability of such covenant, term, condition, or provision shall not affect any other provision contained herein, the intention being that such provisions are severable.

12. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall constitute an original and all of which shall constitute one and the same document.

13. Paragraph Headings. Paragraph headings are inserted for convenience of reference only.

14. Defined Terms. Capitalized terms used herein and not otherwise defined shall have the meanings ascribed to them in the Service Plan.

IN WITNESS WHEREOF, the Districts and the City have caused this Agreement to be duly executed to be effective as of the day first above written.

**[_____] METROPOLITAN
DISTRICT**

By: _____
President

Attest:

Secretary

CITY OF GREELEY, COLORADO

By: _____

Attest:

By: _____
Its: _____

APPROVED AS TO FORM:

CITY OF GREELEY, COLORADO**RESOLUTION NO. ____, 2021****A RESOLUTION APPROVING AN INTERGOVERNMENTAL AGREEMENT BETWEEN THE CITY OF GREELEY AND POUDE HEIGHTS METROPOLITAN DISTRICT NO. 1, POUDE HEIGHTS METROPOLITAN DISTRICT NO. 2, POUDE HEIGHTS METROPOLITAN DISTRICT NO. 3, POUDE HEIGHTS METROPOLITAN DISTRICT NO. 4, POUDE HEIGHTS METROPOLITAN DISTRICT NO. 5, REGARDING THE SERVICE PLAN FOR THE DISTRICT**

WHEREAS, the Districts were organized to provide those services and to exercise powers as are more specifically set forth in the Districts' Service Plan approved by the City on September 7, 2021 ("Service Plan"); and

WHEREAS, the Service Plan makes reference to the execution of an intergovernmental agreement between the City and the Districts, as required by the Greeley City Code; and

WHEREAS, the City and the Districts have determined it to be in the best interests of their respective taxpayers, residents and property owners to enter into this Intergovernmental Agreement ("Agreement").

NOW THEREFORE, BE IT RESOLVED BY THE GREELEY CITY COUNCIL OF THE CITY OF GREELEY, COLORADO.

1. The Agreement is hereby approved and accepted.
2. Nothing contained herein limits the City's powers with respect to the Districts, the property within the Districts, or the improvements to be constructed by the Districts.
3. This Resolution shall become effective immediately upon its passage as provided by the Greeley City Charter.

PASSED, AND ADOPTED, SIGNED AND APPROVED this ____ day of _____, 2021.

ATTEST:

THE CITY OF GREELEY, COLORADO

City Clerk

By: _____
Mayor

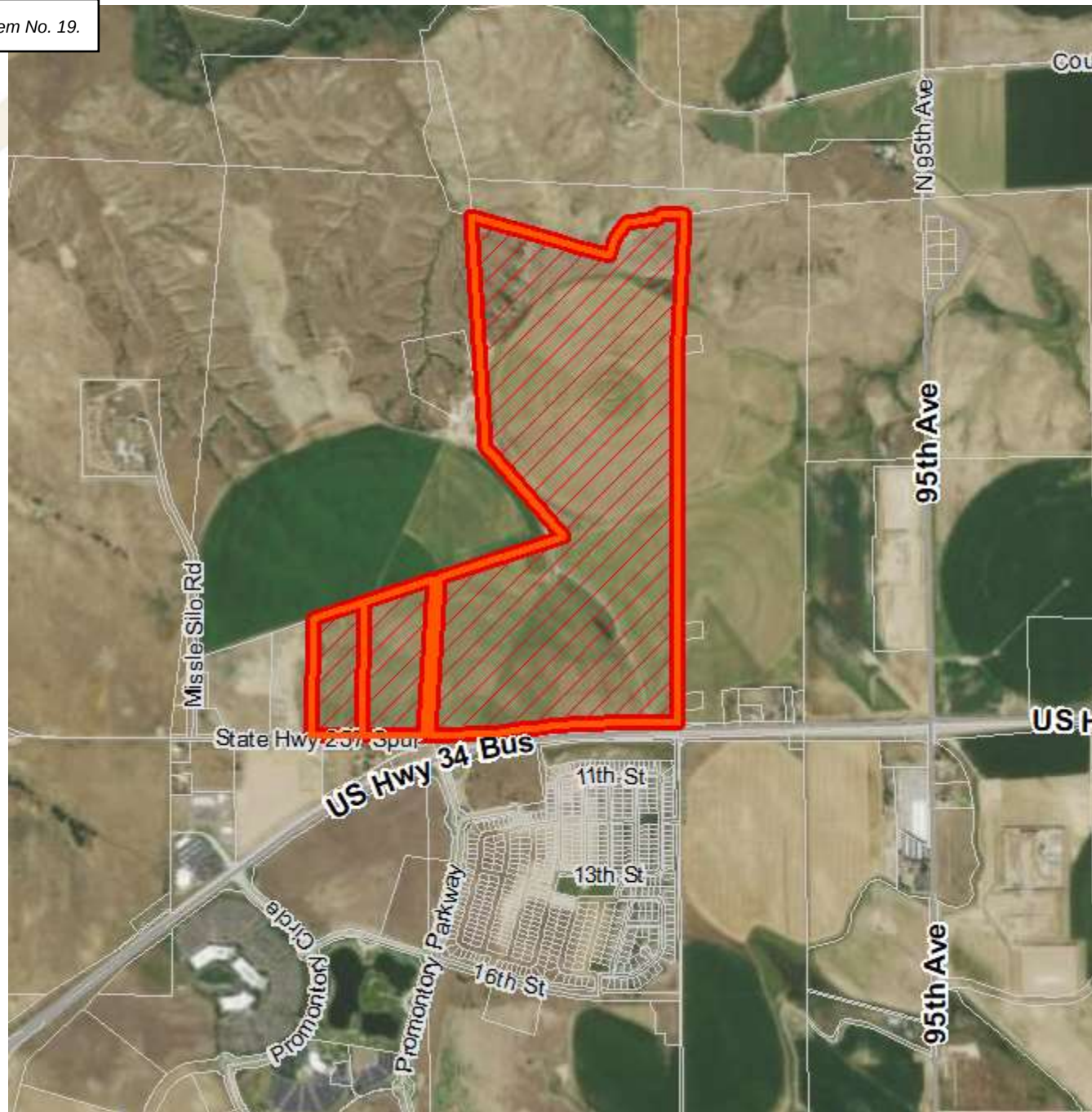
Poudre Heights Metropolitan District Nos. 1-5 (MD2021-0001)

City Council
September 7, 2021
Brittany Hathaway, Planner III

Request

Approval of a Metro District Service Plan

- **Create a Special District (Title 32)**
 - **Poudre Heights Metropolitan Districts Nos. 1-5 (292.652 acres)**
- **Review plan specifics for the Districts**
 - **Plan includes powers to finance, construct, operate and maintain public infrastructure, recreation, and other statutorily authorized improvements and powers**
 - **Debt issuance and limits**
 - **Mill levy**
 - **Revenue sources**
- **Development Plan (Preliminary PUD) is currently under review**



Vicinity

Why a Metro District?

- **Services can be provided to growing areas (often underserved) without impacting the budget or reserves of the City**
- **Provides services and infrastructure to a specific area.**
 - **Residents that directly benefit repay the debt**
- **Rapid growth with limited resources**
 - **Number of households in 2005: 31,000**
 - **Household projection for 2035: 64,000**
- **Provides financing up front for infrastructure**

Formation of a Metro District

- **The formation of a Metro District starts with a Service Plan**
- **Service plan must be approved by City Council in a public hearing**
- **The District Court reviews for legal sufficiency and will notice and hold another public hearing**
- **If the District Court finds the plan in compliance, a vote is held amongst those within the proposed boundaries**

Proposal

- **Capital Plan**

- **Streets, storm water facilities, water and sewer lines, parks, trails, and other services such as community amenities**
- **Supports the development of nearly 293 acres of residential, commercial, open space and park uses.**

- **Revenue Sources**

- **Mill levy up to 60 mills**
- **District facility fees (provides funding upfront)**
 - **SF Detached \$5,000/unit**
 - **SF Attached \$2,500/unit**
 - **Commercial \$2.00/SF**

Staff Review

- **Reviewed by Planning, Engineering, Finance, and City Attorney's Office**
 - **3 review cycles**
 - **Reviewed financial and capital plan**
 - **Cost projections and build-out assumptions**
- **Applicant used the 2018 adopted Model Service Plan**
- **City determined Service Plan is consistent with the City's long range plan and desire to promote growth**

Staff Review

- **Restrictions**
 - **No powers of eminent domain**
 - **No debt issuance without an approved development plan**
 - **Total debt limit of \$110M**
 - **Mill levy limit of 60 mills**
 - **No material change to the Service Plan without new review and approval by City Council**
 - **Annual report must be provided to City**
 - **Does not obligate Council's approval of a Development Plan**



Proposed Preliminary Master Plan

Notice & Feedback

- **City mailed notices to all special districts located within the service area boundary on August 6th**
- **Applicant sent notices to all special districts located within 3 miles of the service area on August 6th**
- **No comments received to date**

Staff Recommendation

- **Staff recommends APPROVAL**
 - *Districts are not reviewed by the Planning Commission.*
- **Recommended Motions**
 - *Based on the application received and the preceding analysis, the City Council finds that the request for the approval of a Colorado Revised Statutes Title 32 Special District Service Plan for Poudre Heights Metropolitan Districts Nos. 1-5 is in conformance with the City of Greeley's Municipal Code Chapter 9, Section 2-528; and therefore, approves the request.*
 - *A motion to adopt the Resolution approving the Intergovernmental Agreement between the City of Greeley and Poudre Heights Metropolitan District Nos. 1-5, regarding the Service Plan for the Districts.*

POUDRE HEIGHTS

METROPOLITAN DISTRICTS NO. 1-5

APPLICANT PRESENTATION

September 7, 2021

THE POUDRE HEIGHTS TEAM



Brian Smerud
Owner/Applicant



Todd Johnson, P.E.
Owners Representative



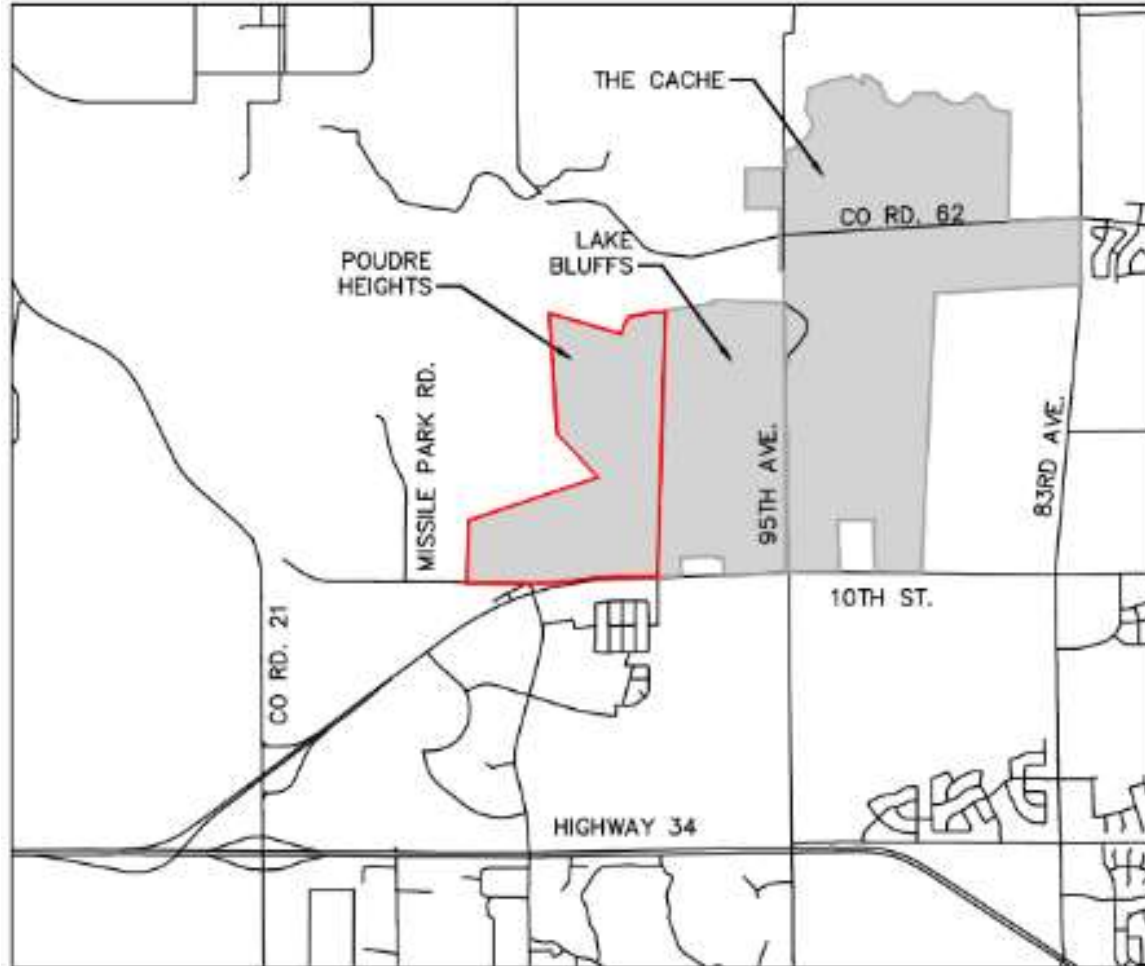
Jennifer Ivey
Metro District Counsel



Zachary Bishop
Financial Analysis



PROJECT LOCATION



PROJECT OVERVIEW

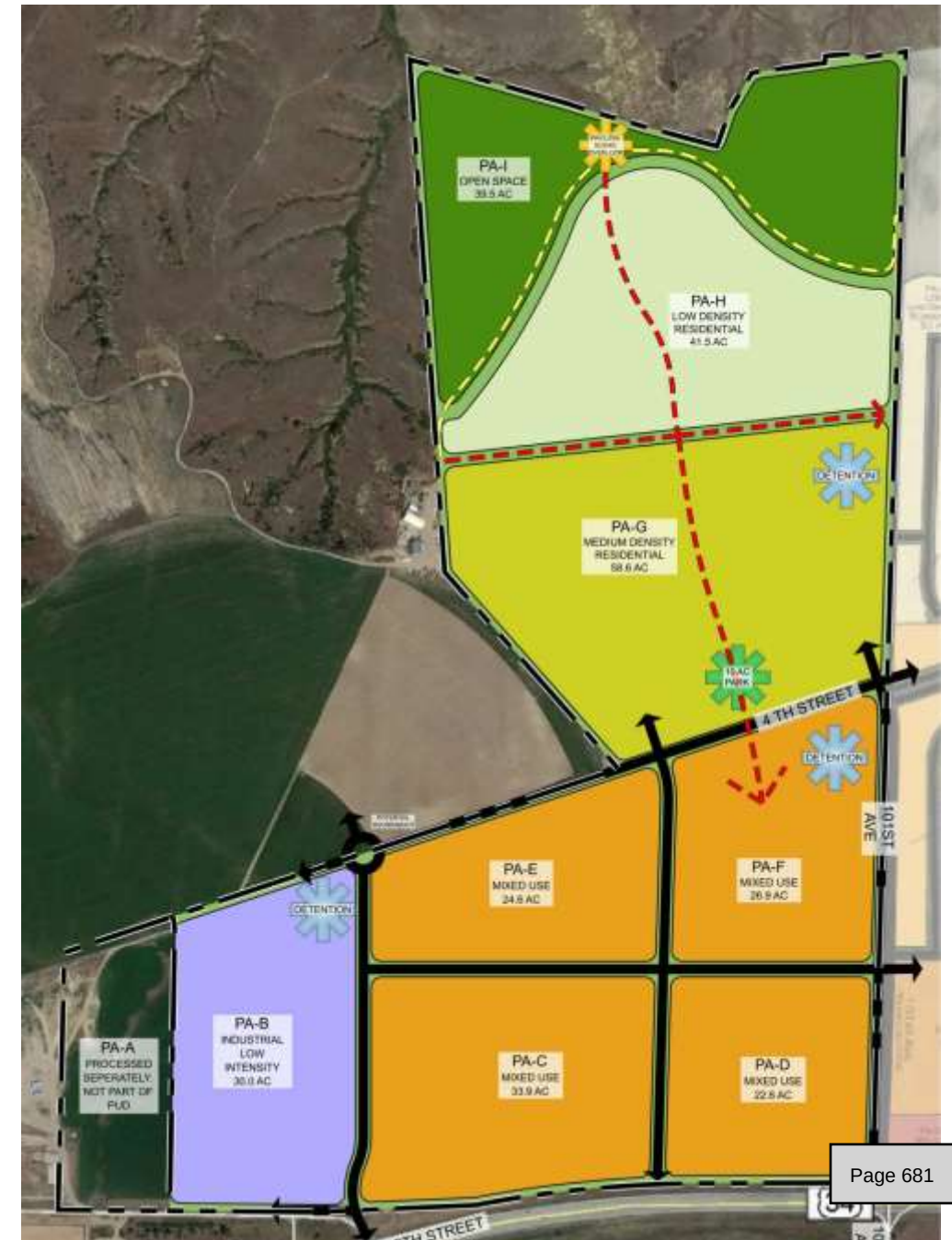
292 Acre Mixed Use Master Planned Community

Metropolitan District Application

- Before you tonight

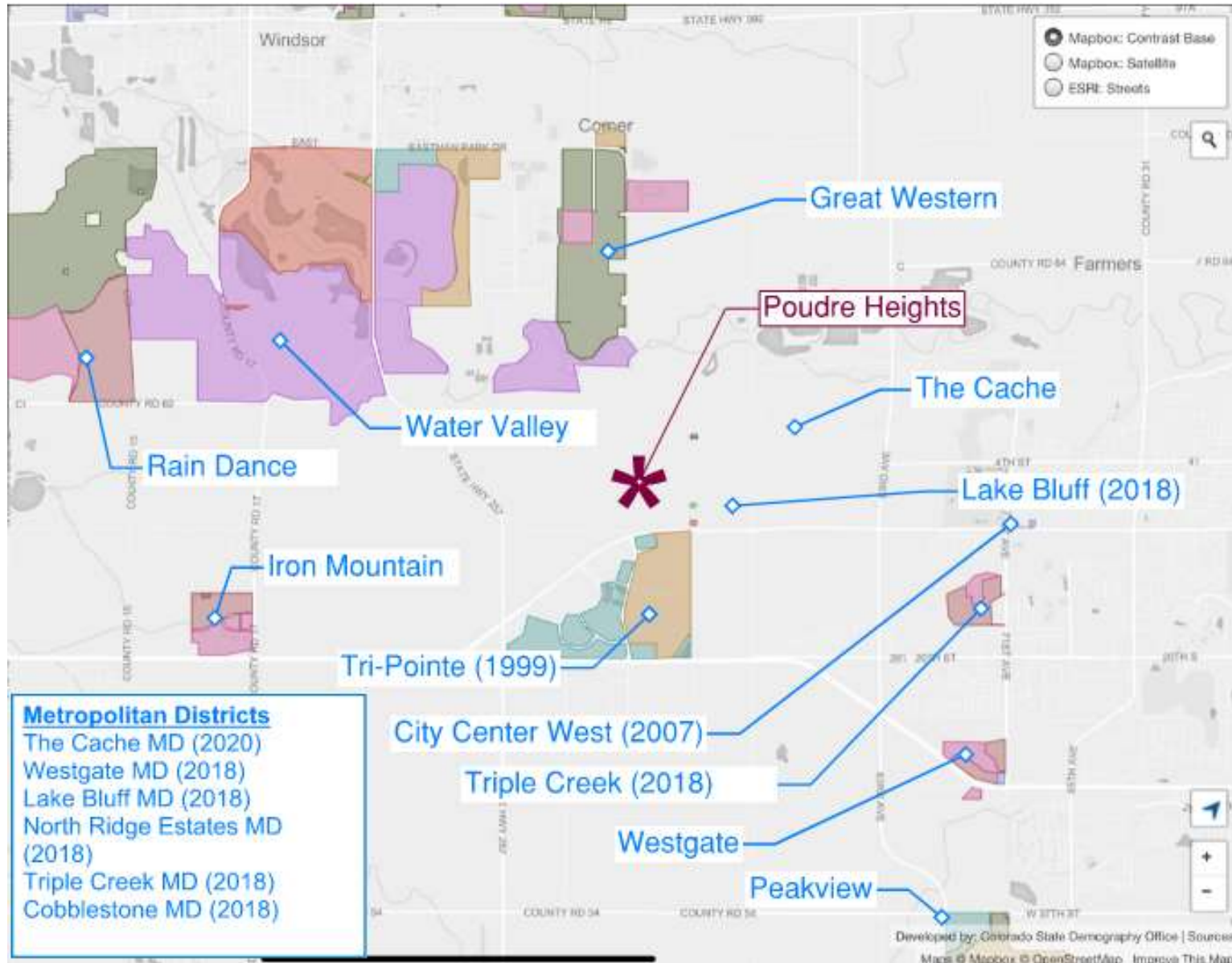
Preliminary PUD

- Currently In Second Review (Concept Plan Right)
- 292 Acres
- Mixed Use (Approximate Max Density):
 - Commercial/Industrial ~ 1,000,000 SF
 - Residential ~ 1,200 Units/2,200 Residents
- Open Space/Parks/Bluffs/Trails
- Broad Range of all uses



-
- X -Projected Start Year**
- | Planning Area | Land Use | Acreage | Projected Start Year |
|---------------|---------------------------------------|---------|----------------------|
| PA-A | Processed Separately, Not Part of PUD | - | 2022 |
| PA-B | Industrial Low Intensity | 30.0 AC | 2023 |
| PA-C | Mixed Use | 33.9 AC | 2024 |
| PA-D | Mixed Use | 22.8 AC | 2024 |
| PA-E | Mixed Use | 24.8 AC | 2026 |
| PA-F | Mixed Use | 25.9 AC | 2023 |
| PA-G | Medium Density Residential | 38.6 AC | 2022 |
| PA-H | Low Density Residential | 41.5 AC | 2025 |
| PA-I | Open Space | 39.5 AC | - |
- Other features on the map include: 101st Ave, 10th Street, 4th Street, 101st Ave, 10th Street, 257, (34), and a green star indicating the City Center.

ADJACENT METROPOLITAN DISTRICTS



ADJACENT METROPOLITAN DISTRICTS

District	Formation Year	Uses			Max Mill Levy	Cap	Max Facility Fees	Max Interest Rate	Max UW Discount	Max Imposition Term	Other notes
		Comm.	Indust.	Resid.							
Poudre Heights	Current Application	375,705	606,355	1,189	60	\$110M	\$5,000 SFD, \$2,500 MF/SFA, \$2.00/SF Commercial	18%	5%	40 years for Residential	Max 10 mills for operations
Adjacent											
Lake Bluff	2018	887,099	-	1,187	60	\$150M	\$5,000 SFD, \$2,500 MF/SFA, \$2.00/SF Commercial	18%	5%	40 years for Residential	Max 10 mills for operations
The Cache	2020	30,000	-	3,700	70	\$200M	\$5,000 SFD, \$2,500 MF/SFA, \$2.00/SF Commercial	18%	5%	40 years for Residential	Max 10 mills for operations
Tri-Pointe (Promontory)	1999				35	\$28M		15%	5%		20 Year max maturity
Other Greeley Districts											
City Center West	2007				50	\$20M	\$10,000 SFD, \$5,000 MF/SFA, \$2.00/SF Commercial	12%	4%	40 years	Convertible to Unlimited; Developer Advance Rates: Never >2% above Senior Debt rate and never >8%
Westgate	2018				65	\$14.5M	\$2,500 Residential, \$1.00/SF Commercial	18%	5%	40 years for Residential	
Northridge Estates	2018				60	\$11.5M	\$2,500 SFD	18%	5%	40 years for Residential	
Triple Creek	2018				60	\$23M	\$2,500 SFD	18%	5%	40 years for Residential	
Cobblestone	2018				60	\$46M	\$10,000 SFD, \$5,000 MF/SFA, \$2.00/SF Commercial	18%	5%	40 years for Residential	

METROPOLITAN DISTRICTS

General Information

Colorado Title 32 Special Districts

- Created to serve a public use; and
- Promote the health, safety, prosperity, security, and general welfare of the inhabitants of such districts

Consistent with “user pay”

- Districts allow ability to fund certain Public Improvements through bond issuance
- Future owners pay for the public improvements through property tax payment rather than initial home price
- Access to longer term funding, and lower interest rates

District formation and funding is a common practice

- There are over 2,500 Metropolitan Districts in Colorado



METROPOLITAN DISTRICTS

Benefits of Metropolitan Districts

Development “Pays its way”

Provides opportunities for “High Quality” Development

Reduces the City’s Infrastructure Investments

Competitive “Playing Field” for adjacent developments

Provides Governmental entity for a more “Structured” oversight of the development

Provides lower home prices a broader range for affordability

POUDRE HEIGHTS METROPOLITAN DISTRICTS 1-5

Responsibilities – Fund Public Improvements

Streets

- Sidewalks, curbs, gutters, paving, street lighting, landscaping, etc

Water

- Potable and Non-potable water lines, fire hydrants, facilities, etc

Storm and Sanitary Sewer

- Storm drainage conveyance elements (pipes, channels, etc,)
- Sanitary Sewer pipelines, manholes, facilities, etc.

Amenities, Parks and Recreation

- Parks and Recreational facilities, open space corridors, multimodal trails/paths, landscaping, art, playgrounds, shelters, lighting, etc.



POUDRE HEIGHTS METROPOLITAN DISTRICTS 1-5

Mill Levy

Imposition Amounts (Competitive Market Position)

- Maximum Aggregate (Debt/Operations) – 60 Mills (Subject to Gallagher)

Debt Limitations

- \$110,000,000 Total Debt (Combined all Districts)
- Required review by City

Disclosure Requirements

- Annual Report to City
- Disclosure Statement recorded against all property
- District IGA's submitted to City in Advance of Execution
- SB 21-262 Disclosure



POUDRE HEIGHTS METROPOLITAN DISTRICTS 1-5

Responsibilities – Maintenance

Matrix of Ownership and Maintenance

Item	District	HOA*	Greeley
Internal Pocket Parks	O	M	
Neighborhood and Community Parks (Until City Acceptance)	O	M	
Recreation Amenities/Facility	O	M	
Roadway Landscape and Tracts	O	M	
Open Space			OM
Detention Ponds	O	M	
Private Storm Drainage	O	M	
Non Potable Infrastructure			OM
Public Roadways			OM
Public Water, Non Potable Water, Sanitary Sewer, Storm Drainage			OM
Median Landscaping in Arterial Roadways			OM
Traffic Signals, Lighting, Signage			OM
O = Ownership M = Maintenance OM = Ownership and Maintenance * If HOA is not incorporated then the District will take the responsibilities shown.			

CRITERIA SPECIAL DISTRICT SERVICE PLANS

Special District Act (Sections 32-1-201 *et seq.*, C.R.S.)

- Proposed Services
- Boundary Map
- Population and assessed valuation projection
- Facilities to be constructed
- Cost Projections
- Proposed IGA's

City of Greeley Model Service Plan and Regulations

- Chapter 9 – Metropolitan Districts

Poudre Heights Metropolitan Districts 1-5 service plan meets this criteria



POUDRE HEIGHTS METROPOLITAN DISTRICTS 1-5

Meets the Additional Criteria Set Forth In Ch. 9, Section 2.528

- a) There is sufficient existing and projected need for organized service in the area to be served by the proposed special district.
- b) The existing service in the area to be served by the proposed special district is inadequate for present and projected needs.
- c) The proposed special district is capable of providing economical and sufficient service to the area within its proposed boundaries.
- d) The area to be included in the proposed special district has, or will have, the financial ability to discharge the proposed indebtedness on a reasonable basis.
- e) Adequate service is not, or will not be, available to the area through the city or other existing quasi-municipal corporations, including existing districts, within a reasonable time and on a comparable basis;
- f) The facility and service standards of the proposed districts are compatible with the facility and service standards of the city;
- g) The proposal is in substantial compliance with the city's comprehensive plan;
- h) The proposal is in substantial compliance with the county, regional or state long-range water quality management plans and wastewater plans for the area;
- i) The creation of the districts will be in the best interests of the area proposed to be served;
- j) The creation of the districts will be in the best interests of the residents or future residents of the area proposed to be served;
- k) The proposed service plan is in substantial compliance with this chapter; and
- l) The creation of the districts will foster urban development that is remote from, or incapable of being integrated with, existing urban areas, or place a burden on the city or adjacent jurisdictions to provide urban services to residents of the proposed districts.

POUDRE HEIGHTS METROPOLITAN DISTRICTS 1-5

Criterion 1 – Projected Need

“There is sufficient existing and projected need for organized service in the area to be serviced by the proposed special district”

- Demand for housing and commercial uses in the area are high
- Construction of necessary public improvements is needed to sufficiently serve future residents
- Maintenance of public improvements to include to not limited to:
 - Parks/Open Spaces
 - Recreational Facilities
 - Multipurpose Trail Corridors
 - Etc.

POUDRE HEIGHTS METROPOLITAN DISTRICTS 1-5

Criterion 2 – Inadequate Existing Service

“The existing service in the area to be served by the proposed special district is inadequate for present and projected needs.”

- Currently no other governmental or district entities located in the vicinity that consider it desirable, feasible or practical to undertake the planning, design, acquisition, construction, and financing of the improvements needed for the project.
- District will provide funding for the required improvements and a funding mechanism for the perpetual maintenance needs and enforcement responsibilities of the project.

POUDRE HEIGHTS METROPOLITAN DISTRICTS 1-5

Criterion 3 – Economic and Sufficient Service

“The proposed special district is capable of providing economical and sufficient service to the area within its proposed boundaries.”

- Projected future costs are in line with comparable districts in general area
- Projected individual property tax is comparable
- Tax deductible for some families
- Projected reduction of end home price is between \$30-60,000
- District will provide adequate and perpetual maintenance of parks, recreational facilities, multipurpose trails and corridors, etc and protective covenants

POUDRE HEIGHTS METROPOLITAN DISTRICTS 1-5

Criterion 4 – Financial Ability

“The area to be included in the proposed special district has, or will have, the financial ability to discharge the proposed indebtedness on a reasonable basis.”

- The Financial Plan – Exhibit F to Service Plan demonstrates this
- The Financing Plan is further subject to limitations of the bond industry, limitations imposed by bond counsel (tax exempt bonds must demonstrate feasibility at issuance), and limitations by the Service Plan and State Statutes.

POUDRE HEIGHTS METROPOLITAN DISTRICTS 1-5

Time Frame and Next Steps

- Respectively request that the City Council approve the Service Plan without modification tonight.
- Submit to District Court to Call Election
- Certification for the Ballot
- Formation Election – November 2, 2021
- District Court Enters Order Organizing The Poudre Heights Metropolitan Districts No. 1-5

QUESTIONS?

Council Agenda Summary

September 7, 2021

Key Staff Contact: Sean Chambers, Water & Sewer Director, 970-350-9815

Title:

Public hearing and final reading of an ordinance of appreciation and appointment of Mr. Robert A. Ruyle as a member emeritus of the water and sewer board.

Summary:

Mr. Ruyle's extensive contributions of time, judgement, wisdom, and insight, over the last 46 years, have been of great value to the City, to its Water & Sewer Board and the Greeley Community. His service, expertise and generosity have extended into many other areas in community and have been equally valuable. Mr. Ruyle institutional knowledge and his wisdom can continue to be of benefit to the citizens of Greeley and their Water & Sewer Board through an honorary appointment to the Board as a non-voting Emeritus Board Member. The Water & Sewer Board has recognized the ongoing value that Mr. Ruyle provides and have acted on a resolution of recognition recommending that the City Council adopt an ordinance appointing Robert A. Ruyle as a member emeritus of the Water and Sewer Board.

Fiscal Impact:

Does this item create a fiscal impact on the City of Greeley?	No
If yes, what is the initial, or, onetime impact?	
What is the annual impact?	
What fund of the City will provide Funding?	
What is the source of revenue within the fund?	N/A
Is there grant funding for this item?	N/A
If yes, does this grant require a match?	N/A
Is this grant onetime or ongoing?	N/A
Additional Comments:	

Legal Issues:

Consideration of this matter is a legislative process which includes the following public hearing steps:

- 1) City staff presentation (if requested)
- 2) Council questions of staff
- 3) Public input (hearing opened, testimony - up to three minutes per person, hearing closed)
- 4) Council discussion
- 5) Council decision

Other Issues and Considerations:

The appointment is to an emeritus non-voting position.

Strategic Work Program Item or Applicable Council Priority and Goal:

Infrastructure & Growth: Establish the capital and human infrastructure to support and maintain a safe, competitive, appealing and successful community.

Decision Options:

- 1) Adopt the ordinance as presented; or
- 2) Amend the ordinance and adopt as amended; or
- 3) Deny the ordinance; or
- 4) Continue consideration of the ordinance to a date certain.

Council's Recommended Action:

A motion to adopt the ordinance and publish with reference to title only.

Attachments:

Power point presentation

July 2021 Water and Sewer Board Resolution of Appreciation to Robert A. Ruyle for years of service to the Water & Sewer Department, Water & Sewer Board, and the Citizens of the City of Greeley.

**CITY OF GREELEY, COLORADO
ACTING BY AND THROUGH ITS WATER AND SEWER BOARD**

RESOLUTION 5, 2021

**A RESOLUTION OF APPRECIATION TO ROBERT A. RUYLE FOR YEARS OF SERVICE
TO THE WATER AND SEWER DEPARTMENT, WATER AND SEWER BOARD, AND THE CITIZENS OF
THE CITY OF GREELEY**

WHEREAS, Mr. Robert A. Ruyle has served on the Water and Sewer Board since January 1975; during the course of his service, the city's population has grown from 39,000 residents in 1975 to approximately 111,000 residents today; and

WHEREAS, Mr. Ruyle regularly provided guidance and expertise at monthly Board meetings contributing to numerous strategic water and sewer decisions in the areas of water rights and supplies, water storage, water treatment, and transmission, master planning efforts, non-potable water systems and water conservation, sewer collection and wastewater treatment, natural disasters, and system performance awards; and

WHEREAS, Mr. Ruyle has demonstrated an unwavering passion for promoting and protecting the city's water utility assets and the role and responsibilities of the Water and Sewer Board under the City's charter; and

WHEREAS, under Mr. Ruyle's tenure the Greeley Water System has grown to encompass four river basins, two water treatment plants, six mountain water storage reservoirs, 155 miles of transmission pipelines, 470 miles of distribution mains, and 75 million gallons of treated water storage. It is a modern, robust, and redundant system that is looked up to by the Colorado water community. The Water Pollution Control Facility is a state of the art plant that meets or exceeds all discharge requirements; and

WHEREAS, during Mr. Ruyle's tenure Greeley's water rights portfolio has continued to expand and to be protected from outside challenges; significant additions have included the Windy Gap Project, the 1990 GLIC and CBT water purchase, a 1/6th interest in the Laramie Poudre Tunnel, acquisition of shares in the Water Supply and Storage Company, the New Cache Irrigation Company, and the Larimer and Weld Irrigation Company, the Leprino Produced Water Decree and the Terry Ranch Aquifer Storage and Recovery Project. Protection of Greeley's water rights included the Federal Reserved Water Rights case, the resolution of the U.S. Forest Service By-Pass Flow claim and the establishment of the Joint Operations Plan on the Poudre River, the Wild and Scenic Designation on the Poudre River, and the creation on the Cache la Poudre Natural Heritage Area; and

WHEREAS, in the Policy Area the establishment of the Industrial Water Bank and the transition from raw water dedication to cash-in-lieu to meet water dedication requirements are notable. During the term of Mr. Ruyle's service, a number of data driven policy refinements have occurred that refine the yield per share of dedicated water; and development code policy updates to raw water dedication requirements for single family residential development, for commercial and multifamily development,

and to the policy that allows development to buy water from the city in lieu of dedication, known as the cash-in-lieu of raw water dedication policy; and

WHEREAS, during Mr. Ruyle's tenure Greeley's raw water storage capacity was upgraded and added to by, the Seaman Reservoir Spillway Replacement, the rehabilitation of the High Mountain Reservoirs, the multi-year permitting effort to enlarge Seaman Reservoir, the construction of the Poudre Ponds for non-portable storage, the development of the Taft Hill Gravel Pits, the aquifer storage associated with the Terry Ranch project, and the final approval for the Construction of the Chimney Hollow Reservoir as part of the Windy Gap Firing Project; and

WHEREAS, during Mr. Ruyle's tenure there were major additions to the Water Treatment, Transmission, Distribution, and Treated Water Storage capital infrastructure, these additions included, the 15 million gallon Gold Hill Reservoir and a second 5 million gallon tank, the Pleasant Valley Pipeline, expansion of the Bellvue plant in the 1990's, thereafter investing in more than \$75 million from 2017-2021, expansions and updates to the Boyd Lake Plant, the Zone 4 Pressure Zone to serve the Promontory development, a new 60 inch transmission main from Bellvue to Gold Hill, a new 20 MGD Treatment Train at Bellvue; and

WHEREAS, during Mr. Ruyle's tenure there was significant long range planning happening including the 2003 Water Master Plan, 2004 Non-Potable Master Plan, the 2019 Wastewater Master Plan, the 2021 Wastewater Collection Plan, Water Distribution Plan and the Updated Non-Potable Plan, initiating an integrated water resource plan; and

WHEREAS, during Mr. Ruyle's tenure the Water Department and the City invested in the utilization of Non-Potable irrigation systems for the Parks, Golf Courses, Schools, and other large turf areas, along with the adoption of increased use of Non-Potable water was a major effort in water conservation including the adoption of a State of Colorado approved Water Conservation Plan for the City, the creation and implementation of a City wide Residential Water Budget program, the start of the conversion of all water meters to Smart Water Meters, and a turf replacement program called Life After Lawn; and

WHEREAS, during Mr. Ruyle's tenure the Wastewater Treatment Plant performance issue were addressed and corrected, the Sheep's Draw Trunk Sewer was constructed to serve West Greeley, the 1984 -1985 expansion of the Wastewater Plant, the 1994 expansion of the Wastewater Plant, the 2021 Nutrient Removal Project, and a multiyear effort to rehabilitate and epoxy line the sewer collection system in the eastern part of Greeley; and

WHEREAS, during Mr. Ruyle's tenure there were also several Natural Disasters that the Board and Department responded to, these being the Big Thompson Flood of 1976, the 2002-2003 Drought, the High Park and Hewlett Gulch wildfires in the Poudre watershed, the Flood of 2013, and the record size Cameron Peak Fire and the East Troublesome Fires of 2020 which impact all four of Greeley's watersheds; and

WHEREAS, during Mr. Ruyle's tenure Greeley's Water Treatment and Reclamation Facility received numerous awards from the Environmental Protection Agency for Excellence in Waste Water Treatment. In 2017 Greeley's water operations won American Water Works award for Best Tasting Water in the United States by the American Water Works Association at their annual meeting; and

WHEREAS, Mr. Ruyle generous contributions of time, judgement, wisdom, and insight, over the last 46 years, have been of incalculable value to the City, to the Board and the Water and Sewer Department. His service and generosity has also extended into many other areas in community and have been equally valuable. Mr. Ruyle is one of those rare individuals who truly have made difference in the life of their community. He will be missed.

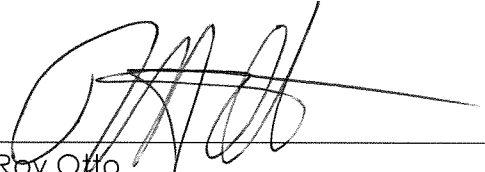
NOW THEREFORE, BE IT RESOLVED BY THE WATER AND SEWER BOARD OF GREELEY, COLORADO, AS FOLLOWS.

Section 1. The Water and Sewer Board hereby acknowledges, and wishes to express its sincere gratitude for, the dedication and contributions of Robert A. Ruyle to the Water and Sewer Department, Water and Sewer Board, and the citizens of the City of Greeley.

Section 2. The Water and Sewer Board hereby recommends that the City Council adopt an ordinance appointing Robert A. Ruyle as a member emeritus of the Water and Sewer Board.

PASSED AND ADOPTED, SIGNED AND APPROVED THIS 21 DAY OF JULY 2021.

ATTEST



Roy Otto
Secretary, Water and Sewer Board

CITY OF GREELEY
WATER AND SEWER BOARD



Harold Evans
Chairman, Water and Sewer Board

**CITY OF GREELEY, COLORADO
ORDINANCE ___, 2021**

**AN ORDINANCE OF APPRECIATION TO ROBERT A. RUYLE FOR YEARS OF SERVICE
AND APPOINTMENT AS A MEMBER EMERITUS OF THE WATER AND SEWER BOARD**

WHEREAS, Mr. Robert A. Ruyle has served on the Water and Sewer Board since January 1975; during the course of his service, the city's population has grown from 39,000 residents in 1975 to approximately 111,000 residents today; and

WHEREAS, Mr. Ruyle regularly provided guidance and expertise at monthly Board meetings contributing to numerous strategic water and sewer decisions in the areas of water rights and supplies, water storage, water treatment, and transmission, master planning efforts, non-potable water systems and water conservation, sewer collection and wastewater treatment, natural disasters, and system performance awards; and

WHEREAS, Mr. Ruyle has demonstrated an unwavering passion for promoting and protecting the city's water utility assets and the role and responsibilities of the Water and Sewer Board under the City's charter; and

WHEREAS, under Mr. Ruyle's tenure the Greeley Water System has grown to encompass four river basins, two water treatment plants, six mountain water storage reservoirs, 155 miles of transmission pipelines, 470 miles of distribution mains, and 75 million gallons of treated water storage. It is a modern, robust, and redundant system that is looked up to by the Colorado water community. The Water Pollution Control Facility is a state of the art plant that meets or exceeds all discharge requirements; and

WHEREAS, during Mr. Ruyle's tenure Greeley's water rights portfolio has continued to expand and to be protected from outside challenges; significant additions have included the Windy Gap Project, the 1990 GLIC and CBT water purchase, a 1/6th interest in the Laramie Poudre Tunnel, acquisition of shares in the Water Supply and Storage Company, the New Cache Irrigation Company, and the Larimer and Weld Irrigation Company, the Leprino Produced Water Decree and the Terry Ranch Aquifer Storage and Recovery Project. Protection of Greeley's water rights included the Federal Reserved Water Rights case, the resolution of the U.S. Forest Service By-Pass Flow claim and the establishment of the Joint Operations Plan on the Poudre River, the Wild and Scenic Designation on the Poudre River, and the creation on the Cache la Poudre Natural Heritage Area; and

WHEREAS, in the Policy Area the establishment of the Industrial Water Bank and the transition from raw water dedication to cash-in-lieu to meet water dedication requirements are notable. During the term of Mr. Ruyle's service, a number of data driven policy refinements have occurred that refine the yield per share of dedicated water; and development code policy updates to raw water dedication requirements for single family residential development, for commercial and multifamily development, and to the policy that allows development to buy water from the city in lieu of dedication, known as the cash-in-lieu of raw water dedication policy; and

WHEREAS, during Mr. Ruyle's tenure Greeley's raw water storage capacity was upgraded and added to by, the Seaman Reservoir Spillway Replacement, the rehabilitation of the High Mountain Reservoirs, the multi-year permitting effort to enlarge Seaman Reservoir, the construction of the Poudre Ponds for non-portable storage, the development of the Taft Hill Gravel Pits, the aquifer storage associated with the Terry Ranch project, and the final approval for the Construction of the Chimney Hollow Reservoir as part of the Windy Gap Firming Project; and

WHEREAS, during Mr. Ruyle's tenure there were major additions to the Water Treatment, Transmission, Distribution, and Treated Water Storage capital infrastructure, these additions included, the 15 million gallon Gold Hill Reservoir and a second 5 million gallon tank, the Pleasant Valley Pipeline, expansion of the Bellvue plant in the 1990's, thereafter inverting in more than \$75 million from 2017-2021, expansions and updates to the Boyd Lake Plant, the Zone 4 Pressure Zone to serve the Promontory development, a new 60 inch transmission main from Bellvue to Gold Hill, a new 20 MGD Treatment Train at Bellvue; and

WHEREAS, during Mr. Ruyle's tenure there was significant long range planning happening including the 2003 Water Master Plan, 2004 Non-Potable Master Plan, the 2019 Wastewater Master Plan, the 2021 Wastewater Collection Plan, Water Distribution Plan and the Updated Non-Potable Plan, initiating an integrated water resource plan; and

WHEREAS, during Mr. Ruyle's tenure the Water Department and the City invested in the utilization of Non-Potable irrigation systems for the Parks, Golf Courses, Schools, and other large turf areas, along with the adoption of increased use of Non-Potable water was a major effort in water conservation including the adoption of a State of Colorado approved Water Conservation Plan for the City, the creation and implementation of a City wide Residential Water Budget program, the start of the conversion of all water meters to Smart Water Meters, and a turf replacement program called Life After Lawn; and

WHEREAS, during Mr. Ruyle's tenure the Wastewater Treatment Plant performance issue were addressed and corrected, the Sheep's Draw Trunk Sewer was constructed to serve West Greeley, the 1984 -1985 expansion of the Wastewater Plant, the 1994 expansion of the Wastewater Plant, the 2021 Nutrient Removal Project, and a multiyear effort to rehabilitate and epoxy line the sewer collection system in the eastern part of Greeley; and

WHEREAS, during Mr. Ruyle's tenure there were also several Natural Disasters that the Board and Department responded to, these being the Big Thompson Flood of 1976, the 2002-2003 Drought, the High Park and Hewlett Gulch wildfires in the Poudre watershed, the Flood of 2013, and the record size Cameron Peak Fire and the East Troublesome Fires of 2020 which impact all four of Greeley's watersheds; and

WHEREAS, during Mr. Ruyle's tenure Greeley's Water Treatment and Reclamation Facility received numerous awards from the Environmental Protection Agency for Excellence in Waste Water Treatment. In 2017 Greeley's water operations won American Water Works award for Best Tasting Water in the United States by the American Water Works Association at their annual meeting; and

WHEREAS, Mr. Ruyle generous contributions of time, judgement, wisdom, and insight, over the last 46 years, have been of incalculable value to the City, to the Board and the Water and Sewer Department. His service and generosity has also extended into many other areas in community and have been equally valuable. Mr. Ruyle is one of those rare individuals who truly have made difference in the life of their community. He will be missed.

NOW THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF GREELEY, COLORADO:

Section 1. The City Council hereby acknowledges, and wishes to express its sincere gratitude for, the dedication and contributions of Robert A. Ruyle to the Water and Sewer Department, Water and Sewer Board, and the citizens of the City of Greeley.

Section 2. The City Council, in recognition of his years of invaluable experience and service, hereby appoints Robert A. Ruyle to a lifetime term as a non-voting member emeritus of the City of Greeley Water and Sewer Board.

Section 3. This ordinance shall take effect on the fifth (5th) day following its final publication, as set forth in Section 3-16 of the Greeley City Charter.

PASSED AND ADOPTED, SIGNED AND APPROVED ON THIS ____ DAY OF _____ 2021.

ATTEST:

THE CITY OF GREELEY, COLORADO

City Clerk

Mayor

Board Member Emeritus Appointment to Greeley Water & Sewer Board Mr. Robert A. Ruyle, Esq.

September 7, 2021

By Sean Chambers,
Director of Water & Sewer Utilities
City of Greeley, Colorado



Recommendation of Appointment to a Honorary Non-Voting Member of the Water and Sewer Board



Non-voting emeritus member appointment requires action by Council ordinance to create the position for Mr. Robert Ruyle

- Mr. Ruyle has a proven passion for serving the City of Greeley and volunteering his time in support of transparent accountable governance
- 46 Continuous years of service on the Greeley Water and Sewer Board
- Vast experience on water policy decisions and an attorney at law
- Lifelong advocate for Greeley

**Board Resolution
(Enclosed) Recommends
that the City Council
appoint Robert A. Ruyle as
member emeritus of the
Water and Sewer Board**



Greeley Council / Water Board - 1908

Questions ?

Council Agenda Summary

September 7, 2021

Key Staff Contact: Sean Chambers, Water & Sewer Director, 970-350-9815

Title:

Public hearing and final reading of an ordinance Adopting the 2021 Sanitary Sewer Master Plan and the 2021 Water Transmission and Distribution Master Plan and Amending the 2018 Comprehensive Plan to include the same by reference.

Summary:

In 2018, the Water and Sewer Department embarked on the process of preparing a Sanitary Sewer Master Plan, which was completed in June of 2021. The project started with the selection of CDM Smith to complete the engineering services based on past experience with Greeley and extensive master planning qualifications. The project started with monitoring wastewater flows in the entire collection system, which involved 12 temporary flow meters, nine permanent flow meters, two rain gauges, and 60 days of data collection. This critical step was followed by developing the existing system model for sewer lines 10" and larger. The project then progressed to utilizing the system model to look at existing conditions of the system and planning the expansion of the system in the 5-year, 20-year, and full system build-out time frames. The future land use planning incorporated the actual planned developments within Greeley, the 2018 Comprehensive Plan, planning development reports, and 2019 zoning and was coordinated with the City's Planning Department staff. This information was incorporated with wastewater flow projections for residential, non-residential, groundwater infiltration, rain dependent infiltration and inflow, and a 5-year storm event system to estimate future demand throughout Greeley. These future demands were integrated into the system expansion model that was utilized to size all sanitary sewer infrastructure out to Greeley's Long Range Expected Growth Area.

The Water Transmission and Distributions Master Plan project started in 2017 with the selection of Bohannon Huston to update the existing 2008 water transmission and distribution model. Then in 2018, the City selected CDM Smith to complete the engineering services for the master plan and planning for the expansion of the system. One of the first steps was developing the long term water demands within the Long Term Growth Area, utilizing the 2018 Imagine Greeley Land Use Guidance Map, existing zoning, future development projections, and working with the Planning Department. This information was combined to estimate the peak month water demands for full buildout of the system. The next steps were developing the water distribution system that could meet the water demands and pressures required throughout the system. The project then progressed to utilizing the system model for maintaining fire flows, water quality, the expansion of the system in the 5-year, 20-year, and full system build-out time frames.

The final steps included developing CIP projects throughout the system and making sure it was coordinated with the other two water and sewer master plan projects and other City Department CIP projects. The final aspects of the project included

coordinating outreach efforts to discuss the planned master plans with different community members and groups interested in participating in reviewing the City's draft master plan and providing critical input or comments. This different feedback and input has now been incorporated into the master plan final report completed in June 2021.

Article XVII, Section 17-7 of the Greeley Charter requires that the Water and Sewer Board recommend long range plans to City Council for water and sanitary sewer improvements. On July 21, 2021, staff presented the 2021 Sanitary Sewer Master Plan and the 2021 Water Transmission and Distribution Plan (the "Plans") to the Water and Sewer Board. By motion, the Water and Sewer Board recommended that City Council adopt the Plans and incorporate the same by reference as an amendment to the 2018 Comprehensive Plan.

Article XIX, Section 19-1 (b) of the Greeley Charter described the Planning Commission's role in providing advice on land use matters to the City Council. The 2018 Comprehensive Plan also requires the Planning Commission conduct a public hearing on any proposed amendment to the 2018 Comprehensive Plan, which includes a modification to policies contained within master plans adopted by reference, and provide a recommendation to City Council. On July 27, 2021, the Planning Commission held a public hearing on the Plans with a presentation by staff and opportunity for public comment. By motion, the Planning Commission recommended that City Council adopt the Plans and incorporate the same by reference as an amendment to the 2018 Comprehensive Plan.

The Plans provide the backbone infrastructure required for long term growth of the sanitary sewer system and water transmission and distributions system. The planning documents are essential to ensure future development in Greeley has adequate public facilities and services. These master plans address the City of Greeley Comprehensive Plan Action Plan items: IMP IN-1.2, IMP IN-1.5, IMP IN-1.6, IMP IN-1.7, and IMP-IN-1.8 as shown in Attachment C.

Fiscal Impact:

Does this item create a fiscal impact on the City of Greeley?	N/A
If yes, what is the initial, or, onetime impact?	
What is the annual impact?	
What fund of the City will provide Funding?	
What is the source of revenue within the fund?	N/A
Is there grant funding for this item?	No
If yes, does this grant require a match?	
Is this grant onetime or ongoing?	
Additional Comments:	

Legal Issues:

Consideration of this matter is a legislative process. The City Attorney's Office drafted the proposed ordinance to adopt the enclosed 2021 Sanitary Sewer Master Plan and

2021 Water Transmission and Distribution Master Plan and incorporation of the same by reference as an amendment to the 2018 Comprehensive Plan.

Other Issues and Considerations:

Not Applicable

Strategic Work Program Item or Applicable Council Priority and Goal:

Economic Health & Development: Foster and maintain public and private investment in business development.

Infrastructure & Growth: Establish the capital and human infrastructure to support and maintain a safe, competitive, appealing and successful community.

Decision Options:

- 1) Adopt the ordinance as presented; or
- 2) Amend the ordinance and adopt as amended; or
- 3) Deny the ordinance; or
- 4) Continue consideration of the ordinance to a date certain.

Council's Recommended Action:

A motion to adopt the ordinance and publish with reference to title only.

Attachments:

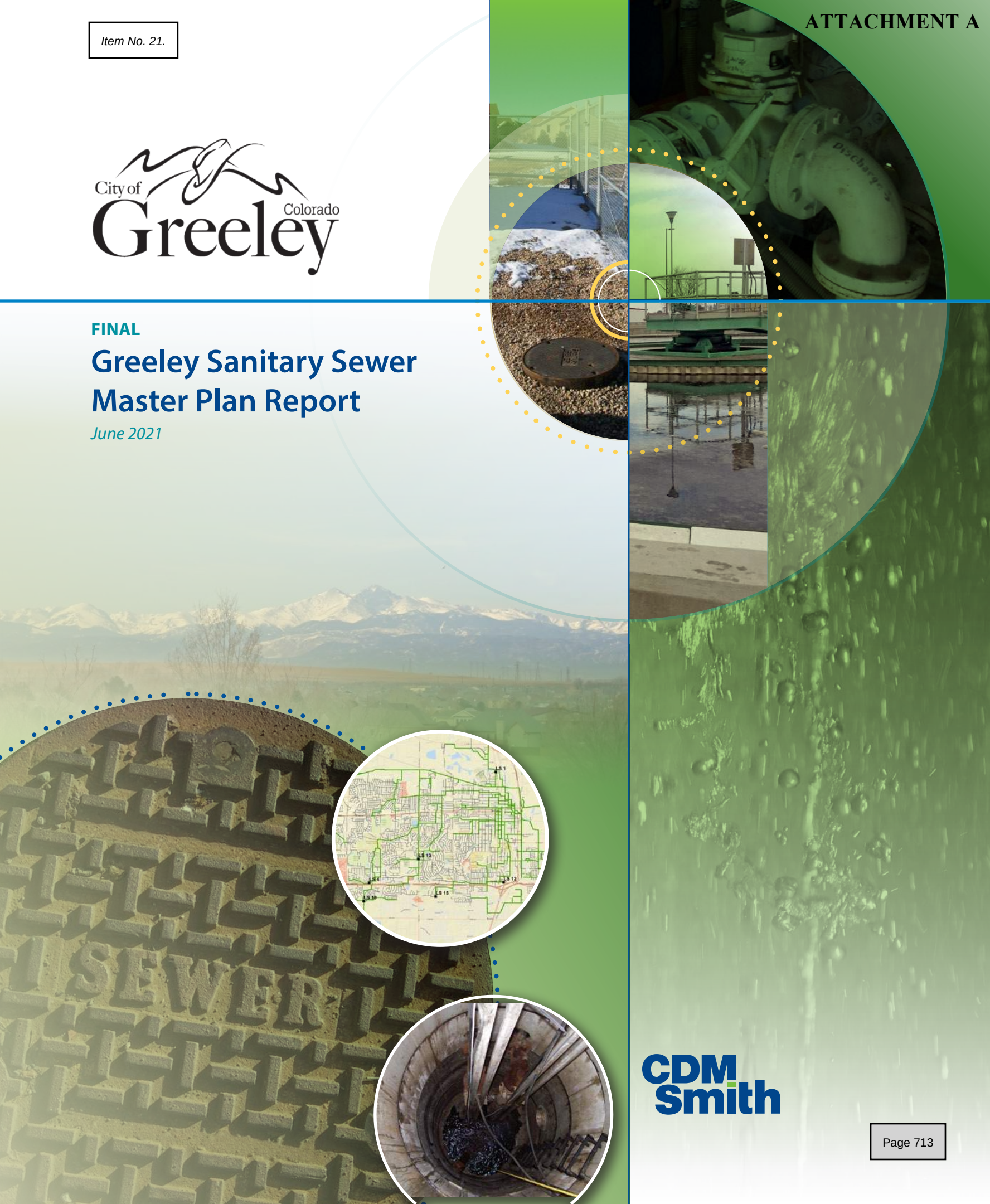
Attachment A –Sanitary Sewer Master Plan
Attachment B – Water Transmission and Distribution Master Plan
Attachment C – City of Greeley Comprehensive Plan: Action Plan for Infrastructure
Attachment D – Ordinance adopting both Plans and amending the 2018 Comprehensive Plan to incorporate by reference.



FINAL

Greeley Sanitary Sewer Master Plan Report

June 2021



**CDM
Smith**

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Appendices

Appendix A Flow Meter Diurnal Patterns (BWF)
Appendix B Calibration Statistics for Wet Weather
Appendix C Sanitary Sewer Master Plan – Flow Monitoring (RJN Group, Inc. September 2019)
Appendix D Cost Development and CIP Information
Appendix E Coordination and Engagement with Adjacent Communities
Appendix F Comprehensive Plan for Demand Projections
Appendix G Goals from Comprehensive Plan

Acronyms and Abbreviations

\$/LF	dollars per linear foot
ac	acre
ASCE	American Society of Civil Engineers
ADF	average daily flow
ADWF	average daily wastewater flow
BWF	base wastewater flow
CIP	capital improvement plan or program
CIWEM	Chartered Institution of Water and Environmental Management
C-H	commercial high intensity
C-L	commercial low intensity
CMAR	construction manager at risk
d/D	depth of diameter
DDA	Downtown development area
DWF	dry weather flow
DU	dwelling unit
DU/acre	dwelling unit(s) per acre
ENR-CCI	Engineering News Record Cost Construction Index
EPA	Environmental Protection Agency
EPS	extended period simulation
FEMA	Federal Emergency Management Agency
ft	feet (or foot)
fps	feet per second
gpcd	gallons per capita per day
gpd	gallons per day
gpd/acre	gallons per day per acre
gpm	gallons per minute
GIS	geographic information system
GWI	groundwater infiltration
HP	horsepower
hr	hour
I-H	industrial high intensity
I-L	industrial low intensity
I-M	industrial medium density
I/I	inflow and infiltration
IGA	intergovernmental agreement
LS	lift station
LREGA	long-range expected growth area
MH	manhole
mgd	million gallons per day
NGS	National Geodetic Survey
NGVD	National Geodetic Vertical Datum
NOAA	National Oceanic and Atmospheric Administration
NAVD	North America Vertical Datum

NFRWQPA	North Front Range Water Quality Planning Association
OPCC	opinion of probable construction cost
PUD	Planned Unit Development
PVC	polyvinyl chloride
RDII	rainfall dependent inflow and infiltration
R-E	residential estate
R-H	residential high density
R-L	residential low density
R-M	residential medium density
R-MH	residential mobile home
SSOAP	Sanitary Sewer Overflow Analysis and Planning
TDH	total dynamic head
UNC	University of Northern Colorado
USACE	United States Army Corps of Engineers
VFD	variable frequency drive
WTRF	Wastewater Treatment and Reclamation Facility
WPCF	Water Pollution Control Facility
WWF	wet weather flow

Definitions

Average annual daily flow – the daily average flow over a one-year period.

Base wastewater flow - the portion of wastewater flow that comes directly from water use and follows a diurnal pattern with a peaking factor.

Buildout – the theoretical point in time where the City has experienced complete development within the LREGA, expected to be sometime after year 2090

Capital improvement - a recommended City construction project to improve or expand the system, summarized in the capital improvement plan

Design storm – theoretical wet weather event with a set duration recurrence frequency that is used to analyze the impacts on the sanitary sewer system. The design storm has a set recurrence frequency.

Diurnal curve - a pattern of peaking factors applied to a base demand (the typical demand for an area) that shows how demands vary by pattern throughout the day; the diurnal curve typically includes the peak hour

Dry weather flow – the wastewater flow within the sewer system that during dry weather periods.

Extended period simulation - a hydraulic modeling methodology that shows how the system performs over a set timescale, during which demands and operating conditions can vary

Firm capacity – capacity of the pump station with one pump (largest) out of service.

Flow factor - value used to estimate the water demand that a given amount of land will produce once its developed, depending on its land use

Freeboard – difference in elevation between the top of the water in a manhole to the top of the manhole or surface elevation. Freeboard of greater than 10 is desired to avoid potential flooding or basement back-ups.

Groundwater infiltration – groundwater that enters the sewer system through defects in the system that allows groundwater or other dry weather sources to infiltrate the pipe system. This is a constant daily flow that may have seasonal variation.

Infiltration – water that seeps into the sewer system through cracks, holes, joint off-sets and other means Infiltration is typically slow leaking into the pipe.

Inflow – water that enters the sewer system through direct connections such as cross connections, manhole lids or defects, and direct stormwater connections. Inflow is typically rapid.

Long range expected growth area - the limits of the City's expected growth and where it plans to provide water and wastewater services.

Opinion of probable construction cost - the costs borne by the contractor to construct a capital project

Peak day demand – the average demand anticipated during a maximum one-day period for a typical year

Peak day flow – the maximum flow anticipated to occur during a one-day period expressed as the daily average.

Peak hour demand – the average demand anticipated during a maximum one-hour period for a typical year; this is considered to be a conservative value for infrastructure sizing

Peak month demand – the average demand anticipated during a maximum one-month period for a typical year, typically experienced during July

Planning horizon - a timeframe used to estimate expected demands and infrastructure needs

Rainfall dependent I/I – flow that comes from defects in the system or openings in the system that allow water from precipitation to enter the system. This flow varies depending on the wet weather event duration and intensity.

RTK – Three parameters used to characterize the rainfall dependent inflow and infiltration unit hydrographs. R is the fraction of rainfall volume that enters the sanitary sewer. Low R values indicate a sewer system with very little inflow or infiltration. T is the time from the onset of rainfall to the peak of the wet weather hydrograph. K is the ratio of the time of hydrograph recession to the time to hydrograph peak.

Surcharged – pipes with a depth over diameter of greater than 1.

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Tier 1, 2 or 3 – tier of information used to distribute future flow parameters to currently undeveloped areas or areas of redevelopment.

Wet weather flow – the wastewater flow within the sewer system that occurs during of following a rainfall event.

Winter water use – the amount of water used in winter months, defined as December through February.

Executive Summary

The City of Greeley (City), Colorado is in Weld County approximately 60 miles northeast of Denver close to Fort Collins and Loveland. Greeley is the twelfth largest city in Colorado and has developed into a cultural and academic hub, hosting educational institutions such as the University of Northern Colorado (UNC) and Aims Community College. Greeley offers an affordable cost of living with many options for housing and economic growth. Greeley's population grew from 20,354 in 1950 to an estimated population of 108,175 in 2019. Greeley continues to experience strong growth in population through both infill and expansion of residential and non-residential development within the City's defined service area.

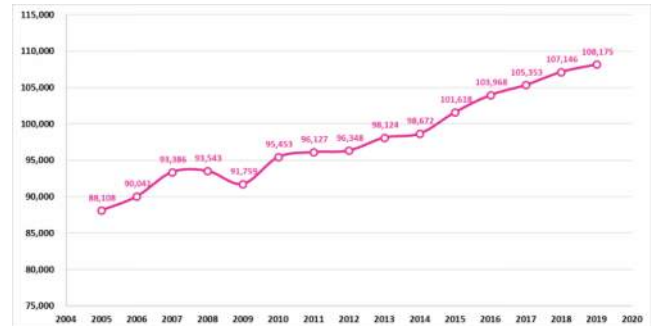


Figure ES-1 Historic Population for the City of Greeley

ES.1 Greeley Master Plan Integration

To address existing and future system needs, the City has updated their 2008 sanitary sewer system master plan and 2014 sewer system model to reflect changes in the system and modify City data. The 2021 Sewer System Master Plan update occurred concurrently with updates to the City's Water Master Plan and Non-Potable Water Master Plan, providing the ability to use consistent data for population and growth; common planning horizons of 5-year, 20-year and buildout; and an integrated planning approach to capital improvement plans (CIP) development. This approach to integrated master planning provides the City with a defensible and coordinated CIP and allows for the scheduling of CIP projects to minimize impacts to citizens. **Figure ES-2** illustrates the critical points of coordination between the three master plans.

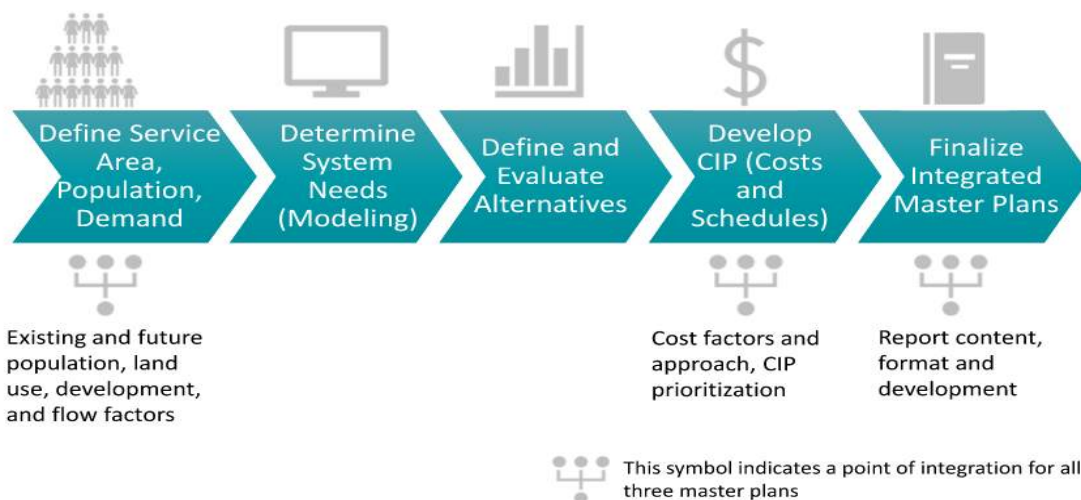


Figure ES-2 Master Plan Approach and Integration with other Master Plans

ES.2 Conservatism and Uncertainty in Planning

During the development of the master plan, assumptions were made for existing and future conditions. These include factors such as population distribution, flow factors to develop wastewater flow, projections for growth and development, and the response of the system to wet weather impacts. The master planning assumptions trended toward conservative values, which may result in the predicted flows being higher than the actual flows. This master plan provides an analysis of the existing system and defines future needs which should be validated by the City with actual data when available.

The sewer system model is a tool for analyzing the existing system and defining future capacity needs. Care is taken to consider the modeling results and needs for capital improvements or timing of improvements, but this tool has limitations. Knowing the limitations is important in making decisions regarding improvement projects. Limited wet weather flow (WWF) for calibration and simulated flow conditions that vary from observed conditions result in the need to review areas where the model indicates system deficiencies.

Additional uncertainty occurs during the development of the CIP and, as a result, conservative planning assumptions are used. Planning level cost development considers the major categories of capital projects but does not include the finite detail available during the preliminary and final design stages of projects. The CIP was developed based on anticipated growth, modeling results, and planning information and is subject to change if the planning information and forecasts shift over time. Prior to COVID-19, a global pandemic, cost inflation tools provided high confidence for predicting unit prices within a given year. However, during and after COVID-19, these cost inflation tools may not prove to be as accurate.

ES.3 Existing System Information and Model Development

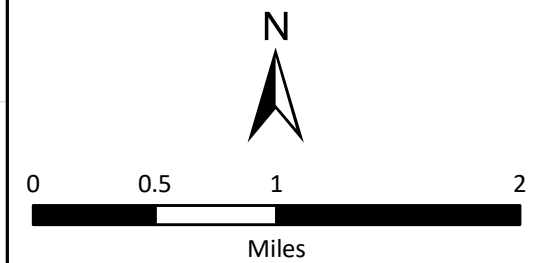
City-provided information was used to inform the development of the master plan update. This information included mapping, asset information, planning data, development plans, and physical data like flow metering and winter water billing data. The winter water billing data was used to compare against overall treatment plant flows, distribute population and flow throughout the system and to analyze nonresidential wastewater flow on an acreage basis as a way to inform recommendations for projecting flows in future areas.

Temporary flow metering was conducted between April 18 through June 18, 2019 with the flow data used to supplement information from the City's permanent flow meters. Meter locations are shown in **Figure ES-3**. The collected flow and rainfall data were analyzed using the Sanitary Sewer Overflow Analysis and Planning (SSOAP) tool to determine dry weather and wet weather flow components, which were then used in system modeling.

The City's existing sewer system model (2014) has been updated with new pipelines, updated pump data, and conversion to the North American Vertical Datum of 1988 (NAVD 88). The flow metering data for dry and wet weather conditions was used for model calibration for each meter location.

Temporary Flow Meter Basins

Figure ES-3
Greeley Sanitary Sewer
System Master Plan



Legend

- Rain Gauge
- Lift Station
- WTRF

Sewer Mains

- Trunk Line
- Force Main
- Collector Line
- Overflow Line

Temporary Flow Meter and Basin

- FM01 Sheep Draw Basin
- FM02 Sheep Draw Basin
- FM03 Hilltop Basin
- FM04 Highland Hills Basin
- FM05 Highland Hills Basin
- FM06 Belair Basin
- FM07 Monfort Basin
- FM08 North Basin
- FM09 Eight Street Basin
- FM10 Central Basin
- FM11 South Basin
- FM12 South Basin

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ES.4 Service Area and Population Projections

This Sanitary Sewer Masterplan has identified municipal sewer infrastructure requirements to serve the City of Greeley up to the Long-Range Extended Growth Area (LREGA) boundary (**Figure ES-4** on the following page). It should be noted that there is an overlap with Greeley's LREGA and Urban Growth Boundaries and 208 boundaries for both Johnstown and Milliken in the southwest corner of Greeley's growth boundary. The City of Greeley has met with Johnstown and Milliken's staff to understand their interest and future plans for providing sewer service to these areas. From these meetings it is not planned to change growth or 208 boundaries at this time. However, parties generally agreed that at that time that development is being considered in these areas further discussions and assessment would be required to determine how these areas would best be served. In the event that these areas are annexed into the City of Greeley and sewer service is provided by another municipality it would require an Inter-Governmental Agreement to address the service requirements. If annexed into Greeley and Greeley provides municipal sewer service, it will require an amendment of the 208 boundary through the North Front Range Water Quality Planning Association (NFRWQPA).

The future population (and resulting flow) that was distributed over the LREGA for each planning horizon was the 'middle' projection from the *City of Greeley Population and Water Demand Projections* (BBC Research & Consulting, 2018) as shown in **Figure ES-5**. Because the 2075 projection does not represent the buildout year for the City within the LREGA boundary, a buildout population was extrapolated using planning data and factors.

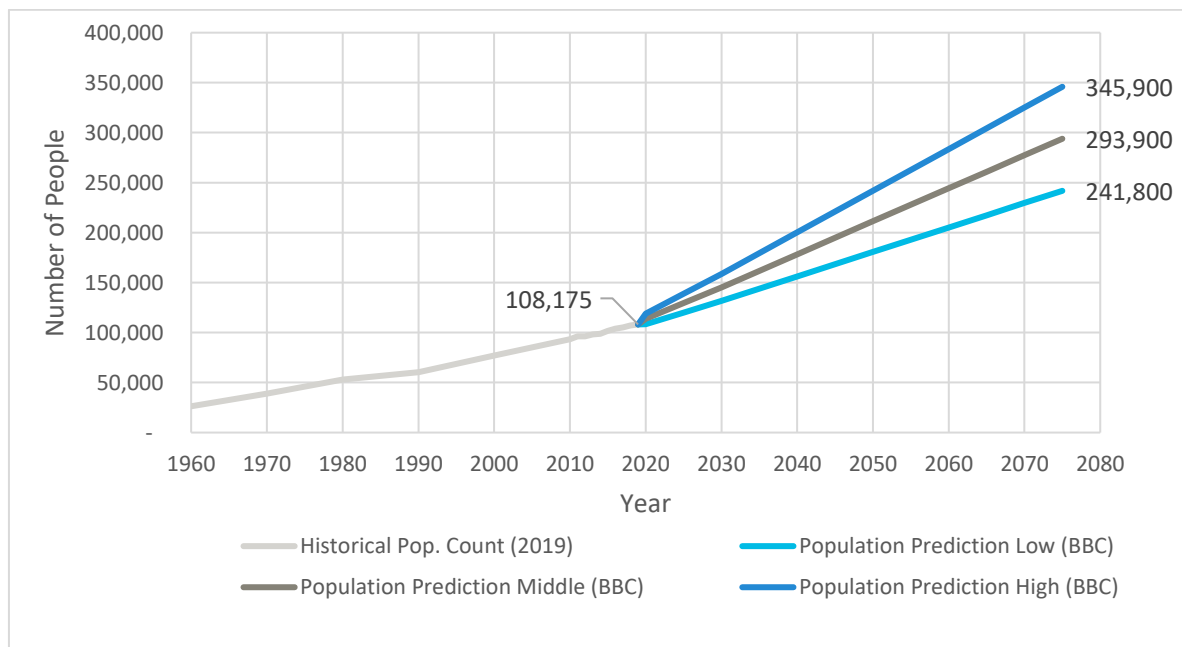
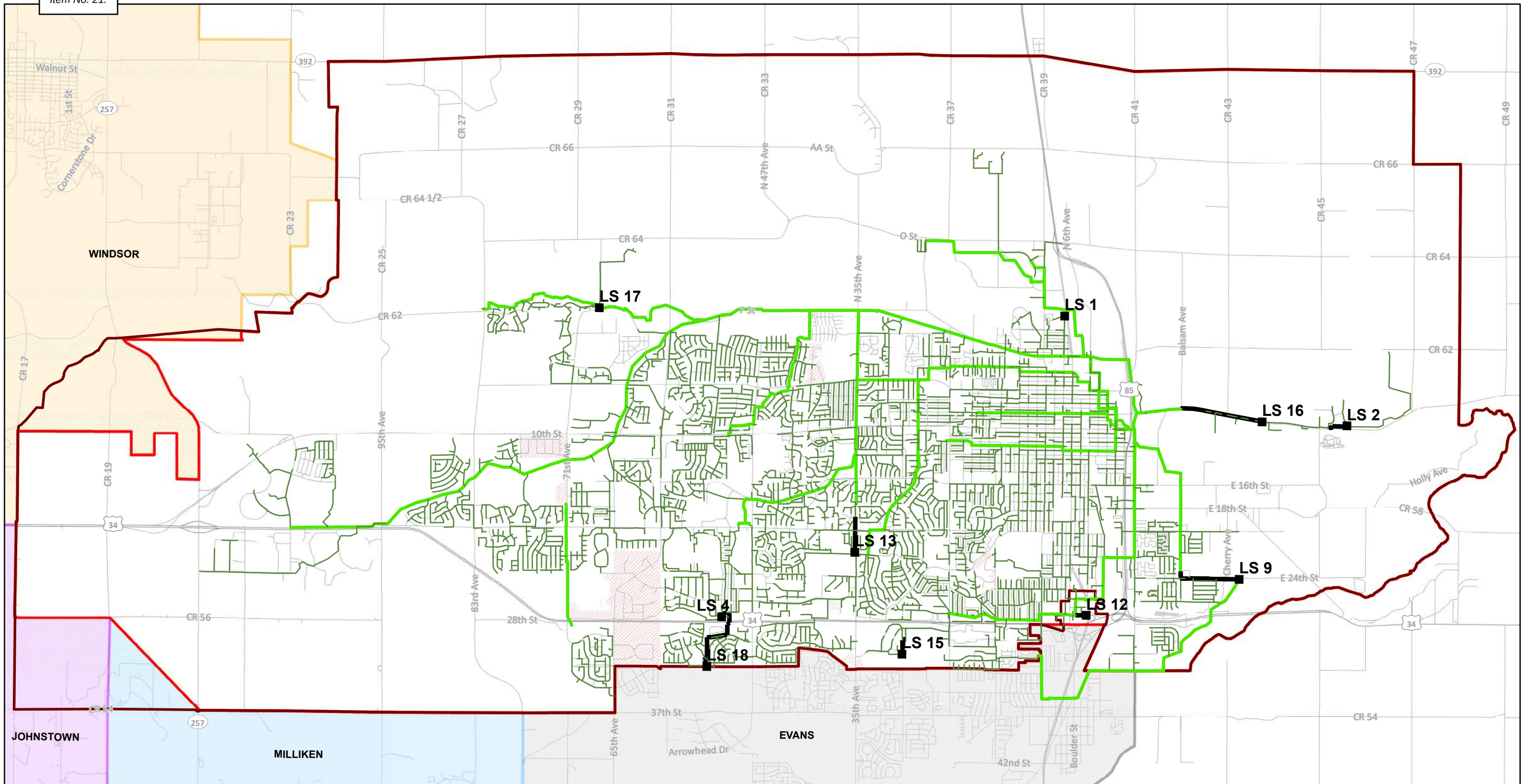


Figure ES-5 Historical and Projected Population

Executive Summary

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Future flow parameters were distributed to currently undeveloped areas, or to areas of redevelopment using a three-tiered approach. To distribute the future flow parameters in the model at each planning horizon, the percent to which each future development tier is built out at the end of each planning horizon was estimated as shown in **Table ES-1**. The percent complete values and development areas included for each Tier were chosen through discussions with the City. **Figures ES-6, ES-7, and ES-8** are a visual representation of the information and a depiction of the assumed growth areas for each planning horizon.

Table ES-1 Future Projections Results by Tier

5 Year Planning Horizon	Acres	Population	Nonresidential BWF	Residential BWF	GW	ADWF
			(gpd)	(gpd)	(gpd)	(mgd)
Existing	10,940	107,146 ¹	2,018,478 ²	4,962,559 ²	1,312,438 ²	8.29 ²
Tier 1	1,418	15,072	613,209	921,224	141,842	1.68
Tier 2	195	2,813	38,904	168,789	19,472	0.23
Tier 3	307	3,483	85,713	329,687	31,647	0.45
Total	12,860	128,514	2,756,304	6,382,259	1,505,399	10.65
20 Year Planning Horizon	Acres	Population	Nonresidential BWF	Residential BWF	GW	ADWF
			(gpd)	(gpd)	(gpd)	(mgd)
Existing	10,940	107,146	2,018,478	4,962,559	1,312,438	8.29
Tier 1	2,243	23,804	695,808	1,427,186	224,209	2.35
Tier 2	1,496	12,577	659,148	760,352	149,576	1.57
Tier 3	3,750	34,159	778,655	2,440,467	375,040	3.59
Total	18,429	177,686	4,152,089	9,590,564	2,061,263	15.80
Buildout	Acres	Population	Nonresidential BWF	Residential BWF	GW	ADWF
			(gpd)	(gpd)	(gpd)	(mgd)
Existing	10,940	107,146	2,018,478	4,962,559	1,312,438	8.29
Tier 1	2,243	23,804	696,085	1,428,058	224,345	2.35
Tier 2	25,983	247,747	8,376,121	14,873,374	2,598,319	25.85
Tier 3	5,940	49,451	955,631	2,967,037	933,109	4.86
Total	45,106	428,148	12,046,315	24,231,028	5,068,211	41.35

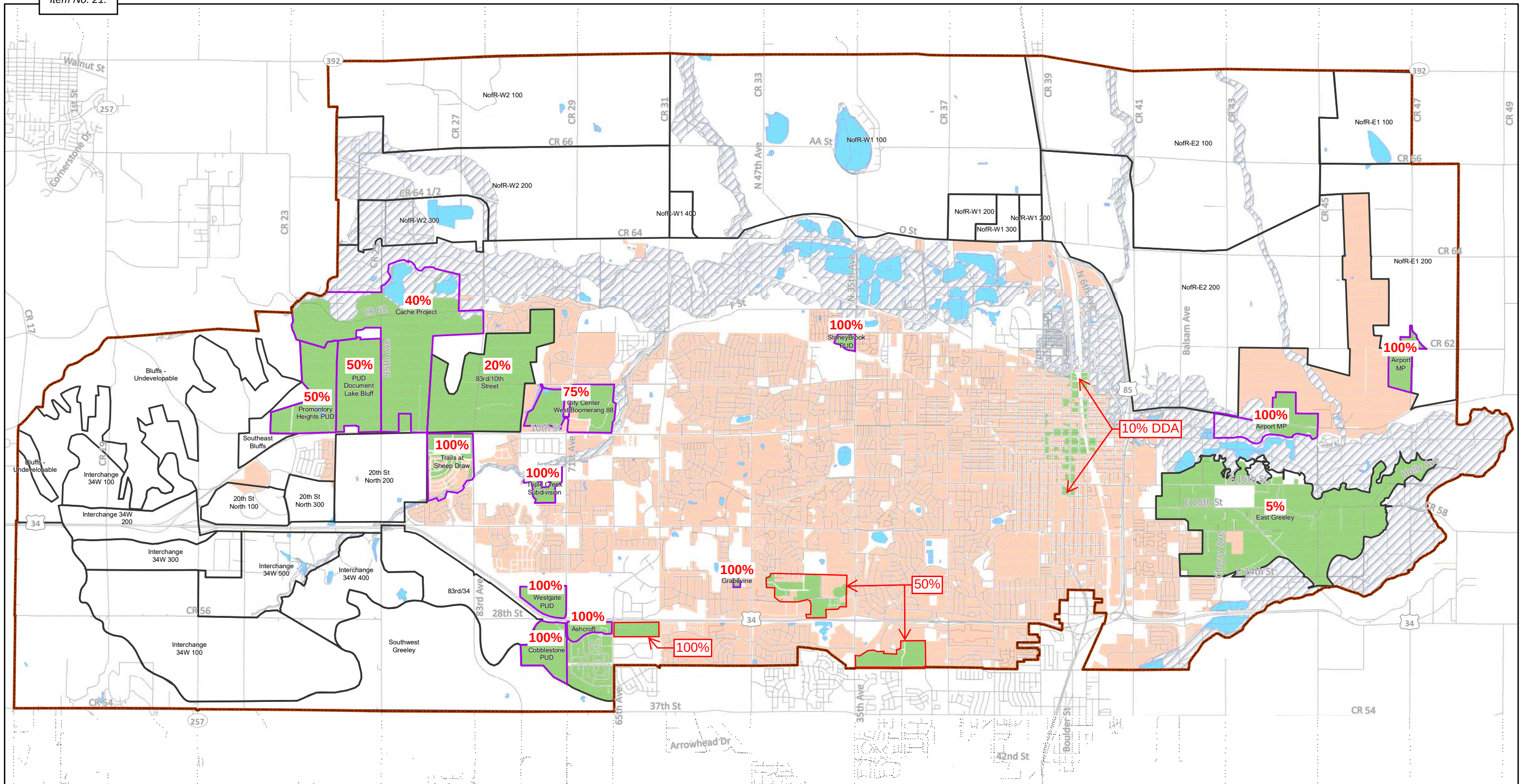
¹ The assumed existing population was taken from the 2018 City of Greeley Population and Water Demand Projections Report.

² Flow information for the existing scenario was derived from the 2019 temporary flow metering, permanent flow metering, and lift station flow data. This data was cross checked, and the model was calibrated to wet and dry weather flow. The resulting calibrated flow values are shown in the above table.

The increase in average daily wastewater flow (ADWF) for buildout is calculated at about five times the current ADWF, as compared to population which is calculated to increase by about four times. This discrepancy is due the wastewater flow parameters being on the higher side of the average. A conservancy such as this is needed in master planning to account for inherent unknowns in the spatial distribution of flows so as not to underestimate the infrastructure sizing. **Figure ES-9** illustrates the flow projections over the different planning horizons.

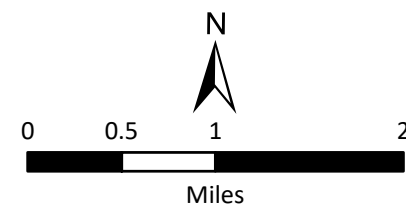
Executive Summary

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Legend

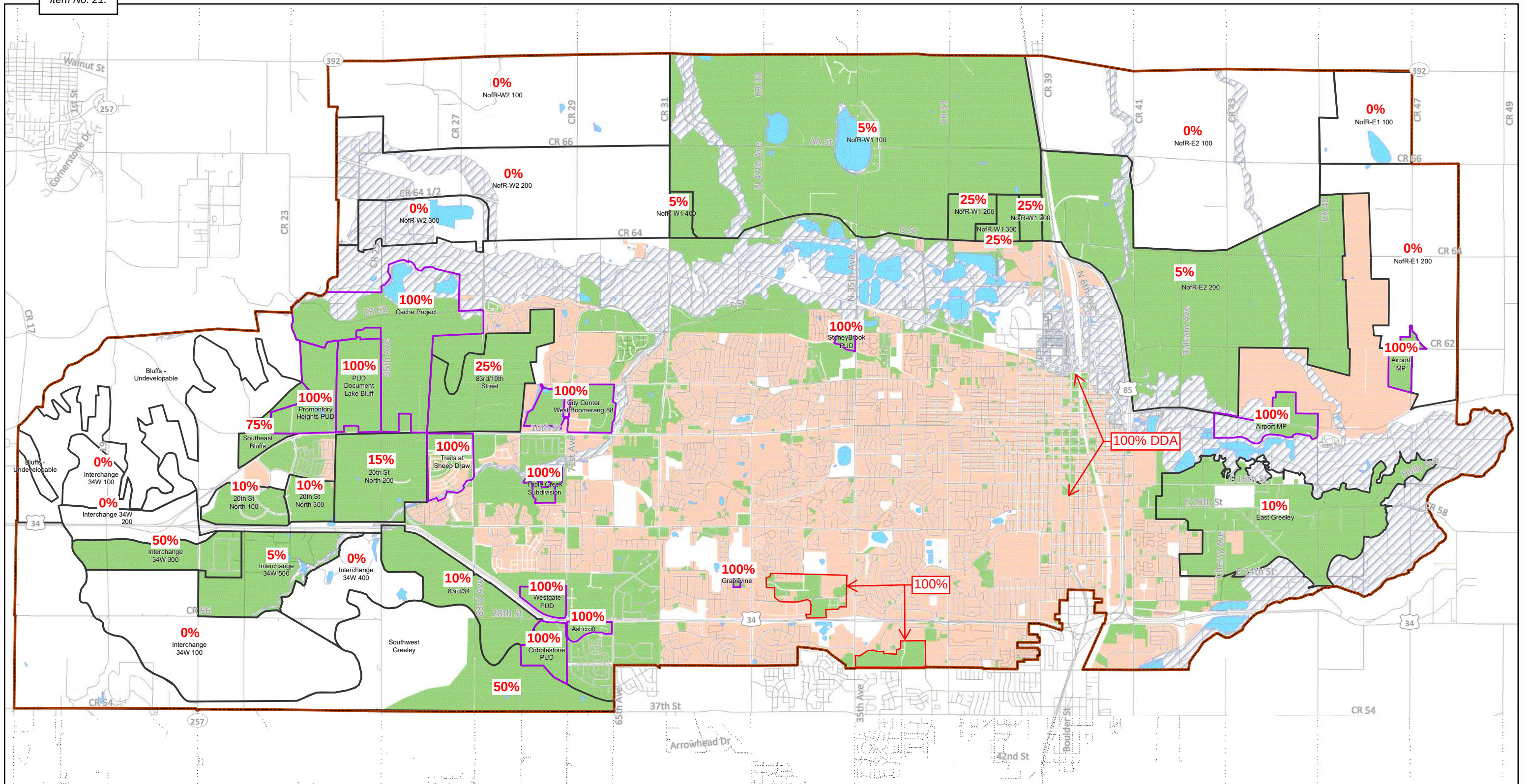
- | | | | | |
|--|-------------------|--|-----------------------|------------------------------|
| | LREGA | | Future Development | % = Percent Developed |
| | Tier 1 | | Existing Service Area | |
| | Tier 2 | | Lakes and Ponds | |
| | 100-yr Floodplain | | Park | |



Developed Area Projections: 2025

Figure ES-6
Greeley Sewer
System Master Plan

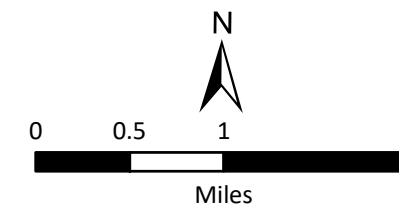
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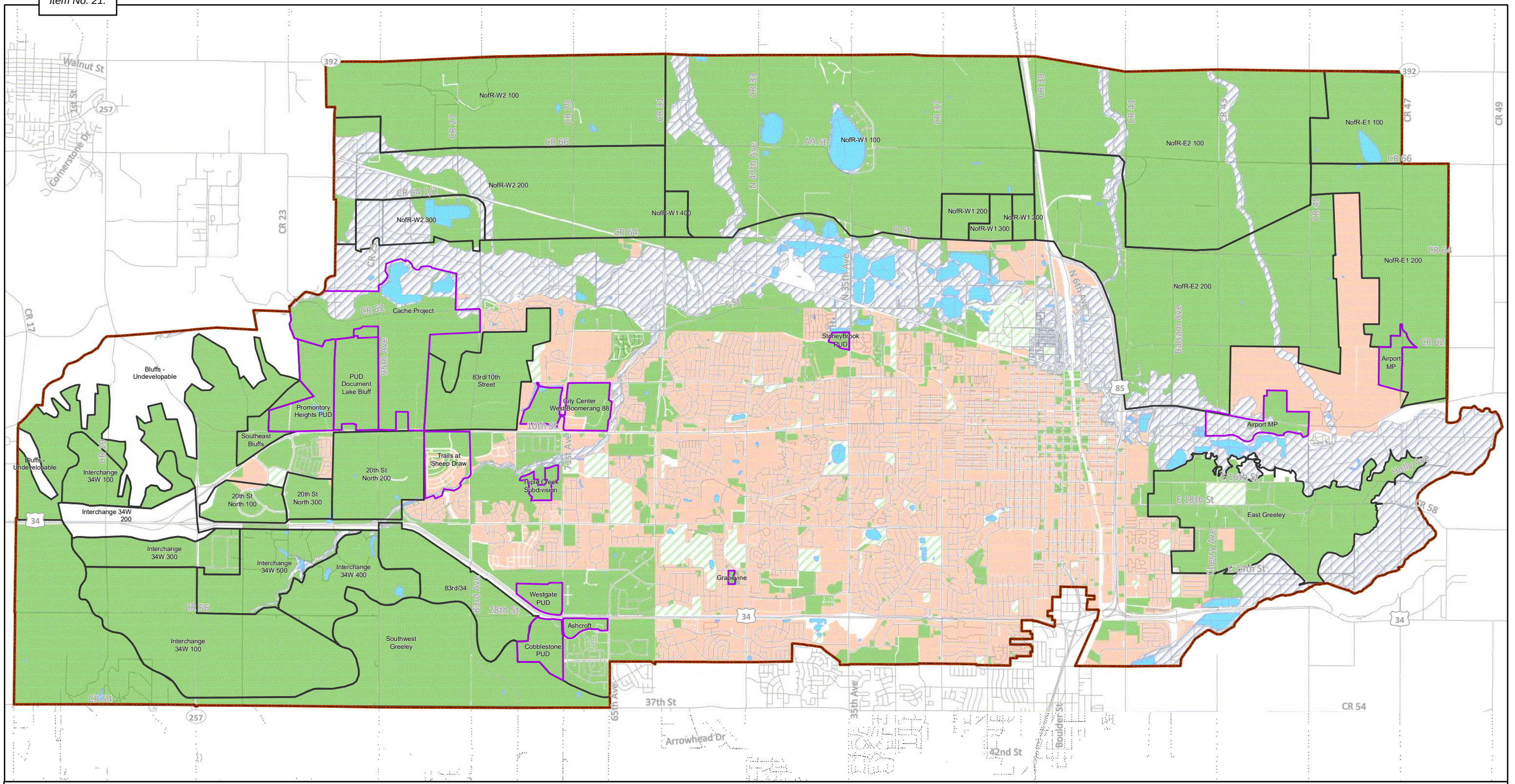
- | | | | | |
|---|-------------------|---|-----------------------|------------------------------|
|  | LREGA |  | Future Development | % = Percent Developed |
|  | Tier 1 |  | Existing Service Area | |
|  | Tier 2 |  | Lakes and Ponds | |
|  | 100-yr Floodplain |  | Park | |



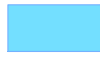
Developed Area Projections: 2040

*Figure ES-7
Greeley Sewer
System Master Plan*

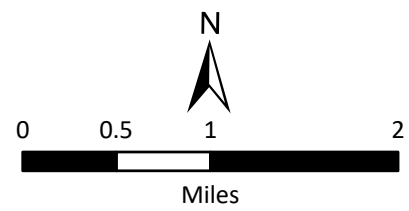
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Legend

-  LREGA
-  Tier 1
-  Tier 2
-  100-yr Floodplain
-  Future Development
-  Existing Service Area
-  Lakes and Ponds
-  Park

All Areas Assumed 100% Developed



Buildout Developed Area
Figure ES-8
Greeley Sewer
System Master Plan

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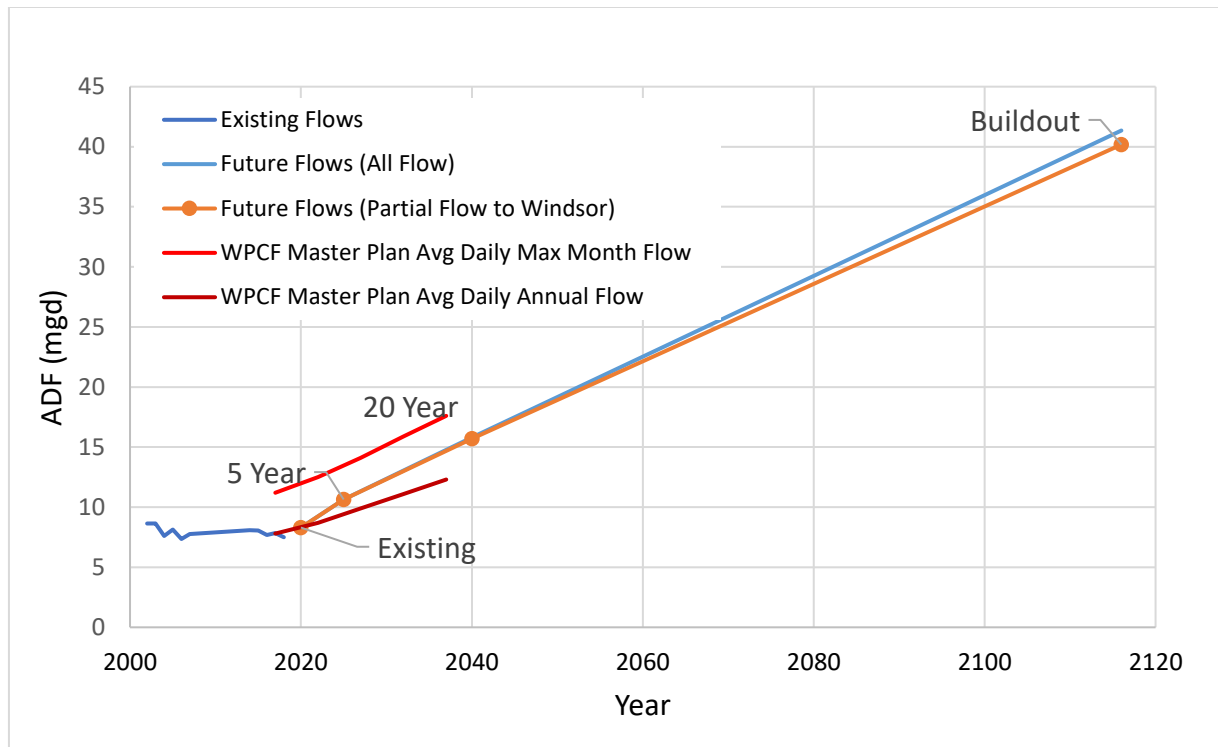


Figure ES-9 Future Flow Projections

ES.5 Model Results and Infrastructure Planning

To accommodate the increase in projected population, the City would need seven (7) new lift stations and about 90 miles of additional gravity sewer by the buildout planning horizon. This expansion allows the City to plan for future growth and development while managing, operating, and maintaining all parts of the sanitary sewer system while providing reliable uninterrupted service to the citizens of Greeley.

The sewer system analysis did not include an assessment of lift station or gravity sewer system condition, nor did it consider any rehabilitation that is not driven by system capacity. Greeley has an asset management program that evaluates existing infrastructure condition and methods of rehabilitation. The asset management program will use this masterplan to inform the rehabilitation methods when addressing sewer system condition. Further assessments of lift stations will determine the lift station condition and consider possible improvements such as the installation of variable frequency drives (VFD) to equalize flow and reduce the hydraulic impact to the receiving gravity sewers.

ES.5.1 Existing System Evaluation

Existing system deficiencies are predicted using the calibrated model with WWF extrapolated for the 5-year design storm event. Recommendations for improvements to the existing system are based on predicted WWF, yet the City's experience with their system and their knowledge of critical areas is what typically drives the prioritization of such projects when developing the capital improvements plan. **Figure ES-10** shows the existing system's dry weather flow (DWF) deficiency locations. The model was also used to analyze the existing system under WWF

conditions. The results indicate potential deficiencies which are summarized in the following sections. **Figure ES-11** shows an illustrative overview of the wet weather system deficiency locations.

ES.5.2 Future System Evaluation (5 Year and 20 Year Planning Horizon)

The 5-year sewer system deficiency map shown in **Figure ES-12**, includes the future infrastructure that was identified in the existing system evaluation. It also describes the recommended improvements from the existing system analysis. These projects are sized for buildout conditions and many of the capacity improvements are driven by development. It will be the responsibility of individual developers to expand sewer capacity to meet the development capacity needs, while any system improvements to address long term system capacity needs will be met by the City. The 20-year recommended improvements map, shown in **Figure ES-13**, adds the recommended improvements that were identified in the existing and 5-year planning horizon system analysis.

ES.6 CIP Projects and Schedule

The opinion of probable construction cost (OPCC) is considered as the costs that are incurred by the contractor to construct a capital project. The project CIP costs include the OPCC and project implementation costs such as planning and design, administration, and construction management. Assumptions made during project development can add to the variability of final bid project costs when compared to the planning level costs. The assumptions are necessary to capture costs for project elements that cannot be defined at a planning level. Project costs were developed using modeled pipeline quantity estimates and data which were then multiplied by unit cost estimates. During design development, more specific data will be used to inform the design and the resulting project cost estimate. **Table ES-2** provides a breakdown of the different assumptions used for project implementation, including cost contingency.

Table ES-2 Costing Factors for Construction Bid and Total CIP Project Costs

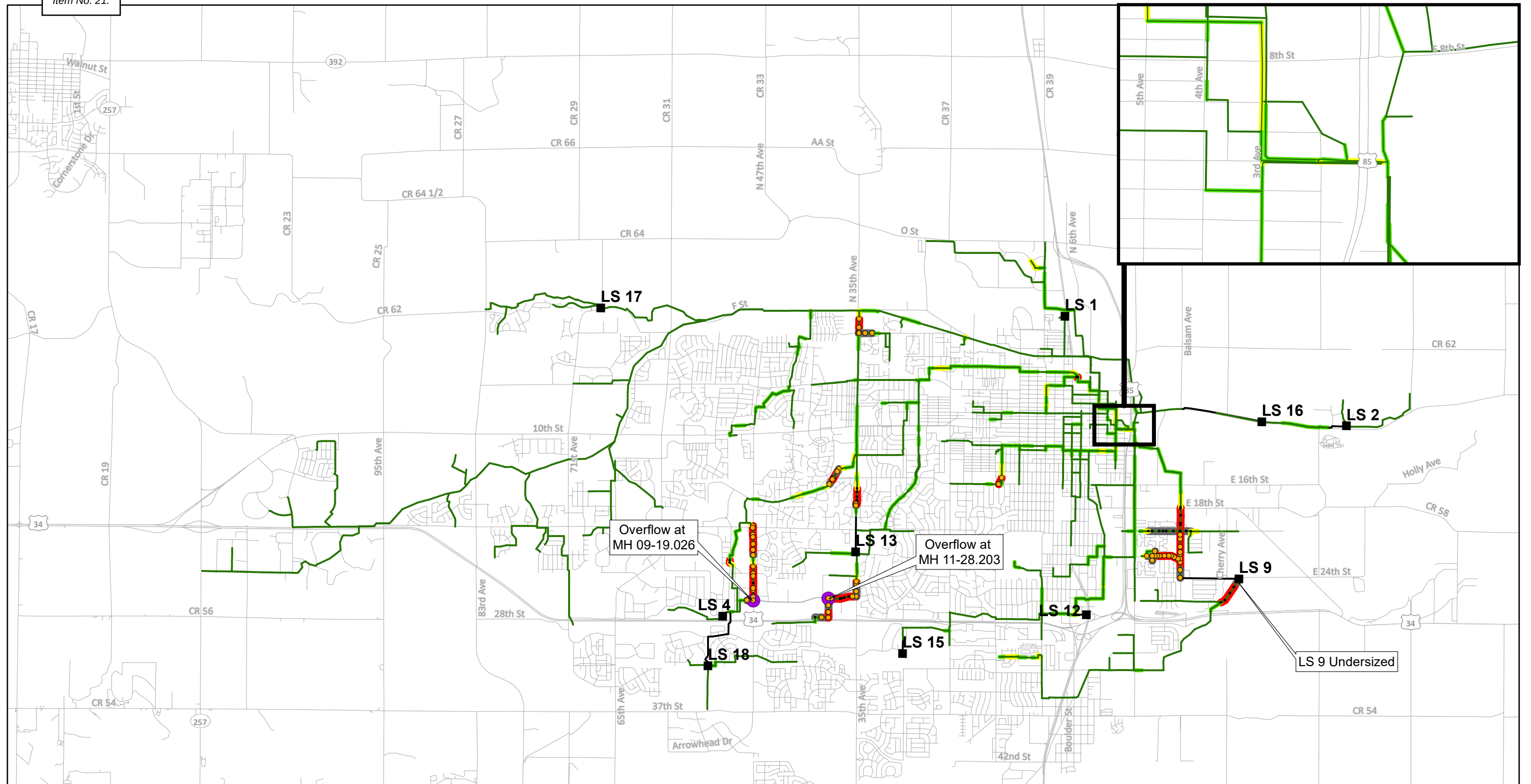
Category	Item	Costing Factor
Construction Bid Cost (includes infrastructure and contractor overhead, profit, bonds, and insurance)	Erosion Control/Stormwater Pollution Prevention ¹	2%
	Mobilization and Demobilization ¹	5%
	Contingency ²	35%
Project Implementation ³	Feasibility and Site Studies	9% for OPCC ≤ \$1M 6% for OPCC of \$1M to \$10M 5% for OPCC > \$10M
	Preliminary and Final Design	9% for OPCC ≤ \$1M 6% for OPCC of \$1M to \$10M 5% for OPCC > \$10M
	Engineering Services During Construction	5%
Additional Project-Related Costs ³	Outside Construction Management	5%
	Outside Project Management	3%

¹ Construction costing factors for erosion control/stormwater pollution prevention, mobilization and demobilization are added to the subtotal of unit cost items.

² Contingency is 35% of the subtotal of the unit cost items and contractor born costs determined by costing factors.

³ Project Implementation and Additional Project-Related Cost categories are determined as a percentage of the construction cost and part of the total CIP project costs.

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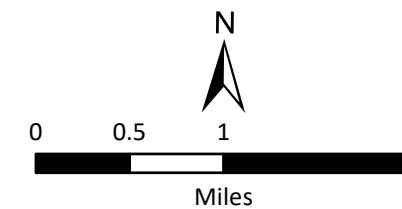
Legend

- Existing Lift Stations
- Existing Force Mains
- Existing Interceptors

- Peak WWF d/D**
- 0 - 0.5
 - 0.5 - 0.8
 - 0.8 - 0.99

- Surcharged (d/D = 1)**
- Backwater
 - Capacity Deficiency

- Freeboard (Distance from Manhole Rim to HGL)**
- <10 ft
 - > 10 Ft
 - Predicted Manhole Overflows

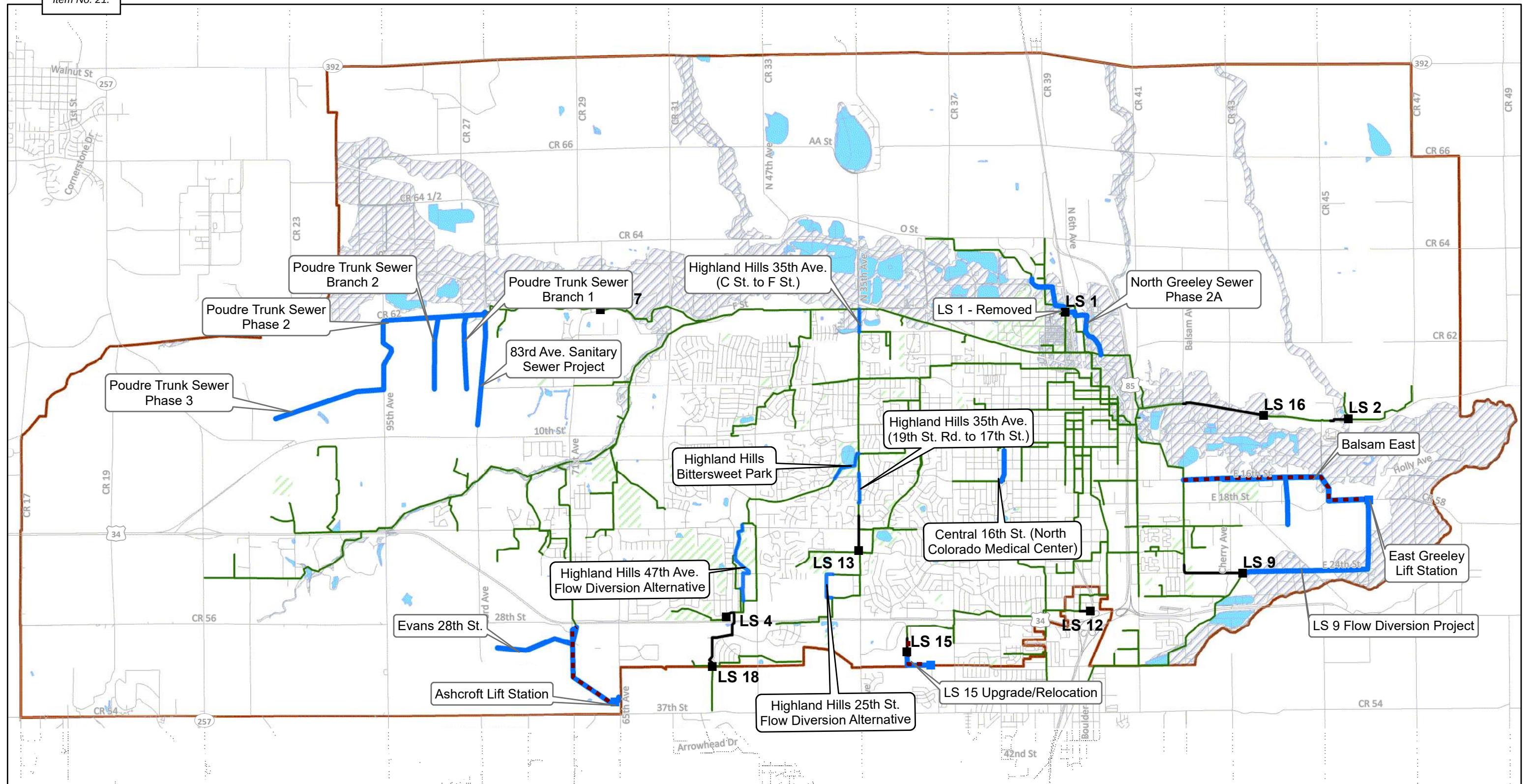


Predicted Peak Wet Weather Flow Deficiencies- Existing System

Figure ES-11

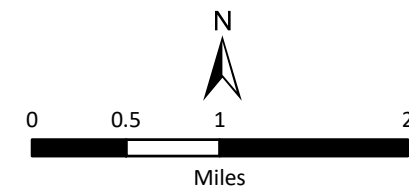
Greeley Sewer System Master Plan

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Legend

- LREGA
- 100-yr Floodplain
- Lakes and Ponds
- Park
- Existing Lift Stations
- Existing Interceptors
- Existing Force Mains
- 5 Year LS Recommendations
- 5 Year Pipe Recommendations
- 5 Year Force Main Recommendations



Recommended 5 Year Improvements
 Figure ES-12
 Greeley Sewer
 System Master Plan

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Recommended 20 Year Improvements

Figure ES-13

Greeley Sewer System Master Plan

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ES.6.1 Identified Projects

Table ES-3 provides cost information for the 5-year planning horizon projects and notes the project driver and the party likely responsible for funding each project. **Table ES-4** presents the information for 20-year planning horizon projects. The growth driven projects will be funded by either the City, the developer, or a combination of the two, depending on the project driver.

Table ES-3 5-Year Planning Horizon Project Costs and Drivers

Project	Driver	Responsible Party	OPCC ¹ (\$M)	Total Cost ² (\$M)
Highland Hills 47 th Ave. Flow Diversion	Deficiency	City	\$1.4	\$1.8
Highland Hills 35 th Ave. C. St. to F St. ³	Deficiency	City	N/A	N/A
Highland Hills 25 th St. Flow Diversion Alternative	Deficiency	City	\$0.5	\$0.7
Highland Hills Bittersweet Park	Deficiency	City	\$0.9	\$1.1
Highland Hills 35 th Ave. (19 th St. Rd. to 17 th St.	Deficiency	City	\$0.8	\$1.0
LS 9 Flow Diversion Project ³	Growth	City	See Footnote 3	
Central 16 th St. (North Colorado Medical Center)	Deficiency	City	\$0.7	\$0.9
North Greeley Sewer Phase 2A	Growth	City	\$5.5	\$5.8
Ashcroft LS ⁴	Growth	City	N/A	N/A
Balsam East	Growth driven development projects. Current model-predicted conditions are not observed so project timing should be evaluated.		\$5.1	Not used for development-driven projects.
East Greeley LS			\$7.4	
LS 15 Upgrade/Relocation	Growth	Development	\$1.2	
Evans 28 th St.	Growth	Development	\$1.9	
83 rd Ave. Sanitary Sewer Project	Growth	Development	\$2.3	
Poudre Trunk Phase 2	Growth	Development	\$6.2	
Poudre Trunk Sewer Branch 1	Growth	Development	\$0.9	
Poudre Trunk Sewer Branch 2	Growth	Development	\$1.2	
Poudre Trunk Sewer Phase 3	Growth	Development	\$1.7	

¹ The OPCC represents the opinion of cost for construction. The total CIP costs include other factors.

² Total costs include the OPCC, land, project implementation and additional project related costs.

³ This CIP has been identified through modeling but the City has not observed the capacity limitations indicated by the model. Additional investigation is recommended to confirm the need for this project. The project is listed in the 5-year planning horizon for additional investigation and the costs are included in the 20-year planning horizon.

⁴ This project is already funded and not included in the total CIP costs.

Executive Summary

Table ES-4 20-Year Planning Horizon Project Costs and Drivers

Project	Driver	Responsible Party	OPCC ¹ (\$M)	Total Cost ² (\$M)
LS 9 Flow Diversion Project ³	City	City	\$6.4	\$8.3
North Poudre Railroad Phase 1	Deficiency	City	\$5.7	\$7.4
North Greeley Sewer Phase 2B	Deficiency	City	\$5.5	\$7.2
North Poudre E C Street	Growth	City	\$17.1	\$21.9
North Greeley O Street	Growth	City	\$12.2	\$15.6
North Poudre Fern Avenue	Growth	Development	\$3.8	Not used for development - driven projects
North Poudre Cherry Avenue East	Growth	Development	\$4.1	
North Poudre Cherry Avenue West	Growth	Development	\$2.4	
North Poudre North 1 st Avenue West	Growth	Development	\$6.5	
North Greeley Centennial Highway	Growth	Development	\$4.3	
North Greeley North 23 rd Avenue	Growth	Development	\$4.0	
North Greeley Seeley Lake	Growth	Development	\$3.2	
North Greeley 47 th Avenue	Growth	Development	\$2.6	
North Greeley 47 th Avenue West	Growth	Development	\$2.9	
North Greeley 59 th Avenue	Growth	Development	\$2.1	
Sheep Draw 29 th Street	Growth	Development	\$2.6	
Sheep Draw US 34	Growth	Development	\$2.5	
Windsor West	Growth	Development	\$7.5	

¹ The OPCC represents the opinion of cost for construction. The total CIP costs include other factors.

² Total costs include the OPCC, land, project implementation and additional project related costs.

³ This CIP has been identified through modeling but the City has not observed the capacity limitations indicated by the model. Additional investigation is recommended to confirm the need for this project. The project is listed in the 5-year planning horizon for additional investigation and the costs are included in the 20-year planning horizon.

ES.6.2 CIP Implementation Schedule

The CIP Planning Tool was used to develop a schedule with consideration of overall costs. Preliminary project planning, design, and construction start dates are subject to change depending on impacts from other projects identified in the water and non-potable water master plans. **Figure ES-14** indicates the proposed implementation schedule for the 5-year and 20-year planning horizons.

 LREGA
 Sewer 5 Year CIP

 Flood Zone
 Sewer 20 Year CIP

 Lake

 Park

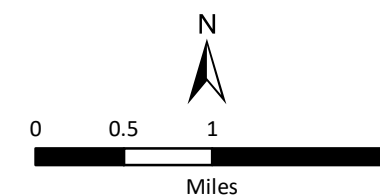
■■■■■ Sewer 20 Year CIP

 Lake

 Park

Figure ES-14

Greeley Sewer System Master Plan



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Section 1

Background and Project Purpose

The City of Greeley (City) Colorado's sanitary sewer system has grown by 96 miles in the last 20 years and over 17 miles in the past 10 years. Greeley continues to experience strong growth in population through both infill and the expansion of residential and non-residential development within the City's defined service area. To address existing and future system needs while considering growth, existing system performance, and improvements required to meet their committed level of service to the new growth areas, the City has updated the *2009 Sanitary Sewer Master Plan* (CDM Smith, 2009) and the *NFRWQA Utility Plan*. This master plan update documents the approach and assumptions used to evaluate the system while defining the capital improvements needed for the long-range CIP for the sanitary sewer system through the year 2040.

1.1 Master Planning Process and Organization

The City's 2021 Sanitary Sewer System Master Plan is being developed in conjunction with its 2021 Water Master Plan and Non-Potable Water Master Plan. Greeley is integrating all three of the master plans so they have a consistent approach to determining the existing and future needs through population and water demand information. By integrating the three master plans, the City made the approach to determining existing and future population, projecting water demands (with resulting wastewater generation) and the defining of capital projects and costs the same across all three master plans.

As a result, the future population projections and associated water demand, the planning horizons, and the approach to capital and project cost development are consistent between the three master plans. This integrated master planning approach is illustrated below in **Figure 1-1**. This figure also shows the critical points of coordination between the three master plans.

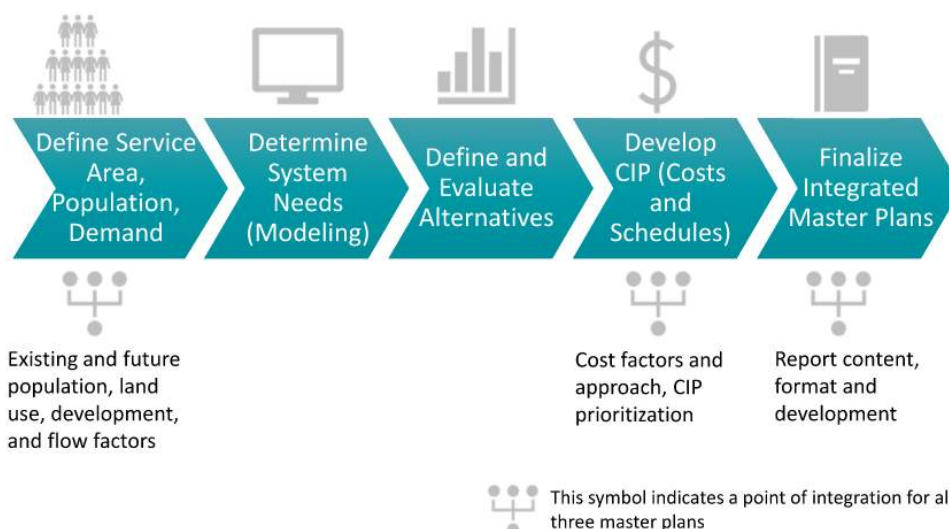


Figure 1-1 Master Plan Approach and Integration with other Master Plans

1.2 Summary of Previous Master Plans

This master plan builds on the information and analysis completed in the 2008/09 master plan and 2014 model update, which are summarized in the following subsections. Both master plans were limited in wet weather analysis due to insufficient rainfall during the monitoring period. The master plans also identified similar sewer system capacity limitation as described below.

1.2.1 Report Organization

The SSMP is organized into the following sections:

- Section 1 – Background and Project Purpose
- Section 2 – Existing Sewer System and Service Area Data
- Section 3 – Existing and Future Systems Model Development
- Section 4 – Future Flow Projections
- Section 5 – Existing and Future Systems Evaluation
- Section 6 – Capital Improvement Plan

1.2.2 2008/09 Sewer System Master Plan

The 2008/09 master plan provided a CIP for the sanitary sewer system through the year 2028. The plan analyzed the sanitary sewer system including the system's lift stations, sewer lines greater than or equal to 10 inches in diameter, and force mains. Improvements were identified for both reinforcement of the existing system and for expanding services to new locations throughout the City. The hydraulic model was converted from steady-state to a quasi-dynamic extended period simulation (EPS) model to analyze how the system performs over time.

For modeling purposes, equivalent populations were estimated using the historical ratio of commercial and industrial water use to residential use. These populations were then distributed spatially using water billing records and Greeley Community Development Department Planning and Zoning Division documents. Five-year housing unit growth rates were used to forecast the population from 2008 to 2012. The 20-year population was projected assuming a population growth rate of 2.25% per year from 2012 to 2027. The equivalent future employment was estimated by assuming a 20% increase in employment, yielding a future equivalent population of 184,812 people. Future equivalent populations were assigned to undeveloped parcels. The anticipated future equivalent population of 5,000 people associated with the Sheep Draw area was distributed uniformly among undeveloped plots of land within this area.

During the spring 2008 flow monitoring program, there was one substantial rainfall event (June 4, 2008) which resulted in 0.94 inches of precipitation recorded at a single gage, yet the flow meters did not record a significant response to this rainfall event. The 2008 flow data was not considered appropriate for development of wet weather modeling parameters, nor for the calibration of wet weather response. The 2000 flow monitoring data were used to develop system wet weather parameters.

Evaluation of the sanitary sewer system was based on the capacity of the pipes under DWF and WWF conditions for existing and future scenarios. Each segment identified as deficient was recommended for paralleling, lining, or replacement with a larger diameter pipe based on length of repair and severity of the deficiency. The recommended repairs were grouped into projects.

1.2.3 2014 Existing Sewer System Hydraulic Model

In 2014 the City contracted CDM Smith to update their existing 2008 flow monitoring data and the existing system hydraulic model from the *2009 Sanitary Sewer Master Plan* (CDM Smith). The 2014 report included the transfer and update of their sanitary sewer system model from Innovyze's H2OMap Sewer to the geographic information system (GIS) based InfoSWMM sewer model. The model could not be calibrated for WWF because there was not a sufficient wet weather event during the monitoring period but was calibrated to DWF conditions.

Sewer system evaluations were conducted for the existing system using DWF conditions, 10-year WWF conditions, and 25-year WWF conditions. The project conclusions and findings are based on the DWF and 10-year WWF scenarios. A lift station consolidation feasibility review was completed to identify opportunities where two or more existing lift stations could be combined into another existing or proposed new lift station. The key findings for existing conditions were:

- There were no capacity issues under dry weather conditions with approximately 94% of the sewer system (by length) under 50% of its capacity on a typical dry day.
- The existing sewer system did not show any flooding or sewer system overflows observed during both the 10-year and 25-year WWF conditions analysis. There was no significant difference in capacity utilization under 10-year wet weather conditions. As noted above, the existing system was evaluated for the 10-year and 25-year conditions only.
- Approximately 2% of the sewer (by length) was fully utilized under 10-year wet weather conditions.
- Lift station (LS) Consolidation findings:
 - LS4 (Highland Hills) could be removed from service and the flow diverted into LS18 (T-Bone Subdivision) by gravity conveyance.
 - Diversion of LS15 (Auto Plaza) to the LS9 (E. Cherry Avenue) service area was found to be possible with additional capacity improvements to downstream pipes.
 - The influent line for LS13 (Southwest Greeley) could be diverted east and downstream pipes upsized to accommodate additional flow, but the cost may be prohibitive.
 - LS2 (Weld Co. Airport), LS16 (E. 8th Street.), and LS9 (E. Cherry Avenue) could be consolidated into a single new lift station with additional capacity improvements to downstream pipes or diversion of flow to provide adequate capacity.

1.3 Summary of Available Data

The City-provided information used to inform the development of the master plan update is described in the following sections. This information includes mapping, asset information, planning data, and physical data like metering.

1.3.1 GIS Data

The City provided their current GIS files (November 2019) including planning, flow metering, land use, population, sewer system, and drainage information. **Tables 1-1** through **1-6** summarize the GIS data provided in each category.

Table 1-1 GIS Planning Data

Shapefile	Information Provided
AddressPoints	Geolocations for each address.
Parcels	Parcel Location and Information
Roads	Roadway Polygons
Contours	Elevation information
StreetCenterlines	Roadway Lines
Boundaries_208	208 Boundaries for the City of Greeley and surrounding municipalities
GreeleyCityLimit	City of Greeley City Limits
LREGA	Long Range Expected Growth Area
Boundary_208_2019.gdb	208 Boundary for City of Greeley and surrounding areas
2019_Overlay	Location of roadway restoration projects
Meters_Cust_number	Location and customer number of water meters to help locate billing data
Parks_NatAreas.zip	GIS location of parks and natural areas
Downtown Development Area (DDA) Shapefiles	Shapefiles showing the location of development for the downtown develop project

Table 1-2 GIS Flow Metering Data

Shapefile	Information Provided
Flow_Metering_2019	Location of 2019 flow meters (CDM Smith)
Flow_Metering_2019_RainRauges	Location of 2019 Rain Gauges
Flow_Metering_Historical	Historical flow meter locations
Flow_Metering_Permanent_new2019	Location of permanent flow meters

Table 1-3 GIS Land Use Data

Shapefile	Information Provided
CombinedNeighborhoodUses	Land use type and description for each neighborhood within the City
Employment_and_Industrial_Areas	Location and size of each employment area within the City
MixedUseHighIntensity	Location and size of the mixed use high intensity areas within the City
NorthAnnexationArea	Location of area recently annexed by the City
Open_Lands_fromPTOLLayers	Location of open land
UNCandAIMS	Locations of Colleges
UrbanReserve	Location of Urban Reserve area

Table 1-4 GIS Population Data

Shapefile	Information Provided
Households_density	Household density information
Median_income_clip	Median income information

Table 1-5 GIS Sewer System Information

Shapefile	Information Provided	Comments
SewerStructuresPublic	Manhole ID, location, depth, diameter, material, liner, construction date, and rehab date	No invert or rim elevations provided in shapefile. Approximately, 1611 sewer structures were included in 2014 model and according with the new sewer system information 326 new structures should be added in the new 2019 SSMP model.
SewerPumpStations	Station name, locations, number, construction date, upgrade date, number of pumps, pump horsepower, pump capacity, head, wetwell size, rim elevation, bottom elevation, and invert elevation	N/A
SewerMainLinesPublic	Gravity sewer locations, upstream manhole, downstream manhole, flow basin, pipe size, material, liner, lining/construction date, and flow type.	No invert elevations provided. Approximately 1,818 of the 8,181 records found in the shapefile were included in 2014 model. 134 new pipes with diameter greater than 8 inches were provided that will be added to the 2019 model and master plan.
Flow_Basins	Flow basin areas	N/A

Table 1-6 GIS Drainage Data

Shapefile	Information Provided
Ditches	Location of drainage ditches
Drainages	Location of rivers and streams
DrainageBasins	Locations of the larger drainage basins within the area
HydroBody	Location of lakes rivers and streams

1.3.2 Flow Data

1.3.2.1 Permanent Flow Meters

The City provided data from seven permanent flow meters from 2016-2019 in 15-minute intervals. The data included depth, velocity, and flow information. **Table 1-7** lists the meters and locations for the data provided.

Table 1-7 Permanent Flow Meters

Flow Meter ID	Location	Main Size	Comments
05-00.003	10 th Street, Middle Line	24"	Bad data (1/1/16 – 3/31/16) Blank Data (1/1/19 – 3/6/19)
03-00.042	10 th Street, South Line	27"	Bad data (1/1/16 – 3/31/16) Blank Data (1/1/19 – 3/6/19)
07-00.003	10 th Street, North Line	24"	Blank Data (1/1/19 – 3/6/19)
13-00.002	1 st Ave, West Line	24"	
02-00.002	1 st Ave, Middle Line	12"	

Section 1 • Background and Project Purpose

Flow Meter ID	Location	Main Size	Comments
01-00.002	1 st Ave, East Line	24"	Zero flow (1/1/17 – 1/9/17)
08-00.011	Highway 85	48"	
08-00.059	F Street and 35 th Ave	36"	2019 Data 5 minute
08-00.163	10 th Street and 63 rd Ave	27"	2019 Data 5 minute

1.3.2.2 Lift Stations

The City provided flow data at their lift stations from 2014 – 2019. After a review of the data, there were a large number records with data outliers or “bad” data. **Figures 1-2 to 1-4** provide a breakdown of the lift station flow data.

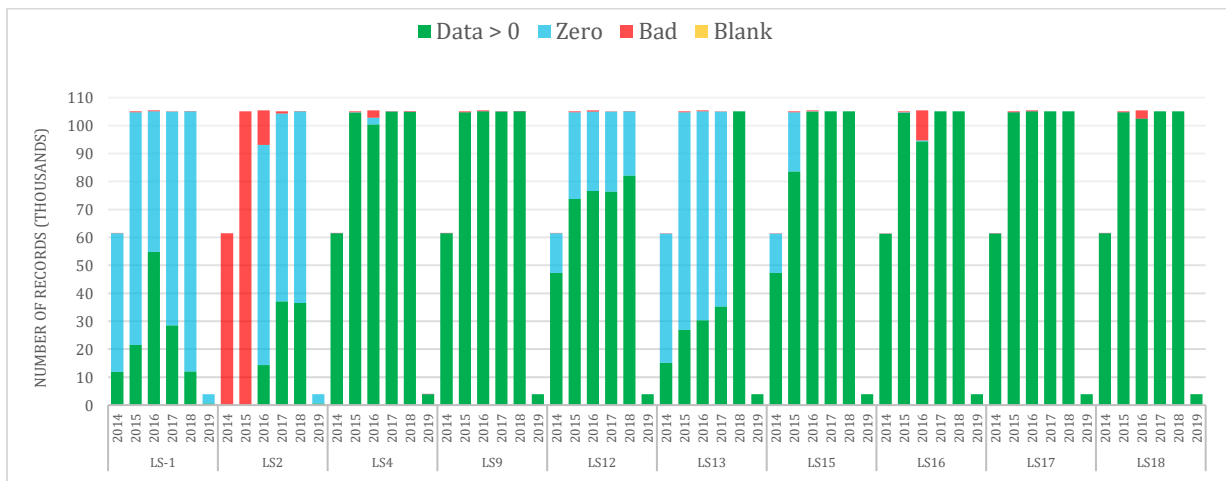


Figure 1-2 Lift Station Outflow Data Records Distribution

LS2 was constructed in 2016. During the reporting period, the data showed very low flow, other than from a water flushing station that occurred late at night.

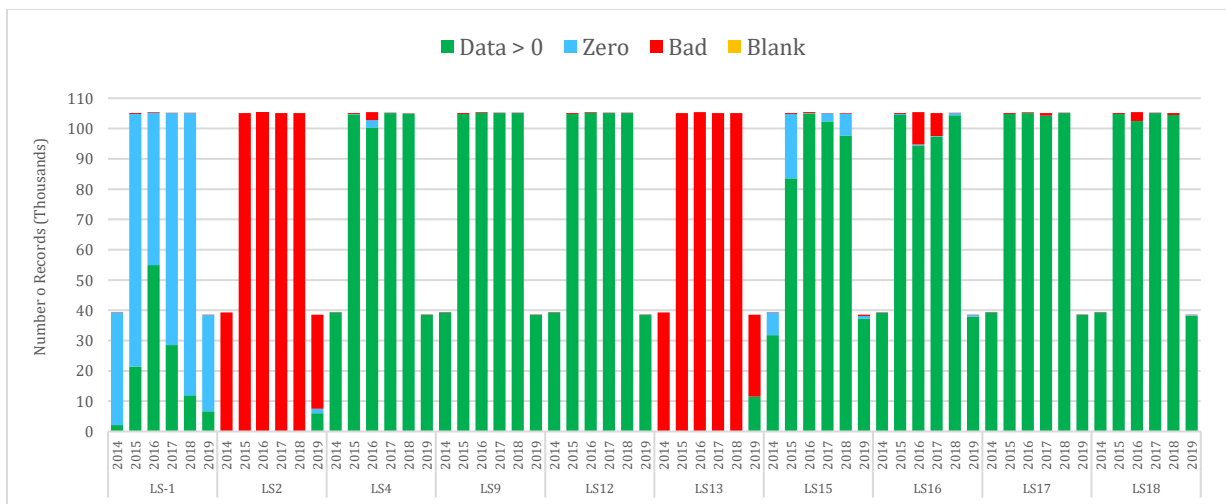


Figure 1-3 Lift Station Inflow Data Records Distribution

No inflow information from LS2 or LS13 was available due to the data collection method. Historical data is based on a flow meter located on the downstream force main for both lift stations.

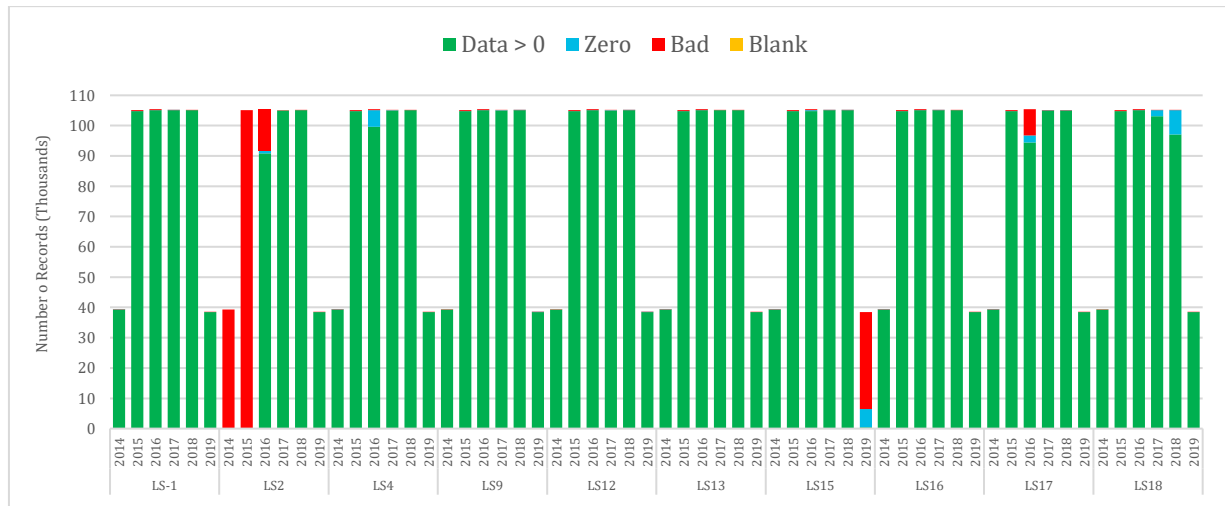


Figure 1-4 Lift Station Level Data Records Distribution

LS2 was constructed in 2016, resulting in the lack of records shown in the above figure.

1.3.2.3 Wastewater Treatment Plant

The City provided flow data at their treatment plant from 2014 – 2020 in 15 minutes intervals, with no major data gaps or issues.

1.3.3 Lift Station Drawings and Curves

Table 1-8 summarizes the lift station information provided by the City.

Table 1-8 Lift Station Information

Lift Station (LS) Number	Station Name	Current Capacity (gpm)	Horse Power (HP)	Approximate Construction Year	Upgrade Year	Pump Curve
LS1	North 9 th Avenue	80	3	1959	2000	Yes
LS2	Airport	120	7.5	2016	-	Yes
LS4	Highland Hills	100	7	1992	2015	Yes
LS9	Cherry Avenue	638	21	1989	2013	Yes
LS12	Garden City	80	3	1985	2007	Yes
LS13	35 th Avenue	1705	75	1981	2012	Yes
LS15	Auto Plaza	150	10	1980	-	Yes
LS16	East 8 th Street	270	13	1985	2013	Yes
LS17	Farmers Spur	560	6.2	1993	2015	Yes
LS18	T Bone	668	54	1998	2013	Yes

HP = horsepower

gpm = gallons per minute

1.3.4 Sanitary Sewer System Drawings

Table 1-9 below lists the sanitary sewer system drawings that were provided by the City.

Table 1-9 Sanitary Sewer System Drawings

Project Name	Drawing Type	Year	Comments
7 th Avenue Improvements	Design	2019	
35 th Avenue Preliminary Design Drawings	Design	2020	
83 rd Ave – Sanitary Sewer Project	Design	2017	
Ashcroft Draw Basin Sanitary Sewer Phase 1	As-Built	2017	
Ashcroft Draw Basin Sanitary Sewer Phase 2A	Design	2018	Project constructed
Ashcroft Draw Basin Sanitary Sewer Phase 2B	Design	2019	30% Design
City Center West	Design	2014	
College Park Subdivision	Record Drawing	2012	
Greeley Weld County Airport East Side Utilities	Record Drawing	2012	
Greeley Weld Airport Lift Station	As-Built	2015	
Homestead Heights Filing 4	Record Drawing	2008	
North Greeley Sewer Phase 2A	As-Built	2019	Partially Constructed
North Greeley Sewer Phase 2A	Design	2016	
North Greeley Sewer Phase 2B	Design	2018	
Poudre Trunk Sewer Phase 2	Design	2019	100% Design
Poudre Trunk Sewer Phase 2	Design	2019	100% Design
River Run at Poudre River Ranch	Record Drawing	2017	
Sheep Draw Sanitary Sewer Extension	As-Built	2011	
The Trails at Sheep Draw Phase 1A	Record Drawing	2018	
T-Bone Lift Station Emergency Overflow Sewer	Design	2012	
West Greeley Tech Center Phase 1	As-Built	2005	
West Greeley Tech Center Phase 2	As-Built	2015	
East Greeley Sewer Improvements Balsam Avenue Line	As Built	1989	

1.3.5 Planning Information

Tables 1-10 through 1-12 review the previous studies and reports, planning information, and intergovernmental agreements (IGAs) provided by the City. The City of Greeley adopted the Imagine Greeley Comprehensive Plan in 2018, which is a policy guide that provides framework for public and private growth and development decisions made by the City of Greeley over the next ten to twenty years. As a part of the Comprehensive Plan, a list of recommended actions was identified in Chapter 5 to assist in implementation of this plan. A summary of action items addressed with the development of this Sanitary Sewer Masterplan to ensure implementation of the Comprehensive Plan can be found in **Appendix G**.

Table 1-10 Previous Studies and Reports

Report	Year
Greeley Ashcroft Draw Basin Sanitary Sewer: NFRWQPA Minor Amendment	2017
Imagine Greeley – Comprehensive Plan	2018
Comprehensive Plan Economic Analysis	2017
Comprehensive Plan Appendices	2018
Solids Handling and Treatment Master Plan	2012
Sanitary Sewer Master Plan	2009
North of the River Sewer Facilities Plan	2010
Wastewater Utility Plan – NFRWQPA 208 Plan	2009
Sewer System Model Update and Analysis	2014
Water Pollution Control Facility Treatment and Nutrient Master Plan	2018
City of Greeley Population and Water Demand Projections	2018
Sanitary Sewer Master Plan Volume 1	2003
7 th Avenue Storm Drain Improvement Project; Sewer Improvement Modeling Tech Memo	2019
83 rd Avenue Sanitary Sewer Main Extension – Sewer Report	2017
Ashcroft Draw Basin Map and Flow Projections	2017
Ashcroft Lift Station and Forcemain Analysis TM	2018
Boomerang 88 Subdivision Sewer System Analysis	2007
Poudre Trunk Sewer Phase II Project-Sub-Basin Master Plan	2018
Final Hydraulic Report – The Trails at Sheep Draw	2018
Industrial Pretreatment Annual Report	2018
Air Emissions and Odor Management Plan	1999
Water Pollution Control Facility Stormwater Management Plan	2017
City of Greeley Strategic Housing Plan	2018
Annual Growth and Development Projections Report	2019
Lakes Bluffs East Area	2013
Promontory Heights Planned Unit Development (PUD)	2019
Lake Bluffs PUD 2019	2019
Lake Bluffs PUD 2020	2020
Flow Information for Eaton	2020
Downtown Redevelopment Plan	2020
Cache Project PUD	2020
Airport Master Plan	2016
AIMS/UNC Reports	2020
City Center West Hydraulics Report	2019
Cobblestone PUD	2019
Grapevine PUD	2019
Stoneybrook PUD	2019
Triple Creek Subdivision PUD	2019
Westgate PUD	2019

Section 1 • Background and Project Purpose**Table 1-11 Planning Information**

Data	Request Purpose
City of Greeley Design Criteria and Construction Specifications	Sewer System Master Plan
Current Colorado Discharge Permit for the Wastewater Treatment and Reclamation Facility (WTRF)	208 Report Update
2019 Management Structure for the Water and Sewer Department	208 Report Update
Emergency Power Availability at Wastewater Lift Stations	208 Report Update
WTRF Site Deeds	208 Report Update
Water Billing Data (2014-2019)	Sewer System Master Plan
Emergency Response Protocols	208 Report Update

Table 1-12 Intergovernmental Agreements

Name	Type	Year
Garden City	Wastewater Treatment	2018
Fort Collins, Windsor, Carestream Health, Boxelder Sanitation District, South Fort Collins Sanitation District, Leprino Foods Company	Water Quality Monitoring on the Lower Cache La Poudre River	2019
State of Colorado	Water Resources Monitoring	2018
Evans	Wastewater Treatment	2002
T-Bone (with Evans)	Wastewater Treatment	2011
Windsor	Wastewater Treatment and Land Use Planning	2008
Fort Collins, Windsor, Boxelder, South Fort Collins, Kodak	Water Quality Monitoring	2007
State of Colorado	Satellite Linked Monitoring	2007
Evans/Ashcroft Lift Station	Wastewater conveyance	Draft

Section 2

Existing Sewer System and Service Area Data

The City of Greeley is in Weld County approximately 60 miles northeast of Denver, east of the cities of Fort Collins and Loveland. Greeley is accessible from I-25 and adjacent to the intersection of US Highways 85 and 34. It is the twelfth largest city in Colorado and is the county seat and most populous city in Weld County. Greeley has developed into a cultural and academic hub, hosting educational institutions such as UNC and Aims Community College. The City offers an affordable cost of living with many options for housing and economic growth.

2.1 Wastewater Service Area Overview

The City's total land area was approximately 30,730 acres (or 48 square miles) as of 2016, which marked an increase of over 13,000 acres since 1990. The largest period of annexations occurred during the early 2000s. **Figure 2-1** from Imagine Greeley illustrates the City's historical growth.

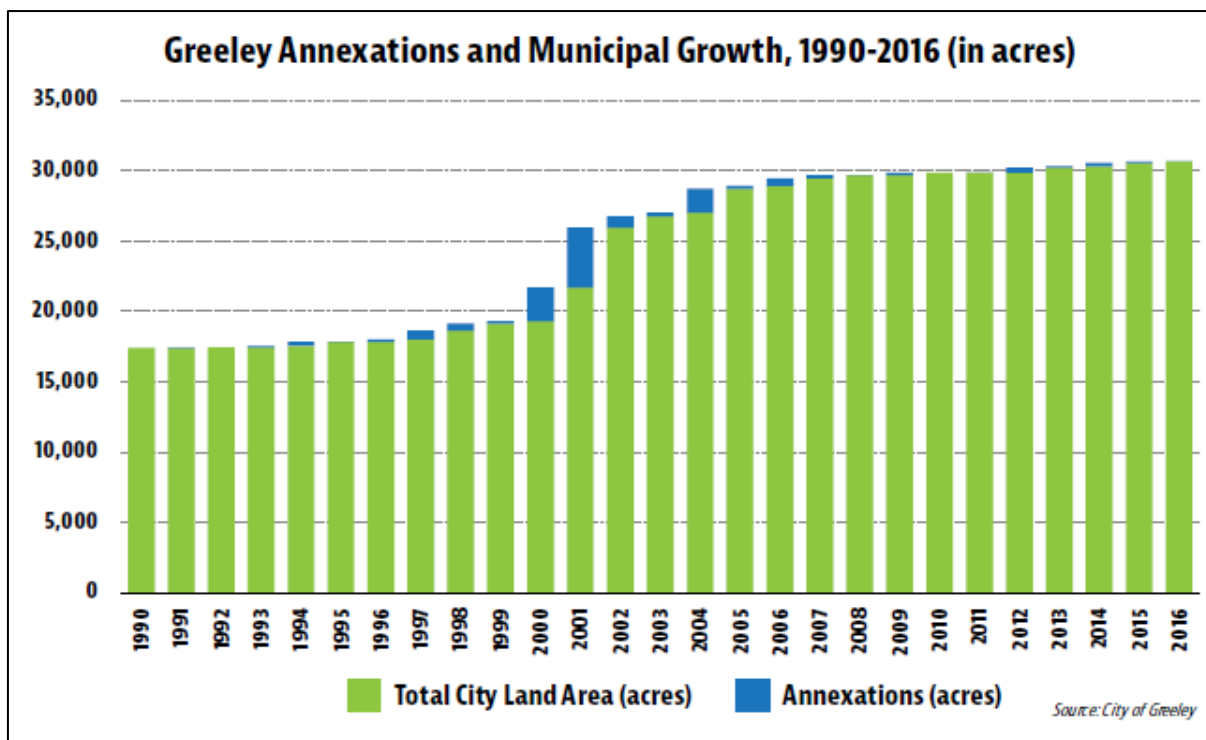


Figure 2-1 Greeley Annexations and Municipal Growth

Source: Imagine Greeley Comprehensive Plan

Of the City's total land area (30,730 acres), 58% was considered to be "developed" in 2017. Within this developed area, the largest land use, as recorded by the Weld County assessor, is rights-of-way (streets, railroads, etc.), followed by residential land uses. The City has a large percentage of land considered property tax exempt/institutional. The remaining 42% of Greeley's land area is considered "undeveloped" and is predominantly used for agriculture. While this land

is undeveloped today, it may be developed in the future unless preserved in some manner.

Figure 2-2 from Imagine Greeley provides detailed information on Greeley's current land use.

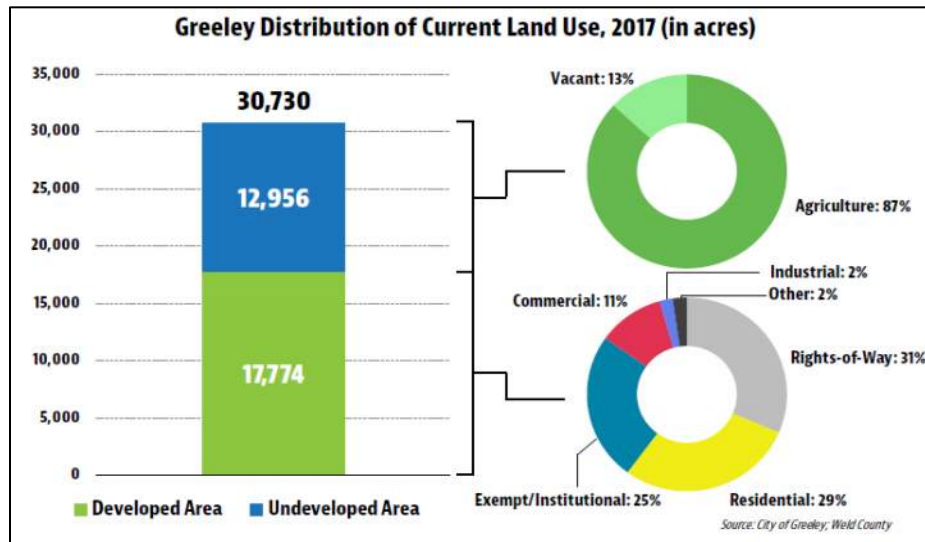


Figure 2-2 Greeley Distribution of Current Land Use, 2017 (in acres)

Source: Imagine Greeley Comprehensive Plan

The City zoning code regulates the types of uses that may occur in specific locations and how such uses may be built. In 2015, most of the land in Greeley was zoned for residential uses, with Agricultural/Holding as the next largest zone type by land area. These categories were the only ones to see decreases in area between 2007 and 2015, likely due to the rezoning that occurred as agricultural lands were developed for other uses. **Figure 2-3** provides a chart detailing the zoning shifts between 2007 and 2015. **Figure 2-4** provides the City's 2019 zoning map.

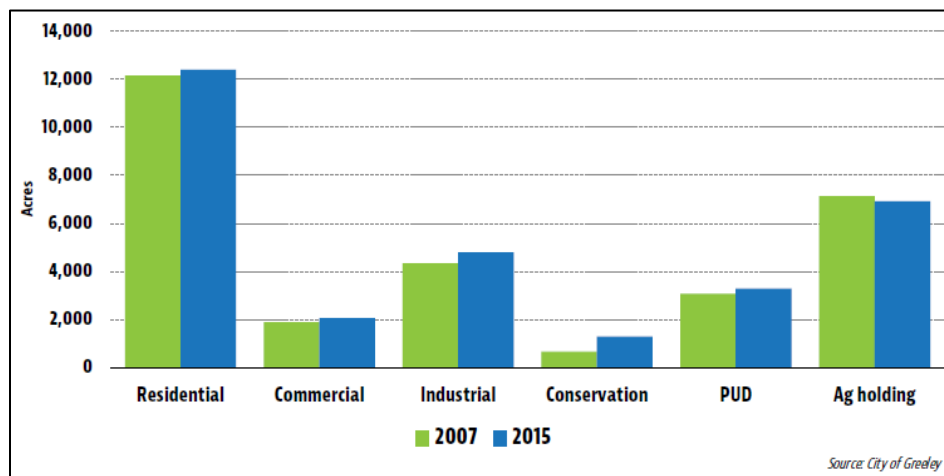


Figure 2-3 Greeley Distribution of Land Uses by Zoning Categories 2007 and 2015

Source: Imagine Greeley Comprehensive Plan

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2.2 Sanitary Sewer System Configuration

2.2.1 Existing Sanitary Sewer System

The City's sanitary sewer system currently consists of approximately 350 miles of sewer pipe which ranges in size from 4" diameter through 21" diameter including approximately 17 miles of interceptor ranging in size from 24" diameter to 48" diameter. The sewer lengths by diameter are shown in **Table 2-1**. The areas that are potentially served by septic systems are shown in **Figure 2-5**.

Table 2-1 Sewer Lengths by Diameter (from GIS information)

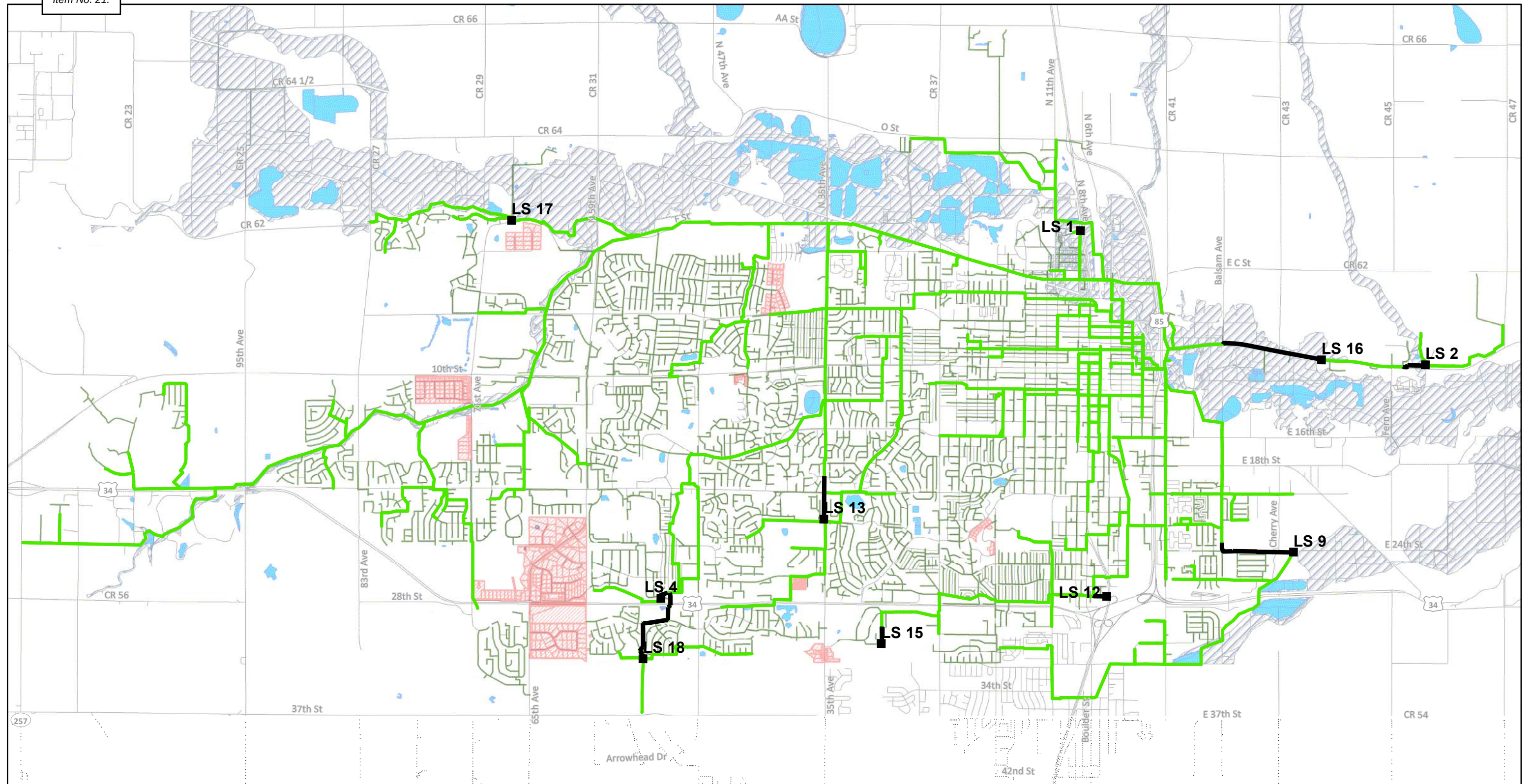
Diameter (inches)	Length (ft)
4	4,697
6	88,818
8	1,398,226
10	131,384
12	78,455
15	54,568
16	465
18	51,779
21	38,688
24	17,008
27	10,779
30	19,011
36	38,006
42	1,232
48	5,430

The City's wastewater conveyance system includes 10 lift stations, shown below in **Table 2-2**.

Table 2-2 Existing Lift Station Information

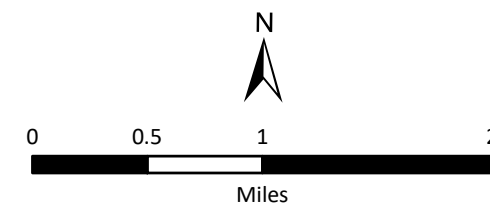
Lift Station Number	Station Name	Current Capacity (gpm)	Horsepower	Approximate Construction Year	Upgrade Year
Lift Station 1	North 9 th Avenue	80	3	1959	2000
Lift Station 2	Airport	120	7.5	2016	-
Lift Station 4	Highland Hills	100	7	1992	2015
Lift Station 9	Cherry Avenue	638	21	1989	2013
Lift Station 12	Garden City	80	3	1985	2007
Lift Station 13	35 th Avenue	1705	75	1981	2012
Lift Station 15	Auto Plaza	150	10	1980	-
Lift Station 16	East 8 th Street	270	13	1985	2013
Lift Station 17	Farmers Spur	560	6.2	1993	2015
Lift Station 18	T Bone	668	54	1998	2013

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Legend

-  100-yr Floodplain
-  Lakes and Ponds
-  Septic Tank Parcels (Assumed)
-  Existing Lift Stations
-  Existing Trunk Lines
-  Force Main
-  Existing Collector Sewer



Existing Sewer System
Figure 2-5
Greeley Sewer
System Master Plan

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2.3 Historical Population Data

The City's population grew from a 20,354 in 1950 to an estimated population of 108,175 in 2019. A closer look at the population trends since 2005 reveals that the City's population decreased during 2009 but returned the following year with continued growth ever since that temporary increase. **Figure 2-6** shows the City's population growth from 2005-2017.

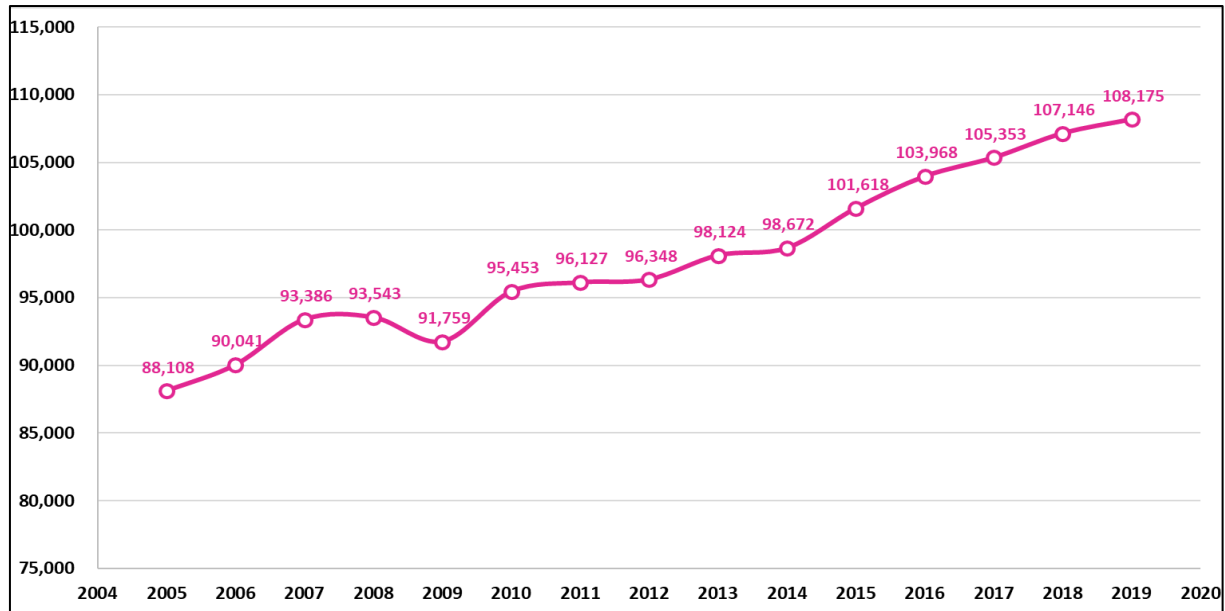


Figure 2-6 Greeley Population 2005 – 2020

2.4 Water Billing Data

The City's sewer flows are not metered and are billed directly for each customer on the wastewater system based on winter water use. Winter water billing data can be used to estimate base wastewater flows (BWF) as this is the portion of wastewater flow that comes directly from water use. During the winter months, water demand is almost exclusively associated with household use, with typically no outside irrigation or other consumptive uses, and is returned as wastewater. Winter water billing data for the City was used to compare to overall treatment plant flows, to distribute population and flow throughout the system and to analyze nonresidential wastewater flow on an acreage basis. This approach was used to inform recommendations for projecting flows in future areas.

The City provided water billing data from 2014 through 2019. This data included a list of the wastewater customers so that any water-only customers would not be accounted for in the estimates of BWF. This data was geolocated using the address information for each account to spatially distribute the information throughout the system. Winter months, or the months of minimum consumptive use, were assumed to be December through February.

The number of customers by type is summarized in **Figure 2-7**, which shows 85% of the accounts as single family residential. Note that customer meter type is different from zoning and land use. Additionally, winter water use by type is summarized in **Figure 2-8**, which shows that

commercial accounts only represent 7% of accounts, however these commercial accounts represent a much greater percentage of the winter water use. Multi-family units are typically grouped into one account resulting in the large difference shown in that category between count and use.

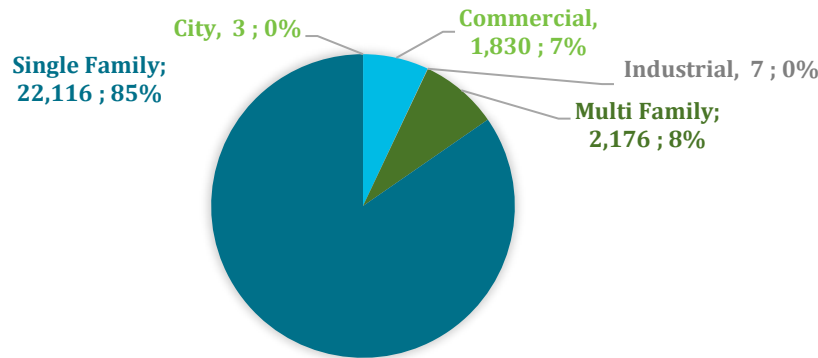


Figure 2-7 Number of Water Billing Accounts by Type

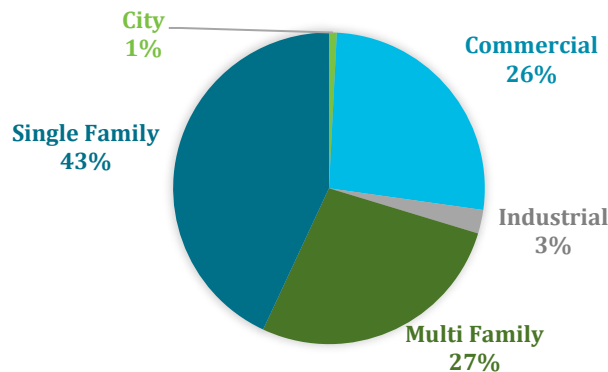


Figure 2-8 Winter Water Use from Billing Data by Type

2.4.1 Spatial Distribution – Residential

As a first step of flow data analysis and model calibration, the 2018/19 winter water billing data associated with their respective geolocated address points were used to spatially distribute population and wastewater flows throughout the system. To calculate existing population from the billing points, the residential billing points were multiplied by the following factors from the City's design criteria:

- Low-density residential (R-L): 3.1 people per unit.
- Medium-density residential (R-M): 2.7 people per unit.
- High-density residential (R-H): 1.7 people per unit.

To determine which criterion applies to each billing point, residential density information is assumed from the following sources of information:

- Existing land use GIS layer
- Household density GIS layer
- Billing data categories

In the absence of information on residential density in specific areas from the above data sources, 2.7 people per unit was assumed. For multi-family water meters, a population of 2.7 people/meter was assumed with the exception of the UNC. The population of UNC was manually inserted to account for the large value. After the initial population distribution estimate, a small citywide scaling factor was used to ensure the total population matched the projected population. The flow per person after-calibration varied between meter basins as a result of the calibration effort.

2.4.2 Spatial Distribution – Nonresidential

The nonresidential billing data from the same period was joined with zoning data and then converted to gallons per day per acre (gpd/acre) to compare winter water use among various nonresidential zoning categories. This information was used for projecting wastewater flows in future development areas where only zoning information was available. The zoning categories for nonresidential water use include the following:

- C-H: Commercial High Intensity
- C-L: Commercial Low Intensity
- I-L: Industrial Low Intensity
- I-M: Industrial Medium Intensity.

The City provided previously calculated nonresidential winter water use in gpd/acre for the categories of retail, restaurant, office and hotel, which all fall under the zoning category of “C-H”. This data set included randomly selected accounts that were examined more closely to understand the likely range of gpd/acre for the commercial zoning. This information was used to remove erroneous gpd/acre calculations or extreme outliers from the 2018/19 winter billing data set.

Figure 2-9 shows box and whisker plots of gpd/acre for the 2018/19 nonresidential winter water use by zoning category. These plots include the following statistics:

- The bottom and top of the vertical lines represent the minimum to maximum values excluding outliers. Outliers are defined as any point that lies 1.5 times the interquartile range or the length of the “box” in the plots shown.
- The bottom and top of the box are the 25th and 75th percentiles, respectively.
- The line inside the box is the median.
- The “x” is the average.

This information guide future conditions flow projections in nonresidential development areas. The 75th percentile values were used in the future land use plans so that the flows were not underestimated.

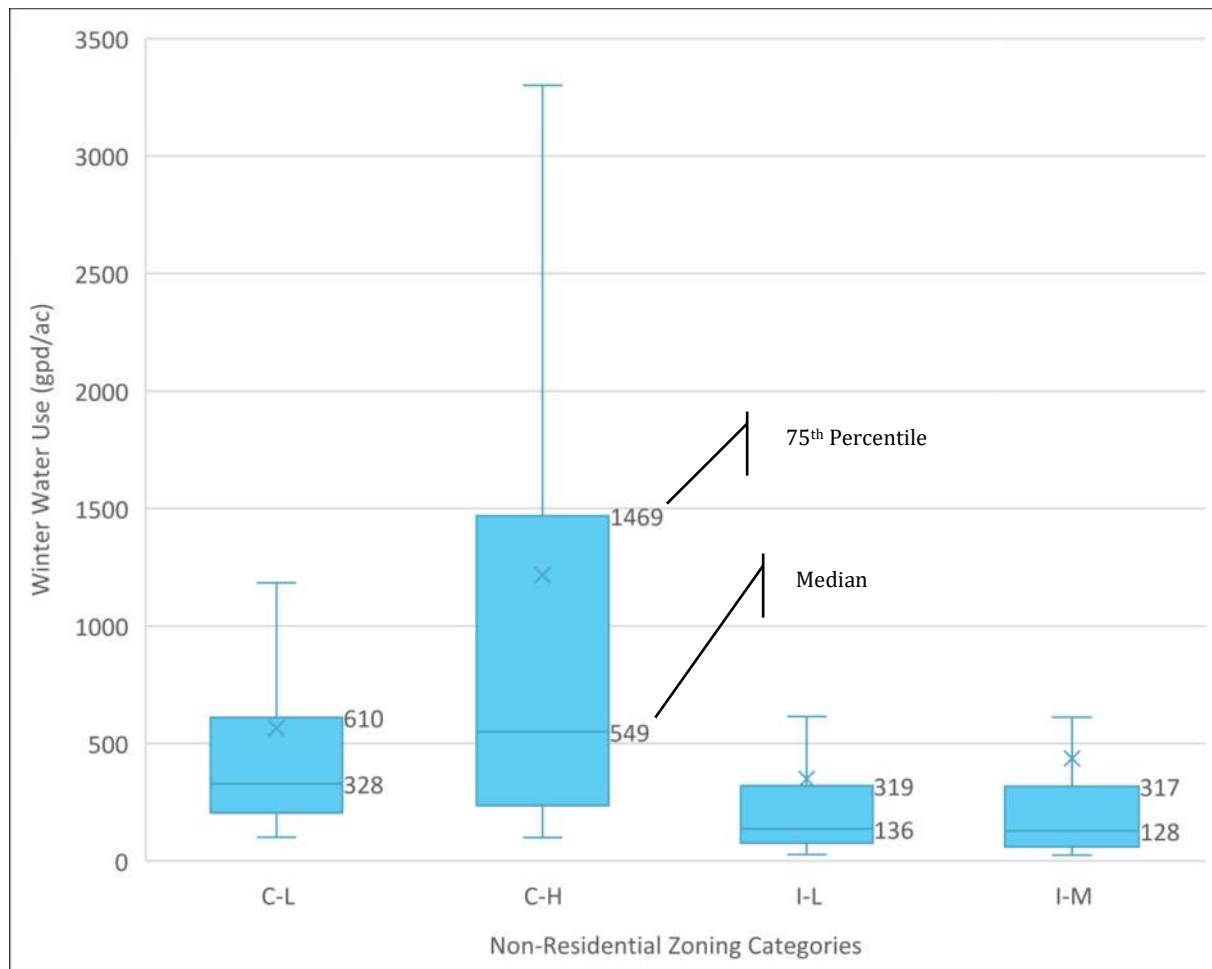


Figure 2-9 Box and Whisker Plot: 2019 Nonresidential Winter Water Use by Commercial Class

Table 2-3 summarizes the median and 75th percentile values for the zoning categories, with the recommended values rounded up from the 75th percentile. This information was used as part of projecting future wastewater flows.

Table 2-3 Nonresidential Winter Water Billing Data Summary

Nonresidential Zoning Categories	Median (gpd/acre)	75 th Percentile (gpd/acre)	Recommended Value for Future Conditions Projections (gpd/acre)
Commercial Low Intensity, C-L	328	610	650
Commercial High Intensity, C-H	549	1469	1500
Industrial Low Intensity, I-L	136	319	500
Industrial Medium Intensity, I-M	128	317	500

Note: At time of planning, there were only 7 industrial meters within the City to approximate industrial flows. To get more data points, all existing water meters within areas zoned as Industrial were selected; the resulting data is shown above. Due to the variability of industrial demands, a higher industrial value was selected to be more conservative. This value more closely aligns with typical values from other municipalities.

2.5 Wastewater Treatment Plant Flow Data

The City provided historical daily wastewater treatment plant flow data in million gallons per day (mgd) from 2014 through 2019, which is used to illustrate trends in average daily flows (ADF) as shown in **Table 2-4**. The ADF divided by total population shows the general trend of a reduction in gallons per capita per day (gpcd). In other words, even though population has increased, ADF has remained steady. This is mainly due to water conservation and improvements that have been made to reduce inflow and infiltration (I/I). The calculated average per capita flow includes residential and nonresidential flow, therefore it does not represent per capita flow for use in future flow projections by land use or zoning type.

Table 2-4 Average and Peak Daily WTRF Influent Flows

Year	Estimated Population ¹	Average Daily Flow (mgd)	Average Per Capita Flow (gpcd) ²	Peak Day Flow (mgd)
2019	108,175	7.31	68	8.28
2018	107,146	7.49	70	8.82
2017	105,353	7.83	74	11.39
2016	103,968	7.67	74	9.72
2015	101,618	8.06	79	11.49
2014	98,672	8.09	82	15.85

¹ Population estimates from Annual Growth & Development Projections (2019)

² Average flow per capita is the ADF divided by the population. The ADF includes residential and nonresidential flow along with GWI attributed to population. The resulting gpcd value was used to illustrate the effects of water conservation on gpcd and was not used for future flow projections.

Peak day flows are presented from 2014 to 2020 and are inclusive of I/I. Monthly rainfall in 2014, 2015 and 2017 was greater than in 2016 and 2018 resulting in higher peaks from I/I in the wetter months. Flow data collected throughout the system on 5 to 15-minute time steps was analyzed to better understand the extent of I/I in the system.

Figure 2-10 shows the average monthly wastewater treatment plant influent flow from 2014 through 2020. This data was used to assess potential seasonal factors in the wastewater flows that may need to be applied in the model. Monthly flows for the month of June in both 2014 and 2015 were significantly higher than in other years due to flooding in those months. Rainfall in the

City is typically greatest in the month of May. This seasonal increase may indicate an increase in I/I, but later years suggest that this is not a normal occurrence. For all years, the greatest flows were observed in May and June, which coincides with the temporary flow monitoring. However, the flow data for 2019 indicates that flow this year was generally lower than previous years. Starting in June of 2019, the flows increased, but were still lower than typical influent flow.

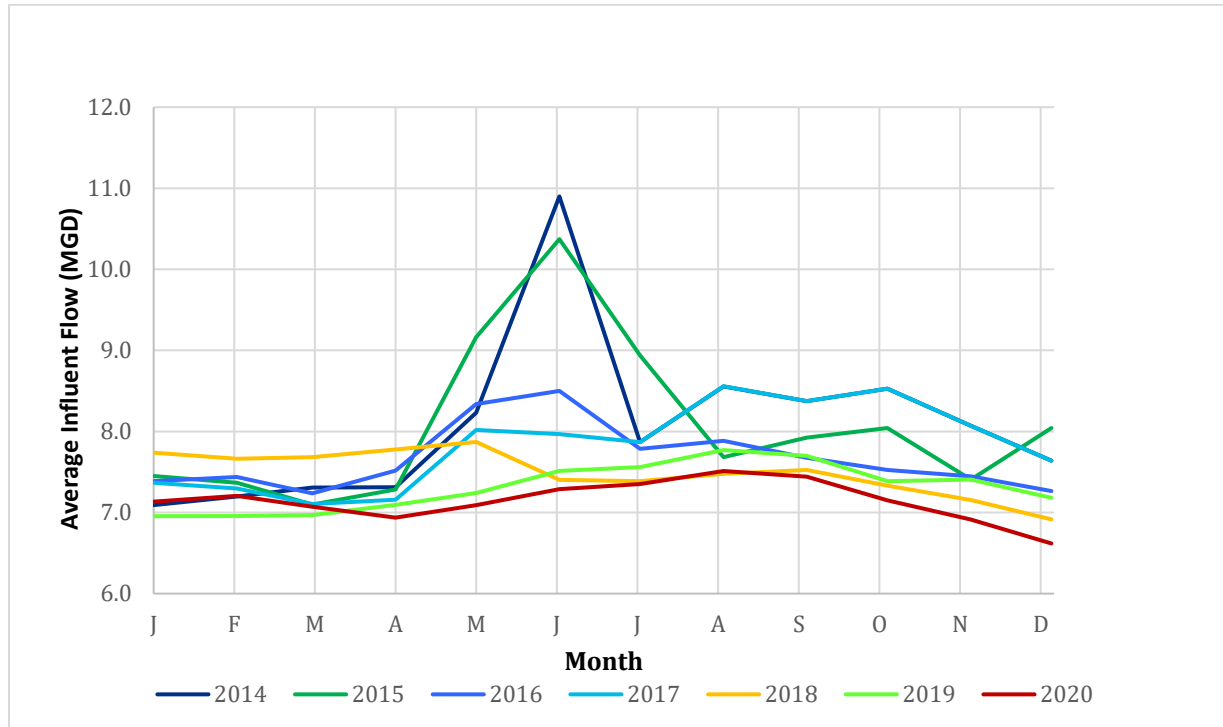


Figure 2-10 ADF Influent Flow Trends by Month

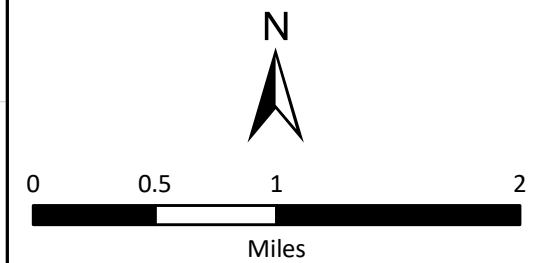
2.6 Available System Flow Data

Available system flow data (obtained upstream of the treatment plant) consists of temporary flow meters and rainfall gages as well as permanent flow meters. Temporary flow meters and rain gauges were installed throughout the wastewater service area by RJN Group from April 18 through June 18, 2019. The data collected was used to analyze the components of wastewater flow within each metered basin. Permanent flow meter data was analyzed in a similar fashion, to assist with model calibration. The parameters developed from the permanent flow meters were used to fill in temporal and spatial gaps in the temporary meter data and to compare parameters across the system.

Temporary wastewater flow monitoring was conducted in 12 locations as shown in **Figure 2-11**. Depth and velocity data were measured from April 18 through June 18, 2019. Rainfall data was collected at two gauges, located on the east and west sides of the City. Permanent meters operated by the City were used to supplement the temporary flow meter data that was collected between April 18, 2019 and June 18, 2019. **Figure 2-12** identified the locations of the City's permanent flow meters.

Temporary Flow Meter Basins

Figure 2-12
Greeley Sanitary Sewer
System Master Plan



Legend

- Rain Gauge
- Lift Station
- WTRF

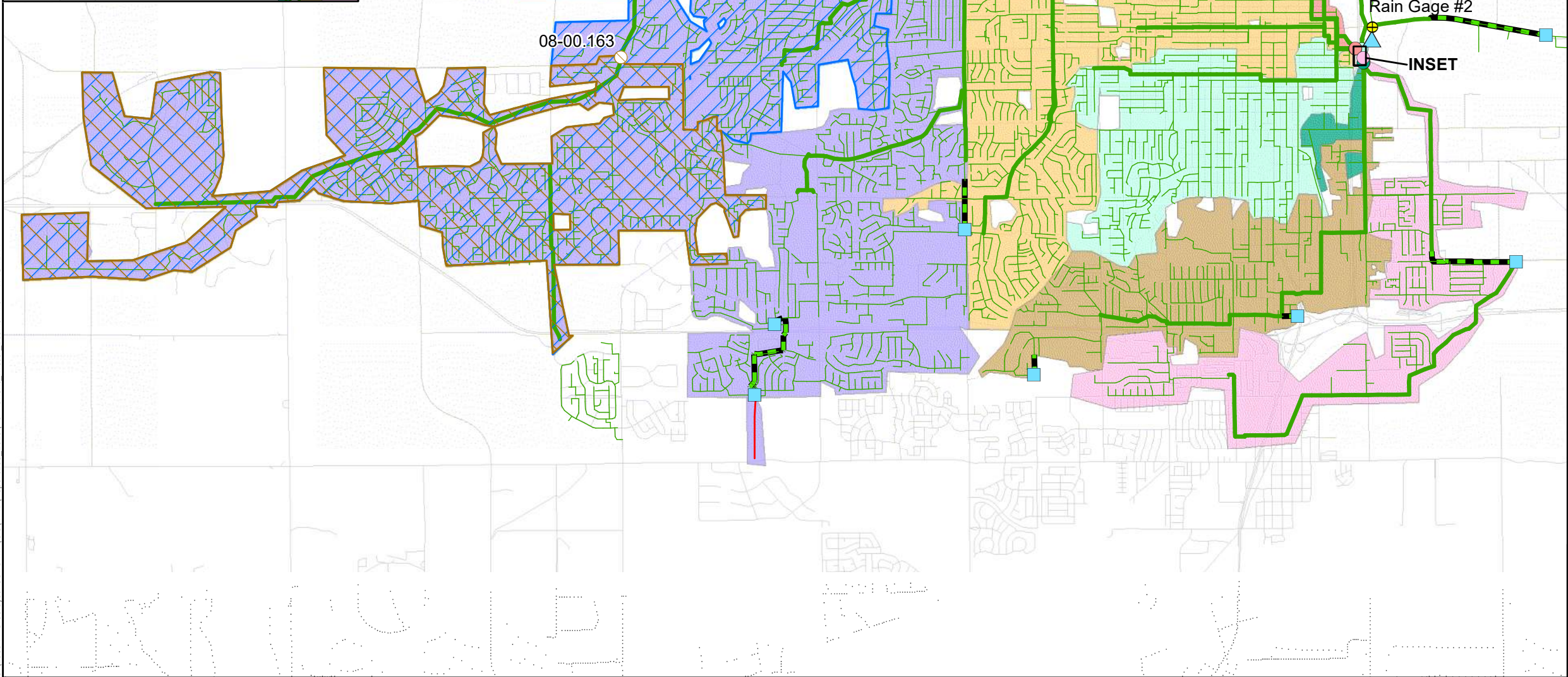
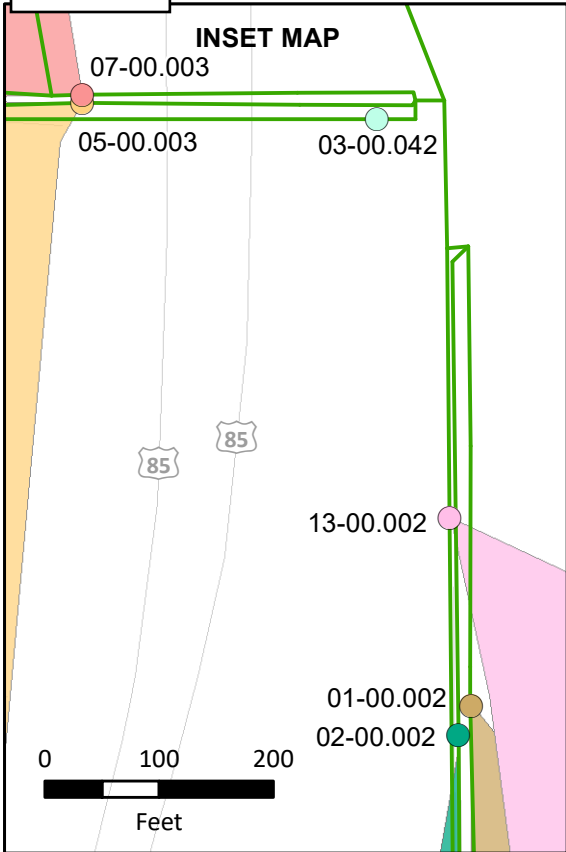
Sewer Mains

- Trunk Line
- Force Main
- Collector Line
- Overflow Line

Temporary Flow Meter and Basin

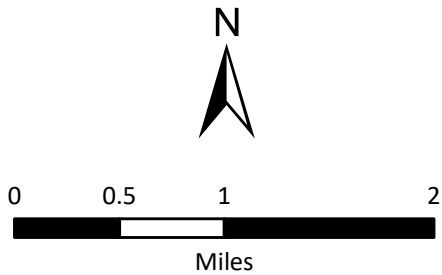
- FM01 Sheep Draw Basin
- FM02 Sheep Draw Basin
- FM03 Hilltop Basin
- FM04 Highland Hills Basin
- FM05 Highland Hills Basin
- FM06 Belair Basin
- FM07 Monfort Basin
- FM08 North Basin
- FM09 Eight Street Basin
- FM10 Central Basin
- FM11 South Basin
- FM12 South Basin

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Permanent Flow Meter Basins

Figure 2-13
Greeley Sanitary Sewer
System Master Plan



Legend

- Rain Gauge
- Lift Station
- WTRF

Sewer Mains

- Trunk Line
- Force Main
- Collector Line
- Overflow Line

Permanent Flow Meter and Basin

- 01-00.002
- 02-00.002
- 03-00.042
- 05-00.003
- 07-00.003
- 08-00.010
- 08-00.059
- 08-00.163
- 13-00.002

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2.6.1 Flow Meter Data Analysis

Wastewater flow was divided into three components as shown in **Figure 2-13**, and described below:

- Groundwater Infiltration (GWI), which is a constant flow from groundwater that leaks into the system through cracks in pipes and other structure defects
- BWF is made up of sanitary wastewater flows that are produced by people and businesses, which will vary throughout the day depending on water usage and other factors
- Rainfall Dependent Inflow and Infiltration (RDII), which is peaked based on the peak of the rainfall event simulated

DWF is the sum of GWI and the BWF. WWF is the sum of DWF and RDII. Analysis of the temporary flow meter data is described in the following sections for DWF and RDII.

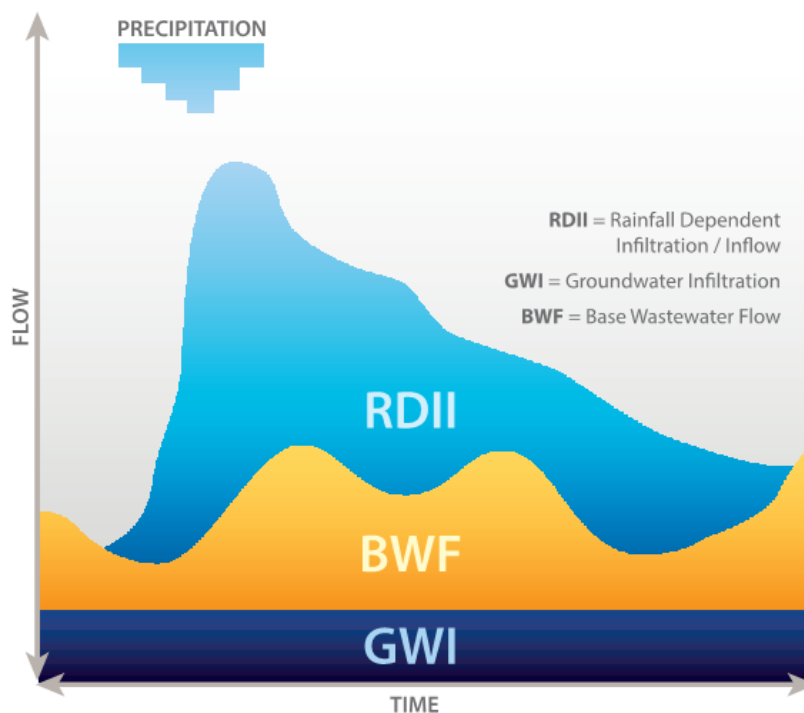


Figure 2-13 Components of Wastewater Flow

2.6.1.1 Dry Weather Flow Analysis

The collected flow and rainfall data were analyzed using the SSOAP toolbox developed by the U.S. Environmental Protection Agency (EPA) and CDM Smith. Using SSOAP, DWF was separated from WWF. DWF statistics were developed by selecting flow from specific DWF days. A day is considered a dry day if no rainfall is observed between the time of the flow and the two days previous. DWF days that were considered statistically different from the rest of the dataset were removed from the analysis. Weekday and weekend DWF statistics were developed separately because of their distinct flow patterns. Once wet days and statistical outliers have been removed,

the SSOAP toolbox calculates an average flow, average peak, and diurnal flow patterns for each basin organized by weekday and weekends. GWI was estimated as the difference between total DWF measured from the flow meters and the average winter water use from billing data, which was assumed to represent BWF. Initial flow estimates and diurnal patterns calculated from the SSOAP toolbox were loaded into the model, and then adjusted until the flow patterns within the model for each flow basin (both temporary and permanent) matched the measured DWF patterns during the periods used for calibration.

Population and area were used to parameterize the components of wastewater flow. The City estimates that the population currently served by the wastewater system is 107,146. This population was distributed throughout the system based on the geolocated billing data and address points. Understanding the approximate population statistics in each basin allows for the characterization of wastewater flow in terms of per person use. **Tables 2-5** summarizes the calibrated distribution of population, nonresidential flow, residential flow, and GWI within each measured flow basin.

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Table 2-5 Calibrated Modeling Parameters

Flow Metering Basin	Population	Acres	Nonresidential BWF (mgd)	Residential BWF (gpd/person)	GWI (gpd/acre)
FM01 Sheep Draw Basin	3,357	372	0.003	47	43
FM02 Sheep Draw Basin	4,302	686	0.072	35	38
FM03 Hilltop Basin	9,895	1,042	0.043	35	38
FM04 Highland Hills Basin	18,143	2,466	0.283	40	84
FM05 Highland Hills Basin	11,294	1,422	0.05	44	111
FM06 Belair Basin	7,979	911	0.116	67	117
FM07 Monfort Basin	197	458	0.2	51	129
FM08 North Basin	14,997	1,502	0.177	54	188
FM09 Eight Street Basin	4,668	530	0.111	89	140
FM10 Central Basin	5,681	654	0.181	36	38
FM11 South Basin	11,194	1,225	0.362	51	117
FM12 South Basin	8,670	923	0.188	47	92
01-00.002	12,103	1,425	0.441	53	129
02-00.002	375	158	0.01	24	10
03-00.042	13,855	1,340	0.296	38	108
05-00.003	20,935	2,255	0.329	61	162
07-00.003	806	678	0.226	83	139
08-00.010	48,137	6,453	0.532	39	59
13-00.002	8,456	1,004	0.115	66	151
08-00.059	28,933	3,811	0.227	34	39
08-00.163	12,064	1,813	0.125	39	60

¹ Population distribution was estimated from geolocated billing data and address points. These values cannot be summed due to overlapping basins.

2.6.1.2 Calibrated Diurnal Patterns

For each flow meter, SSOAP develops an average diurnal flow pattern for DWF by averaging the flows at each hour in a dry weather day. These patterns were then adjusted specifically for BWF by subtracting the estimated GWI. The BWF flow pattern for each meter was then normalized by dividing the flow in each hour by the overall daily average BWF. These normalized patterns were uploaded into the model and adjusted to match measured flow as part of the calibration process. The normalized patterns are provided in **Appendix A**. For residential water use, the patterns typically peak in the morning and the evening. These peaks diminish with larger area due to sewer system attenuation. For nonresidential areas, the water pattern typically has a plateau of water use from 8 AM to 8 PM.

2.6.1.3 Peaking Factors

Table 2-6 summarizes the average BWF, peak BWF and peaking factor for each temporary flow meter basin by weekend and weekday.

Table 2-6 Temporary Meter Base Wastewater Flows and Peaking Factors

Basin	Type of Use	Weekday			Weekend		
		BWF (mgd)	BWF Peak (mgd)	Peaking Factor	BWF (mgd)	BWF Peak (mgd)	Peaking Factor
FM01 Sheep Draw Basin	Residential	0.16	0.39	2.46	0.17	0.34	1.96
FM02 Sheep Draw Basin	Mixed	0.23	0.38	1.65	0.23	0.40	1.79
FM03 Hilltop Basin	Residential	0.39	0.66	1.68	0.43	0.72	1.70
FM04 Highland Hills Basin	Residential	1.00	1.38	1.39	1.05	1.68	1.60
FM05 Highland Hills Basin	Residential	0.56	0.90	1.62	0.58	0.99	1.71
FM06 Belair Basin	Mixed	0.61	0.93	1.53	0.65	1.12	1.71
FM07 Monfort Basin	Industrial	0.21	0.32	1.49	0.20	0.32	1.60
FM08 North Basin	Mixed	1.02	1.44	1.42	1.05	1.64	1.55
FM09 Eight Street Basin	Mixed	0.43	0.63	1.47	0.43	0.68	1.58
FM10 Central Basin	Industrial	0.37	0.56	1.50	0.35	0.64	1.86
FM11 South Basin	Industrial	0.64	0.88	1.37	0.58	0.85	1.47
FM12 South Basin	Industrial	0.49	0.71	1.44	0.43	0.66	1.53
01-00.002	Industrial	0.89	1.26	1.42	0.74	1.16	1.57
02-00.002	Industrial	0.02	0.03	1.38	0.02	0.03	1.56
03-00.042	Mixed	0.84	1.15	1.36	0.74	1.20	1.61
05-00.003	Mixed	1.38	1.85	1.34	1.39	2.01	1.45
07-00.003	Industrial	0.43	0.63	1.46	0.43	0.69	1.61
08-00.010	Residential	2.28	3.38	1.49	2.27	3.93	1.73
13-00.002	Mixed	0.58	0.92	1.59	0.61	0.99	1.64
08-00.059	Residential	1.32	2.14	1.62	1.38	2.42	1.76
08-00.163	Residential	0.53	0.89	1.68	0.53	0.96	1.80

The peaking factors for each basin are not intended to be applied city-wide and are appropriate only for the individual basin.

Peaking factors vary based on the type of use (residential versus nonresidential) and the size of the basin. In general, residential areas have a greater peaking factor since most of the water use occurs in the morning and then again in the evening, as compared to nonresidential areas that use water consistently throughout normal business hours. Additionally, as population increases and land use becomes mixed, the peaking factor decreases, as demonstrated by comparing residential and mixed-use diurnal patterns. The increasing size of a basin will result in a lower peaking factor due to the attenuation of peak flows as they move through the collectors and into the interceptors. The peaking factors used in modeling are not intended to be used in smaller areas or for criteria for peaking in development considerations.

2.6.2 Rainfall Data

Rainfall data was collected along with the flow metering data at two locations. Three events were observed at Rain Gauge 1 (West) and four events were observed at Rain Gauge 2 (East). These events are summarized in **Table 2-7**. Comparing the events to the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 8, Version 2, Point Precipitation Frequency Estimates for Greeley (Atlas 14), the observed events are less than the 1-year return period for the observed durations. Although the observed rainfall was less than the Atlas 14 frequency estimates, there were RDII responses observed that could be characterized using RTKs. RTK is defined as the three parameters used to characterize the rainfall dependent inflow and infiltration unit hydrographs. R is the fraction of rainfall volume that enters the sanitary sewer. Low R values indicate a sewer system with very little inflow or infiltration. T is the time from the onset of rainfall to the peak of the wet weather hydrograph. K is the ratio of the time of hydrograph recession to the time to hydrograph peak. By applying a selected design storm to the RTKs, the RDII response can be extrapolated in the model.

Table 2-7 Rain Events Used for RTK Analysis

Rain Gauge 1 (West)				Rain Gauge 2 (East)			
Start Date/Time	Total Volume (in)	Duration (hr)	Peak Intensity (in/hr)	Start Date/Time	Total Volume (in)	Duration (hr)	Peak Intensity (in/hr)
5/19/2019 9:50	0.75	25.17	0.36	5/20/2019 01:20	0.87	20.83	0.39
(no rainfall observed at this rain gauge)				5/27/2019 17:15	0.31	0.92	0.31
6/2/2019 16:40	0.31	1.58	0.29	6/2/2019 16:20	0.42	1.42	0.41
6/3/2019 16:50	0.21	0.42	0.21	6/3/2019 17:00	0.27	0.42	0.27

hr = hour

in = inches

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Section 3

Existing and Future System Model Development

The City's existing sewer system hydraulic model was most recently updated in 2014 by CDM Smith. This section summarizes the changes made to the 2014 model to represent the 2019 system. These changes included datum conversion, infrastructure updates, database updates, and model pump station updates.

3.1 Datum Conversion

The 2014 Federal Emergency Management Agency (FEMA) Vertical Datum Conversion document supports the nine vertical datum standards adopted by FEMA in the execution of vertical datum conversions from the National Geodetic Vertical Datum of 1929 (NGVD29) to the North American Vertical Datum of 1988 (NAVD 88). This document provides context and supporting guidance for the conversion process. The conversion process used to convert the wastewater model from NGVD 29 to NAVD 88 was based on the above guidance document and is summarized below. To convert from NGVD 29 to NAVD 88, specific conversion software must be used. The National Geodetic Survey (NGS) and the United States Army Corps of Engineers (USACE) have developed software for performing the conversion. USACE CORPSCON software was used for this project.

The primary guiding principle in executing vertical datum conversions is to ensure that no more than a 0.25-foot variance from the average conversion factor exists at any point. **Table 3-1** provides a high-level summary of the different vertical conversion options recommended by the FEMA guidance document.

Table 3-1 Vertical Datum Conversion Options

Option	Name	Description
1	Passive Conversion	This option is used when the difference between NGVD 29 and NAVD 88 is negligible. When this option is used, no changes are made to the elevations.
2	Countywide Conversion	This option uses a single conversion factor for the entire project area. The conversion factor must be determined by setting a grid over the area and taking an unweighted arithmetic average of all the conversion factors at each grid corner. If the maximum offset from this average for all points within the conversion area does not exceed 0.25 feet, then a countywide conversion is acceptable.
3	Smaller Area Based Conversion	This option is used when options 1 and 2 are not possible or when Option 2 is not appropriate due to potential mismatches that could occur in adjacent counties. When this option is used, individual areas may be grouped to carry a common conversion factor, or each area may have its own conversion factor.

The conversion factor must be determined by setting a grid over the area and taking an unweighted arithmetic average of all the conversion factors at each grid corner. If the maximum offset from this average for all points within the conversion area does not exceed 0.25 feet, then a countywide conversion is acceptable.

A countywide conversion (Option 2 from Table 3-1) was used for the conversion of the 2014 model. **Table 3-2** summarizes the results of the analysis from CORPSCON.

Table 3-2 Greeley Vertical Datum Conversion

Calculation	Value
Average Conversion Factor	2.95 ft
Maximum Conversion Factor	3.068 ft
Minimum Conversion Factor	2.874 ft
Maximum Offset within Project Area	0.12 ft

The maximum offset from the average conversion factor of 0.12 ft was less than the limiting value of 0.25 ft, and therefore the conversion factor of 2.95 ft from NGVD 29 to NAVD 88 was used for the update of the 2014 model.

3.2 Infrastructure Updates

3.2.1 GIS Data

The City provided a comprehensive GIS data set of the existing system and record drawings representing projects completed between 2014 and 2019. The first step in updating the 2014 model was to perform a comprehensive review of all model pipe diameters and confirm that all pipe diameters within the model matched the City GIS pipe diameters. The next step in updating the 2014 model was to add the new infrastructure detailed within the drawings. **Table 3-3** lists the projects that were added to the existing model using record drawing and as-built information from the City.

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Table 3-3 Record Drawings and As-Builts

Project Name	Record Drawing Datum	Datum Conversion	Comments
Ashcroft Draw Basin Sanitary Sewer Phase 1	NAVD 88	N/A	Added new pipes and temporary connection to the model.
Ashcroft Draw Basin Sanitary Sewer Phase 2A	NAVD 88	N/A	Not installed during flow metering. Added to model but only in future scenarios. Existing scenario set to match flow metering period.
Ashcroft Draw Basin Sanitary Sewer Phase 2B	NAVD 88	N/A	Not installed during flow metering. Added to model but only in future scenarios. Existing scenario set to match flow metering period.
College Park Subdivision	NAVD 88	N/A	Updated model, removed pipes that no longer exist.
East Greeley Sewer Improvements, Balsam Avenue Line	City Datum + 0.82 ft	Converted to NAVD 88	Updated pipe diameters and slopes within model.
Greeley-Weld County Airport East Side Utilities	NAVD 88	N/A	Added to model.
Homestead Heights Filing 4	NGVD 29	Converted to NAVD 88	Added 12" section into model.
River Run at Poudre River Ranch Second Filing	NAVD 88	N/A	Added to model.
Sheep Draw Sanitary Sewer Extension	NGVD 29	Converted to NAVD 88	Added to model.
The Trails at Sheep Draw Phase 1A	NAVD 88	N/A	Added to model.
T-Bone Lift Station Overflow Sewer	NAVD 88	N/A	Added to model.
West Greeley Tech Center	NGVD 29	Converted to NAVD 88	Added to model.
West Greeley Tech Center Phase II	NAVD 88	N/A	Added to model.
7 th Avenue Improvements	NAVD 88	N/A	Added to model, removed pipes that no longer exist.

3.2.2 2019 Survey Data

Approximately 100 manholes were surveyed to obtain rim and invert information for use within the sanitary sewer model. The 100 manholes selected for survey included flow splitting manholes, areas where the 2014 model had errors in the profile, and areas with no available sources for invert information.

All known flow splits within the model were updated to 2019 survey data. All areas within the model that had profile errors were resolved. The remaining survey data was used to update invert and slope data. All manholes updated with the 2019 survey data were tagged with a 2019 survey data source marker for future model iterations.

3.2.3 Modeled Lift Station Updates

The modeled lift stations were updated with the latest available information including the pump curves provided by the City. Wet well dimensions were confirmed from the GIS data. Lift station

run data were used to adjust level settings to match field conditions. The design total dynamic head (TDH), HP, and capacity were obtained from the Cy GIS data as shown in **Table 3-4**.

Table 3-4 Lift Station Information

LS #	Location	Service Area	Year Upgraded	Make	Model	HP	Design TDH (ft)	Design Capacity ¹ (gpm)
1	601 N 9 th Ave	N 9 th Ave	2000	Gorman-Rupp	T3A-B	3	20	80
2	660 Ed Beegle Lane	Weld Co. Airport	2016	Gorman-Rupp	T4A-B	7.5	N/A	120
4	5102 27 th Street	Highland Hills	2015	Gorman-Rupp	SFV4A	7	35	100
9	1400 E 24 th St	E Cherry Ave	2013	Gorman-Rupp	SFV4D	21	57	638
12	600 27 th St	Garden City	2007	Gorman-Rupp	T3A-B	3	24	80
13	2100 35 th Ave	SW Greeley	2012	Gorman-Rupp	T8A-B	75	94	1700
15	3000 29 th St	Auto Plaza	1980	Gorman-Rupp	T3A-B	10	62	150
16	1700 E 8 th St	E 8 th St	2013	Gorman-Rupp	SFV4D	13	48	270
17	7100 F St	Farmer's Spur	2015	Gorman-Rupp	SFV4A/JS4A60	6.2	16.5	560
18	3252 52 nd Ave	T-Bone Subdivision	2013	Gorman-Rupp	SF4C/JS6J60	54	153	668

¹ Reported design capacity as of the 2019 flow monitoring effort.

3.3 Dry Weather Flow Calibration

DWF was calibrated in the model using the temporary and permanent flow monitoring data from April 18 to June 18, 2019. Improvements have been completed in the Ashcroft basin (near FM01) since this time.

Observed (metered) DWF was compared to modeled DWF at each meter location. The initial model parameters discussed in Section 2 were adjusted to calibrate simulated flow to observed conditions. Calibration statistics for each flow meter are shown in **Table 3-5**. Volumes are averaged over 7 days for two separate periods of DWF that occurred during the flow monitoring. Peak weekday flows were also compared for each week-long period. The observed and simulated values are within typical calibration standards for DWF of +/- 10% for volume and +20% to -10% for peak flow for at least one of the two calibration weeks for all temporary and permanent flow meter locations. Most of the meter basins calibrated to both weeks.

The model was also calibrated to available lift station flow data as shown in **Table 3-5**. Due to the low flows and small capacity at some lift stations, the Chartered Institution of Water and Environmental Management (CIWEM) criteria could not be applied. Instead, the high, low, and average daily flow from each lift station are shown in comparison to the simulated average daily

Table 3-5 Model Calibration Results – Dry Weather Flow

Flow Metering Basin	Calibration Dates	Simulated	Observed	% Difference	Simulated	Observed	% Difference	Lift Station Basin	Calibration Dates	Min Observed	Max Observed	Avg Observed	Avg Simulated	Min Observed	Max Observed	Avg Simulated
		Average Daily Flow (mgd)			Weekday Peak Hourly Flow (mgd)					Average Daily Flow (mgd)				Peak Hourly Flow (mgd)		
FM01 Sheep Draw Basin	4/22/19 – 4/29/19	0.180	0.178	1%	0.407	0.409	-1%	Lift Station 4	4/22/19 – 4/29/19	0.013	0.017	0.015	0.019	0.029	0.040	0.028
	5/2/19 – 5/9/19	0.180	0.181	0%	0.400	0.418	-4%		5/2/19 – 5/9/19	0.013	0.017	0.015	0.020	0.028	0.046	0.030
FM02 Sheep Draw Basin	4/22/19 – 4/29/19	0.252	0.248	2%	0.427	0.429	-1%	Lift Station 9 ²	4/22/19 – 4/29/19	0.133	0.359	0.292	0.558	0.367	0.468	0.881
	5/2/19 – 5/9/19	0.252	0.253	0%	0.423	0.417	2%		5/2/19 – 5/9/19	0.328	0.361	0.343	0.558	0.408	0.467	0.878
FM03 Hilltop Basin	4/22/19 – 4/29/19	0.438	0.434	1%	0.762	0.766	-1%	Lift Station 13	4/22/19 – 4/29/19	0.462	0.482	0.471	0.480	0.640	0.701	0.724
	5/2/19 – 5/9/19	0.438	0.391	12%	0.762	0.681	12%		5/2/19 – 5/9/19	0.455	0.489	0.468	0.484	0.658	0.743	0.724
FM04 Highland Hills Basin	4/22/19 – 4/29/19	1.164	1.097	6%	1.657	1.581	5%	Lift Station 15	4/22/19 – 4/29/19	0.002	0.006	0.005	0.007	0.004	0.019	0.010
	5/2/19 – 5/9/19	1.174	1.170	0%	1.657	1.608	3%		5/2/19 – 5/9/19	0.002	0.006	0.005	0.007	0.003	0.015	0.010
FM05 Highland Hills Basin	4/22/19 – 4/29/19	0.698	0.679	3%	1.061	1.068	-1%	Lift Station 16	4/22/19 – 4/29/19	0.054	0.070	0.059	0.061	0.187	0.219	0.184
	5/2/19 – 5/9/19	0.703	0.708	-1%	1.060	1.045	1%		5/2/19 – 5/9/19	0.054	0.056	0.055	0.061	0.181	0.204	0.180
FM06 Belair Basin	4/22/19 – 4/29/19	0.757	0.755	0%	1.120	1.122	0%	Lift Station 17	4/22/19 – 4/29/19	0.038	0.097	0.069	0.069	0.065	0.175	0.137
	5/2/19 – 5/9/19	0.759	0.793	-4%	1.121	1.144	-2%		5/2/19 – 5/9/19	0.041	0.061	0.053	0.070	0.067	0.135	0.135
FM07 Monfort Basin	4/22/19 – 4/29/19	0.272	0.268	2%	0.428	0.437	-2%	Lift Station 18	4/22/19 – 4/29/19	0.154	0.281	0.234	0.262	0.397	0.447	0.454
	5/2/19 – 5/9/19	0.273	0.285	-4%	0.432	0.442	-2%		5/2/19 – 5/9/19	0.254	0.286	0.263	0.264	0.395	0.485	0.461
FM08 North Basin	4/22/19 – 4/29/19	1.270	1.252	1%	1.854	1.913	-3%		1. Calibration of the flow meter basins considered as +/- 10% for volume and +20% and -10% for peak hourly flow. Calibration of the lift stations was based on absolute values due to the small basin sizes. 2. Influent flow data at Lift Station 9 was not utilized as part of calibration. The measured flow from the downstream meter 13-00.002 could not be reconciled with the Lift Station flow data. Additionally, flow measurement upstream of Lift Station 9 from the 2014 flow monitoring data agreed with the calibrated DWF levels shown in this table. When reviewed more closely, the lift station inflow data seemed to plateau during high flow periods, indicating a loss of proper flow measurement during those events.							
	5/2/19 – 5/9/19	1.274	1.364	-7%	1.854	1.836	1%									
FM09 Eight Street Basin	4/22/19 – 4/29/19	0.553	0.546	1%	0.777	0.781	0%									
	5/2/19 – 5/9/19	0.555	0.549	1%	0.777	0.777	0%									
FM10 Central Basin	4/22/19 – 4/29/19	0.370	0.376	-2%	0.597	0.596	0%									
	5/2/19 – 5/9/19	0.372	0.399	-7%	0.596	0.609	-2%									
FM11 South Basin	4/22/19 – 4/29/19	0.988	0.991	0%	1.461	1.366	7%									
	5/2/19 – 5/9/19	0.989	0.979	1%	1.431	1.267	13%									
FM12 South Basin	4/22/19 – 4/29/19	0.685	0.681	1%	1.100	1.114	-1%									
	5/2/19 – 5/9/19	0.686	0.614	12%	1.061	0.841	26%									
01-00.002	4/22/19 – 4/29/19	1.169	1.173	0%	1.656	1.754	-6%									
	5/2/19 – 5/9/19	1.171	1.166	0%	1.638	1.548	6%									
02-00.002	4/22/19 – 4/29/19	0.023	0.022	1%	0.032	0.034	-6%									
	5/2/19 – 5/9/19	0.023	0.023	-2%	0.033	0.035	-8%									
03-00.042	4/22/19 – 4/29/19	1.076	1.075	0%	1.420	1.496	-5%									
	5/2/19 – 5/9/19	1.079	1.074	0%	1.422	1.427	0%									
05-00.003	4/22/19 – 4/29/19	1.804	1.713	5%	2.376	2.363	1%									
	5/2/19 – 5/9/19	1.807	1.722	5%	2.377	2.245	6%									
07-00.003	4/22/19 – 4/29/19	0.557	0.561	-1%	0.883	0.815	8%									
	5/2/19 – 5/9/19	0.560	0.574	-2%	0.883	0.813	9%									
08-00.010	4/22/19 – 4/29/19	2.757	2.854	-3%	3.836	4.266	-10%									
	5/2/19 – 5/9/19	2.770	2.887	-4%	3.822	4.200	-9%									
13-00.002	4/22/19 – 4/29/19	0.907	0.924	-2%	1.258	1.277	-1%									
	5/2/19 – 5/9/19	0.905	0.947	-4%	1.257	1.312	-4%									
08-00.059	4/22/19 – 4/29/19	1.382	1.332	4%	2.060	1.958	5%									
	5/2/19 – 5/9/19	1.386	1.443	-4%	2.054	2.399	-14%									
08-00.163	4/22/19 – 4/29/19	0.710	0.682	4%	1.105	1.092	1%									
	5/2/19 – 5/9/19	0.710	0.694	2%	1.102	1.068	3%									

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flow. Additionally, the observed high, low, and average peak hourly flow was provided in comparison to the simulated peak hourly flow.

Simulated DWF was calibrated by adjusting the initial parameters developed for BWF, GWI, and peaking factors described in Section 2. **Table 3-6** shows the calibrated parameters for each flow meter.

Table 3-6 Calibrated Modeling Parameters

Flow Metering Basin	Population	Acres	Nonresidential BWF (mgd)	Residential BWF (gpd/person)	GWI (gpd/acre)
FM01 Sheep Draw Basin	3,357	372	0.003	47	43
FM02 Sheep Draw Basin	4,302	686	0.072	35	38
FM03 Hilltop Basin	9,895	1,042	0.043	35	38
FM04 Highland Hills Basin	18,143	2,466	0.283	40	84
FM05 Highland Hills Basin	11,294	1,422	0.05	44	111
FM06 Belair Basin	7,979	911	0.116	67	117
FM07 Monfort Basin	197	458	0.2	51	129
FM08 North Basin	14,997	1,502	0.177	54	188
FM09 Eight Street Basin	4,668	530	0.111	89	140
FM10 Central Basin	5,681	654	0.181	36	38
FM11 South Basin	11,194	1,225	0.362	51	117
FM12 South Basin	8,670	923	0.188	47	92
01-00.002	12,103	1,425	0.441	53	129
02-00.002	375	158	0.01	24	10
03-00.042	13,855	1,340	0.296	38	108
05-00.003	20,935	2,255	0.329	61	162
07-00.003	806	678	0.226	83	139
08-00.010	48,137	6,453	0.532	39	59
13-00.002	8,456	1,004	0.115	66	151
08-00.059	28,933	3,811	0.227	34	39
08-00.163	12,064	1,813	0.125	39	60

¹ Population distribution was estimated from geolocated billing data and address points. These values cannot be summed due to overlapping basins.

3.4 Wet Weather Flow Calibration

Rainfall data was collected along with the flow metering data at two locations. Three events were observed at Rain Gauge 1 (West) and four events were observed at Rain Gauge 2 (East). The three events that were observed at both rain gauges were used for calibration, and they are summarized in **Table 3-7**. Comparing the events to the *NOAA Atlas 14, Volume 8, Version 2*, Point Precipitation Frequency Estimates for Greeley (Atlas 14), the observed events are less than the 1-year return period for the observed durations.

Table 3-7 Rain Events Used for RTK Analysis

Rain Gauge 1 (West)				Rain Gauge 2 (East)			
Start Date/Time	Total Volume (in)	Duration (hr)	Peak Intensity (in/hr)	Start Date/Time	Total Volume (in)	Duration (hr)	Peak Intensity (in/hr)
5/19/2019 9:50	0.75	25.17	0.36	5/20/2019 01:20	0.87	20.83	0.39
6/2/2019 16:40	0.31	1.58	0.29	6/2/2019 16:20	0.42	1.42	0.41
6/3/2019 16:50	0.21	0.42	0.21	6/3/2019 17:00	0.27	0.42	0.27

RDII was initially analyzed using SSOAP. SSOAP allows the user to examine the RDII response for selected rainfall events to develop parameters for RDII modeling. The unit hydrograph method was used to develop the hydrographs that represent RDII. This method is based on fitting three triangular unit hydrographs to an actual RDII hydrograph. A unit hydrograph is the flow response that results from one unit of rainfall during one unit of time.

Using the unit hydrograph method, RDII unit hydrographs are characterized by the following three parameters:

- R: The fraction of rainfall volume that enters the sanitary sewer.
- T: The time from the onset of rainfall to the peak of the wet weather hydrograph.
- K: The ratio of the time of hydrograph recession to the time to hydrograph peak.

Three sets of RTKs were developed for the observed rainfall event to represent the fast, medium, and slow responses usually associated with RDII. The initially developed RTKs were adjusted during calibration by comparing observed and simulated WWF hydrographs for each flow meter for the observed rainfall event. The shape of each hydrograph was compared, as was the volume, peak flow, and peak depth.

The evaluation criteria for wet weather calibration are +20% to -10% for flow volume, +25% to -15% for peak flow, and +/- 4 inches for peak depth (CIWEM, 2017). Flow meters that had values within the calibration criteria for two of three storm events were considered calibrated (CIWEM, 2017).

The calibration statistics for wet weather volume, peak flow, and peak depth are shown in **Appendix B** for all flow meters for each storm event. Each flow meter's observed versus modeled values are plotted against the upper and lower CIWEM calibration criteria. Points above or below the calibration lines would be considered outside the criteria limits, while points within the criteria lines are considered calibrated. Meters that are outside the criteria limits for two or more rainfall event are labeled in the figures as these did not meet the overall criterion of calibration to two of the three events.

All flow meters were calibrated for volume and peak flow within the criteria limits except for FM 07 and 08-00.010. Although flow volume during all three wet weather events for FM 07 (Monfort Basin) was within the criteria limits, the peak flows during those events varied widely. The model versus observed peak flow values for the three storm events were +44%, -6%, and -31%. The variation may be due to GWI that was observed during flow metering that would vary based on

antecedent moisture conditions. There was an observed infiltration leak for FM 07. When reviewing this area for recommendations, the calibration plots and the peak WWF to DWF factor were reviewed when simulating a design storm to check if the peaks were overstated compared to the rest of the system.

Peak flows for permanent meter 08-00.010 were within the acceptable criteria limits, however, flow volume during two of three events was slightly below the criteria limits (-13%, +2%, -13%). Due to a large overlap with other meters within this basin, no further calibration adjustments could be made to bring the volume within the criteria limits without sacrificing the calibration of other meters. These included permanent meter basins 08-00.059 and 08-00.163 and temporary basins 01, 02, 03, 04, 05, and 07. Total volume measured during the wet weather events for all upstream basins were within the acceptable criteria limits. Additionally, the peak flows for all upstream basins (excluding FM 07), were also within the acceptable limits.

During the depth calibration of meter 05-00.003, the peak flow level for Event 3 was taken very slightly outside the peak flow criteria limits. In the interest of maintaining the depth calibration, no further adjustments were made to this basin. All other flow meters besides FM 07, 08-00.010, and 05-00.003 were within the acceptable limits for volume and peak flow. **Table 3-8** and **Table 3-9** show the calibrated RTK parameters.

Table 3-8 Calibrated Temporary Meter Basin RTKs

Flow Metering Basin	Area (ac)	Fast Response			Medium Response			Slow Response			Total R (%)
		R1 (%)	T1 (hr)	K1	R2 (%)	T2 (hr)	K2	R3 (%)	T3 (hr)	K3	
FM01 Sheep Draw	372	0.2	1	1.5	0.1	3	1	0.1	7	3.5	0.4
FM02 Sheep Draw	686	0.1	2	2	0.2	5	5	0.2	10	9	0.5
FM03 Hilltop	1,042	0.1	1	1	0.2	3.5	2	0.3	6	7	0.6
FM04 Highland Hills	1,044	0.4	1	2	0.2	2.5	2.5	0.1	5	3	0.7
FM05 Highland Hills	1,422	0.2	1.5	2	0.3	5	3	0.4	10	5	0.9
FM06 Belair	911	0.2	1	1	0.1	3	3	0.1	6	5	0.4
FM07 Monfort	458	0.3	0.65	1	0.5	2	2	0.1	5	10	0.9
FM08 North	591	0.3	1	1.1	0.1	2.2	2	0.1	2.8	2.5	0.5
FM09 Eight Street	530	0.5	1	1	0.1	2.5	3	0.1	4	4	0.7
FM10 Central	654	0.3	1	1	0.1	2.1	1.8	0.1	2.6	2.2	0.5
FM11 South	302	0.2	1	1	0.1	2.9	1.9	0	4.3	3	0.3
FM12 South	923	0.1	0.7	1	0	1.5	2	0.1	2	3	0.2

Note: Areas shown correspond to areas where RTKs are applied. Due to overlapping basins, the RTK contributing areas will not equal the total basin areas.

Table 3-9 Calibrated Permanent Meter Basin RTKs

Flow Metering Basin	Area (ac)	Fast Response			Medium Response			Slow Response			Total R (%)
		R1 (%)	T1 (hr)	K1	R2 (%)	T2 (hr)	K2	R3 (%)	T3 (hr)	K3	
01-00.002	200	0.4	0.5	1.7	0.1	3	2	0.1	5	3	0.6
02-00.002	630	0.2	1.25	1.25	0.1	3	3	0.1	7	6	0.4
03-00.042	686	0.2	1	1	0.2	3	2	0.2	5	3	0.6
05-00.003	223	0.1	2	2	0.1	5	3	0.1	10	5	0.3
07-00.003	220	0.1	2.5	2	0.1	5	3	0.1	10	7	0.3
08-00.010	176	0.2	2	1	0.2	5	2	0.2	10	3	0.6
13-00.002	1,004	0.5	1.5	1	0.4	5	2	0.2	10	3	1.1
08-00.059	956	0.4	2.5	2	0.5	5	3	0.6	10	5	1.5
08-00.163	755	0.1	1	1	0	3	2	0	5	3	0.1

Note: Areas shown correspond to areas where RTKs are applied. Due to overlapping basins, the RTK contributing areas will not equal the total basin areas.

The depth calibrations for the flows were all within the range of the CIWEM criteria with the peak depths reasonably close to observed values.

3.5 Model Flow Validation

The model calibration was validated by comparing the simulated flows during the calibration period to the WTRF influent flow and by then comparing the range of calibrated total R to the previously calibrated model. As shown by the ADF at the WTRF by month for 2014 to 2020 (Section 2), the flow in 2019 and 2020 tended to be lower than in previous years. This was considered after model calibration to determine if modeled flows needed to be increased in the model for system evaluation. **Figure 3-1** shows the simulated flows from the calibrated model plotted against the historical data graph. On average from April to May from 2014 to 2020, the modeled influent flow to the WTRF was 9% higher than the influent flow data over those years. Summation of the meters on the seven interceptors that combine at the WTRF indicate that the influent flow should be 8.3 mgd on average from April to May. The simulated DWF was also 8.3 mgd, on average.

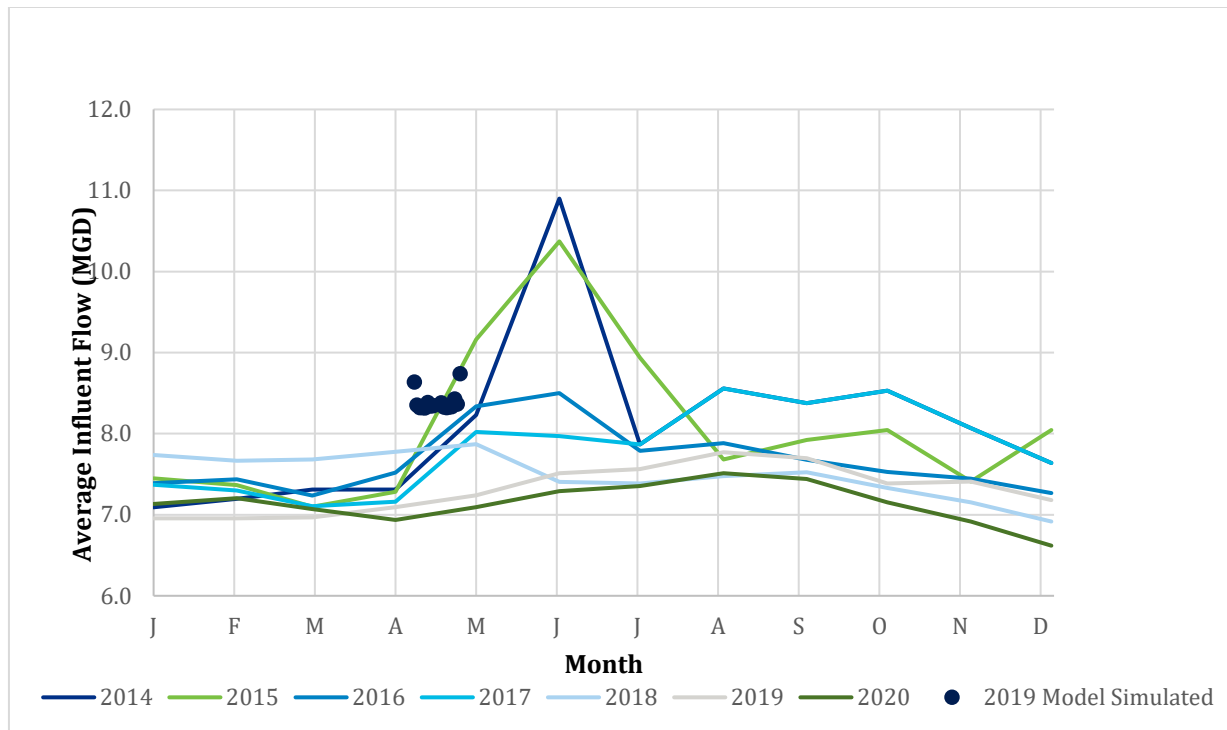


Figure 3-1 Average WTRF Influent Flow Trends Compared to Simulated Influent for 2019

The summed metered flow of all the influent interceptors was inconsistent with the measurements of influent flow at the WTRF. For 2020, the simulated average daily dry weather flow was 16% higher than was observed at the WTRF. The WTRF meter were recently calibrated. Overall, this indicates that it is not necessary to increase the flows in the model to be consistent with the WTRF influent flow data from previous years. The model, as calibrated, is reasonably conservative for the purposes of master planning.

The WTRF 15-minute influent flow data was compared with the simulated flow during the wet weather periods used for calibration to confirm similar peaks in flow. **Figure 3-2** and **Figure 3-3** compare the observed influent flow data to the simulated influent flow for the wet weather events in May and June, respectively. The observed data may be influenced by the WTRF pump station; however, the groups of spikes in the influent flow during wet weather correspond to the simulated wet weather peaks. The simulated flow tends to be higher than the observed flows in May, while the comparison was closer in June.

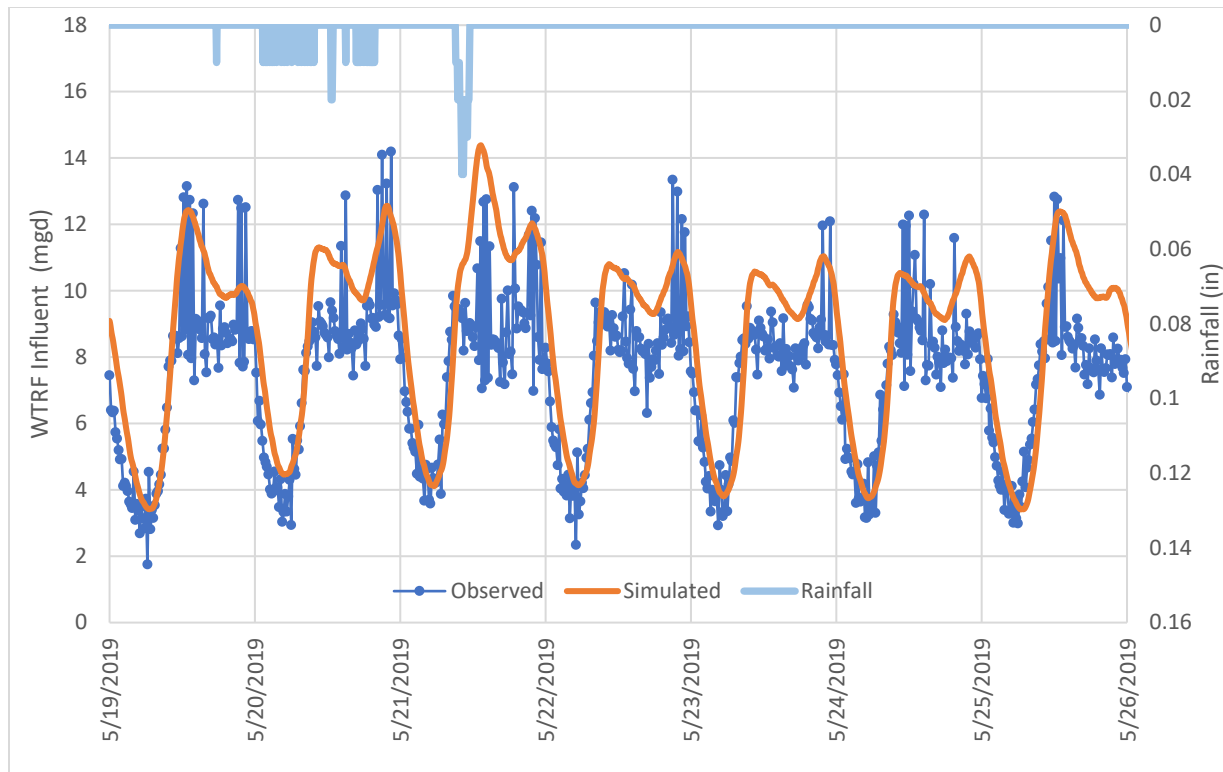


Figure 3-2 Observed Versus Simulated WTRF Influent Flows, May Wet Weather

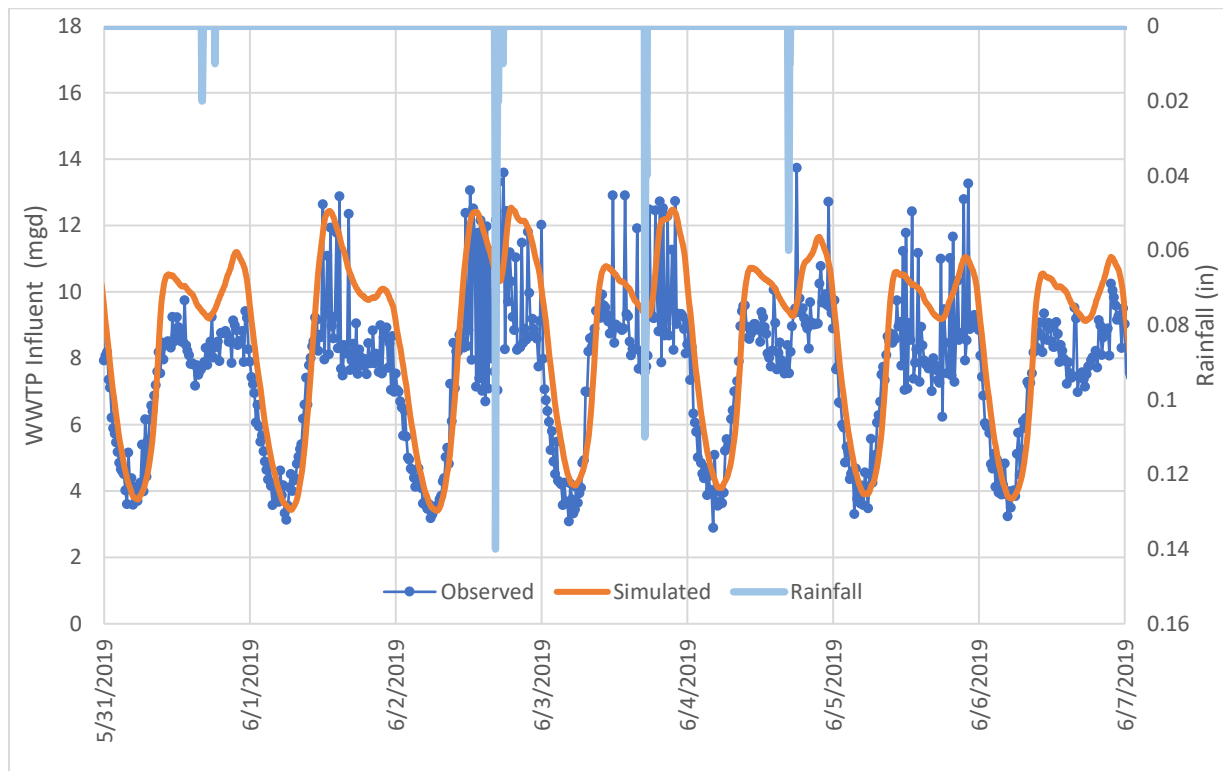


Figure 3-3 Observed Versus Simulated WTRF Influent Flows, June Wet Weather

Calibrated total R by meter basin was compared to the previously calibrated total R as reported in the *City of Greeley Sewer System Model Update and Analysis* (CDM Smith, 2014). The WWF metering is from the year 2000 but it is the best available information to verify that the methods for developing RDII parameters are consistent. The range of calibrated total R for the year 2019 metering was 0.1% to 1.5%, and the 2014 report contained a range of 0.2% to 1.1%. Only two basins from 2019 were outside the range from the 2014 report. This indicates overall consistency with previous work.

On a basin-by-basin comparison, there were four metered areas from 2019 with a total R that was higher by about 50%, as compared to the 2014 report (08-00.059, 03-00.042, FM03 and FM04). There were also three basins that were lower by about 50% (05-00.003, FM06 and FM08). These areas and their calibration may be reviewed when considering recommendations for improvements; however, these values will vary some since 2000. This does not mean the actual flows were 50% higher or lower, since total R only refers to the percentage of rainfall assumed to enter the sewer system, which is small overall.

Conclusions of the validation include the following:

- The influent flow meter data for 2019 at the WTRF is low as compared to the flow monitored in each of the seven interceptors that combine at the WTRF. However, the simulated influent flow compares well to previous years of higher flows. It was concluded that the higher flows are sufficiently conservative for master planning purposes, and it was not necessary to increase the modeled flows.
- Assuming the average daily influent flow data at the WTRF is low by about 17%, the simulated flows during the wet weather calibration periods are reasonable. A comparison of the simulated influent flow and the 15-minute WTRF metered flow shows that the simulated wet weather peaks are reasonable.
- Calibrate total R is within a similar range as previously calibrated in the model based on 2000 flow monitoring data. Specific metered areas found to be significantly higher or lower than previous calibration will be reviewed when developing recommendations for improvements.

Data from the flow metering is included in **Appendix C**.

3.6 Model Limitations

The model has been updated and calibrated using available data; however, there are limitations as in any model. Knowing those limitations is important in making decisions regarding improvement projects. The limitations and how they will be addressed are outlined below:

- The data collected from the temporary and permanent meters provided sufficient data for good calibration of dry weather flows. For wet weather, although there were some significant rainfall events, the RDII response was limited. Wet weather calibration was an important step in this model update since WWF had not been calibrated since 2000. While the WWF calibration was within the calibration parameters for all but two of the meters, a small RDII response means that most of the flow being calibrated is the dry weather

portion. The calibration plots were reviewed at locations with existing system deficiencies indicating a need for improvements.

- Depth calibration showed the simulated depths to be higher than observed. The difference was typically two inches or less for all but two meters. The greater simulated depth was considered when examining the system depth of diameter (d/D) criteria for evaluation (see Section 5).
- The WTRF influent data during the flow monitoring period was used as an overall check of the calibrated system response to RDII. The sum of the ADF volumes from each of the metered interceptors suggests that the calculated influent flow is between 8% and 17% higher than what was measured at the WTRF influent meter in 2019. This confirms the calibrated model is sufficiently conservative for master planning.

3.7 Design Storm Development

The previous 2009 and 2014 sewer system studies for the City considered a design storm with a 10-year return period and 24-hour duration for system evaluation. This selection was re-visited as part of this master plan update. The following aspects of design storm selection were considered:

- Design storms used by other municipalities for sanitary sewer system evaluation.
- Updates based on the NOAA Atlas 14 Point Precipitation Frequency Estimates, Volume 8 (NOAA, 2013).
- The shape, or temporal distribution, of the design storm.

In Colorado, there is limited information available on design storm return periods used by other municipalities. Several municipalities apply an overall criterion that does not consider the system's specific response to rainfall. This may be due to the limited time when such data can be collected. Colorado Springs uses a 5-year return period, whereas Boulder cites use of 15-, 20-, and 25-year return periods. Although Boulder considered larger return periods, their method only considers an analysis of flow at their wastewater treatment plant and is not comparable to the more detailed RDII analysis considered for Greeley.

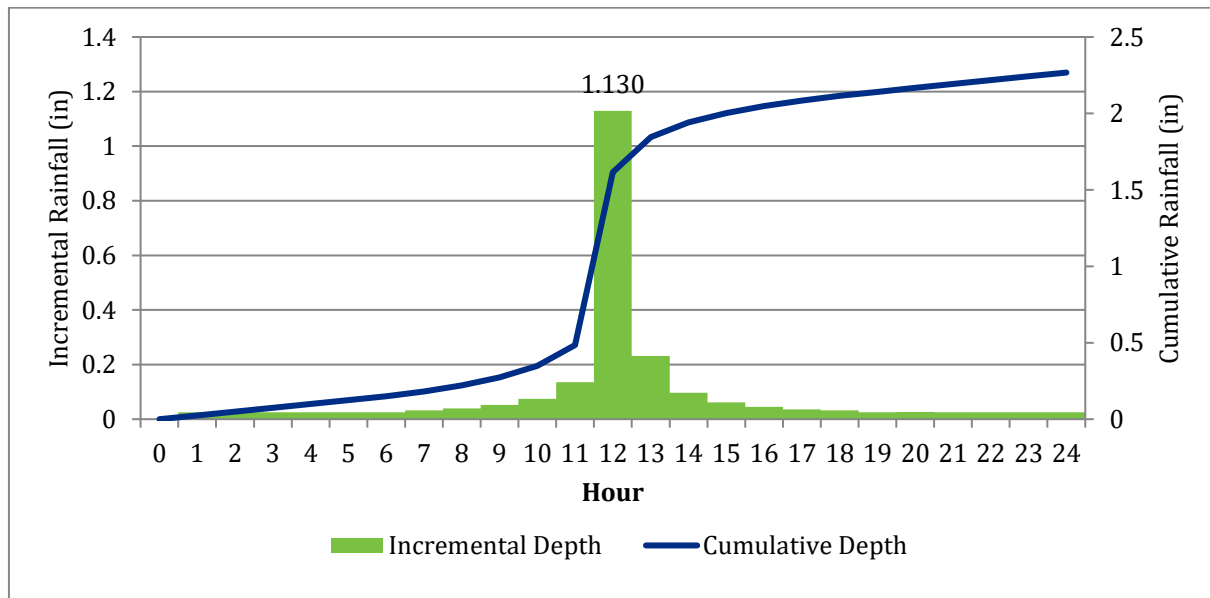
Given the limited number of comparisons and that the Atlas 14 frequency analysis provides regionalization of a design storm, the research was expanded to other areas. A summary of 41 municipalities across the United States developed by CDM Smith shows that about 70% of separate sanitary systems use a design storm of 5 years or less as their level of service for system evaluation.

Updated frequency estimates from Atlas 14 are shown in **Table 3-10**. The total depth for the 10-year 24-hour event in Greeley has increased from 2.4 to 2.73 inches compared to the design storm used in the 2014 report. Given this increase and that most municipalities use a 5-year design storm or less, it is recommended that the City consider a 5-year design storm event in addition to the 10-year event used before.

Table 3-10 Atlas 14 Precipitation Frequency Estimates (inches)

Return Period (years)	Duration (hr)						
	1	2	3	6	12	24	48
1	0.72	0.86	0.95	1.08	1.27	1.51	1.74
2	0.86	1.02	1.11	1.28	1.51	1.78	2.05
5	1.14	1.34	1.44	1.68	1.97	2.27	2.60
10	1.41	1.66	1.79	2.07	2.41	2.73	3.11
25	1.86	2.21	2.38	2.73	3.09	3.44	3.85
50	2.27	2.71	2.93	3.32	3.69	4.05	4.47
100	2.73	3.27	3.56	3.98	4.34	4.72	5.13

The temporal distribution of the design storm has been updated from the previous studies to an alternating block design storm that captures the depth for each duration of the 5- and 10-year period based on Atlas 14. For example, the 10-year, 1-hour event in Greeley is 1.41 inches; therefore, this is the peak intensity used in the middle of the design storm. The 2-hour depth is 1.66 inches; therefore, the next “block” of rainfall is 0.25 inches, the difference between the 1-hour and 2-hour depth. This is similar to the rainfall distribution described in the Code of Colorado Regulations for the *Rainfall Distribution for NRCS Unit Hydrograph Method*. The design storms for the 5- and 10-year return periods are shown in **Figure 3-4** and **Figure 3-5**, respectively, with incremental and cumulative depth. The peak intensity for the 5 and 10-year design storm is considerably greater than the design storm used previously, which was based on an observed rainfall event.

**Figure 3-4 Greeley 5-Year, 24-Hour Design Storm**

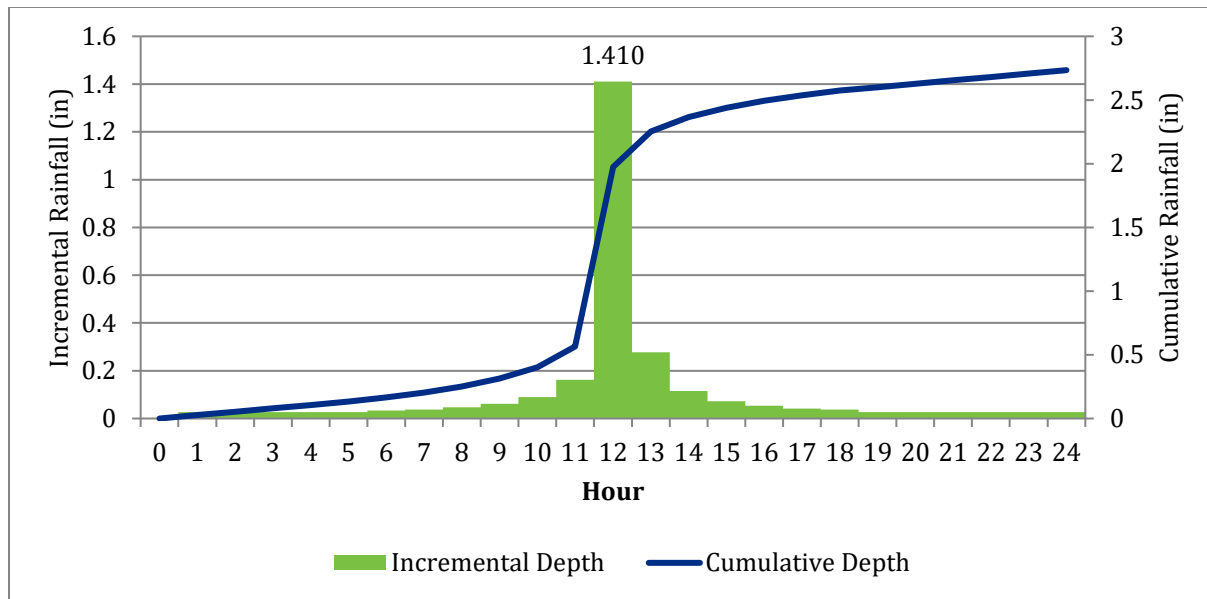


Figure 3-5 Greeley 10-Year, 24-Hour Design Storm

To validate the use of a new design storm peak intensity, historical plant influent data during three large rainfall events and the three calibration events was compared to the simulated flow using the new 5- and 10-year design storms. The peaking factor, which is the peak flow divided by the average annual flow, was calculated for each observed event and a regression analysis was performed on the peaking factor versus the 24-hour rainfall depth. The linear trend with 90% confidence intervals is shown in **Figure 3-6**. Separately, the peaking factor versus rainfall depth was plotted for the two new design storms and the previous design storm. While the design storms simulate a greater peaking factor than the linear trend, they are within the 90% confidence and are therefore more appropriate than using an event that is lower than the trend.

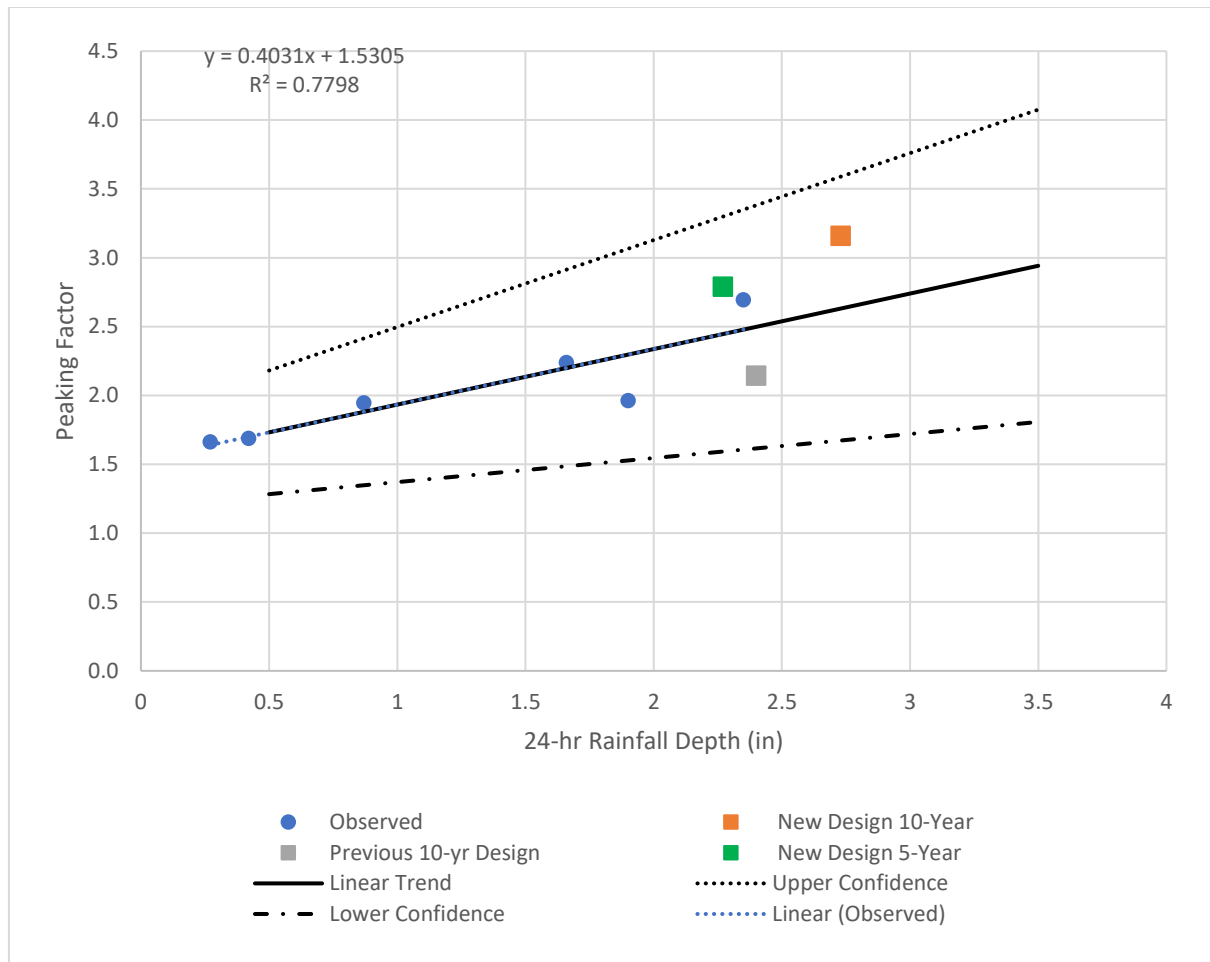


Figure 3-6 Observed Peaking Factor Versus 24-hr Rainfall Depth Compared to Simulated Peaking Factors

To compare the temporal distribution of the hydrographs, the plant influent flow for the three historical events is plotted with the predicted flow using the design storms, shown in **Figure 3-7**. The 24-hr return periods of the three historical events are as follows:

- 2016 Event: between a 1- and 2-year return period.
- 2017 Event: between a 5- and 10-year return period.
- 2018 Event: between a 2- and 5-year return period.

While the design storms produce additional volume when compared to the historical events, the simulated design peaks for the new 5 and 10-year events are similar to the 2017 event. The previous design storm was also simulated and found to simulate a lower peak, as compared to historical events.

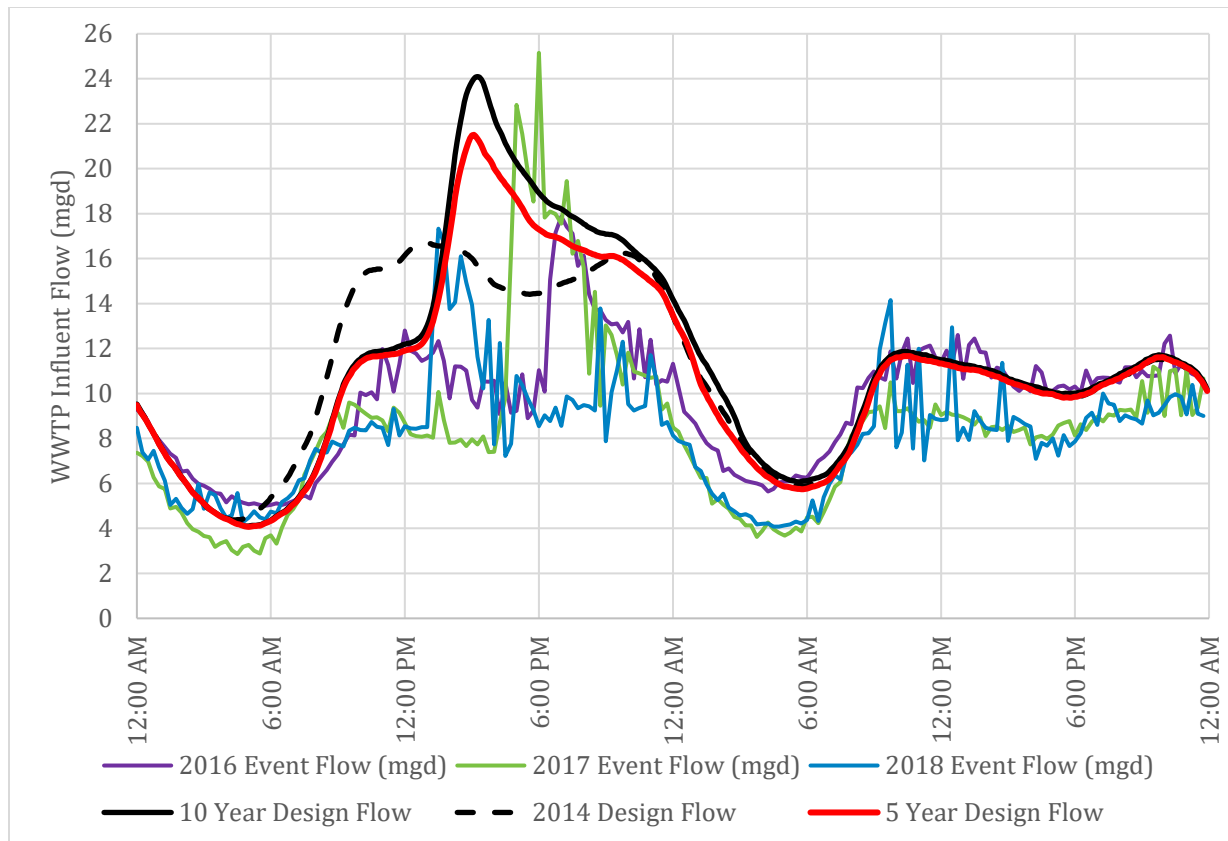


Figure 3-7 Historical WTRF Influent Flows Compared to the Predicted Design Storm Influent Flow

Both the 5-year and 10-year, 24-hour design storms were used to evaluate the existing system; however, only the 5-year event was used in recommending improvements for the following reasons:

- The 5-year event provides sufficient level of service that is comparable or better than other municipalities and therefore this event was used for system evaluation
- Updates from Atlas 14 required that the design storm depth be revisited where it was found that a 10-year event has a greater depth than what was used before.
- Overall peak depth calibration tended to be high in the model; therefore, using a 10-year event may be too conservative.

Section 4

Future Flow Projections

This section presents the methodology for projecting and distributing future wastewater flows for the Sanitary Sewer Master Plan. This methodology was coordinated with the Water Transmission and Distribution System Master Plan flow projections. It was also extended to project and distribute non-potable water demands should the methods overlap, thereby creating consistency between the sanitary sewer, non-potable water, and water master plans.

The goal of the process described herein is to develop the values and parameters related to modeling wastewater flows for each of the planning horizons, which are defined as existing, 5-year, 20-year, and buildout. An overview of the methodology is outlined below:

- For existing conditions, flows are determined based on existing condition data sets, including winter water use and flow monitoring data. Flow components are calibrated according to the flow monitoring data. Parameters for projecting flow components for future conditions were determined from of this effort.
- The next step is to define the buildout scenario. All areas not currently developed or planned for re-development within the service area boundary were assigned flows based on planned development, zoning, and future land use information provided by the City. Density factors recommended for each land use type to describe residential population or nonresidential flows per acre are applied to the additional acreage to be developed, including new development, re-development and infill.
- The final step is to define and spatially distribute the flows for the 5- and 20-year planning horizons. Planned development progress information from the City was used for this step.

This methodology extends to projecting and distributing water and non-potable demands to the extent that the methods should overlap to be consistent between the wastewater, water, and non-potable master plans.

4.1 Modeling Values and Parameters

Wastewater flow is modeled according to the following three main components:

- BWF: These are the sanitary wastewater flows that come directly from water use and follow a diurnal pattern with a peaking factor.
- GWI: These flows come from defects in the system that allow groundwater or other dry weather sources to infiltrate. This is a constant daily flow that may have seasonal variation.
- RDII: These flows come from defects in the system or openings in the system that allow water from precipitation to enter the system. This flow varies depending on the wet weather event duration and intensity.

BWF is the component derived from the projections methodology and is divided into residential and nonresidential flow components in the model. Winter water billing records are used to initially develop BWF components, which are then calibrated using flow monitoring data. Winter

water use is an estimate of BWF because water use during the winter months is mostly non-consumptive (i.e., most of the water used is sent back to the sanitary sewer system).

Residential BWF is defined by multiplying the population by gallons per day per person (gpd/person). This is not gpcd due to the fact that residential BWF does not include nonresidential flow contributions. For the existing conditions model, the gpd/person is derived from analysis of flow monitoring data using a population that is spatially distributed in the model from the geolocated water billing records.

Nonresidential BWF was initially defined directly from winter water use and was then adjusted during model calibration. For future conditions, specific design values are used based on this analysis and calibration.

The specific planning information needed to develop future flows in the model include the following:

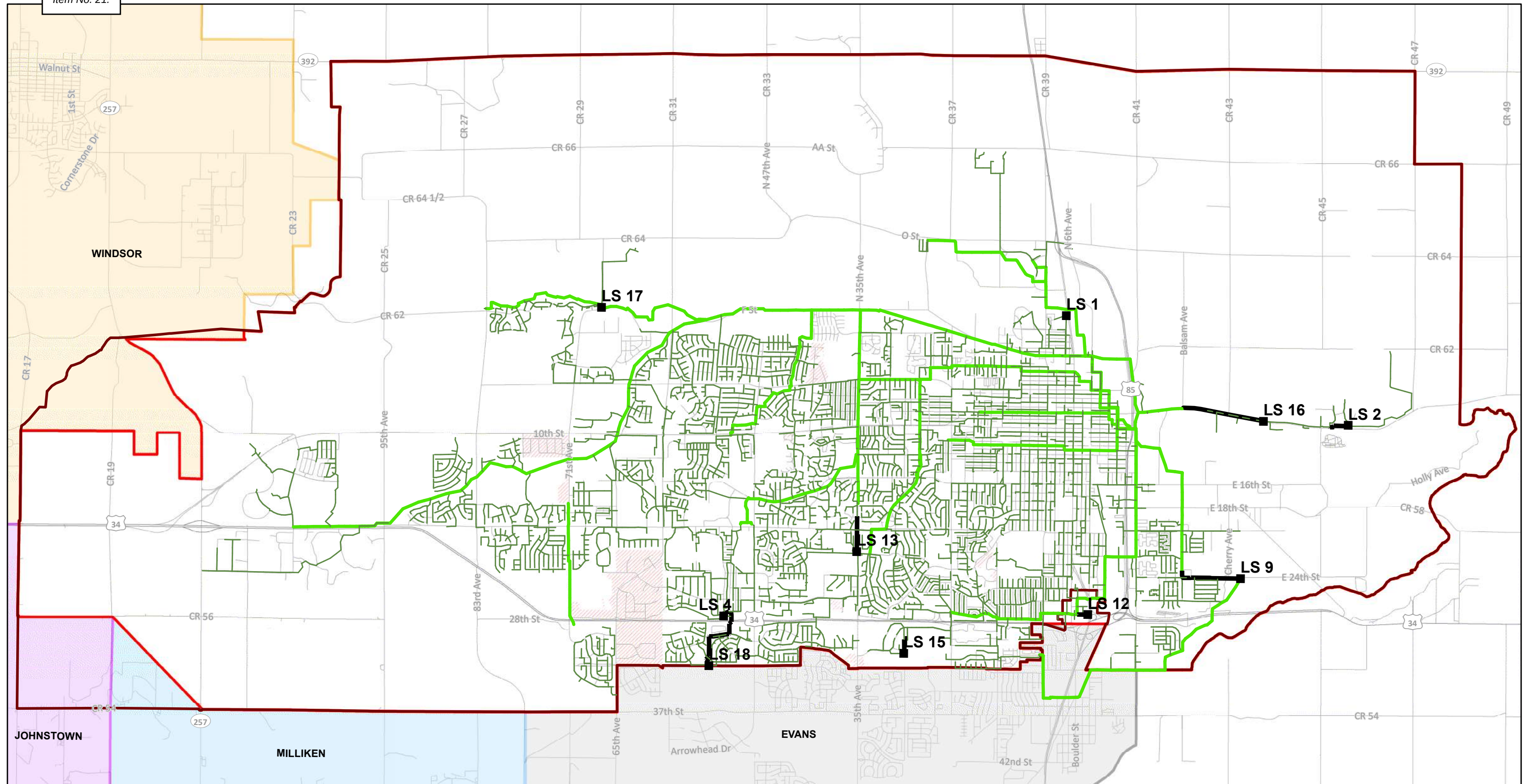
- Population
- Zoning and Land Use
- Area to be served or currently served

The above information was developed for the following planning horizons: existing (year 2020), 5-year (year 2025), 20-year (year 2040), and buildout. The information developed for each planning horizon will be used for this master plan as well as for the Water Master Plan and Non-Potable Water Master Plan.

The parameters derived from the information available along with the necessary calculations and assumptions needed to distribute that information spatially for each planning horizon are described below. The parameters are presented in terms of how they are used for the wastewater master plan. The water and non-potable master plans use similar parameters as appropriate for determining water demands.

4.2 Service Area and Population Projections

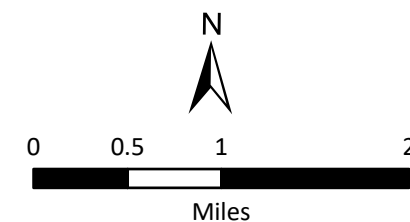
The planning information was spatially distributed to the long-range expected growth area (LREGA) boundary as shown in **Figure 4-1**. This represents the limits of the City's expected growth and where it plans to provide water and wastewater services. It should be noted that there is an overlap with Greeley's LREGA and Urban Growth Boundaries and 208 boundaries for both Johnstown and Milliken in the southwest corner of Greeley's growth boundary. The City of Greeley has met with Johnstown and Milliken's staff to understand their interest and future plans for providing sewer service to these areas. Based on these meetings, it is not planned to change growth or 208 boundaries at this time. However, parties generally agreed that at that time that development is being considered in these areas further discussions and assessment would be required to determine how these areas would best be served. In the event that these areas are annexed into the City of Greeley and sewer service is provided by another municipality it would require an Inter-Governmental Agreement to address the service requirements. If annexed into Greeley and Greeley provides municipal sewer service, it will require an amendment of the 208 boundary through NFRWQPA.



Legend

- Existing Lift Stations
- Sewer Mains**
- Trunk Line
- Force Main
- Collector Line
- LREGA

- Private Septic System Parcels
- 208 Boundaries**
- GREELEY
- EVANS
- JOHNSTOWN
- MILLIKEN
- WINDSOR



Wastewater Master Plan Area

*Figure 4-1
Greeley Sewer
System Master Plan*

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Population projections represent the timing of population growth to be distributed throughout the LREGA. Various sources of population projections were reviewed and discussed with the City. The most relevant projections come from the *City of Greeley Population and Water Demand Projections*. Historical, low, middle and high population projections are shown in **Figure 4-2**. The three population projections result in a linear annual growth rate of 2.2% for the low scenario, 3.1% for the middle scenario, and 4.0% for the high scenario. The current population and projected 2075 populations are noted. Based on discussions with the City and their knowledge from other studies, it is assumed that 2075 does not represent the buildout year for the City within the LREGA boundary. The BBC report notes that the buildout scenario is likely even later than 2090.

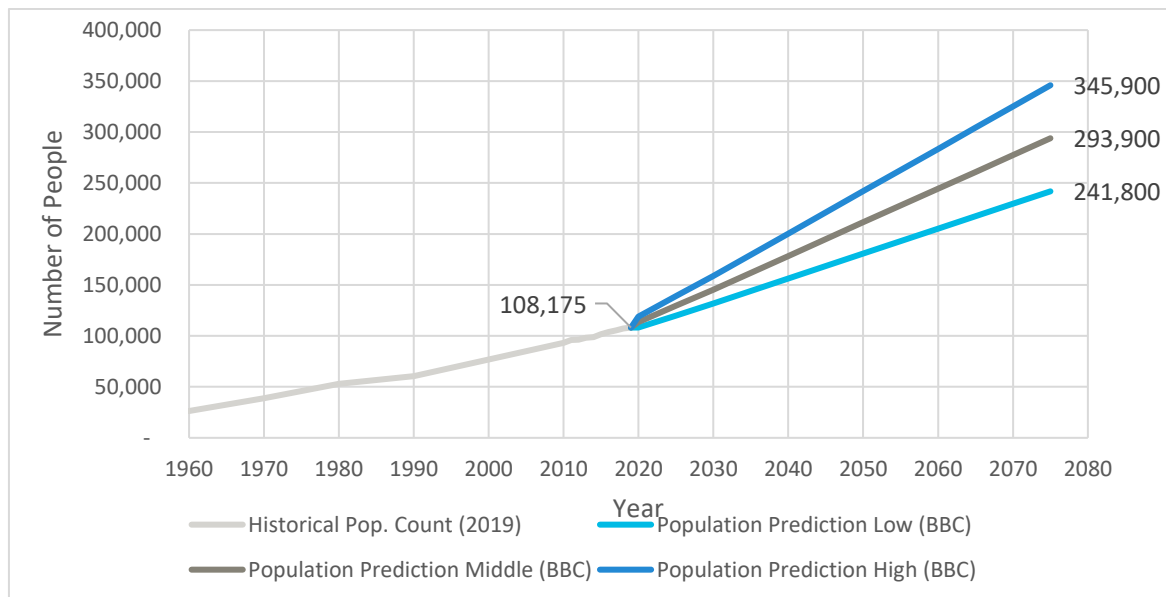


Figure 4-2 Historical and Projected Population

Per the *City of Greeley Population and Water Demand Projections* (BBC) the estimated population served by the wastewater system is 107,146. This population was distributed throughout the system based on the geolocated water billing data and address points. To project future wastewater flow, the proposed population increases from the BBC report are used to spatially distribute flows for each planning horizon. (i.e., the spatially distributed additional population plus the existing population at each planning horizon is set to match the “middle” population projection). The “middle” projection was selected for system analysis and as the basis of the projections methodology. A buildout population is extrapolated beyond 2075 based on the planning data and factors described in the following sections. **Table 4-1** lists the population for each decade and planning horizon year out to buildout.

Table 4-1 Middle Population Projection

Year	Middle Population Projection
2018	107,146
2020	113,700
5-year, 2025	129,450
2030	145,200
20-year, 2040	178,300
2050	211,400
2060	244,400
2065	260,900
2070	277,400
2075	293,900
Buildout	428,148

Source: City of Greeley Population and Water Demand Projections

4.3 Winter Water Billing

Winter water billing data from 2018 to 2019 is used to distribute existing populations and nonresidential BWF and was then calibrated using flow monitoring data. To determine the distributed existing population, the residential billing points are multiplied by the appropriate factors from the City's design criteria:

- Low-density residential (R-L): 3.1 people per unit.
- Medium-density residential (R-M): 2.7 people per unit.
- High-density residential (R-H): 1.7 people per unit.

To determine which criteria applies to each billing point, residential density information is assumed from the following sources of information:

- Existing land use layer.
- Household density layer.
- Billing data categories.

In the absence of information on residential density from the above data sources in specific areas, 2.7 people per unit is assumed.

Nonresidential BWF was distributed in the existing conditions model using the spatially distributed winter water billing data, which was then adjusted during calibration using the flow monitoring data. This data was also used to analyze typical wastewater flow volume by nonresidential land use types. Flow density by nonresidential land use type was calculated in terms of gpd/acre as shown in **Table 4-2**. The recommended values are rounded up from the 75th percentile of all data within each category. This information was used for projecting flows in future development areas.

Table 4-2 Nonresidential Winter Water Billing Data Summary

Nonresidential Zoning Categories	Median (gpd/acre)	75 th Percentile (gpd/acre)	Recommended Value for Future Conditions Projections (gpd/acre)
Commercial Low Intensity, C-L	328	610	650
Commercial High Intensity, C-H	549	1469	1500
Industrial Low Intensity, I-L	136	319	500
Industrial Medium Intensity, I-M	128	317	500

4.4 Spatial Projections Data and Methodology

Future flow parameters are distributed to currently undeveloped areas or areas of redevelopment based on the best available information for each area. Three tiers of information are described below:

1. Tier 1: Planned Developments.
2. Tier 2: City of Greeley Land Use (Sub-Areas) and Zoning Markup Map (Greeley Markup).
3. Tier 3: Zoning and Comprehensive Plan Information.
 - a. Zoning from the *Annual Growth & Development Projections Report* (City of Greeley, 2019).
 - b. Land use guidance from the *Imagine Greeley Comprehensive Plan* (City of Greeley Community Development Department, 2018).

4.4.1 Tier 1: Planned Unit Developments (PUDs) and Proposed Developments

Several development plans have been submitted to the City for areas within the LREGA. This information is used to delineate areas and to distribute future populations for modeling future wastewater flows. These various planned developments are described in **Table 4-3** and are shown spatially in **Figure 4-3**.

Table 4-3 Planned Development Information

Planned Development	Area	Projected Population	Projected Residential Flow	Projected Nonresidential Flow
	(acres)	(people)	(gallons/day)	(gallons/day)
Airport Master Plan	196	0	0	233,234
Cache Project	800	8,444	506,640	37,343
City Center West/Boomerang 88	214	3,001	180,060	0
Cobblestone PUD	145	3,049	182,940	38,015
Grapevine	6	119	7,140	0
Lake Bluffs PUD	305	2,308	138,480	47,058
Promontory Heights	276	2,936	176,160	73,448
StoneyBrook PUD	20	350	21,000	0
Trails at Sheep Draw	93	2,304	138,240	98,395
Triple Creek Subdivision	51	282	16,920	0
UC Health – Ashcroft	45	0	0	141,120
Westgate PUD	85	1,012	60,720	20,322
Total	2,236	23,804	1,428,240	688,934

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4.4.2 Tier 2: City of Greeley Land Use and Zoning Markup Map

Outside of the Tier 1 areas described above, projection data for the remaining available area includes the 2019 Zoning Map and the 2018 *Imagine Greeley Comprehensive Plan*. The City reviewed the data sets and marked off 11 areas to which a specific growth distribution is applied. The City Planning Department assigned percentages of land use type to each growth area. **Table 4-4** describes the distribution of land use projections for each growth area. For example, for the area within the 83rd Ave/Highway 34 boundary, 65% of the total acreage is assumed to be C-H, while 35% of the total acreage is assumed to be R-H at 20 dwelling units per acre (DU/acre).

Table 4-4 City of Greeley Markup Map Summary

Markup Areas	Area (acres)	% of Total Area per Nonresidential Land Use Category				% of Total Area per Residential DU/Acre Category				Projected Population Increase	Projected Residential Flow	Projected Nonresidential Flow
		C-L	C-H	I-L	(gpd)	1.0	2.5	4.0	20	(people) ^{1,2}	(gpd)	(gpd)
83 rd Avenue/Highway 34	578		65%						35%	6,878	412,680	563,550
83 rd Avenue/10 th Street	650		15%					45%	40%	12,467	748,020	146,250
20 th Street North	883		25%					50%	25%	12,980	778,800	331,125
Southeast Bluffs	123		15%					45%	40%	2,359	141,540	27,675
North of the River – East 1	1,969		10%		80%	10%				610	36,600	1,082,950
North of the River – East 2	5,708		20%		30%			35%	15%	53,884	3,233,040	2,568,600
North of the River – West 1	4,410		15%		10%	10%		50%	15%	51,200	3,072,000	1,212,750
North of the River – West 2	3,783		10%		20%	30%		30%	10%	30,453	1,827,180	945,750
East Greeley	1,292				30%	40%		30%		6,408	384,480	193,800
Southwest Greeley	2,860						100%			22,165	1,329,900	0
Interchange 34 West	3,719		20%		10%			50%	20%	48,347	2,900,820	1,301,650
Total										247,751	14,865,060	8,374,100

¹ For 20 DU/acre, 1.7 people per DU was assumed. For 1-4 DU/acre, 3.1 people per DU was assumed.

² The estimated population increase of 247,751 people is assumed to occur by “buildout”, which is estimated to be in approximately 2116.

As determined by the City of Greeley Planning Department, the population for each area is calculated by multiplying the DU/acre by the percentage of the total area marked for residential and then applying the appropriate population factors (people/DU). The nonresidential flow is calculated by multiplying the total area by the percentage of nonresidential use and then applying the appropriate density factor (gpd/ac) that was developed in **Table 4-2** (included earlier in this section).

To spatially distribute the calculated flows within each Tier 2 growth area, the total flow is split into sub areas within each Tier 2 growth area based on direction from the City. The distribution of flow to each sub area is intended to follow the density distribution of the original *Imagine Greeley Comprehensive Plan*. This distribution results in flow densities across each growth area that are similar to densities within the Comprehensive Plan.

4.4.3 Tier 3: Zoning and Land Use Guidance (Infill Areas)

For the remaining area within the LREGA, zoning and land use information was used to distribute future populations and wastewater flow parameters. The 2019 Zoning Map was used except in areas defined as Planned Unit Development or Holding Agriculture. In these zones and areas outside the 2019 Zoning Map, the Comprehensive Plan land use guidance was used to define future population and wastewater flow parameters.

City design criteria provides a typical range of density (population per acre) within each zoning type. To project future flow, a typical density was chosen for each zoning type. The recommended densities are based on discussions with the City and a review of the following sources:

- Existing winter water billing data for nonresidential areas (in gpd/acre by category).
- *Imagine Greeley Comprehensive Plan* (City of Greeley Community Development Department, 2018).
- Design criteria document which includes zoning district development standards.
- Similar future projection studies.

Table 4-5 summarizes the recommended densities by zoning and land use guidance category used for the projection methodology. Values recommended for nonresidential wastewater flows are based on the values previously presented. **Table 4-6** shows the resulting population and nonresidential flow projections from the Tier 3 areas.

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Table 4-5 Recommended Zoning and Land Use Guidance Densities

Zoning or Land Use Guidance Category	Design Criteria Residential Density ¹ (DU/ac)	Recommended Residential Density for Planning (DU/ac)	People Per Unit ²	Recommended Nonresidential Wastewater Flow Density (gpd/ac) ³
Residential Estate (R-E)		1	3.1	
Residential Low Density (R-L)	3 to 5	4	3.1	
Residential Medium Density (R-M)	6 to 10	6	2.7	
Residential High Density (R-H)	11 to 20	20	1.7	
Residential Mobile Home (R-MH)		6	2.7	
Commercial Low Intensity (C-L) ⁵				650
Commercial High Intensity (C-H) ⁵				1,500
Industrial Low Intensity (I-L) ⁵				500
Industrial Medium Intensity (I-M) ⁵				500
For areas Zoned as - Planned Unit Development (PUD) or Holding Agriculture (H-A) The projection categories from the 2018 <i>Imagine Greeley Comprehensive Plan</i> are used. See below:				
Employment, Industrial, and Commercial				883
Mixed Use High Intensity (assume 50% R-H, 50% C-L)	4 to 20	15	1.7	650
Mixed Use (assume 50% R-M, 50% C-L)	4 to 20	10	2.7	650
Suburban	2 to 10	10	2.7	
Residential	3 to 5	4	3.1	
Legacy Urban	4 to 20	10	2.7	
Downtown Development Authority (Redevelopment)	N/A	45	1.7	
Rural	0 to 2	2	3.1	

¹ City of Greeley Design Criteria provided as reference values for the recommended residential zoning densities. Reference values from the *Imagine Greeley Comprehensive Plan* provided for the Mixed Use, Suburban, Legacy Urban Residential, and Rural areas.

² People per unit are based on the City of Greeley design criteria

³ Recommended Nonresidential Wastewater flow densities per **Table 4-2**.

⁴ Recommended density of 45 units/acre within the DDA area is per discussions with City of Greeley.

⁵ Commercial and industrial land use categories and their associated intensity designations (C-L, C-M, C-H, I-L, I-M, and I-H) are for zoning purposes only and do not indicate volume of water use.

Table 4-6 Zoning and Comprehensive Plan Projections for Tier 3 Areas

Zone	Acres	Projected Population	Projected Nonresidential Flow
		(people)	(gpd)
Commercial High Intensity (C-H)	216	0	324,364
Commercial Low Intensity (C-L)	363	0	236,014
Industrial High Intensity (I-H)	0	0	0
Industrial Low Intensity (I-L)	99	0	49,637
Industrial Medium Intensity (I-M)	354	0	176,930
Residential Estate (R-E)	1,491	4,621	0
Residential High Density (R-H)	242	8,214	0
Residential Low Density (R-L)	1,712	21,226	0
Residential Medium Density (R-M)	80	1,300	0
Residential Mobile Home (R-MH)	1	24	0
Comprehensive Plan Area Category	Acres	Projected Population	Projected Nonresidential Flow
		(people)	(gpd)
DDA	94	7,161	0
Employment, Industrial, and Commercial	137	0	121,018
Legacy Urban	10	259	0
Mixed Use	23	186	7,444
Mixed Use High Intensity	123	2,090	39,964
Residential	275	3,405	0
Rural	156	964	0
Total	5,281	49,450	955,371

4.4.3.1 Tier 3: Special Cases

During the development of the projection methodology, certain areas within Tier 3 were adjusted to values outside the Zoning and Comprehensive Plan information. To simplify the projection methodology, these cases were left in Tier 3:

- Downtown Greeley – Future land use for the downtown area was based on a report prepared by the Downtown Development Authority. After discussion with the City, a value of 45 du/acre was assumed for areas marked for development within the report.
- Lift Station 15 Service Area – The City has received interest from developers in this area that has provided a more detailed future projection than the previously available information. All future development area within the LS 15 service area are now projected to develop as R-H.
- West Greeley, Bluffs Area – The Zoning and Comp Plan do not indicate future growth in these areas. After discussion with the City, it was assumed that these areas would develop out as R-E and R-L.

4.5 Future BWF and GWI Parameters

The total acreage, buildout population and ADWF broken down by flow component were calculated for each tier to show the weight of each tier in the projected flows. Population and nonresidential wastewater flows were calculated using the methodology as presented. To calculate the components of dry weather wastewater flow and overall ADWF, population was converted to BWF in gpd and future GWI was converted from acreage to gpd. These calculations used flow parameters determined from model calibration and flow monitoring data. The averages of the parameters developed by flow metering basin, shown in **Table 4-7**, were reviewed and agreed to with the City.

Table 4-7 Future Projection Parameters

Flow Parameter	Factor
Residential BWF	60 gpd/person
GWI	100 gpd/ac

4.5.1 Future Base Wastewater Flow – Diurnal Patterns

To project future BWF, separate diurnal patterns were developed for residential and nonresidential flow. These patterns were developed through a review of the 2019 flow monitoring data and are intended for use on a systemwide basis. The peaking factors within the proposed patterns are lower than the Greeley Criterion. This difference is intentional. Use of the Greeley Criterion peaking factors for system-wide analysis will result in significantly oversized infrastructure since it is intended to serve as criterion for development specific application.

Figure 4-4 and **Figure 4-5** show the future diurnal patterns used for modeling. Greeley criterion peaking factors include WWF and have additional factors of safety. For modeling and system analysis, wet weather peaks were evaluated separately.

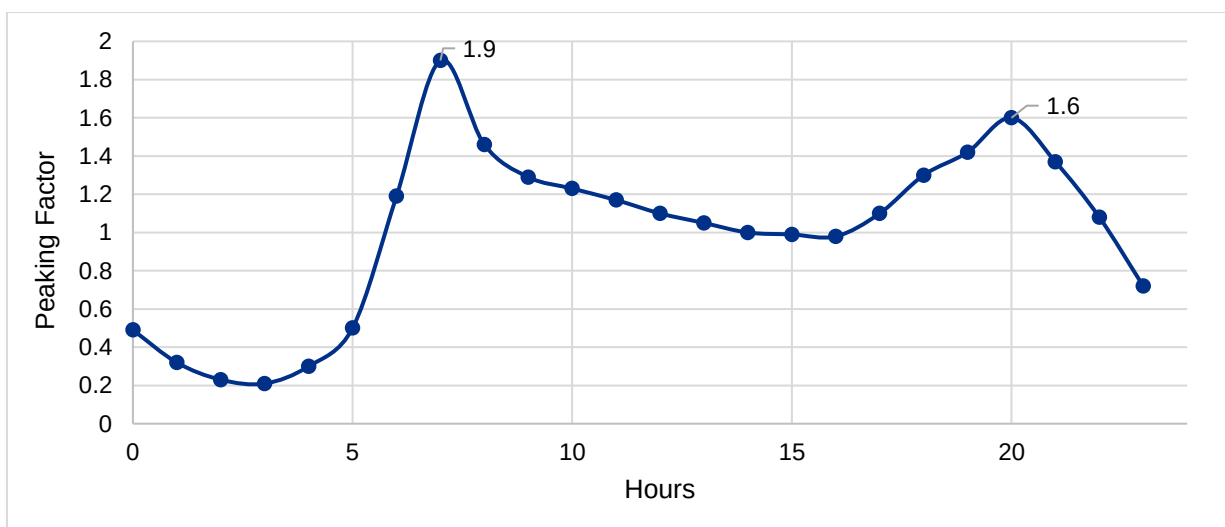


Figure 4-4 Diurnal Curve for Future Residential Flow

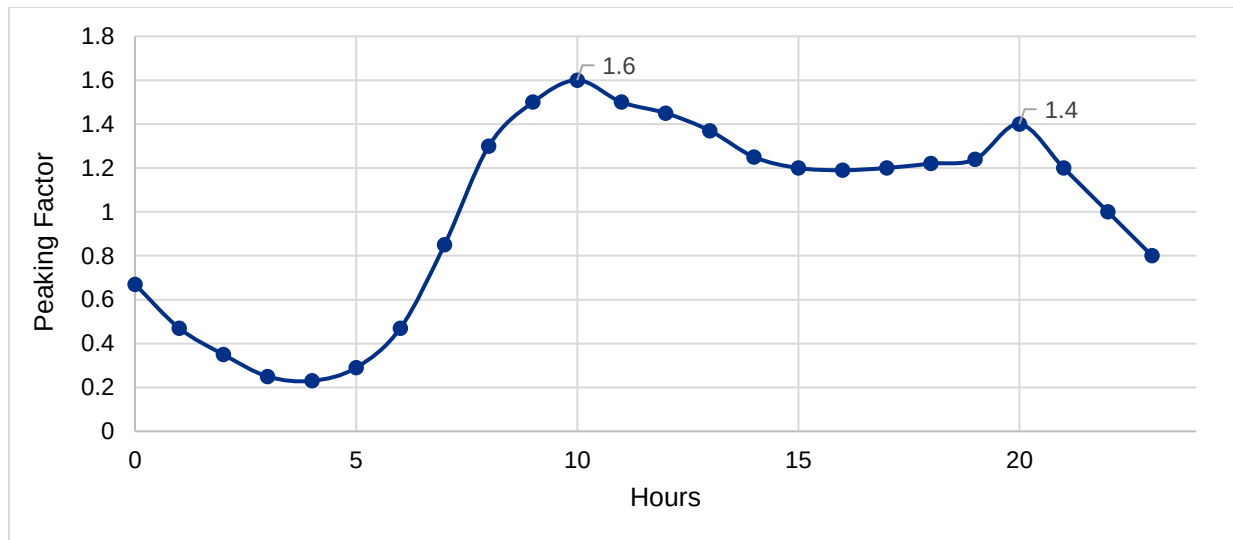


Figure 4-5 Diurnal Curve for Future Nonresidential Flow

4.6 Growth Estimates by Planning Horizon

To distribute the future flow parameters in the model at each planning horizon, the percent to which each future development tier is built out at the end of each planning horizon was estimated (Table 4-8) based on the BBC report. At the 2025 and 2040 planning horizons, the calculated population is matched to the BBC report. The overall buildout population was assumed to exceed the 2075 BBC projected population. The total buildout population is projected to be 428,148.

Table 4-8 Planned Development/Markup Area Information

Planned Development – Tier 1	5 Year (% Complete)	20 Year (% Complete)	Buildout (% Complete)
Airport Master Plan	100%	100%	100%
Cache Project	40%	100%	100%
City Center West/Boomerang 88	75%	100%	100%
Cobblestone PUD	100%	100%	100%
Grapevine	100%	100%	100%
Lake Bluffs PUD	50%	100%	100%
Promontory Heights	40%	100%	100%
Stoney Brook PUD	100%	100%	100%
Trails at Sheep Draw	100%	100%	100%
Triple Creek Subdivision	100%	100%	100%
UC Health – Ashcroft	100%	100%	100%
Westgate PUD	100%	100%	100%
Total Population Increase – Tier 1	15,072	23,804	23,804

Markup Areas – Tier 2	5 Year (% Complete)	20 Year (% Complete)	Buildout (% Complete)
83 rd Avenue/Highway 34	0%	10%	100%
83 rd Avenue/10 th Street	20%	25%	100%
20 th Street North (100)	0%	10%	100%
20 th Street North (200)	0%	15%	100%
20 th Street North (300)	0%	10%	100%
Southeast Bluffs	0%	75%	100%
North of the River – East 1 (100)	0%	0%	100%
North of the River – East 1 (200)	0%	0%	100%
North of the River – East 2 (100)	0%	0%	100%
North of the River – East 2 (200)	0%	5%	100%
North of the River – West 1 (100)	0%	5%	100%
North of the River – West 1 (200)	0%	25%	100%
North of the River – West 1 (300)	0%	25%	100%
North of the River – West 1 (400)	0%	5%	100%
North of the River – West 2 (100)	0%	0%	100%
North of the River – West 2 (200)	0%	0%	100%
North of the River – West 2 (300)	0%	0%	100%
East Greeley	5%	10%	100%
Southwest Greeley	0%	10%	100%
Interchange 34 West (100)	0%	0%	100%
Interchange 34 West (200)	0%	0%	100%
Interchange 34 West (300)	0%	50%	100%
Interchange 34 West (400)	0%	0%	100%
Interchange 34 West (500)	0%	5%	100%
Total Population Increase – Tier 2	2,813	12,577	247,752
Zoning and Land Use Guidance – Tier 3	5 Year	20 Year	Buildout
Tier 3 Areas	7% ¹	69% ¹	100%
Total Population Increase – Tier 3	3,483	34,159	49,451
Summary	5 Year	20 Year	Buildout
Projected Population Increase – Tier 1-3 Total	21,368	70,540	321,007
BBC Report – Population Increase	21,275	70,125	N/A

¹ Percentage increases for the Tier 3 area are relative to total Tier 3 population increase. This increase will occur in specific areas per discussions with City of Greeley.

The percent complete values listed in **Table 4-8**, and development areas included for each Tier were chosen through discussions with the City. **Figures 4-6, 4-7, and 4-8** are depictions of the assumed growth areas for each planning horizon and provide visual representations of the information within **Table 4-8**.

It is assumed that the Tier 1 projects will be completed first. For this reason, most of the Tier 1 projects have been assumed to be complete at the 5-year planning horizon, and all of them assumed to be complete at the 20-year planning horizon.

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	LREGA		Future Development	% = Percent Developed
	Tier 1		Existing Service Area	
	Tier 2		Lakes and Ponds	
	100-yr Floodplain		Park	

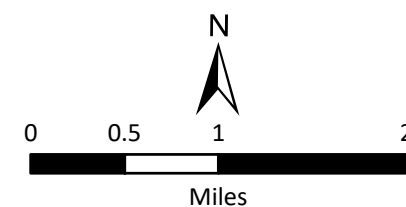
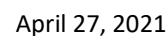


Figure 4-6
Greeley Sewer
System Master Plan

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 LREGA
 Tier 1
 Tier 2
 100-yr Floodplain

Tier 1

Tier 2

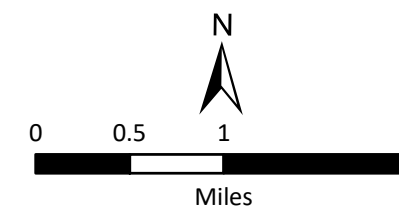
 100-yr Floodplain

 Existing Service Area

 Lakes and Ponds

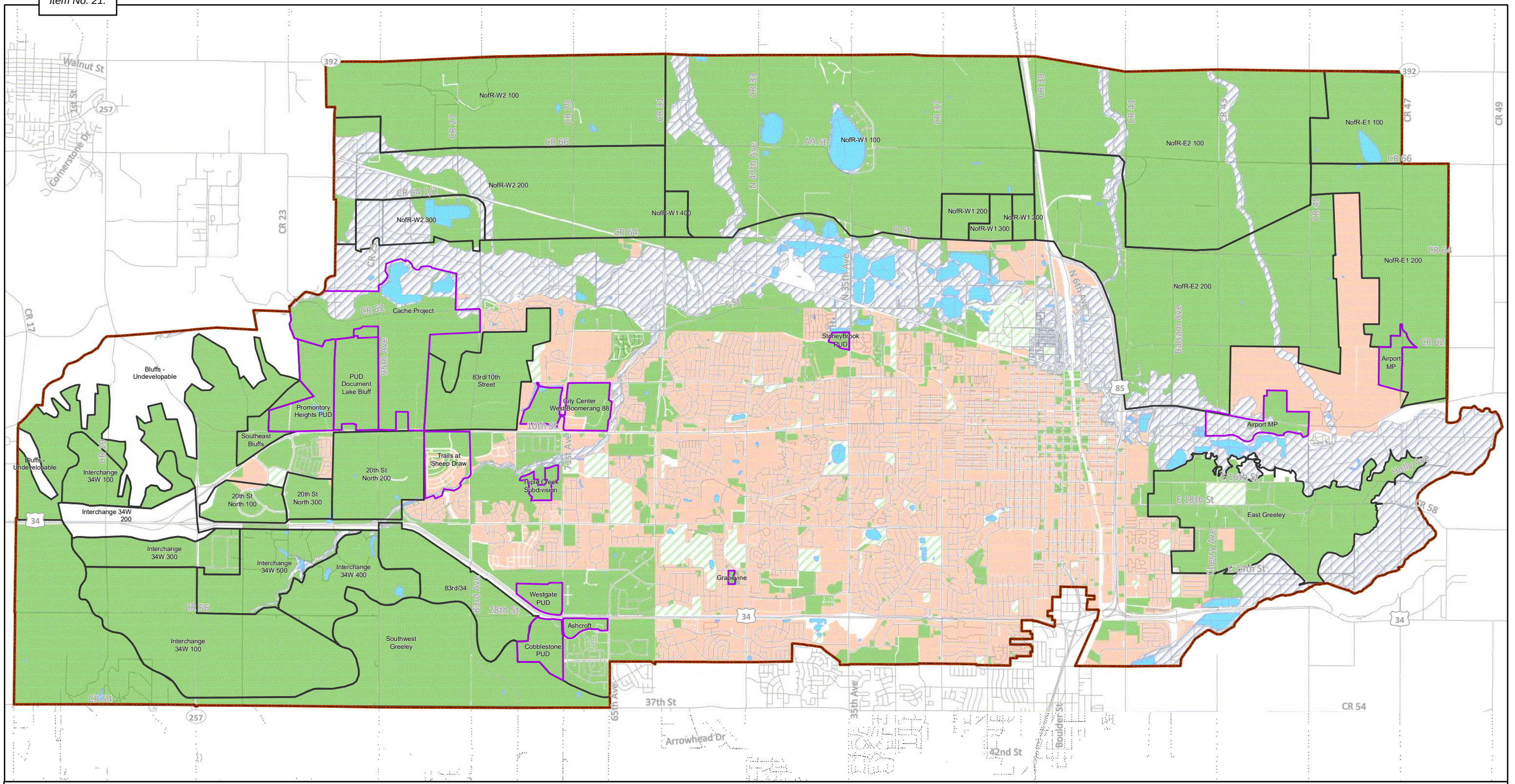
 Park

% = Percent Developed

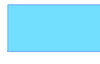


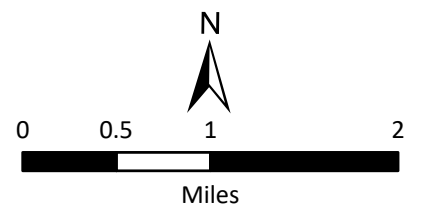
*Figure 4-7
Greeley Sewer
System Master Plan*

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Legend

- | | | | |
|---|-------------------|---|-----------------------|
|  | LREGA |  | Future Development |
|  | Tier 1 |  | Existing Service Area |
|  | Tier 2 |  | Lakes and Ponds |
|  | 100-yr Floodplain |  | Park |



Buildout Developed Area
Figure 4-8
Greeley Sewer
System Master Plan

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Due to the large areas within the Tier 2 projections category, the Tier 2 percent complete values for the 5-year and 20-year planning horizons have been developed through close discussion with the City. The Tier 2 areas identified for growth at the 5-year/20-year planning horizons are the areas which the City planning department has identified as the most likely growth areas.

The Tier 3 growth identified below for the 5-year planning horizon was chosen through discussions with the City. Tier 3 growth included at the 20-year planning horizon was assumed to include all the infill around the Tier 1 and Tier 2 projected growth areas.

4.7 Overall Methodology Summary

This projections methodology organized the available planning data by tiers to produce the following three components of wastewater flow:

- Residential BWF (gpd)
- Nonresidential BWF (gpd).
- Groundwater Infiltration (gpd).

This information was converted to the components of wastewater flow and spatially distributed in the hydraulic model at each planning horizon. The resulting ADWF by planning horizon and tier is summarized in **Table 4-9**. The calibrated model was used to describe the existing conditions to arrive at the total system flow.

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Table 4-9 Future Projections Results by Tier

5 Year Planning Horizon	Acres	Population	Nonresidential BWF	Residential BWF	GWl	ADWF
			(gpd)	(gpd)	(gpd)	(mgd)
Existing	10,940	107,146 ¹	2,018,478 ²	4,962,559 ²	1,312,438 ²	8.29 ²
Tier 1	1,418	15,072	613,209	921,224	141,842	1.68
Tier 2	195	2,813	38,904	168,789	19,472	0.23
Tier 3	307	3,483	85,713	329,687	31,647	0.45
Total	12,860	128,514	2,756,304	6,382,259	1,505,399	10.65
20 Year Planning Horizon	Acres	Population	Nonresidential BWF	Residential BWF	GWl	ADWF
			(gpd)	(gpd)	(gpd)	(mgd)
Existing	10,940	107,146	2,018,478	4,962,559	1,312,438	8.29
Tier 1	2,243	23,804	695,808	1,427,186	224,209	2.35
Tier 2	1,496	12,577	659,148	760,352	149,576	1.57
Tier 3	3,750	34,159	778,655	2,440,467	375,040	3.59
Total	18,429	177,686	4,152,089	9,590,564	2,061,263	15.80
Buildout	Acres	Population	Nonresidential BWF	Residential BWF	GWl	ADWF
			(gpd)	(gpd)	(gpd)	(mgd)
Existing	10,940	107,146	2,018,478	4,962,559	1,312,438	8.29
Tier 1	2,243	23,804	696,085	1,428,058	224,345	2.35
Tier 2	25,983	247,747	8,376,121	14,873,374	2,598,319	25.85
Tier 3	5,940	49,451	955,631	2,967,037	933,109	4.86
Total	45,106	428,148	12,046,315	24,231,028	5,068,211	41.35

¹ The assumed existing population was taken from the 2018 *City of Greeley Population and Water Demand Projections*.

² Flow information for the existing scenario was derived from the 2019 temporary flow metering, permanent flow metering, and lift station flow data. This data was cross checked, and the model was calibrated to wet and dry weather flow. The resulting calibrated flow values are shown in the above table.

The increase in ADWF for buildout is calculated as about five times the current ADWF. This is different, as compared to population, which is calculated to increase by about four times. This discrepancy is due the wastewater flow parameters being on the higher side of the average. A conservative approach such as this is needed in master planning to account for the inherent unknowns in the spatial distribution of flows so as not to underestimate the infrastructure sizing.

Figure 4-9 illustrates the flow projections over the different planning horizons. For reference comparison, this figure shows future flow projections from the 2018 *Water Pollution Control Facility (WPCF) Treatment and Nutrient Master Plan*.

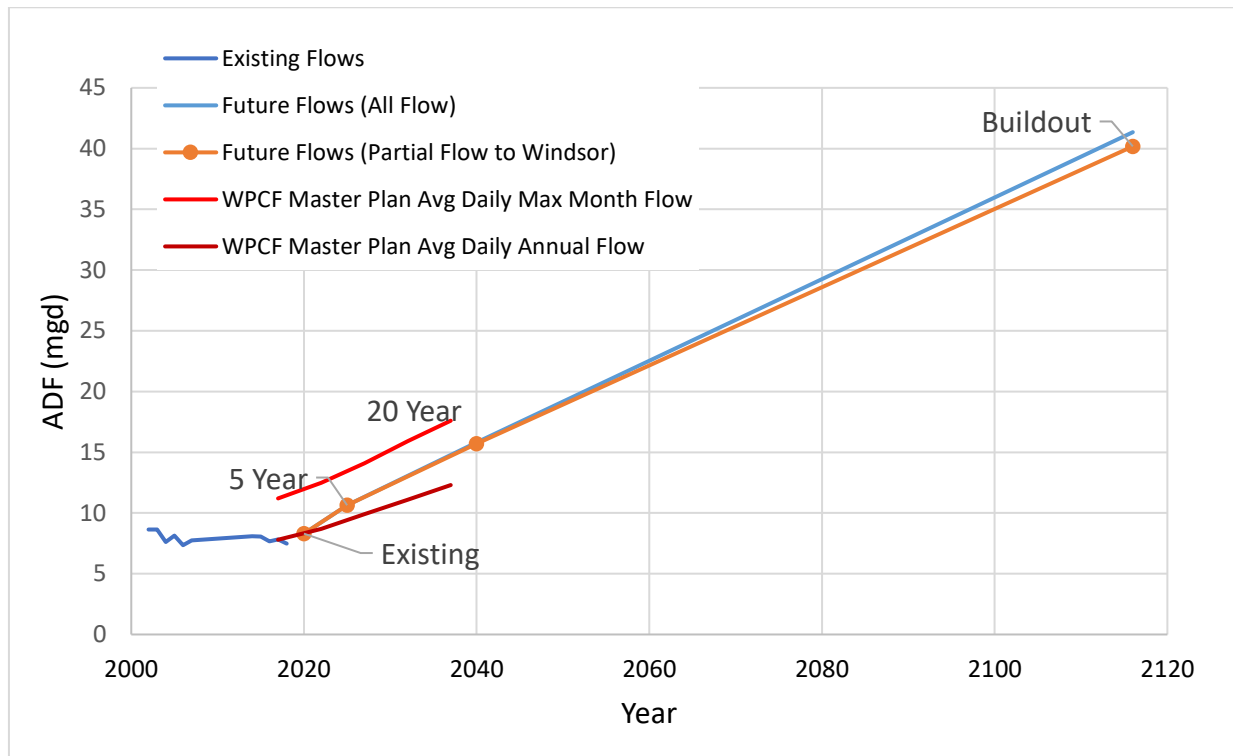


Figure 4-9 Future Flow Projections

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Section 5

Existing and Future Systems Evaluation

Model scenarios representing each of the planning horizons (Existing (2020), 2025, 2040, Buildout) were developed and evaluated to determine the improvements needed to accommodate development and growth. This section describes the evaluation criteria, model results and model deficiencies, followed by recommended improvements for each planning horizon. The existing system was evaluated, and the future system components were sized based on simulated peak WWF using the 5-year design storm event.

Existing system deficiencies were predicted using the calibrated model with WWF extrapolated for the 5-year design storm event. The City may not have observed such deficiencies since the specific duration and shape of the 5-year event has likely not occurred in recent memory. The rainfall and flow monitoring data used for model calibration only captured storm events smaller than a 1-year event. Extrapolation to larger storm events reduces the accuracy of WWF modeling, however, estimates and assumptions are necessary to plan for the desired level of service, which was recommended as the 5-year design storm event. Recommendations for improvements to the existing system are based on these predicted WWF, although the City's experience with their system and knowledge of critical areas is what drives the prioritization of such projects during capital improvements planning.

The improvements recommended to resolve the deficiencies identified at each planning horizon were sized to convey the future buildout conditions during WWF. The planning horizon at which each deficiency was identified is then used to phase the projects during capital improvements planning. The sewer system analysis did not include assessment of lift station or gravity sewer system condition and did not consider rehabilitation that are not driven by system capacity. The City has an asset management program that evaluates existing infrastructure condition and methods of rehabilitation. The asset management program will use this masterplan to inform rehabilitation methods when addressing the sewer system condition. Further assessments of lift stations will determine the lift stations' condition and possible improvements such as the installation of VFDs to equalize flow and reduce the hydraulic impact to the receiving gravity sewers.

Two flow routing alternatives were considered for serving some of the West Greeley areas, defined as those areas west of County Road 19. These flow routing alternatives included the Poudre Alternative and the Windsor Alternative. The Poudre Alternative routes all the flow through the Poudre Trunk line to the WTRF). The Windsor Alternative leverages the overlap of Windsor's sewer service area with the LREGA boundary to route a portion (3.84 mgd) of the West Greeley area flow to Windsor. Modeling analysis predicted that the Windsor alternative would eliminate 11,000 LF of existing 30" sewer interceptor replacement. Additionally, this alternative would also eliminate the need for two lift stations. Based on City discussions and input, the model evaluation scenarios presented in the following sections are based on the Windsor flow routing alternative.

5.1 Sewer Sub-Basins

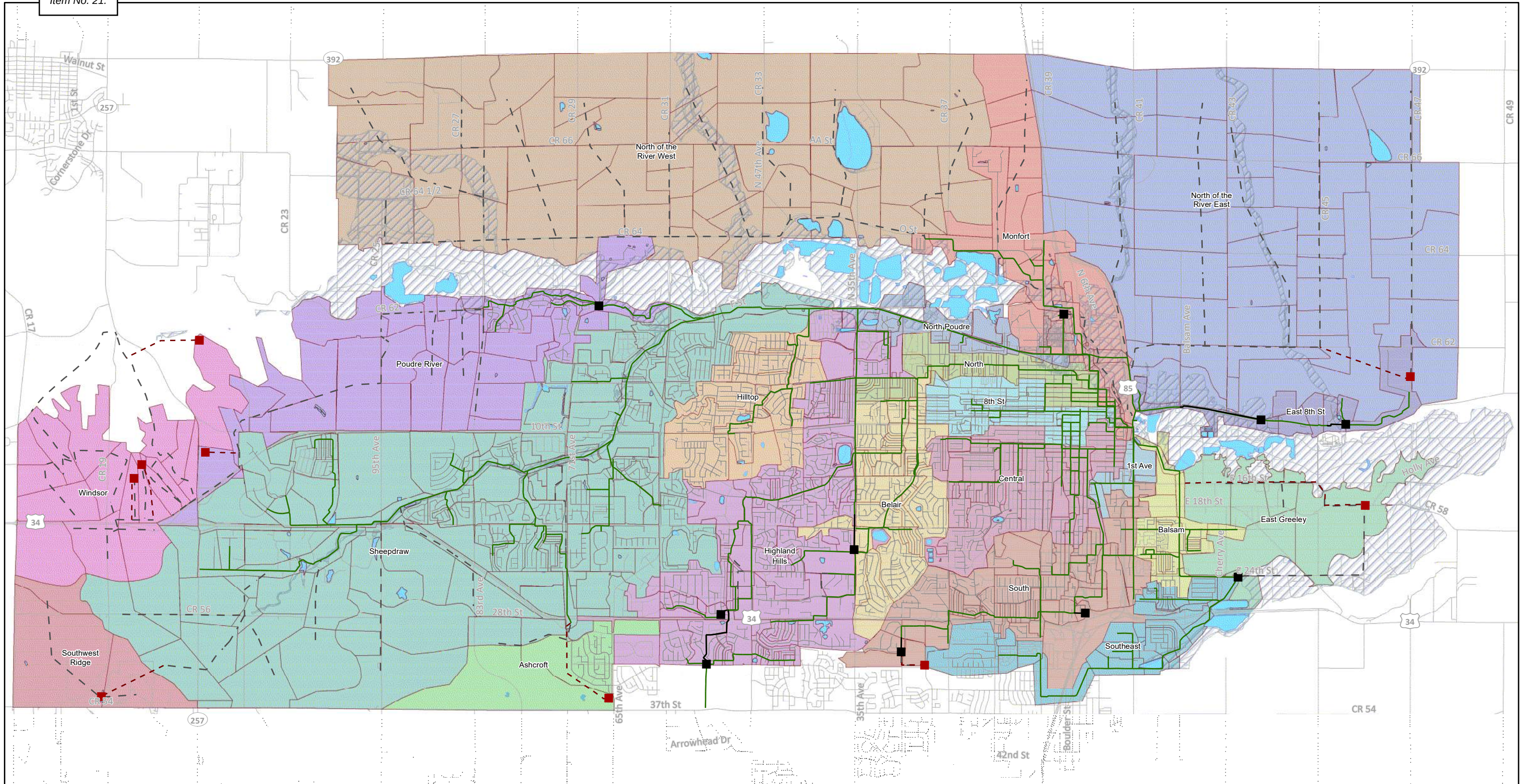
Sewer basins are large collection areas that make up the City's sewer system. Sewer sub-basins are the smaller collection areas that are delineated to route flow to their respective downstream sewer manholes. Existing system sub-basins were delineated using collector sewers and parcel boundaries. Each sewer sub basin would include all the collector sewers that are tributary to a manhole but will not include any collector sewer tributary to the upstream or downstream sub-basins. Future sewer system sub-basins were delineated using existing system sub-basins, future planning documents, parcel boundaries, topography, geographic features (rivers, streams, etc.), railroads, and major roads. Note that as developers provide more detailed information, future sewer sub-basin boundaries will need to be revisited.

Future system dry weather and wet weather parameters were applied to each sub-basin and the resulting ADFs were allocated to the nearest manhole for each planning horizon. **Figure 5-1** shows the existing and future sub-basins.

5.2 Evaluation Criteria

The following evaluation criteria were used to evaluate the existing system and future systems under WWF conditions (5-year design storm). The following describes the evaluation and improvement sizing criteria by system component:

- **Lift stations** were evaluated by comparing the simulated wet weather influent flow to the lift station firm capacity, which is the capacity with the largest pump out of service. If the peak wet weather inflow exceeds the firm capacity, then the lift station is flagged as deficient. Deficient lift stations are further evaluated to understand the operation of the station and assess the impacts of the station on the system, such as upstream surcharging. If improvements were determined to be needed, they were sized to match the peak wet weather inflow under buildout conditions.
- **Force mains** were evaluated to check that velocities were within 2.0 and 7.5 feet per second (fps). If peak velocities during WWF were outside of that range, the force main was identified for improvements, which were sized to maintain a peak velocity near 5 fps under buildout conditions.
- **Gravity pipes** were evaluated for capacity utilization by peak d/D under dry and wet weather conditions. Pipes were flagged as deficient if the $d/D > 1$ and freeboard (depth of flow below manhole rim) < 10 feet. A d/D less than 1.0 indicates the pipe is not flowing full while a d/D of 1.0 or greater is considered surcharged. Surcharged pipes, however, may indicate capacity deficiency in that pipe segment or they may be caused by backwater effects. Improvements are likely to be recommended for existing pipes that are predicted to be surcharged, but improvements may not be necessary if the pipes are sufficiently deep. To assess this, freeboard is considered. A freeboard of 10 feet or more would likely negate the need for improvement of a surcharged pipe.



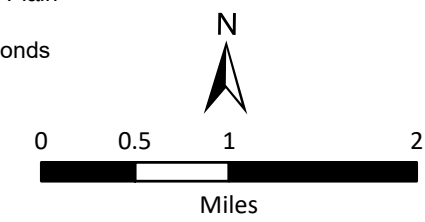
Legend

- Existing Lift Stations
- Future Lift Stations
- Existing Force Mains
- Existing Interceptors
- Existing Collectors
- Future Pipes
- Future Force Main

Sewer Sub-Basins

- | | | |
|-------------|-------------------------|-------------------------|
| 1st Ave | East Greeley | North of the River West |
| 8th St | Highland Hills | Poudre River |
| Ashcroft | Hilltop | Sheepdraw |
| Balsam | Monfort | South |
| Belair | North | Southeast |
| Central | North Poudre | Southwest Ridge |
| East 8th St | North of the River East | Windsor |

- 100-yr Flood Plain
- Lakes and Ponds



Existing and Future Sewer Sub-Basins
Figure 5-1
Greeley Sewer
System Master Plan

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- **Existing System Improvements** – Once a portion of the existing system has been identified as requiring improvement, the following criteria are used:
 - **Replacement Pipe Size** – Replacement pipe size for existing gravity sewer is calculated based on the buildout peak WWF such that the maximum d/D is 0.8. It is assumed that the replacement pipe slope will match the existing pipe slope. It also assumes that replacement pipes will not decrease in diameter at any point along the replacement section (This assumption can potentially lead to lower slope pipe sections driving the replacement pipe sizes).
 - **Parallel Pipe Size** – Parallel pipe size for existing gravity sewers is calculated based on the buildout peak WWF such that the maximum d/D in the parallel pipe is 0.8, assuming the existing gravity sewer remains in service. The required capacity of the parallel pipe is determined by subtracting the existing pipe capacity from the total buildout peak WWF. It is assumed that the parallel pipe slope will match the existing pipe slope.
- **Future System Gravity Sewer** – New interceptor pipes are sized based on buildout WWF with a maximum d/D of 0.8.

5.2.1 Peak Flow Design Standards Review

The Colorado Department of Health and Safety (CDPHE) and 10 State Standards do not specify design criteria for peak WWF. The requirements for wastewater facilities are that the infrastructure be able to handle “peak flow”. The *City of Greeley Design Criteria and Construction Specifications* specify a domestic peaking factor based on population from the American Society of Civil Engineers (ASCE) Peak Flow Curve G. The overall systemwide peaking factor for the City using the ASCE Peak Flow Curve is approximately 2. The ASCE Manual of Practice for Gravity Sewers recommends an overall peaking factor of 2.6 for medium sized utilities.

A 5-Year Design Storm is used for this Master Plan to analyze peak flow. The systemwide peaking factor resulting from this design storm is 2.55 for the existing system scenario, and 2.21 for the buildout system scenario. Within the last 5 years, the City has not had a rain event with the same volume as a 5-year design storm, but there have been storm events with higher peak flows than the proposed design storm. Overall, while the 5-year design storm is a conservative rain event, the resulting peaking factors within the system are not substantially greater than industry standard peaking factors.

5.2.2 5-Year Design Storm

A design criterion of 1000 gpd/acre was simulated for the design storm, using an average of the calibrated RTK parameters that were then adjusted to achieve the design criterion peak. This design criterion is specific to the 5-year design storm and is based on the average results of the calibrated model RTKs which was approximately 895 gpd/acre when simulating the 5-year design storm. Note that the model can be used with a larger design storm to simulate higher RDII rates, but the recommended design criterion of 1000 gpd/acre is specific to a level of service aligned with the 5-year design storm.

5.3 Existing System Evaluation

The existing conditions model was used to simulate dry and wet weather flow conditions. Under dry weather flow conditions, only 0.25% of the modeled interceptors were predicted to surcharge. **Figure 5-2** shows the existing system dry weather flow deficiency locations.

The location of surcharging during dry weather flow is along 47th Avenue near MH 09-19.010. The model predicted surcharging during dry weather flow at only 4" above the pipe crown, while maintaining 8 feet of freeboard. This area is sensitive to high flow and will be discussed further in this section.

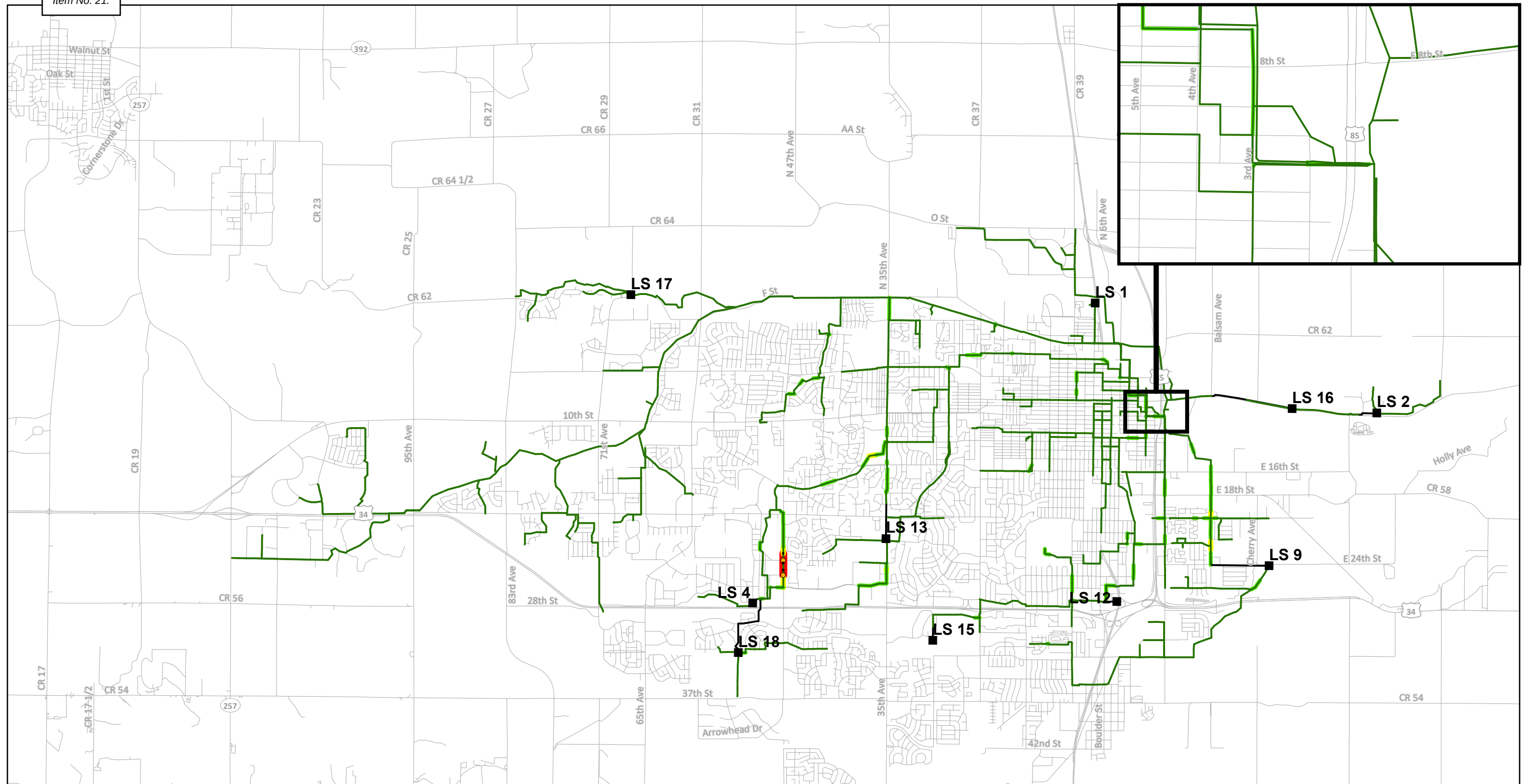
The model was also used to analyze the existing system under WWF conditions (5-year design storm). The results indicate potential deficiencies as summarized in the following sections.

Figure 5-3 shows these wet weather system deficiency locations.

5.3.1 Lift Stations (Existing System)

Lift stations were evaluated based on simulated existing condition influent flows. A summary of this evaluation is presented in **Table 5-1**, which compares the modeled firm capacity to the influent flows under wet and dry conditions. The lift station capacity is considered deficient if the influent flow exceeds the firm capacity. No deficiencies are predicted for DWF conditions. Lift stations 9 and 18 are predicted to be deficient for the simulated peak WWF based on the 5-year design storm.

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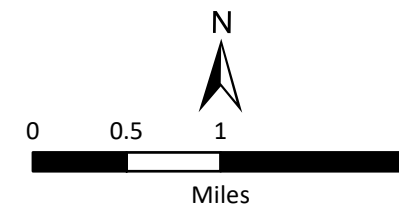
Legend

- Existing Lift Stations
- Existing Interceptors
- Existing Force Mains

- Peak DWF d/D**
- 0 - 0.5
 - 0.5 - 0.8
 - 0.8 - 0.99

- Surcharged (d/D = 1)**
- Backwater
 - Capacity Deficiency

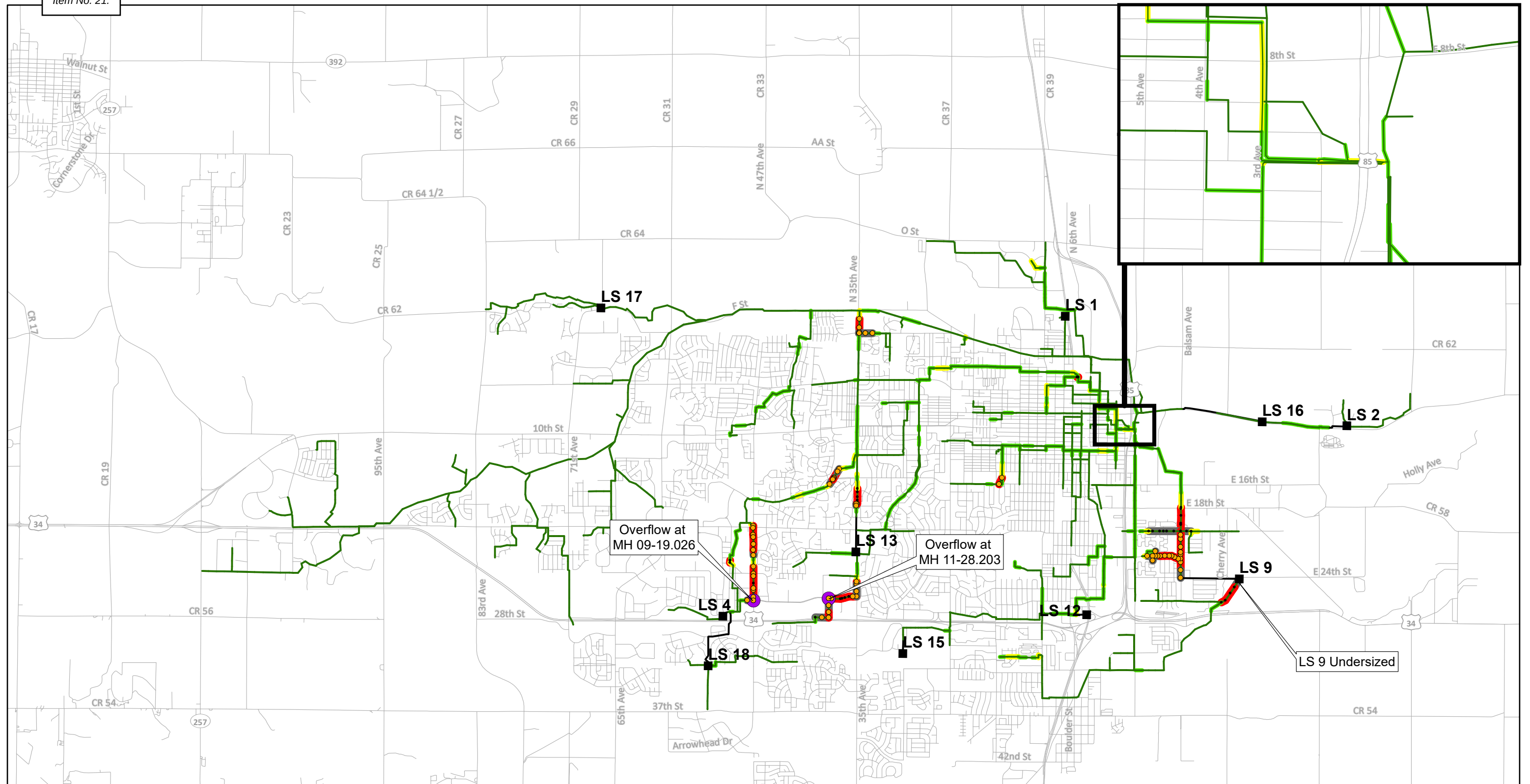
- Freeboard (Distance from Manhole Rim to HGL)**
- < 10 ft
 - > 10 Ft



Predicted Peak Dry Weather Flow Deficiencies- Existing System

*Figure 5-2
Greeley Sewer System Master Plan*

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Legend

- Existing Lift Stations
- Existing Force Mains
- Existing Interceptors

Peak WWF d/D

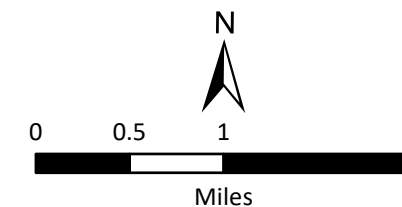
- 0 - 0.5
- 0.5 - 0.8
- 0.8 - 0.99

Surcharged (d/D = 1)

- Backwater
- Capacity Deficiency

Freeboard (Distance from Manhole Rim to HGL)

- <10 ft
- > 10 Ft
- Predicted Manhole Overflows



Predicted Peak Wet Weather Flow Deficiencies- Existing System

Figure 5-3
Greeley Sewer System Master Plan

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Table 5-1 Lift Station Evaluation Results (Existing)

LS #	Name	Firm Capacity (One Pump)				Simulated Peak Inflow (gpm)		Deficiency (gpm)	
		Design TDH (ft)	Design Capacity (gpm) ¹	Modeled TDH (ft) ²	Modeled Capacity (gpm) ³	DWF	5-Year Storm	DWF	5-Year Storm
1	North 9 th Ave	20	80	20	125	12	13	--	--
2	Airport	N/A	120	28	111	6 ⁷	43 ⁸	--	--
4	Highland Hills	35	100	38	111	19	51	--	--
9	Cherry Ave	57	638	57	764 ⁴	486	1,330	--	566
12	Garden City	24	80	24	104	3	23	--	--
13	35 th Ave	94	1,700	96	1,680	458	1,071	--	--
15	Auto Plaza	62	150	61	160	7	27	--	--
16	East 8 th St	48	270	52	285	25	125 ⁷	--	--
17	Farmers Spur	16.5	560	20	458 ⁵	76	211	--	--
18	T-Bone	153	668 ⁶	140	320 ⁶	327	417	--	97

¹ Design Capacity information taken from the City of Greeley Lift Station GIS shapefile and is assumed to be firm capacity (1 pump running).

² Model TDH was developed by adjusting force main losses to re-create the design TDH within the model.

³ Model Capacities are firm capacity. Model Capacity is simulated by using pump curves provided by the City with the modeled TDH.

⁴ For LS9, the model uses the newer Infinity pump curve provided by the City. The GIS design capacity is likely based on the older J-Series pump curve.

⁵ For LS17, different curves are shown for the lead/lag pump. The lead pump is using the older J series curve, while the lag pump is using the new infinity pump curve. This difference between the model and design capacity is due to the small amount of additional head simulated by the model (20 ft TDH vs 16.5 ft TDH).

⁶ For LS18, the City indicated the capacity to be approximately 315 gpm. The original pumps at LS18 have been replaced with newer infinity pumps. The model uses the infinity pump curve with an assumed impeller trim of 11.75".

⁷ Peak WWF values at LS2/LS 16 exclude an overnight water line flushing up to 80 gpm flowing to LS2. If the flushing were to occur during a peak wet weather event, the total inflow at LS2/LS 16 could reach 123 gpm and 243 gpm //respectively.

For each lift station predicted to be deficient for the simulated wet weather conditions, analysis and recommendations are discussed further below:

LS9 (Cherry Avenue): Peak wet weather influent flows are predicted to exceed the capacity of the existing lift station causing the level in the wet well to rise such that wastewater begins to surcharge upstream of the lift station.

Sensitivity Analysis: The City has not observed capacity issues at LS9 and calibration specific to the LS9 service area was limited to dry weather only due to errors within the lift station SCADA data during wet weather events. Due to the uncertainty in the simulated WWF at LS9 and the City's experience with the lift station, the sensitivity of the simulated peak WWF on predicted system impacts was checked.

If the peak WWF into LS9 were reduced by 25%, the firm capacity (1 pump) and total capacity (2 pumps) would still be exceeded, but the total flow into the lift station would not result in surcharging if both pumps are operating.

If the peak WWF into LS9 were increased by 25%, the total capacity (2 pumps) would be further exceeded and predicted backwater surcharging would increase; however, the predicted hydraulic grade line is still more than 20 feet below manhole rims.

Assuming the same 25% peak WWF increase, if one pump were out of service, the level in the LS9 wet well is predicted to increase causing further backwater effects upstream. However, the hydraulic grade line upstream of LS9 is still 9 feet below manhole rims.

Recommendations: Additional WWF monitoring and calibration is recommended for the LS9 service area. No immediate improvements are recommended because the sensitivity analysis shows that the lift station deficiency does not result in significant level of surcharging in the upstream gravity pipes even if WWFs are 25% greater than currently simulated.

LS18 (T-Bone): Simulated peak inflow during the 5-year storm event exceeded the capacity of the existing lift station causing the level in the wet well to rise such that the gravity lines upstream of the lift station are predicted to surcharge.

Sensitivity Analysis: After discussions with City, no capacity issues have been observed in the field. Predicted surcharge during wet weather is still more than 10 feet below manhole rims in the upstream, modeled system.

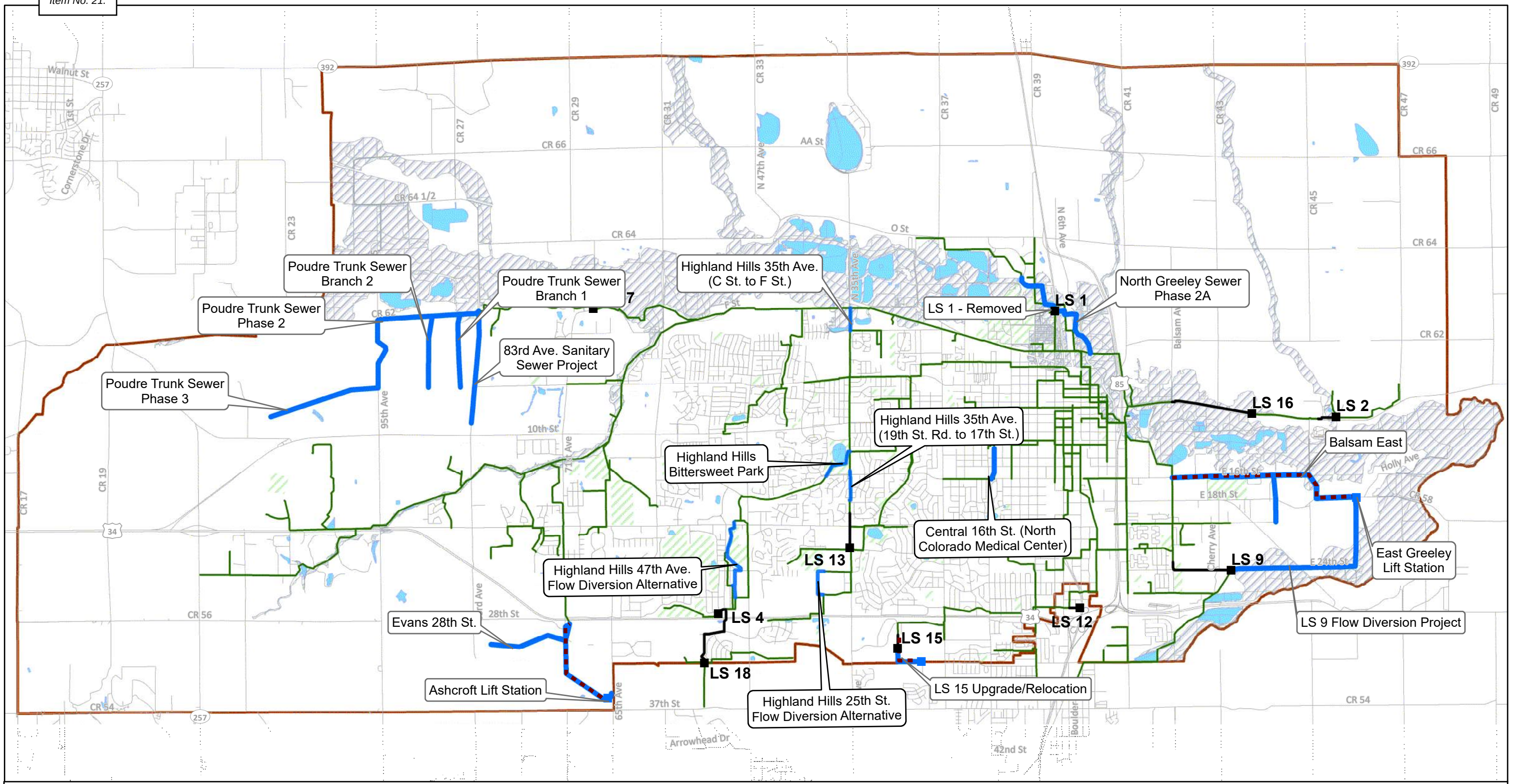
If the levels in LS18 were to be surcharging the upstream system or if LS18 were to go offline for an extended period, excess flow would be directed to the City of Evans through the existing LS18 overflow pipe.

The existing total capacity of LS18 is already greater than the downstream capacity of the existing 8" pipes. Once the lead and lag pump turn on, the downstream system is predicted to surcharge. If the lift station firm capacity was upgraded to pump the simulated design storm peak WWF, the City may begin seeing regular surcharging in the downstream system. A CIP project (Highland Hills 47th Avenue Flow Diversion) is planned to address the downstream capacity deficiencies.

Recommendations: No additional improvements are recommended because the deficiency does not result in a significant level of surcharging in the upstream gravity pipes. Any excess flows are directed to Evans through the LS18 overflow pipe.

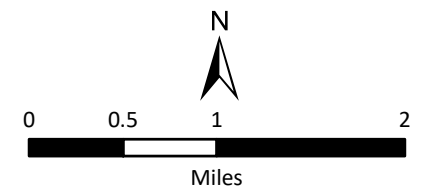
5.3.2 Gravity Pipe (Existing System)

For gravity pipes, surcharging is predicted in about 5% of the modeled pipes under the simulated WWF conditions. Specific areas of predicted surcharging are identified in **Figure 5-3** (previously shown) and described below. All recommended improvements account for future lift station capacity expansions as well as future buildout peak WWF. **Figure 5-4** details the recommended improvements for the existing system and future infrastructure within the next 5 years.



Legend

- | | | |
|---|---|---|
|  LREGA |  Existing Lift Stations |  5 Year Pipe Recommendations |
|  100-yr Floodplain |  Existing Interceptors |  5 Year Force Main Recommendations |
|  Lakes and Ponds |  Existing Force Mains | |
|  Park |  5 Year LS Recommendations | |



Recommended 5 Year Improvements
Figure 5-4
Greeley Sewer
System Master Plan

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Balsam - LS9 to 18th St: During dry weather conditions (normal operation) there are no predicted deficiencies for this section of gravity sewer. However, during WWF, the existing 12" pipe and 15" pipe downstream of LS9 are predicted to surcharge. This occurs when 2 pumps at LS9 are operating for a total of 1,070 gpm to pump the upstream flows. The hydraulic grade line is predicted to be within 3-5 feet of manhole rims in the 12" pipe (near 22nd Street) but well below manhole rims in the 15" pipe (12-20 ft). See **Figure 5-5** below for location details.

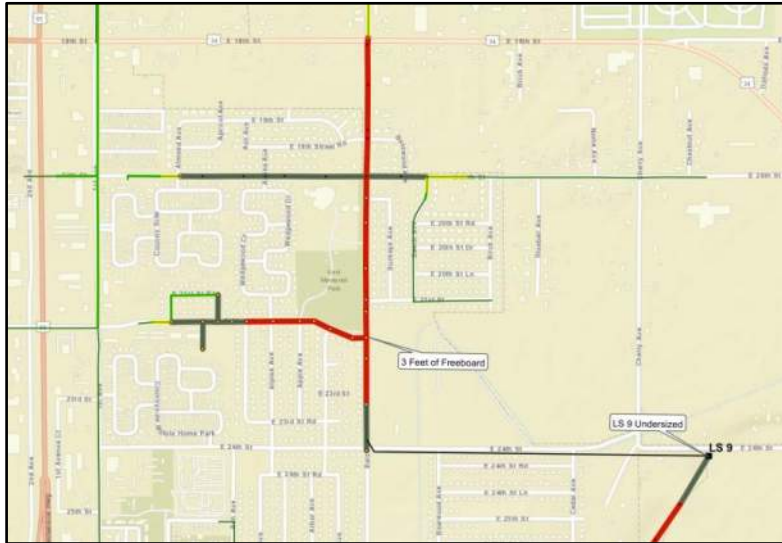


Figure 5-5 Balsam Ave Capacity Deficiency

The existing 10" sewer along 20th Street is predicted to surcharge, but the depth from the hydraulic grade line to manhole rims is greater than 10 ft (12 ft to grade). Surcharging along 20th Street is caused by a backwater effect from the downstream interceptor. If the downstream issues are resolved, there are no capacity deficiencies predicted along 20th Street east of Balsam Avenue.

The existing 8-12" sewer along 22nd Street is predicted to surcharge within 2 feet of manhole rims. Surcharging along 22nd Street is caused by a backwater effect from the downstream interceptor. If the downstream issues are resolved, there are no capacity deficiencies predicted along 22nd Street.

Upstream of LS9, the 15" pipe is predicted to surcharge. The hydraulic grade line is predicted to be 16-20 ft below manhole rims. Surcharging in this pipe is due to a capacity limitation at LS9 that is resulting in a backwater effect. The peak WWF into LS9 exceeds the simulated pump capacity such that the level in the wet well rises above the crown of the influent pipe, resulting in upstream surcharging. If the lift station capacity issue is resolved, the existing 15" pipe is sufficiently sized for the projected flows through buildout.

Recommended Improvements: No immediate improvements are recommended for this section of gravity sewer. Future recommended improvements to the upstream system will eliminate capacity issues within this section of gravity sewer. However, due to the sensitivity of this system with two-pump flow from LS9, the City should monitor this area during wet weather events. If the capacity issues within this section of gravity sewer become critical before the upstream improvements are constructed, improvements to this section of sewer may need to be re-visited.

Highland Hills - 35th Ave (C Street to F Street): During dry weather conditions (normal operation) there are no predicted deficiencies for this section of gravity sewer. However, during WWF the 18" pipe along 35th Avenue is predicted to surcharge within 4 feet of manhole rims. Additionally, this capacity deficiency results in a backwater effect that causes surcharging within the 12" pipe along C Street. Once the capacity deficiency along 35th Avenue is resolved, there are no predicted capacity deficiencies along C Street.

Recommended Improvements: Replace or parallel the existing 18" gravity sewer as described in **Appendix D.**

Highland Hills - 35th Ave (19th St Rd to 17th Street): During dry weather conditions (normal operation) the existing 12" sewer is predicted to surcharge within 8 feet of manhole rims. Additionally, during wet weather conditions the existing 12" pipe is predicted to surcharge within 3 feet of manhole rims. Surcharging in this 12" pipe is due to a capacity deficiency when the lead pump from LS13 is operating at 1,680 gpm.

Recommended Improvements: Replace or parallel the 12" gravity sewer as described in **Appendix D.** The recommended improvements account for the existing firm pumping capacity from LS13 upstream. LS13 is not deficient in existing or buildout flow conditions; therefore, no improvements are recommended for LS13 and the recommended downstream gravity improvements are appropriately sized for buildout conditions.

Highland Hills - Bittersweet Park: During dry weather conditions (normal operation) there are no predicted deficiencies for this section of gravity sewer. However, during WWF the existing 10" pipe is predicted to surcharge within 4 feet of manhole rims.

Recommended Improvements: Replace or parallel the 10" gravity sewer as described in **Appendix D.**

Highland Hills - 25th Street: During dry weather conditions (normal operation) there are no predicted deficiencies for this section of gravity sewer. However, during WWF the existing 8" pipe along 25th Street is predicted to surcharge with an overflow predicted at MH 11-28.203. This capacity limitation along 25th Street is predicted to cause a backwater effect surcharging the 10" pipes south of 25th Street. The full flow capacity of the existing 8" pipe is approximately 0.5 mgd, while the predicted peak flow during the 5-year design storm is approximately 1.0 mgd. This capacity deficiency in the 8" pipe along 25th Street causes surcharging which results in a predicted overflow at MH 11-28.203.

Alternatives and Sensitivity Analysis: To address the deficiency, alternatives to divert flows from MH 11-28.203 to MH 11-28.061 were evaluated.

- **Diversion of Centerplace Drive Only:** If only the flows from Centerplace Drive were diverted, the remaining peak WWF through the existing 8" pipe along 25th St is still greater than the pipe capacity (peak flow = 0.51 mgd, pipe capacity = 0.46 mgd). The 8" pipe along 25th Street is still predicted to surcharge within 4 feet of manhole rims. A sensitivity analysis of the simulated WWF along 25th Street found that only a 12% increase in peak WWF will result in a predicted overflow at MH 11-28.203.

- Diversion of All flow Into MH 11-28.203: If all flow into MH 11-28.203 was diverted to MH 11-28.061 (24th Street), the downstream sewer is predicted to surcharge within 5 feet of manhole rims during peak WWF conditions. A sensitivity analysis of the simulated WWF in the 24th Street pipe found that a 30% increase in peak WWF will result in a predicted overflow at MH 11-28.061.

Recommended Improvements: Alternative 1: Divert the flow from Centerplace Drive to MH 11-28.061. Utilizing a flow split, divert 50% of flow upstream of MH 11-28.203 to MH 11-28.061 and 50% of the upstream flow to 25th Street. Install 12" gravity sewer along 38th Avenue as shown in **Appendix D**. This flow split alternative eliminates the capacity issues along both sections of downstream sewer (25th Street and 24th Street). It is possible to construct these improvements in phases, with phase 1 diverting the flow from Centerplace Drive, and phase 2 implementing the flow split for the flow upstream of MH 11-28.203. Alternative 2: Replace or parallel the existing 8" gravity sewer following the same corridor as described in **Appendix D**.

- Alternative 1 is recommended since it addresses the system issues and avoids construction along 35th Avenue.

Highland Hills 47th Ave: During dry weather conditions (normal operation) the existing 8" sewer is predicted to surcharge within 5 feet of manhole rims. During WWF, an overflow is predicted at MH 09-19.026, along with surcharging in the adjacent 8" pipe. This is the result of flow from LS18 with two pumps operating at a combined capacity of 0.58 mgd (400 gpm), which exceeds the capacity of the limiting sections of 8" pipe at about 0.5 mgd (350 gpm). With one pump running, the flow simulated from LS18 is approximately 0.46 mgd (320 gpm), which is below the modeled capacity of the existing 8" pipe. However, during the 5-year design storm event, the predicted peak WWF to LS18 is 0.6 mgd, which triggers the second pump and exceeds the downstream capacity of the system resulting in a predicted overflow at manhole (MH 09-19.026).

Recommended Improvements: To address the deficiency, two alternatives to divert flows from LS18 into a separate downstream gravity sewer were evaluated.

- Alternative 1: Divert all flow from LS18 into the proposed gravity sewer as shown in **Appendix D**. Additionally, divert the flow from LS4 into the proposed diversion sewer to avoid future projected capacity deficiencies along 50th Avenue. It is important to note that this recommended flow diversion includes a section of new pipe and a section of replacement piping along 50th Avenue. This alternative is recommended to avoid construction along 47th Avenue.
- Alternative 2: Replace or parallel the 8" gravity sewer along 47th Avenue as described in **Appendix D**.

5.3.3 Force Main (Existing System)

Force mains were evaluated at the flow rates of the modeled firm capacity of each lift station, the results are summarized in **Table 5-2**. A force main is considered deficient if the velocity based on the pumped flow is less than 2 fps or greater than 7.5 fps. No force mains were identified as deficient.

Table 5-2 Force Main Evaluation Results

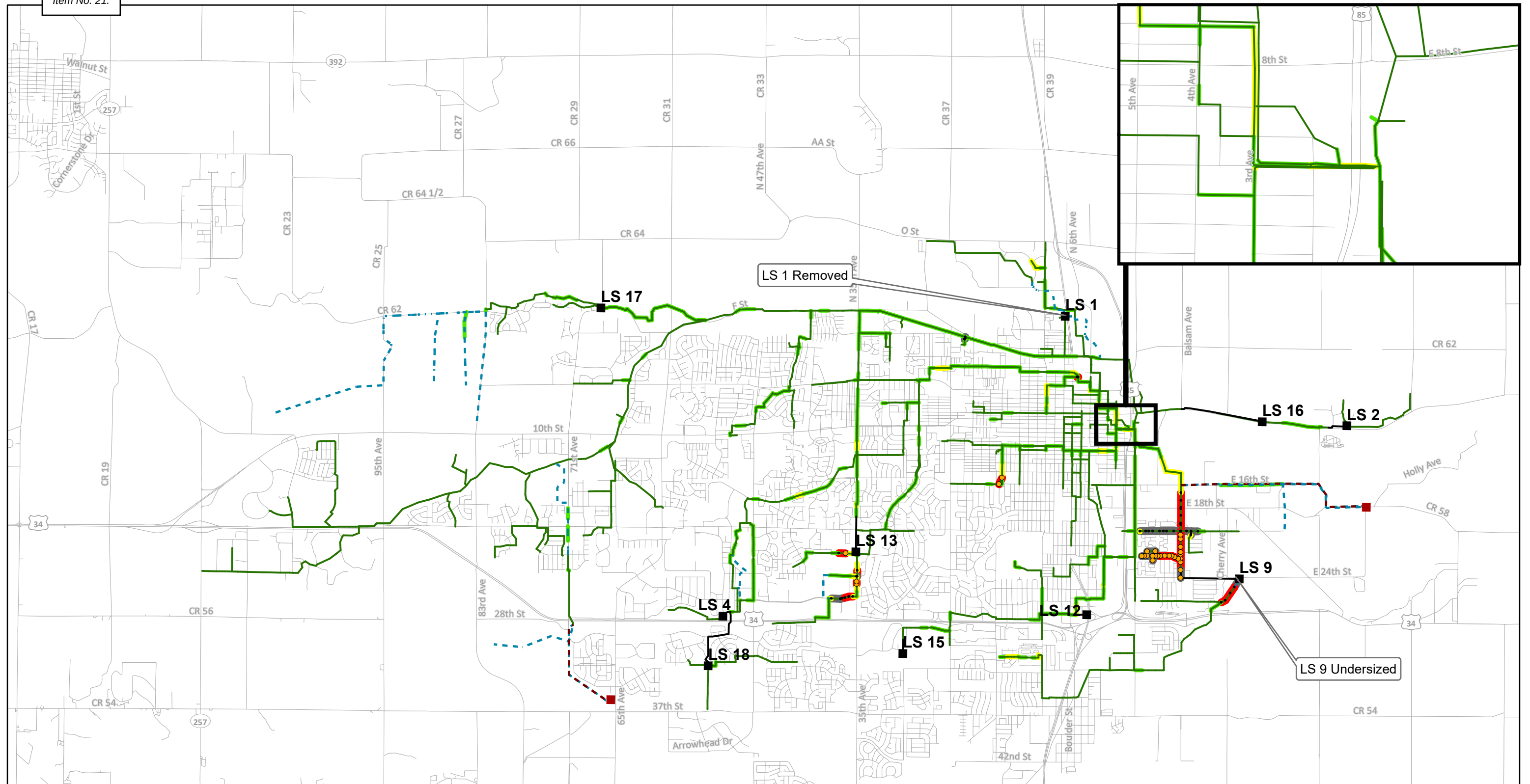
LS #	Name	Force Main Diameter (inches)	Lift Station Firm Capacity (gpm)	Simulated Force Main Velocity (fps)	Deficiency (< 2 or > 7.5 fps)
1	North 9 th Ave	4	125	3.14	--
2	Airport	4	111	2.83	--
4	Highland Hills	4	111	2.83	--
9	Cherry Ave	10	764	3.12	--
12	Garden City	4	104	2.65	--
13	35 th Ave	10	1,680	6.86	--
15	Auto Plaza	4	160	4.08	--
16	East 8 th St	6	285	3.23	--
17	Farmers Spur	6	458	5.20	--
18	T-Bone	8	320	2.04	--

5.4 2025 System Evaluation (5 Year Planning Horizon)

The 2025 planning horizon model simulates the future WWF as determined from the projection methodology and the RDII design criterion. **Figure 5-6** shows the 2025 wastewater system deficiency map which includes the future infrastructure that was identified in **Figure 5-5** (previous figure). It also shows the recommended improvements from the existing system analysis.

Table 5-3 lists the future infrastructure included in the 2025 system model to serve the areas identified in **Section 4**. These projects are sized for buildout conditions. Many of the capacity improvements are driven by development. It will be the responsibility of individual developers to expand sewer capacity to meet the development capacity needs. Any system improvements to address long term master plan needs will be met by the City.

There are 6 planned large industrial water users identified in the Water Master Plan that have not been specifically located or demand allocated. As these locations are determined, they will be evaluated on a case-by-case basis for impacts to determine impacts to the sewer system.



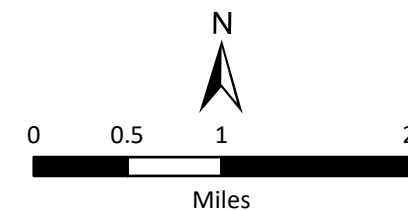
Legend

- Existing Lift Stations
- Future Lift Stations
- Existing Force Mains
- Future Force Main
- Existing Interceptors
- Future Interceptors (2025)

- Peak WWF d/D**
- 0 - 0.5
 - 0.5 - 0.8
 - 0.8 - 0.99

- Surcharged (d/D = 1)**
- Backwater
 - Capacity Deficiency

- Freeboard (Distance from Manhole Rim to HGL)**
- <10 ft
 - > 10 Ft
 - Predicted Manhole Overflows



2025 Predicted Peak Wet Weather
Flow Deficiencies
Figure 5-6
Greeley Sewer
System Master Plan

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Table 5-3 2025 Projected Future Infrastructure

Project Name	Project Infrastructure
Balsam East	1,693 LF 8" Sewer 4,562 LF 12" Sewer 2,767 LF 15" Sewer 2,987 LF 18" Sewer New East Greeley Lift Station 8,900 LF 8" Force Main
North Greeley Sewer Phase 2A	7,300 LF 36" Sewer
Evans – Ashcroft Lift Station	350 LF 18" Sewer New Ashcroft Lift Station 5,800 LF 8" Force Main
Evans – 28 th Street	1,200 LF 8" Sewer 1,750 LF 10" Sewer 2,050 LF 12" Sewer
LS 15 Upgrade and Relocation	New Lift Station 15 2,095 LF 8" Sewer 2,885 LF 6" Force Main
83 rd Avenue Sanitary Sewer	2,075 LF 8" Sewer 4,390 LF 10" Sewer
Poudre Trunk Sewer Phase II	10,230 LF 30" Sewer
Poudre Trunk Sewer – Branch 1	4,366 LF 8" Sewer
Poudre Trunk Sewer – Branch 2	916 LF 8" Sewer 3,181 LF 10" Sewer
Poudre Trunk Sewer Phase 3	4,884 LF 10" Sewer 3,865 LF 15" Sewer

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5.4.1 Lift Stations and Force Mains (2025)

Lift Stations 2, 9, 16, and 18 are predicted to be deficient in 2025 based on the simulated WWF for this planning horizon. A summary of the lift station deficiencies is shown in **Table 5-4**.

Table 5-4 Lift Station Evaluation Results (2025)

LS #	Name	Firm Capacity (One Pump)		Simulated Peak Inflow (gpm)		Deficiency (gpm)	
		TDH (ft)	Capacity (gpm)	DWF	5-Year Storm	DWF	5-Year Storm
1	North 9 th Ave	Removed per North Greeley Sewer Phase 2A Project					
2	Airport	28	111	132	157	21	46
9	Cherry Ave	57	764	486	1,330	--	566
15	Auto Plaza	61	160	136	180	--	20
16	East 8 th St	52	285	299	342	14	57
18	T-Bone	140	320	327	417	7	97
Future Lift Stations							
LS #	Name	Estimated Buildout TDH (ft)	Estimated Buildout Wet Weather Flow (gpm)	Estimated 2025 Dry Weather Flow (gpm)		Estimated 2025 Wet Weather Flow (gpm)	
Future	LS15	85	310	136		180	
Future	Ashcroft	170	1,974	517		1,206	
Future	East Greeley	61	2,650	31		988	

¹ Buildout peak WWF.

Additional discussion of deficiencies by each individual lift station, along with recommended improvements, are described below.

LS1 (North 9th Avenue): As part of the North Greeley Sewer Phase 2A project, Lift Station 1 is projected to be taken offline by 2025. This is reflected in the 2025 system mode.

LS2 (Airport): Simulated peak inflows exceed the capacity of the existing lift station which causes the level in the wet well to rise such that the gravity lines upstream of the lift station are predicted to surcharge.

Recommended Improvements: No improvements are recommended because the model indicates that the lift station flow deficiency does not result in a deficiency in the upstream gravity pipes.

LS9 (Cherry Avenue): Simulated peak inflows exceed the capacity of the existing lift station which causes the level in the wet well to rise such that wastewater begins to surcharge upstream of the lift station. Additionally, during WWF conditions, the downstream gravity sewer surcharges within 3 feet of existing manhole rims.

Recommended Improvements: To address both the lift station and downstream gravity deficiencies, it is recommended that LS9 be removed, and the flow routed by gravity to the proposed East Greeley Lift Station. The proposed interceptor would serve future development in the East Greeley area. The proposed alignment and profile are feasible given this planning-level

analysis but will need to be confirmed during design. Simulated peak inflows exceed the capacity of the existing lift station causing the level in the wet well to rise such that wastewater begins to surcharge upstream of the lift station. During WWF conditions, the downstream gravity sewer surcharges within 3 feet of existing manhole rims.

Recommended Improvements: To address both the lift station and downstream gravity deficiencies, it is recommended that LS9 be removed, and the flow routed by gravity to the proposed East Greeley Lift Station. The proposed interceptor would serve future development in the East Greeley area. The proposed alignment and profile are feasible given this planning-level analysis but will need to be confirmed during design.

LS15 (Auto Plaza): Expansion and growth within the lift station service area is predicted to increase the peak WWF to be slightly greater than the lift station capacity. This expansion will be driven by future development. Improvements to the wastewater system will be the responsibility of the developers. To serve the future buildout service area, LS15 will need to be relocated.

Recommended Improvements: Relocate LS15 and expand capacity to meet buildout conditions.

LS16 (East 8th Street): Simulated peak inflows exceed the capacity of the existing lift station which causes the level in the wet well to rise such that the gravity lines upstream of the lift station are predicted to surcharge.

Recommended Improvements: No improvements are recommended because the model indicates that the lift station flow deficiency does not result in a deficiency in the upstream gravity pipes. If LS2 is taken offline and the flow routed by gravity to LS16, no additional improvements would be required at LS16.

Future Ashcroft Lift Station: This lift station is recommended to serve future development per the 2025 planning horizon. The recommended design capacity for the Ashcroft Lift Station is 1,597 gpm. The proposed downstream force main is 5,800 feet of 12" pipe.

Future East Greeley Lift Station: This lift station is recommended for the future East Greeley service area. The recommended design capacity for the East Greeley Lift Station is 2,650 gpm. The proposed downstream force main is 11,700 feet of 18" pipe.

5.4.2 Gravity Pipe (2025)

Specific areas of predicted surcharging are described below. All recommended improvements account for future lift station capacity expansions as well as future buildout peak WWF.

Balsam - LS9 to 16th St: Surcharging along Balsam Avenue from LS9 to 16th St remains an issue for the 2025 planning horizon. When 2 pumps at LS9 are operating for a total of 1,070 gpm, the existing 12" pipe and 15" pipe downstream of LS9 are predicted to surcharge. The hydraulic grade line is predicted to be within 3-5 feet of manhole rims in the 12" pipe (near 22nd Street) but well below manhole rims in the 15" pipe (12-20 ft).

Recommended Improvements: With the construction of the East Greeley Lift Station, it is recommended that all flow to LS9 be diverted to the East Greeley Lift Station, and the station be

removed from service. This diversion of the LS9 flow will eliminate the capacity deficiency detailed above.

Central 16th Ave (North Colorado Medical Center): With the 2025 projected flows, this section of 8" pipe is predicted to be surcharged within 6 feet of manhole rims. The full flow capacity of the existing 8" pipe is approximately 0.75 mgd, while the maximum inflow during the design storm is approximately 0.84 mgd.

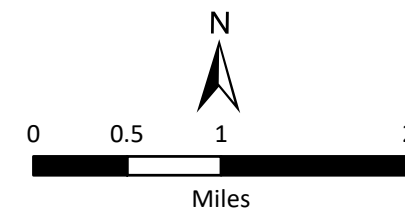
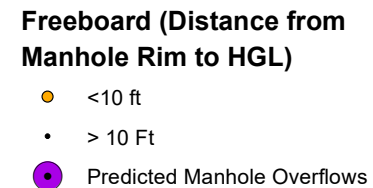
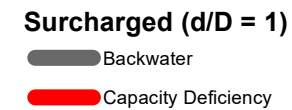
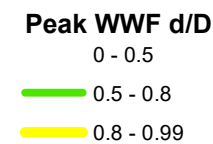
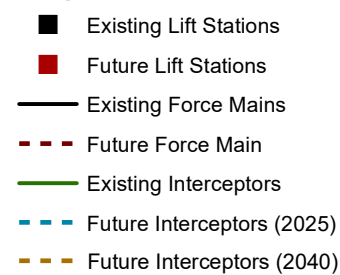
Recommended Improvements: Replace or parallel the existing 8" gravity sewer

5.5 2040 System Evaluation (20 Year Planning Horizon)

The 2040 planning horizon model includes future flows determined from the projection methodology and the RDII design criterion. The 2040 wastewater system deficiency map, shown in **Figure 5-7**, includes the future infrastructure identified in **Figure 5-8** and the recommended improvements from the existing and 2025 system analysis.

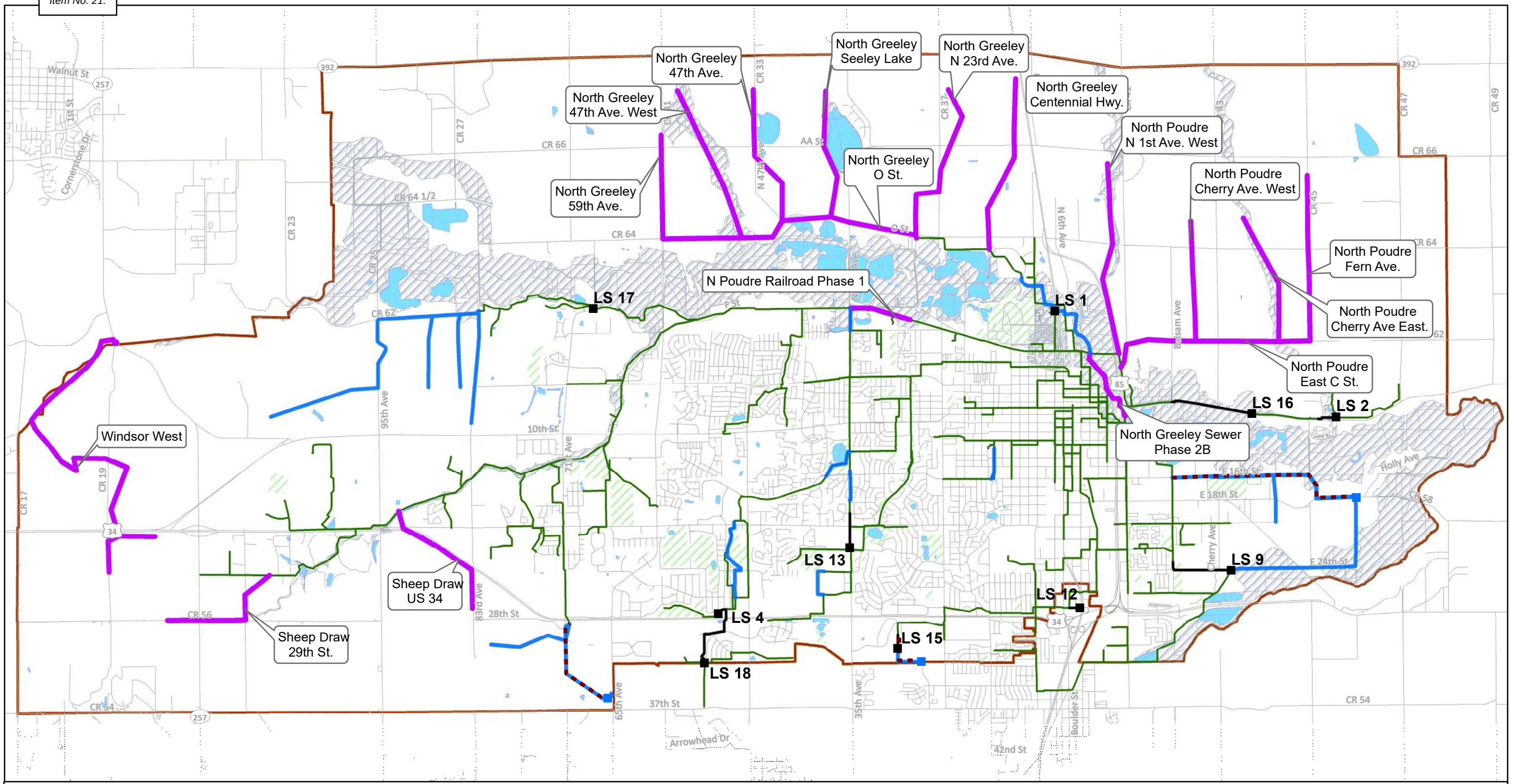
Table 5-5 (following figures) lists the additional future infrastructure included in the 2040 system model to serve areas identified in **Section 4**. These projects have been sized for buildout conditions. **Figure 5-8** shows the locations of the future infrastructure that has been included in the 2040 system model. Many of the capacity improvements listed below are driven by development and will be the responsibility of individual developers to expand sewer capacity. Any system improvements to address long term master plan needs will be met by the City.

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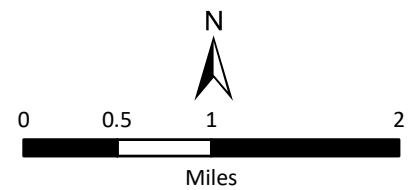
2040 Predicted Peak Wet Weather
Flow Deficiencies
Figure 5-7
*Greeley Sewer
System Master Plan*

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Legend

- | | | |
|-------------------|---------------------------|-----------------------------------|
| LREGA | Existing Lift Stations | 5 Year Pipe Recommendations |
| 100-yr Floodplain | Existing Interceptors | 20 Year Pipe Recommendations |
| Lakes and Ponds | Existing Force Mains | 5 Year Force Main Recommendations |
| Park | 5 Year LS Recommendations | |



Recommended 20 Year Improvements
Figure 5-8
Greeley Sewer
System Master Plan

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Table 5-5 2040 Projected Future Infrastructure

Project Name	Project Infrastructure
North Greeley Sewer Phase 2B	4,603 LF 48" Sewer
North Poudre East C Street	1,797 LF 30" Sewer 3,106 LF 36" Sewer 7,073 LF 42" Sewer
North Poudre Fern Ave	5,557 LF 15" Sewer 3,321 LF 18" Sewer 659 LF 21" Sewer
North Poudre Cherry Ave East	4,285 LF 15" Sewer 1,710 LF 21" Sewer 1,623 LF 24" Sewer
North Poudre Cherry Ave West	5,464 LF 18" Sewer 1,447 LF 21" Sewer
North Poudre North 1 st Ave West	3,129 LF 15" Sewer 8,017 LF 18" Sewer
North Greeley Centennial Highway	1,376 LF 8" Sewer 3,157 LF 10" Sewer 5,663 LF 12" Sewer
North Greeley West O Street	15,421 LF 36" Sewer
North Greeley North 23 rd Ave	1,759 LF 10" Sewer 4,581 LF 12" Sewer 3,672 LF 15" Sewer
North Greeley Seeley Lake	1,536 LF 10" Sewer 3,556 LF 12" Sewer 2,376 LF 15" Sewer
North Greeley 47 th Ave	1,850 LF 10" Sewer 1,980 LF 12" Sewer 2,228 LF 15" Sewer 2,161 LF 18" Sewer
North Greeley 47 th Ave West	1,257 LF 8" Sewer 3,500 LF 10" Sewer 3,410 LF 12" Sewer 1,128 LF 15" Sewer
North Greeley 59 th Ave	2,420 LF 8" Sewer 2,227 LF 10" Sewer 1,329 LF 15" Sewer
Sheep Draw US 34	1,172 LF 8" Sewer 4,324 LF 10" Sewer 1,240 LF 12" Sewer
Sheep Draw 24 th St South	3,245 LF 27" Sewer
Sheep Draw 29 th Street	2,800 LF 8" Sewer 1,690 LF 12" Sewer
Windsor West	3,748 LF 8" Sewer 825 LF 10" Sewer 6,540 LF 12" Sewer 12,633 LF 18" Sewer

5.5.1 Lift Station and Force Mains (2040)

By 2040, no additional existing lift station improvements are required.

5.5.2 Gravity Pipe (2040)

Specific areas of predicted surcharging are described below. All recommended improvements account for future lift station capacity expansions as well as future buildout peak WWF.

N Poudre Railroad Phase 1 (East of 35th Avenue): The 36" downstream of 35th Ave is predicted to be surcharged within 5 feet of manhole rims due to projected future flows within the Poudre River and Sheep Draw Basins (Completion of the Tier 1 projects – Cache/Lake Bluff/Promontory Heights along with the initial Tier 2 development.). The capacity of the existing 36" pipe is approximately 16.5 mgd. However, the peak wet weather inflow is approximately 20.8 mgd. This capacity deficiency causes a backwater effect upstream along F Street, which compounds the flow capacity issues along 35th Ave (C Street to F Street).

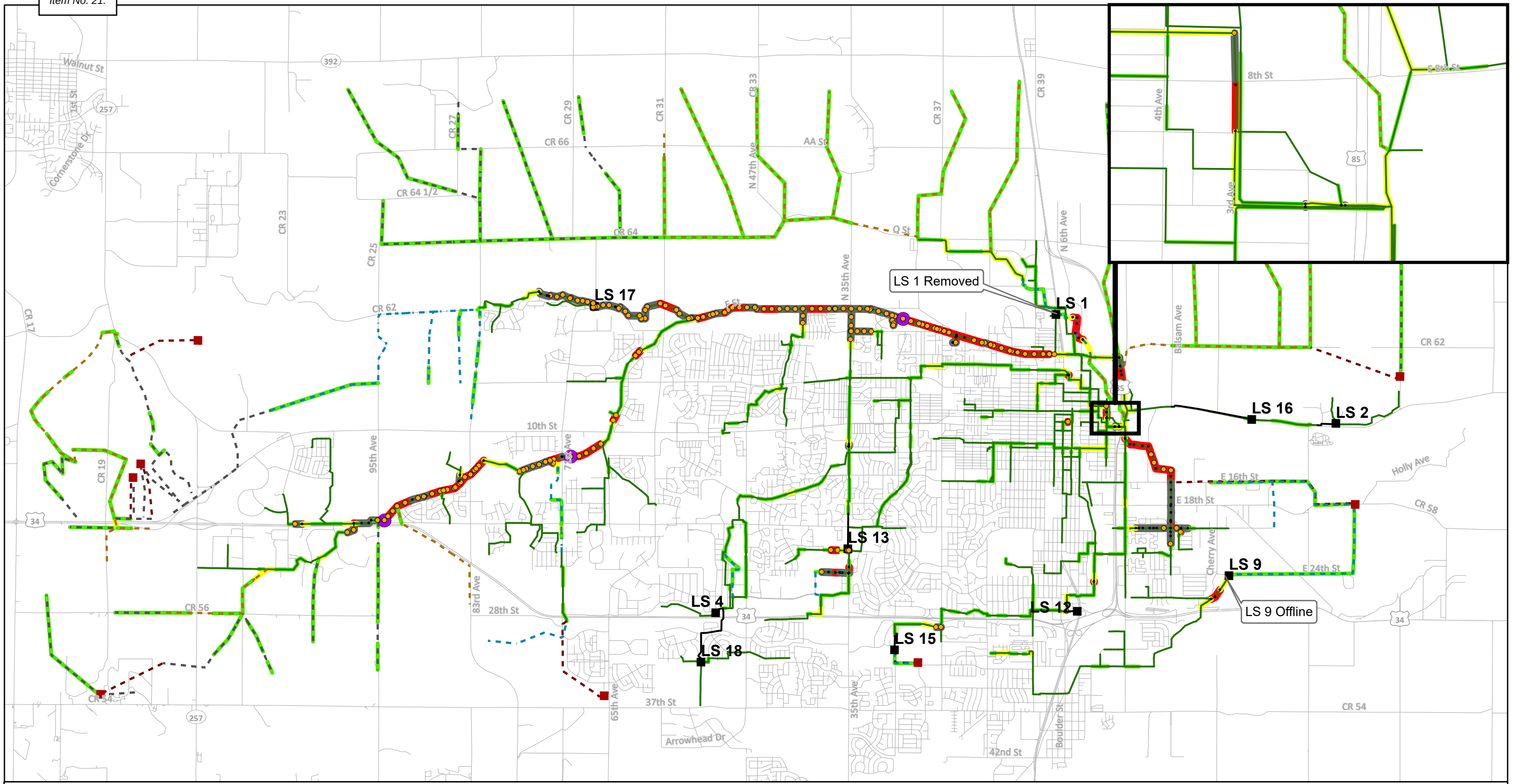
Recommended Improvements: Replace or parallel the existing 36" sewer as described in **Appendix D**.

Balsam 18th St to Ash Avenue: Surcharging along the Balsam Ave trunk line downstream of the East Greeley Lift Station is predicted at the 2040 planning horizon; however, surcharging is still 9 feet below the manhole rims.

Recommended Improvements: No immediate improvements are recommended; however, when the East Greeley service area is built out, improvements to the Balsam Ave trunk line downstream of the East Greeley force main will be required.

5.6 Buildout System Evaluation

The buildout planning horizon model includes future flows as determined from the projection methodology and RDII design criterion. **Figure 5-9** shows the buildout wastewater system deficiency map, including the future infrastructure identified in **Figure 5-10** and the recommended improvements from the existing, 2025, and 2040 system analysis.



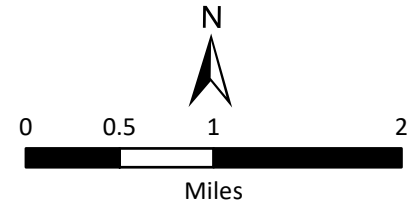
Legend

- Existing Lift Stations
- Future Lift Stations
- Existing Force Mains
- Future Force Main
- Existing Interceptors
- Future Interceptors (2025)

- Future Interceptors (2040)
- Future Interceptors (Buildout)
- Peak WWF d/D**
 - 0 - 0.5
 - 0.5 - 0.8
 - 0.8 - 0.99

- Surcharged (d/D = 1)**
- Backwater
- Capacity Deficiency

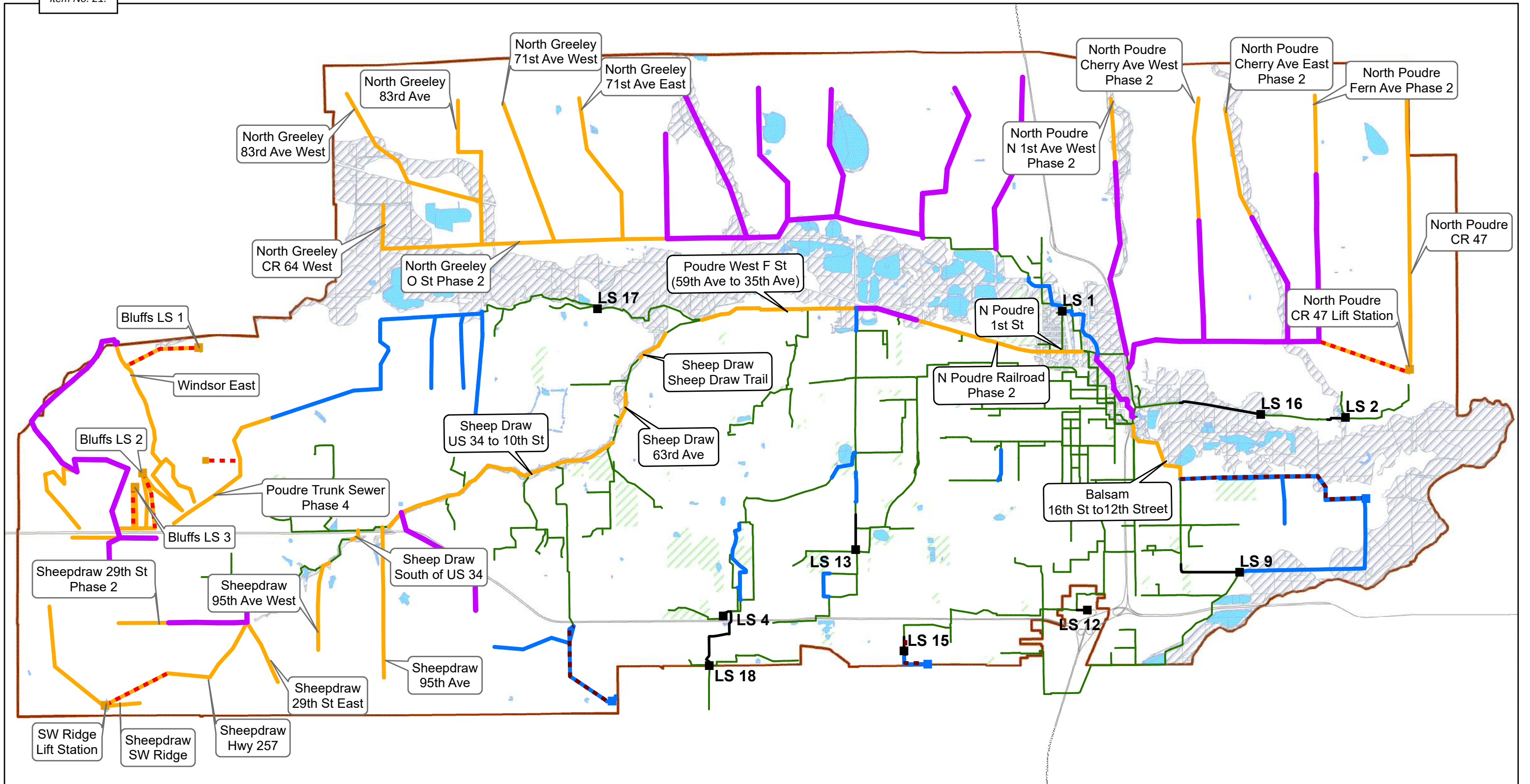
- Freeboard (Distance from Manhole Rim to HGL)**
 - <10 ft
 - > 10 Ft
- Predicted Manhole Overflows



Buildout Predicted Peak Wet Weather Flow Deficiencies

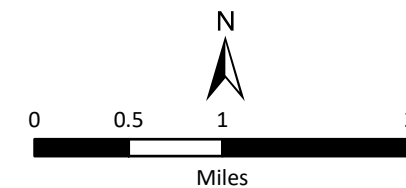
*Figure 5-9
Greeley Sewer
System Master Plan*

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Legend

- | | | |
|-------------------|-----------------------------|-------------------------------------|
| LREGA | Existing Lift Stations | 5 Year Pipe Recommendations |
| 100-yr Floodplain | Existing Interceptors | 20 Year Pipe Recommendations |
| Lakes and Ponds | Existing Force Mains | Buildout Pipe Recommendations |
| Park | 5 Year LS Recommendations | 5 Year Force Main Recommendations |
| | Buildout LS Recommendations | Buildout Force Main Recommendations |



Recommended Capital Improvements

*Figure 5-10
Greeley Sewer
System Master Plan*

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Table 5-6 lists the additional future infrastructure that is included in the buildout system model to the service areas identified in **Section 4**. **Figure 5-10** shows the locations of the future infrastructure that has been included in the buildout system model. Many of the capacity improvements listed below are driven by development and it will be the responsibility of individual developers to expand sewer capacity. Any system improvements to address long term master plan needs will be met by the City.

Table 5-6 Buildout Projected Future Infrastructure

Project Name	Project Infrastructure
North Poudre CR 47	5,481 LF 10" Sewer 7,792 LF 15" Sewer 3,963 LF 18" Sewer N Poudre CR 47 Lift Station 5,460 LF 18" Force Main
North Poudre Fern Ave Phase 2	3,118 LF 10" Sewer 1,411 LF 15" Sewer
North Poudre Cherry Ave East Phase 2	2,942 LF 10" Sewer 3,528 LF 12" Sewer
North Poudre Cherry Ave West Phase 2	2,308 LF 10" Sewer 4,722 LF 15" Sewer
North Poudre North 1 st Ave West Phase 2	1,835 LF 12" Sewer 1,826 LF 15" Sewer
North Greeley O Street Phase 2	2,461 LF 21" Sewer 4,170 LF 24" Sewer 6,448 LF 30" Sewer
North Greeley 71 st Ave East	672 LF 10" Sewer 1,450 LF 12" Sewer 5,795 LF 15" Sewer 884 LF 21" Sewer
North Greeley 71 st Ave West	1,325 LF 8" Sewer 1,600 LF 10" Sewer 1,532 LF 12" Sewer 3,992 LF 15" Sewer
North Greeley 83 rd Ave	2,109 LF 8" Sewer 845 LF 12" Sewer 4,155 LF 15" Sewer
North Greeley 83 rd Ave West	1,005 LF 8" Sewer 1,119 LF 10" Sewer 1,280 LF 12" Sewer 4,222 LF 15" Sewer 2,805 LF 18" Sewer
North Greeley CR 64	2,502 LF 8" Pipe 5,694 LF 12" Pipe
Sheep Draw 95 th Ave	2,774 LF 8" Sewer 3,386 LF 10" Sewer 2,481 LF 18" Sewer
Sheep Draw 95 th Ave West	1,315 LF 8" Sewer 2,515 LF 10" Sewer 1,000 LF 12" Sewer

Project Name	Project Infrastructure
Sheep Draw 29 th Street East	2,335 8" Sewer 981 LF 10" Sewer 531 LF 12" Sewer
Sheep Draw 29 th Street Phase 2	2,865 LF 8" Sewer
Sheep Draw Highway 257	4,095 LF 12" Sewer 2,296 LF 15" Sewer
Sheep Draw Southwest Ridge	3,454 LF 8" Sewer 6,222 LF 10" Sewer SW Ridge Lift Station 4883 LF 15" Force Main
Poudre Trunk Sewer Phase 4	9,463 LF 8" Sewer
Windsor West Phase 2	11,383 LF 8" Sewer 2,715 LF 10" Sewer 4,077 LF 12" Sewer Bluffs Lift Station 1 Bluffs Lift Station 2 Bluffs Lift Station 3 7,000 LF 4" Force Main
Windsor East	8,053 LF 8" Sewer 6,781 LF 10" Sewer 4,500 LF 4" Force Main

5.6.1 Poudre Flow Routing Alternative

Analysis, maps, and pipe size recommendations described in the previous sections assumed that a portion of the buildout flow will be directed to Windsor for treatment. If an agreement with Windsor cannot be reached for the treatment of the future flows, the City's buildout wastewater system would require additional upgrades. **Figure 5-11** illustrates the Poudre alternative and **Table 5-7** compares the infrastructure needs for the Poudre and Windsor Alternatives at buildout.

An additional lift station may be required to serve an area near the Bluffs (west of US34 across from Promontory Park). During design development, the ability to gravity flow or the requirement for a lift station should be confirmed. For purposes of this master plan, the flow from the area is accounted for in the Poudre gravity pipeline.

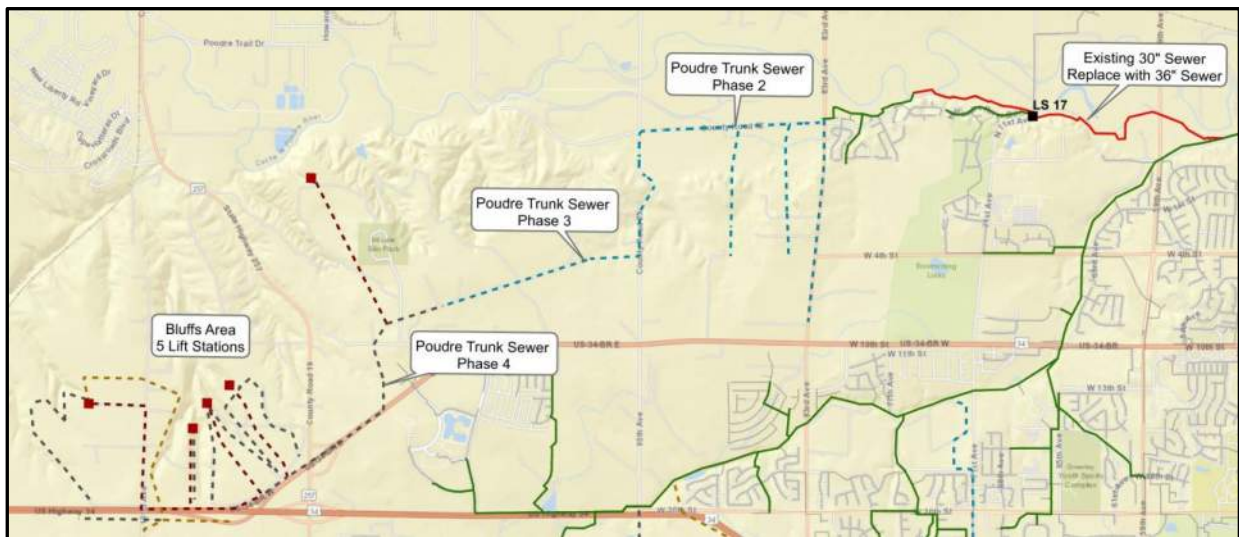
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Table 5-7 Poudre and Windsor Alternatives Infrastructure Recommendations for Buildout

Project Name	Poudre Alternative	Windsor Alternative
Poudre Trunk Sewer Phase 3	8,749 LF 21" Sewer	4,884 LF 10" Sewer 3,865 LF 15" Sewer
Poudre Trunk Sewer Phase 4	5,651 LF 18" Sewer 3,812 LF 21" Sewer	9,463 LF 8" Sewer
Bluffs Area ¹ (North of US 34/West of CR 257)	22,393 LF 8" Sewer 3,540 LF 10" Sewer 8,267 LF 12" Sewer 410 LF 15" Sewer 3,886 LF 18" Sewer Bluffs Lift Station 1 Bluffs Lift Station 2 Bluffs Lift Station 3 Bluffs Lift Station 4 Bluffs Lift Station 5 14,642 LF 4" Force Main 9,008 LF 12" Force Main	23,184 LF 8" Sewer 10,321 LF 10" Sewer 10,616 LF 12" Sewer 12,769 LF 18" Sewer Bluffs Lift Station 1 Bluffs Lift Station 2 Bluffs Lift Station 3 7,000 LF 4" Force Main 4,500 LF 6" Force Main
Existing Infrastructure Upgrades (78 th Ave to West F Street)	Replace 11,470 LF of existing 30" sewer with 36" sewer.	N/A

¹ Infrastructure layout for the Poudre and Windsor flow routing alternatives follows the Poudre Trunk Sewer Phase II Project Sub Basin Master Plan (Stantec 2018)

² An additional lift station may be required for service to the Bluffs area. This should be evaluated in more detail during design development

**Figure 5-11 Poudre Alternative Infrastructure Review**

5.6.2 Lift Stations and Force Mains

In addition to the lift stations previously discussed, LS4 was found to be deficient at buildout.

Table 5-8 summarizes the model results for the lift stations.

Table 5-8 Lift Station Evaluation Results (Buildout)

LS #	Name	Firm Capacity		Simulated Peak Inflow (gpm)		Deficiency (gpm)	
		Model TDH (ft)	Model Capacity (gpm)	DWF	5-Year Storm	DWF	5-Year Storm
4	Highland Hills	38	111	38	124	--	13
Future	N Poudre CR 47	45	2,222	1,235	2,222	N/A	
Future	SW Ridge	163	1,421	642	1,421		
Future	Bluffs LS1	30	319	101	319		
Future	Bluffs LS2	100	110	3	110		
Future	Bluffs LS3	67	70	17	70		

Additional discussion of deficiencies by each lift station, along with recommended improvements for the lift stations and associated force mains, are described below.

LS4 (Highland Hills): Simulated peak inflow during the design storm event exceeded the capacity of the existing lift station by approximately 13 gpm. The inflows during the design storm simulation were attenuated in the wet well and did not result in surcharging in the upstream gravity system. Projected future growth within the LS4 service area includes the connection of existing homes currently on septic systems east of 65th Avenue.

Recommended Improvements: No improvements are recommended for LS4. The lift station deficiency does not result in surcharging in the upstream gravity pipes.

Future N Poudre CR 47 Lift Station: This lift station is recommended to serve future development at the buildout planning horizon. The recommended design capacity is 2,222 gpm. The proposed downstream force main is 5,460 feet of 18" pipe.

Future SW Ridge Lift Station: This lift station is recommended to serve future development at the buildout planning horizon. The recommended design capacity is 1,421 gpm. The proposed downstream force main is 4,880 feet of 15" pipe.

Future Bluffs Lift Stations: To serve the parcels bluffs area in West Greeley, it is recommended that the Bluffs LS1, LS2, LS3 be installed. It is likely these lift stations will be designed and paid for by developers.

5.6.3 Gravity Pipe (Buildout)

Specific areas of predicted surcharging are described below. All recommended improvements account for future lift station capacity expansions as well as future buildout peak WWF. **Figure 5-10** and **Table 5-9** (at the end of this section) provide details on the recommended improvements at the buildout planning horizon.

Balsam 16th Street to 12th Street: When the East Greeley and LS9 combined service area reaches buildout flows, the projected WWF event exceeds the capacity of the existing Balsam Avenue trunk line. Surcharging downstream of the East Greeley force main connection at 16th Street is predicted to be within 4 feet of manhole rims. Additionally, this lack of capacity creates a backwater effect that reaches back past 20th Street (refer to **Figure 5-9**).

Recommended Improvements: Replace or parallel the existing pipe.

N Poudre Railroad Phase 2/N Poudre 1st St: The average capacity in these sections of pipe is approximately 17-21 mgd. However, the peak wet weather inflow is approximately 38 mgd. This increase is due to the development assumptions for the Tier 2 areas within the Sheep Draw and Poudre River flow basins.

Recommended Improvements: Replace or parallel the existing pipe.

Poudre West F St (59th Ave to 35th Avenue): The average capacity in this section of pipe is approximately 22 mgd. However, the peak wet weather inflow is approximately 31 mgd, which results in a predicted sanitary sewer overflow at MH 08-00.058. The deficiency is a result of development expected in the 83rd Ave/Highway 34, Interchange 34 West, and 20th Street North Tier 2 growth areas.

Recommended Improvements: Replace or parallel the existing pipe.

Sheep Draw – Sheep Draw Trail: The average capacity in this section of pipe is approximately 15 mgd. However, the peak wet weather inflow is approximately 23.3 mgd. The deficiency is a result of development expected in the 83rd Ave/Highway 34, Interchange 34 West, and 20th Street North Tier 2 growth areas.

Recommended Improvements: Replace or parallel the existing pipe.

Sheep Draw – 63rd Ave: The average capacity in this section of pipe is approximately 17 mgd. However, the peak wet weather inflow is approximately 22.5 mgd. The deficiency is a result of development expected in the 83rd Ave/Highway 34, Interchange 34 West, and 20th Street North Tier 2 growth areas.

Recommended Improvements: Replace or parallel the existing pipe.

Sheep Draw – US 34 to 10th St: The average capacity in this section of pipe is approximately 10 mgd. However, the peak wet weather inflow is approximately 13-21 mgd. It should be noted that the wide range in peak flows are due to the large number of trunk lines that connect to this section of pipe, with the peak flow of 13 mgd near the upstream portion and a peak flow of 21 mgd at the downstream portion. The deficiency is a result of development expected in the 83rd Ave/Highway 34, Interchange 34 West, and 20th Street North Tier 2 growth areas.

Recommended Improvements: Replace or parallel existing 18-24" gravity sewer.

Sheep Draw – South of US 34: Two short segments of gravity sewer are predicted to surcharge within 5 feet of manhole rims during the design storm. The deficiency is a result of development expected in the Interchange 34 West growth area.

Recommended Improvements: Replace or parallel the existing 15" and 21" gravity sewer.

North Greeley Sewer Phase 2A: The North Greeley Sewer Phase 2A project is projected to surcharge during buildout wet weather conditions. However, surcharging is only predicted to flow within 9 feet of existing manhole rims. It is unlikely that surcharging within this trunk line will cause flooding in connected services. Because this project is already under construction and appears to be adequately sized for the 2040 planning horizon, no further improvements are recommended for buildout conditions. Instead, the area should be revisited as development occurs to confirm adequate capacity remains.

Recommended Improvements: No recommended improvements.

Table 5-9 Buildout Gravity Sewer Projects – Existing System

Project Name	Length	Existing Diameter	Future Diameter ¹	Parallel Diameter ²	Upstream MH	Downstream MH
Balsam 16 th Street to 12 th Street	2,927	21"	27"	18"	13-00.014	13-00.007
	2,050	24"	27"	15"	13-00.007	13-00.001
N Poudre Railroad Phase 2	6,852	36"	48"	42"	08-00.047	08-00.028
N Poudre 1 st St	2,850	36"	48"	42"	08-00.028	08-00.019
Poudre West F St (59 th Ave to 35 th Ave)	9,006	36"	48"	27"	08-00.171	08-00.056
Sheep Draw – Sheep Draw Trail	2,108	30"	36"	24"	08-00.089	08-00.084
Sheep Draw – 63 rd Ave	1,832	27"	36"	24"	08-00.100	08-00.095
Sheep Draw – US 34 to 10 th St	309	18"	30"	24"	08-00.174	08-00.136
	6,598	21"	36"	24"	08-00.136	08-00.120
	4,778	24"	36"	21"	08-00.120	08-00.110
	2,920	24"	36"	36"	08-00.110	08-00.103
Sheep Draw – South of US 34	401	15"	21"	8"	08-33.024	08-33.023
	777	21"	24"	12"	08-33.017	08-33.015

¹ Assumes the existing is replaced at the future diameter at the existing slope.

² Assumes the existing line remains in service.

Section 6

Capital Improvement Plan

6.1 Approach to CIP Development

The identified capital improvements discussed in Sections 4 and 5 were developed with consideration of the City's current and long-range population and projected flows while using currently available information. Conditions will change with time and potential uncertainties will impact the accuracy of each plan in later years. It is important that the City re-evaluates each CIP to better reflect costs as the projects become closer to implementation.

This section provides planning level cost estimates for capital improvements project scheduling. Major capital elements are itemized with unit prices based on the information from past projects and outside resources (both locally and nationwide) for the major capital categories. Project CIPs were developed using modeled pipeline quantity estimates and data. GIS mapping was used to help identify areas of interest, such as utilities and road crossings. The unit prices were then multiplied by the quantity of each element. Project elements that were difficult to estimate during the planning stage are included in the overall cost as either allowances or as a percentage of the total for the itemized project elements. During design development, the more specific data will be used to inform the design and resulting project cost estimate.

Unit priced line items and contractor cost elements were rounded to the nearest whole dollar. Project contingency was rounded to the nearest \$10 and then added to the OPCC subtotals, which was then rounded up to the nearest \$10,000. Subsequent costing factors were added to the OPCC project totals to determine the CIP estimates used during high-level planning. This approach was also used in the water and non-potable water master plans.

Planning level cost development considers the major categories of capital projects because the detailed field and design information is not available to allow for a more detailed and itemized cost estimate. This information is typically developed during the design and is used similar to that developed during preliminary and final design. Increasing the number of cost elements (and complexity of the estimate) does not increase the project cost accuracy as many of these elements are unknown during the planning phase. Each layer of assumption used to develop more line items adds more uncertainty.

This CIP has been developed based on anticipated growth, modeling results, and planning information. The CIP is subject to change if the planning information and forecasts differ from those used to develop the CIP.

6.2 Cost Development

Unit costs were developed for use in project cost development as described below and in **Appendix D**. Cost estimating is considered Association for the Advancement of Cost Estimating (AACE) Class 5 – Conceptual engineering phase.

6.2.1 Project Implementation and Additional Project-Related Costs

Project elements considered part of project implementation are difficult to quantify at the planning level. Construction elements include items such as erosion control/stormwater pollution prevention and contractor mobilization and demobilization. These costs are estimated as a percentage of the subtotal for pipe, manholes, and equipment. Contingency is applied to the subtotal of these construction cost elements to account for variations in unit prices or quantity estimates. Programmatic elements include engineering, permitting, legal and administration and are estimated as a percentage of the construction cost. **Table 6-1** provides a breakdown of the different assumptions used for project implementation and contingency.

Table 6-1 Costing Factors for Construction Bid and Total CIP Project Costs

Category	Item	Costing Factor
Construction Bid Cost (includes infrastructure and contractor overhead, profit, bonds, and insurance)	Erosion Control/Stormwater Pollution Prevention ¹	2%
	Mobilization and Demobilization ¹	5%
	Contingency ²	35%
Project Implementation ³	Feasibility and Site Studies	9% for OPCC ≤ \$1M 6% for OPCC of \$1M to \$10M 5% for OPCC > \$10M
	Preliminary and Final Design	9% for OPCC ≤ \$1M 6% for OPCC of \$1M to \$10M 5% for OPCC > \$10M
	Engineering Services During Construction	5%
Additional Project-Related Costs ³	Outside Construction Management	5%
	Outside Project Management	3%

¹ Construction costing factors for erosion control/stormwater pollution prevention, mobilization and demobilization are added to the subtotal of unit cost items.

² Contingency is 35% of the subtotal of the unit cost items and contractor born costs determined by costing factors.

³ Project Implementation and Additional Project-Related Cost categories are determined as a percentage of the construction cost and part of the total CIP project costs.

6.2.1.1 Project Erosion Control/Stormwater Pollution Prevention

Project erosion control and stormwater pollution prevention includes the contractors cost to manage the stormwater during construction through best management practices. Best management practices include items such as silt fences, rock socks, vehicle tracking, and silt prevention at storm inlets. This category is assumed as 2% of the OPCC subtotal of the items that have unit costs and is based on estimator's judgement and prior reports. This costing factor is added to calculate project OPCC totals.

6.2.1.2 Mobilization and Demobilization

Contractor mobilization and demobilization includes the contractor's start-up and close-out costs. Start-up costs include items such as moving equipment and personnel to the project location, obtaining permits and bonds, etc. Close-out costs include such items as project cleanup, moving equipment and personnel from the project location, etc. The mobilization and demobilization category is assumed as 5% of the OPCC subtotal of the items that have unit costs and is based on

estimator's judgement and prior reports. This costing factor is added to calculate project OPCC totals.

6.2.1.3 Contingency

During the planning phase, the field work and design have not been completed for the CIPs and therefore the cost development relies on estimated quantities and unit prices for each construction element. Project contingency provides for these uncertainties by adding additional costs to the project total. The contingency at the planning level is typically 35% of the OPCC subtotal after erosion control/stormwater pollution prevention and mobilization and demobilization factors have been included. Project contingency also provides for the costs associated with items that are difficult to itemize at the planning level.

6.2.1.4 Feasibility and Site Studies

This cost element includes the planning and field investigations (geotechnical, survey, ground sampling, subsurface utility engineering (SUE) and locates, etc.) required to implement a project and is estimated as a percentage of the subtotal of the previous elements. The percentage varies based on the OPCC.

6.2.1.5 Preliminary and Final Design

The preliminary and final design cost element includes the cost for engineering services to develop biddable plans and specifications in accordance with applicable standards. This cost is estimated using a percentage of the OPCC.

6.2.1.6 Engineering Service During Construction

Engineering services during construction include review of contractor submittals, requested changes, and design adjustments that may be required during construction. A flat percentage of the OPCC is used to estimate this cost element.

6.2.1.7 Additional Project Related Costs

Outside Construction and Project Management are estimated for projects that are not directly managed by the City. For purposes of this master plan, only projects in excess of \$1M were assigned these cost elements.

6.3 Identified CIP Projects

The projects included in the 5-year and 20-year CIPs are defined in Sections 4 and 5 and shown in **Figure 6-1**. Construction and total project costs were developed for the CIP projects for the five-year (2021 through 2025) and 20-year (2026 through 2040) planning horizons and are described in the following subsections.

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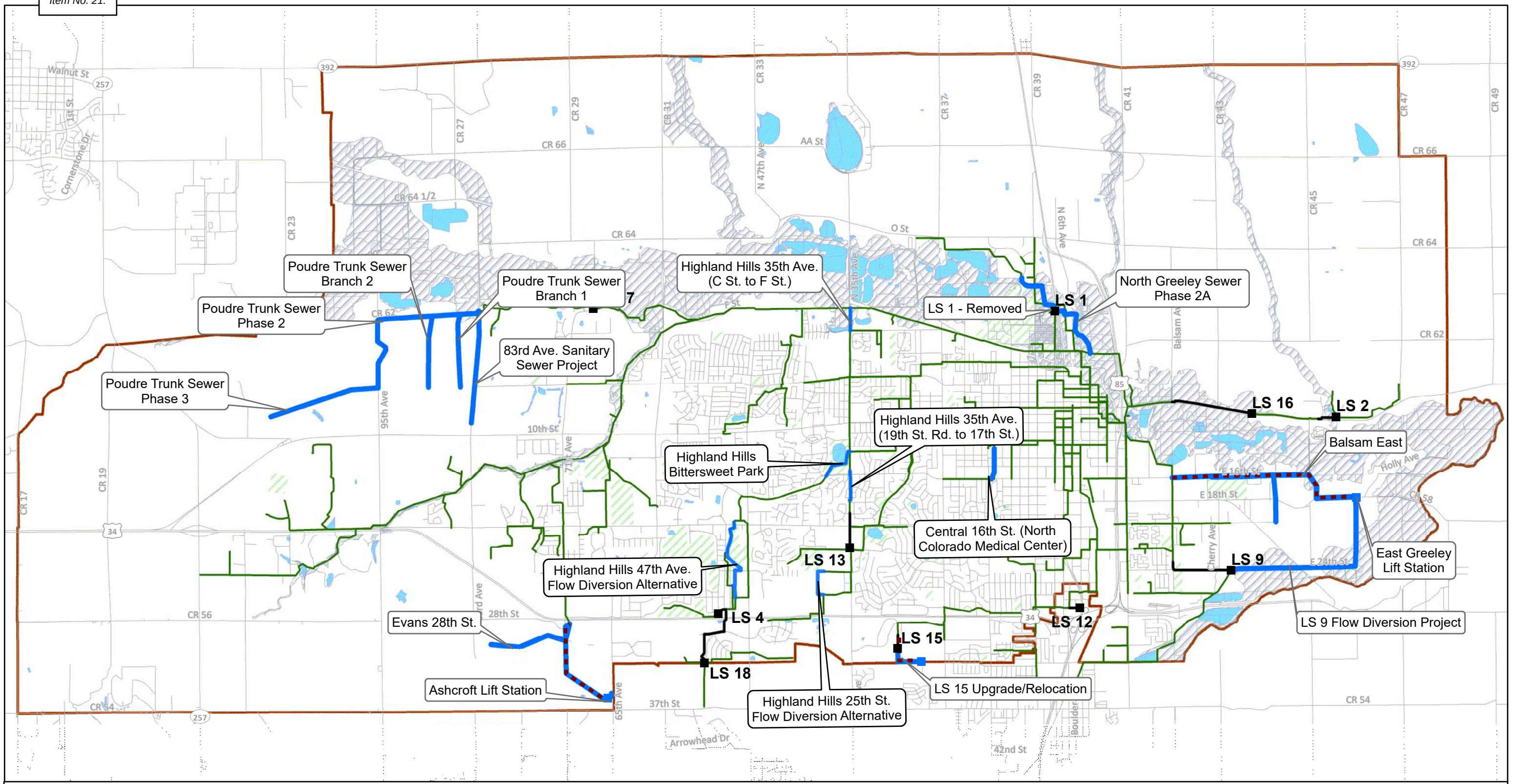
6.3.1 5-Year CIPs

The 5-year CIP includes deficiency driven projects and growth driven projects as summarized below and shown in **Figure 6-2**. Additional details are provided in **Appendix D**. The deficiency driven projects assume pipe removal and replacement; however, during design development, pipe parallel may be considered. The growth driven projects will be funded by either the City or developer (or a combination of the two) depending on the project driver.

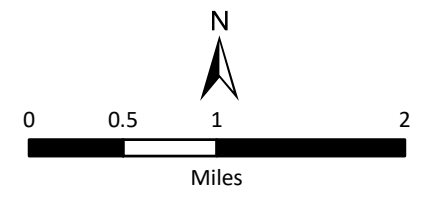
- Highland Hills 47th Avenue Flow Diversion Alternative. This project is driven by the lack of capacity downstream of LS18 along 47th Avenue. During dry weather flow, surcharging is predicted within 5 feet of manhole rims. During WWF, with two pumps operating at LS18, an overflow is predicted at MH 09-19.026. The City has not observed any capacity deficiencies within this section of gravity sewer in the field. Therefore, it is recommended the City monitor this area during a high intensity wet weather event before proceeding with design.
- Highland Hills 25th Street Flow Diversion Alternative. This project is driven by a wet weather capacity deficiency where a 10" gravity sewer discharges into an 8" gravity sewer. An overflow is predicted during the 5-year design storm. After discussions with the City, it was determined that this project may be addressed through coordination with a developer of the property West of 38th Avenue. Due to the overflow predicted by the hydraulic model, alleviating the capacity deficiency along 25th Street is critical to the CIP.
- Highland Hills 35th Avenue (C Street to F Street). This project is currently under design by the City and planned to be constructed in the spring of 2021. As the project is already funded, it is included in the 5-year planning horizon but not included in the CIP estimate.
- Highland Hills Bittersweet Park. This project is driven by a wet weather capacity deficiency where a 12" gravity sewer discharges into a 10" gravity sewer. No overflows are predicted during the 5-year design storm, but surcharging is predicted within 4 feet of manhole rims.
- Highland Hills 35th Avenue (19th Street Road to 17th Street). This project is driven by the lack of capacity downstream of LS13 along 35th Avenue. During WWF, surcharging is predicted within 4 feet of manhole rims. This capacity deficiency has been temporarily reduced by the installation of a VFD at LS13. When the pumps at LS13 are operated near full capacity, the downstream surcharging issues are predicted to return.

LS9 Flow Diversion Project/East Greeley Lift Station/Balsam East. These projects are driven by two factors, growth within the surrounding area, and capacities deficiencies along Balsam Avenue downstream of LS9. During 2 pump operation at LS9, surcharging along Balsam Ave near 22nd Street is predicted to be within 3 feet of manhole rims. These projects when constructed, eliminate this capacity deficiency. The City has not observed capacity deficiencies immediately downstream of LS9. However, due to the surcharge levels predicted, it is recommended the City monitor the pipes downstream of LS9 during high intensity wet weather events. This project timing may be shifted to the 20-year CIP if observed conditions do not match modeled surcharging. The project timing should be adjusted based on actual flow observations or studies in coordination with other projects in the area.

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Recommended 5 Year Improvements
Figure 6-2
Greeley Sewer
System Master Plan



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- LS15 Upgrade and Relocation - This project is driven purely by additional development within the LS15 service area. The existing lift station is nearing the end of its expected useful life and in its current location will not be able to provide service to the entire service area. It is recommended the City work with the developers in the area to relocate and construct a new LS15.

Table 6-2 provides cost information for the 5-year projects and notes the project driver and party likely responsible for funding each project.

Table 6-2 5-Year Planning Horizon Project Costs and Drivers

Project	Project Driver	Responsible Party	OPCC ¹ (\$M)	Total Cost ² (\$M)
City CIP Projects				
Highland Hills 47 th Ave. Flow Diversion Alternative	Deficiency	City	\$1.4	\$1.8
Highland Hills 35 th Ave. C. St. to F St. ³	Deficiency	City	N/A	N/A
Highland Hills 25 th St. Flow Diversion Alternative	Deficiency	City	\$0.5	\$0.7
Highland Hills Bittersweet Park	Deficiency	City	\$0.9	\$1.1
Highland Hills 35 th Ave. (19 th St. Rd. to 17 th St.	Deficiency	City	\$0.8	\$1.0
Central 16 th St. (North Colorado Medical Center)	Deficiency	City	\$0.7	\$0.9
North Greeley Sewer Phase 2A ³	Growth	City	N/A	N/A
Ashcroft LS ³	Growth	City	N/A	N/A
LS 9 Flow Diversion Project ⁴	Growth	City	Costs are included in the 20-year planning horizon	
Development Driven Projects				
Balsam East	Growth driven development projects. Current model-predicted conditions are not observed so projects timing should be evaluated.		\$5.1	Not used for development drive projects
East Greeley LS			\$7.4	
LS 15 Upgrade/Relocation	Growth	Development	\$1.2	
Evans 28 th St.	Growth	Development	\$1.9	
83 rd Ave. Sanitary Sewer Project	Growth	Development	\$2.3	
Poudre Trunk Phase 2	Growth	Development	\$6.2	
Poudre Trunk Sewer Branch 1	Growth	Development	\$0.9	
Poudre Trunk Sewer Branch 2	Growth	Development	\$1.2	
Poudre Trunk Sewer Phase 3	Growth	Development	\$1.7	

¹ The OPCC represents the opinion of construction cost only.

² Total costs include the OPCC, land, project implementation and additional project related costs (Appendix D).

³ This project is already funded and not included in the total CIP costs.

⁴ This CIP has been identified through modeling but the City has not observed the capacity limitations indicated by the model. Additional investigation is recommended to confirm the need for this project. The project is listed in the 5-year planning horizon for additional investigation and the costs are included in the 20-year planning horizon.

6.3.2 20-Year Planning Horizon Projects

The 20-year projects include deficiency driven projects and growth driven projects as summarized below. **Figure 6-3** is a visual representation of the recommended 20-year improvements. Additional details are provided in **Appendix D**. The deficiency driven projects assume pipe removal and replacement; however, during design development, pipe parallel may be considered. The growth driven projects will be funded by either the City or developer (or a combination of the two) depending on the project driver.

- North Poudre Railroad Phase 1. This project is driven by two factors, growth within the upstream Poudre and Sheep Draw trunk lines, and low slope within the existing sewer. The flow projections that resulted in this section of pipe being flagged as deficient are conservative, therefore it is recommended the analysis of this pipe section be re-visited before beginning design.
- Remaining 20-year Projects. The remainder of the 20-year projects are development driven and should be implemented and funded on a case-by-case basis.

Table 6-3 provides cost information for the 5-year projects and notes the project driver and party likely responsible for funding each project.

Table 6-3 20-Year Planning Horizon Project Costs and Drivers

Project	Project Driver	Responsible Party	OPCC ¹ (\$M)	Total Cost (\$M)
City CIP Projects				
LS 9 Flow Diversion Project ³	Growth	City	\$6.4	\$8.3
North Poudre Railroad Phase 1	Deficiency	City	\$5.7	\$7.4
North Greeley Sewer Phase 2B	Deficiency	City	\$5.5	\$7.2
North Poudre East C Street	Growth	City	\$17.1	\$21.9
North Greeley O Street	Growth	City	\$12.2	\$15.6
Development Driven Projects				
North Poudre Fern Avenue	Growth	Development	\$3.8	Not used for development driven projects
North Poudre Cherry Avenue East	Growth	Development	\$4.1	
North Poudre Cherry Avenue West	Growth	Development	\$2.4	
North Poudre North 1 st Avenue West	Growth	Development	\$6.5	
North Greeley Centennial Highway	Growth	Development	\$4.3	
North Greeley North 23 rd Avenue	Growth	Development	\$4.0	
North Greeley Seeley Lake	Growth	Development	\$3.2	
North Greeley 47 th Avenue	Growth	Development	\$2.6	
North Greeley 47 th Avenue West	Growth	Development	\$2.9	
North Greeley 59 th Avenue	Growth	Development	\$2.1	
Sheep Draw 29 th Street	Growth	Development	\$2.6	
Sheep Draw US 34	Growth	Development	\$2.5	
Windsor West	Growth	Development	\$7.5	

¹ The OPCC represents the opinion of construction cost only.

² Total costs include the CIP OPCC, land, project implementation and additional project related costs (Appendix D).

³ Cost deferred to 20-year planning horizon pending confirmation of project need.

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6.4 CIP Implementation Schedule

The CIP Planning Tool was used to develop a schedule with consideration of overall costs. Preliminary project planning, design, and construction start dates are included in the tool but are subject to change depending on impacts from other projects that were identified in the water and non-potable water master plans. For projects with a total cost over \$1M, planning and design were assumed to have a duration of 1 year and construction was assumed to have a duration of 2 years. Projects identified within the 5- and 20-year improvements based on hydraulic evaluations were given projected planning, design, and construction start years. It was assumed that each stage (planning, design, and construction) will take at least 1 year with the construction phase spread out over 2, 3, or 4 years if the total CIP cost for a project was greater than \$1 million, \$5 million, or \$10 million, respectively. For scheduling purposes, 5-year improvements were identified from 2022 through 2027 (start of construction year) while 20-year improvements were identified from 2028 through 2048 (construction start year). Projects will be referred to as 5- and 20-year projects in this section.

Table 6-4 shows the anticipated project schedule along with the total costs for the 5-year and 20-year planning horizons. **Figure 6-4** provides the cumulative cost from planning through construction for the City CIP projects only. Project schedules were confirmed so that financial requirements do not exceed \$10M in any given year. Additional annual financial details are provided at the end of **Appendix D**.

Table 6-4 Project Schedule and Cost Summary

Projects	Project Driver	Funding Source	Planning Start Year	Design Start Year	Construction Start Year ¹	OPCC (\$M)	Total Cost (\$M)
5-year Planning Horizon							
Highland Hills 35 th Ave C St. to F St.	Deficiency	City			2021	N/A	N/A
Ashcroft Lift Station	Growth	City			2022	N/A	N/A
Highland Hills 47 th Ave Flow Diversion	Deficiency	City		2022	2023	\$1.39	\$1.81
Highland Hills 35 th Ave 19 th St. to 17 th St.	Deficiency	City		2022	2023	\$0.82	\$1.01
Highland Hills 25 th St Flow Diversion	Deficiency	City	2022	2023	2024	\$0.51	\$0.66
North Greeley Sewer Phase 2A	Growth	City	2022	2023	2024	\$5.5	\$5.8
Highland Hills Bittersweet Park	Deficiency	City	2024	2025	2026	\$0.84	\$1.08
Central 16 th Street	Deficiency	City	2025	2026	2027	\$0.71	\$0.91
Lift Station 9	Growth	City	Moved to 20 year				
20-year Planning Horizon							
Lift Station 9	Growth	City	TBD/2026	TBD/2027	TBD/2028	\$6.4	\$8.3
N. Poudre RR Phase 1	Deficiency	City	2026	2027	2029	\$5.7	\$7.4
North Greeley Sewer Phase 2B	Deficiency	City			2029	\$5.5	\$7.2
North Greeley O St.	Growth	City	2028	2030	2032	\$12.2	\$15.6
North Poudre East C St.	Growth	City	2030	2032	2034	\$17.2	\$21.9

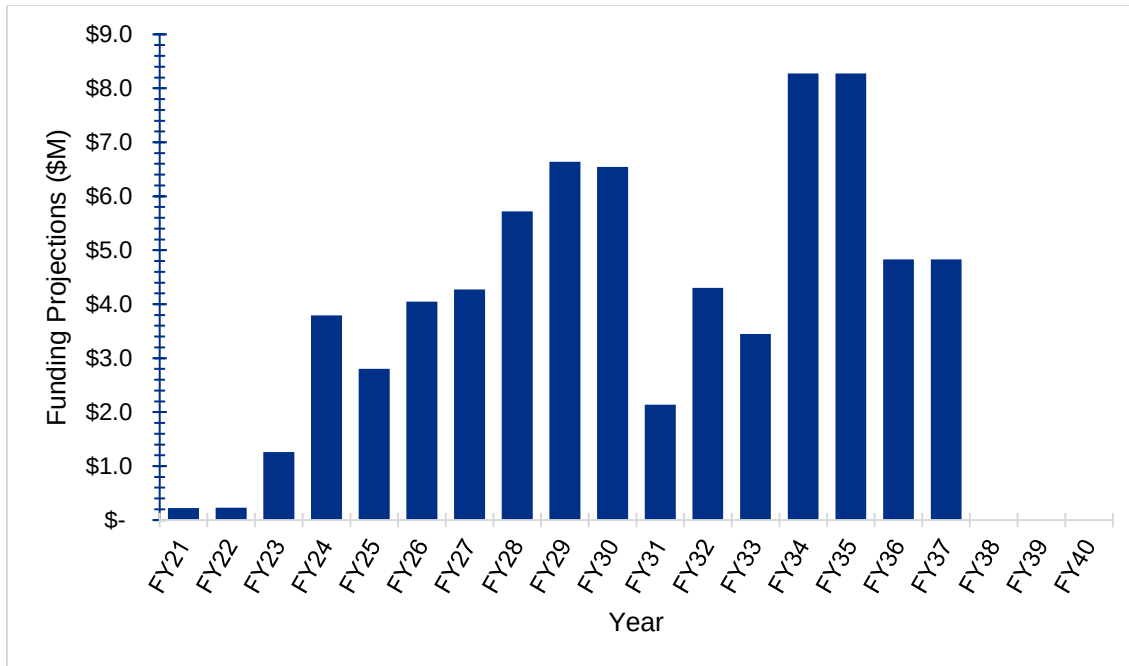


Figure 6-4 Annual Sewer Funding Projections for City CIP Projects

Section 7

References

Additional information sources are listed in Section 2 of this report. Various design projects (plan drawings) were provided and are references in Section 6.

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Appendix A

Flow Meter Diurnal Patterns (BWF)

For each flow meter, SSOAP develops an average diurnal flow pattern for DWF by averaging the flows at each hour in a dry-weather day. These patterns were then adjusted specifically for BWF by subtracting the estimated GWI. The BWF flow pattern for each meter was then normalized by dividing the flow in each hour by the overall daily average BWF. These normalized patterns will be used in the model. They also provide a peaking factor, which is the maximum daily BWF divided by the average BWF for each basin. This is done for temporary and permanent meters.

Figures A-1, A-2, A-3, A-4, A-5, and A-6 compare the weekday and weekend diurnal patterns developed for each metered area for the dominant uses of residential, mixed and commercial, respectively. The patterns shown in **Figure A-1** and **Figure A-2** are typical of residential use, which peaks in the morning and the evening. These peaks diminish with larger area due to sewer system attenuation. **Figure A-3** and **Figure A-4** present the diurnal pattern for mixed use areas, while **Figure A-5** and **Figure A-6** present patterns showing a typical plateau of water use in predominately nonresidential areas from 8 AM to 8 PM.

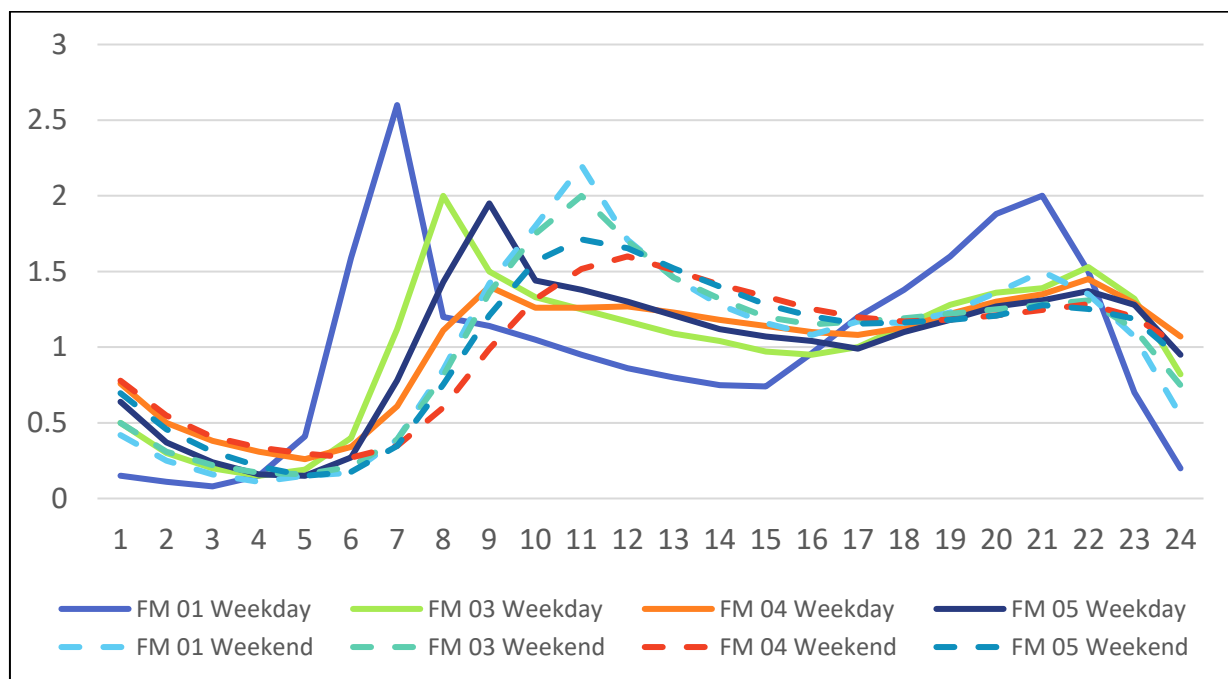


Figure A-1 Temporary Meter Diurnal Patterns of BWF (Residential)

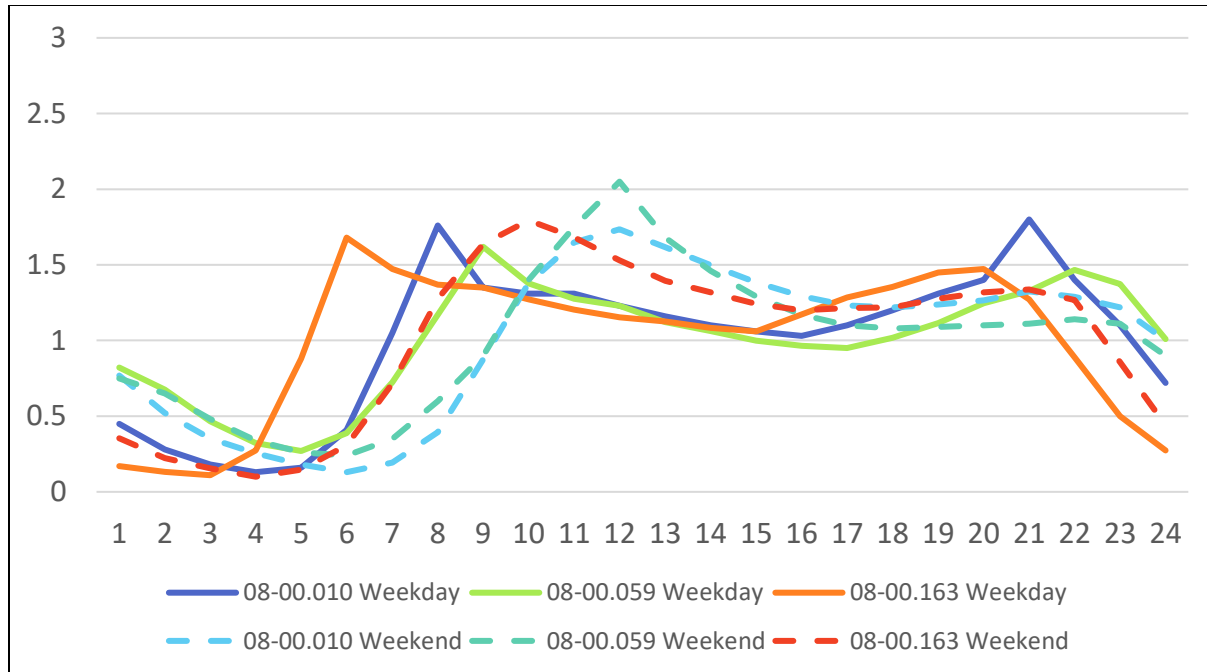


Figure A-2 Permanent Meter Diurnal Patterns of BWF (Residential)

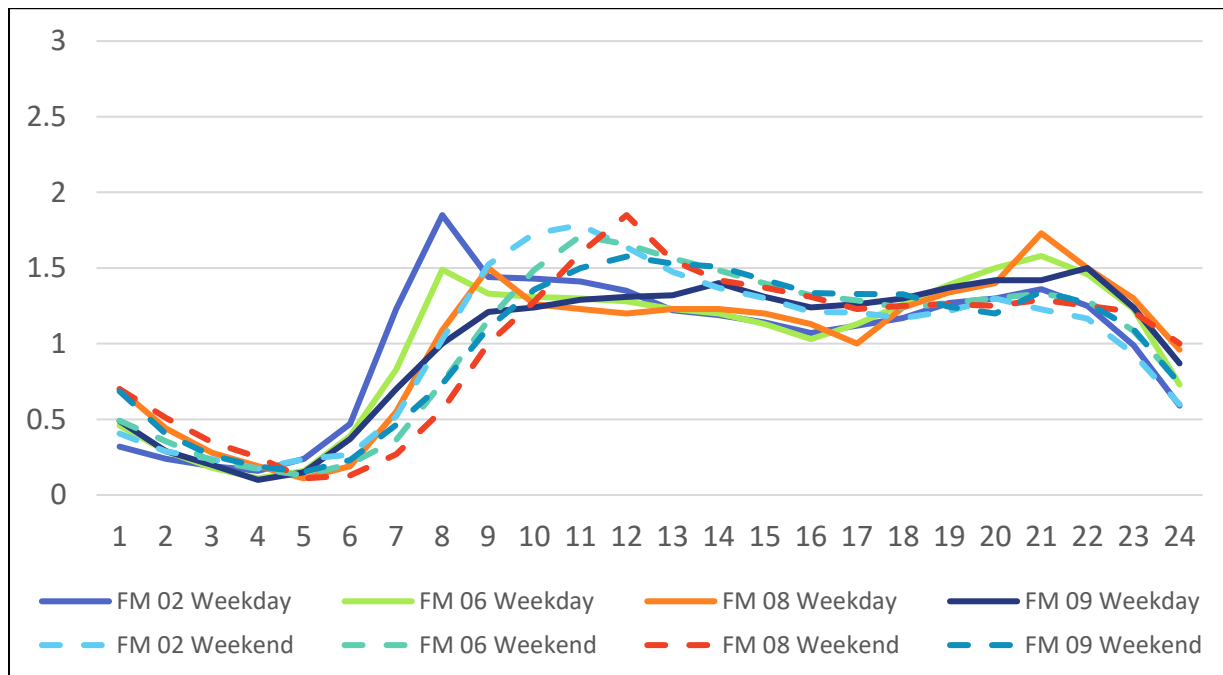


Figure A-3 Temporary Meter Diurnal Patterns of BWF (Mixed Use)

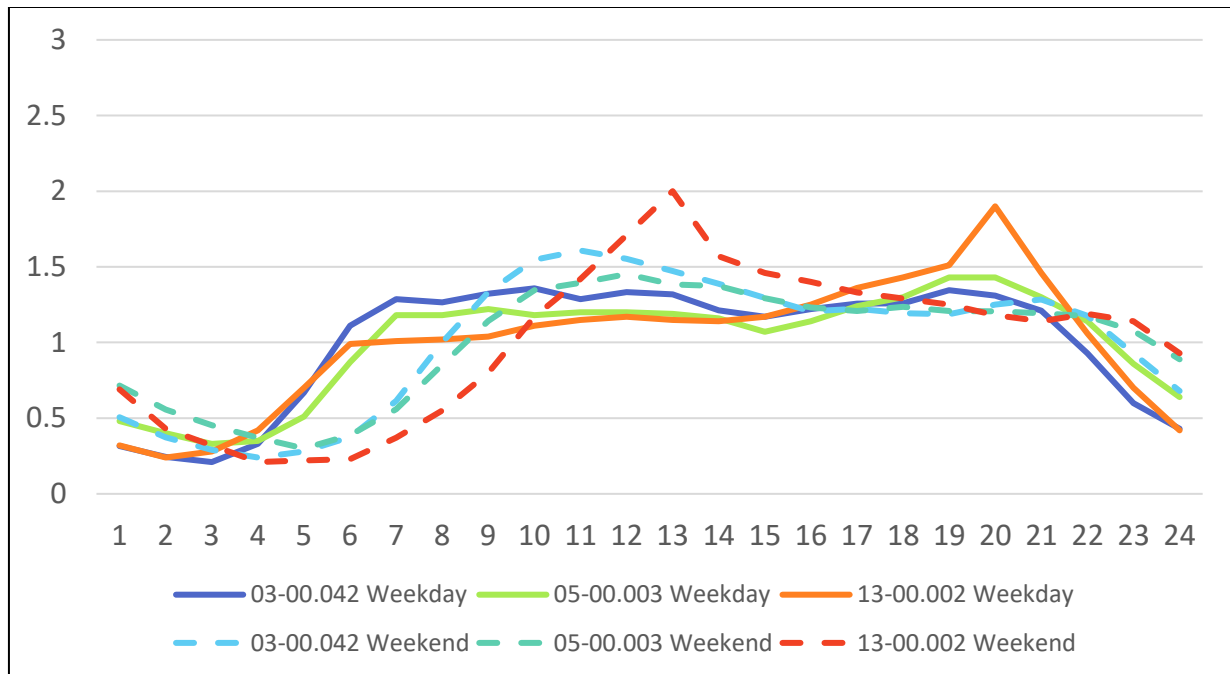


Figure A-4 Permanent Meter Diurnal Patterns of BWF (Mixed Use)

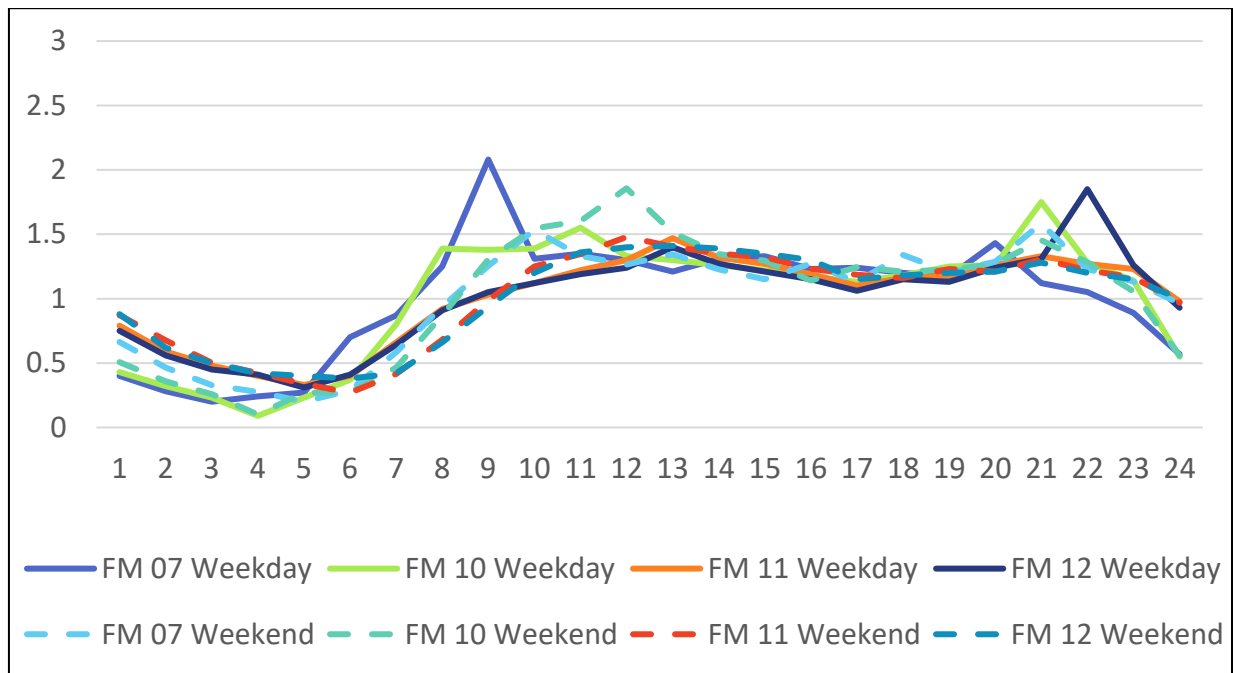


Figure A-5 Temporary Meter Diurnal Patterns of BWF (Commercial/Industrial)

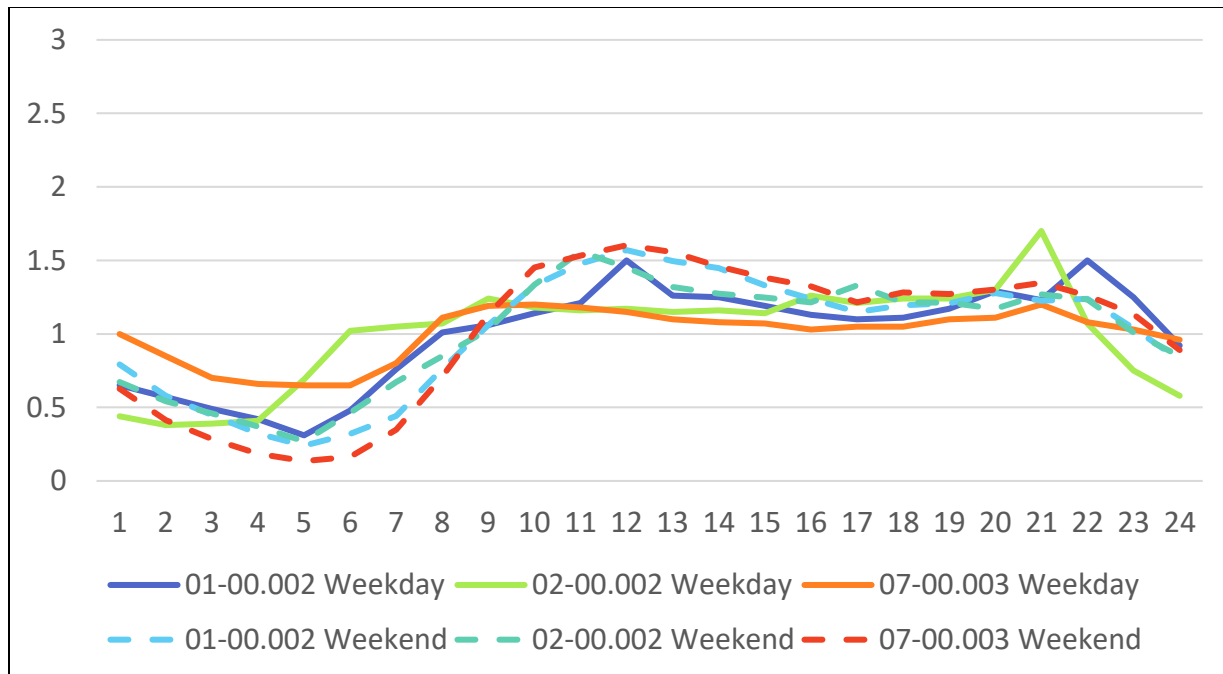


Figure A-6 Permanent Meter Diurnal Patterns of BWF (Commercial/Industrial)

Appendix B

Calibration Statistics for Wet Weather

The calibration statistics for wet weather volume, peak flow, and peak depth are shown in **Figure B-1** through **Figure B-9**, for all flow meters for each storm event. Each flow meter's observed versus modeled values are plotted against the upper and lower CIWEM calibration criteria. Points above or below the calibration lines would be considered outside the criteria limits, while points within the criteria lines are considered calibrated. Meters that are outside the criteria limits for two or more rainfall event are labeled in the figures as these did not meet the overall criterion of calibration to two of the three events. Calibration plots for the separate meters are provided at the end of this section.

All flow meters were calibrated for volume and peak flow within the criteria limits except for FM 07 and 08-00.010. Although flow volume during all three wet weather events for FM 07 (Monfort Basin) was within the criteria limits, the peak flows during those events varied widely. The model versus observed peak flow values for the three storm events were +44%, -6%, and -31%. The variation may be due to GWI that was observed during flow metering that would vary based on antecedent moisture conditions. When reviewing this area for recommendations, the calibration plots and the peak WWF to dry weather flow factor will be reviewed when simulating a design storm to check if the peaks may be overstated compared to the rest of the system. If this is the case, further investigation may be recommended prior to implementing major improvement projects.

Peak flows for permanent meter 08-00.010 were within the acceptable criteria limits; however, flow volume during two of three events was slightly below the criteria limits (-13%, +2%, -13%). Due to a large overlap with other meters within this basin, no further calibration adjustments could be made to bring the volume within the criteria limits without sacrificing the calibration of other meters including permanent meter basins 08-00.059 and 08-00.163 and temporary basins 01, 02, 03, 04, 05, and 07. Total volume measured during the wet weather events for all upstream basins were within the acceptable criteria limits. Additionally, the peak flows for all upstream basins (excluding FM 07), were also within the acceptable limits.

During depth calibration of meter 05-00.003, the peak flow level for Event 3 was taken very slightly outside the peak flow criteria limits. In the interest of maintaining the depth calibration, no further adjustments were made to this basin.

All other flow meters besides FM 07, 08-00.010, and 05-00.003 were within the acceptable limits for volume and peak flow. Refer to **Table B-1** and **Table B-2** for the calibrated RTK parameters.

The depth calibration for the flow were all within range of the CIWEM criteria.

Table B-1 Calibrated Temporary Meter Basin RTKs

Flow Metering Basin	Area (ac)	Fast Response			Medium Response			Slow Response			Total R (%)
		R1 (%)	T1 (hr)	K1	R2 (%)	T2 (hr)	K2	R3 (%)	T3 (hr)	K3	
FM01 Sheep Draw	372	0.2	1	1.5	0.1	3	1	0.1	7	3.5	0.4
FM02 Sheep Draw	686	0.1	2	2	0.2	5	5	0.2	10	9	0.5
FM03 Hilltop	1,042	0.1	1	1	0.2	3.5	2	0.3	6	7	0.6
FM04 Highland Hills	1,044	0.4	1	2	0.2	2.5	2.5	0.1	5	3	0.7
FM05 Highland Hills	1,422	0.2	1.5	2	0.3	5	3	0.4	10	5	0.9
FM06 Belair	911	0.2	1	1	0.1	3	3	0.1	6	5	0.4
FM07 Monfort	458	0.3	0.65	1	0.5	2	2	0.1	5	10	0.9
FM08 North	591	0.3	1	1.1	0.1	2.2	2	0.1	2.8	2.5	0.5
FM09 Eight Street	530	0.5	1	1	0.1	2.5	3	0.1	4	4	0.7
FM10 Central	654	0.3	1	1	0.1	2.1	1.8	0.1	2.6	2.2	0.5
FM11 South	302	0.2	1	1	0.1	2.9	1.9	0	4.3	3	0.3
FM12 South	923	0.1	0.7	1	0	1.5	2	0.1	2	3	0.2

Note: Areas shown correspond to areas where RTKs are applied. Due to overlapping basins, the RTK contributing areas will not equal the total basin areas.

Table B-2 Calibrated Permanent Meter Basin RTKs

Flow Metering Basin	Area (ac)	Fast Response			Medium Response			Slow Response			Total R (%)
		R1 (%)	T1 (hr)	K1	R2 (%)	T2 (hr)	K2	R3 (%)	T3 (hr)	K3	
01-00.002	200	0.4	0.5	1.7	0.1	3	2	0.1	5	3	0.6
02-00.002	630	0.2	1.25	1.25	0.1	3	3	0.1	7	6	0.4
03-00.042	686	0.2	1	1	0.2	3	2	0.2	5	3	0.6
05-00.003	223	0.1	2	2	0.1	5	3	0.1	10	5	0.3
07-00.003	220	0.1	2.5	2	0.1	5	3	0.1	10	7	0.3
08-00.010	176	0.2	2	1	0.2	5	2	0.2	10	3	0.6
13-00.002	1,004	0.5	1.5	1	0.4	5	2	0.2	10	3	1.1
08-00.059	956	0.4	2.5	2	0.5	5	3	0.6	10	5	1.5
08-00.163	755	0.1	1	1	0	3	2	0	5	3	0.1

Note: Areas shown correspond to areas where RTKs are applied. Due to overlapping basins, the RTK contributing areas will not equal the total basin areas.

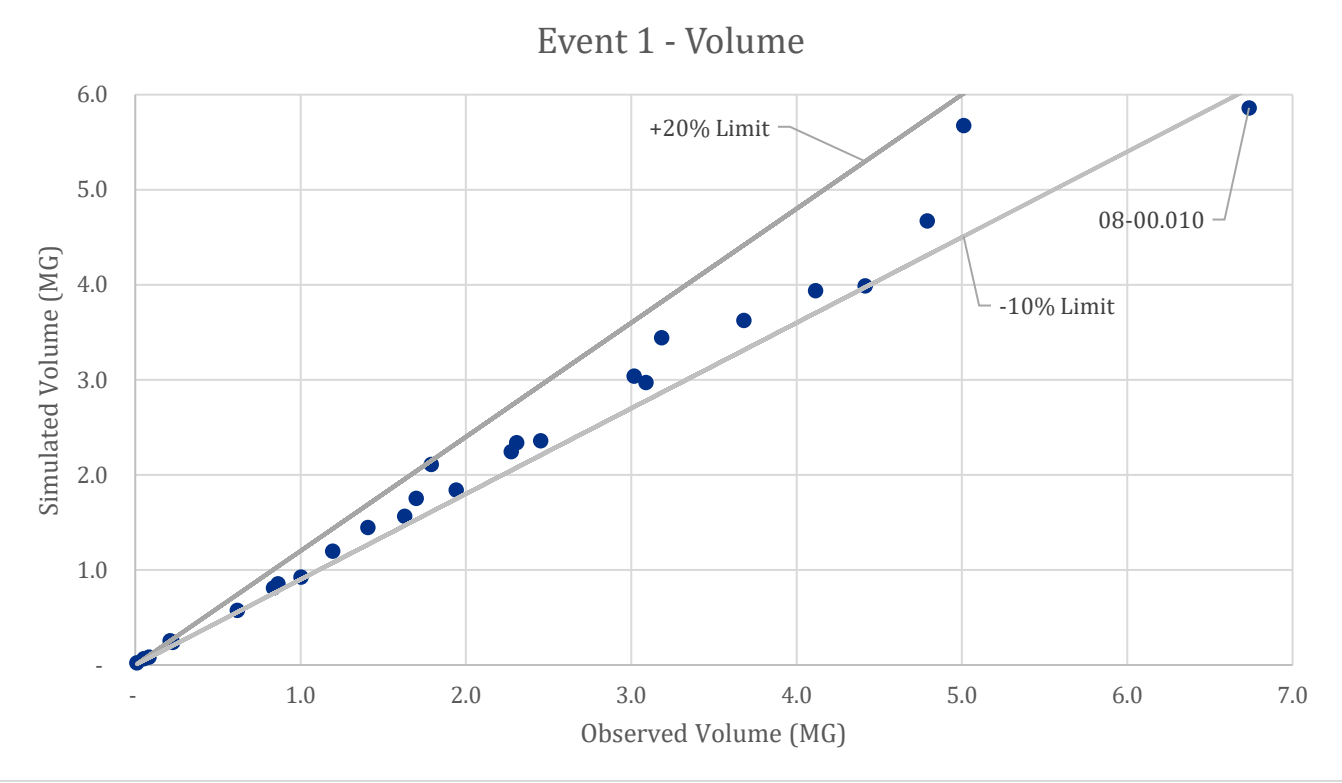


Figure B-1 Event 1 Volume

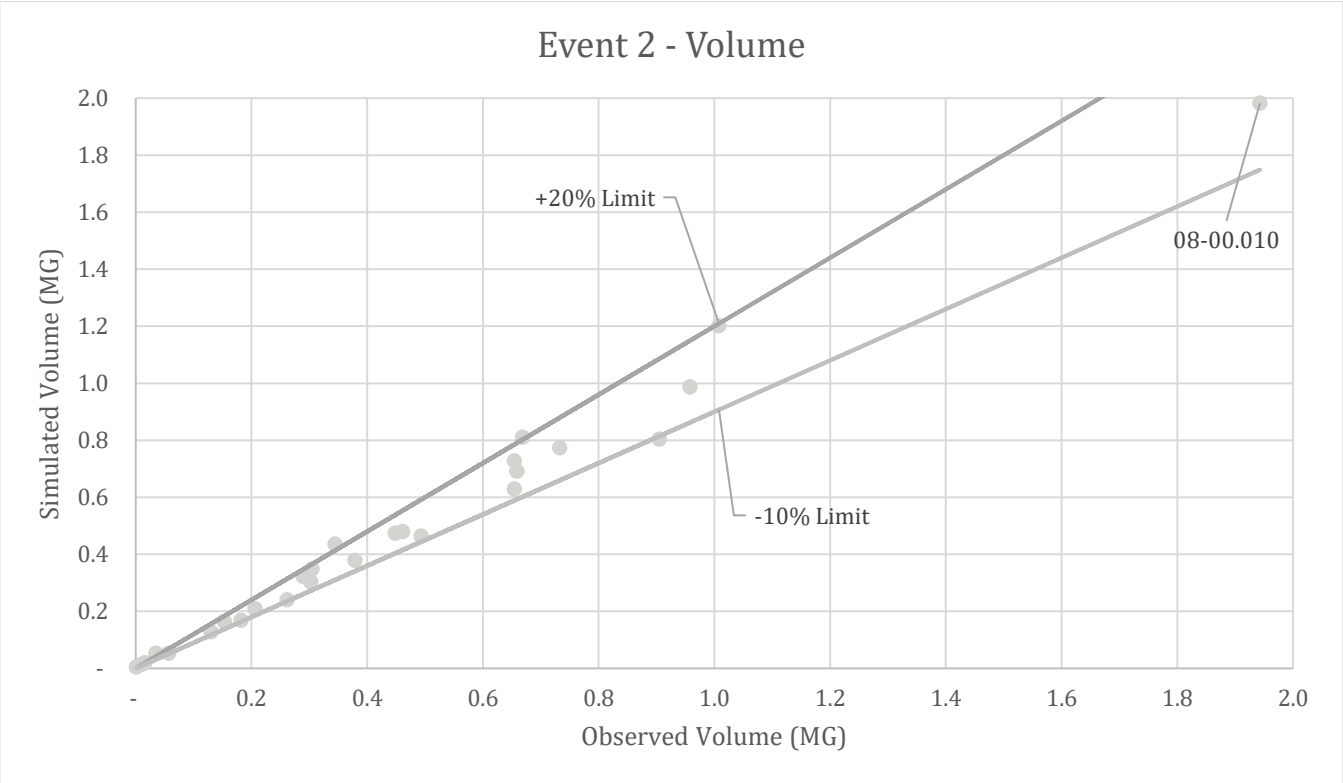


Figure B-2 Event 2 Volume

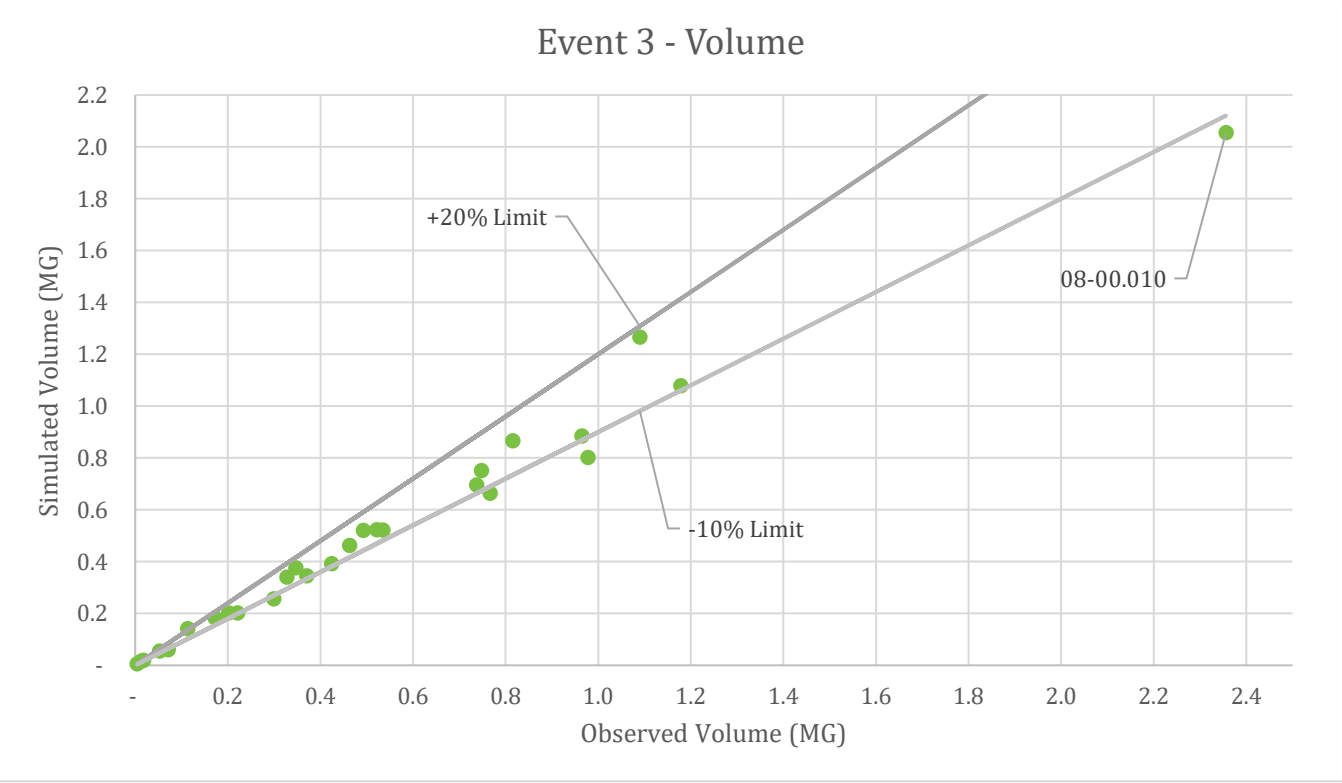


Figure B-3 Event 3 Volume

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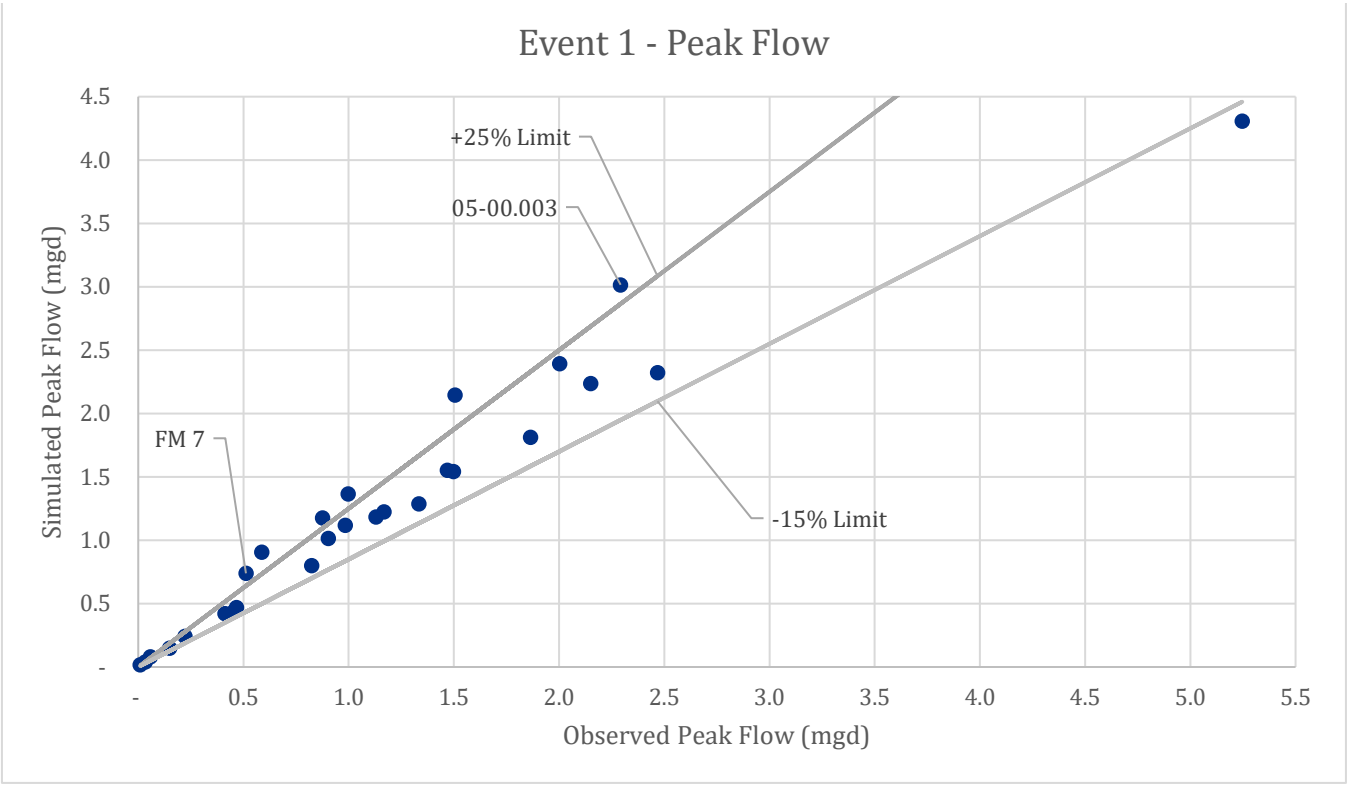


Figure B-4 Event 1 Peak Flow

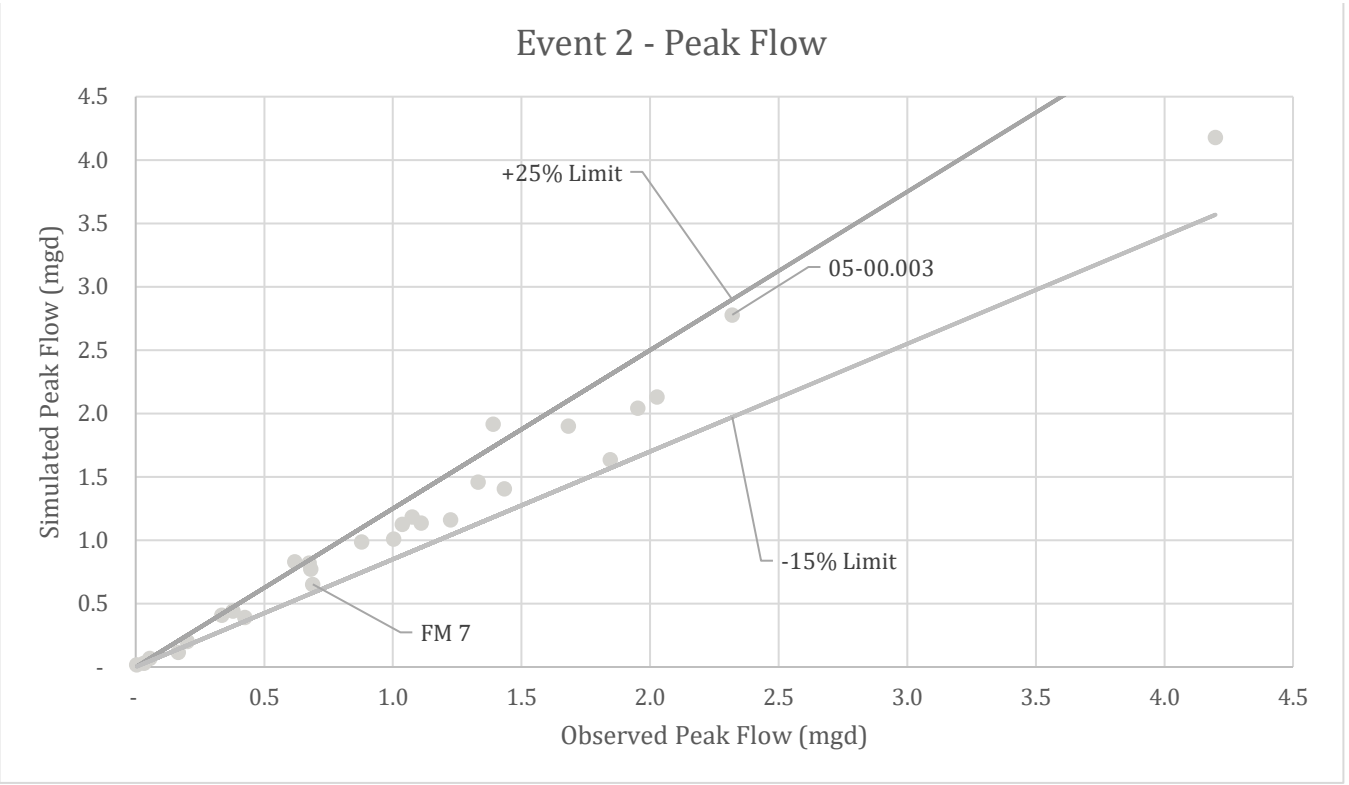


Figure B-5 Event 2 Peak Flow

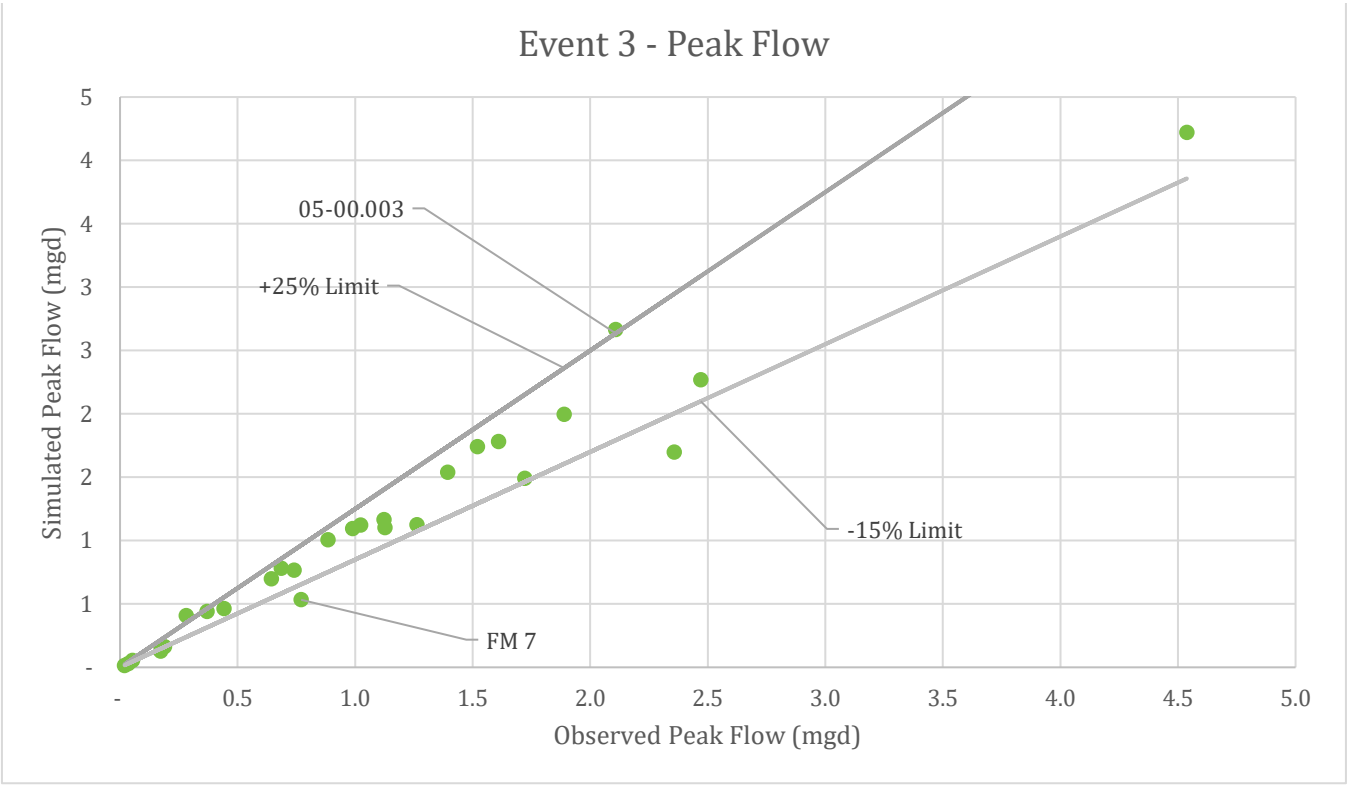


Figure B-6 Event 3 Peak Flow

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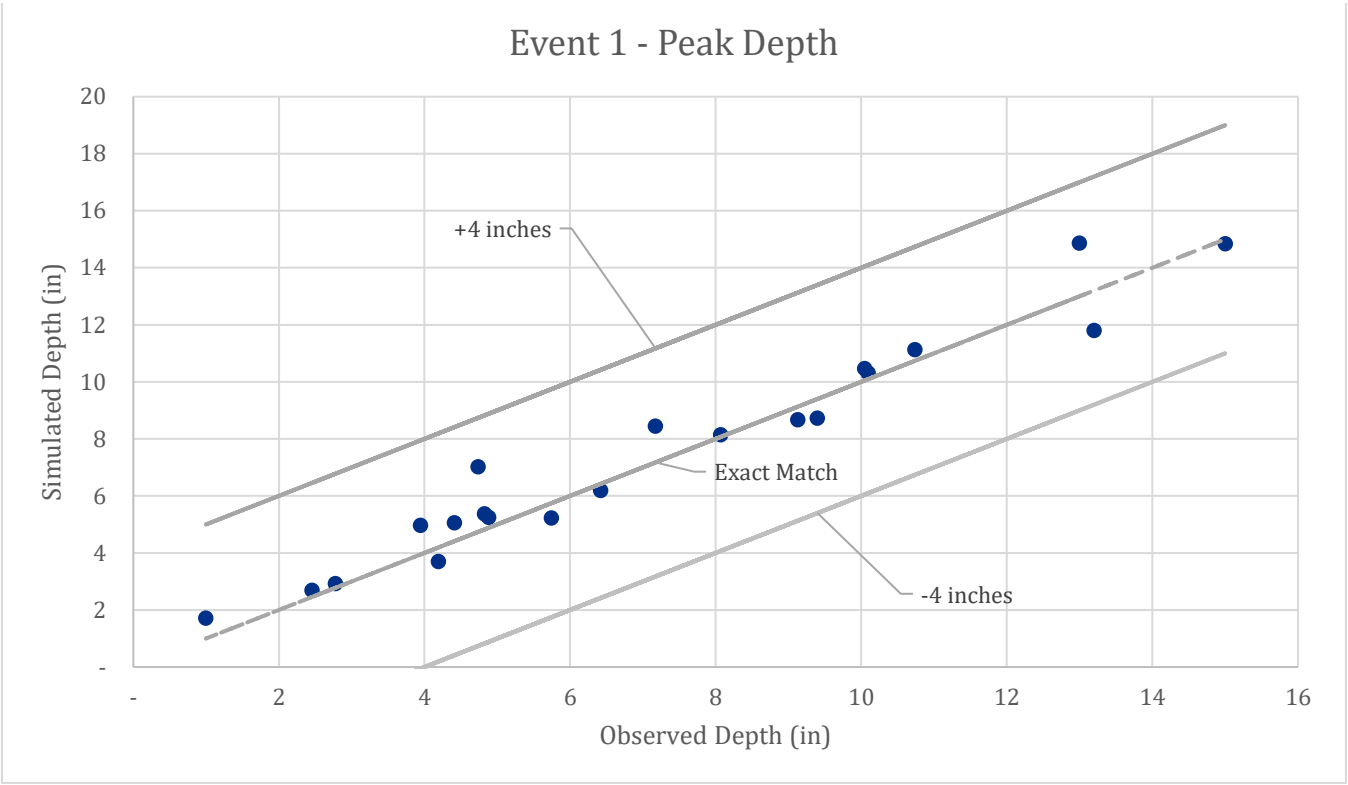


Figure B-7 Event 1 Peak Depth

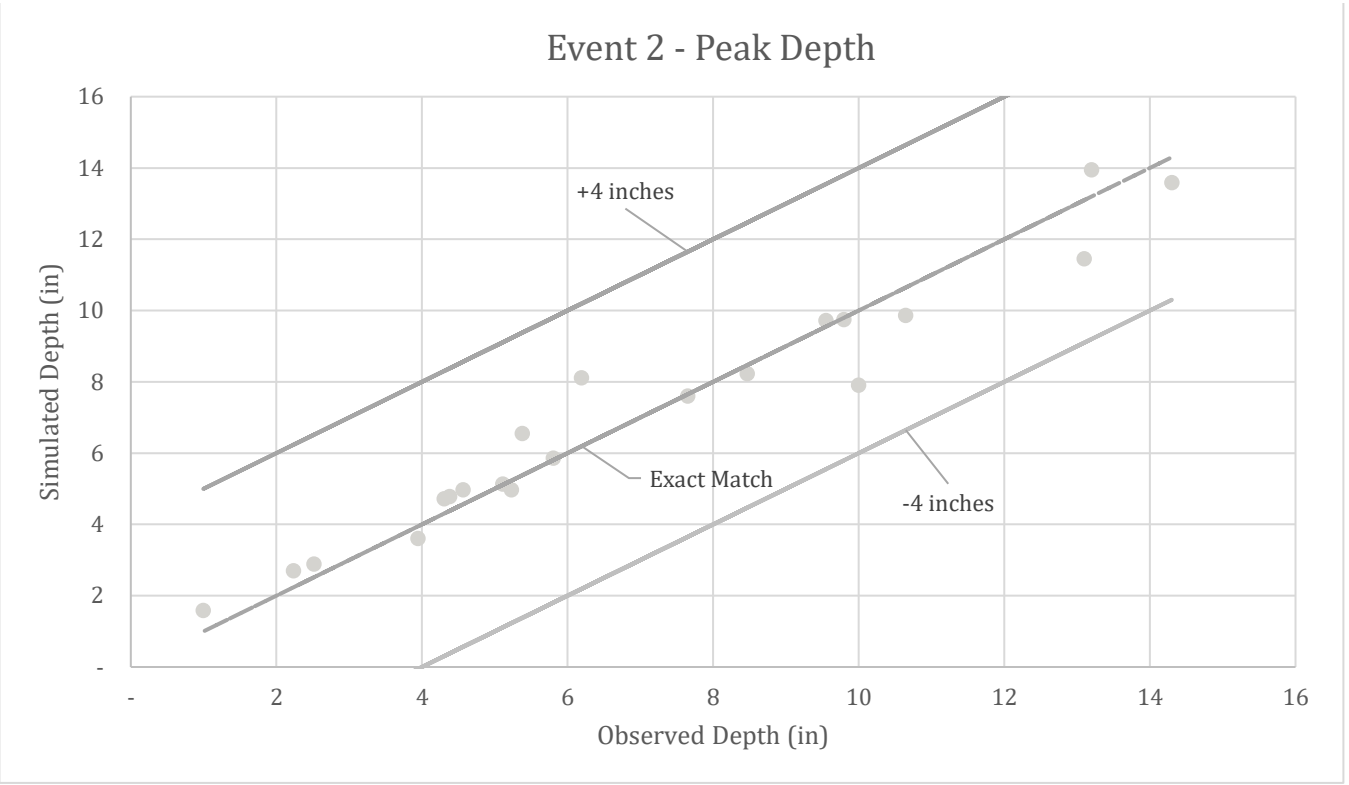


Figure B-8 Event 2 Peak Depth

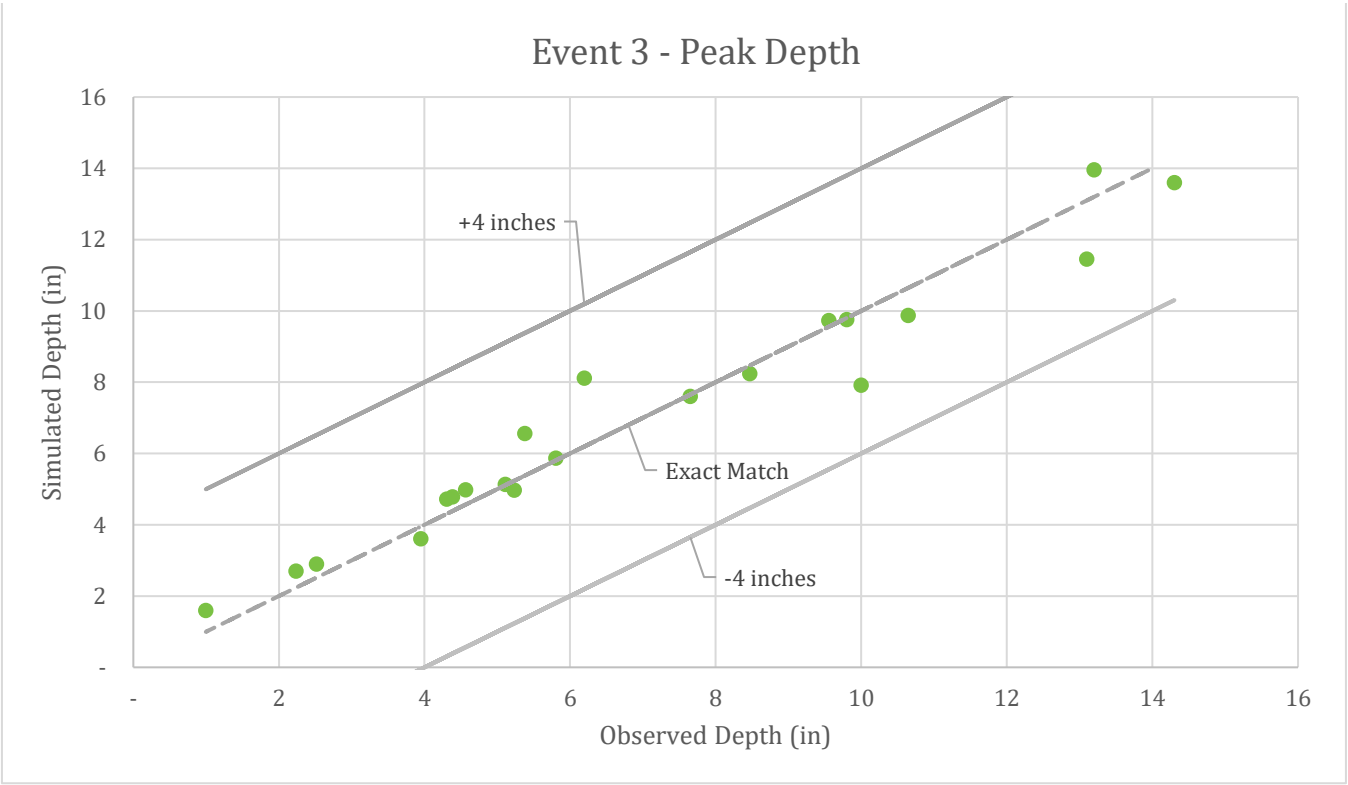
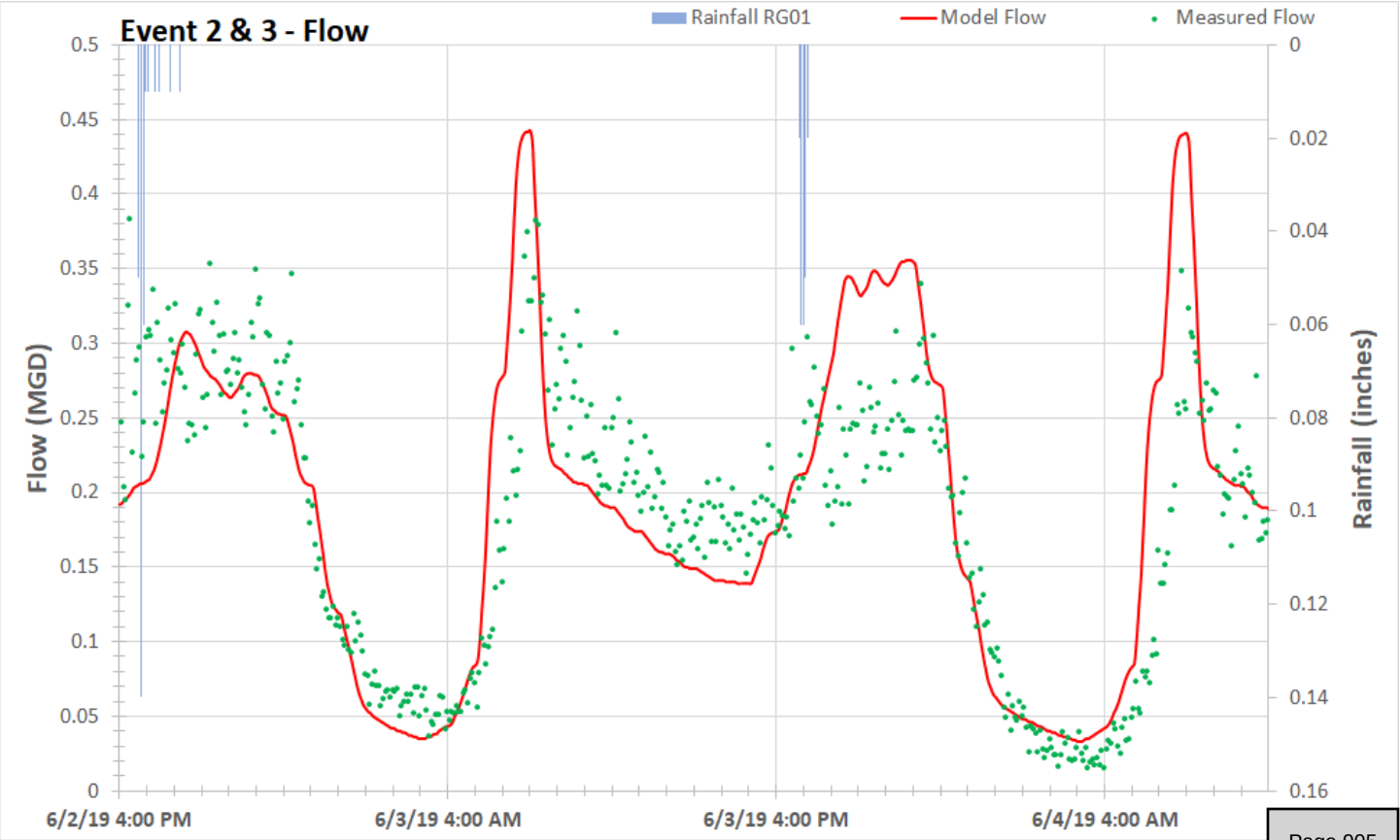
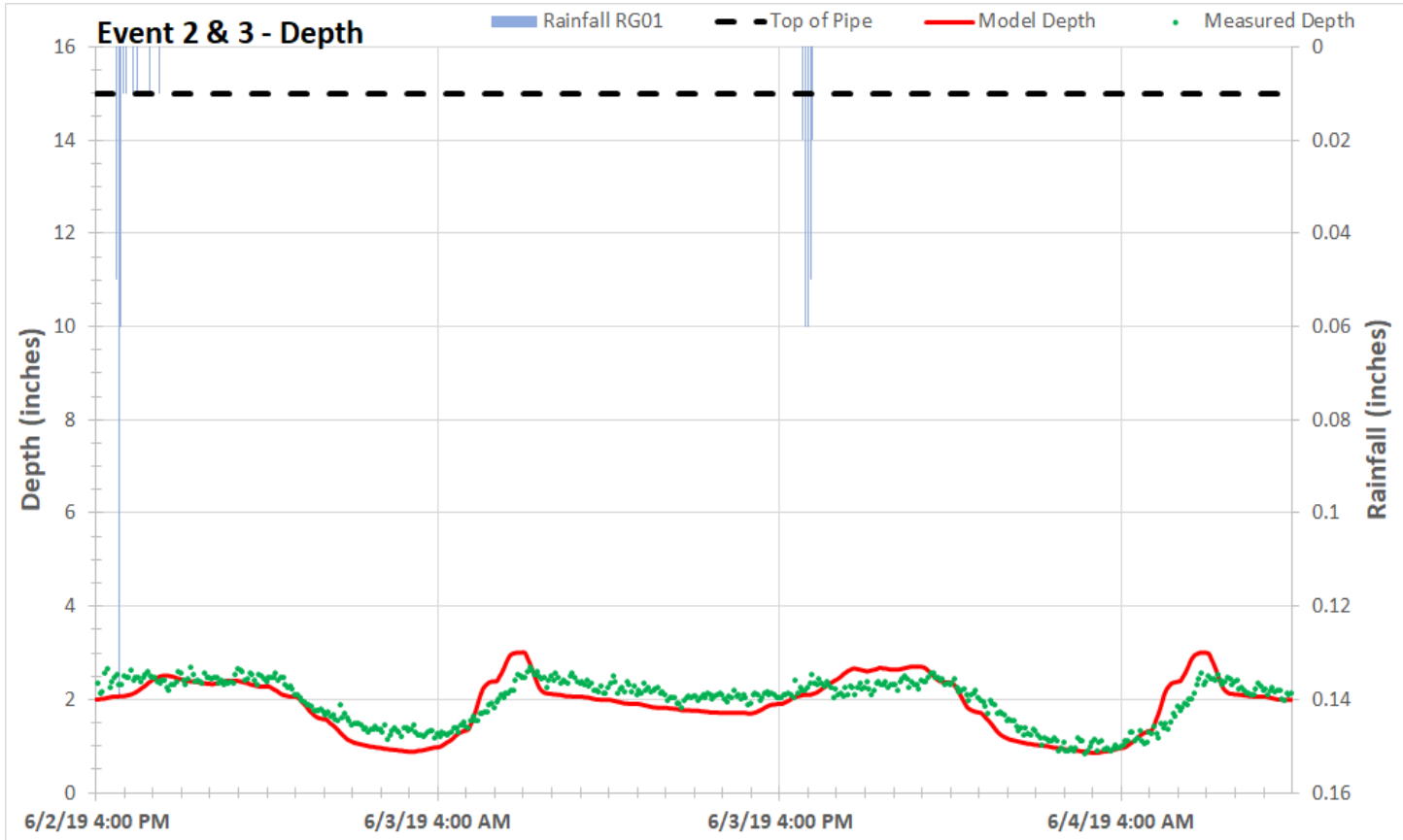
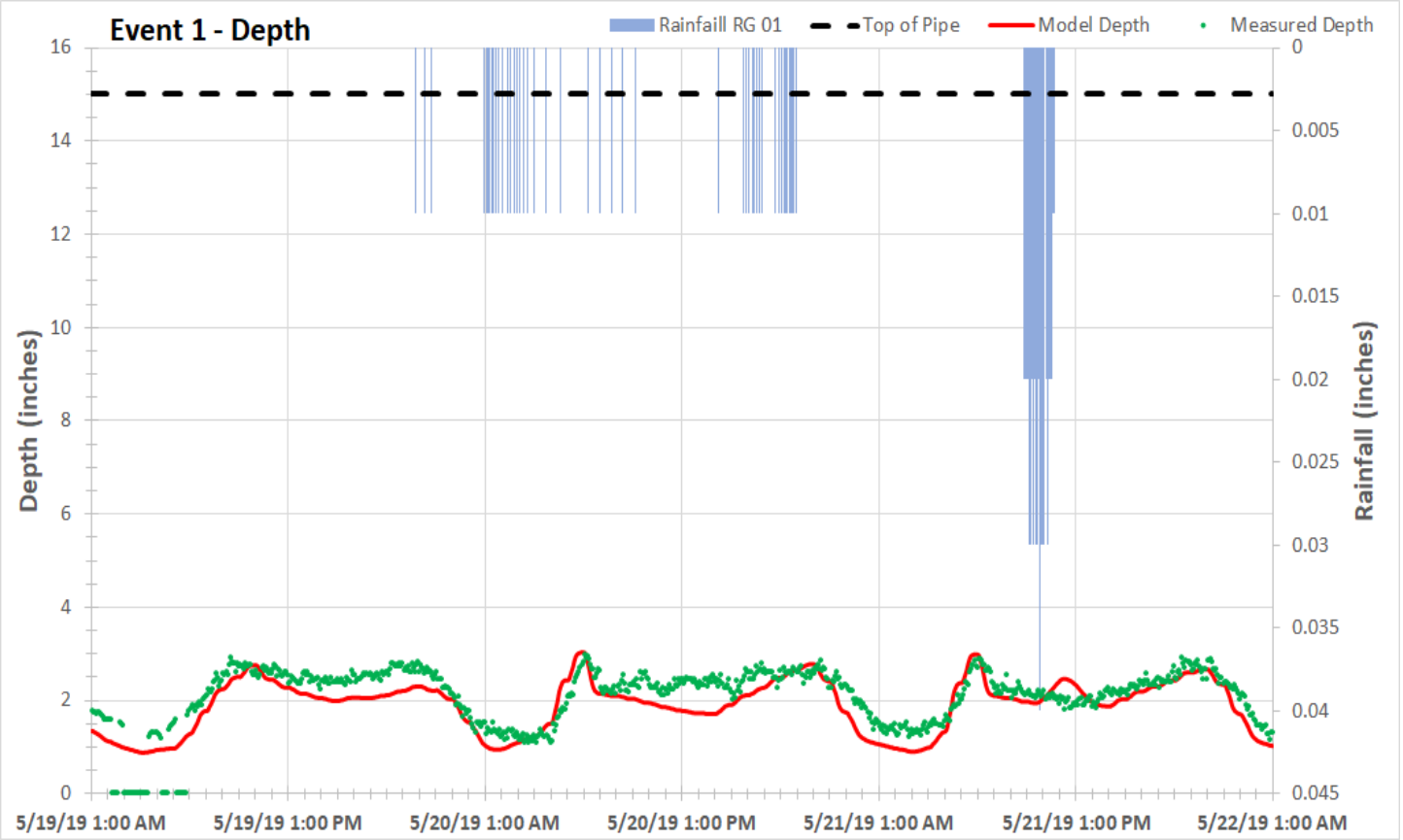


Figure B-9 Event 3 Peak Depth

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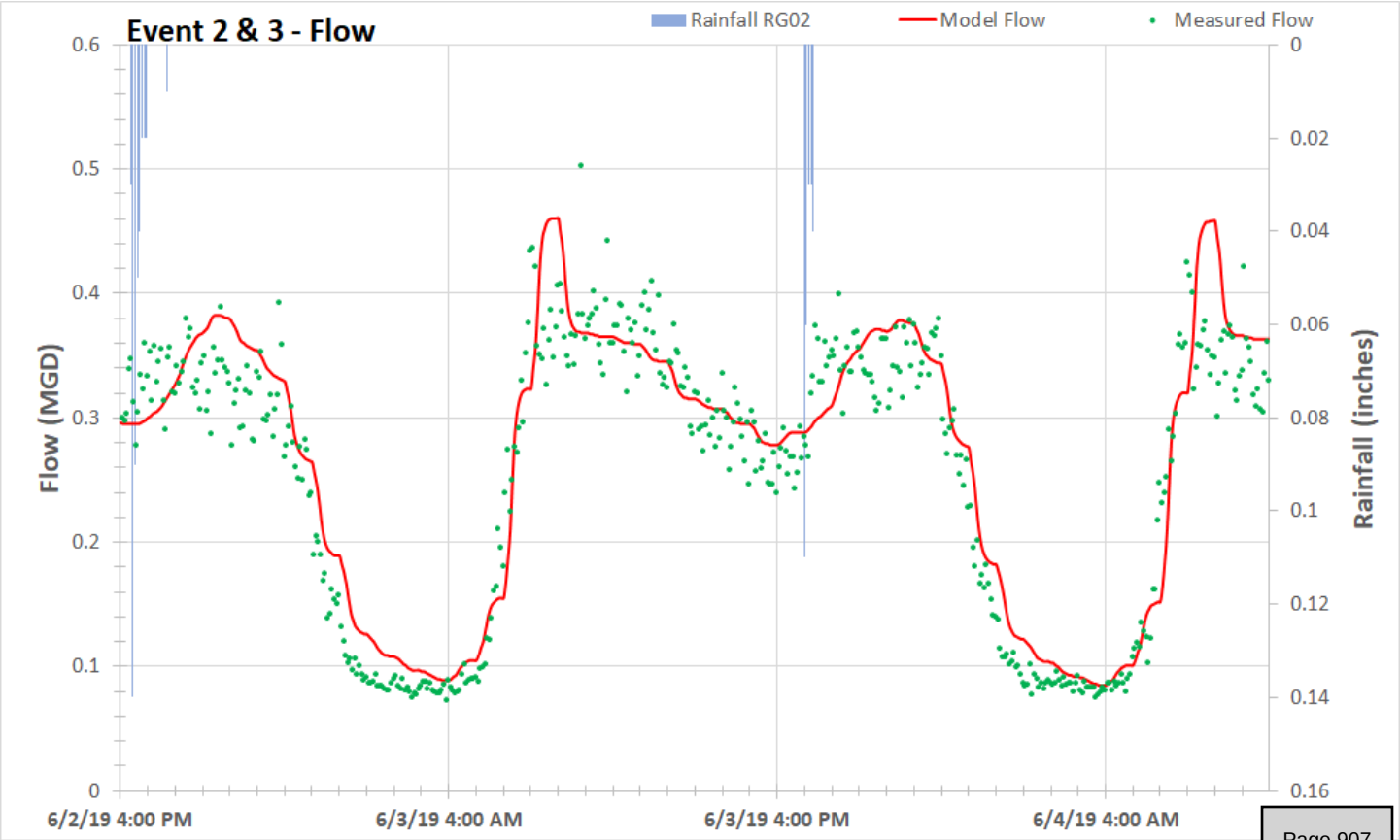
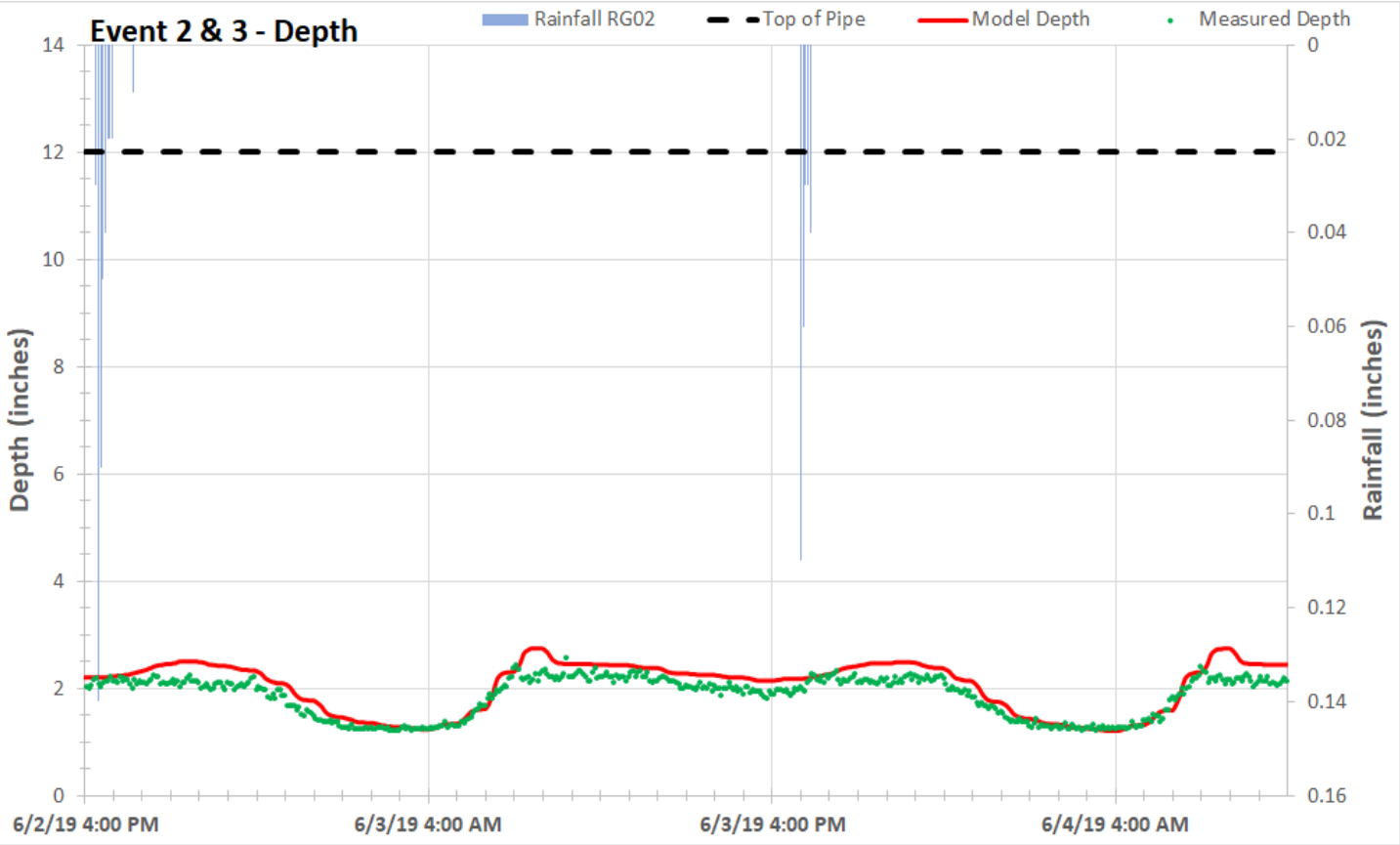
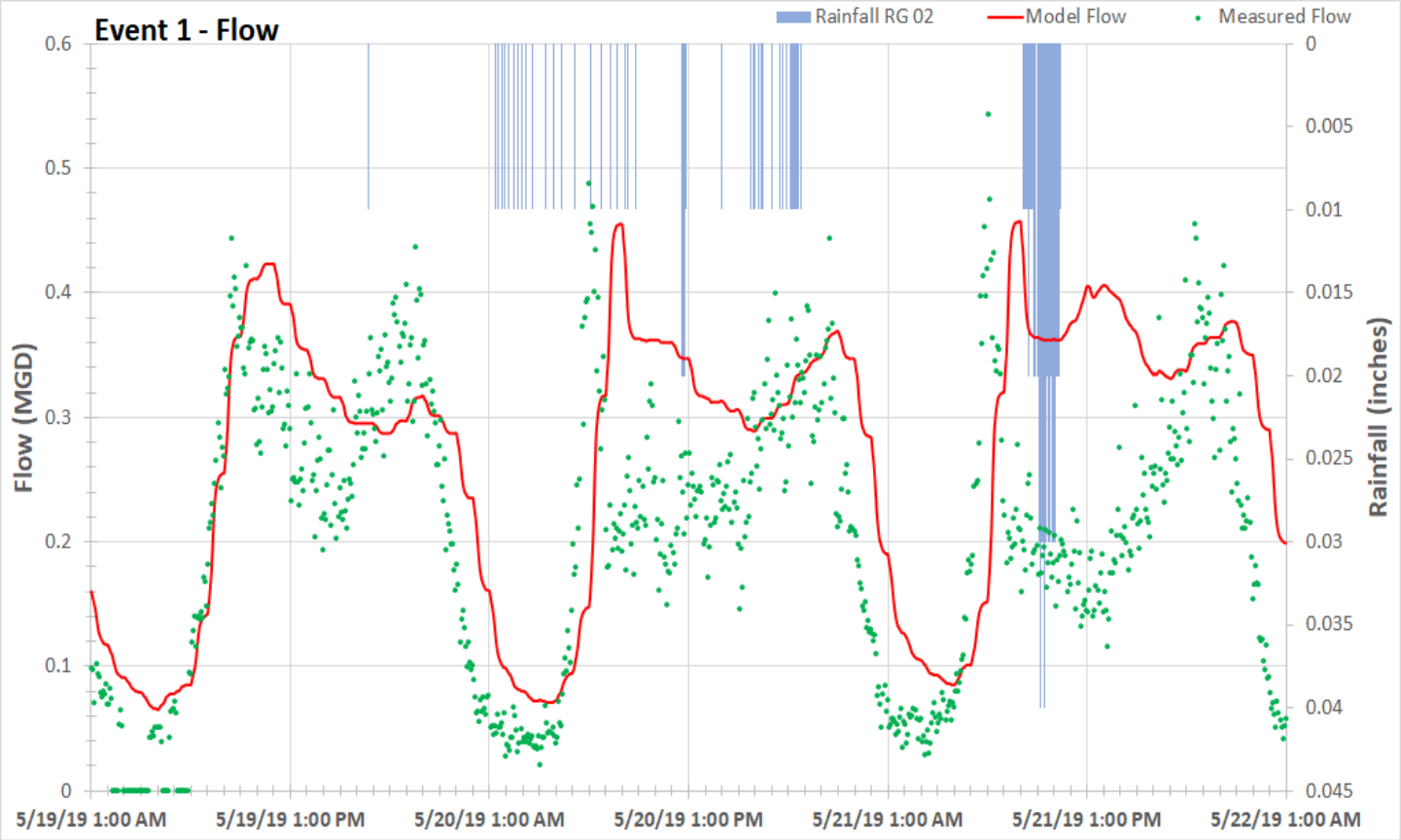
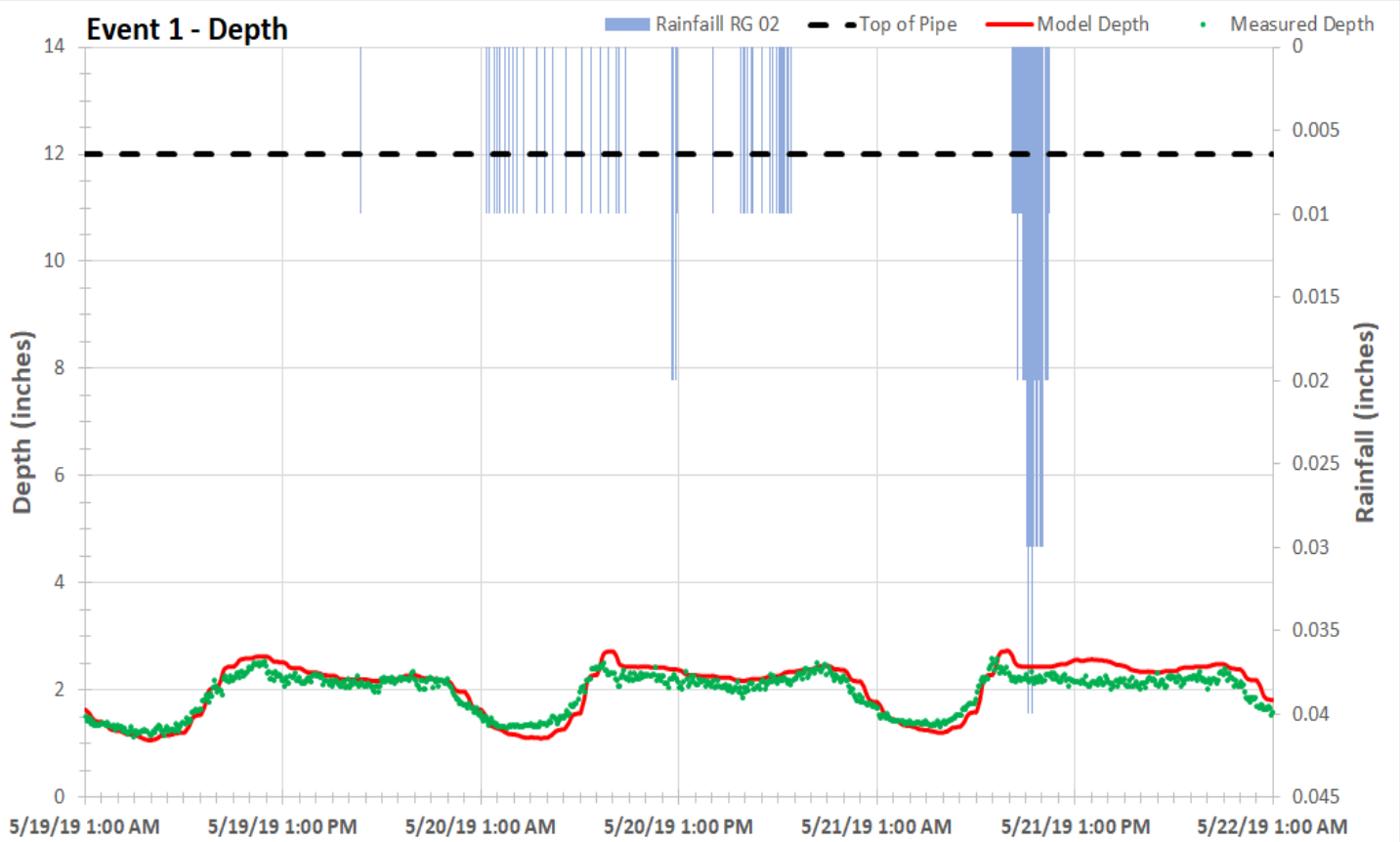
FM 01 - Sheep Draw Basin



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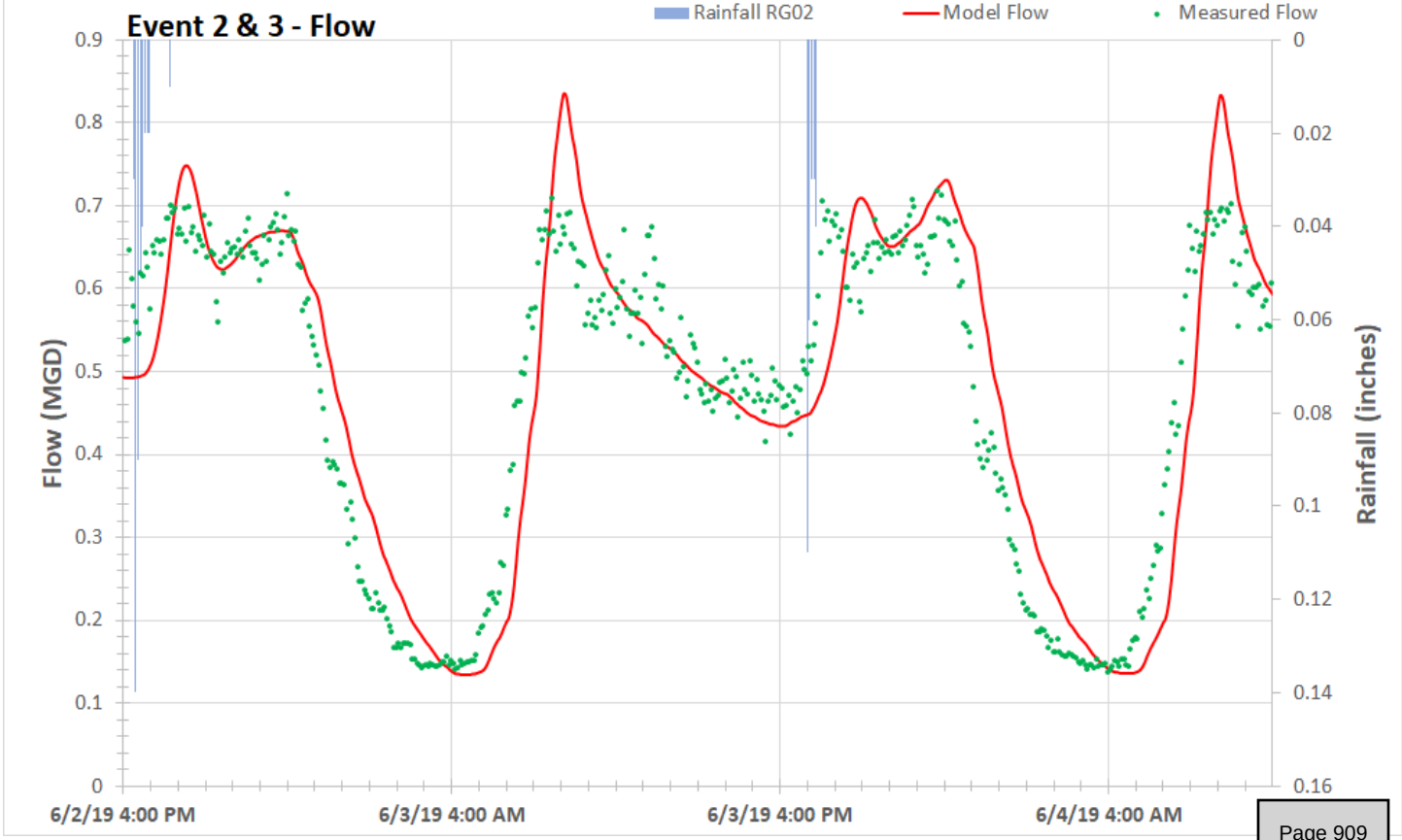
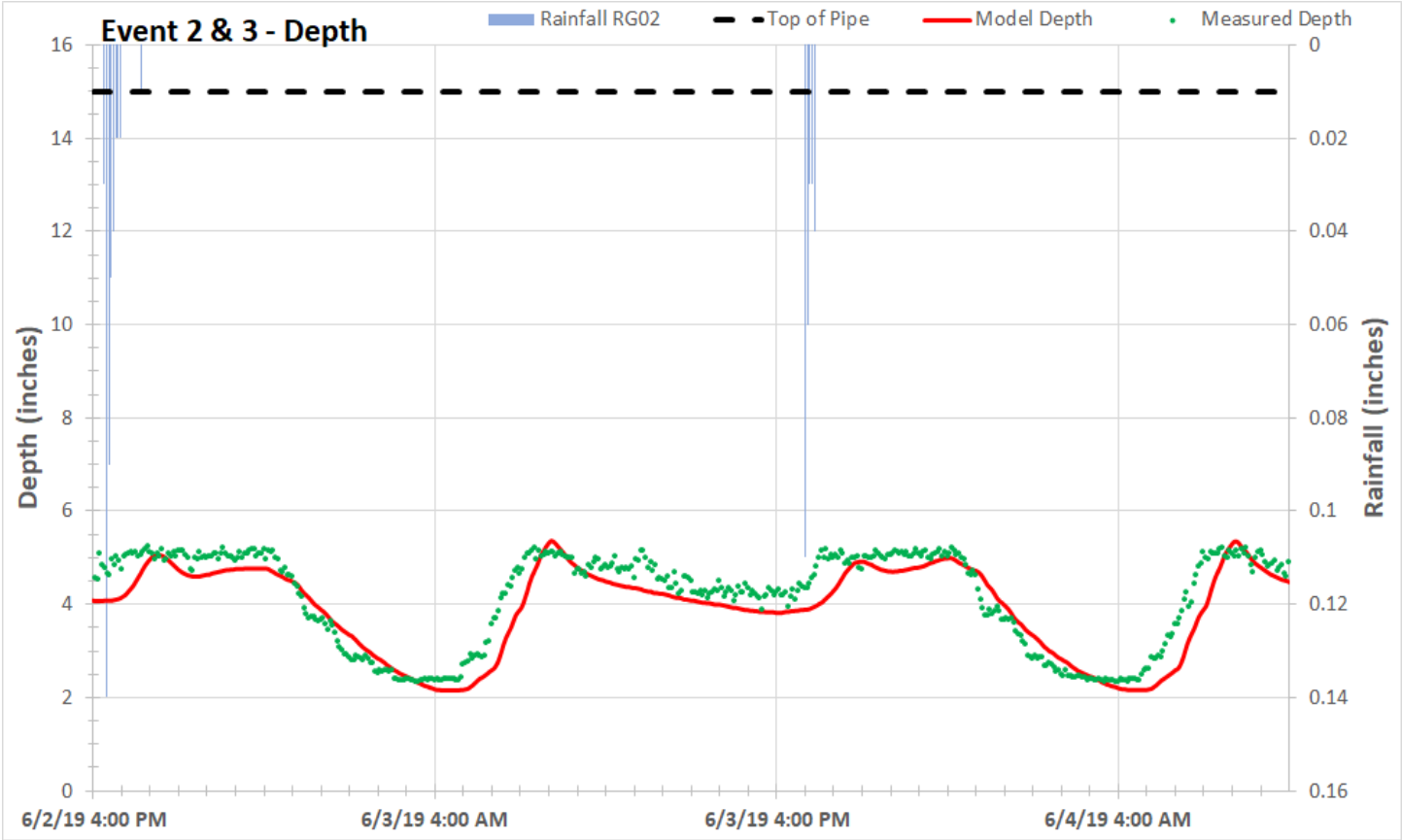
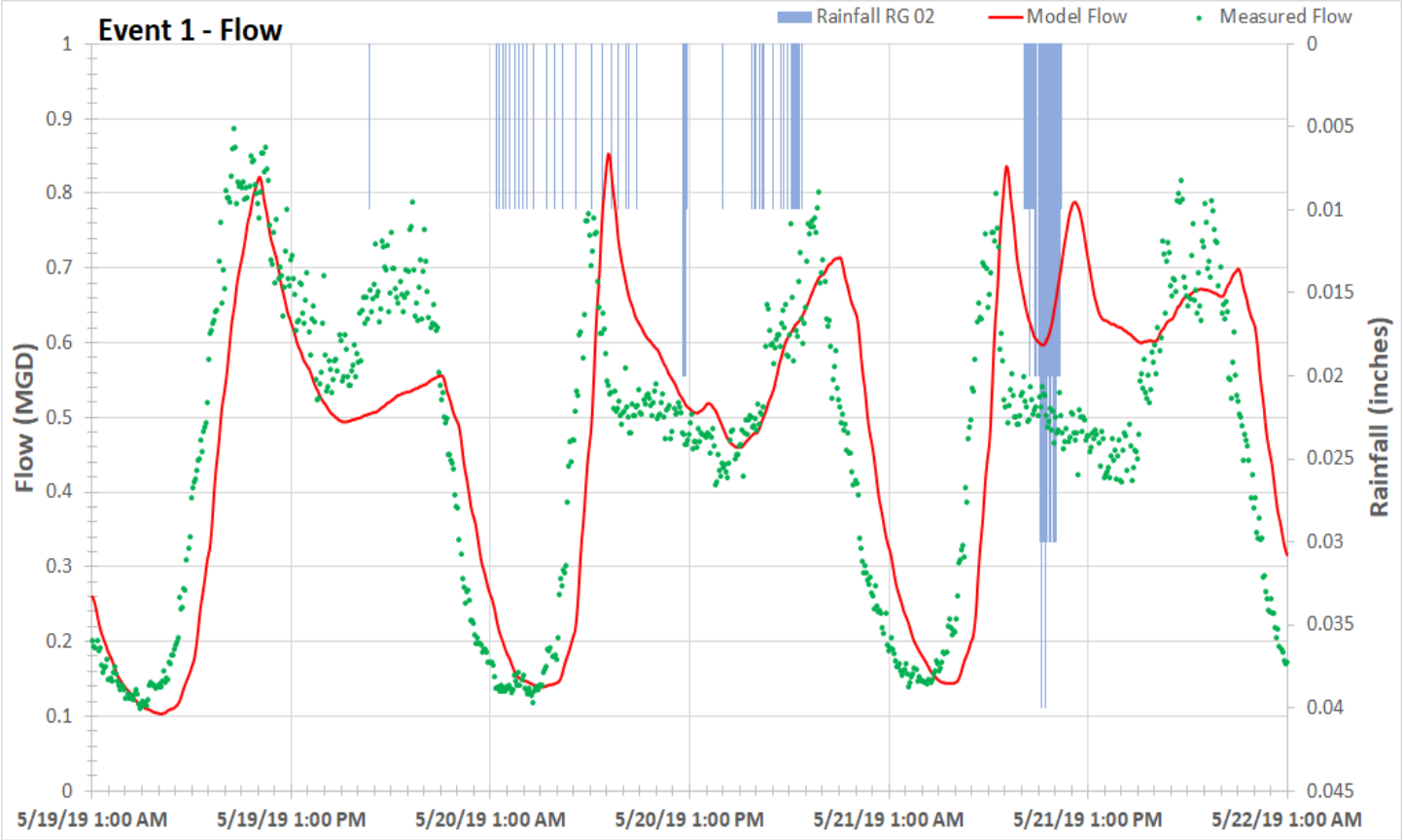
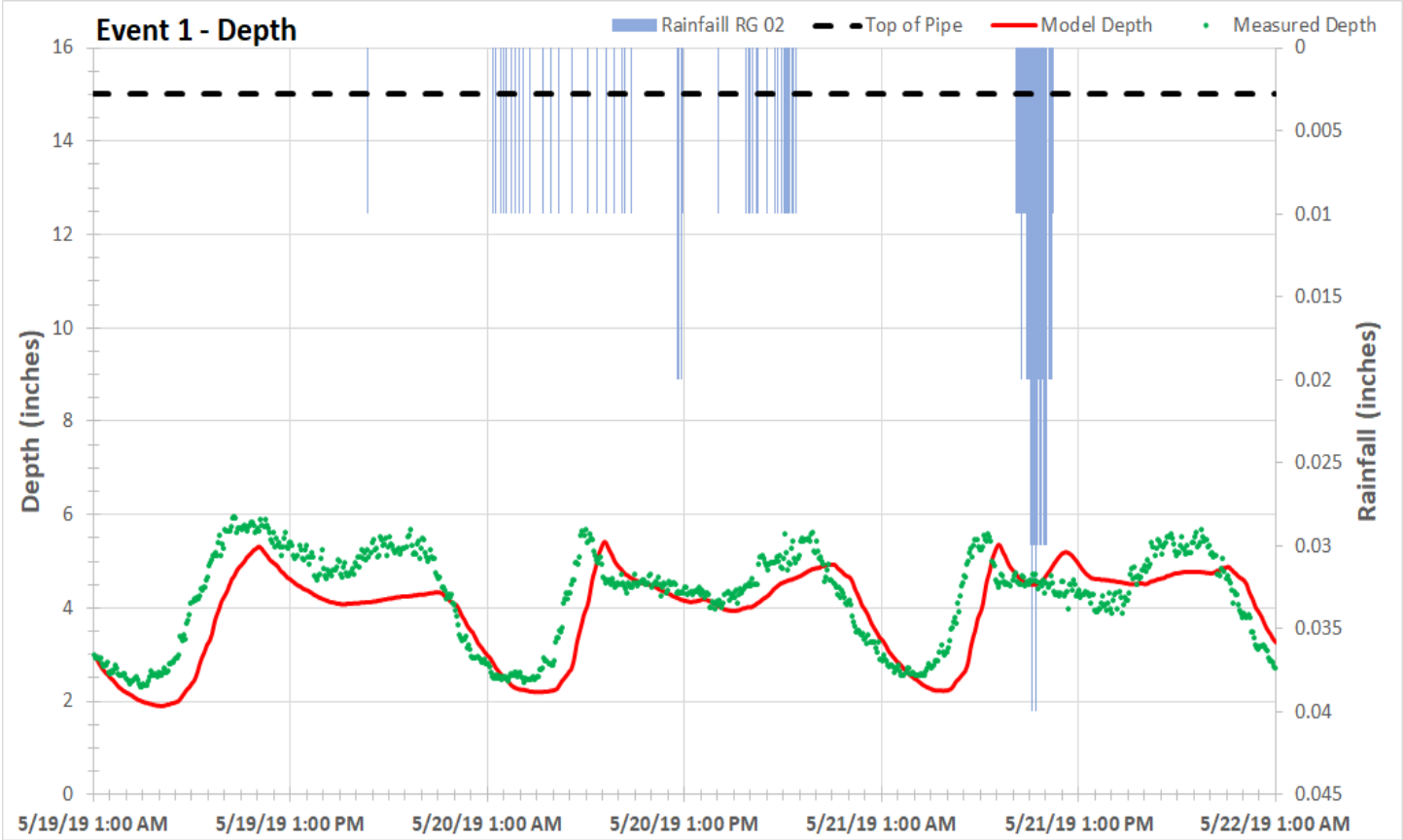
FM 02 - Sheep Draw Basin



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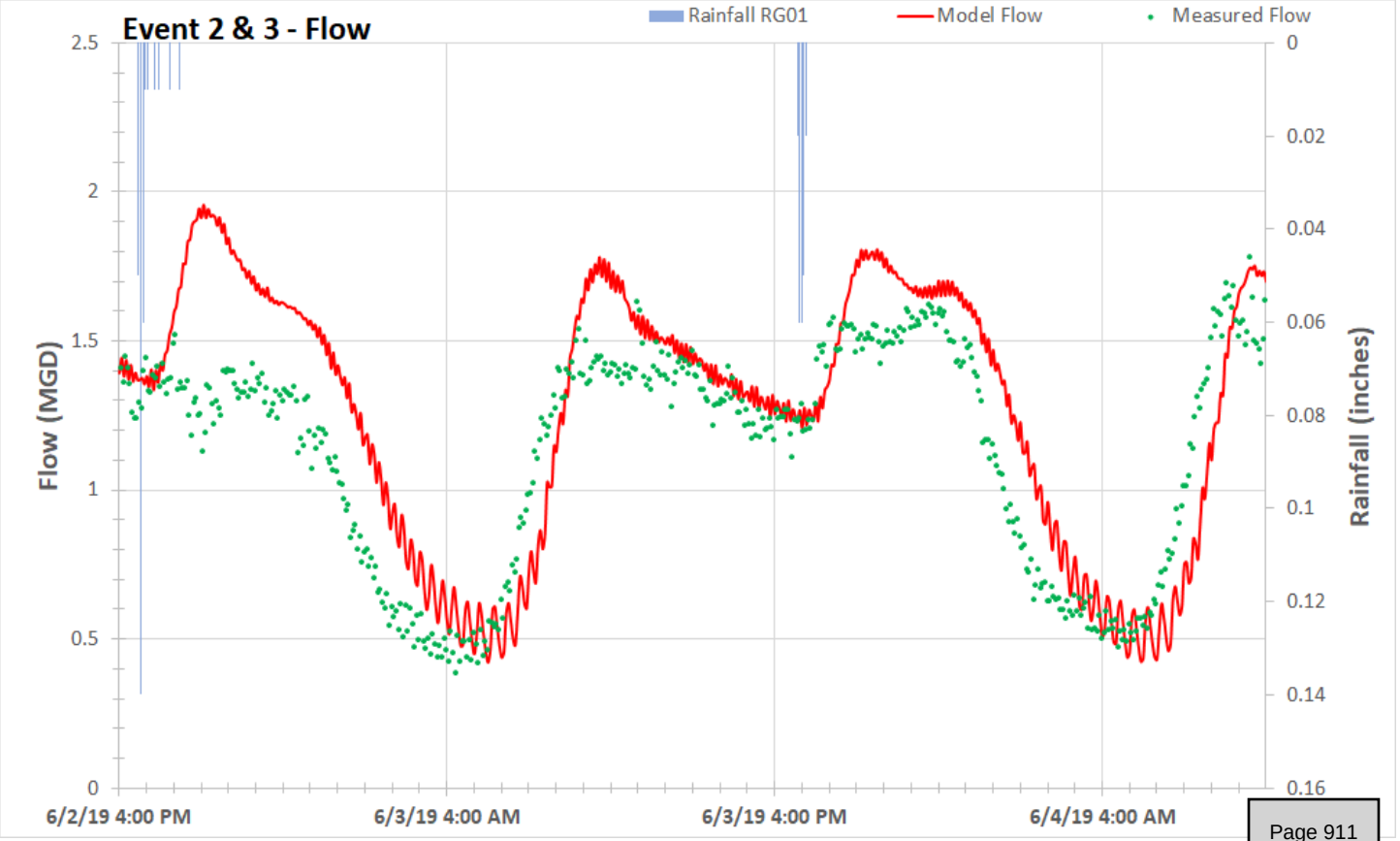
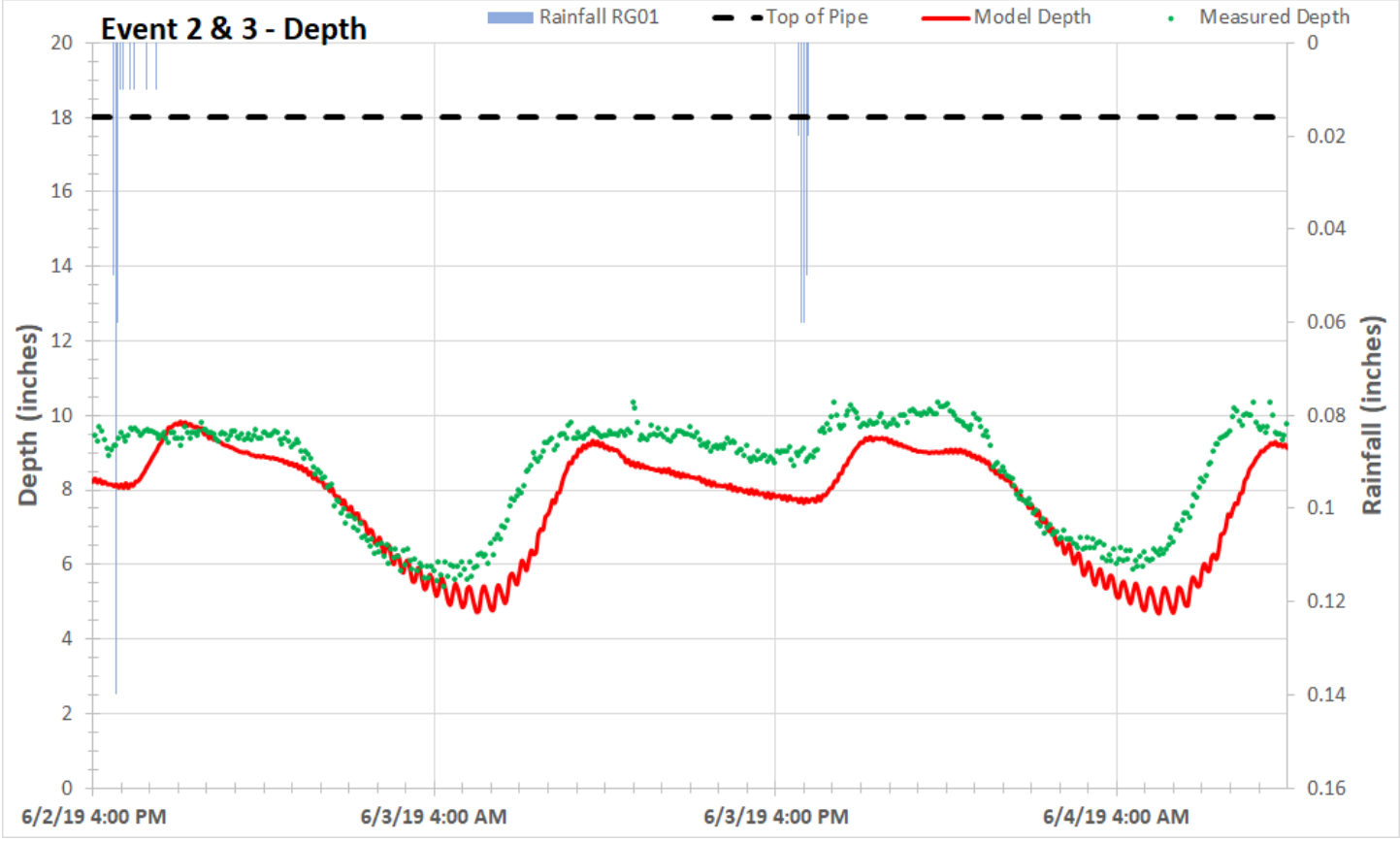
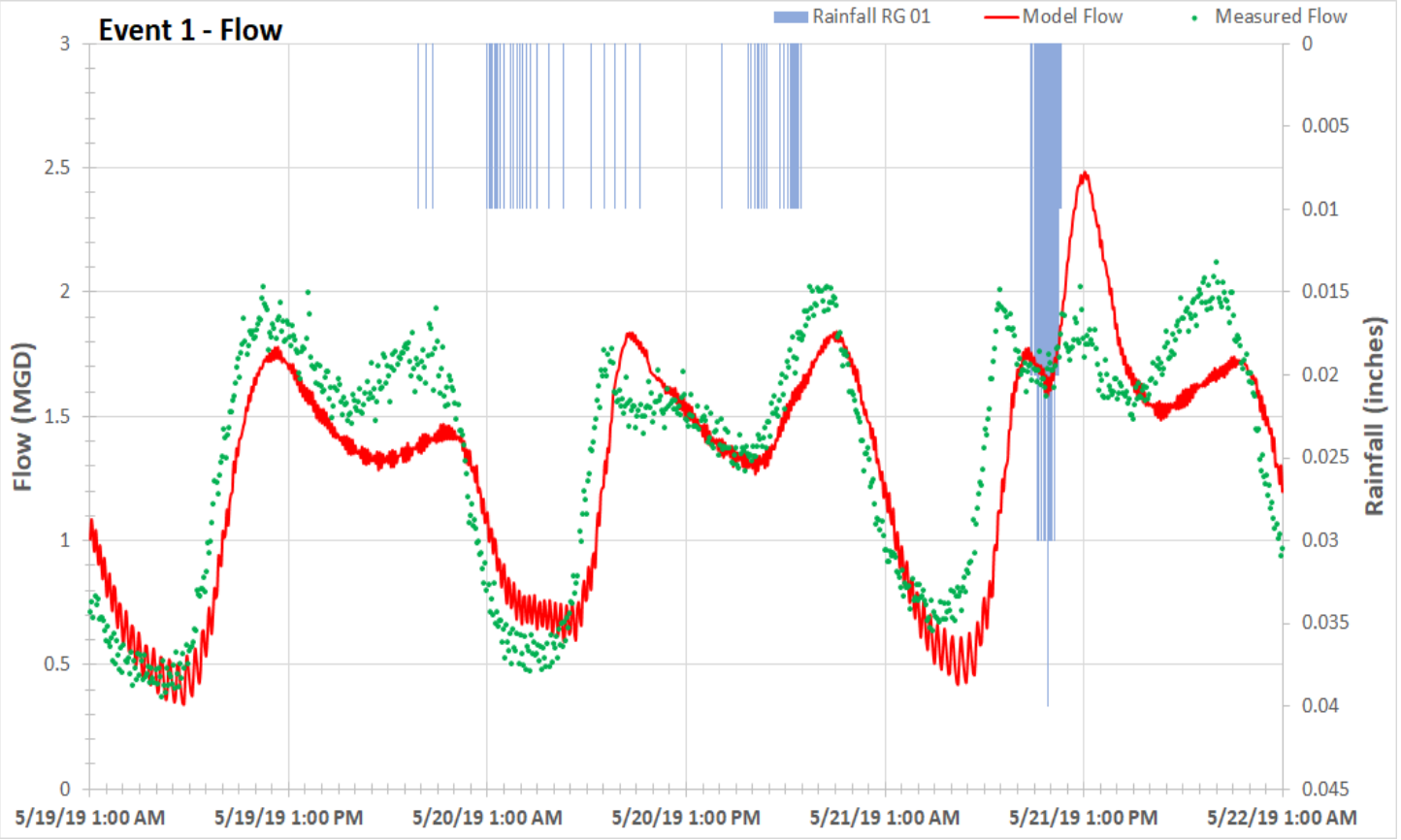
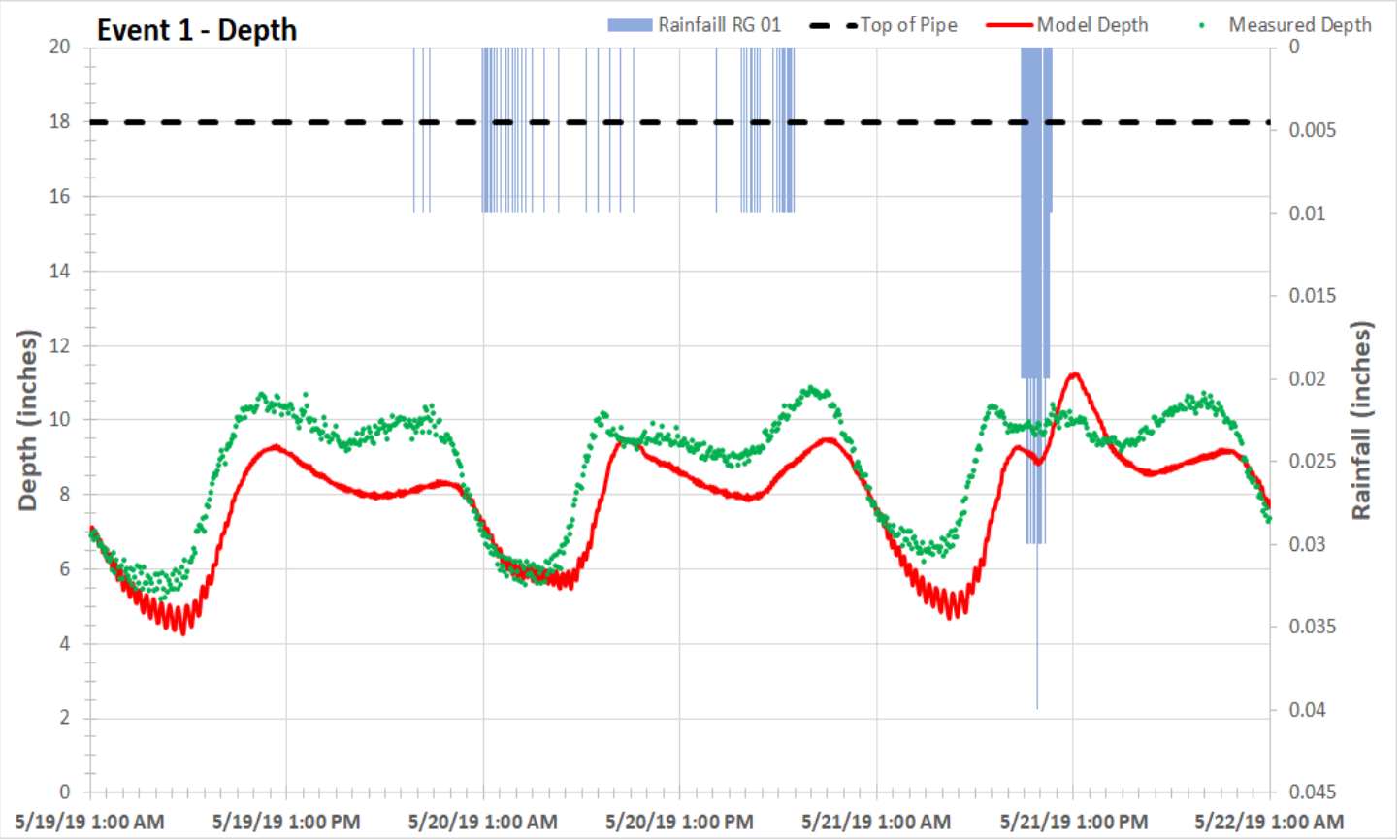
FM 03 - Hilltop Basin



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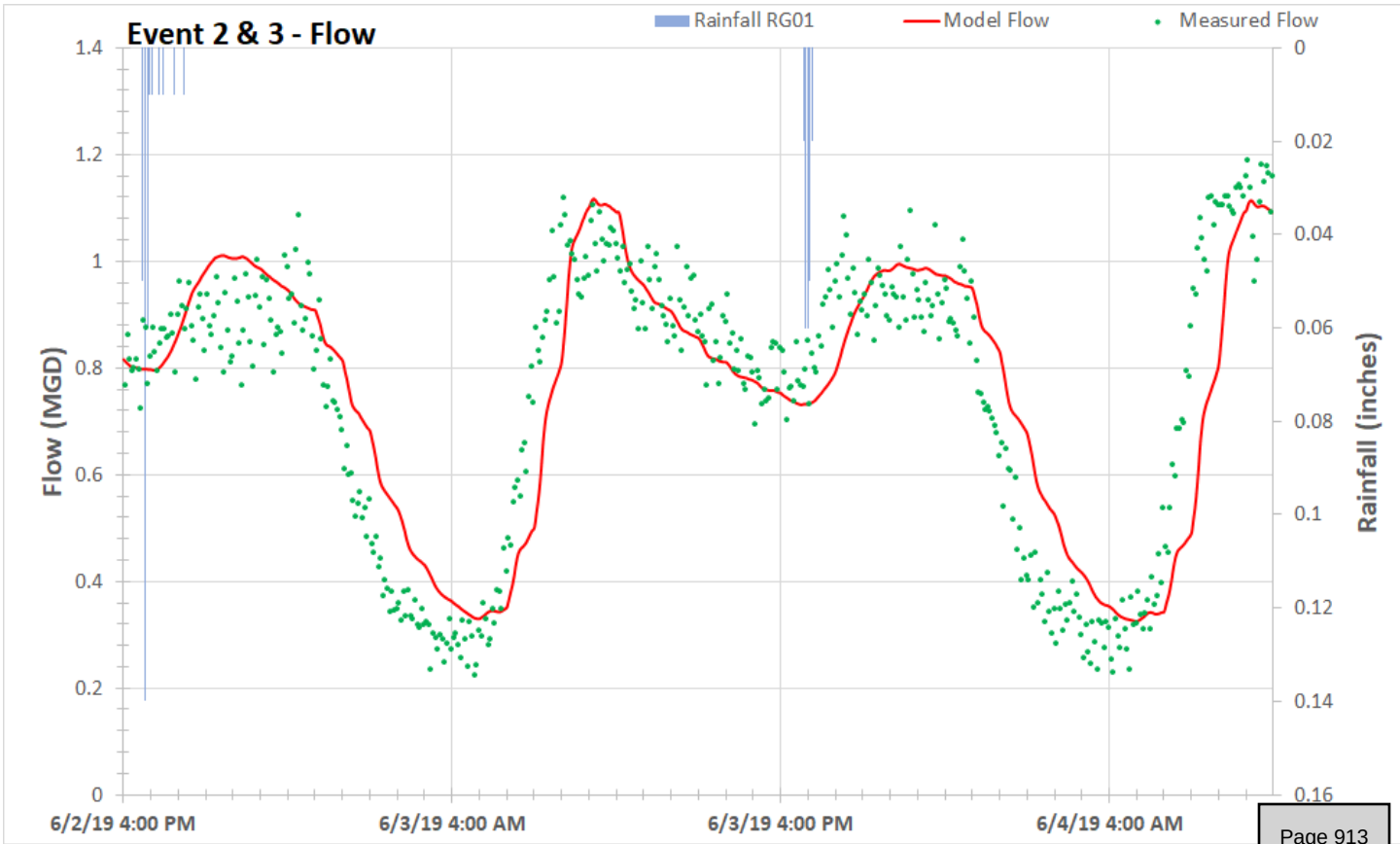
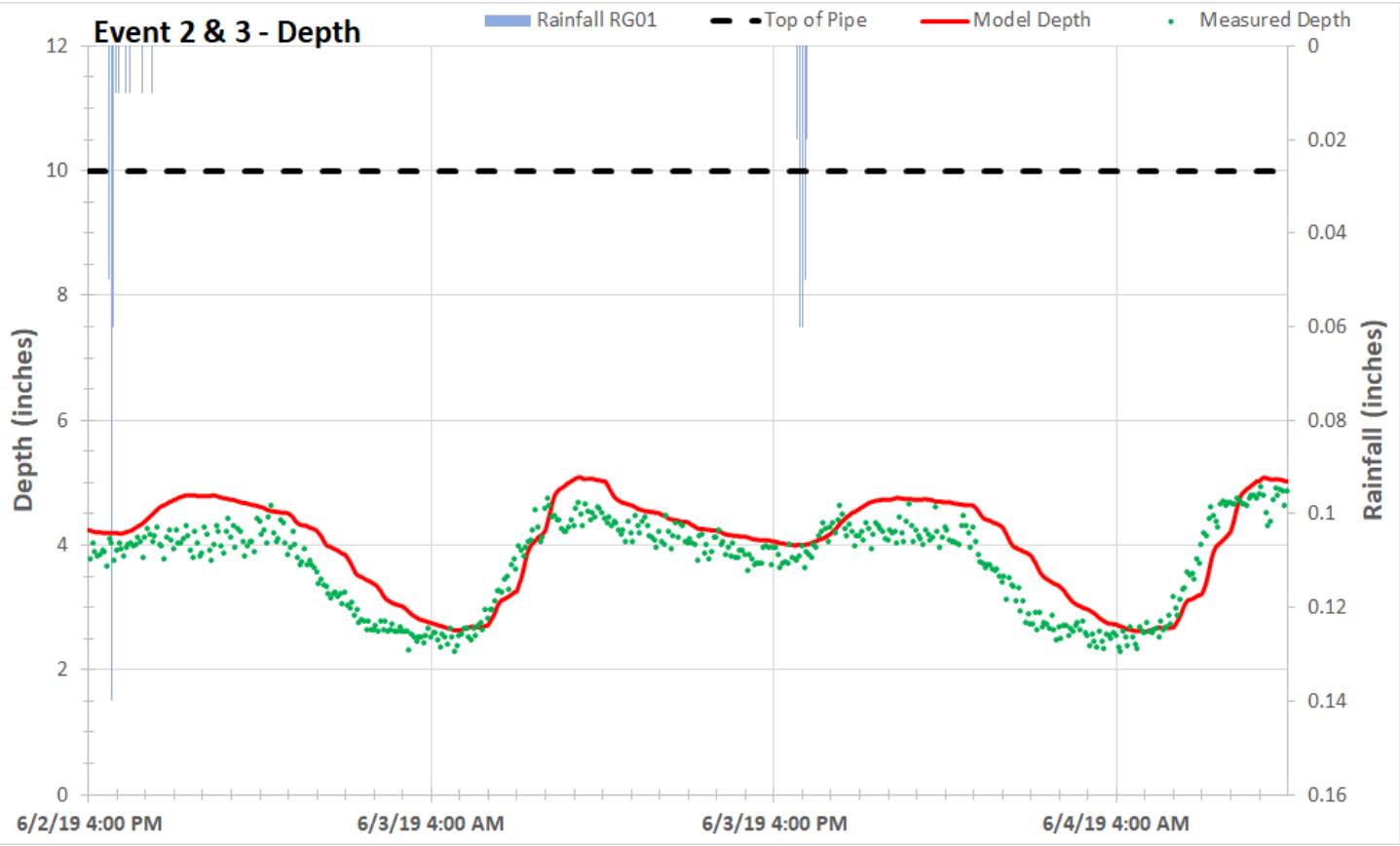
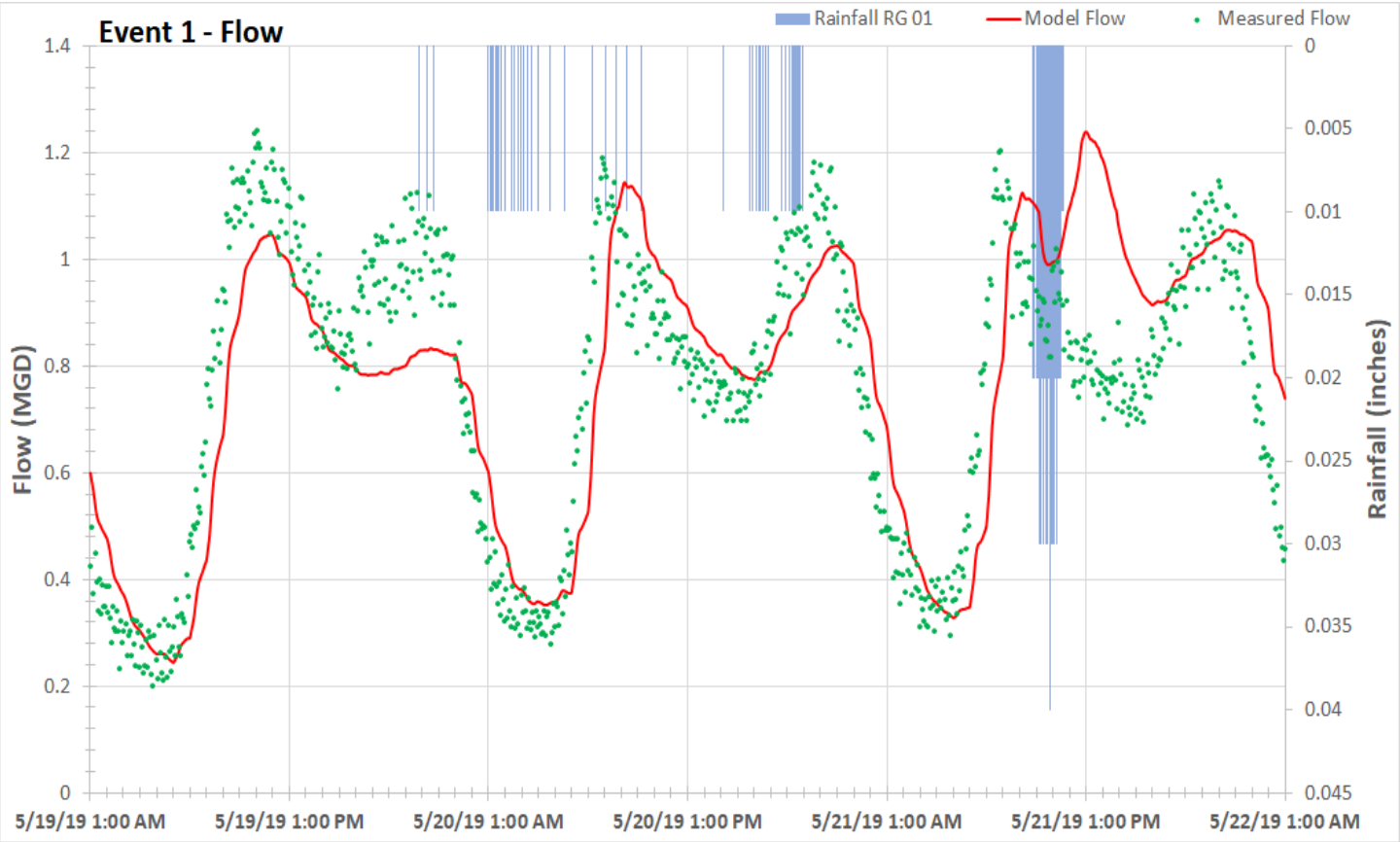
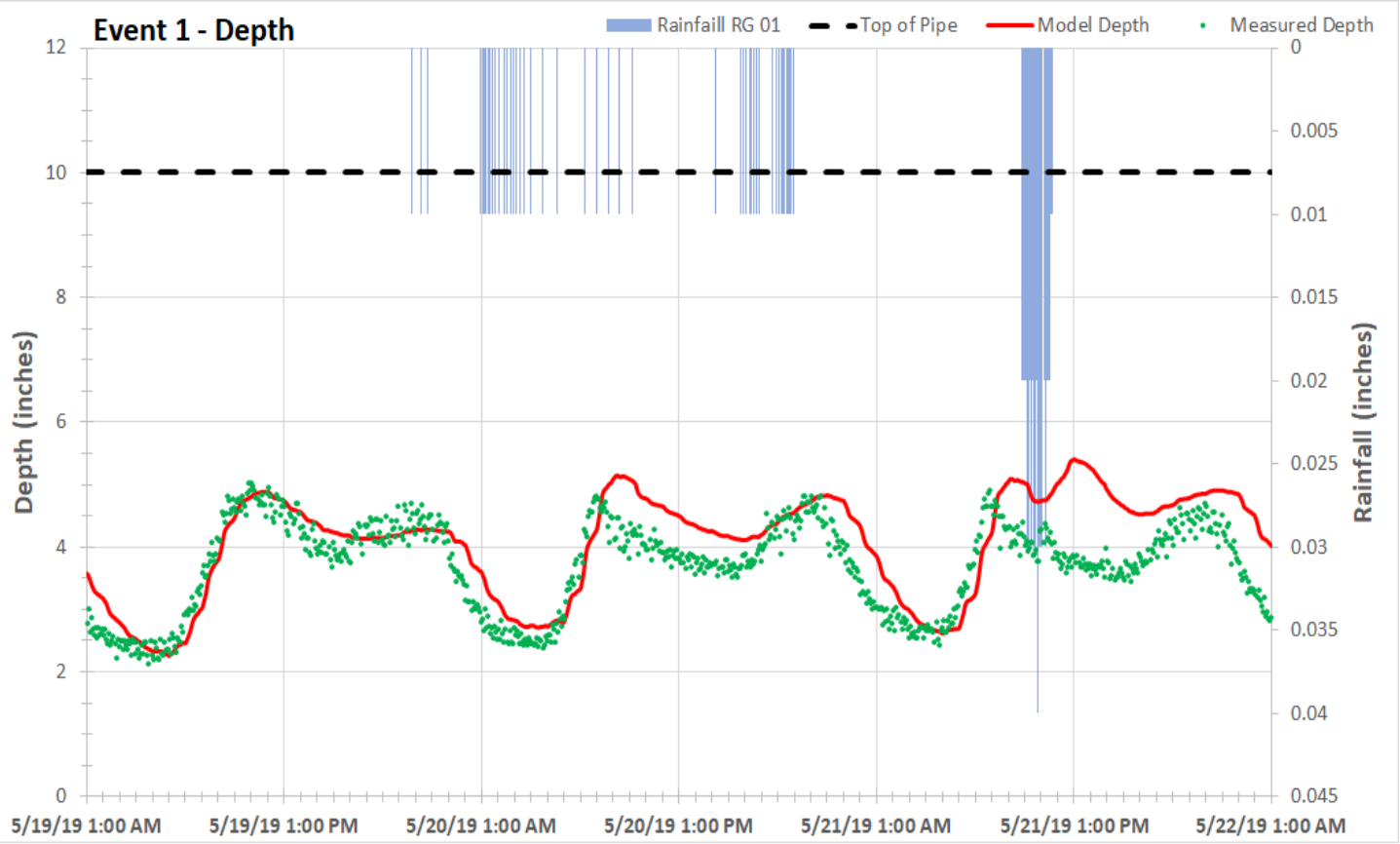
FM 04 - Highland Hills Basin



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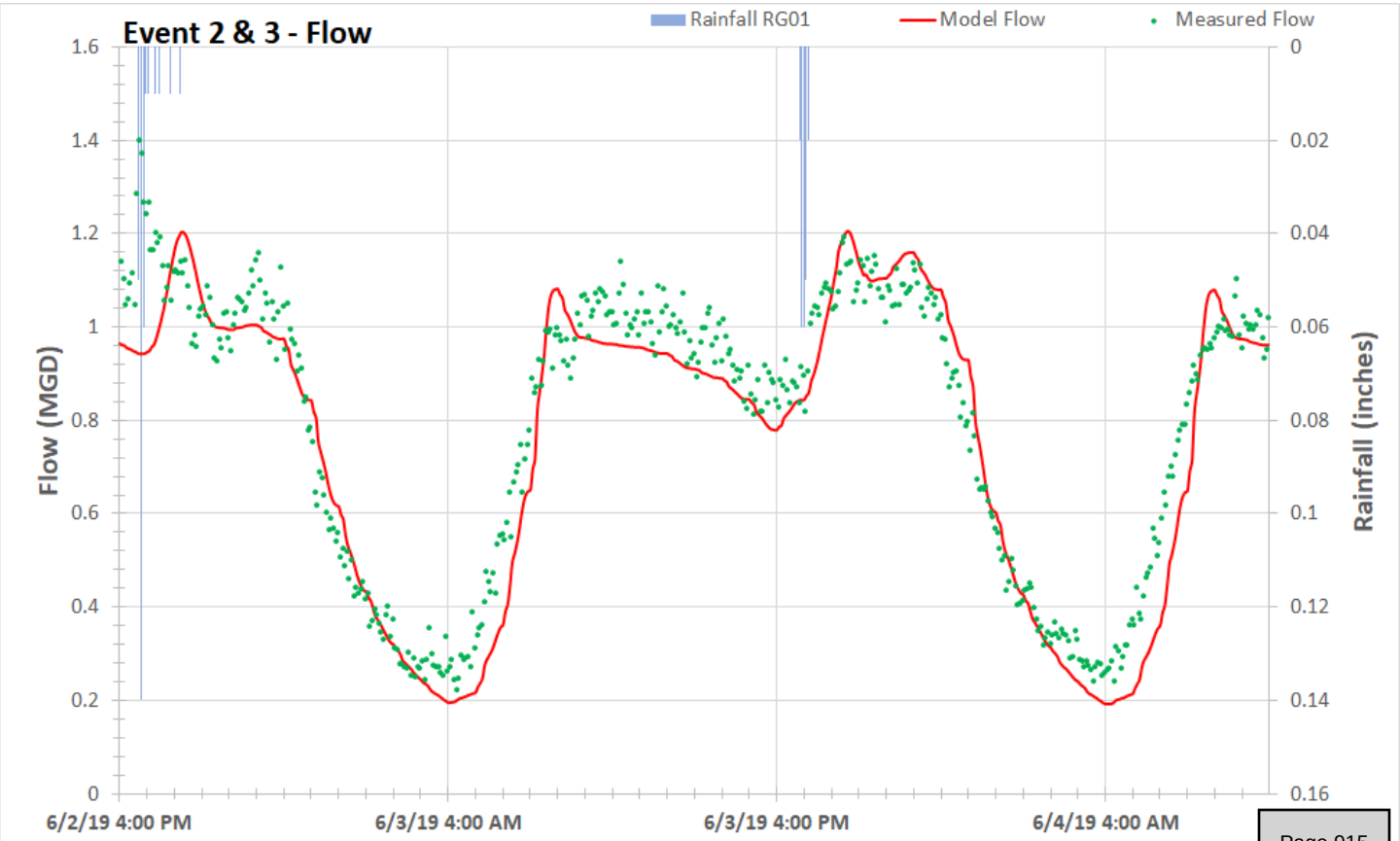
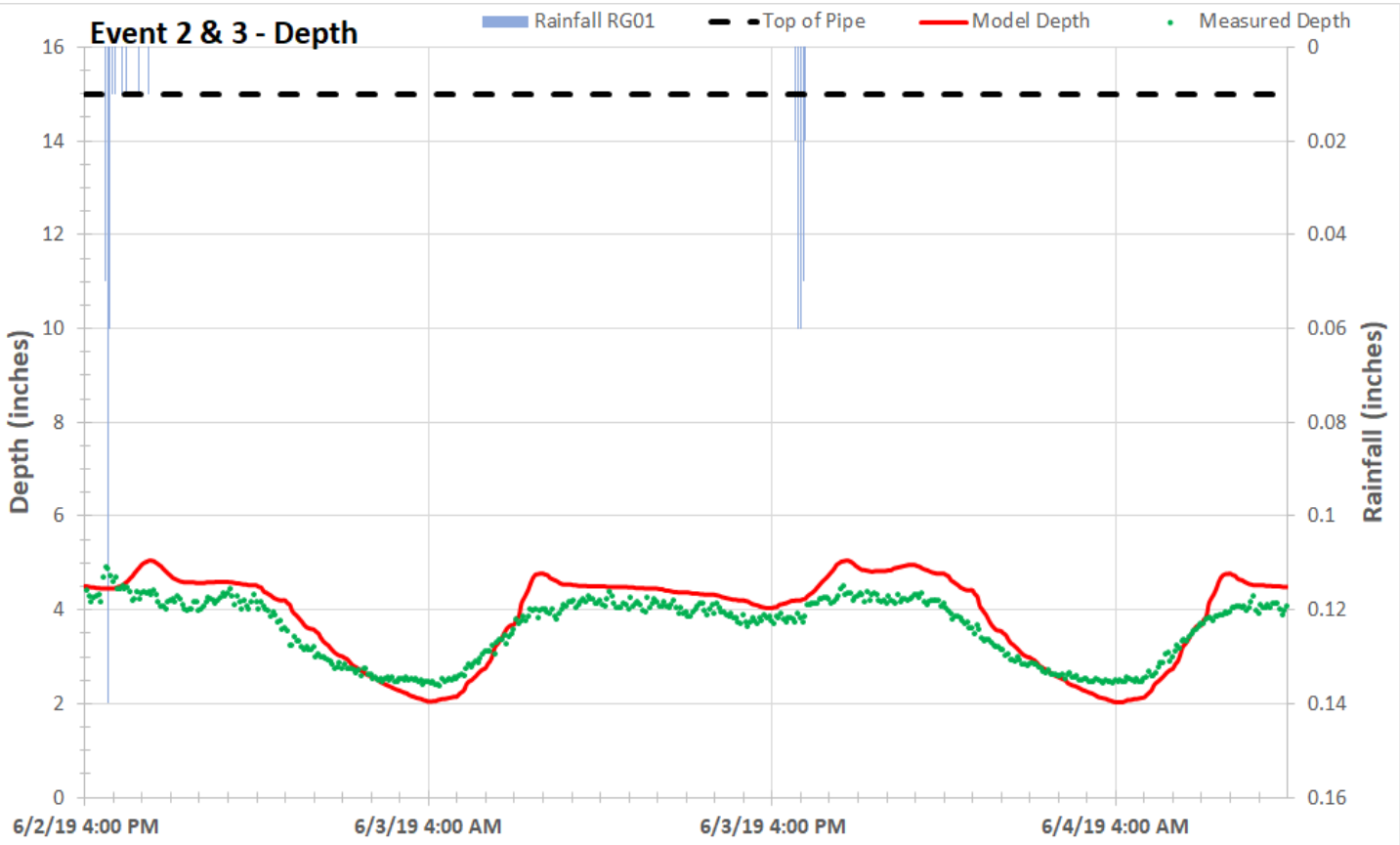
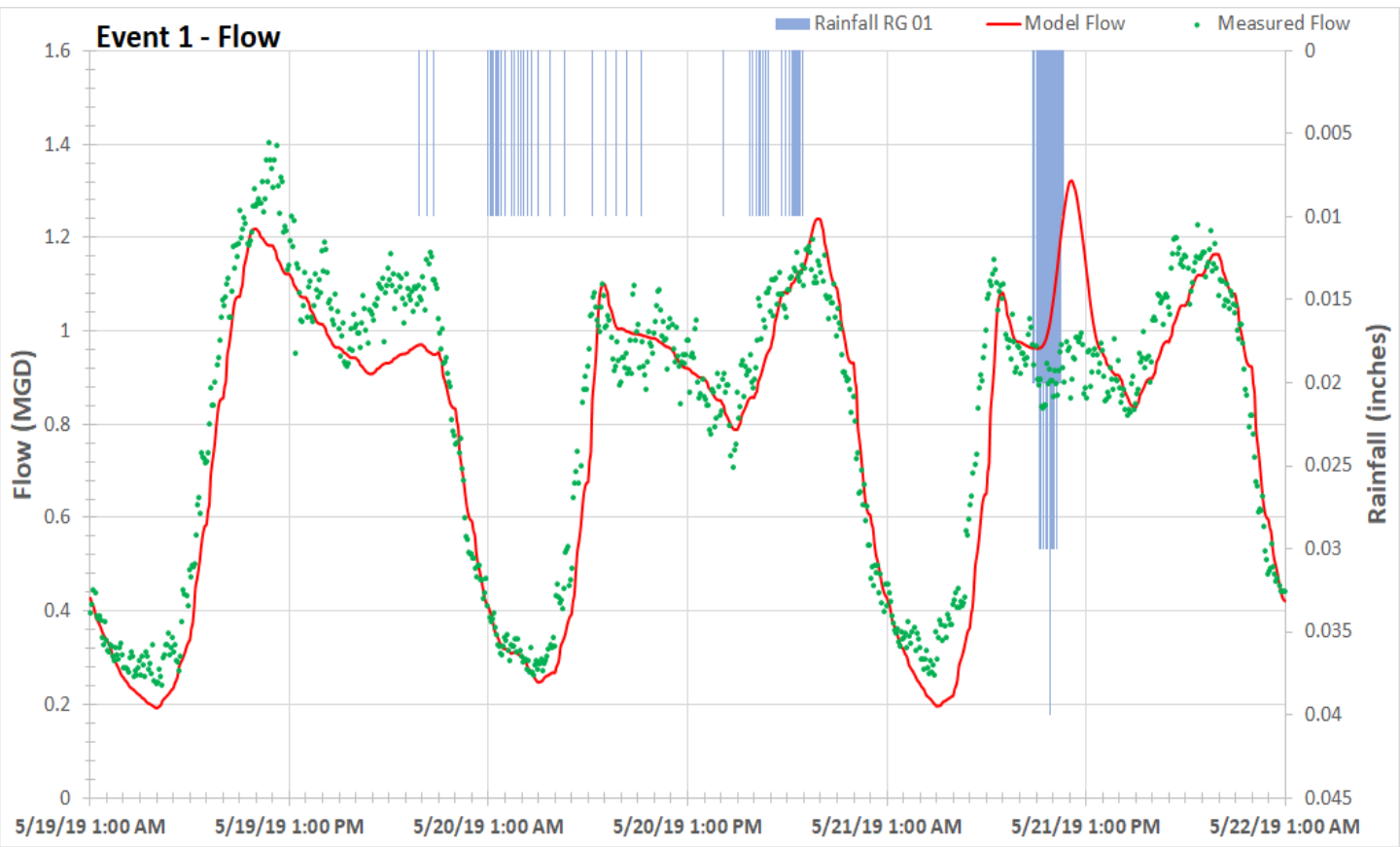
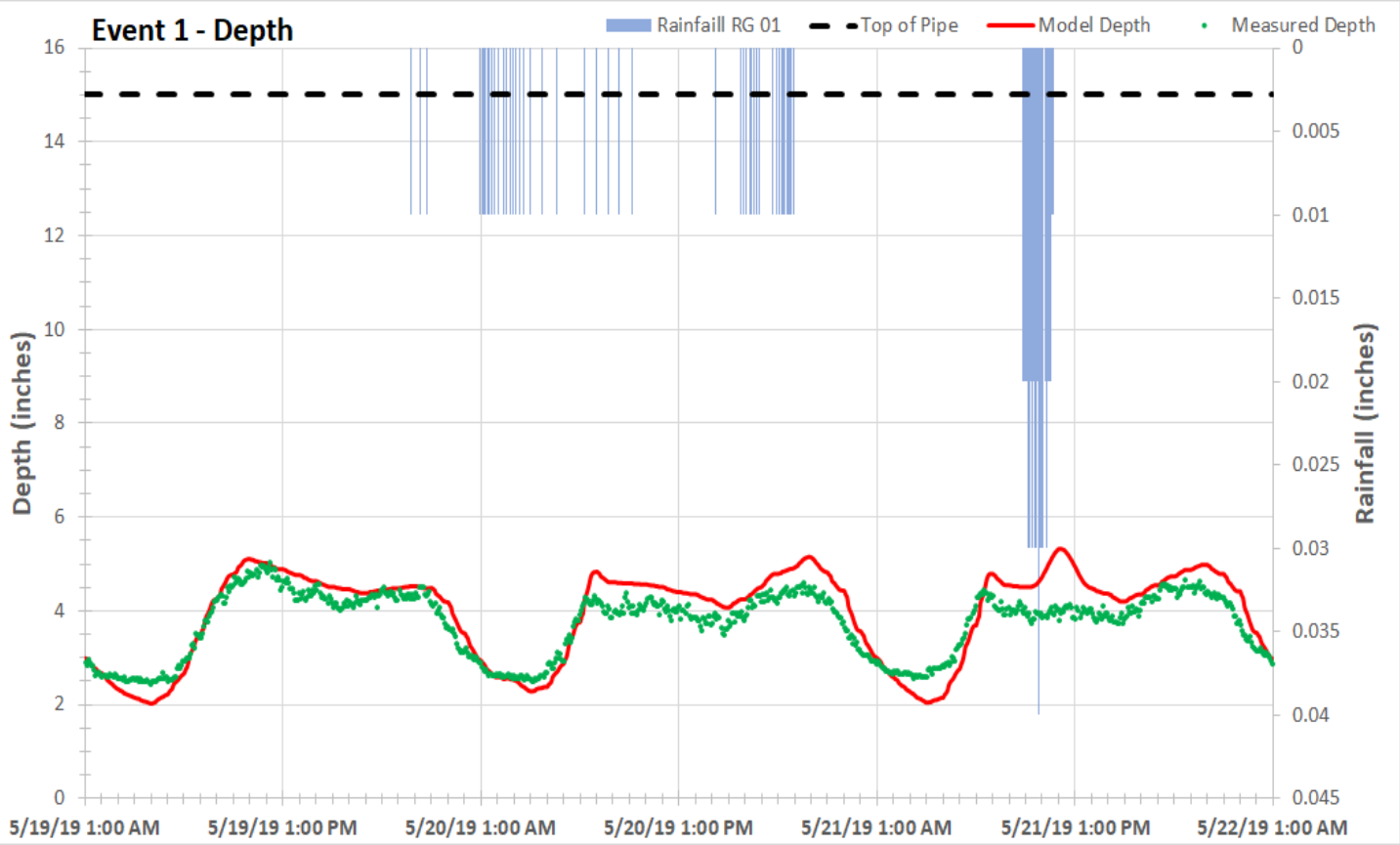
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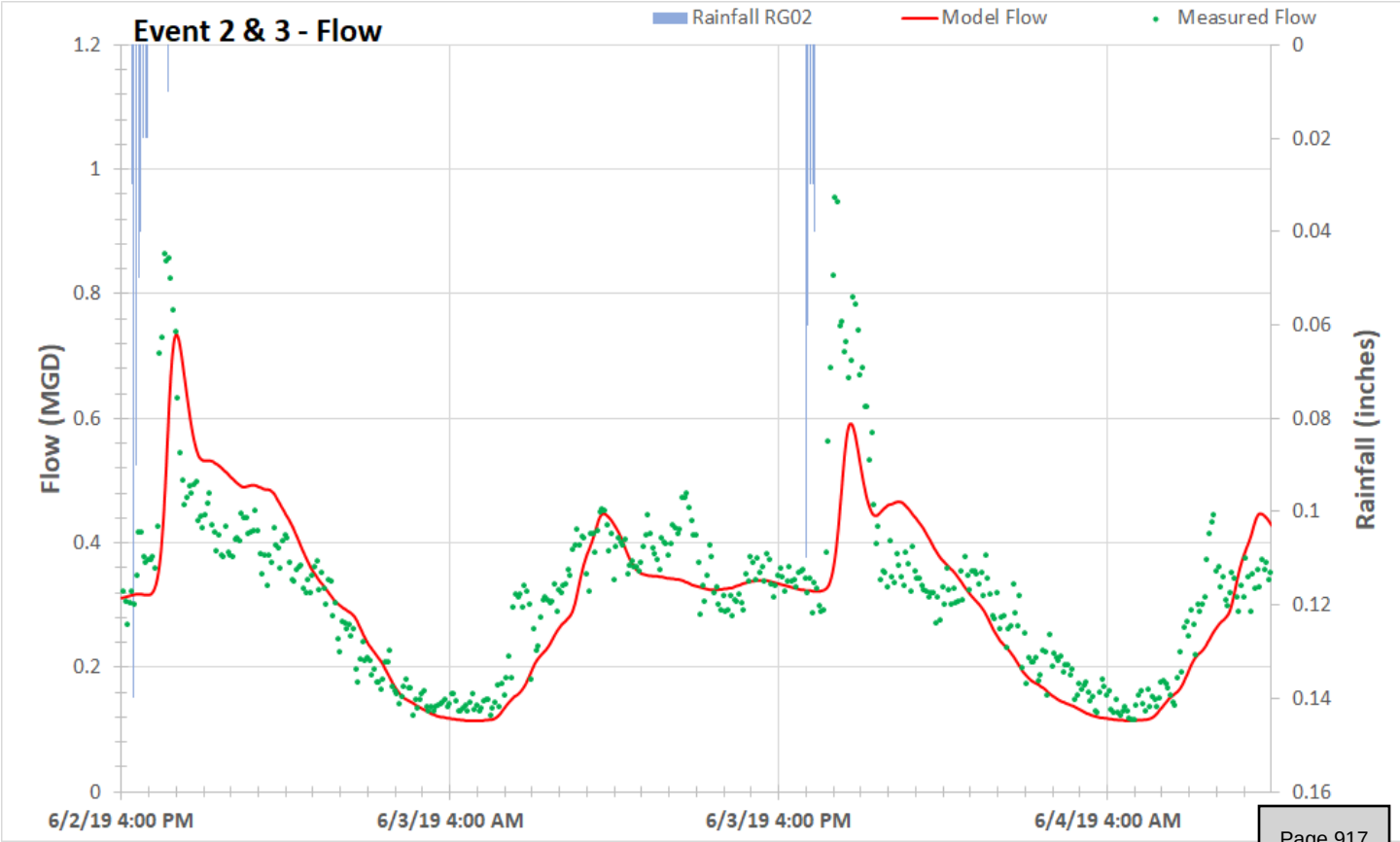
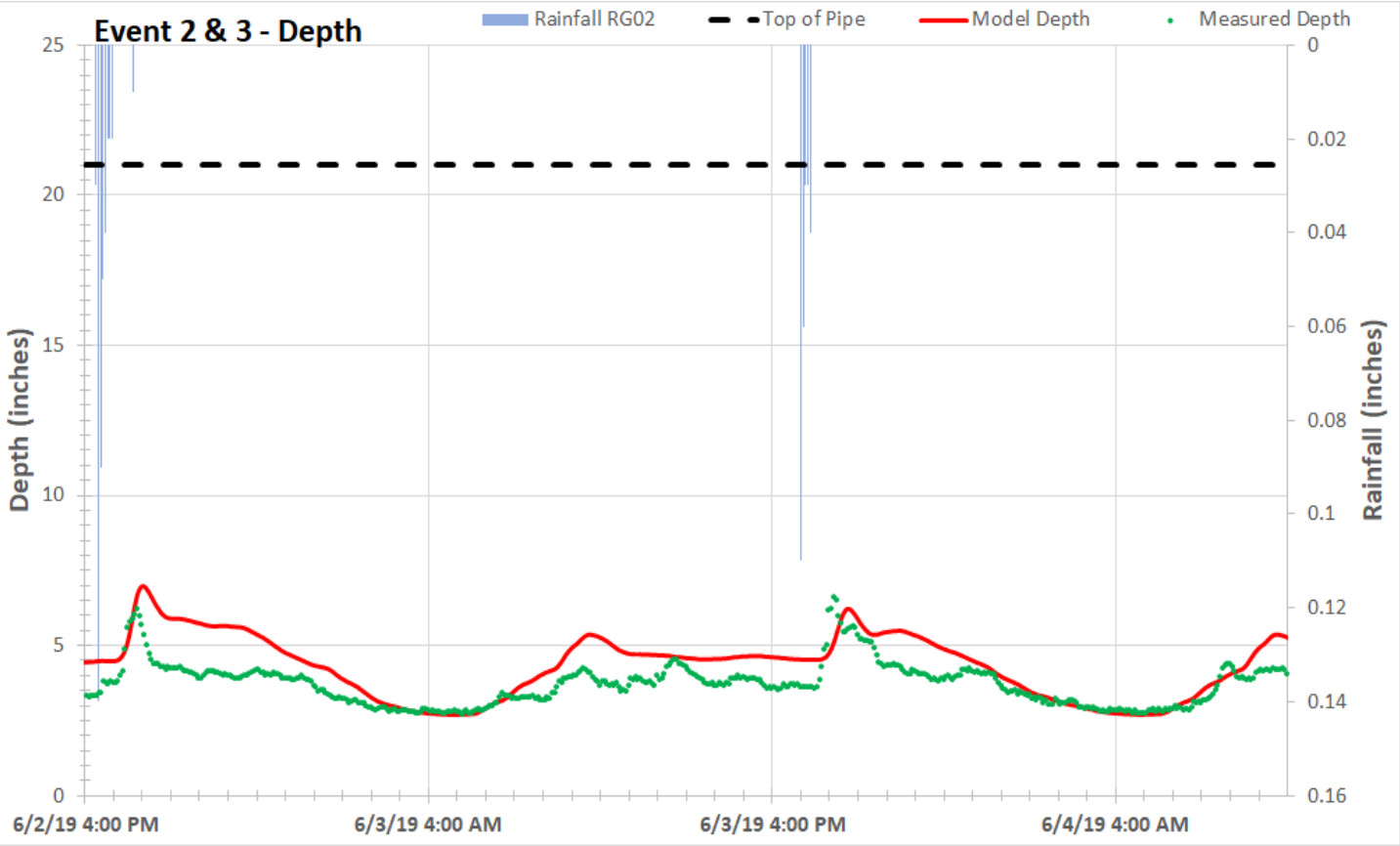
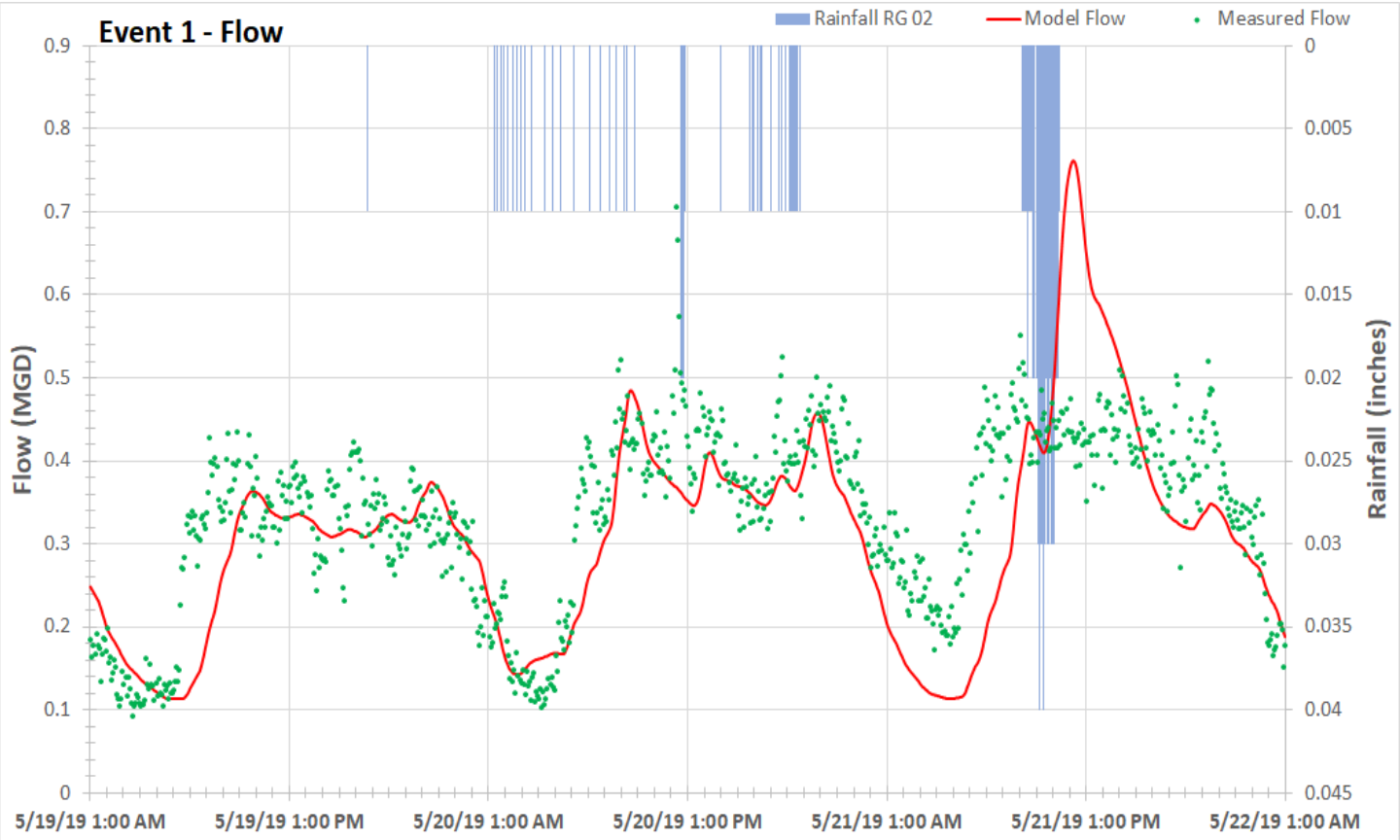
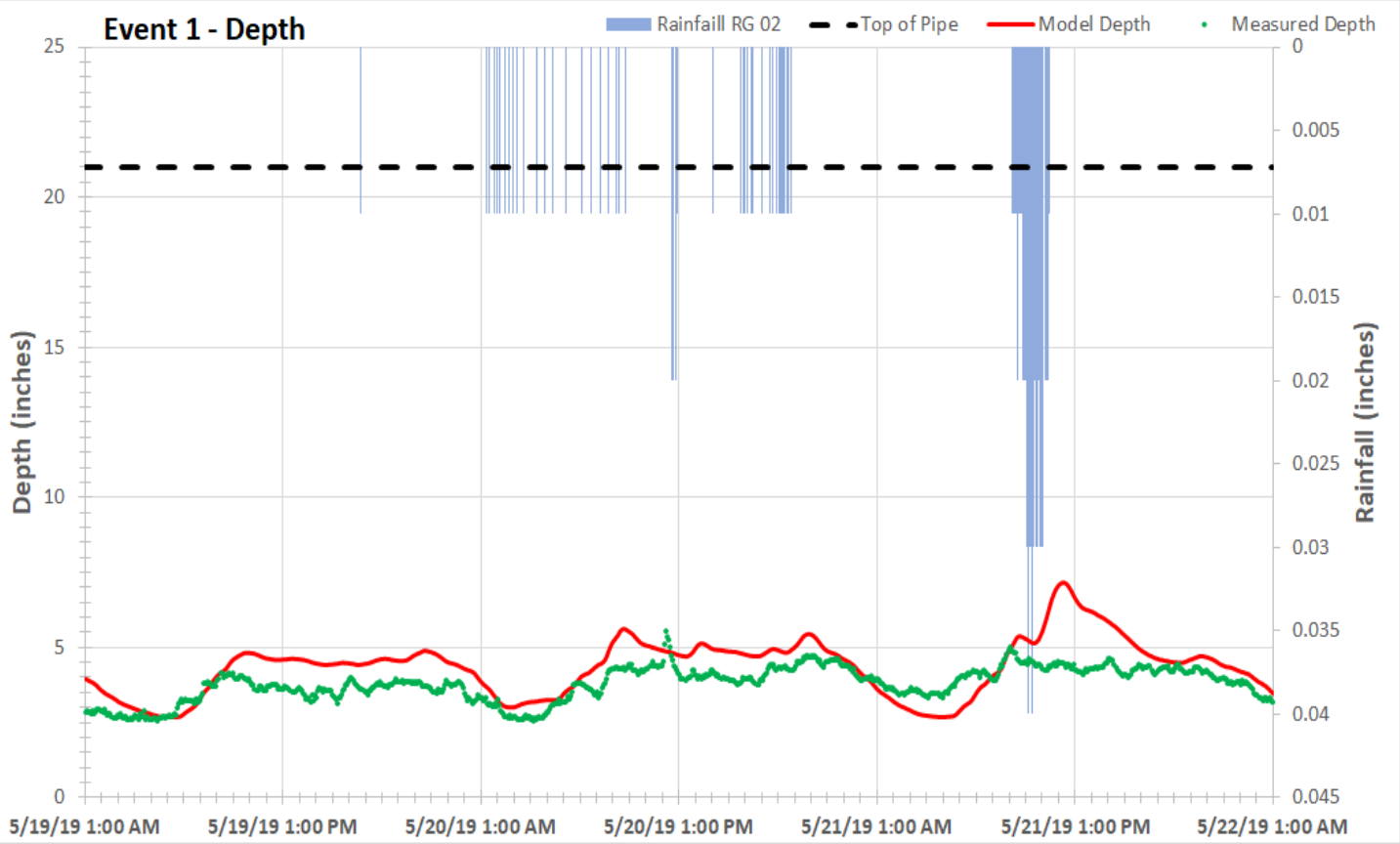
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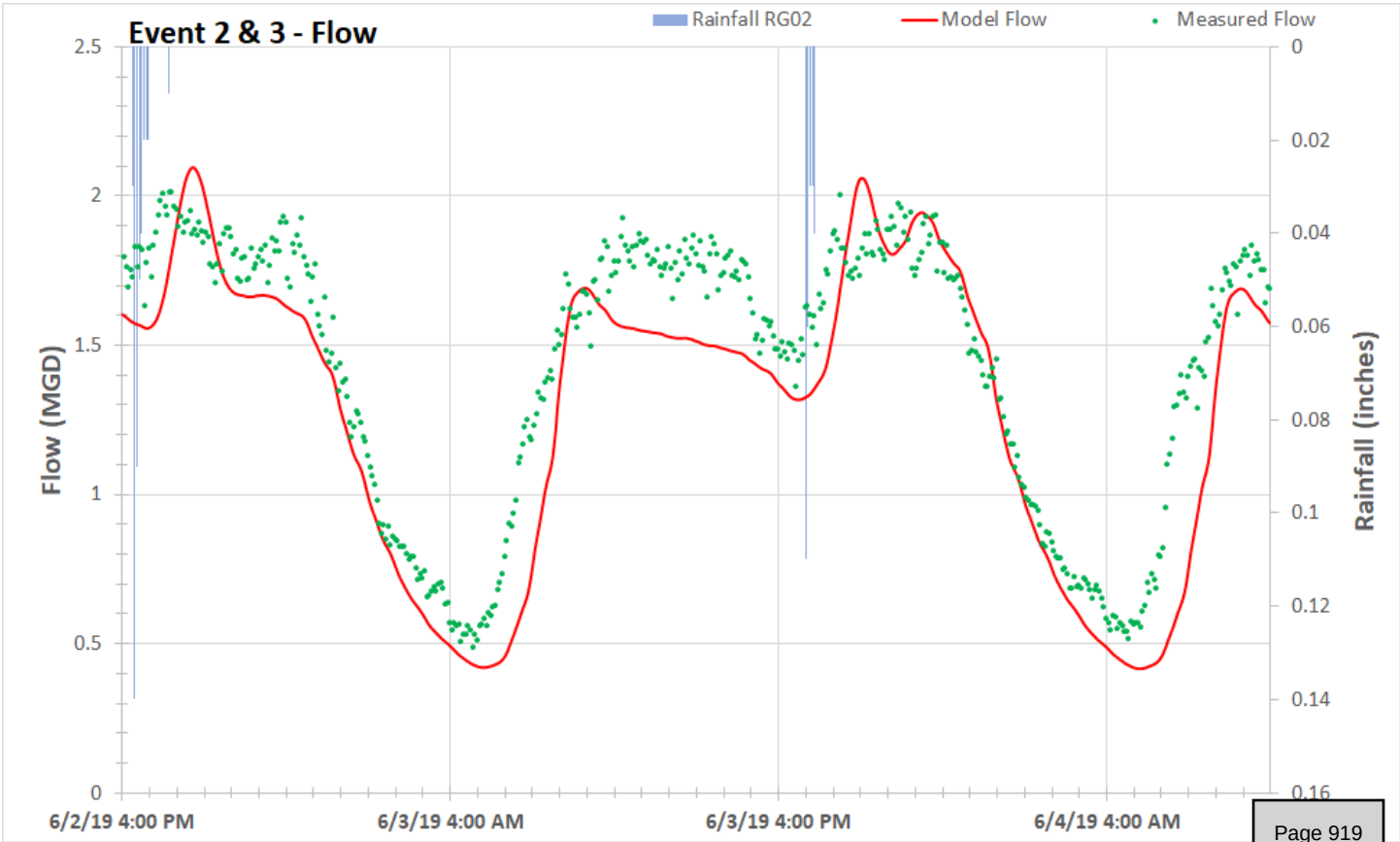
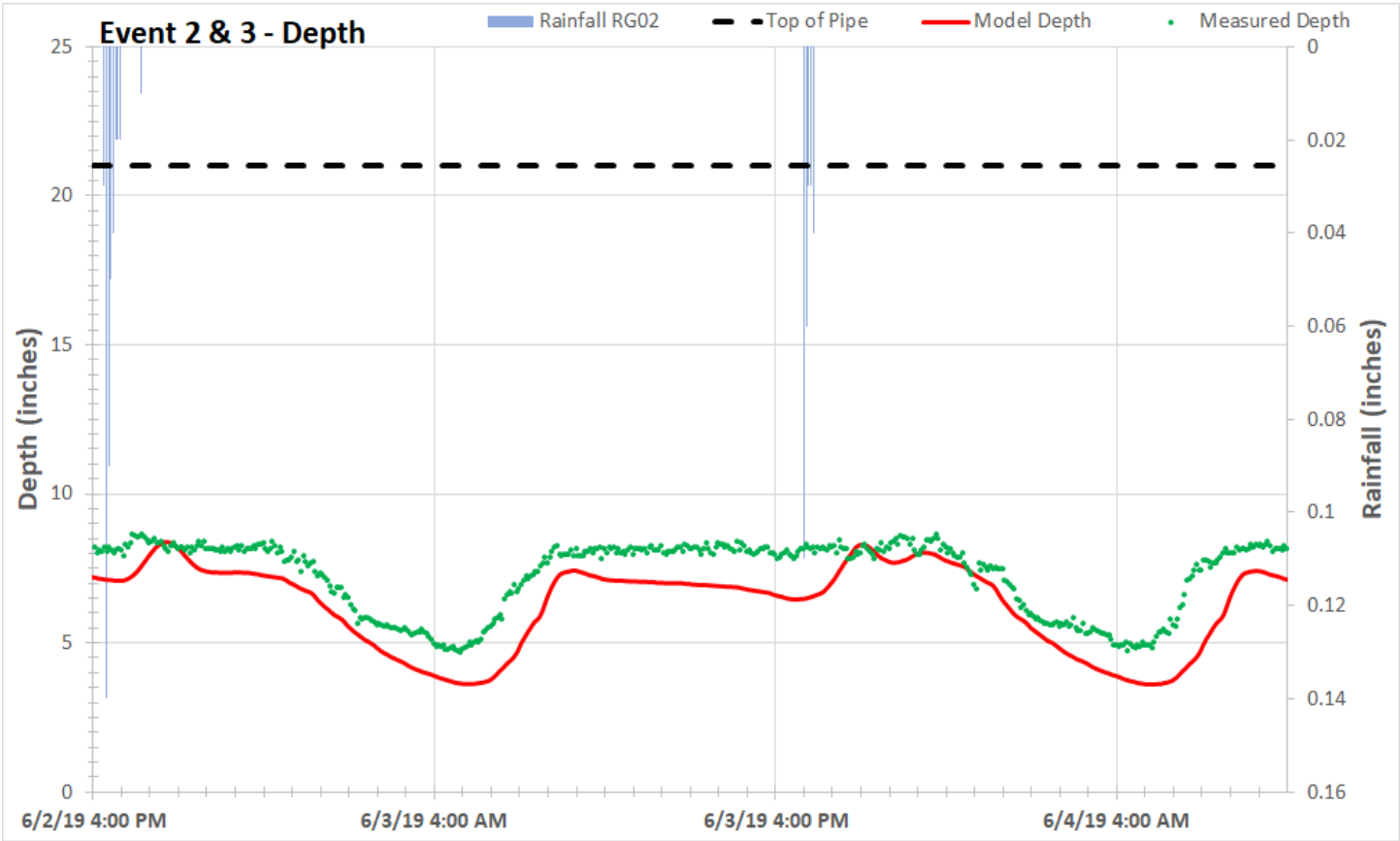
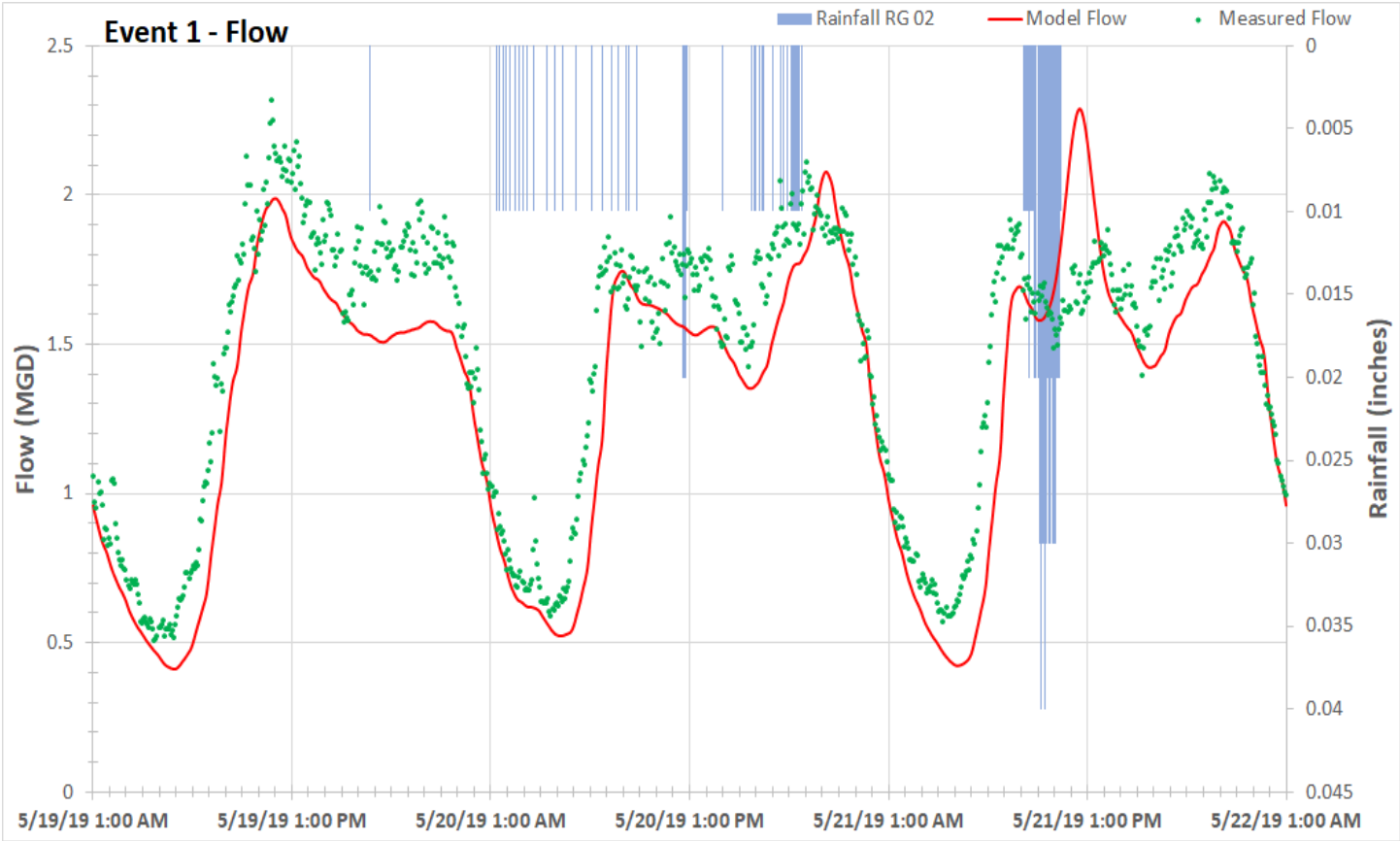
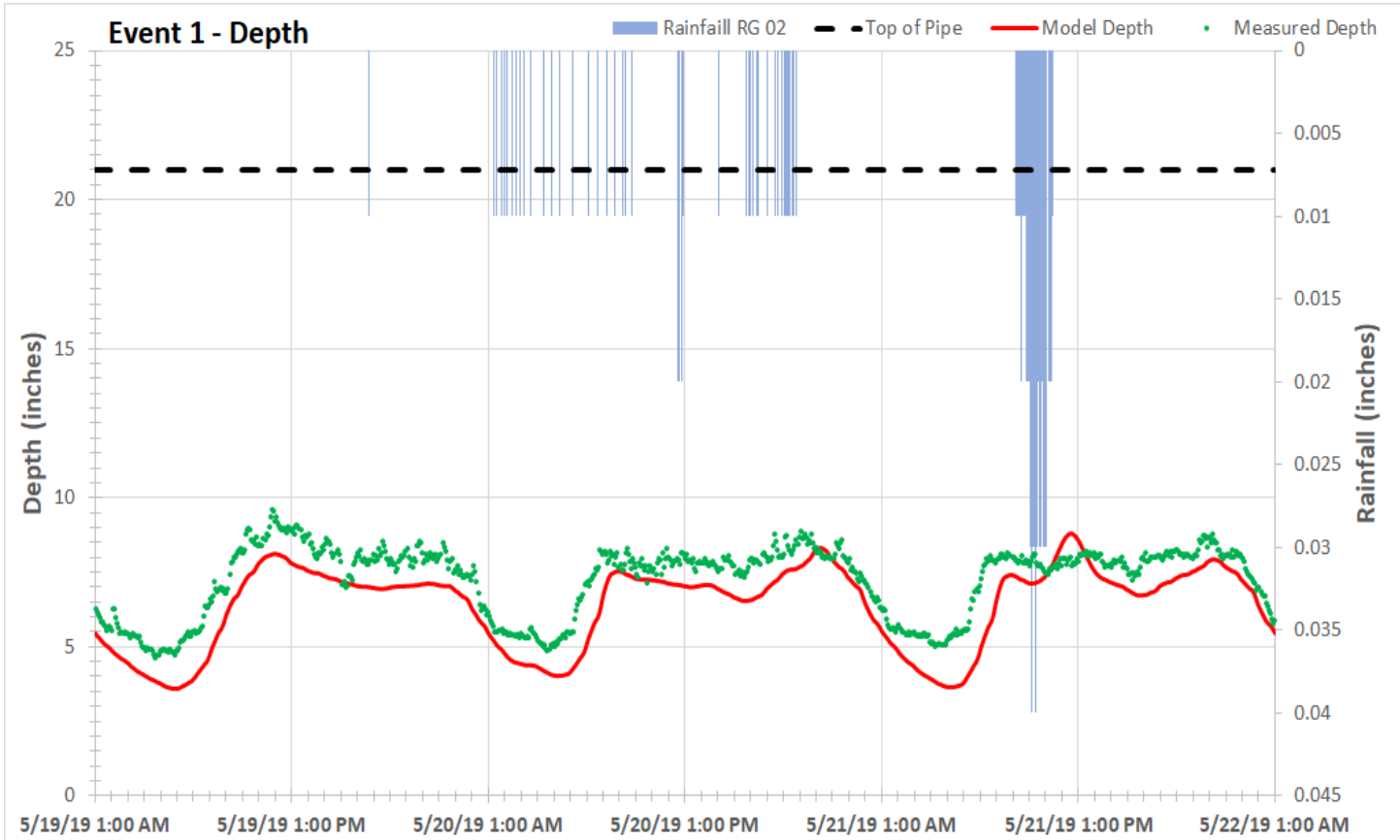
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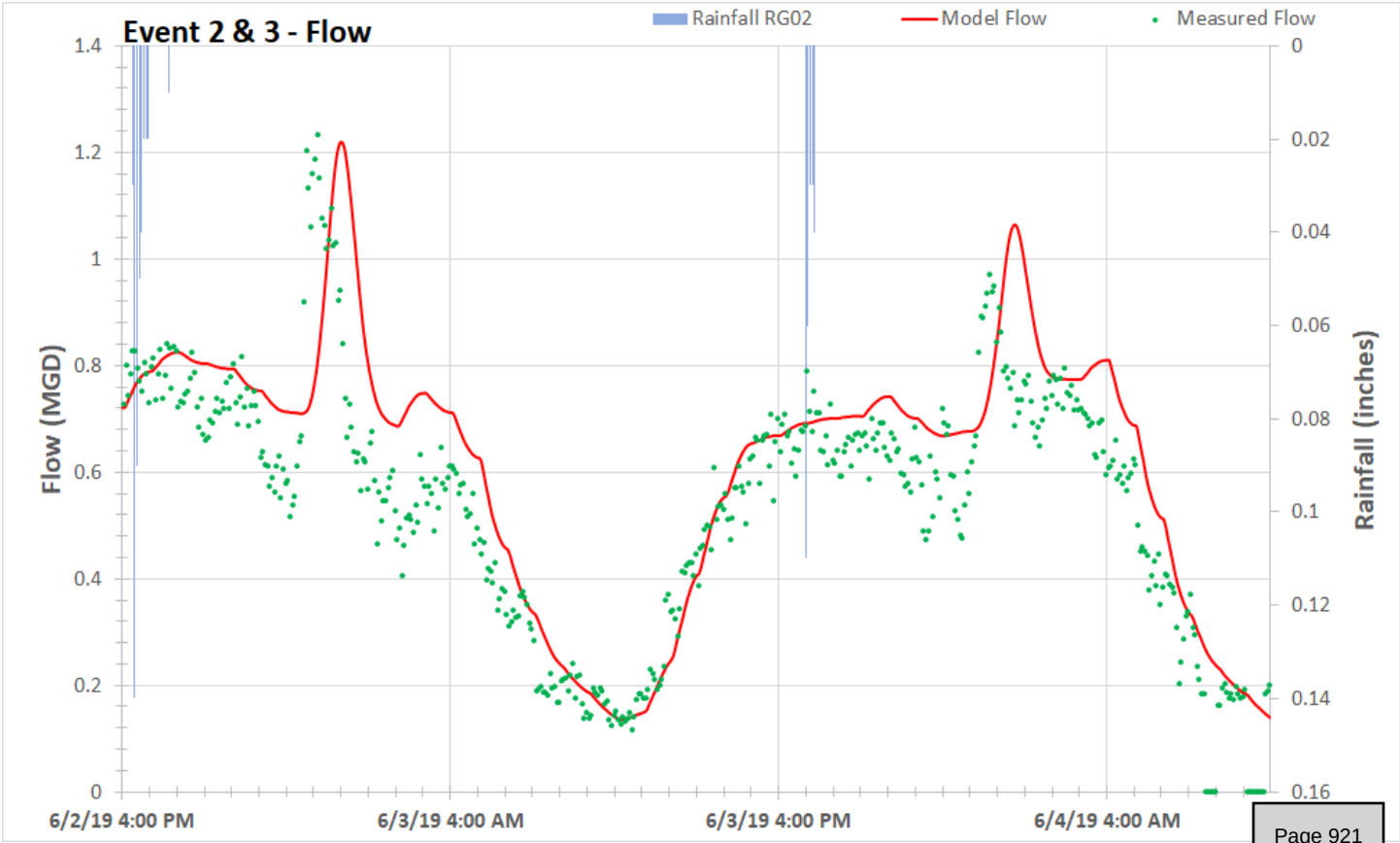
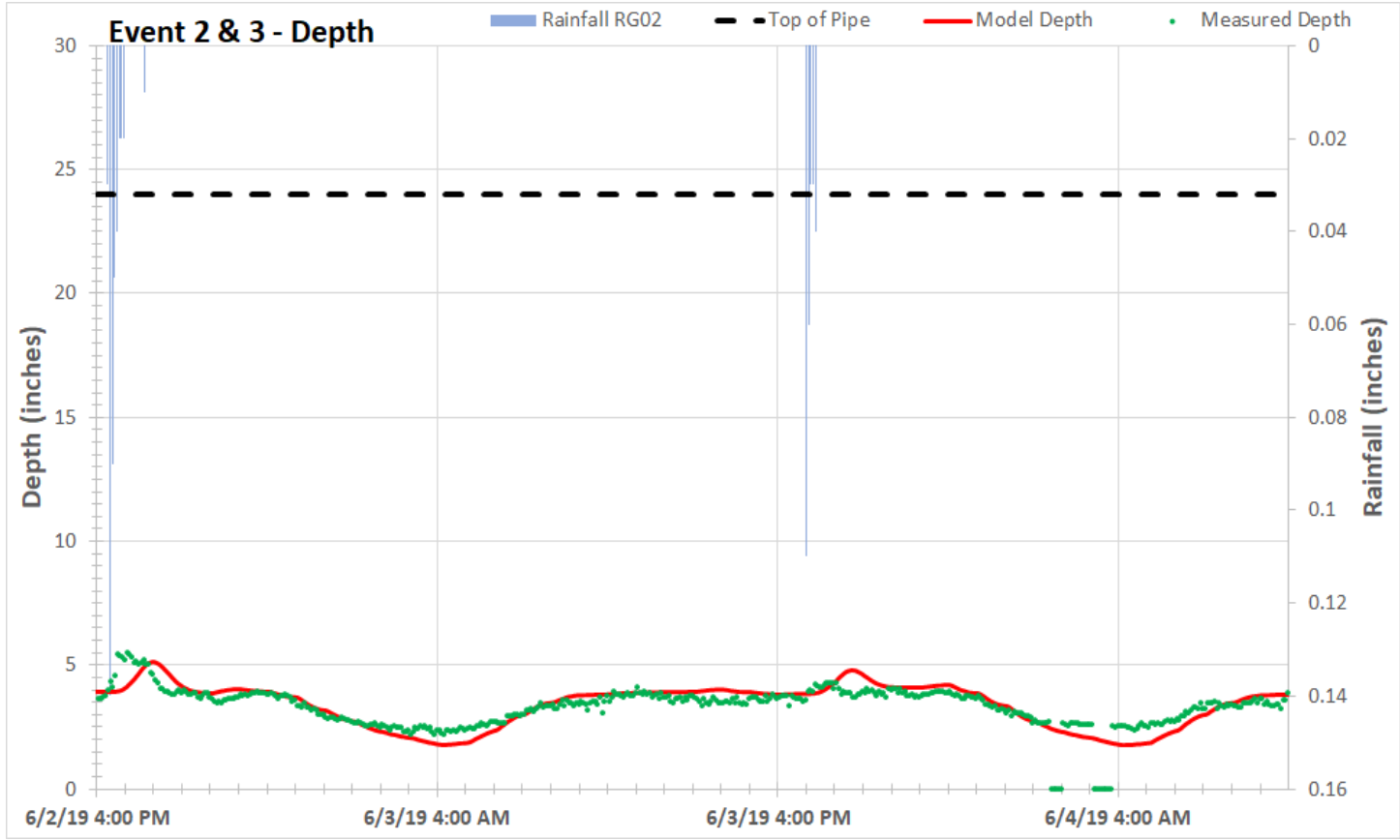
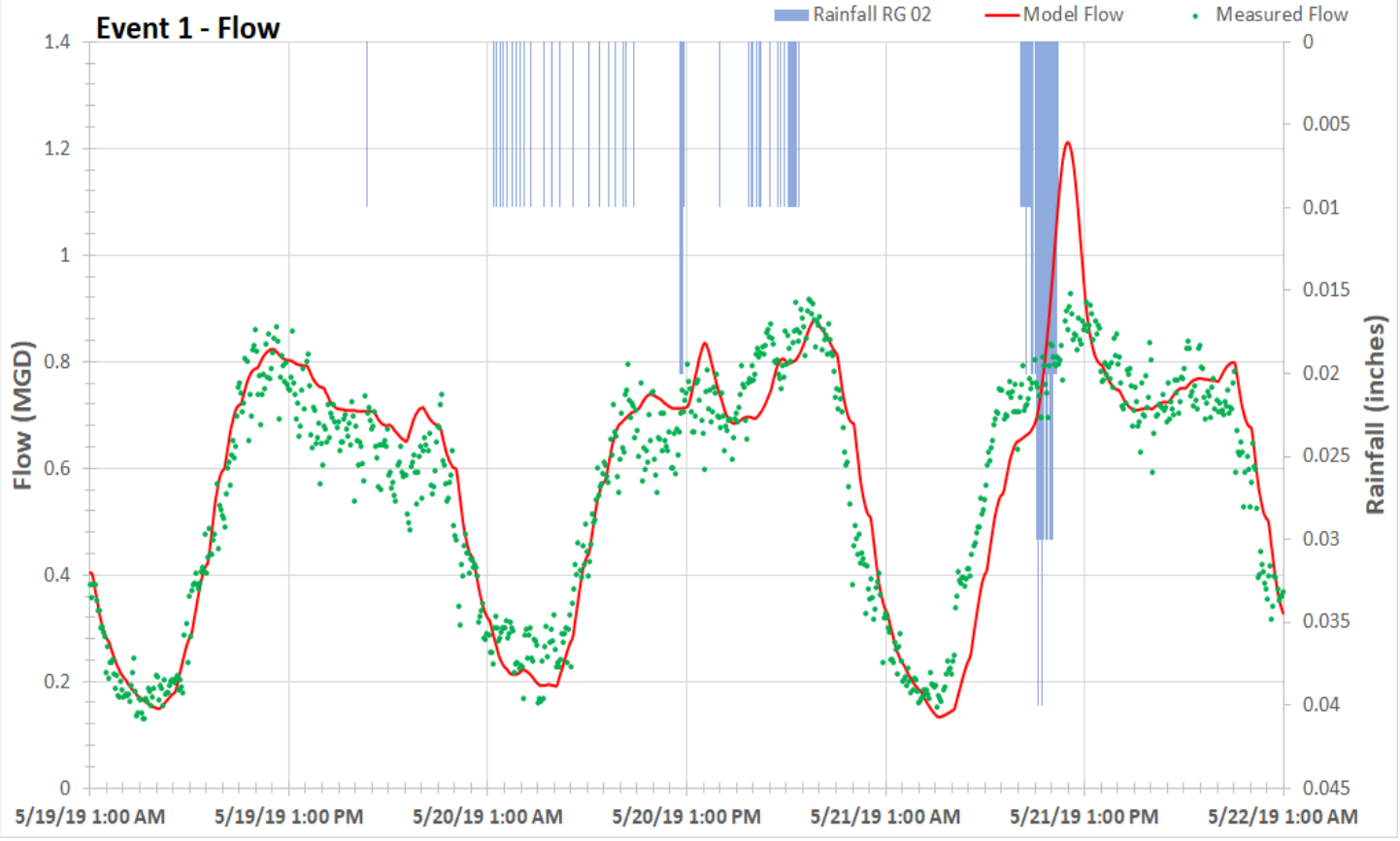
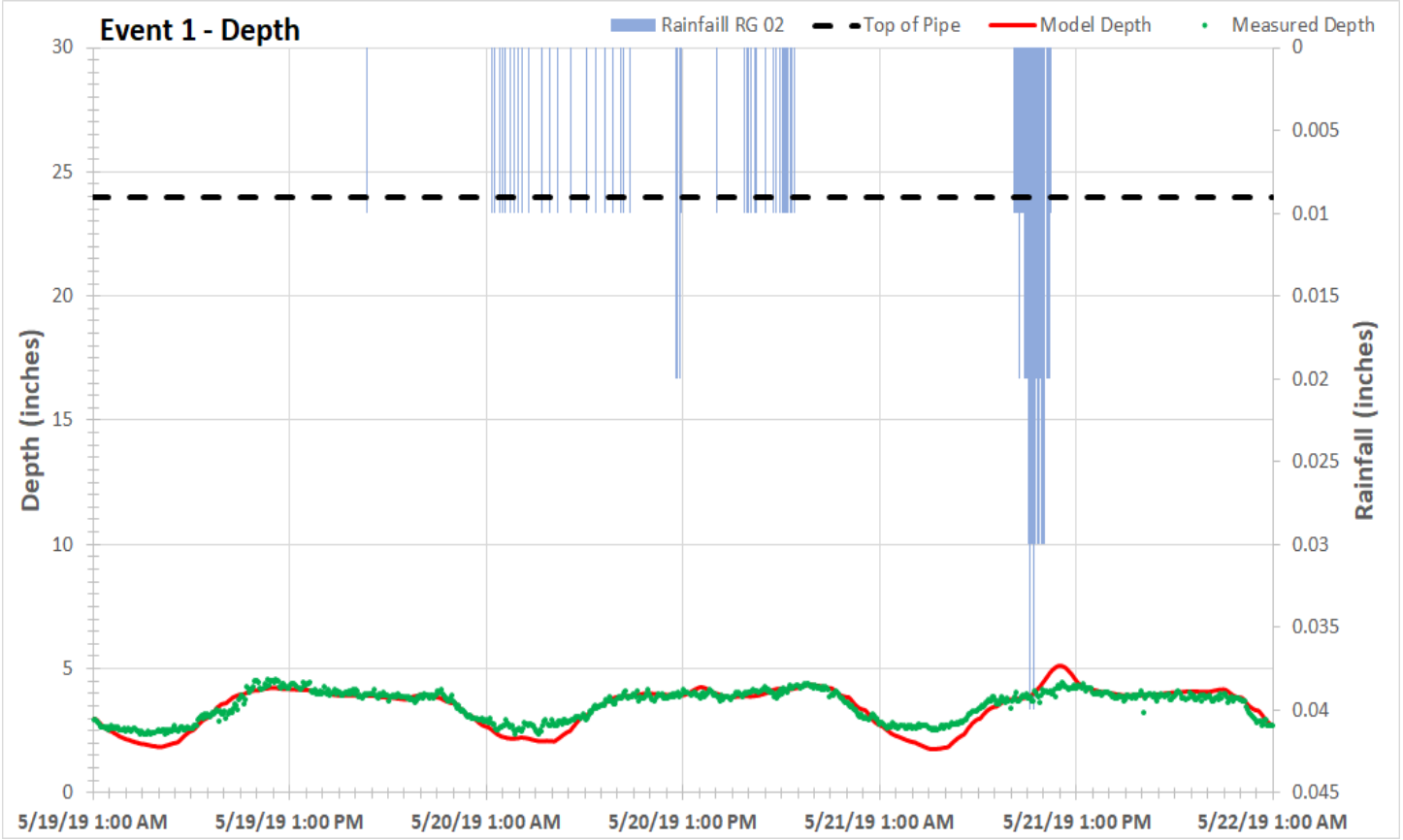
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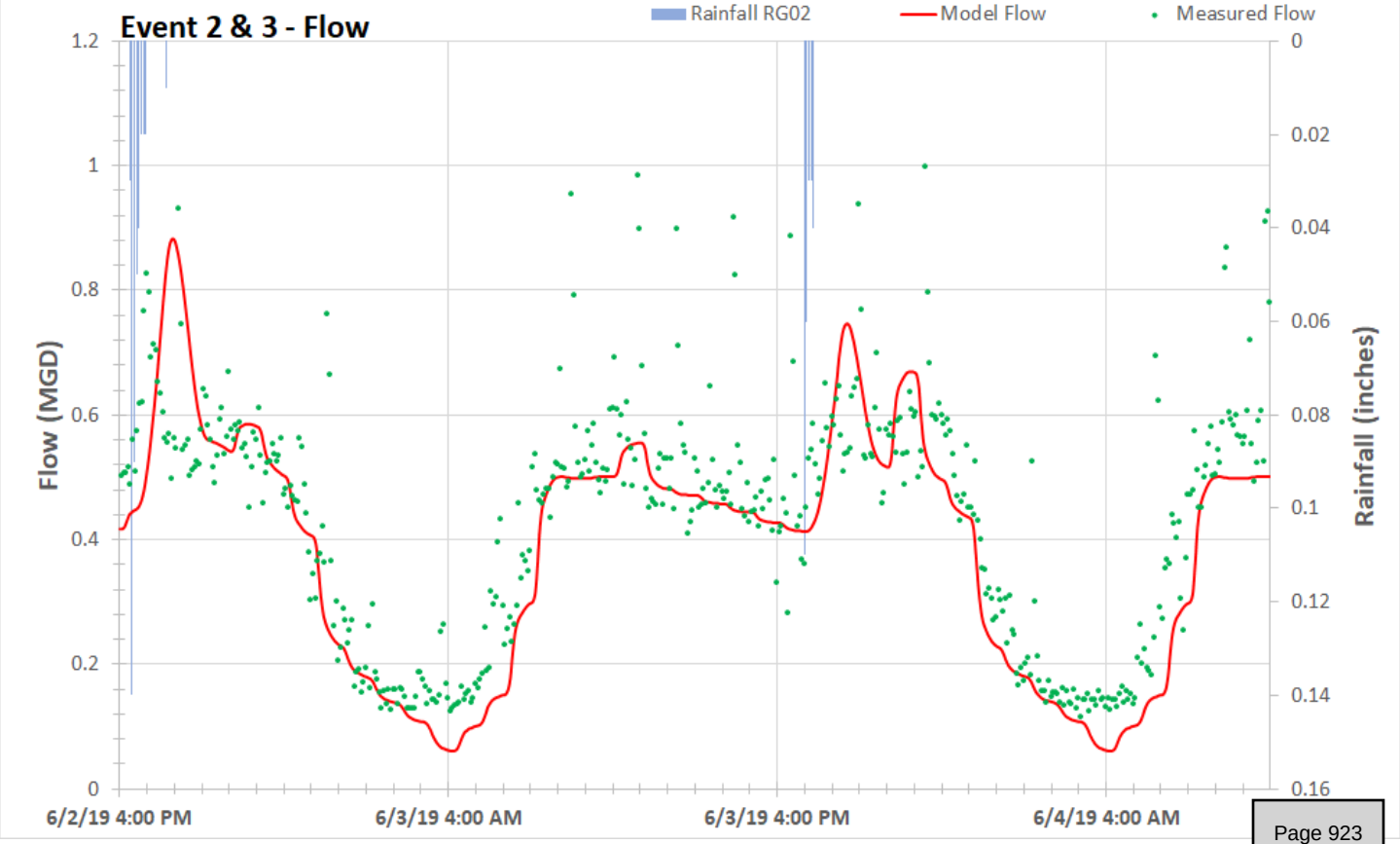
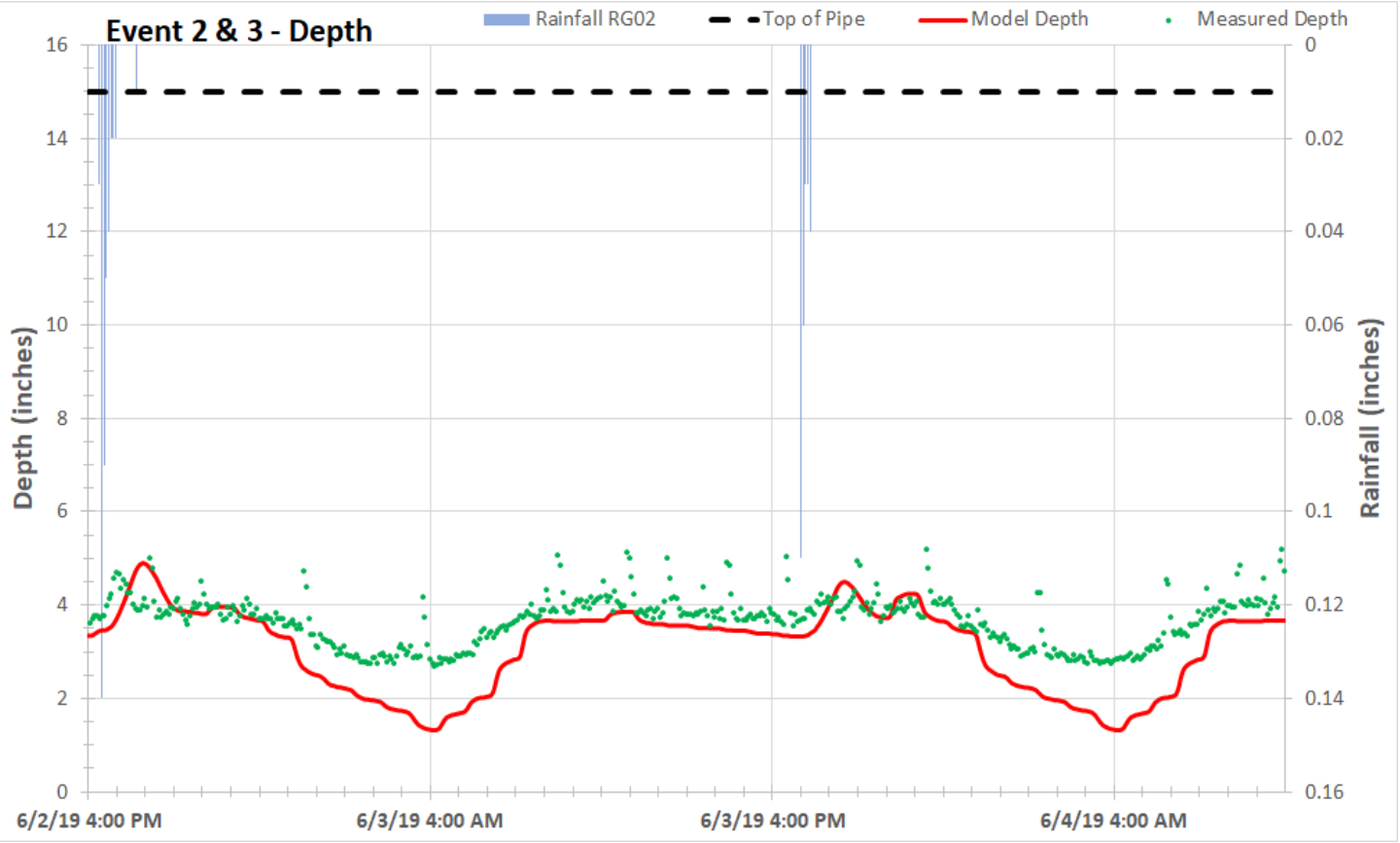
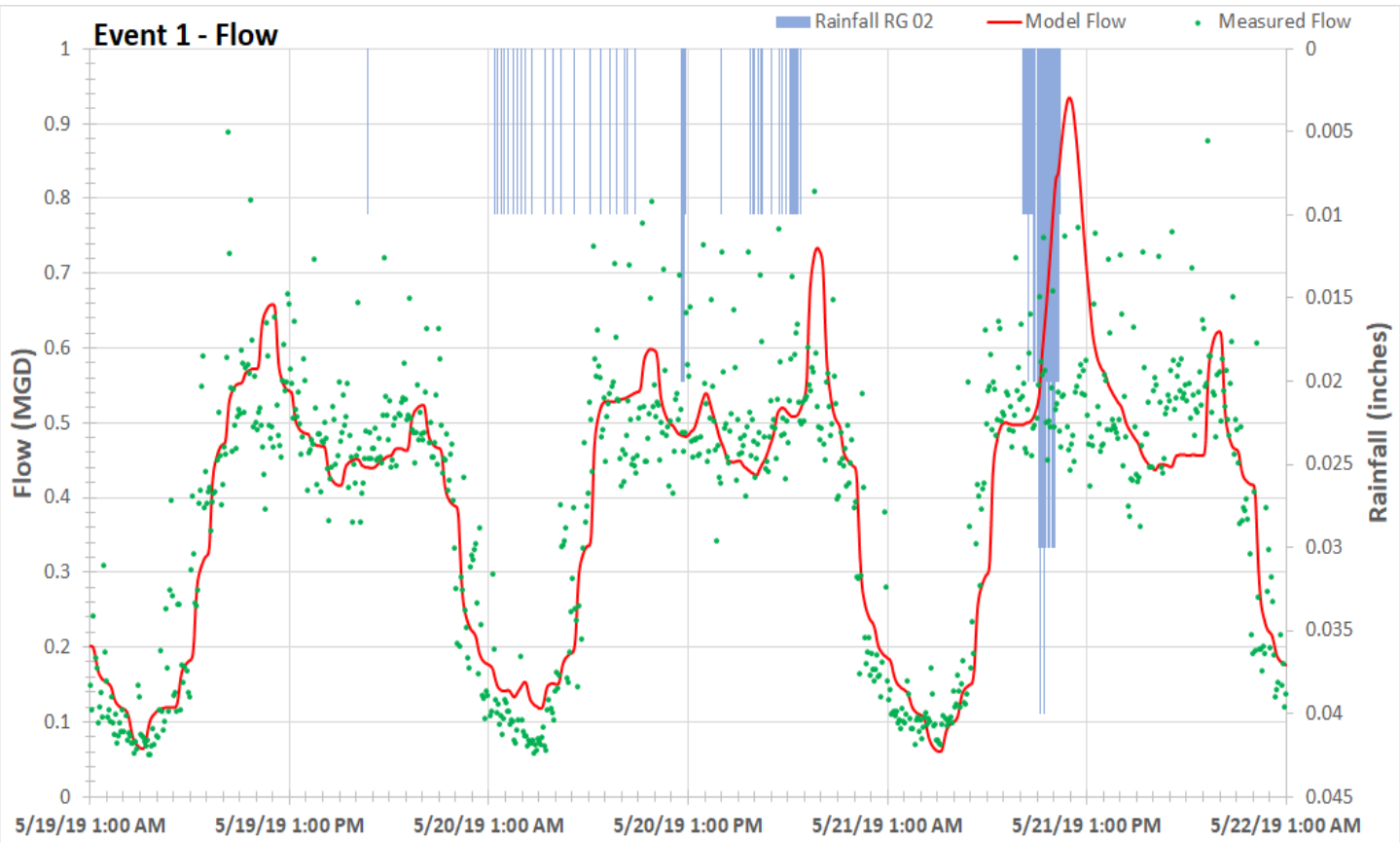
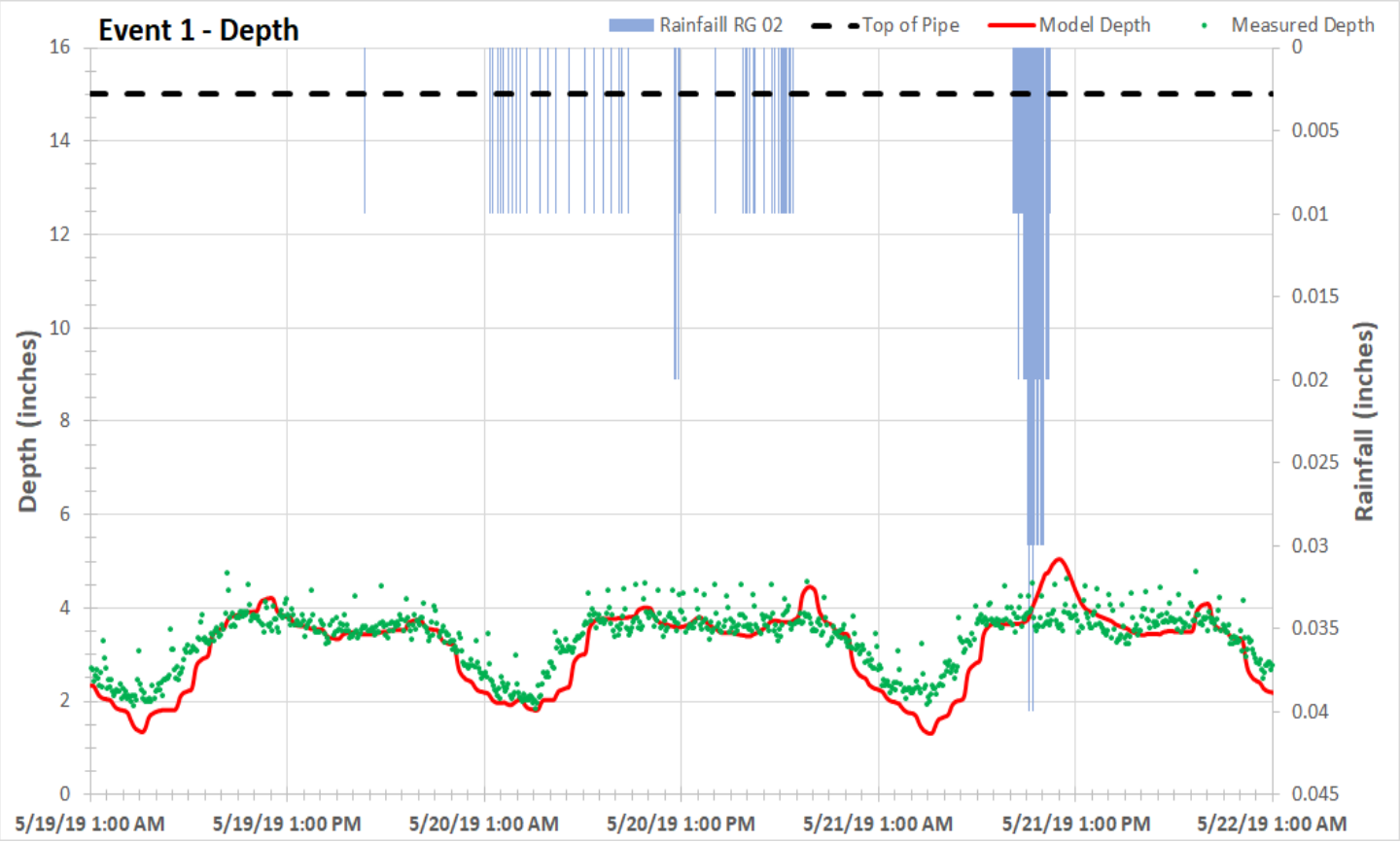
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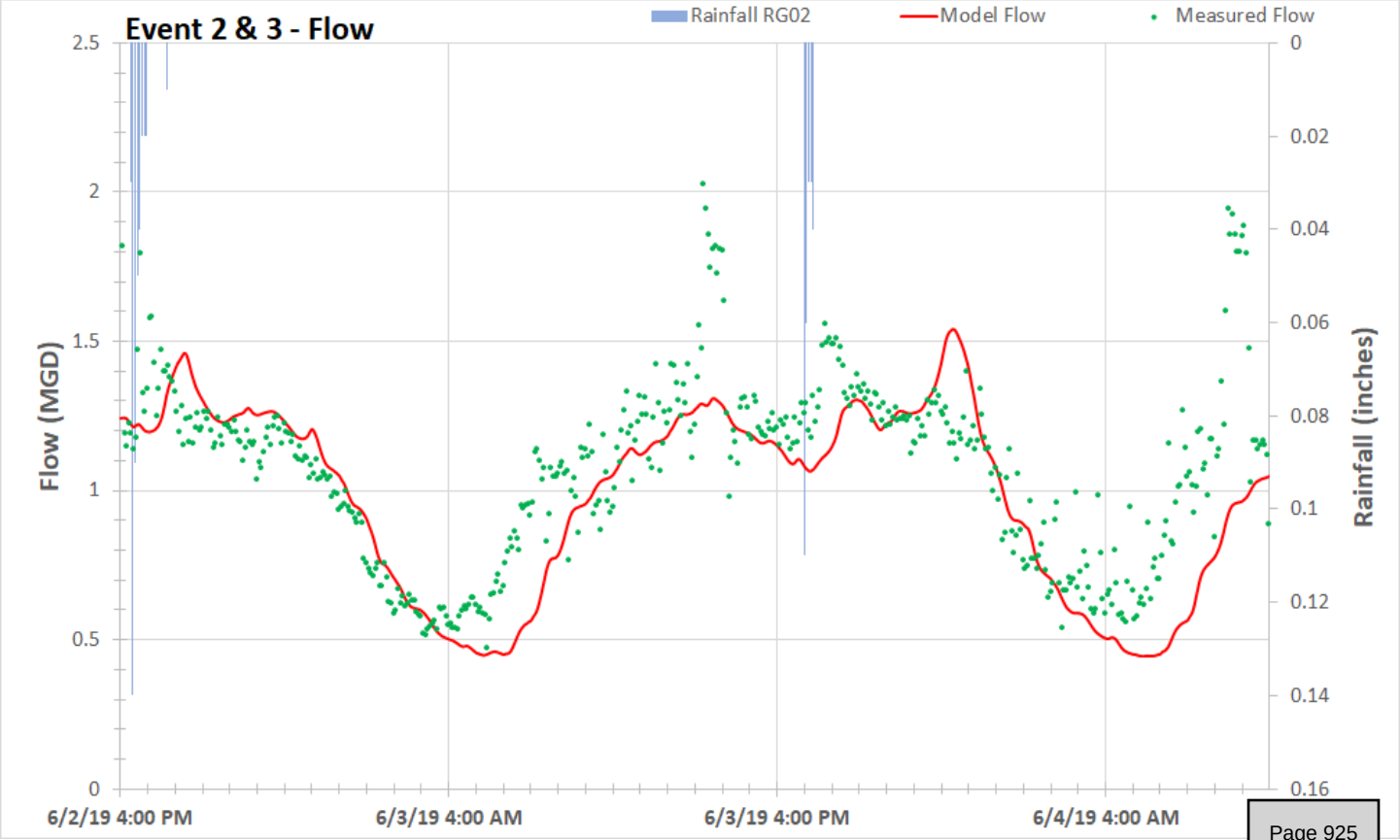
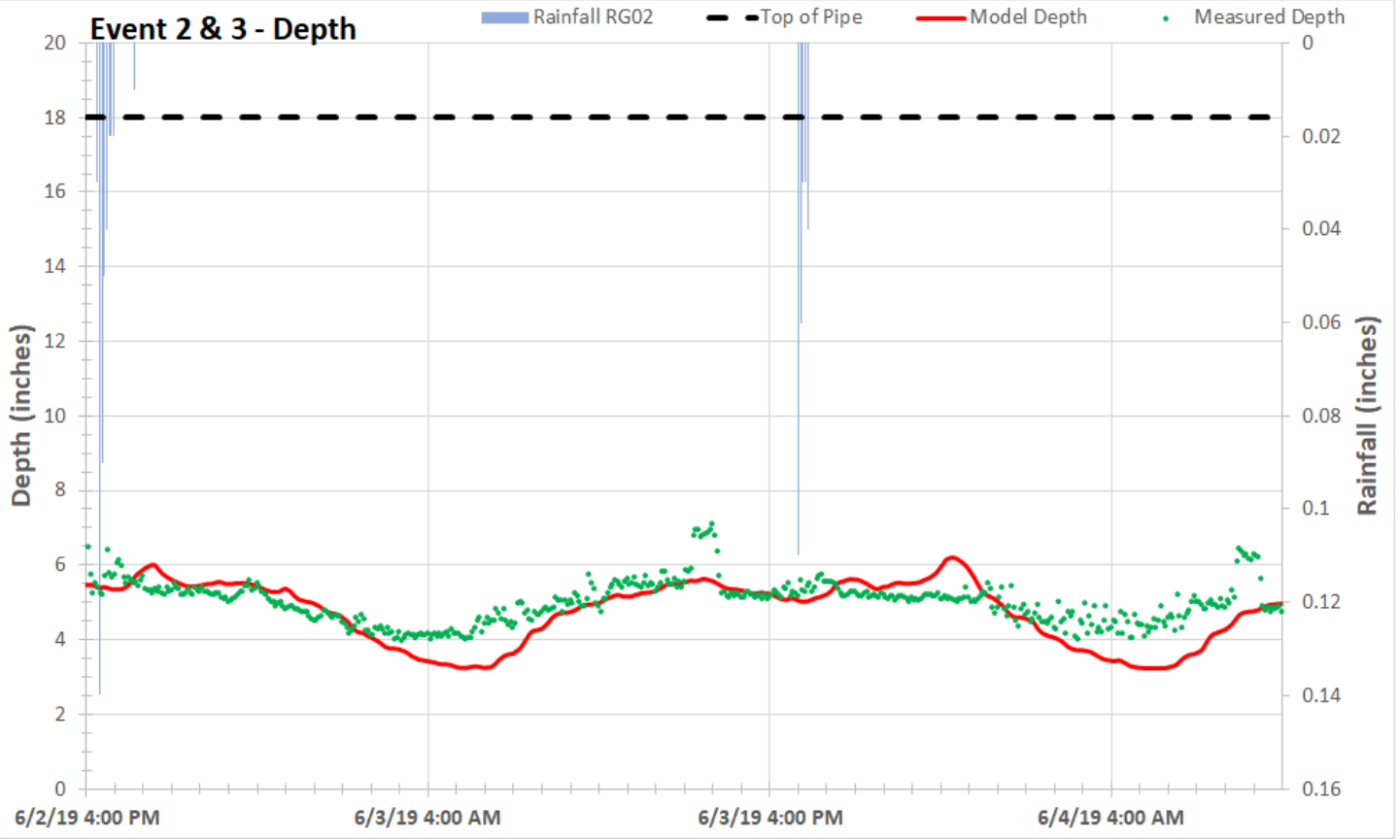
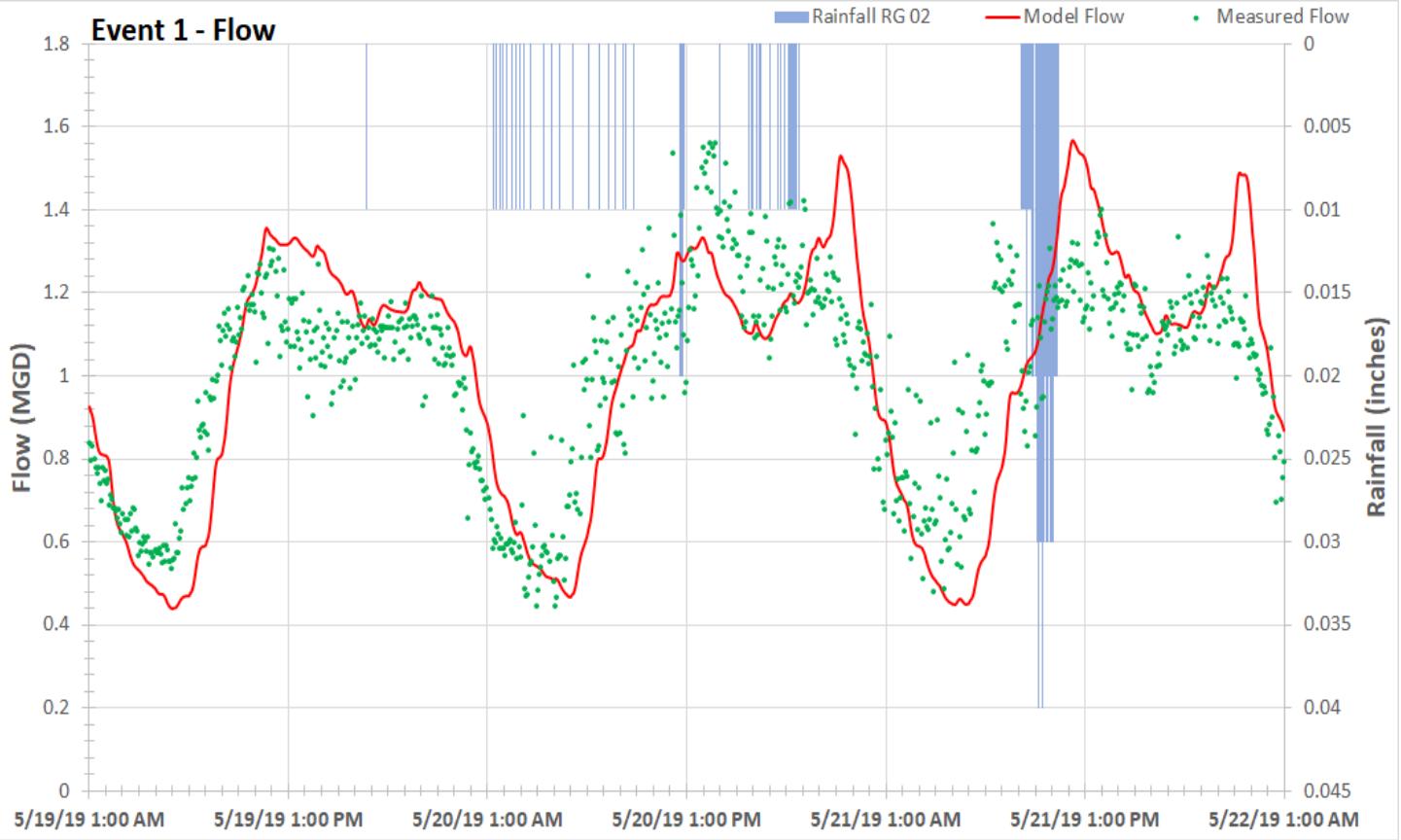
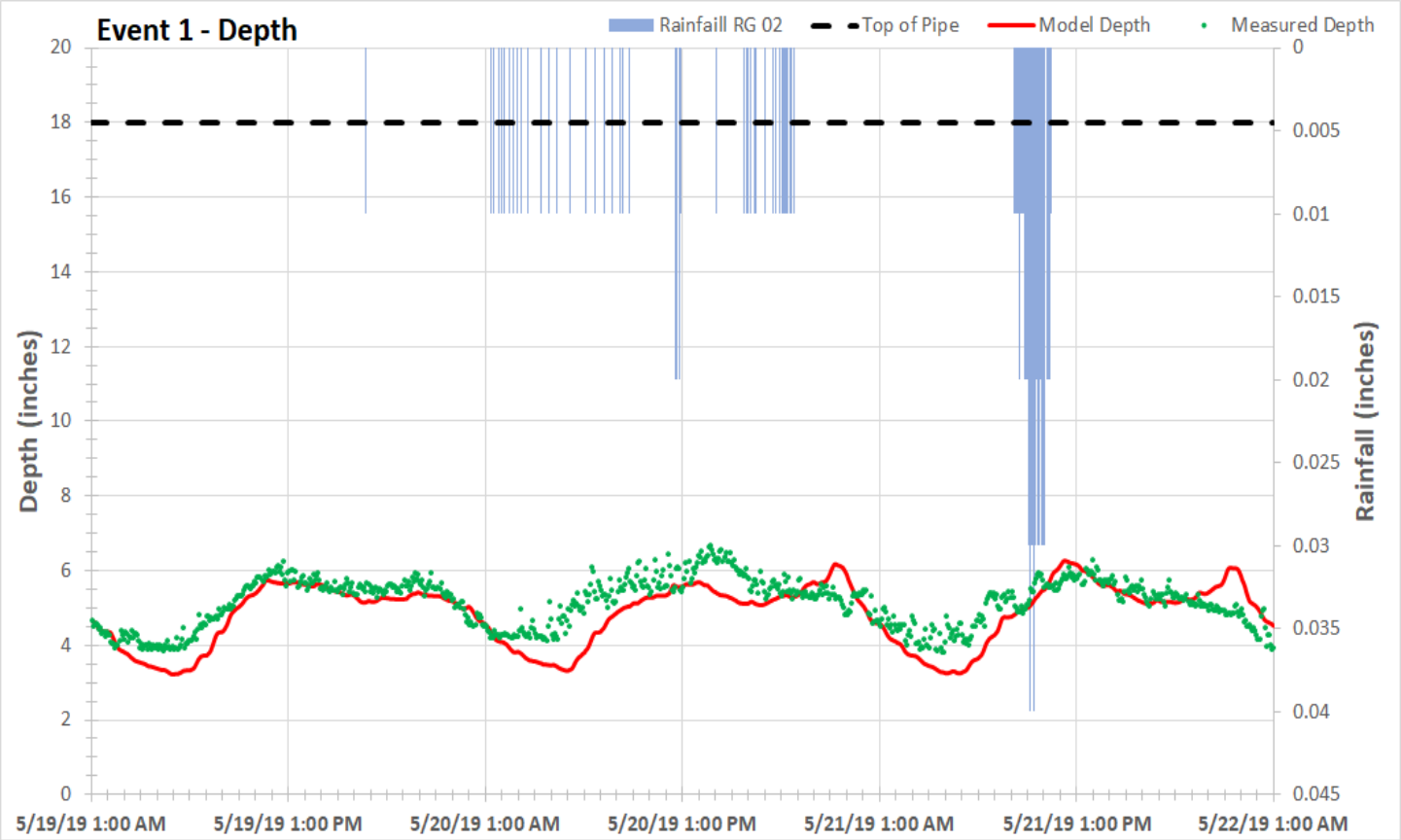
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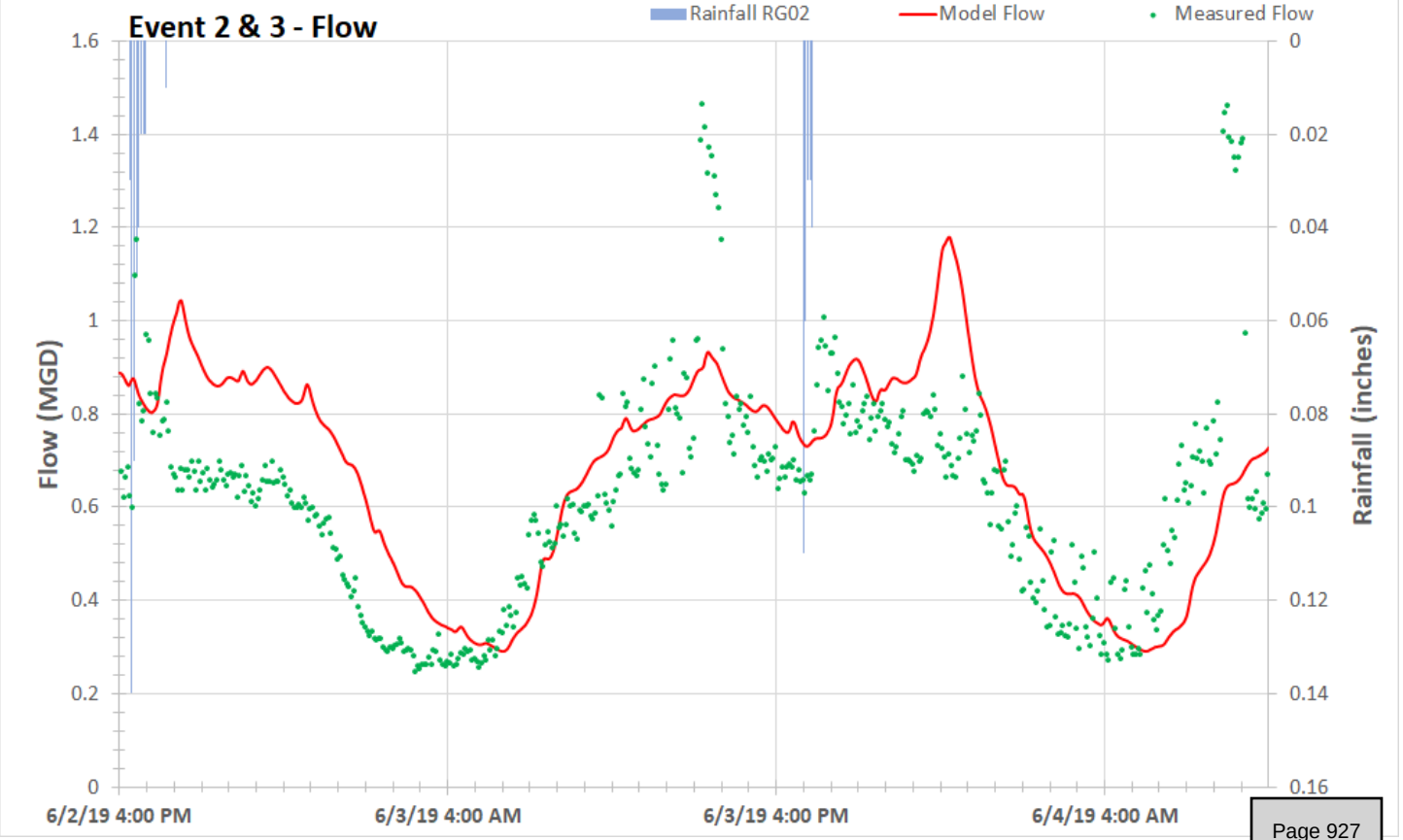
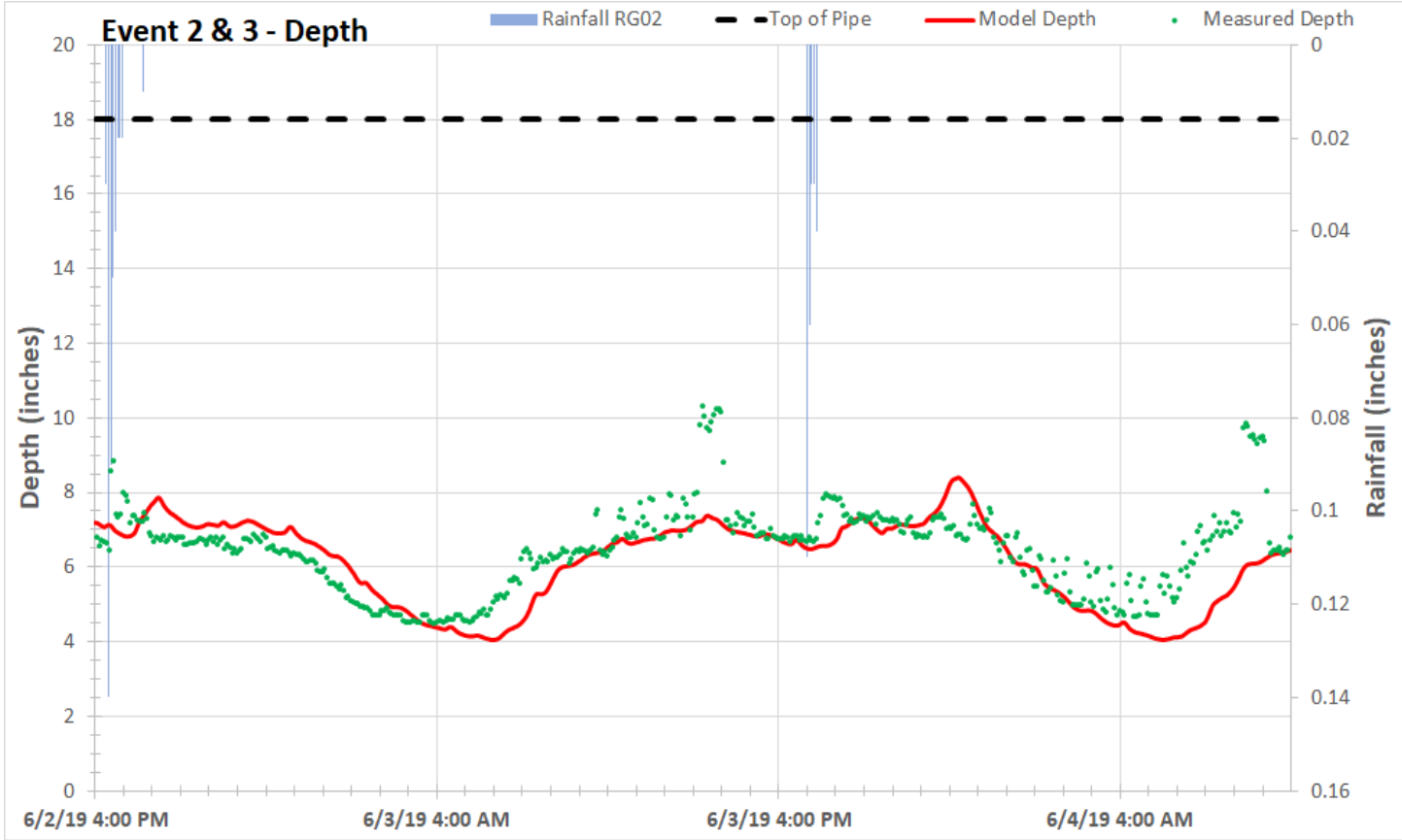
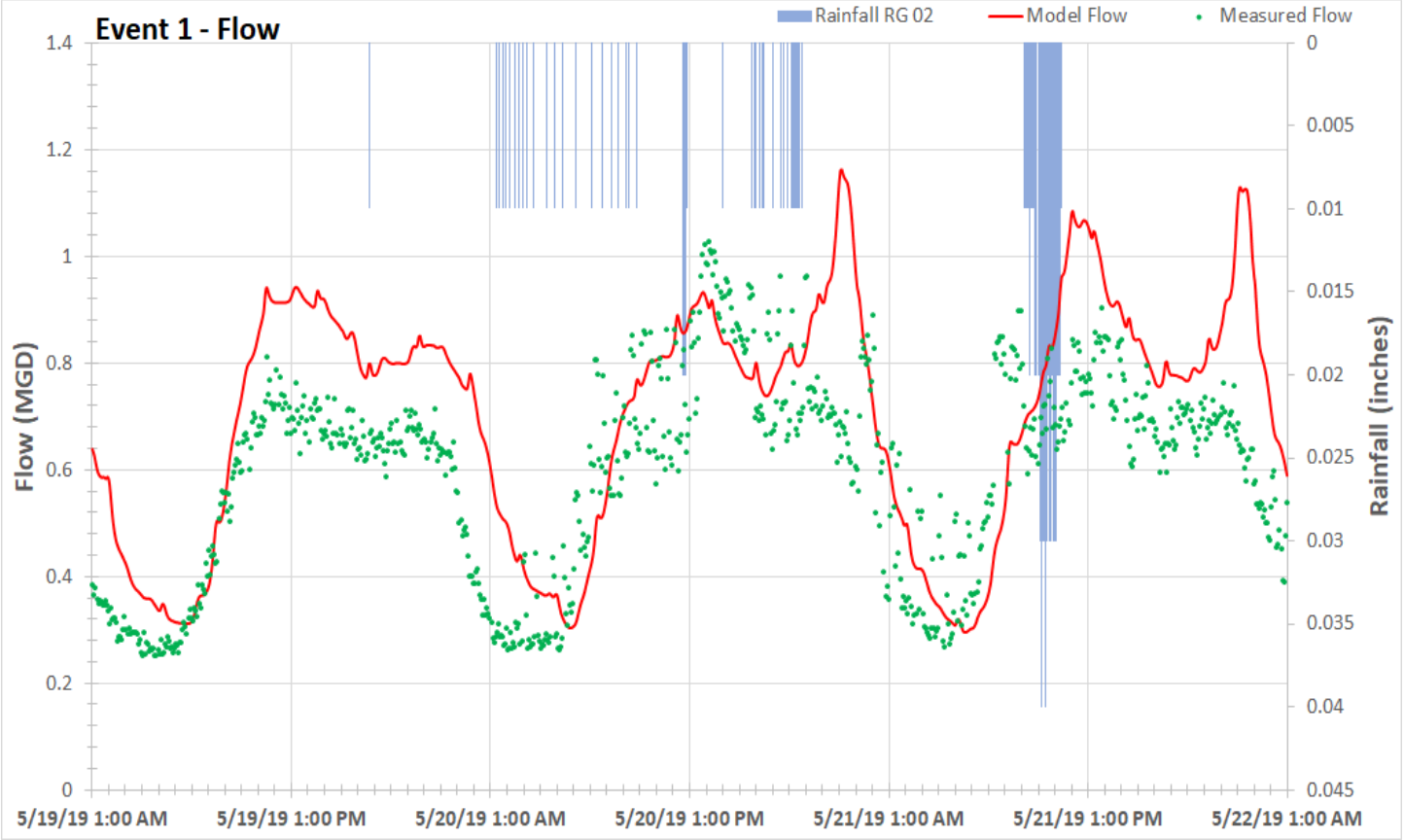
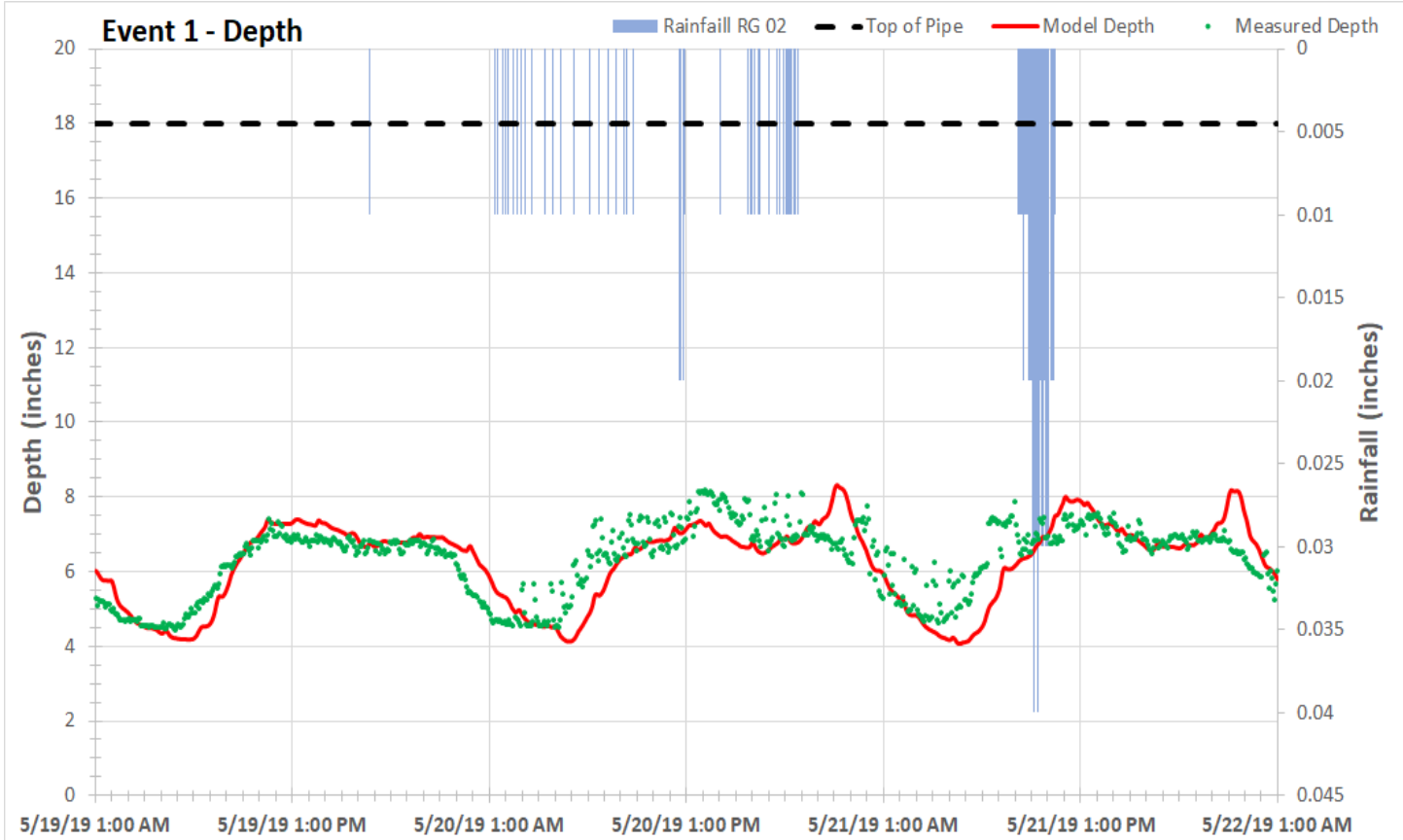
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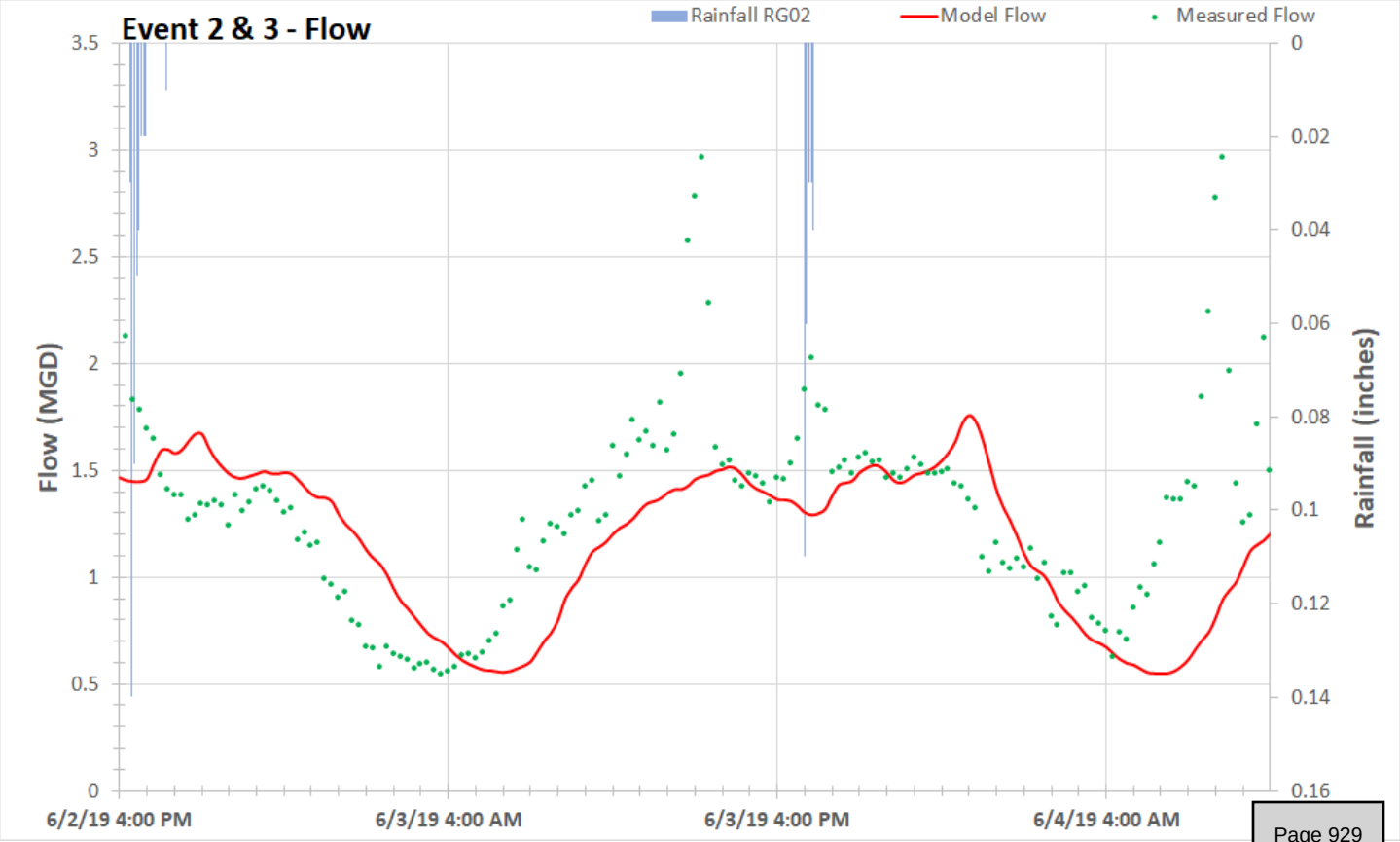
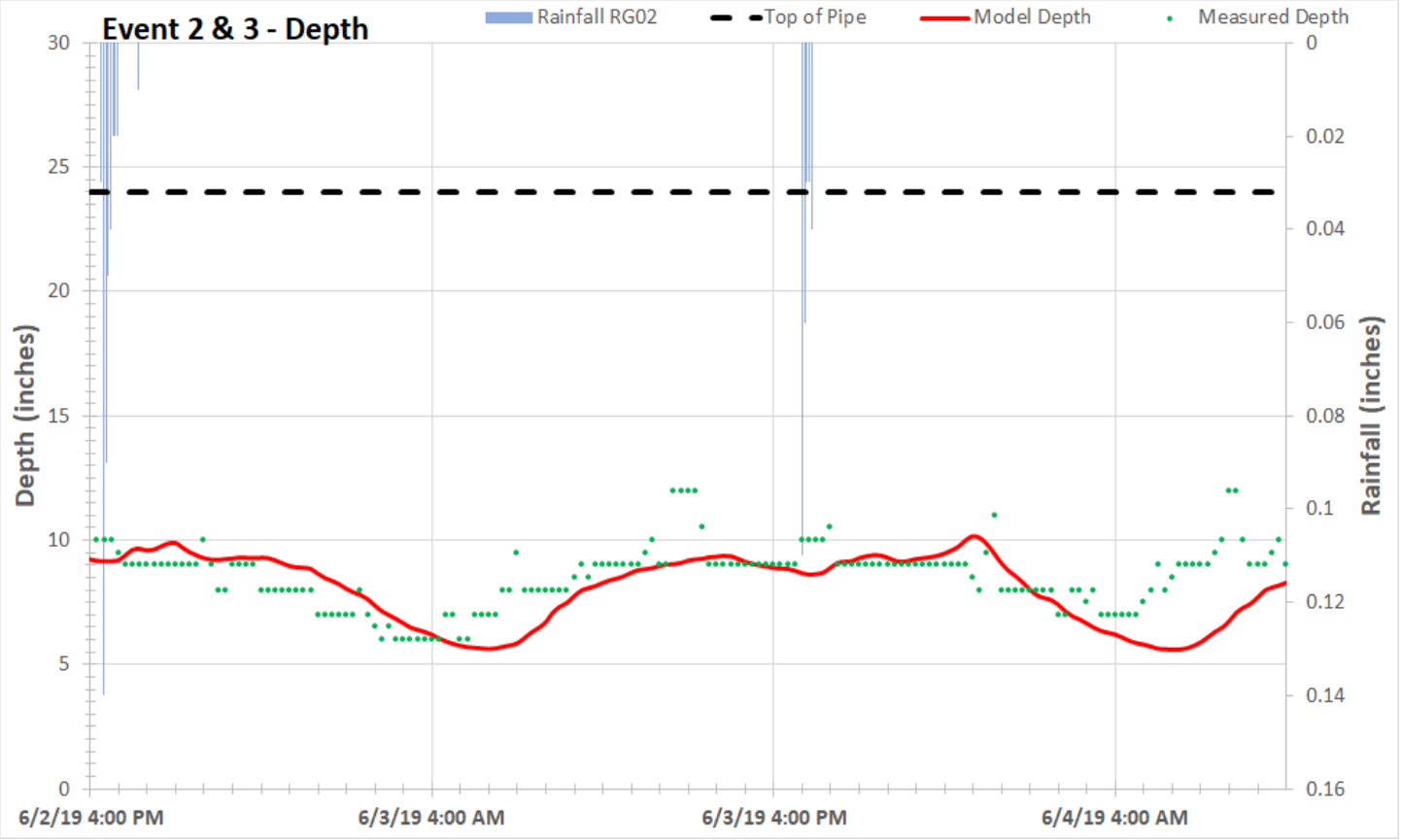
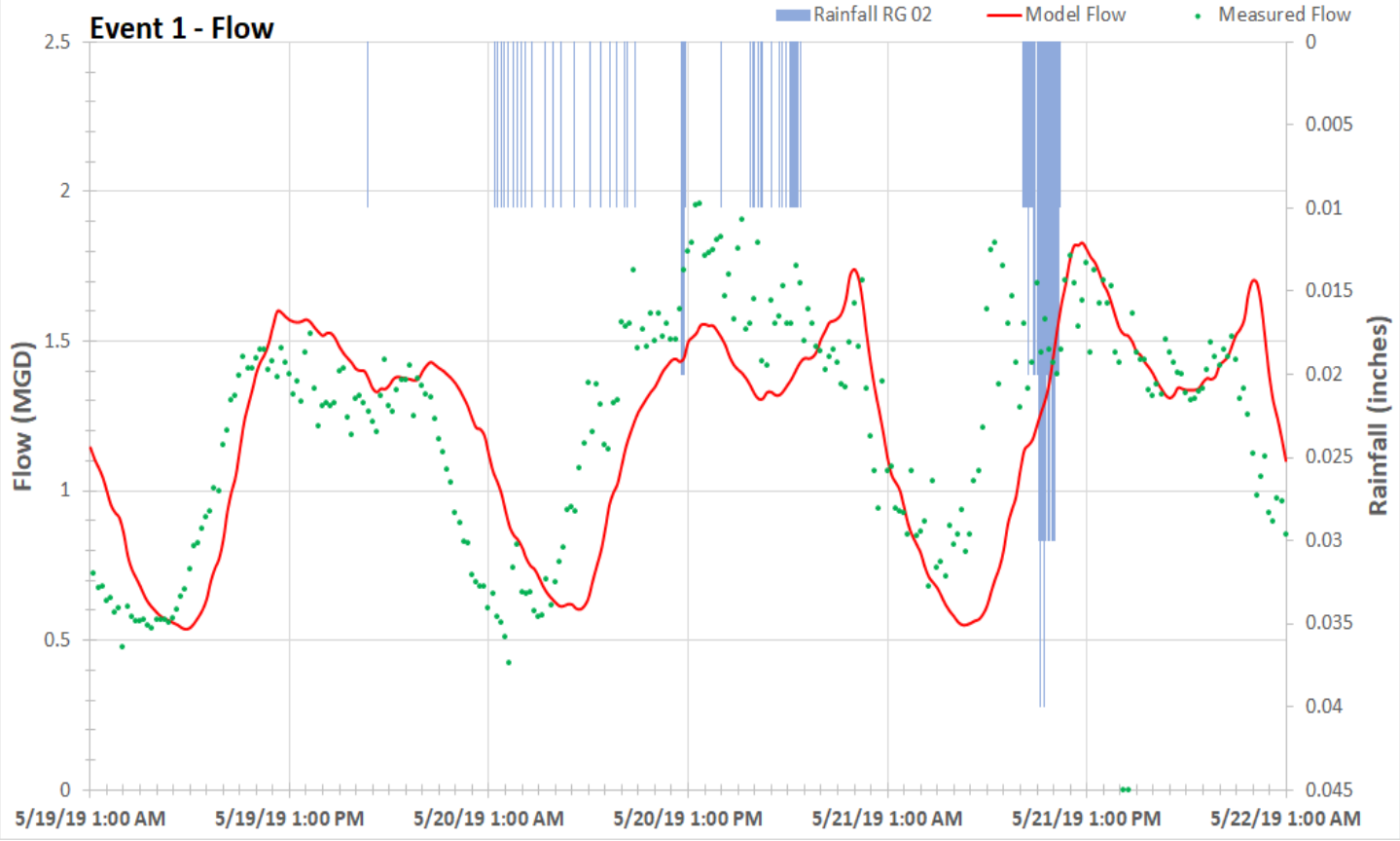
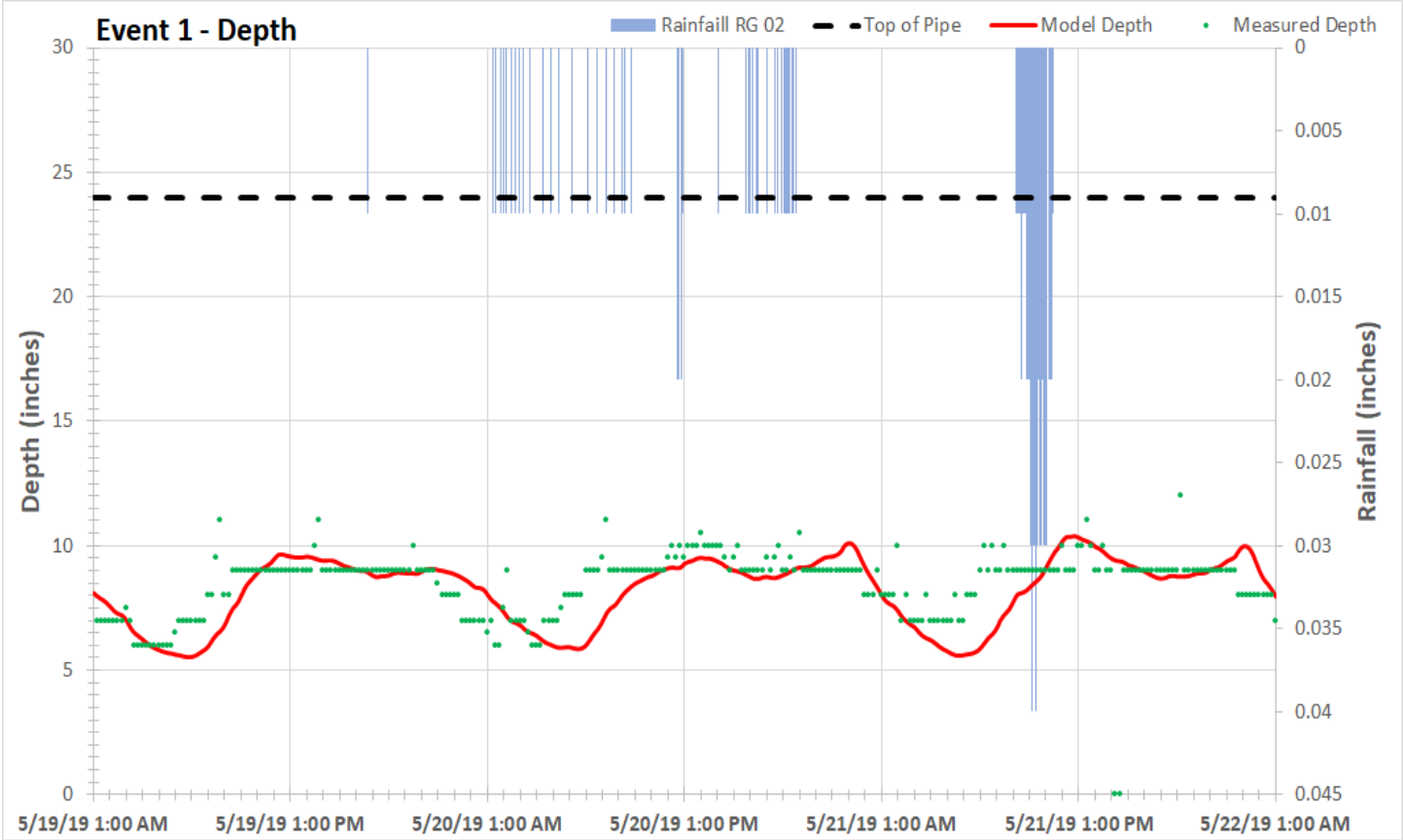
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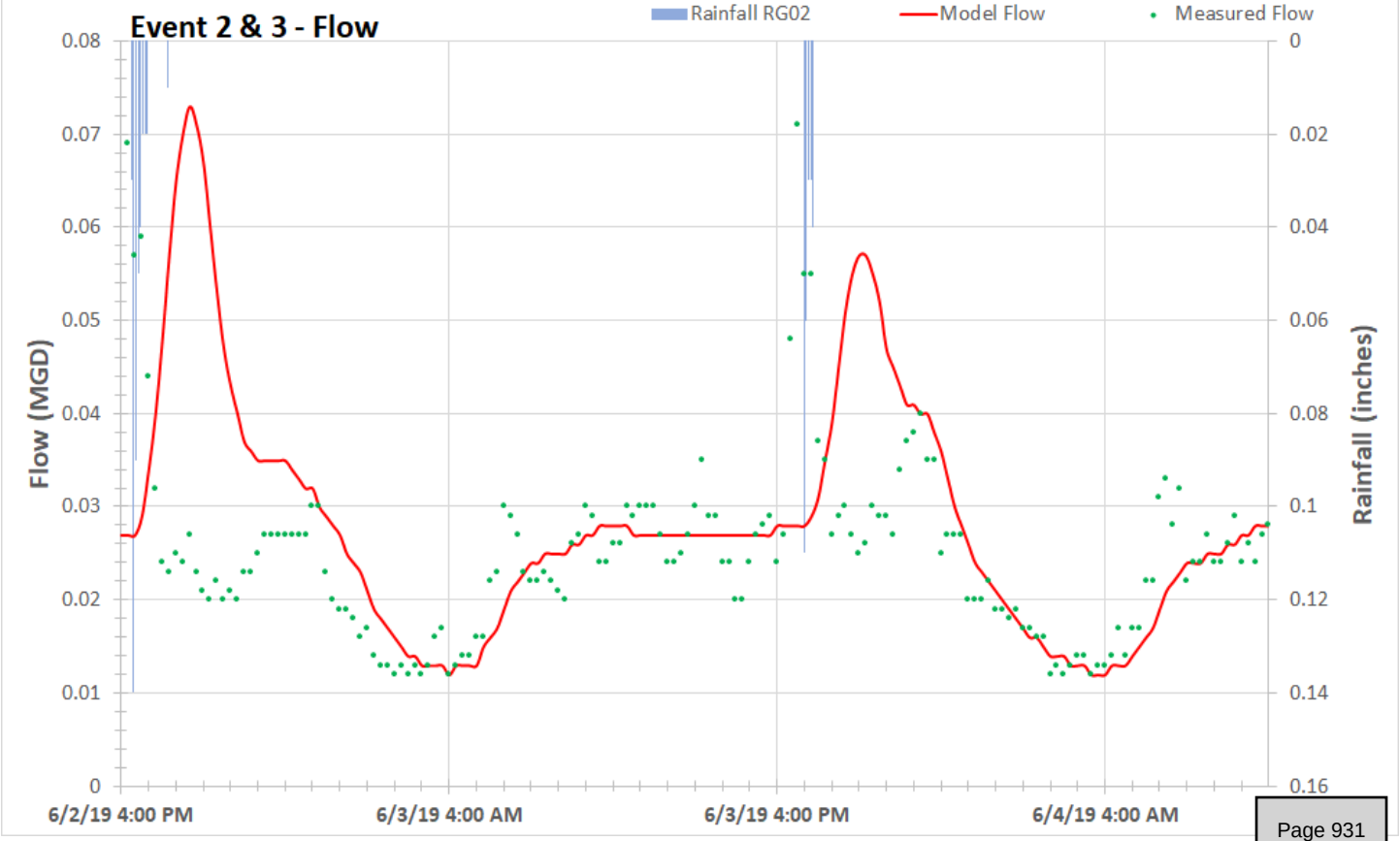
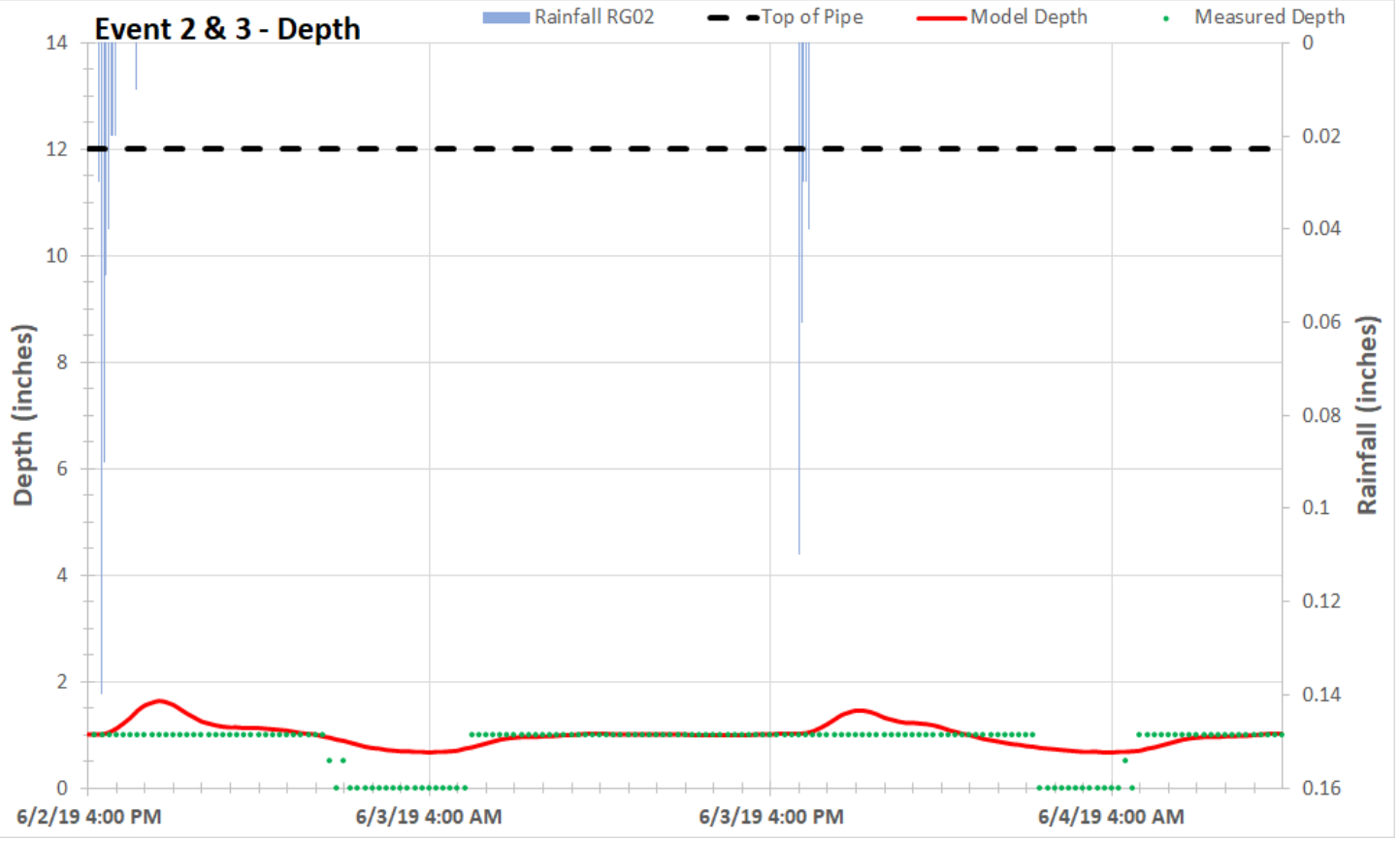
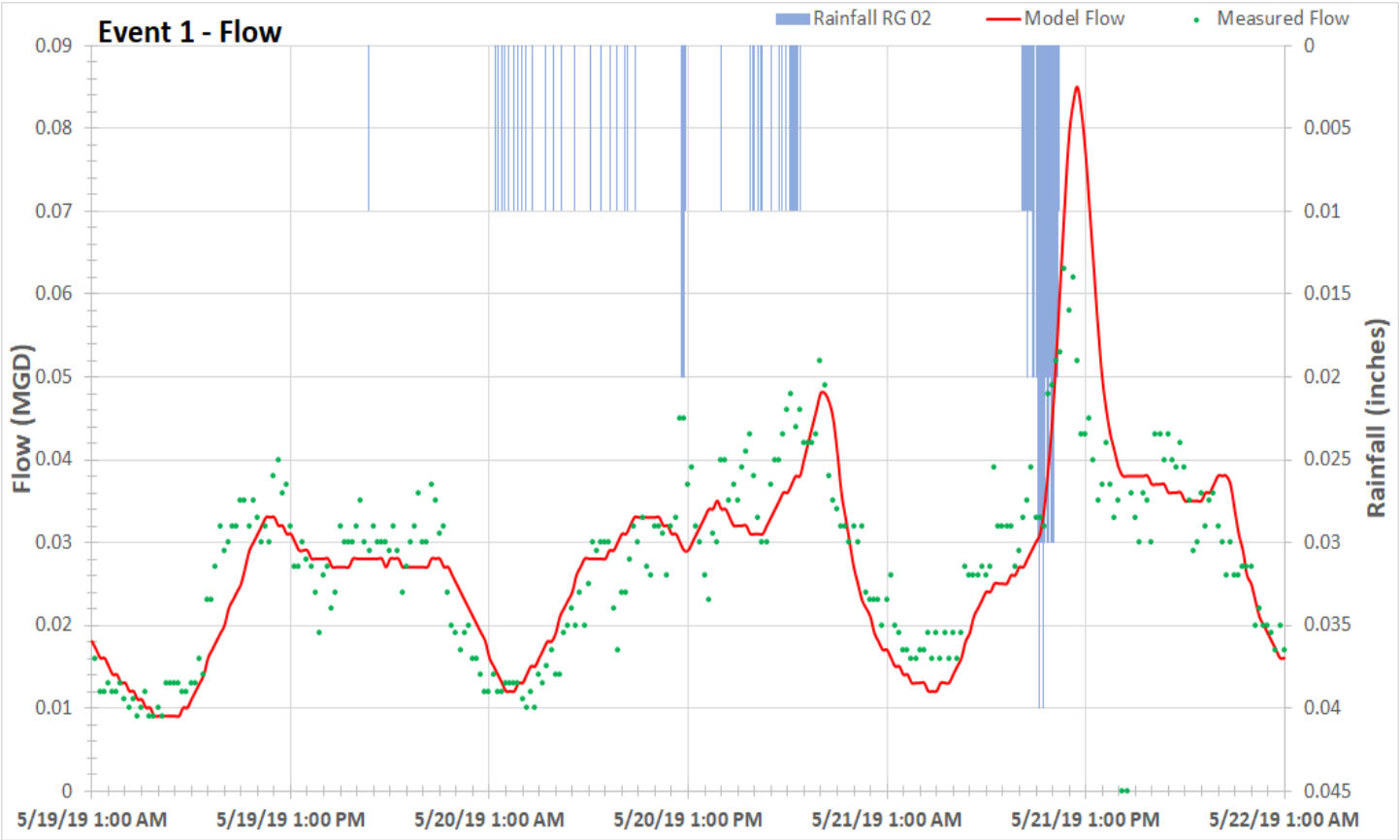
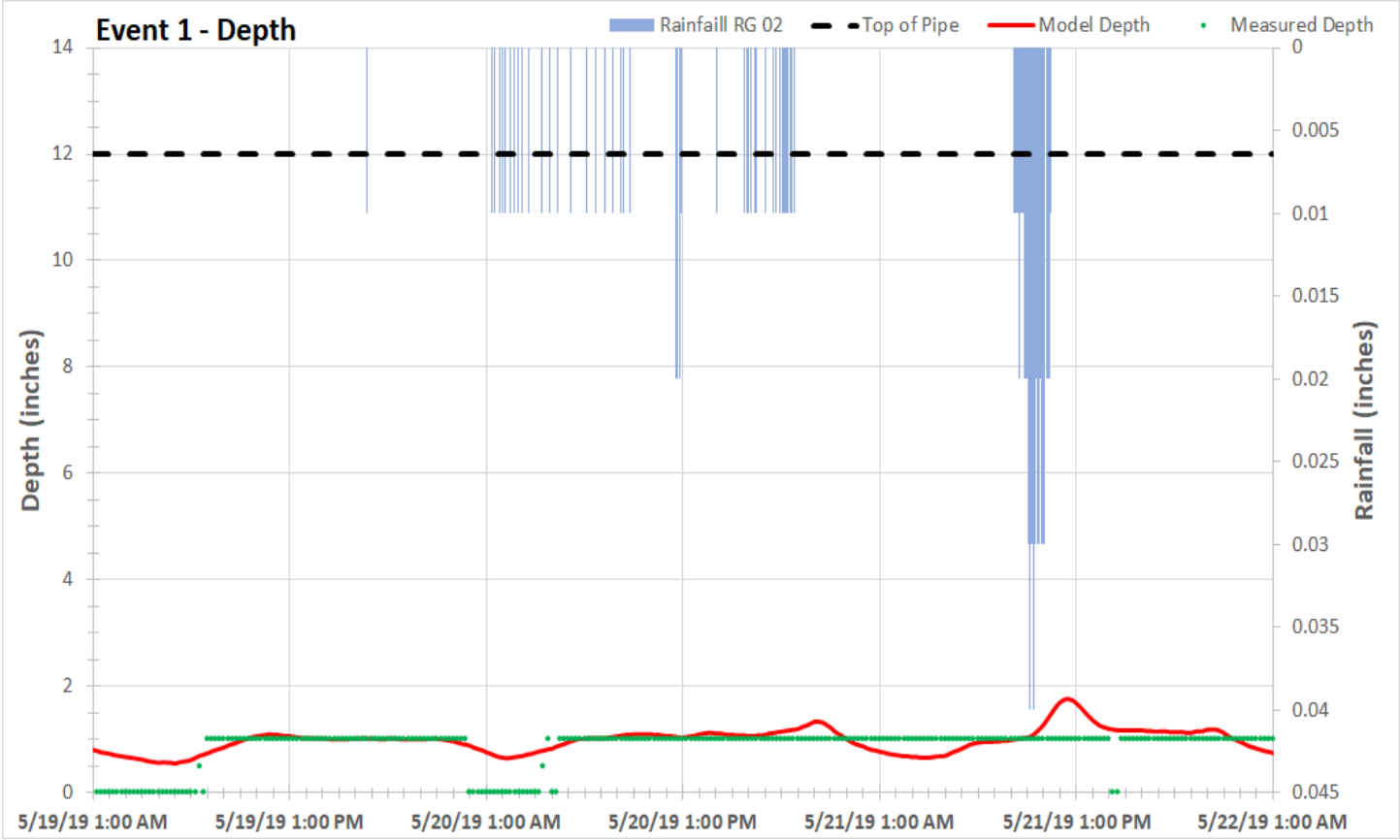
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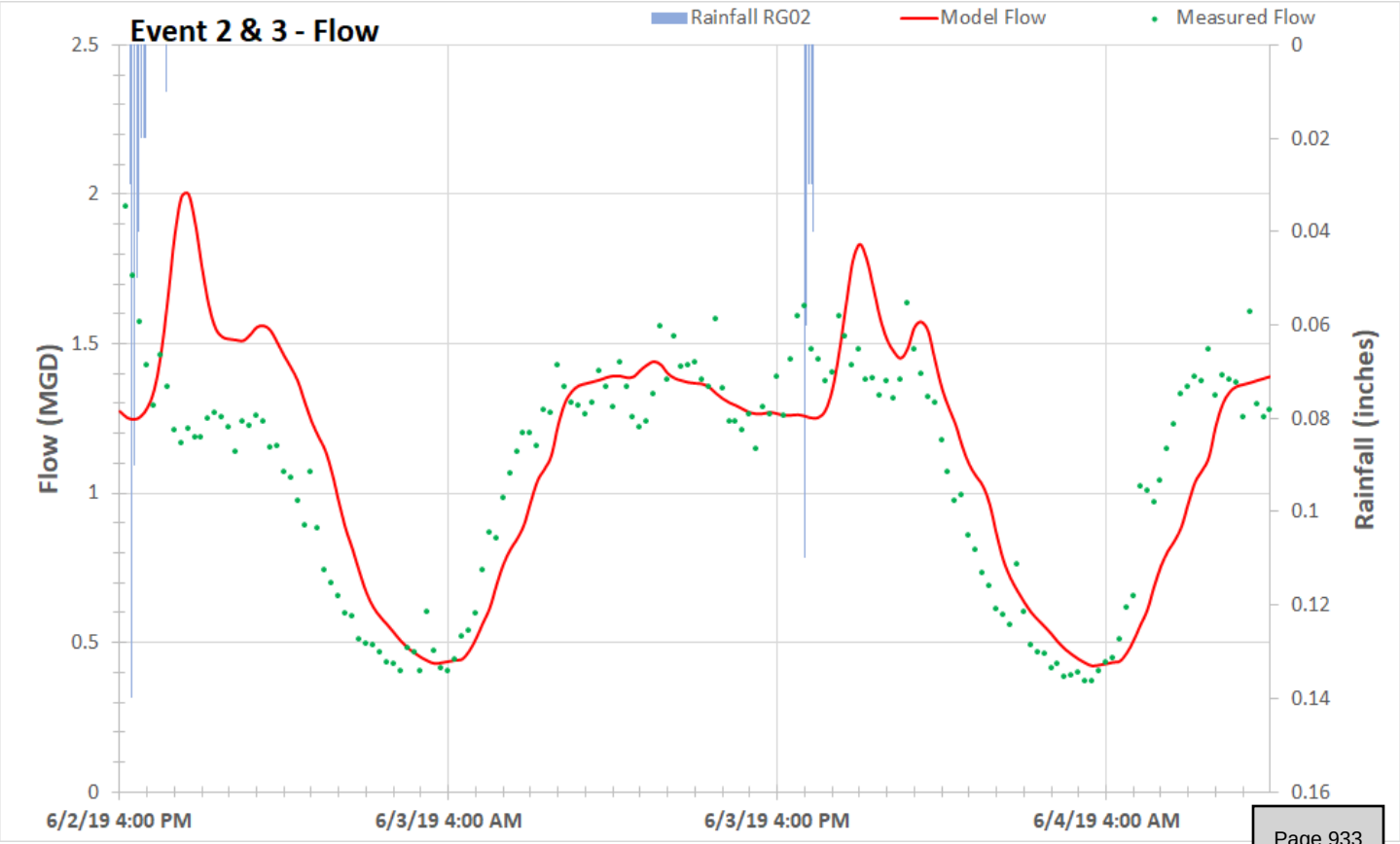
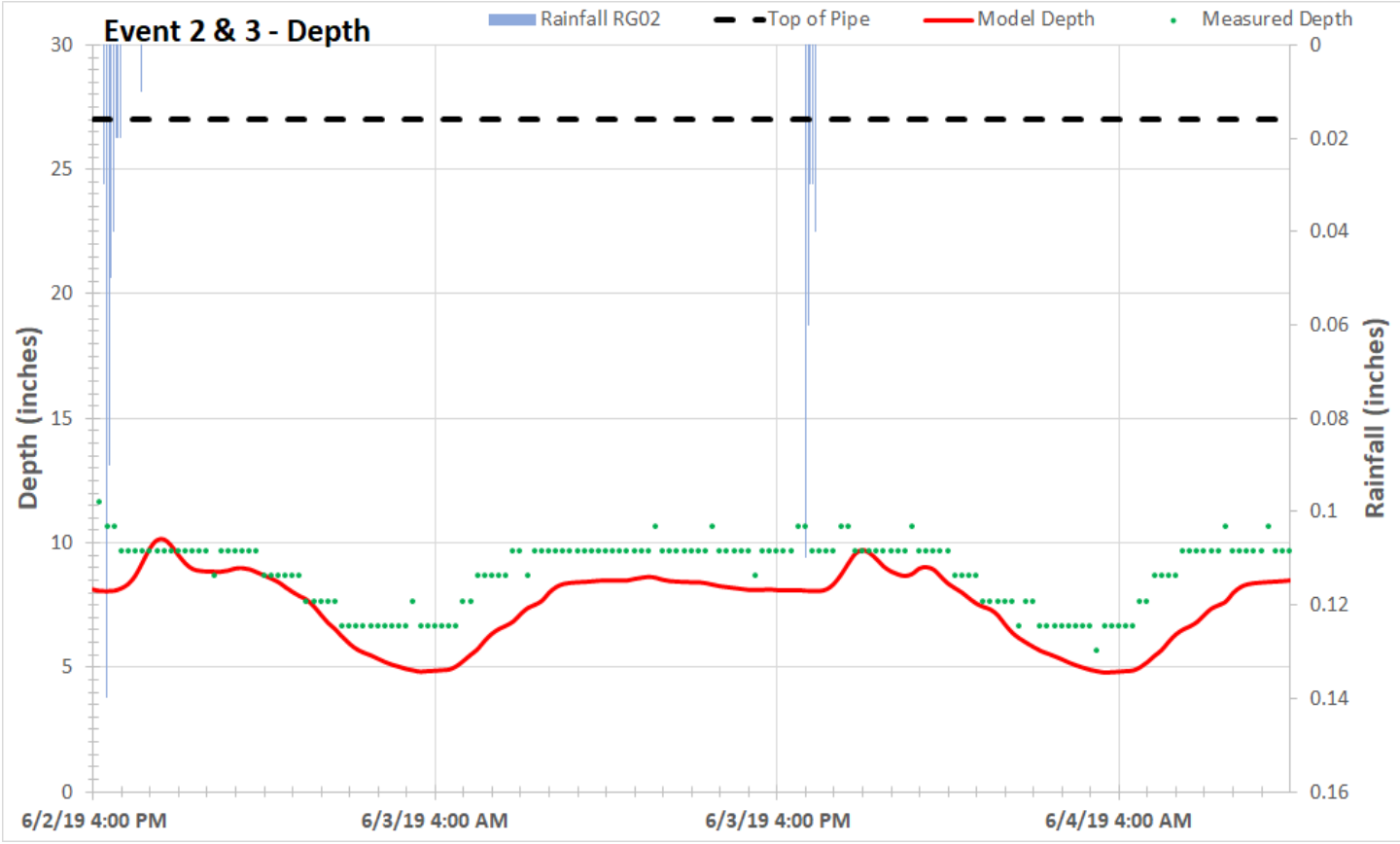
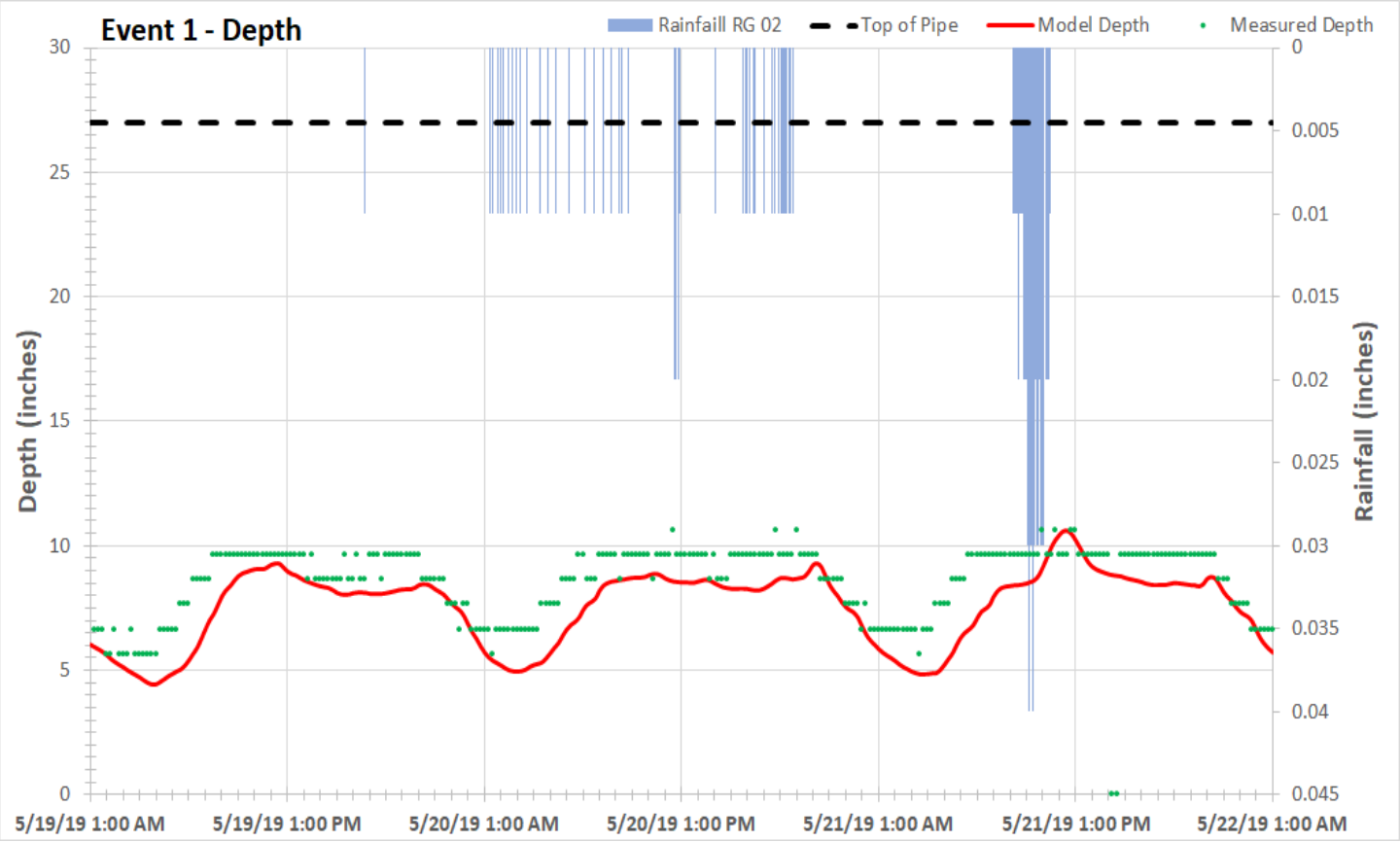
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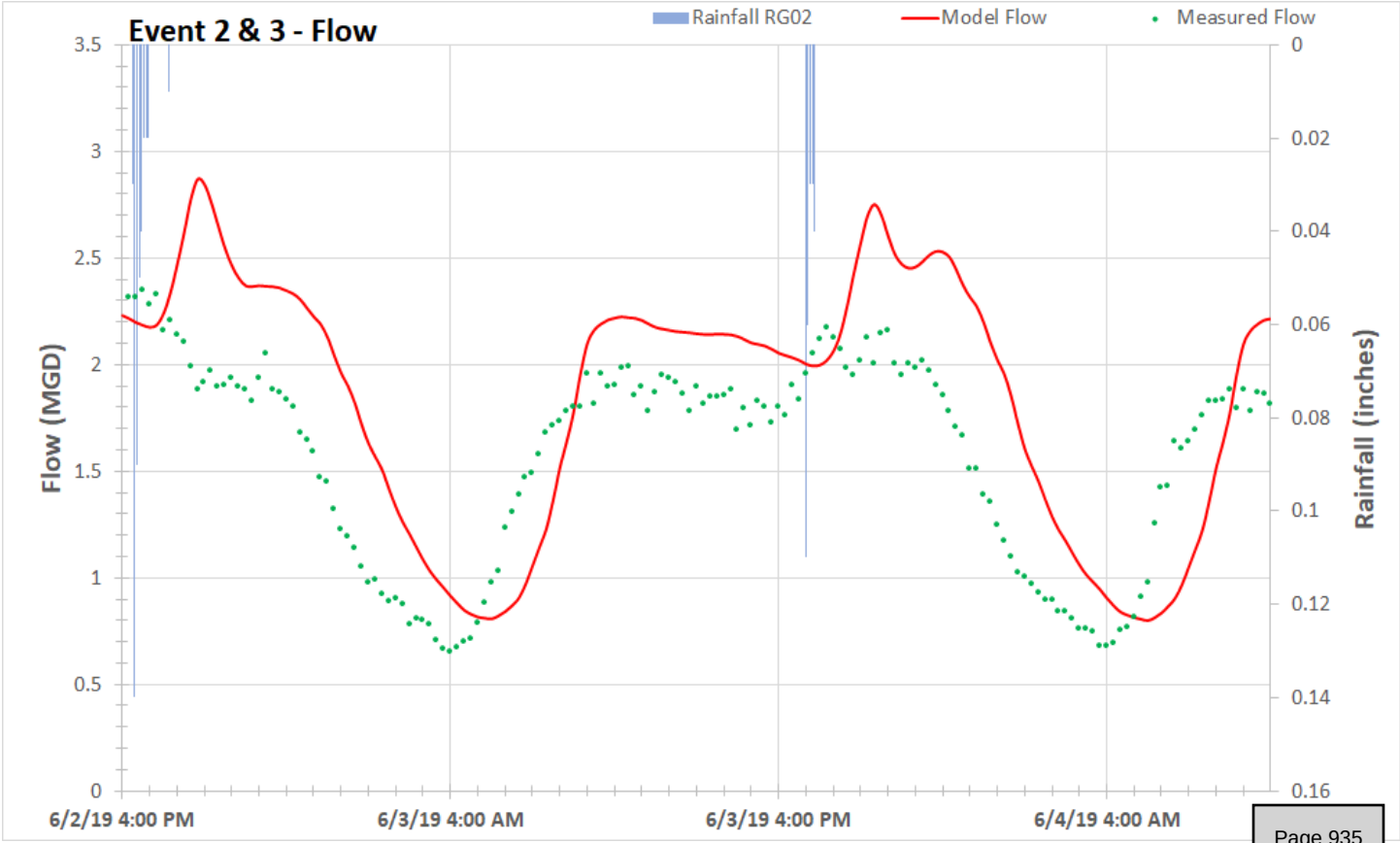
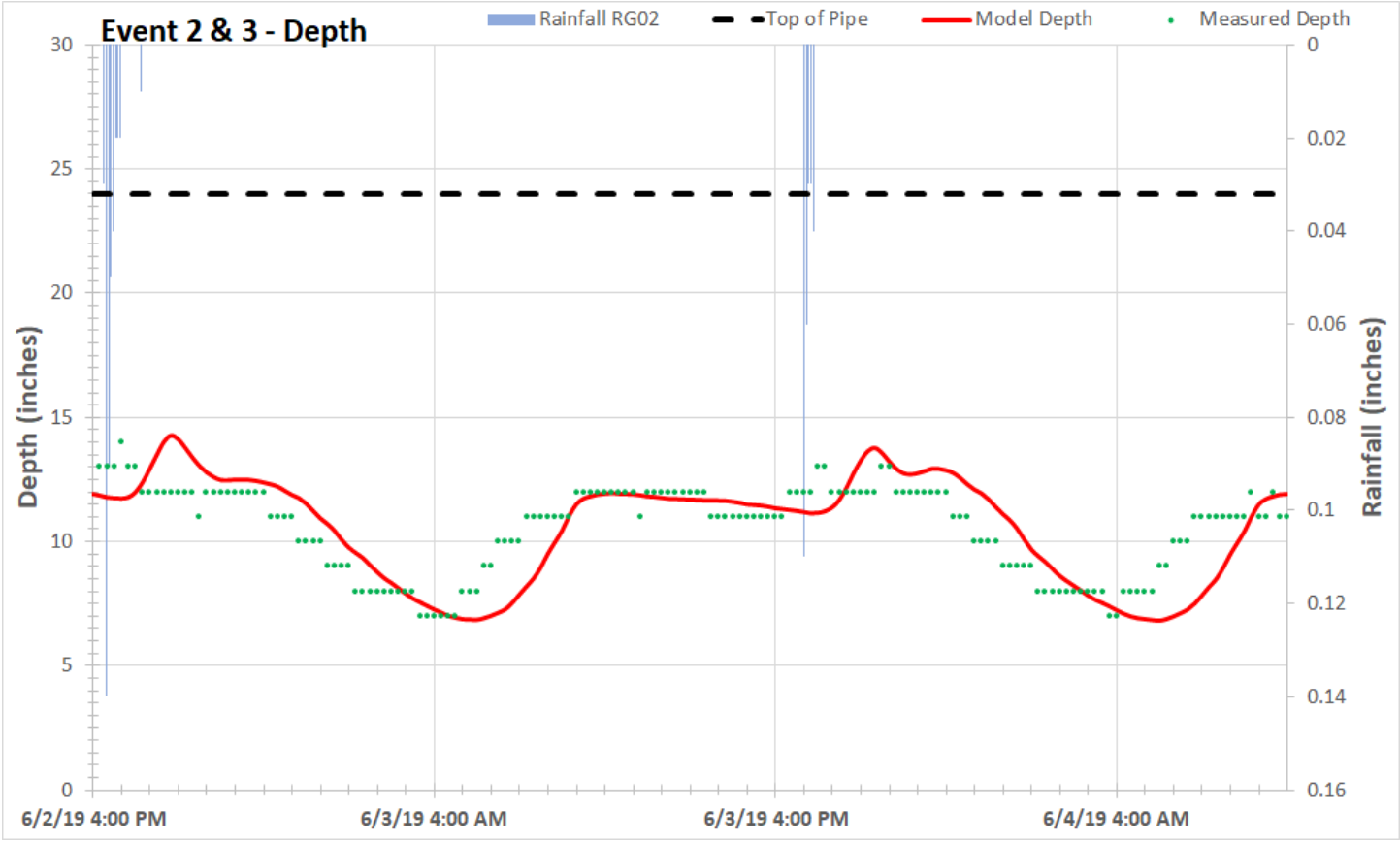
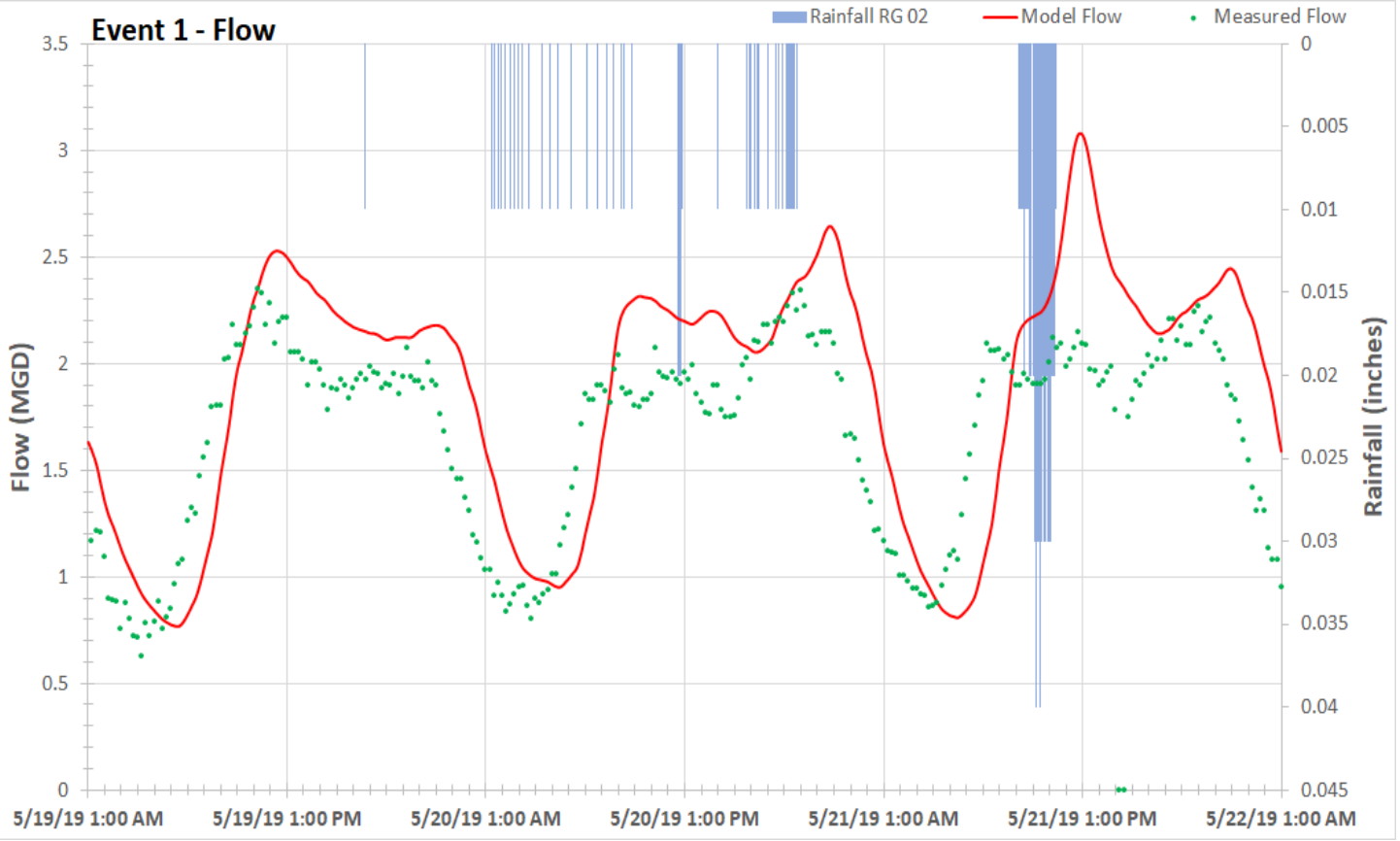
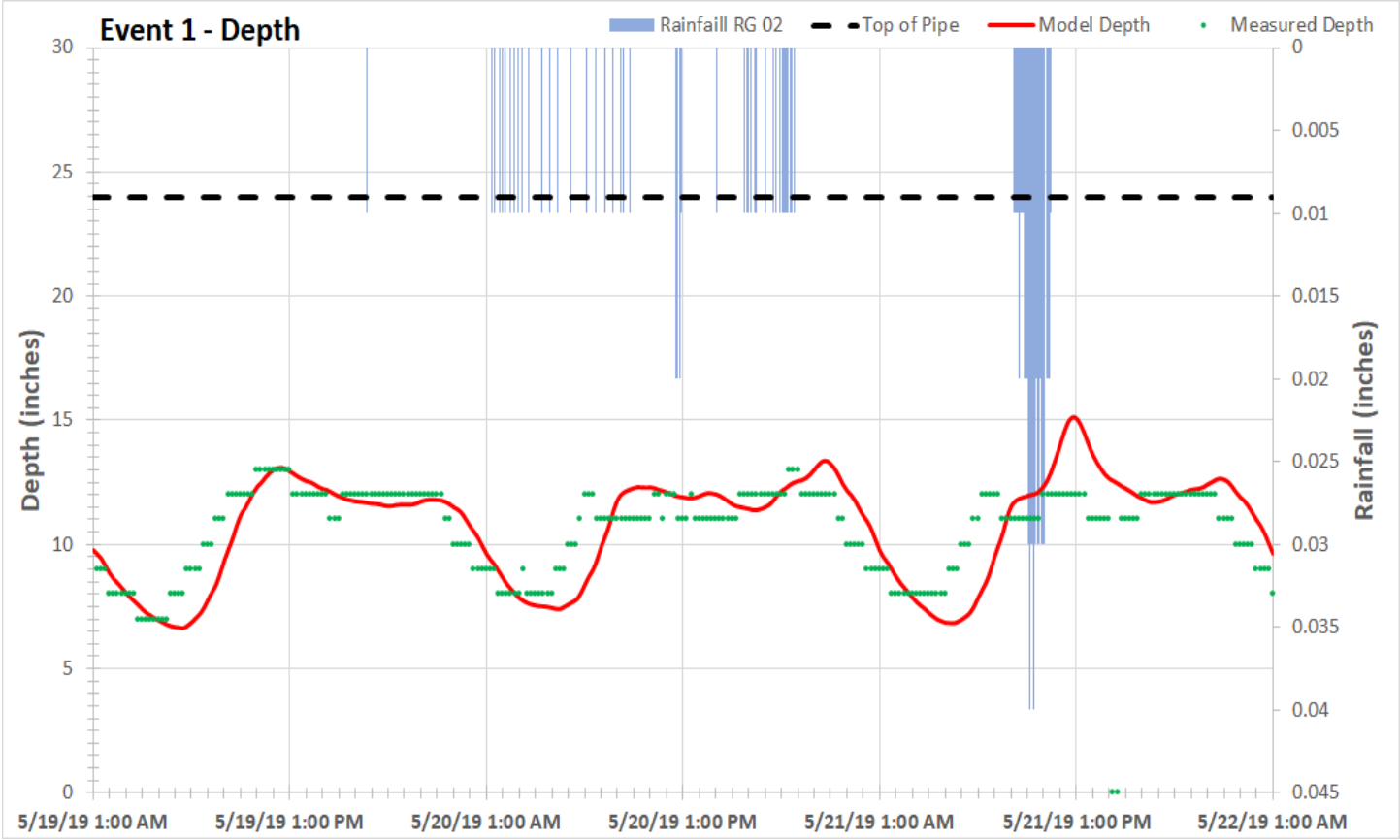
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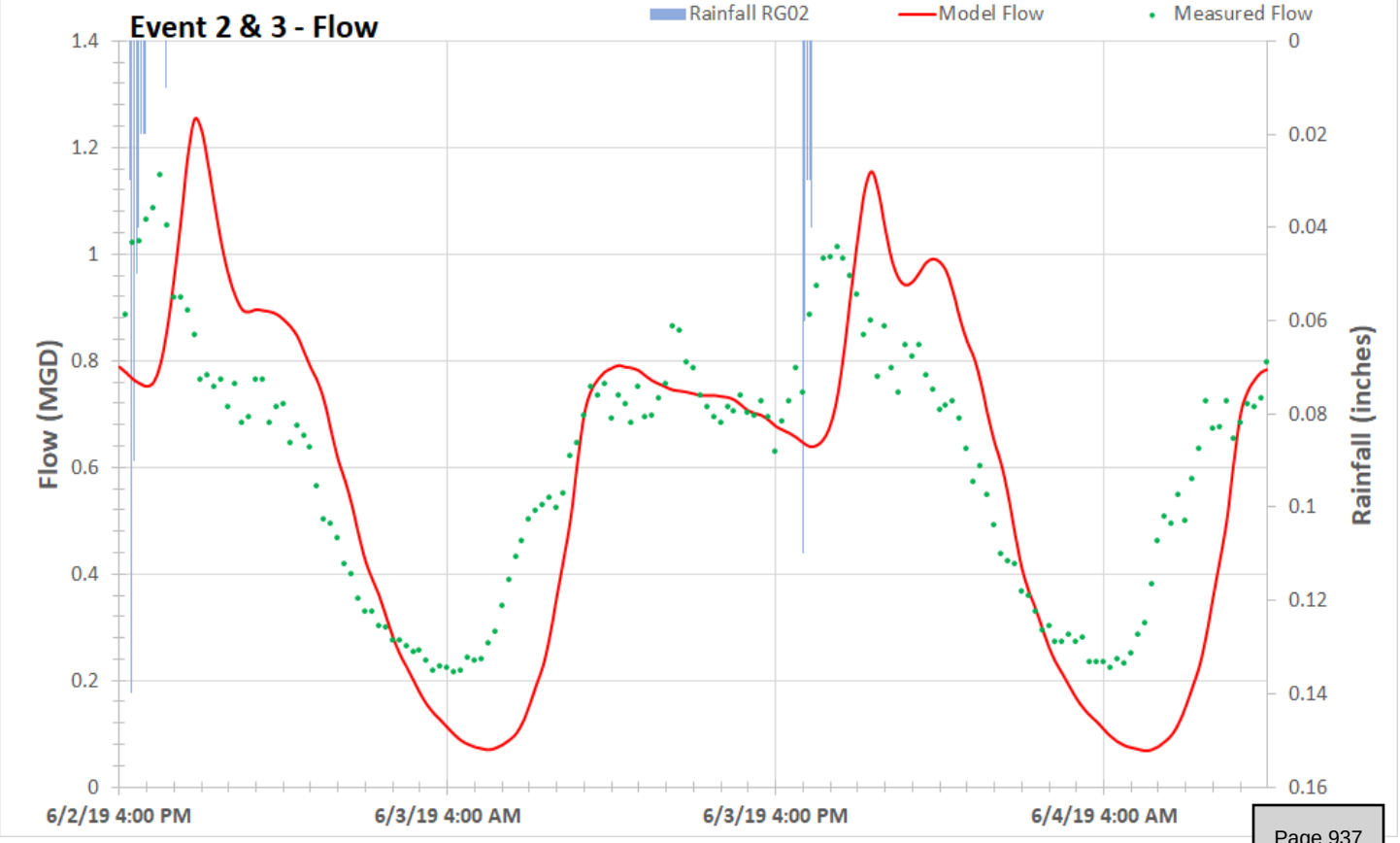
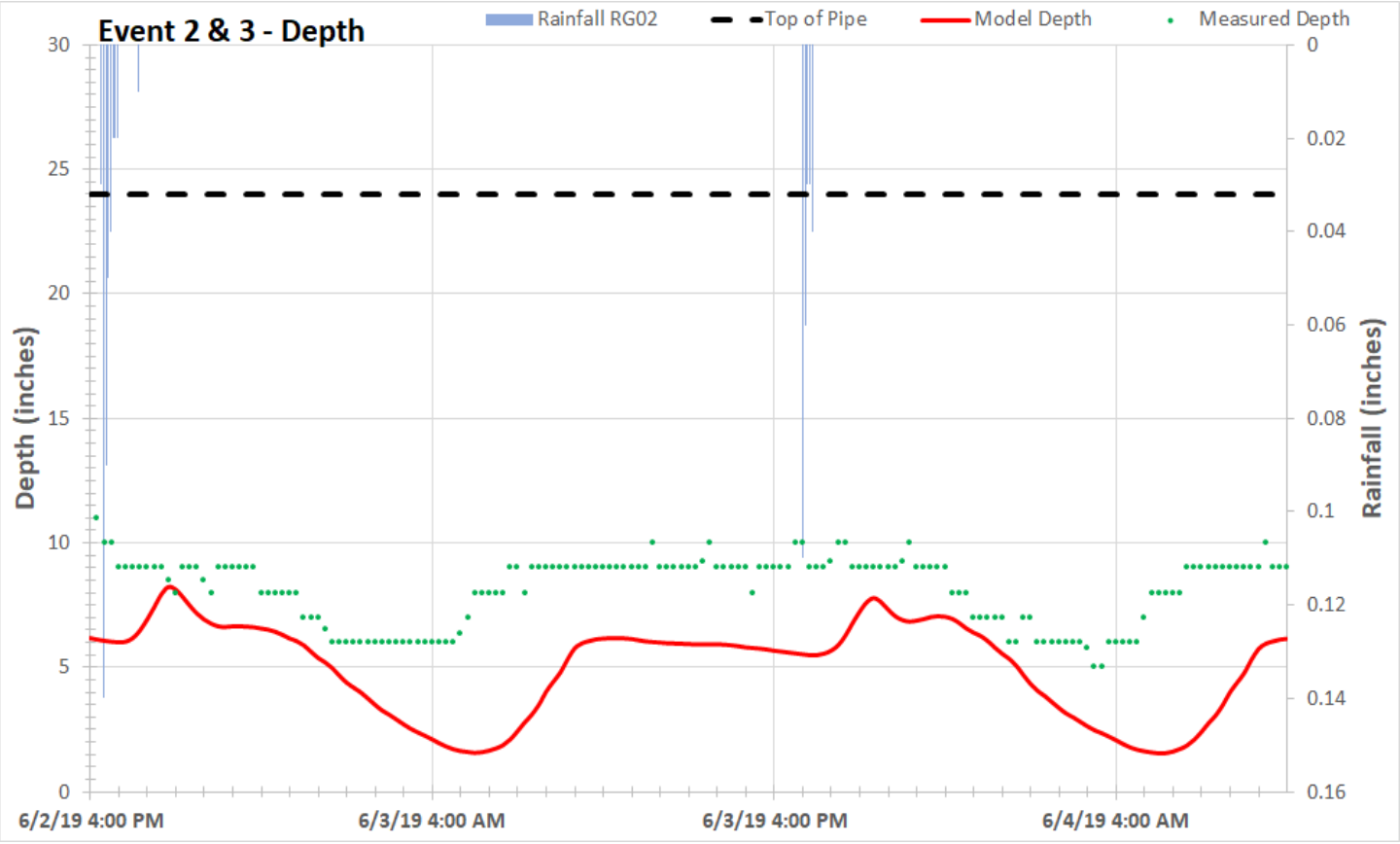
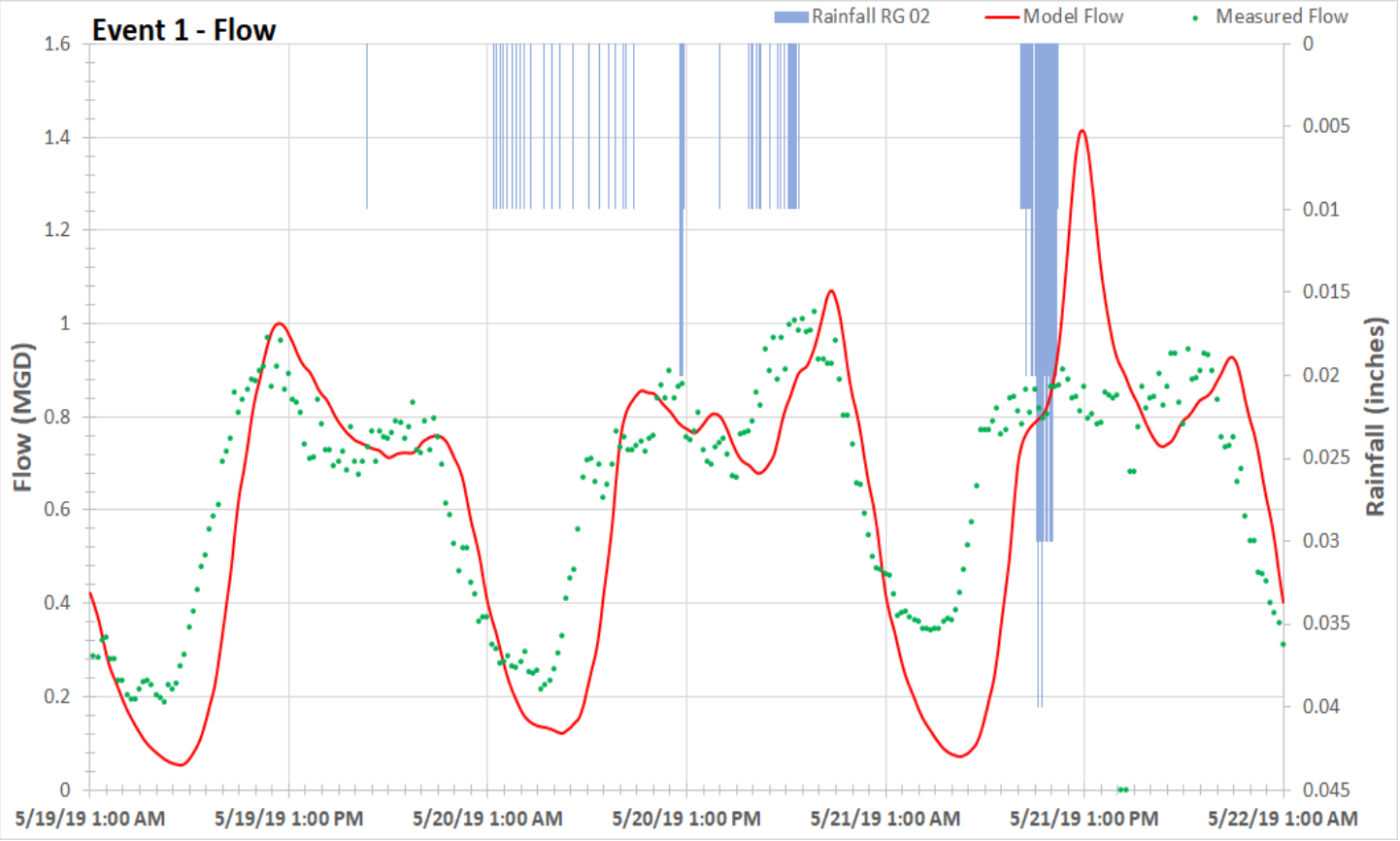
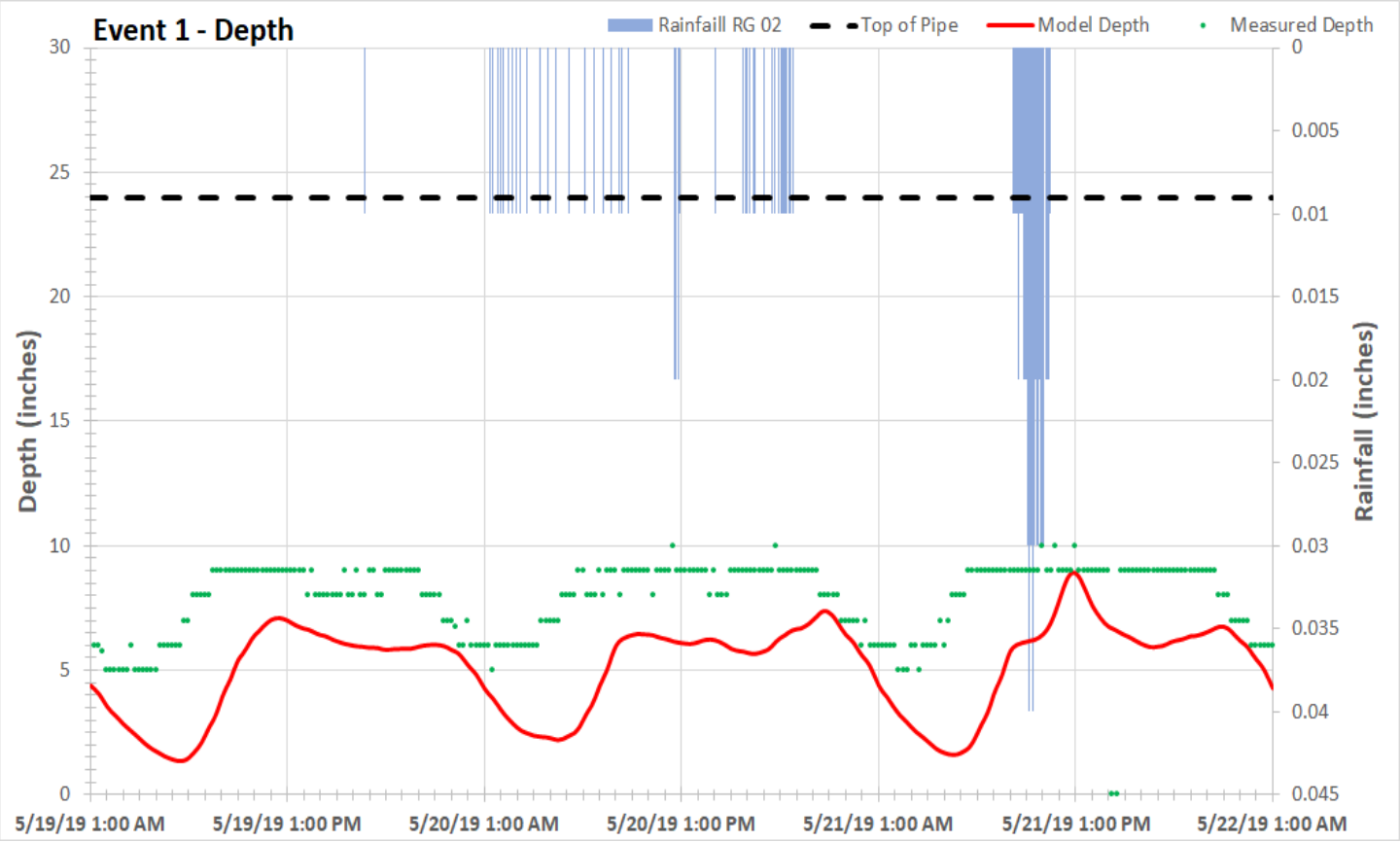
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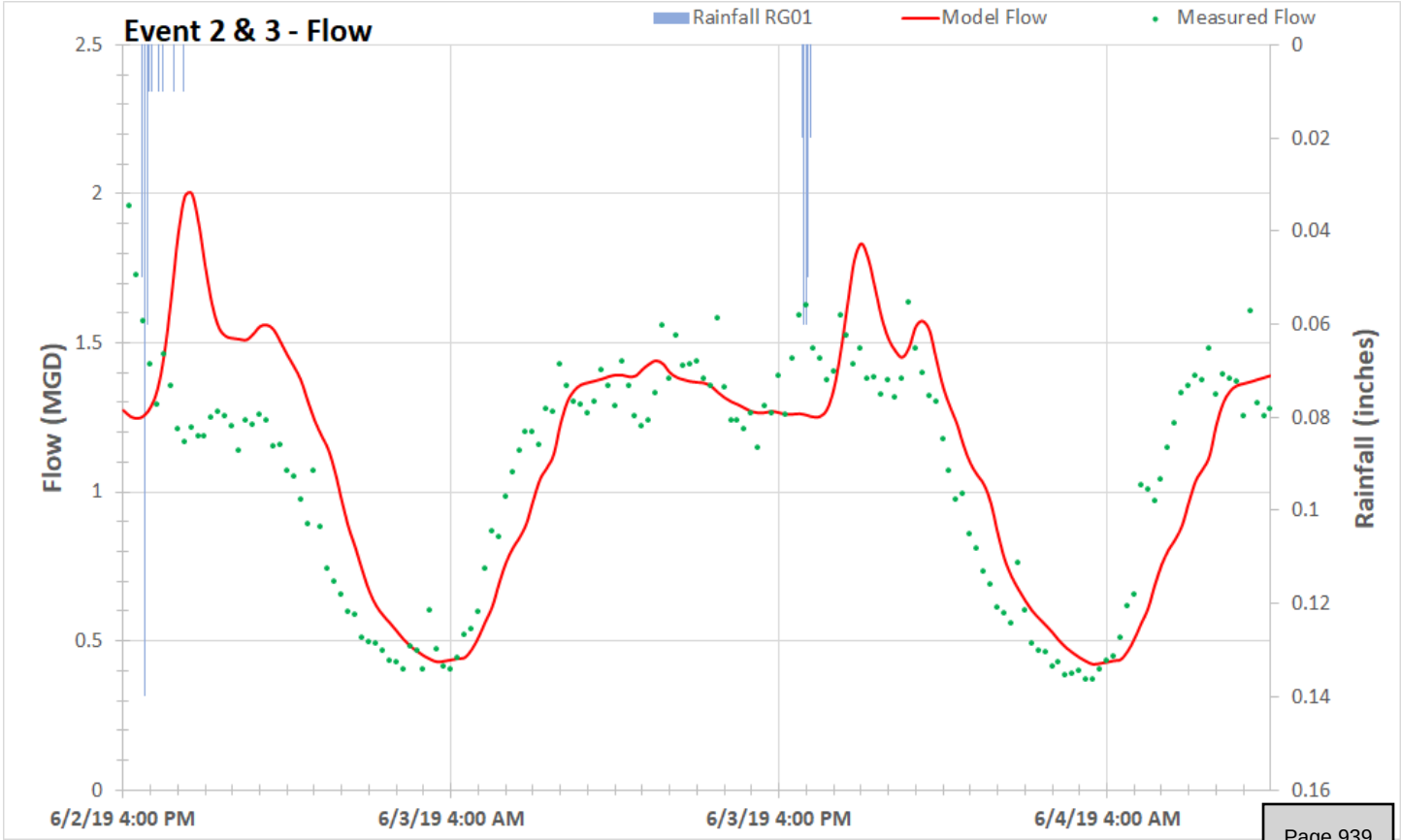
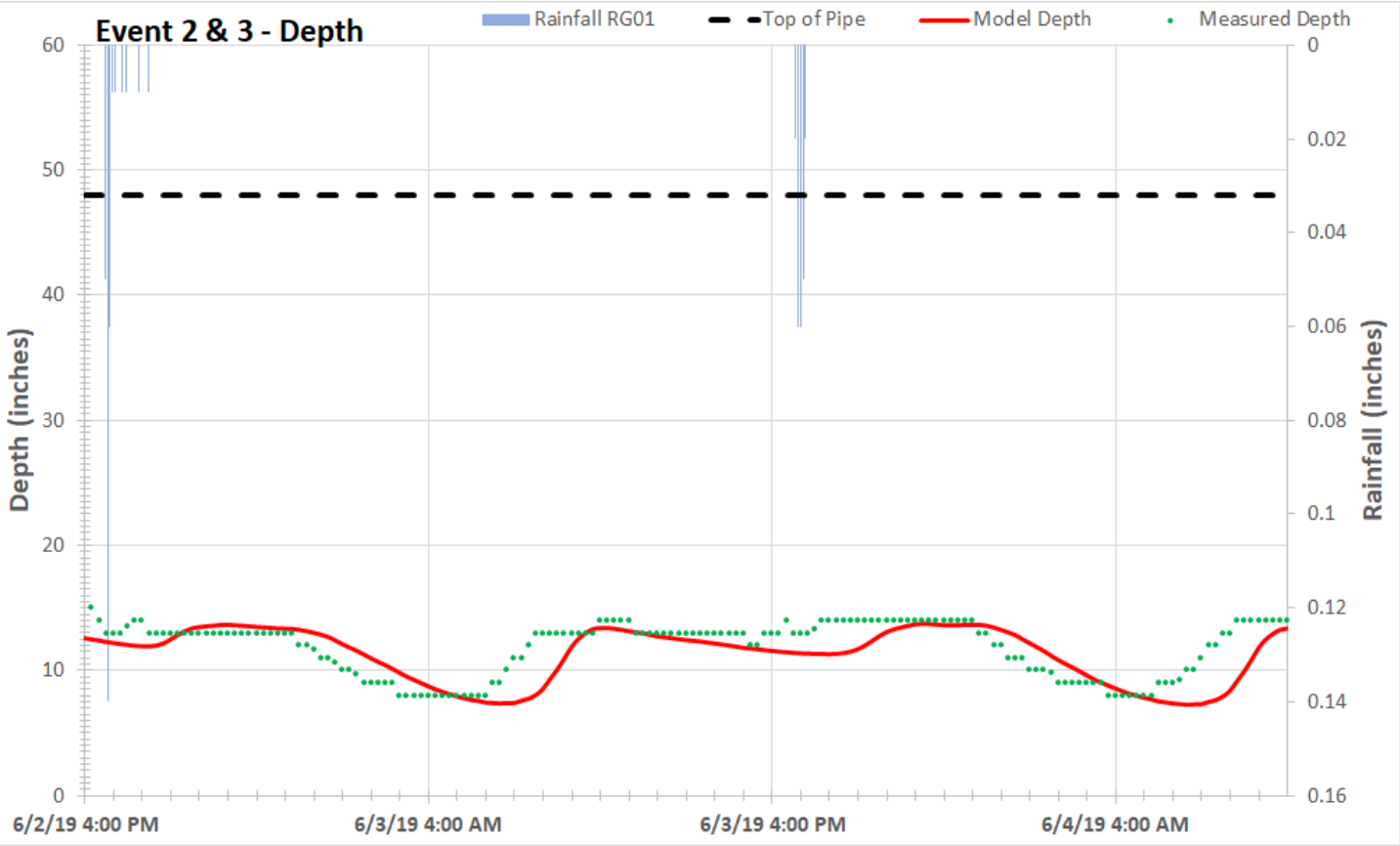
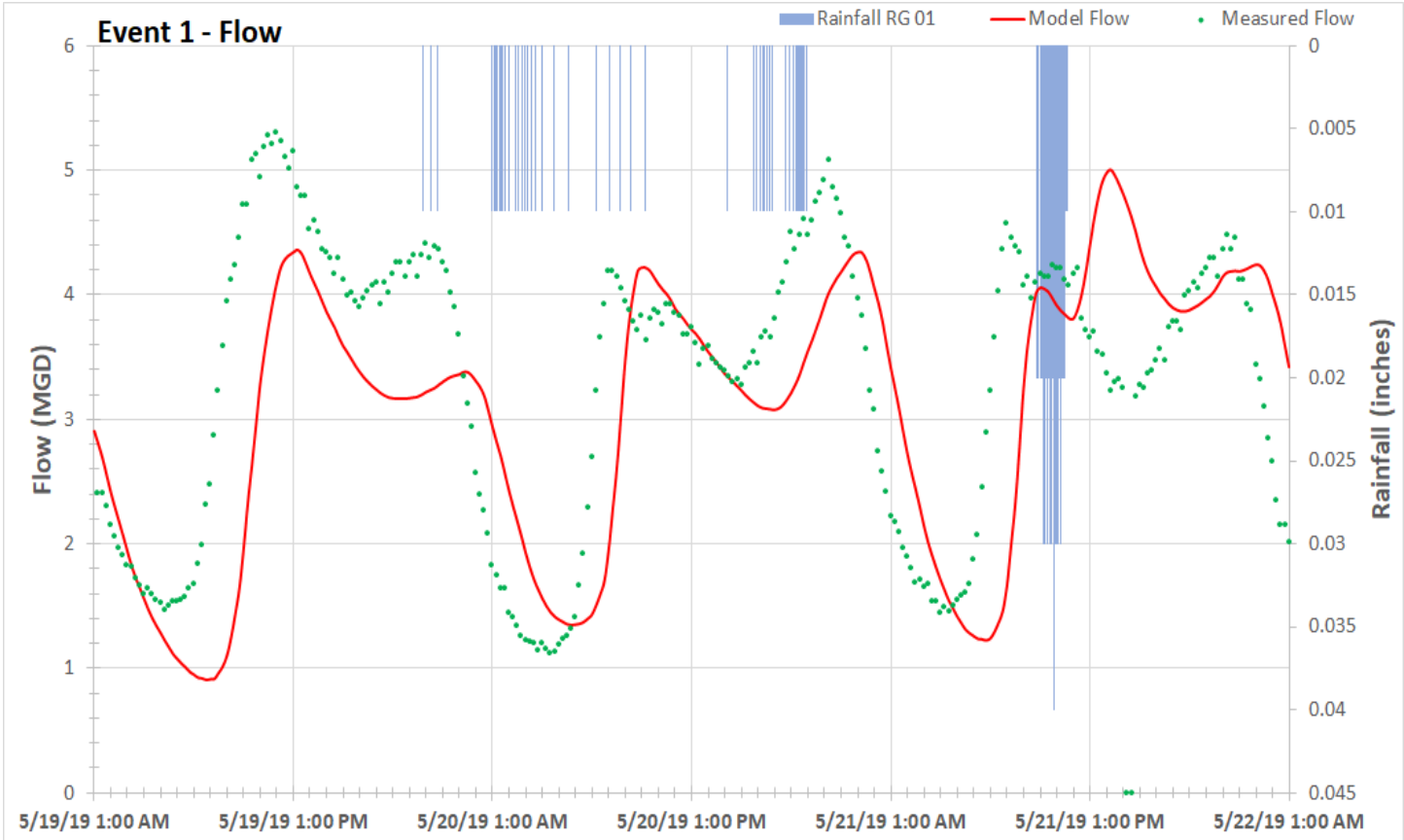
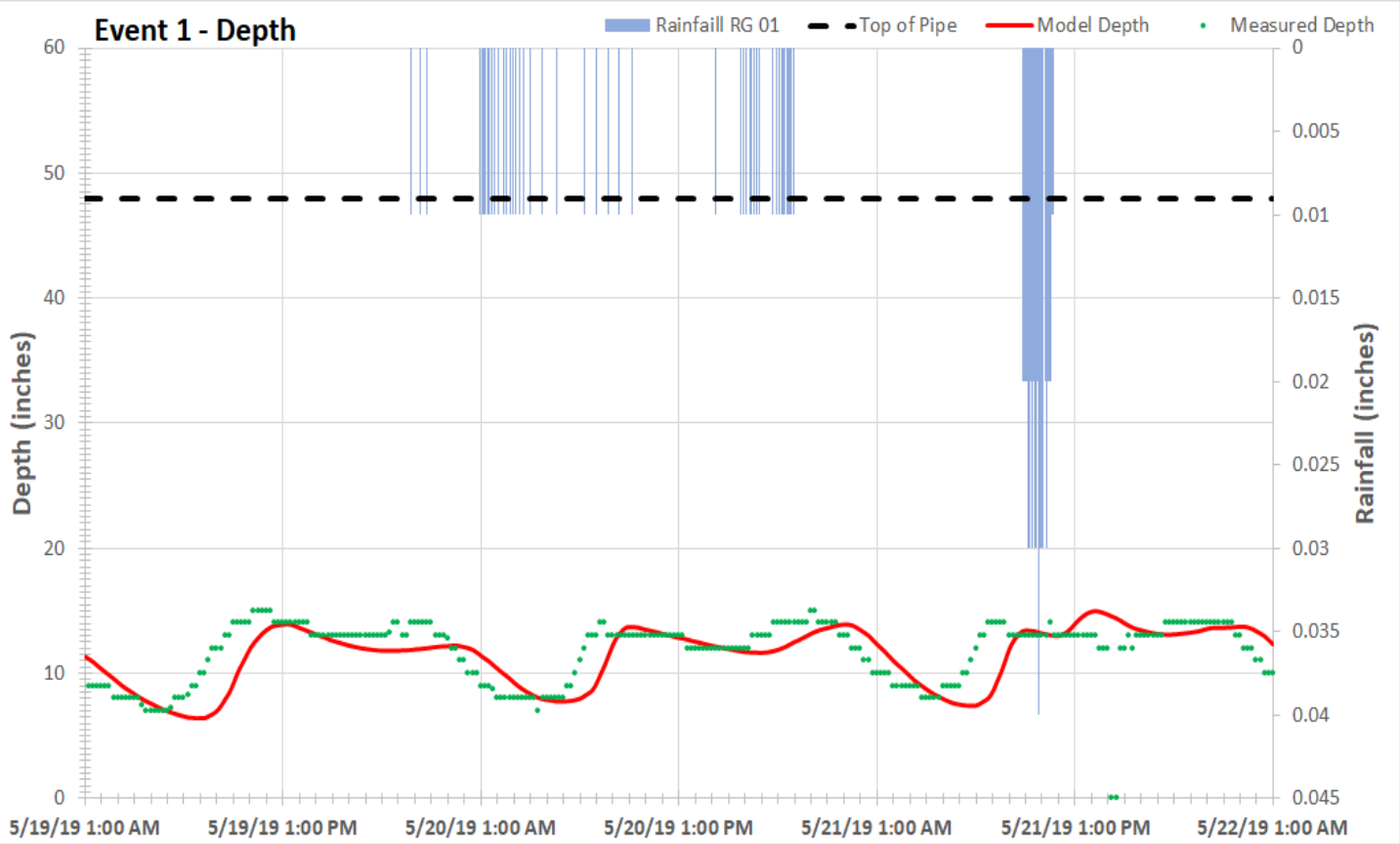
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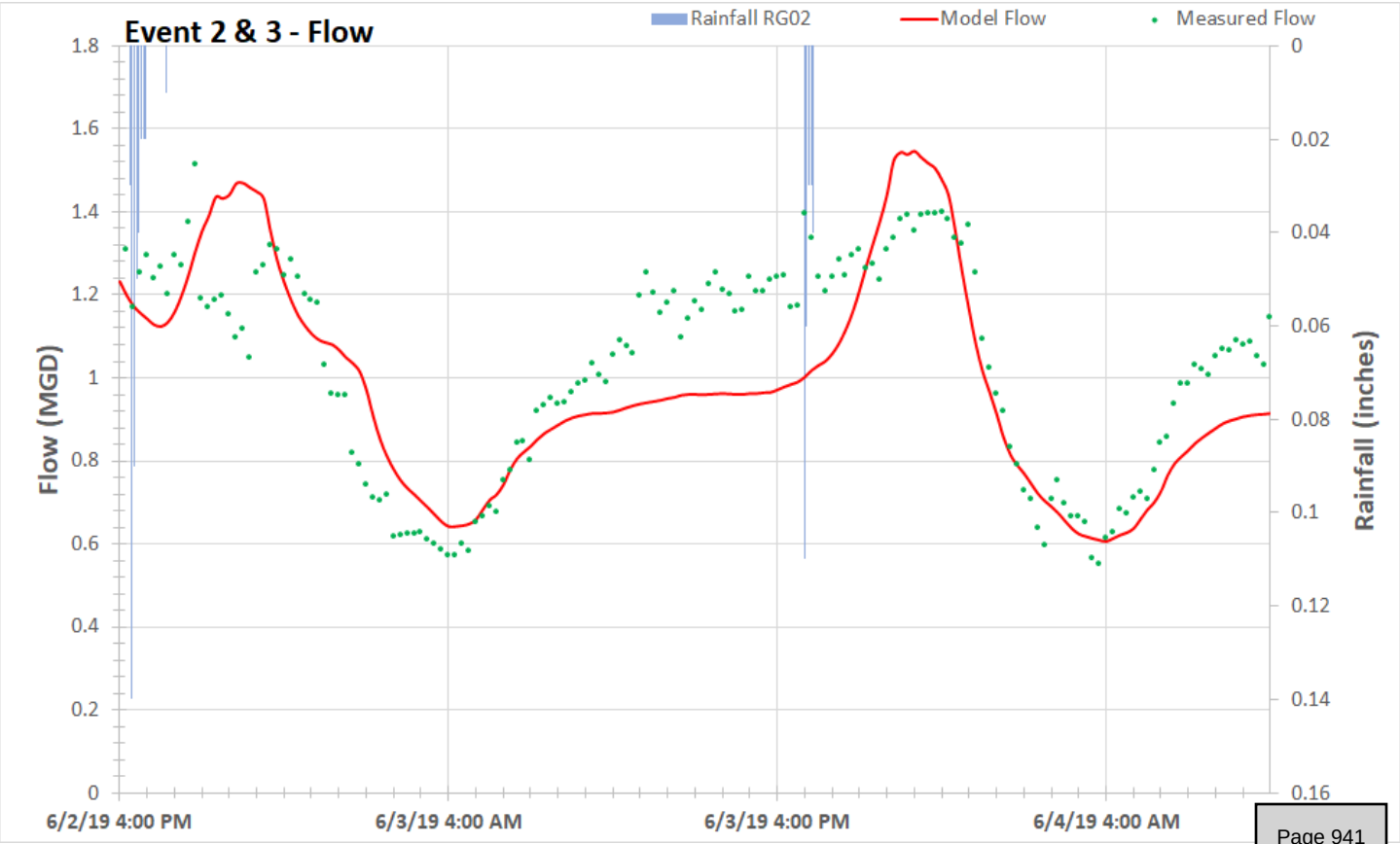
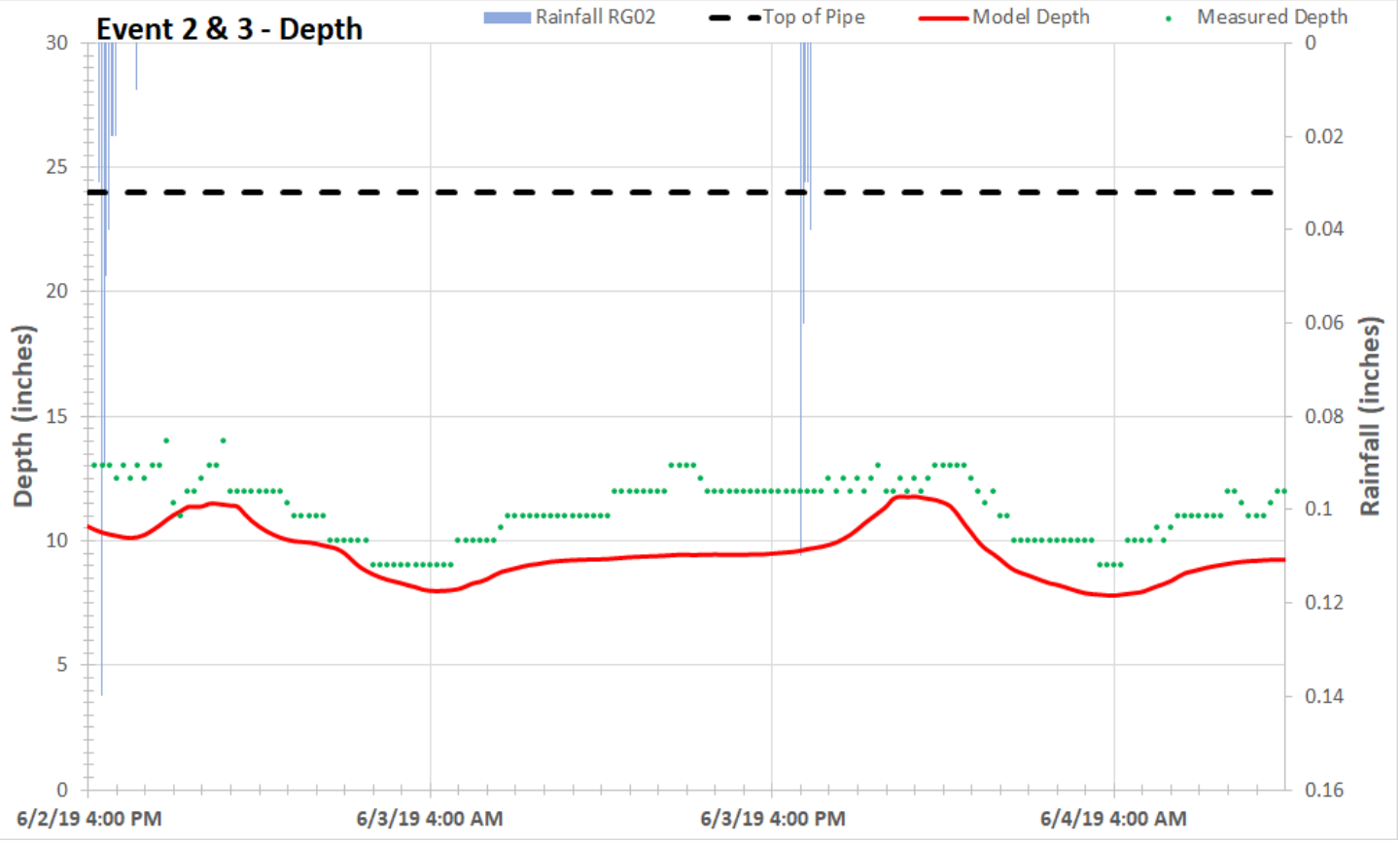
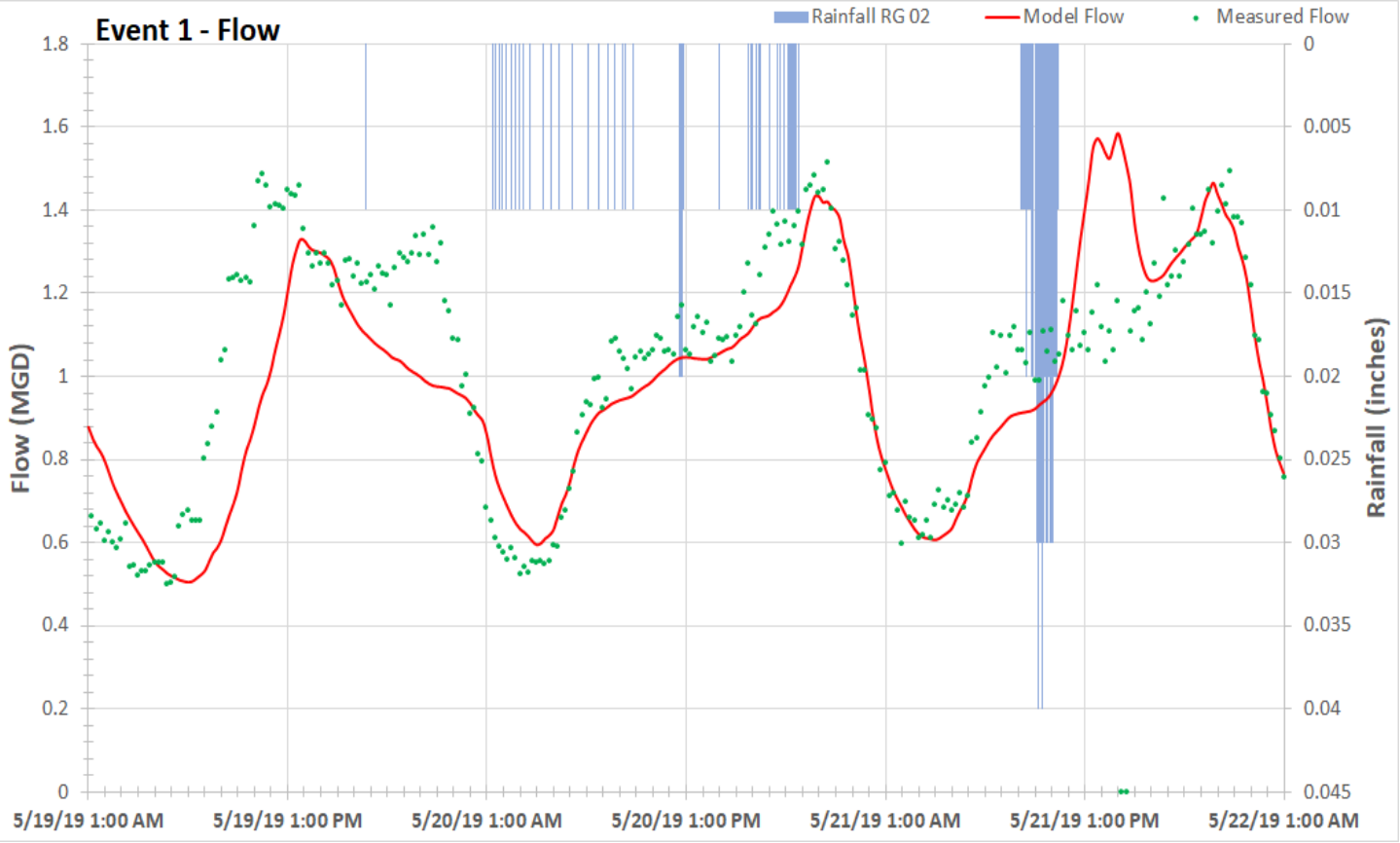
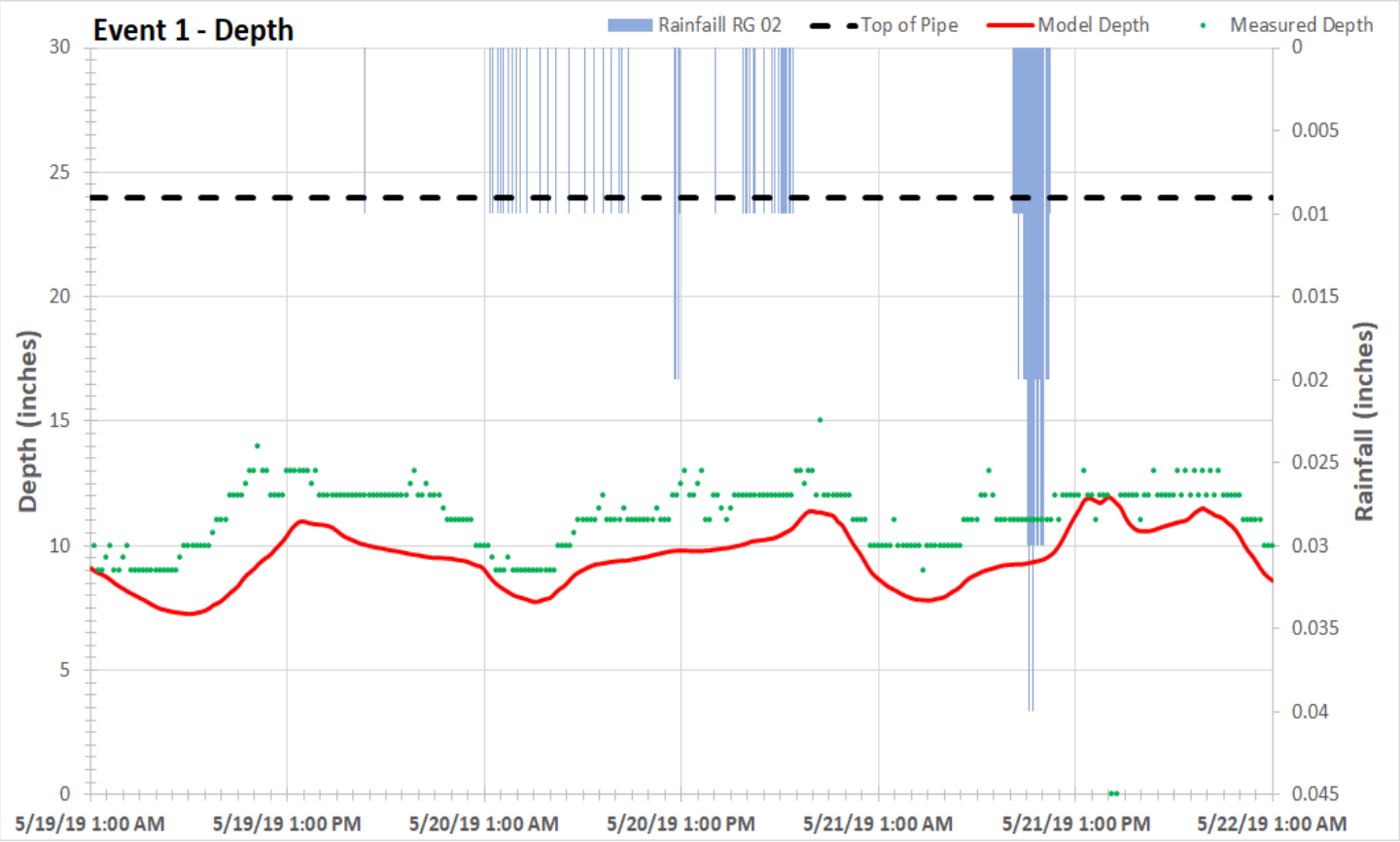
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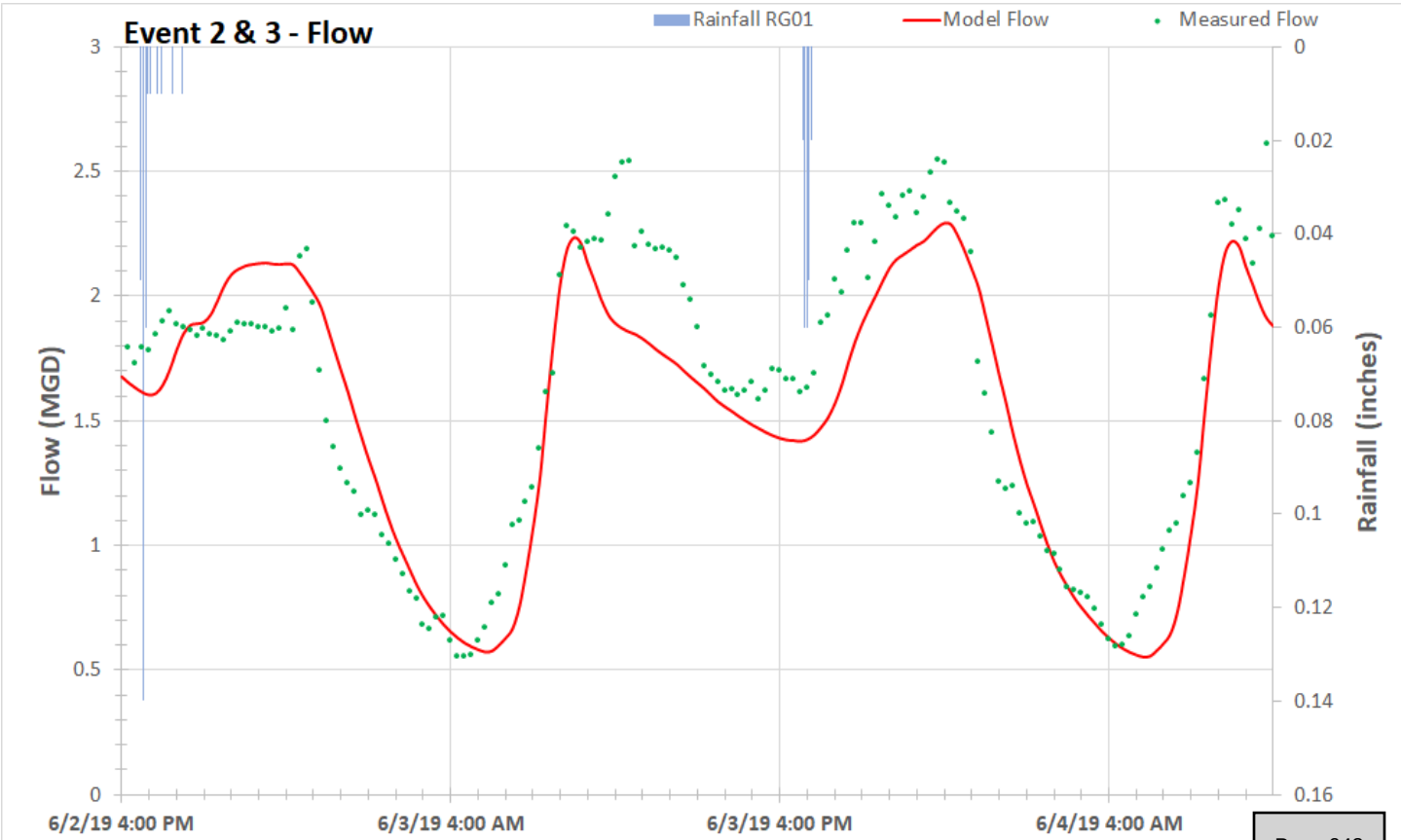
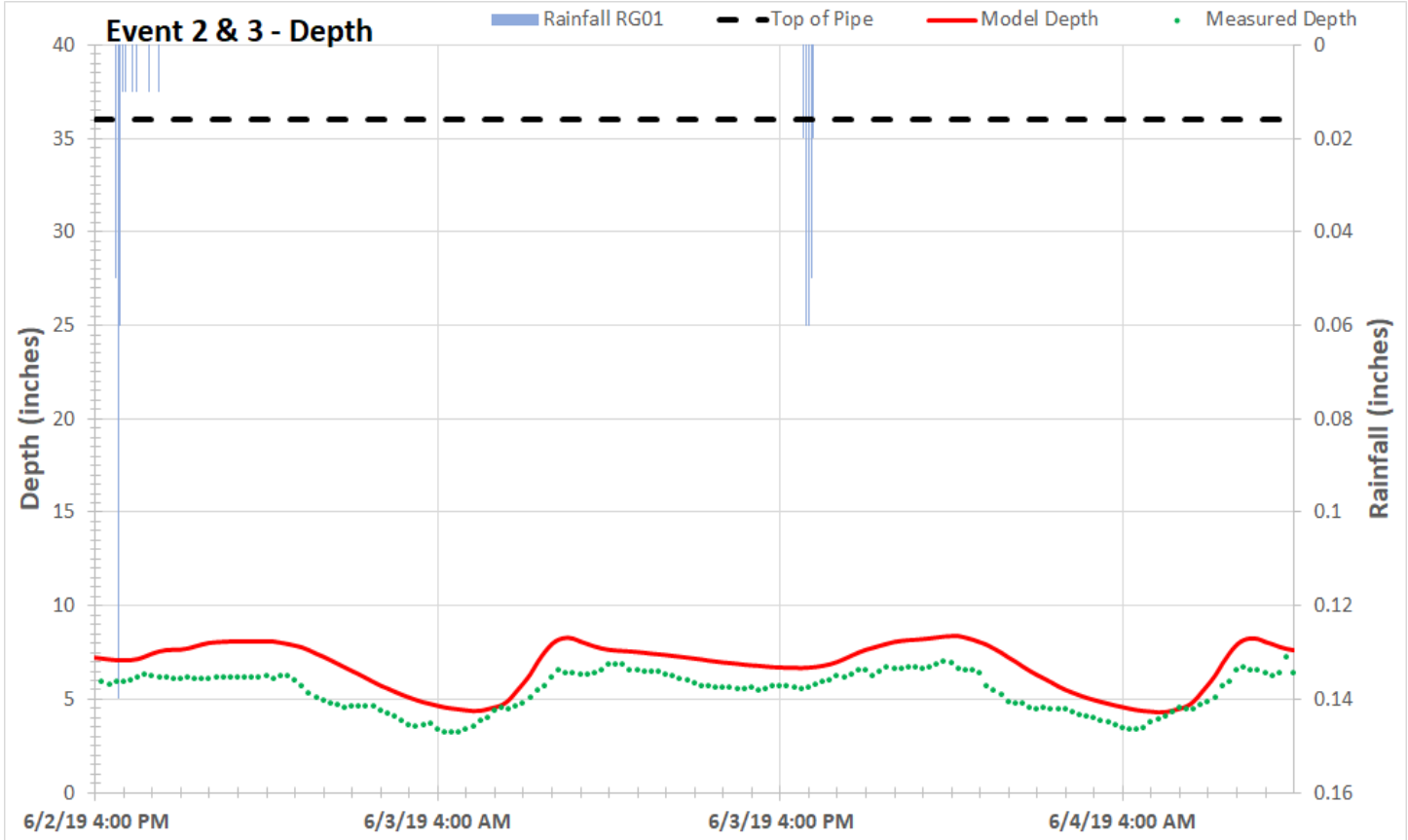
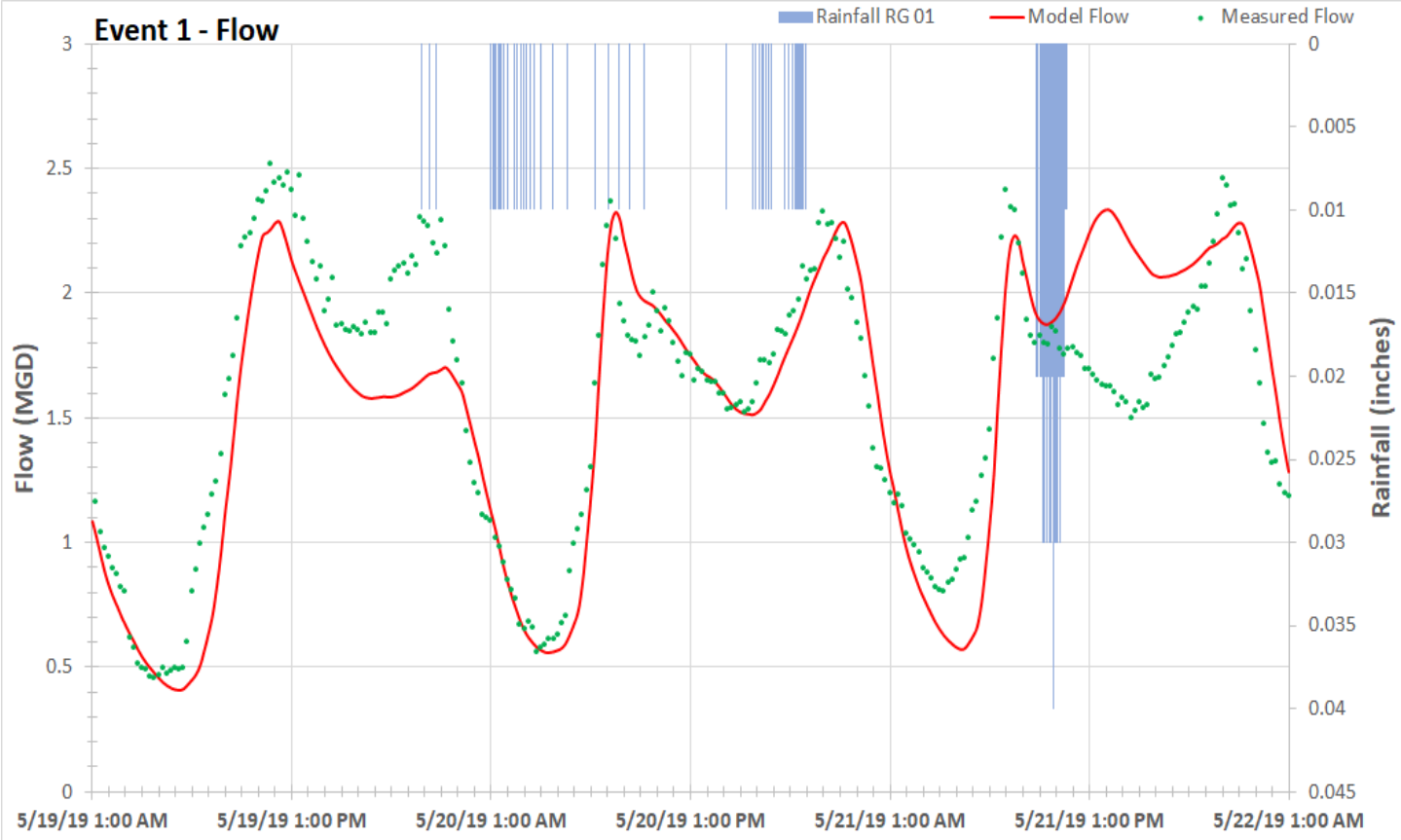
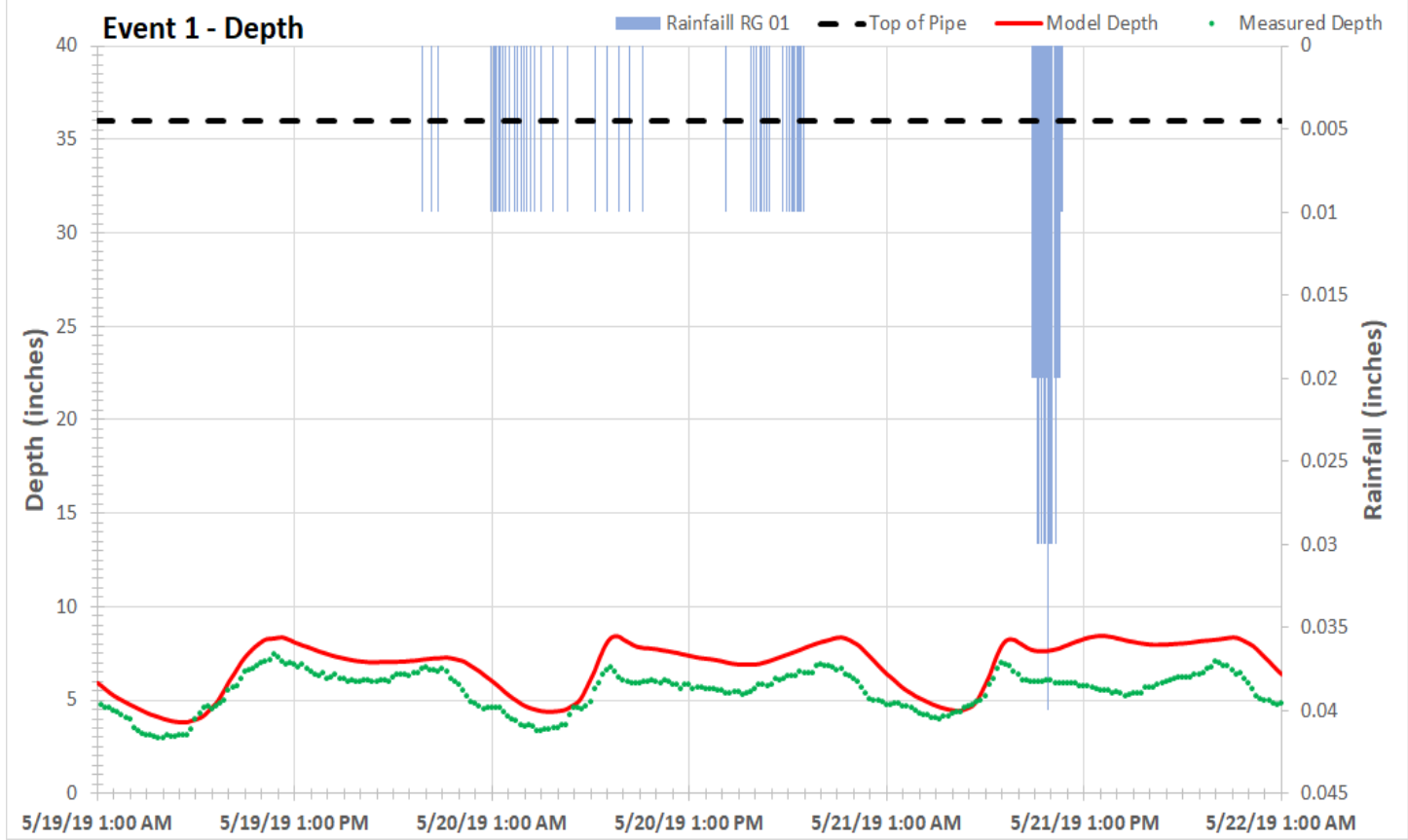
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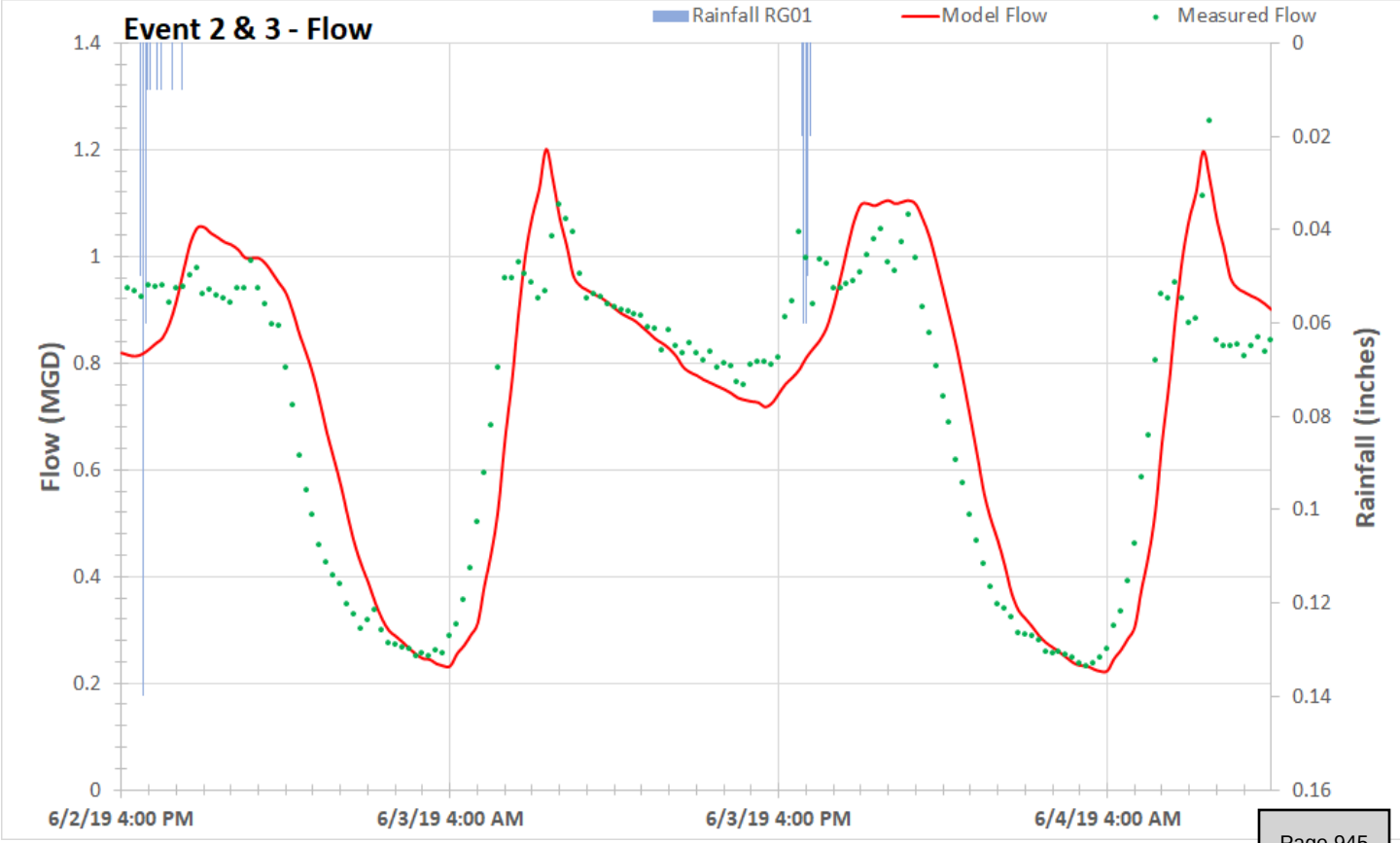
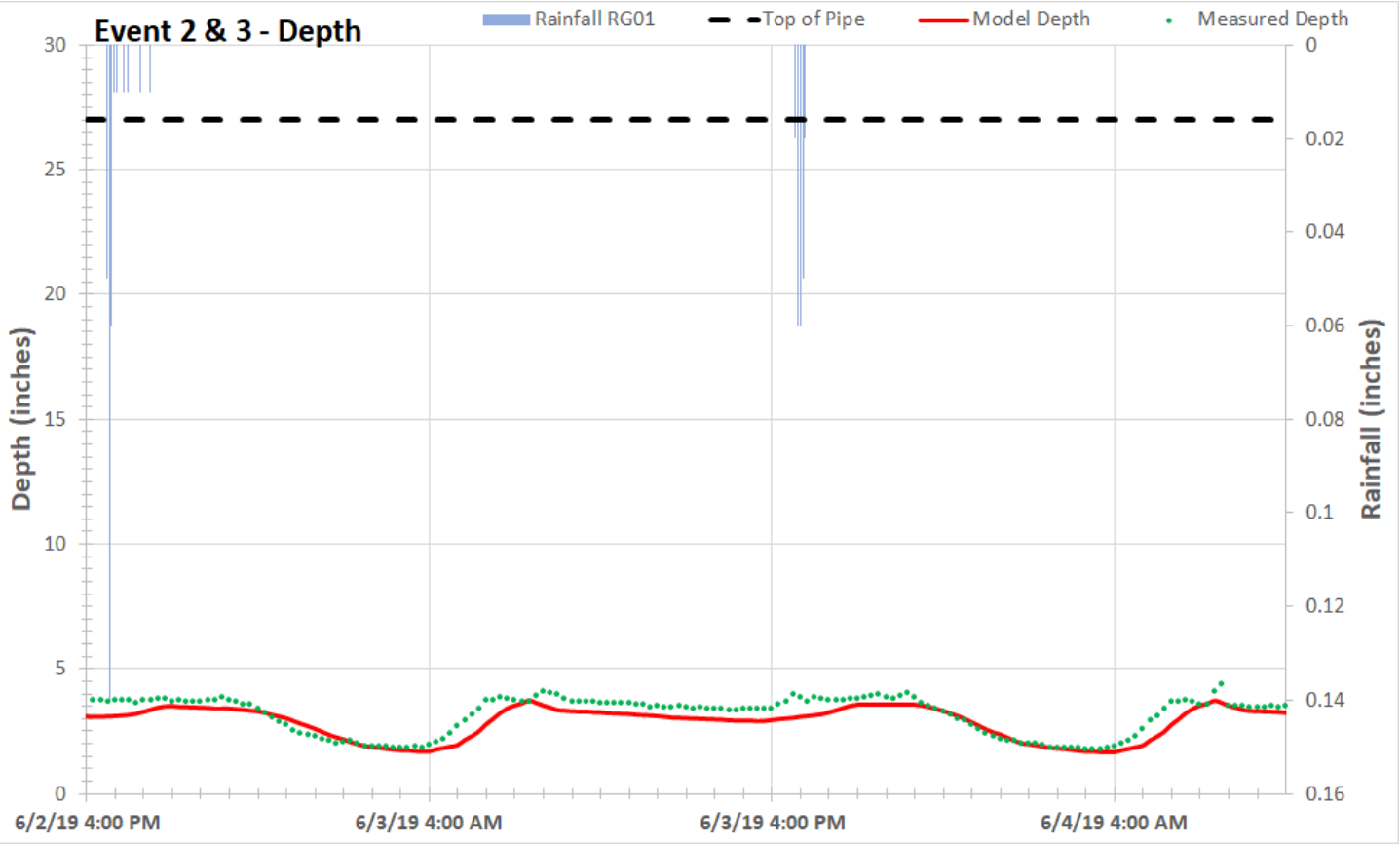
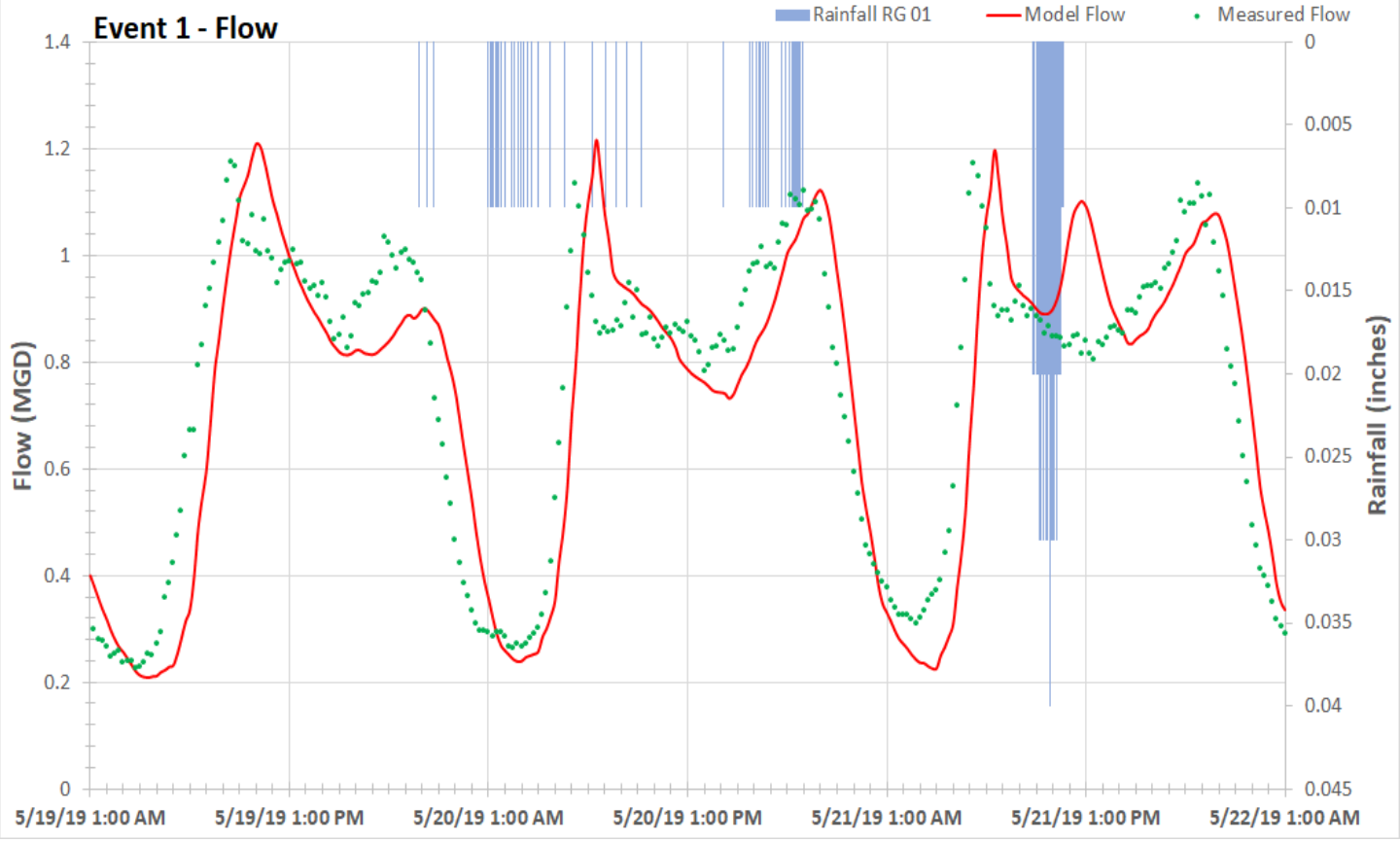
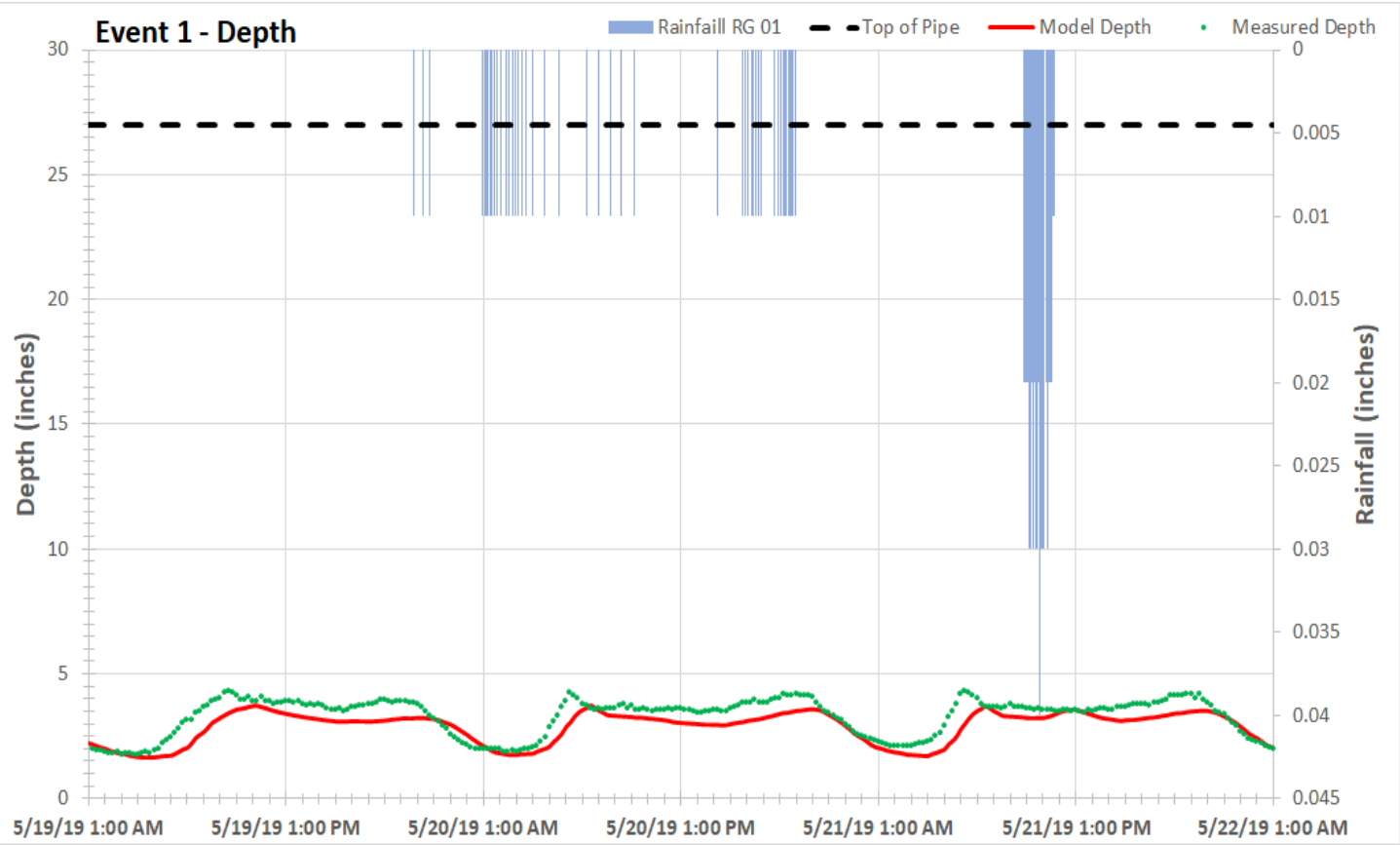
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Appendix C

Sanitary Sewer Master Plan – Flow Monitoring (RJN Group, Inc. September 2019)

September 2019

City of Greeley, CO Sanitary Sewer Master Plan

Flow Monitoring



Technical Memorandum
prepared for CDM Smith Inc.



prepared by
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- APPENDIX C – Scattergraphs
- APPENDIX D – Daily Flow Summary Tables

1

INTRODUCTION

In April 2019 RJN Group, Inc. was retained by CDM Smith, Inc. (CDM Smith) to perform flow monitoring in the City of Greeley (COG), Colorado. The study consists of using twelve (12) flow monitors and two (2) rain gauges for a monitoring period of 60 days.

The purpose of the flow and rainfall monitoring was to assist with the COG's wastewater collection master plan update. Dry and Wet-weather flows were analyzed to determine dry weather patterns and to identify the contributed excesses flows from wet weather events into the sewer system.

This report addresses the results of the flow monitoring activities.

PROJECT APPROACH

RJN Group, Inc. performed a flow monitoring study between April 18 to June 17, 2019 of COG's wastewater collection system for the purpose of evaluating flow characteristics and to assist CDM Smith's wastewater collection system master plan update efforts.

The project scope consisted of flow and rainfall monitoring for 60 days. Twelve (12) flow meters and two (2) rain gauges were installed between the dates April 2 to April 16, 2019 with the flow monitoring period beginning on April 18. The flow meter and rain gauge locations were provided by CDM Smith. Although the scope requested 30 days of flow monitoring, due to a CDM Smith-requested extension of flow monitoring, meters were pulled after 60 days.

Table 1-A, on the following page provides details of the meter locations used for this monitoring period. The height/width of opening, as indicated on the table, is the measured pipe dimension and does not reflect the nominal pipe size. This is due to deflections that occur at the mouth of a pipe during manhole installation.

The flow meters were used to record depth and velocity of flow at five-minute intervals. Engineering review and input of additional calibration data was used to finalize the metered flow data. Manual depth and velocity readings (velocity profiles) were taken weekly to verify and calibrate the metered data. Average flow rates for one-hour intervals were determined for the monitoring locations. The average hourly flow rates were used to determine daily dry-weather and wet-weather flow rates. Flow data collected during rainfall events was evaluated to determine peak instantaneous inflow rates.

Figure 1.1, on the following page outlines the location of the flow meter.

Table 1-A
FLOW MONITORING LOCATIONS

Meter Site Number	Manhole Number	Site Address	Pipe Dimensions	
			Pipe Height (in)	Pipe Width (in)
FM01	18-16.001	1731 71 st Ave.	14.19	14.37
FM02	08-08.003	6350 W 13 th St. Rd.	11.50	11.66
FM03	10-00.001	296 Street C	15.31	15.25
FM04	09-00.002	435 N 35 th Ave.	18.00	17.75
FM05	09-00.026	35 th Ave. & 13 th St.	10.18	10.18
FM06	11-00.005	723 26 th Ave.	15.25	15.00
FM07	07-00.024	621 A St.	19.75	20.06
FM08	05-00.027	1011 3 rd St.	20.18	20.25
FM09	04-00.007	601 8 th St.	20.00	20.05
FM10	03-00.018	1203 12 th Ave.	15.00	15.00
FM11	01-00.022	222 22 st St.	17.00	17.56
FM12	01-00.028	2330 4 th Ave.	17.25	17.75

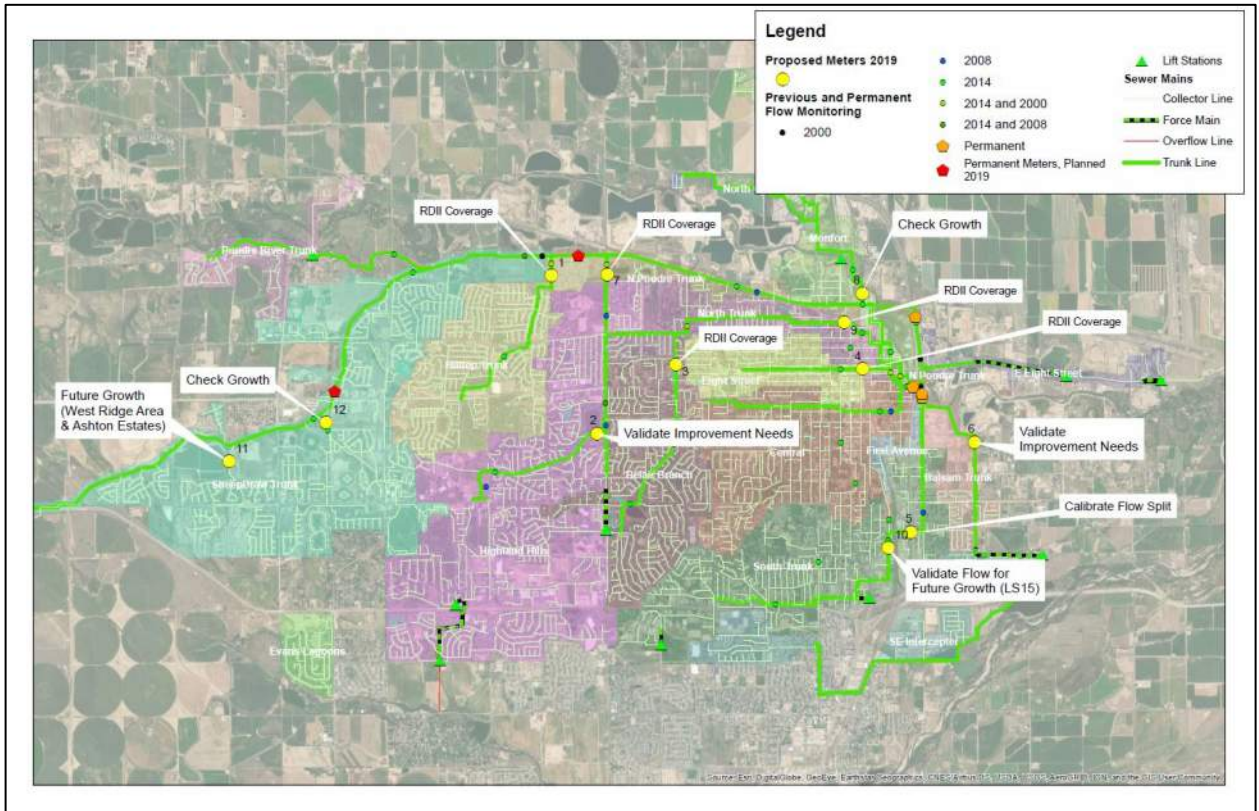


Figure 1.1: Overview of Flow Meter Locations

DEFINITIONS AND ABBREVIATIONS

This section contains definitions and abbreviations commonly used throughout this report.

- (1) Infiltration (as defined by USEPA) - the water entering a sewer system and service connections from the ground through such means as, but not limited to, defective pipes, pipe joints, service connections, service laterals, or manhole walls.
- (2) Inflow (as defined by USEPA) - the water discharged into a sewer system, including service connections, from such sources as roof leaders; cellar, yard, and area drains; foundation drains; cooling water discharges; drains from springs and swampy areas; manhole covers; cross connections from storm sewers, combined sewers, or catch basins; storm waters; surface runoff; or drainage.
- (3) Excessive infiltration and inflow (I/I) - the extraneous clean water that enters the sanitary sewer system, which can be eliminated, on a cost-effective basis.
- (4) Base flow - wastewater flow exclusive of infiltration or inflow. Generally determined from water records during months when most of the water consumption is returned to the wastewater collection system.
- (5) Permanent Infiltration - extraneous flow that enters the sewer system through the ground during periods of dry-weather/low-groundwater. Generally determined by subtracting base flow during winter months from the average daily dry-weather monitored flow.
- (6) Peak Infiltration - the maximum extraneous flow that enters the wastewater collection system during high groundwater conditions after the inflow effects of a rain event have ended. Generally determined by subtracting dry-weather/low-groundwater flow (average daily dry weather monitored flow) from flow recorded during periods of high groundwater.
- (7) Average Daily Dry-Weather flow - dry-weather/low-groundwater flow exclusive of dry-weather/high-groundwater (peak infiltration) and wet weather (inflow) flow. Includes base flow and permanent infiltration only.
- (8) Average Daily Dry-Weather flow Peaking Factor - the ratio between the peak hourly flow rate and the average daily flow.
- (9) 1-Year/60-Minute Storm - a storm event that produces 0.72 inches of rain per hour and is expected to occur once in any given year according to National Oceanic and Atmospheric Administration Atlas 14 Point Precipitation Frequency Estimates.
- (10) Design Storm Event - a storm event selected for purposes of analyzing its effect on the wastewater collection system.
- (11) gpd - gallons per day.

- (12) mgd - million gallons per day.
- (13) Surcharge Condition – When the sewer flow depth equals or exceeds the diameter of the discharging sewer lines. (WEF Manual of Practice FD-6)
- (14) Sanitary Sewer Overflows (SSOs) (as defined by USEPA) – The discharge of untreated sewage from municipal sanitary sewer systems as a result of broken pipes, equipment failure, or system overload.
- (15) Infiltration and Inflow (I/I) – A combination of infiltration and inflow in sanitary sewer.
- (16) Rain-Derived Inflow and Infiltration (RD-I/I) – Quantity of rain dependent inflow and infiltration that enters the sanitary sewer system.

2

DATA COLLECTION AND EQUIPMENT

SITE SELECTION

Once the preliminary locations were submitted by CDM Smith a site investigation was performed to determine if the site had good hydraulics for data collection. Generally, it is preferred to have a straight channel where flow is free of turbulence or backwater effects. Listed below are other considerations that were investigated:

- Installation constraints
- Pipe dimensions
- Site accessibility
- Site specific concerns
- Manhole accessibility
- Manhole configuration
- Flow depth range
- Velocity range
- Employee safety
- Surcharging evidence
- Silt deposition
- Maintainability
- Telemetry constraints
- Sensor survival

A copy of the Flow Meter and Rain Gauge Site Installation Form complete with photos and site details of the meter locations, is provided in Appendix A. The photos of the meter site include the site location, inside manhole, and pipe before and after sensor placement.

FLOW METER TYPE INFORMATION

ADS Flowshark meters were selected as the gravity flow meter to complete the flow monitoring program. The average accuracy of the meters for the depth measurement is ± 0.15 inches and the average accuracy for velocity is ± 0.04 fps.

Some information regarding the selected flow meters is included below and on the following pages:

ADS FLOWSHARK METER PRINCIPLES:

The flow meters are open channel flow meters that utilize Doppler ultrasound technology to sense flow velocity, as well as a redundant depth sensor. The flow meters have five primary components: a logger unit that stores the collected data and houses the RTU, the ultrasonic, pressure and velocity sensors, and the integrated wireless modem. The pressure depth sensor utilizes a pressure transducer which will record level including full pipe and surcharge level. The ultrasonic sensor is a non-intrusive quad-redundant transceiver sensor which will accurately record the depth to within one (1) inch of the sensor's face. The sensors emit signals and receive returned signals from the flow to capture the characteristics of the flow velocity and depth. During surcharged conditions the ultrasonic depth sensors no longer function, and the level is recorded through the pressure sensor.

Flows are calculated using the continuity equation, which is expressed as $Q = AV$, where Q is flow, A is the cross-sectional area, and V is the average velocity of the flow as illustrated in Figure 2.1. The meter records velocity and depth at five-minute intervals. Also, as redundant checks, during non-surcharged conditions, Qmannings equation was also utilized.

Calibration and Installation:

The ADS FlowShark meter must be calibrated on site by entering physical offsets of the sensors and their positions in the meter as well as comparing the depth and velocity measurements recorded by the meter to manual measurements. Depth and velocity adjustments for the ADS meters are made directly to the meter as necessary.

The meter housing was secured with an eyebolt on the wall of the manhole. A stainless steel, expandable band secured the depth/velocity probe to the channel. The probes were positioned in the flow of the incoming pipe to minimize the effects of flow turbulence and debris buildup that may exist in the manhole.

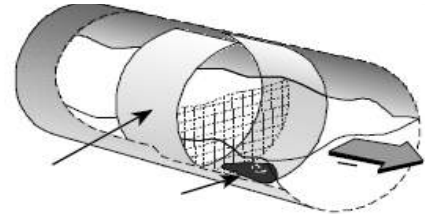


Figure 2.1: Flow is calculated using the Continuity Equation: Flow = Average Velocity x Area of Flow



Cables tied properly

Ultrasonic sensor

Crank for band (rotated to prevent debris collection)

Pressure sensor (submerged) calibrated and rotated to prevent debris collection

Velocity sensor (submerged) centered on invert

Figure 2.2: FM 03 Flow Meter Installation

TELEMETRY EQUIPMENT

The flow meter called into a central processing location during the project to perform a data dump for data collection and review. This process was performed through a Remote Transmission Unit (RTU) that collects data and sends the collected data by wireless telemetry to

the central processing location. The data was then available for review on the website hosted by RJN.

Each RTU initiated a call into the central location once every 24 hours. The RTU's transmit all the 5-minute data points recorded during that day.

The antennas are typically located just outside the manhole because a cast-iron manhole cover would block the wireless signals otherwise. The antenna was buried just below the existing surface. A typical installation is shown in Figure 2.3.

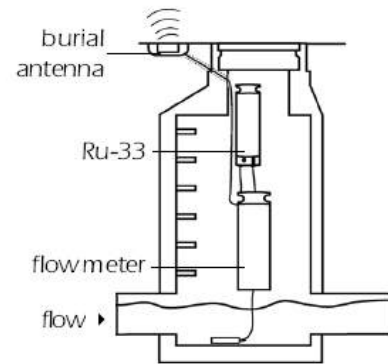


Figure 2.3: Typical meter installation

METER MAINTENANCE

During site visits, data stored in the meter was manually retrieved as a backup to the telemetry download and the meters were inspected to ensure proper operation. The meter depth and velocity readings were taken before and after maintenance/cleaning of the probes. Manual depth and velocity measurements were taken, silt deposit depths were recorded, and the batteries were changed, if necessary. Table 2-A is a list of the maintenance schedule during the monitoring period.

Table 2-A FLOW METER & RAIN GAUGE MAINTENANCE LOG		
Item	Description of Work	Date
1	Site Investigation, Install, & Calibration	4/2 - 4/16/19
2	Maintenance	4/19/19
3	Manual Site Confirmation & Maintenance	4/24 - 4/25/19
4	Maintenance	4/29/19
5	Manual Site Confirmation & Maintenance	5/1 - 5/2/19
6	Maintenance	5/8/19
7	Manual Site Confirmation & Maintenance	5/10/19
8	Manual Site Confirmation & Maintenance	5/15 - 5/16/19
9	Manual Site Confirmation & Maintenance	5/22/19
10	Manual Site Confirmation & Maintenance	5/29/19
11	Manual Site Confirmation & Maintenance	6/5/19
12	Manual Site Confirmation & Maintenance	6/12/19
13	Final Site Confirmation & Removal	6/24 - 6/25/19

RAINFALL MONITORING

Two (2) temporary rain gauges maintained by RJN Group, Inc. were utilized to monitor rainfall during the April 18 through June 17 study period. Rainfall was recorded with a continuously recording rain gauge with an accuracy of 0.01 inches. The rain gauges were equipped with a separate RTU and called in once per day to relay data to the central database.

One rain gauge (RG01) was installed on the west side of City of Greeley at a lift station located near 610 N 71st St. and the other (RG02) was installed on the east side of the City of Greeley on the roof of the administration building of the WWTF located at 300 E 8th St. Rain gauge site sheets can be viewed within Appendix A of this report.

RAINFALL RESULTS:

Both rain gauges recorded one rainfall event of greater or equal than 0.75-inches of rainfall for a 24-hour period. The largest storm event occurred on between May 20 – May 21 for rain gauges RG01 and RG02, where the total rainfall was 0.75 inches and 0.87 inches, with a peak 1-hour intensity of 0.36 inches per hour and 0.39 inches per hour, respectively. The total cumulative rainfall measured from April 18 to June 17 for rain gauges RG01 and RG02 was approximately 3.17 inches and 4.82 inches, respectively. Rain gauge-recorded intensities are listed in Table 2-B and daily summaries are listed in Table 2-C.

Table 2-B RAINFALL INTENSITIES						
Rain Gauge	Observed Peak 60-min Intensity (in)	Observed Peak 60-min Storm Duration	Observed Peak 2-hour Intensity (in)	Observed Peak 2-hour Storm Duration	Observed Peak 24-hour Intensity (in)	Observed Peak 24-hour Storm Duration
RG01	0.36	5/21/2019 10:05:00 AM to 5/21/2019 11:05:00 AM	0.55	5/21/2019 9:40:00 AM to 5/21/2019 11:40:00 AM	0.75	5/20/2019 11:45:00 AM to 5/21/2019 11:45:00 AM
RG02	0.41	5/26/2019 4:05:00 PM to 5/26/2019 5:05:00 PM	0.58	5/21/2019 9:20:00 AM to 5/21/2019 11:20:00 AM	0.87	5/20/2019 11:25:00 AM to 5/21/2019 11:25:00 AM

Table 2-C
RAINFALL DAILY SUMMARIES

Date	RG01 Cumulative Rainfall (in)	RG02 Cumulative Rainfall (in)	Date	RG01 Cumulative Rainfall (in)	RG02 Cumulative Rainfall (in)
4/18/2019	0	0	5/19/2019	0.03	0.01
4/19/2019	0	0	5/20/2019	0.44	0.47
4/20/2019	0	0	5/21/2019	0.55	0.61
4/21/2019	0.15	0.37	5/22/2019	0	0
4/22/2019	0	0	5/23/2019	0.01	0
4/23/2019	0	0	5/24/2019	0	0
4/24/2019	0	0	5/25/2019	0	0
4/25/2019	0	0	5/26/2019	0.01	0.41
4/26/2019	0.03	0.04	5/27/2019	0.05	0.31
4/27/2019	0	0	5/28/2019	0.21	0.21
4/28/2019	0.01	0.01	5/29/2019	0.01	0.02
4/29/2019	0.03	0	5/30/2019	0	0
4/30/2019	0.33	0.25	5/31/2019	0.01	0.06
5/1/2019	0.1	0.1	6/1/2019	0	0
5/2/2019	0	0	6/2/2019	0.31	0.42
5/3/2019	0	0	6/3/2019	0.21	0.27
5/4/2019	0	0	6/4/2019	0.04	0.16
5/5/2019	0	0	6/5/2019	0	0
5/6/2019	0	0	6/6/2019	0	0
5/7/2019	0.05	0.07	6/7/2019	0	0
5/8/2019	0.04	0	6/8/2019	0.02	0
5/9/2019	0.19	0.22	6/9/2019	0.01	0.01
5/10/2019	0	0	6/10/2019	0	0
5/11/2019	0.14	0.12	6/11/2019	0	0
5/12/2019	0	0	6/12/2019	0	0
5/13/2019	0	0	6/13/2019	0	0
5/14/2019	0	0	6/14/2019	0	0
5/15/2019	0	0	6/15/2019	0.01	0.38
5/16/2019	0	0	6/16/2019	0.04	0.01
5/17/2019	0.06	0.24	6/17/2019	0.08	0.05
5/18/2019	0	0	TOTAL:	3.17	4.82

Due to the short term 60-day monitoring period, significant rain events were not recorded. For the rain events during the flow monitoring study compared to the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 8, Version 2, Point Precipitation Frequency Estimates table for the Greeley, CO area, perhaps similar storms as shown below would assist in a more thorough wet weather analysis. For comparison purposes, a 1-year/1-hour, 1-year/2-hour, and 1-year/24-hour NOAA storm is compared to a peak 1-hour, 2-hour, and 24-hour storm as shown below in Table 2-D during the flow monitoring period.

Table 2-D NOAA vs. RAINFALL INTENSITIES DURING FLOW MONITORING STUDY						
Rain Gauge	Observed Peak 60-min Intensity (in)	NOAA 1-year / 1-hour (in)	Observed Peak 2-hour Intensity (in)	NOAA 1-year / 2-hour (in)	Observed Peak 24-hour Intensity (in)	NOAA 1-year / 24-hour
RG01	0.36	0.72	0.55	0.86	0.75	1.51
RG02	0.41	0.72	0.58	0.86	0.87	1.51

FLOW MONITORING

Utilizing a pdf overall exhibit that was provided by CDM Smith, RJN was able to develop a flow network diagram as shown in Figure 2.5, on the following page. Hydrographs and scattergraphs for the monitored sites are included in Appendix B and Appendix C, respectively. Also, a daily flow summary table that includes daily minimum, maximum, and average flows for each monitored site, is included in Appendix D.

OBSERVED INFILTRATION LEAK

During a routine May 29 site confirmation and maintenance visit, an infiltration runner was observed at FM 7 site (MH 07-00.024) located at 621 A St. The infiltration runner was observed during each succeeding site visit up until when the meter was removed. The infiltration runner as shown below in Figure 2.4, was infiltrating through a hole on the side of the manhole channel, above the top of the flow depth.



Infiltration runner

Figure 2.4: FM 7 site infiltration runner along manhole channel

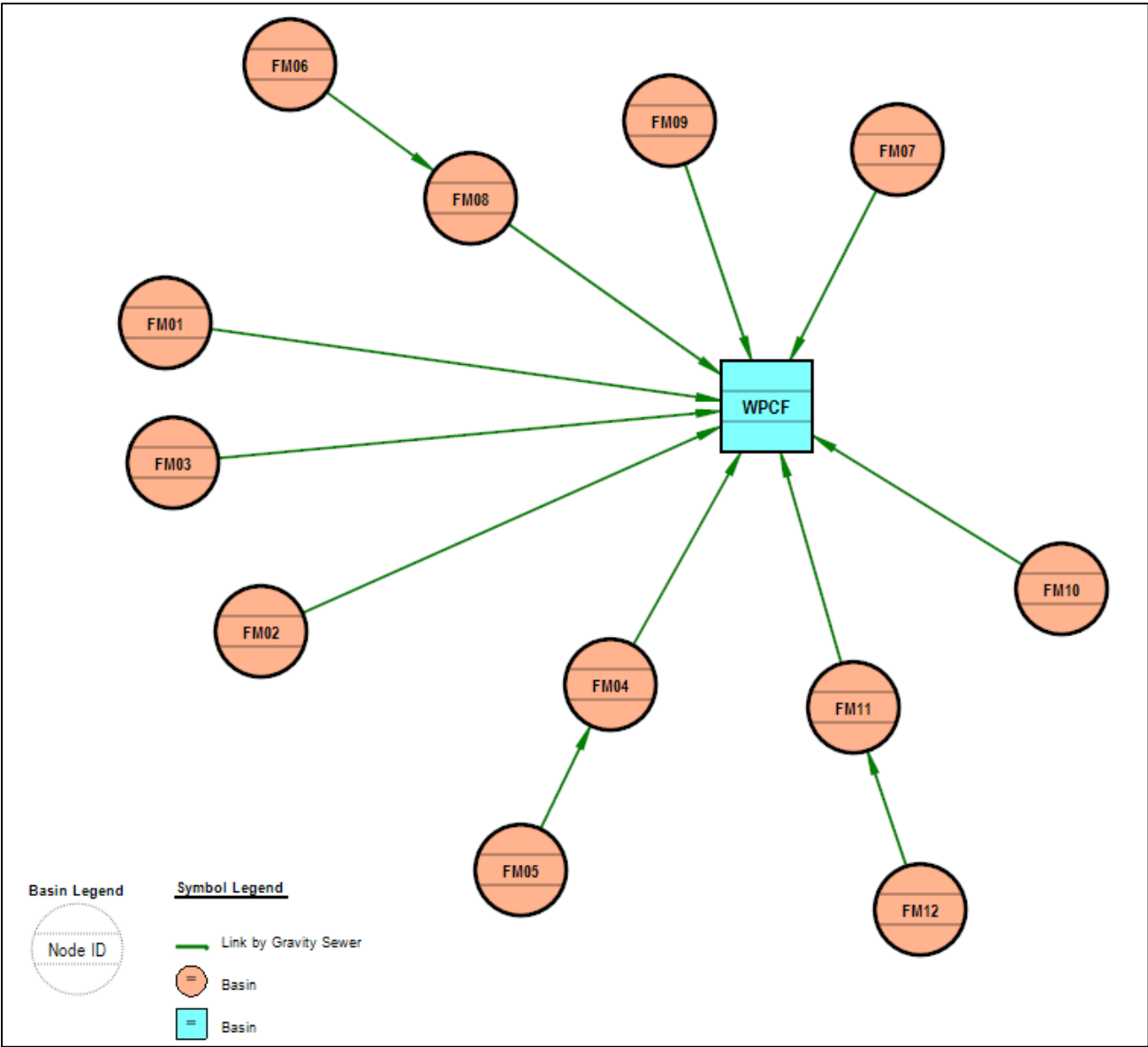
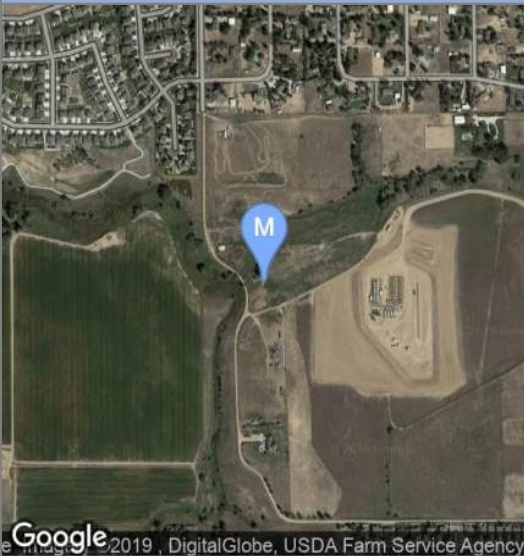
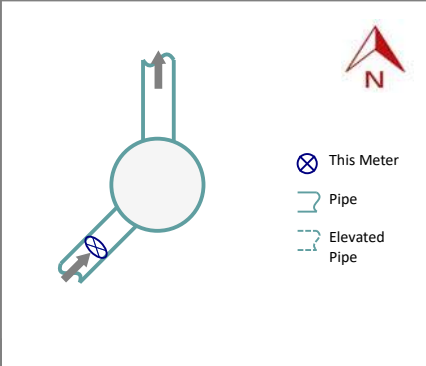
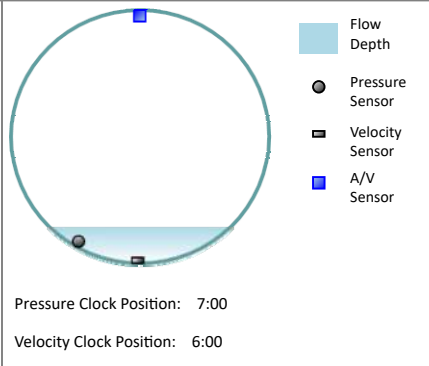
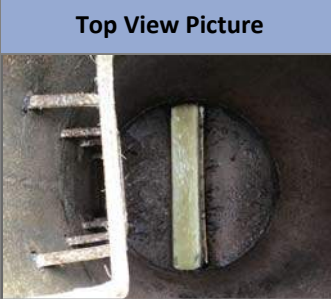
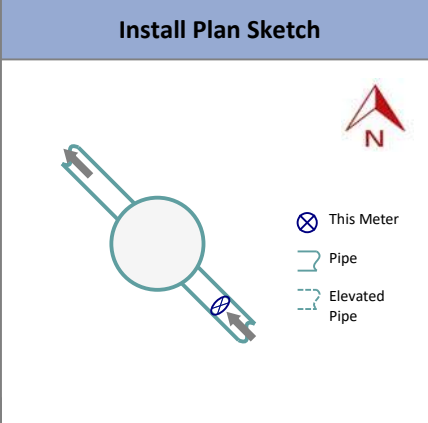
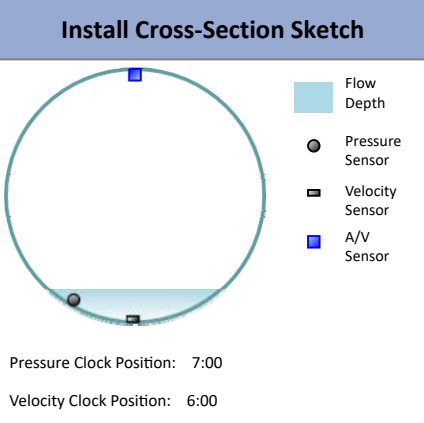


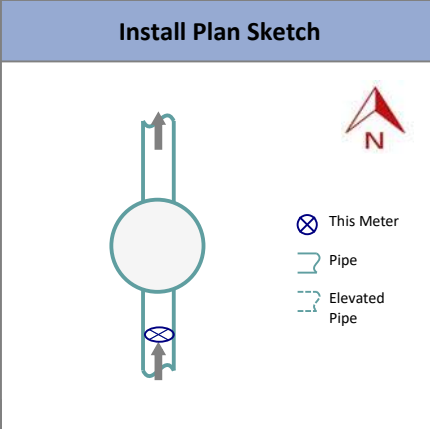
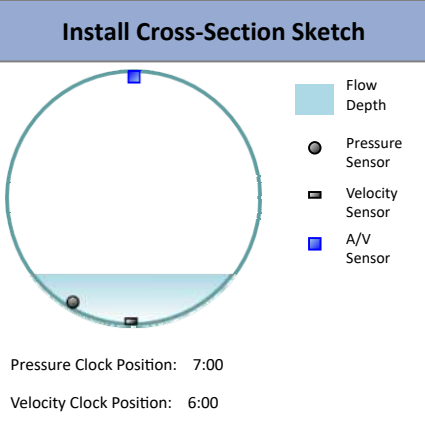
Figure 2.5: Flow network diagram

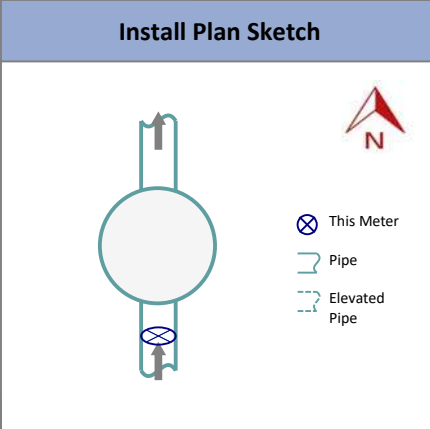
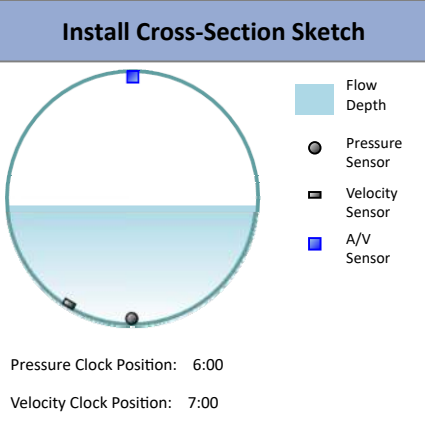
APPENDIX A

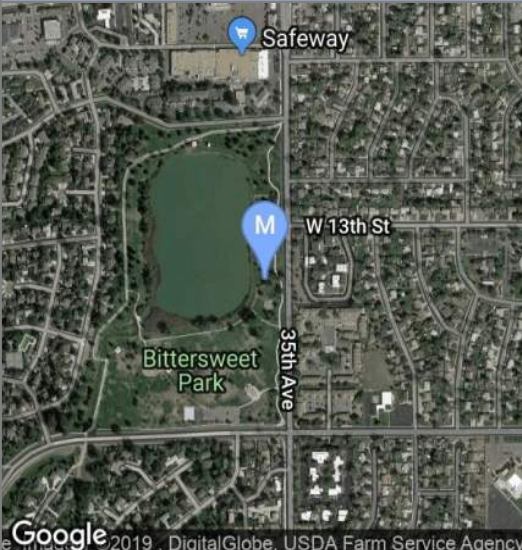
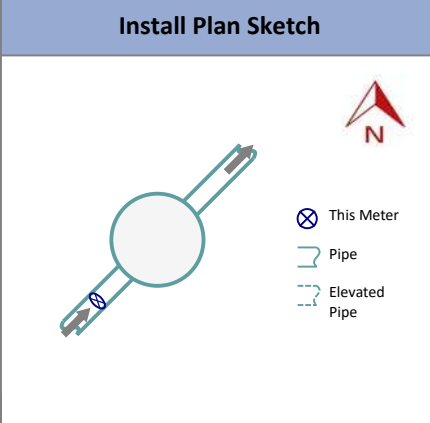
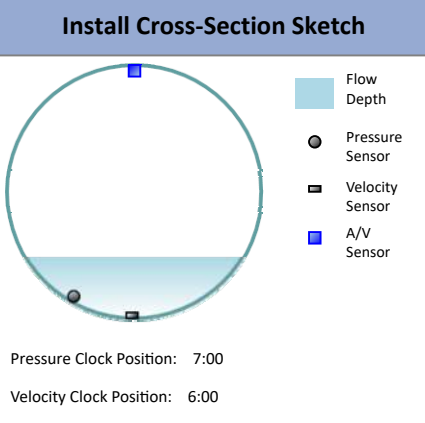
FLOW METER AND RAIN GAUGE SITE REPORTS

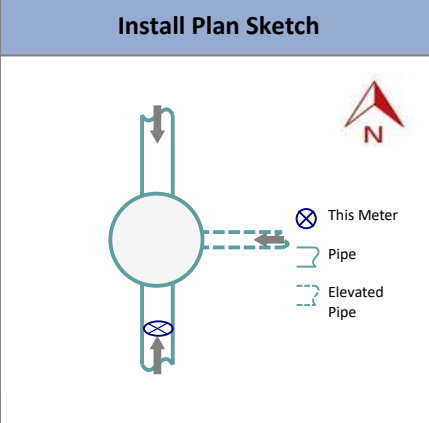
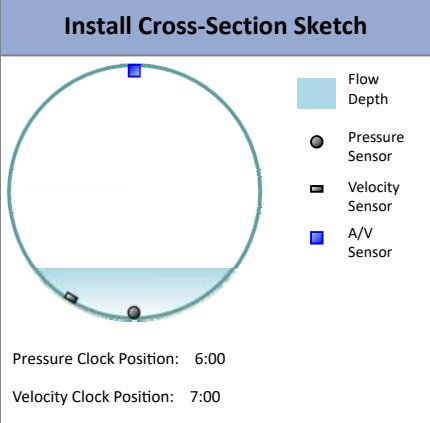
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Inspected By ncaris		Project No. 18-3428-00		Site Code D-2	
Inspected Date/Time 4/9/2019 12:06 PM					
System Information		Area Location Map		Area View Picture	
Target Pipe Dia. (in) 15.0 Municipality District Greeley Assigned Rain Gauge Client Manhole # 18-16.001 U/S Connecting MH I.D 08-16.002 System Characteristics: Residential - ☐ Commercial - ☐ Industrial - ☐ P/S Influence No WWTP Influence No					
Location Information				Top View Picture	
Site Address Site Access Off-Road Longitude -104.80200000 Latitude 40.41480000 MH Type Precast Concrete Manhole Depth (ft) 10.56 Manhole Width (ft) 4.0 Elevated MH Yes Height Elevated (ft) 0.3 Structural Integrity Safe		Access Notes Off new concrete trail.			
Site Information		Investigation Photo		Installation Photo	
Pipe Height (in) 14.19 Pipe Width (in) 14.37 Pipe Type Polyvinyl Chloride Pipe Shape Circular O2 LEL % H2S CO					
Hydraulic Information		Hydraulic Characteristics		Installation Notes	
Flow Depth (in) 2.00 Instant Velocity (fps) 3.50 Surge Evidence (ft) Silt Type None Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Slight Bend Drop Inlet No Hydraulic Rating Fair		Install Plan Sketch		Install Cross-Section Sketch	
Installation Notes					
Location in Pipe (ft) 1.0 Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Non-Paved Surface Signal Strength 50		Pressure Clock Position: 7:00 Velocity Clock Position: 6:00			
Post Installation Notes		Approvals			
Meter Type ADS 5000 AS Telemetry Type Telog Installation Date 4/9/2019		Recommended by FSP		Client Approval	

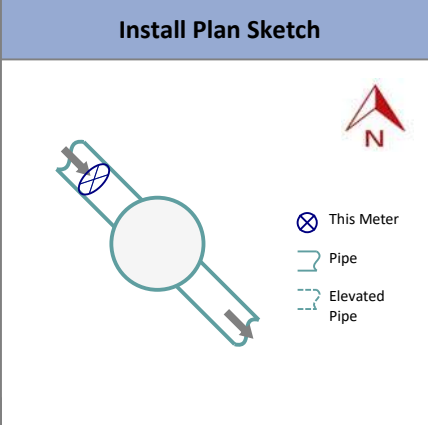
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Inspected By ncaris		Project No. 18-3428-00		Site Code U-1	
Inspected Date/Time 4/2/2019 3:11 PM					
System Information		Area Location Map		Area View Picture	
Target Pipe Dia. (in) 12.0 Municipality District Greeley Assigned Rain Gauge Client Manhole # 08-08.003 U/S Connecting MH I.D 08-08.004 System Characteristics: Residential - ☐ Commercial - ☐ Industrial - ☐ P/S Influence No WWTP Influence No					
Location Information		Access Notes		Top View Picture	
Site Address 6350 W 13th St Rd Site Access Off-Road Longitude -104.78500000 Latitude 40.41710000 MH Type Precast Concrete Manhole Depth (ft) 7.96 Manhole Width (ft) 4.0 Elevated MH No Height Elevated (ft) Structural Integrity Safe		About 50 yards perp to street. Investigated 1 upstream manhole from target because of inaccessibility.			
Site Information		Investigation Photo		Installation Photo	
Pipe Height (in) 11.50 Pipe Width (in) 11.66 Pipe Type Polyvinyl Chloride Pipe Shape Circular O2 LEL % H2S CO					
Hydraulic Information		Hydraulic Characteristics		Installation Notes	
Flow Depth (in) 1.50 Instant Velocity (fps) 4.00 Surge Evidence (ft) Silt Type None Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Straight Drop Inlet No Hydraulic Rating Fair		Install Plan Sketch		Install Cross-Section Sketch	
Installation Notes					
Location in Pipe (ft) 1.0 Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Non-Paved Surface Signal Strength 50		Pressure Clock Position: 7:00 Velocity Clock Position: 6:00			
Post Installation Notes		Approvals			
Meter Type ADS 5000 AS Telemetry Type Telog Installation Date 4/9/2019		Recommended by FSP		Client Approval	

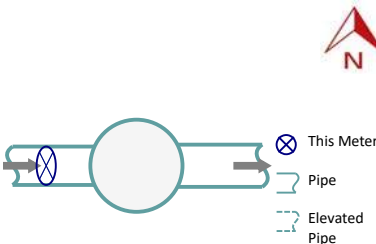
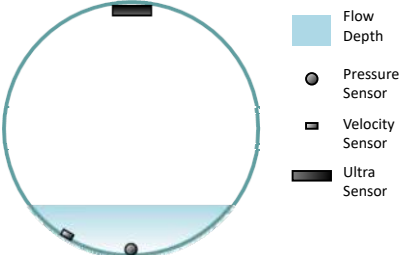
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Inspected By ncaris		Project No. 18-3428-00		Site Code T	
Inspected Date/Time 4/2/2019 4:15 PM					
System Information		Area Location Map		Area View Picture	
Target Pipe Dia. (in) 15.0 Municipality District Greeley Assigned Rain Gauge Client Manhole # 10-00.001 U/S Connecting MH I.D. 10-00.002 System Characteristics: Residential - ☐ Commercial - ☐ Industrial - ☐ P/S Influence No WWTP Influence No					
Location Information				Top View Picture	
Site Address 296 Street C Site Access Parkway Longitude -104.74469800 Latitude 40.43984100 MH Type Precast Concrete Manhole Depth (ft) 9.20 Manhole Width (ft) 4.0 Elevated MH No Height Elevated (ft) Structural Integrity Safe		Access Notes On concrete trail			
Site Information		Investigation Photo		Installation Photo	
Pipe Height (in) 15.31 Pipe Width (in) 15.25 Pipe Type Polyvinyl Chloride Pipe Shape Circular O2 LEL % H2S CO					
Hydraulic Information		Hydraulic Characteristics		Installation Notes	
Flow Depth (in) 3.00 Instant Velocity (fps) 2.00 Surge Evidence (ft) Silt Type None Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Straight Drop Inlet No Hydraulic Rating Fair		Install Plan Sketch		Install Cross-Section Sketch	
Installation Notes					
Location in Pipe (ft) 1.0 Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength 50		Pressure Clock Position: 7:00 Velocity Clock Position: 6:00			
Post Installation Notes		Approvals			
Meter Type ADS 5000 AS Telemetry Type Telog Installation Date 4/9/2019		Recommended by FSP		Client Approval	

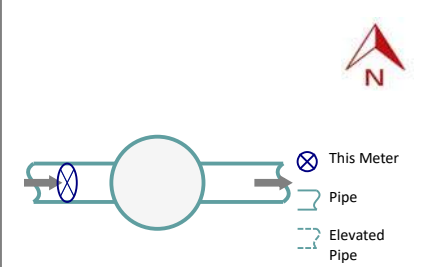
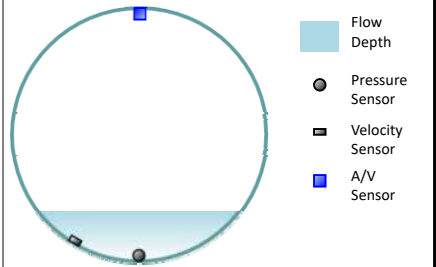
Item No. 21.  The Choice for Collection System Solutions		CDM Smith Greeley CO Flow Monitoring		Site Name FM04	
Inspected By ncaris		Project No. 18-3428-00		Site Code T	
Inspected Date/Time 4/3/2019 11:02 AM					
System Information		Area Location Map		Area View Picture	
Target Pipe Dia. (in) 18.0 Municipality District Greeley Assigned Rain Gauge Client Manhole # 09-00.002 U/S Connecting MH I.D 09-00.003 System Characteristics: Residential - ☐ Commercial - ☐ Industrial - ☐ P/S Influence No WWTP Influence No					
Location Information		Access Notes		Top View Picture	
Site Address 435 N 35th Ave Site Access Fenced In Longitude -104.73500000 Latitude 40.43830000 MH Type Poured Concrete Manhole Depth (ft) 7.44 Manhole Width (ft) 5.0 Elevated MH No Height Elevated (ft) Structural Integrity Safe		Fenced in property off road. Owner granted access during project. No lock on access gate. Gate located at W 35th Ave & W C St.			
Site Information		Investigation Photo		Installation Photo	
Pipe Height (in) 18.00 Pipe Width (in) 17.75 Pipe Type Vitrified Clay Pipe Shape Circular O2 LEL % H2S CO					
Hydraulic Information		Hydraulic Characteristics		Installation Notes	
Flow Depth (in) 8.40 Instant Velocity (fps) 2.00 Surge Evidence (ft) Silt Type None Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Straight Drop Inlet No Hydraulic Rating Fair		Install Plan Sketch		Install Cross-Section Sketch	
Installation Notes					
Location in Pipe (ft) 2.0 Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Non-Paved Surface Signal Strength 50		Pressure Clock Position: 6:00 Velocity Clock Position: 7:00			
Post Installation Notes		Approvals			
Meter Type ADS 5000 AS Telemetry Type Telog Installation Date 4/16/2019		Recommended by FSP		Client Approval	

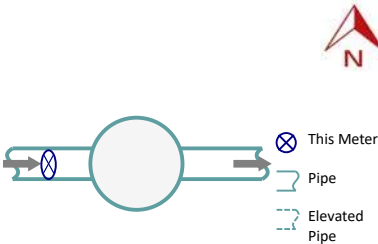
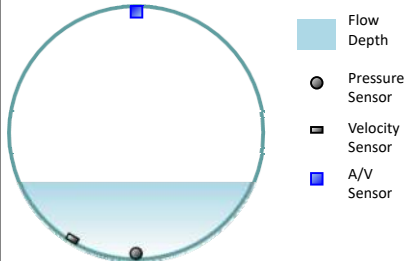
Item No. 21.  The Choice for Collection System Solutions		CDM Smith Greeley CO Flow Monitoring		Site Name FM05	
Inspected By ncaris		Project No. 18-3428-00		Site Code D-1	
Inspected Date/Time 4/3/2019 11:48 AM					
System Information		Area Location Map		Area View Picture	
Target Pipe Dia. (in) 10.0 Municipality District Greeley Assigned Rain Gauge Client Manhole # 09-00.026 U/S Connecting MH I.D 09-00.027 System Characteristics: Residential - ☐ Commercial - ☐ Industrial - ☐ P/S Influence No WWTP Influence No					
Location Information		Access Notes		Top View Picture	
Site Address 35th Ave & 13th St Greeley Site Access Parkway Longitude -104.73600000 Latitude 40.41740000 MH Type Poured Concrete Manhole Depth (ft) 8.52 Manhole Width (ft) 4.0 Elevated MH No Height Elevated (ft) Structural Integrity Safe		25 yards off street in public park. Selected 2 downstream because target manhole was 1 inch from surcharging and bench flooding at time of site investigation. The next downstream manhole from target site has a significant bend.			
Site Information		Investigation Photo		Installation Photo	
Pipe Height (in) 10.18 Pipe Width (in) 10.18 Pipe Type Vitrified Clay Pipe Shape Circular O2 LEL % H2S CO					
Hydraulic Information		Hydraulic Characteristics		Installation Notes	
Flow Depth (in) 2.50 Instant Velocity (fps) 4.00 Surge Evidence (ft) Silt Type None Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Straight Drop Inlet No Hydraulic Rating Fair				Band near mouth of pipe. Was unable to go further up pipe due to slight deformity.	
Installation Notes		Install Plan Sketch		Install Cross-Section Sketch	
Location in Pipe (ft) 0.2 Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Non-Paved Surface Signal Strength 50					
Post Installation Notes		Approvals			
Meter Type ADS 5000 AS Telemetry Type Telog Installation Date 4/9/2019		Recommended by FSP		Client Approval	

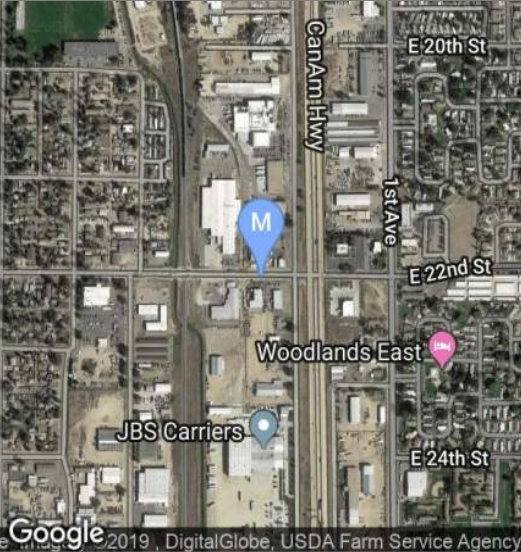
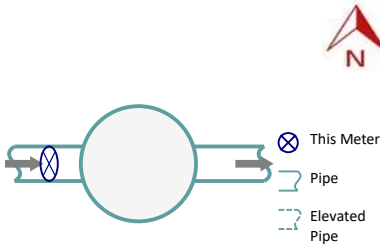
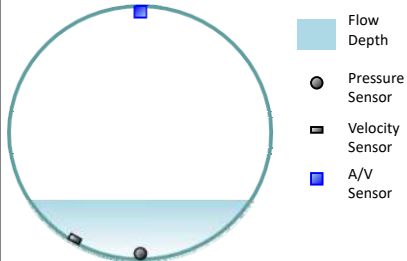
Item No. 21.  The Choice for Collection System Solutions		CDM Smith Greeley CO Flow Monitoring		Site Name FM06	
Inspected By ncaris			Project No. 18-3428-00		Site Code T
Inspected Date/Time 4/3/2019 12:23 PM					
System Information			Area Location Map		Area View Picture
Target Pipe Dia. (in) 15.0 Municipality District Greeley Assigned Rain Gauge Client Manhole # 11-00.005 U/S Connecting MH I.D 11-00.006 System Characteristics: Residential - ☐ Commercial - ☐ Industrial - ☐ P/S Influence No WWTP Influence No					
Location Information					Top View Picture
Site Address 723 26th Ave Site Access Roadway, Low Traffic Longitude -104.72200000 Latitude 40.42580000 MH Type Precast Concrete Manhole Depth (ft) 10.82 Manhole Width (ft) 4.0 Elevated MH No Height Elevated (ft) Structural Integrity Safe			Access Notes		
Site Information			Investigation Photo		Installation Photo
Pipe Height (in) 15.25 Pipe Width (in) 15.00 Pipe Type Vitrified Clay Pipe Shape Circular O2 LEL % H2S CO					
Hydraulic Information			Hydraulic Characteristics Incoming 6" dia. line from east had no flow during site investigation & installation vis		Installation Notes
Flow Depth (in) 3.00 Instant Velocity (fps) 2.00 Surge Evidence (ft) Silt Type None Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Straight Drop Inlet No Hydraulic Rating Fair			Install Plan Sketch		Install Cross-Section Sketch
Installation Notes					
Location in Pipe (ft) 1.0 Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength 50					
Post Installation Notes			Approvals		
Meter Type ADS 5000 AS Telemetry Type Telog Installation Date 4/16/2019			Recommended by FSP		Client Approval

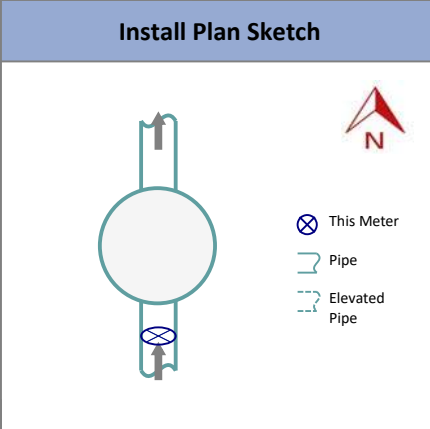
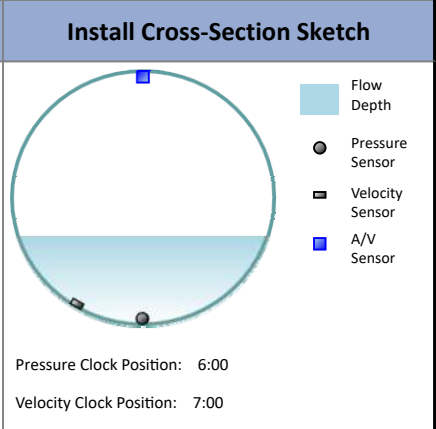
Item No. 21.  The Choice for Collection System Solutions		CDM Smith Greeley CO Flow Monitoring		Site Name FM07	
Inspected By ncaris			Project No. 18-3428-00		Site Code T
Inspected Date/Time 4/3/2019 2:13 PM					
System Information			Area Location Map		Area View Picture
Target Pipe Dia. (in) 21.0 Municipality District Greeley Assigned Rain Gauge Client Manhole # 07-00.024 U/S Connecting MH I.D 07-00.023 System Characteristics: Residential - ☐ Commercial - ☐ Industrial - ☐ P/S Influence No WWTP Influence No					
Location Information					Top View Picture
Site Address 621 A St Site Access Other Longitude -104.68900000 Latitude 40.43540000 MH Type Poured Concrete Manhole Depth (ft) 10.04 Manhole Width (ft) 4.0 Elevated MH Yes Height Elevated (ft) 0.4 Structural Integrity Safe			Access Notes Inside bay yard. Spoke to owner and he is ok with access throughout project. Not gated.		
Site Information			Investigation Photo		Installation Photo
Pipe Height (in) 19.75 Pipe Width (in) 20.06 Pipe Type Polyvinyl Chloride Pipe Shape Circular O2 LEL % H2S CO					
Hydraulic Information			Hydraulic Characteristics		Installation Notes
Flow Depth (in) 4.25 Instant Velocity (fps) 2.00 Surge Evidence (ft) Silt Type None Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Straight Drop Inlet No Hydraulic Rating Fair			Install Plan Sketch		Install Cross-Section Sketch
Installation Notes					
Post Installation Notes			Approvals		
Meter Type ADS 5000 AS Telemetry Type Telog Installation Date 4/9/2019			Recommended by FSP Client Approval		

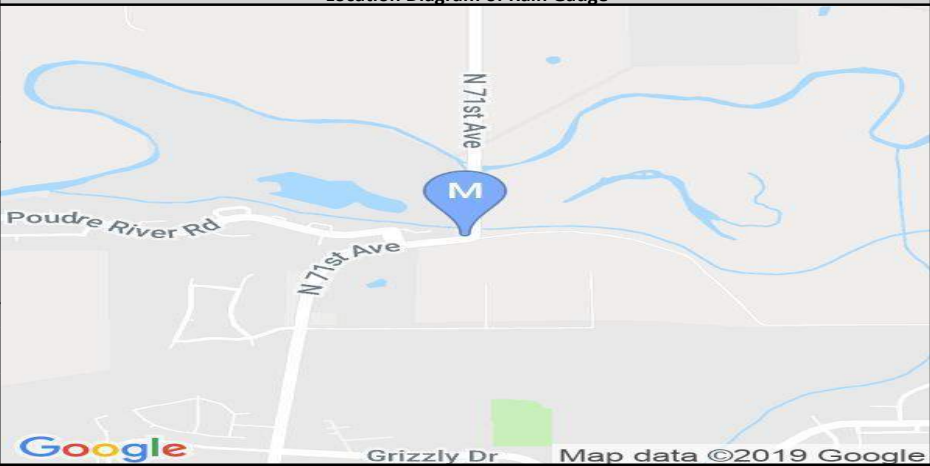
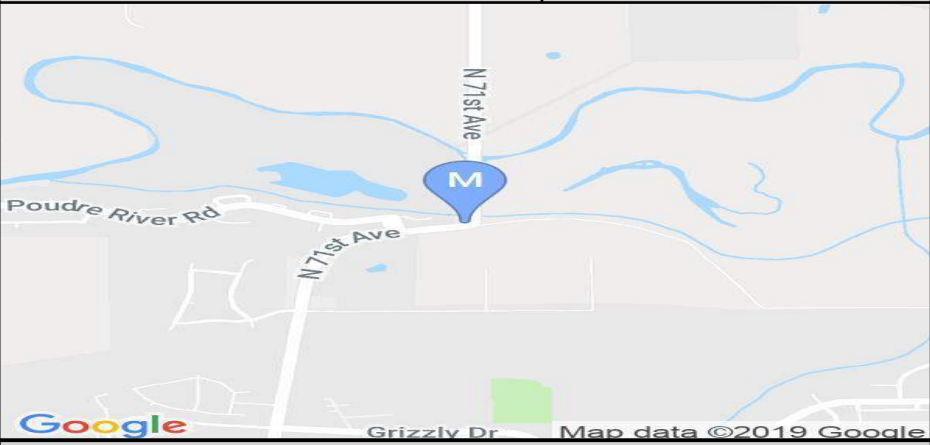
Item No. 21.  The Choice for Collection System Solutions		CDM Smith Greeley CO Flow Monitoring		Site Name FM08	
Inspected By ncaris		Project No. 18-3428-00		Site Code U-1	
Inspected Date/Time 4/3/2019 2:45 PM					
System Information		Area Location Map		Area View Picture	
Target Pipe Dia. (in) 21.0 Municipality District Greeley Assigned Rain Gauge RG02 Client Manhole # 05-00.027 U/S Connecting MH I.D 05-00.028 System Characteristics: Residential - ☐ Commercial - ☐ Industrial - ☐ P/S Influence No WWTP Influence No					
Location Information				Top View Picture	
Site Address 1011 3rd St Site Access Roadway, High Traffic Longitude -104.69400000 Latitude 40.43140000 MH Type Poured Concrete Manhole Depth (ft) 6.66 Manhole Width (ft) 4.0 Elevated MH No Height Elevated (ft) Structural Integrity Safe		Access Notes Picked 1 upstream because of lower risk traffic accident.			
Site Information		Investigation Photo		Installation Photo	
Pipe Height (in) 20.18 Pipe Width (in) 20.25 Pipe Type Vitrified Clay Pipe Shape Circular O2 LEL % H2S CO					
Hydraulic Information		Hydraulic Characteristics		Installation Notes	
Flow Depth (in) 4.00 Instant Velocity (fps) 2.50 Surge Evidence (ft) Silt Type None Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Straight Drop Inlet No Hydraulic Rating Fair		Install Plan Sketch		Install Cross-Section Sketch	
Installation Notes					
Location in Pipe (ft) 1.5 Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength 50		Pressure Clock Position: 6:00 Velocity Clock Position: 7:00			
Post Installation Notes		Approvals			
Meter Type ADS 5000 AS Telemetry Type Telog Installation Date 4/15/2019		Recommended by FSP		Client Approval	

Item No. 21.  The Choice for Collection System Solutions		CDM Smith Greeley CO Flow Monitoring		Site Name FM09	
Inspected By ncaris			Project No. 18-3428-00		Site Code T
Inspected Date/Time 4/3/2019 3:35 PM					
System Information			Area Location Map		Area View Picture
Target Pipe Dia. (in) 24.0 Municipality District Greeley Assigned Rain Gauge Client Manhole # 04-00.007 U/S Connecting MH I.D 04-00.008 System Characteristics: Residential - ☐ Commercial - ☐ Industrial - ☐ P/S Influence No WWTP Influence No					
Location Information			Top View Picture		
Site Address 601 8th St Site Access Roadway, High Traffic Longitude -104.68700000 Latitude 40.42490000 MH Type Precast Concrete Manhole Depth (ft) 9.30 Manhole Width (ft) 4.0 Elevated MH No Height Elevated (ft) Structural Integrity Safe					
Site Information			Access Notes		
Pipe Height (in) 20.00 Pipe Width (in) 20.05 Pipe Type Other Pipe Shape Circular O2 LEL % H2S CO			Cones setup south bound lane 6th ave & west bound 8th St. to redirect traffic around manhole site		
Hydraulic Information			Investigation Photo		Installation Photo
Flow Depth (in) 4.00 Instant Velocity (fps) 2.00 Surge Evidence (ft) 1.83 Silt Type None Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Straight Drop Inlet No Hydraulic Rating Fair					
Installation Notes			Hydraulic Characteristics		Installation Notes Pipe material is HDPE
Location in Pipe (ft) 1.0 Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength 50			Install Plan Sketch		Install Cross-Section Sketch
Post Installation Notes					
Approvals			Recommended by FSP		Client Approval
Meter Type ADS 5000 AS Telemetry Type Telog Installation Date 4/15/2019					

Item No. 21.  The Choice for Collection System Solutions		CDM Smith Greeley CO Flow Monitoring		Site Name FM10	
Inspected By ncaris		Project No. 18-3428-00		Site Code U-3	
Inspected Date/Time 4/16/2019 5:57 PM					
System Information		Area Location Map		Area View Picture	
Target Pipe Dia. (in) 18.0 Municipality District Greeley Assigned Rain Gauge Client Manhole # 03-00.018 U/S Connecting MH I.D 03-00.019 System Characteristics: Residential - ☐ Commercial - ☐ Industrial - ☐ P/S Influence No WWTP Influence No					
Location Information				Top View Picture	
Site Address 1203 12th Ave Site Access Roadway, High Traffic Longitude -104.69800000 Latitude 40.41990000 MH Type Poured Concrete Manhole Depth (ft) 14.34 Manhole Width (ft) 4.0 Elevated MH No Height Elevated (ft) Structural Integrity Safe					
Site Information		Access Notes			
Pipe Height (in) 15.00 Pipe Width (in) 15.00 Pipe Type Vitrified Clay Pipe Shape Circular O2 LEL % H2S CO		Investigation Photo		Installation Photo	
					
Hydraulic Information		Hydraulic Characteristics		Installation Notes	
Flow Depth (in) 4.50 Instant Velocity (fps) 2.50 Surge Evidence (ft) Silt Type None Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Straight Drop Inlet No Hydraulic Rating Fair					
Installation Notes		Install Plan Sketch		Install Cross-Section Sketch	
Location in Pipe (ft) 1.0 Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength 75					
Post Installation Notes		Approvals			
Meter Type ADS 5000 AS Telemetry Type Telog Installation Date 4/16/2019		Recommended by FSP		Client Approval	

Item No. 21.  The Choice for Collection System Solutions		CDM Smith Greeley CO Flow Monitoring		Site Name FM11	
Inspected By ncaris			Project No. 18-3428-00		Site Code T
Inspected Date/Time 4/3/2019 4:48 PM					
System Information			Area Location Map		Area View Picture
Target Pipe Dia. (in) 18.0 Municipality District Greeley Assigned Rain Gauge Client Manhole # 01-00.022 U/S Connecting MH I.D 01-00.023 System Characteristics: Residential - ☐ Commercial - ☐ Industrial - ☐ P/S Influence No WWTP Influence No					
Location Information					Top View Picture
Site Address 222 22nd St Site Access Roadway, High Traffic Longitude -104.68100000 Latitude 40.40240000 MH Type Poured Concrete Manhole Depth (ft) 11.78 Manhole Width (ft) 5.0 Elevated MH No Height Elevated (ft) Structural Integrity Safe			Access Notes Eastbound lane 22nd st in bike lane.		
Site Information			Investigation Photo		Installation Photo
Pipe Height (in) 17.00 Pipe Width (in) 17.56 Pipe Type Vitrified Clay Pipe Shape Circular O2 LEL % H2S CO					
Hydraulic Information			Hydraulic Characteristics		Installation Notes
Flow Depth (in) 4.00 Instant Velocity (fps) 4.00 Surge Evidence (ft) Silt Type None Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Straight Drop Inlet No Hydraulic Rating Fair			Install Plan Sketch		Install Cross-Section Sketch
Installation Notes					
Location in Pipe (ft) 1.0 Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength 50			Pressure Clock Position: 6:00 Velocity Clock Position: 7:00		
Post Installation Notes			Approvals		
Meter Type ADS 5000 AS Telemetry Type Telog Installation Date 4/16/2019			Recommended by FSP Client Approval		

Item No. 21.  The Choice for Collection System Solutions		CDM Smith Greeley CO Flow Monitoring		Site Name FM12	
Inspected By ncaris			Project No. 18-3428-00		Site Code T
Inspected Date/Time 4/3/2019 5:08 PM					
System Information			Area Location Map		Area View Picture
Target Pipe Dia. (in) 18.0 Municipality District Greeley Assigned Rain Gauge Client Manhole # 01-00.028 U/S Connecting MH I.D 01-00.029 System Characteristics: Residential - ☐ Commercial - ☐ Industrial - ☐ P/S Influence No WWTP Influence No					
Location Information					Top View Picture
Site Address 2330 4th Ave Site Access Roadway, Low Traffic Longitude -104.68400000 Latitude 40.40020000 MH Type Lined Manhole Depth (ft) 11.30 Manhole Width (ft) 5.0 Elevated MH No Height Elevated (ft) Structural Integrity Safe			Access Notes North bound lane along 4th ave. Manhole closer to edge of street.		
Site Information			Investigation Photo		Installation Photo
Pipe Height (in) 17.25 Pipe Width (in) 17.75 Pipe Type Vitrified Clay Pipe Shape Circular O2 LEL % H2S CO					
Hydraulic Information			Hydraulic Characteristics		Installation Notes
Flow Depth (in) 6.00 Instant Velocity (fps) 4.00 Surge Evidence (ft) Silt Type None Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Straight Drop Inlet No Hydraulic Rating Fair			Install Plan Sketch		Install Cross-Section Sketch
Installation Notes					
Post Installation Notes			Approvals		
Meter Type ADS 5000 AS Telemetry Type Telog Installation Date 4/15/2019			Recommended by FSP Client Approval		

		CDM Smith Greeley CO Flow Monitoring		RG Site Name RG01	
Project	Project No.	Inspection Date/Time	Facility Name		
Greeley CO Flow Monitoring	18-3428-00	4/9/2019 9:22 AM	Pump Sttion		
		Inspected By	Access Instructions		
		kbelk			
Site Address:	610 N 71st Ave				
Latitude / Longitude	40.44120000		-104.78800000		
Contact Info		Location Diagram of Rain Gauge			
Name	Cory Fuller				
Title	City of Greeley				
Phone #	970-415-2166				
Tipping Bucket Serial #					
Logger Serial #					
Rain Gauge Manufacturer					
Telog RG32					
Recommended for Installation	☒				
Installation Instructions		Area Location Map			
					
				Building Photo	
Ladder Location Photo					
					

		CDM Smith Greeley CO Flow Monitoring		RG Site Name RG02
Project	Project No.	Inspection Date/Time	Facility Name	
Greeley CO Flow Monitoring	18-3428-00	4/10/2019 9:43 AM	Water Treatment Plant	
		Inspected By kbelk	Access Instructions Buzz at front gate, pull to main building, go inside, and gain access to stairs to roof.	
Site Address:	300 E 8th St			
Latitude / Longitude	40.42460000	-104.67700000		
Contact Info		Location Diagram of Rain Gauge		
Name	Cory Fuller			
Title	City of Greeley			
Phone #	970-415-2166			
Tipping Bucket Serial #				
Logger Serial #				
Rain Gauge Manufacturer				
Telog RG32				
Recommended for Installation	☒			
Installation Instructions		Area Location Map		
				
Building Photo		Installation Photo		
				
Ladder Location Photo				

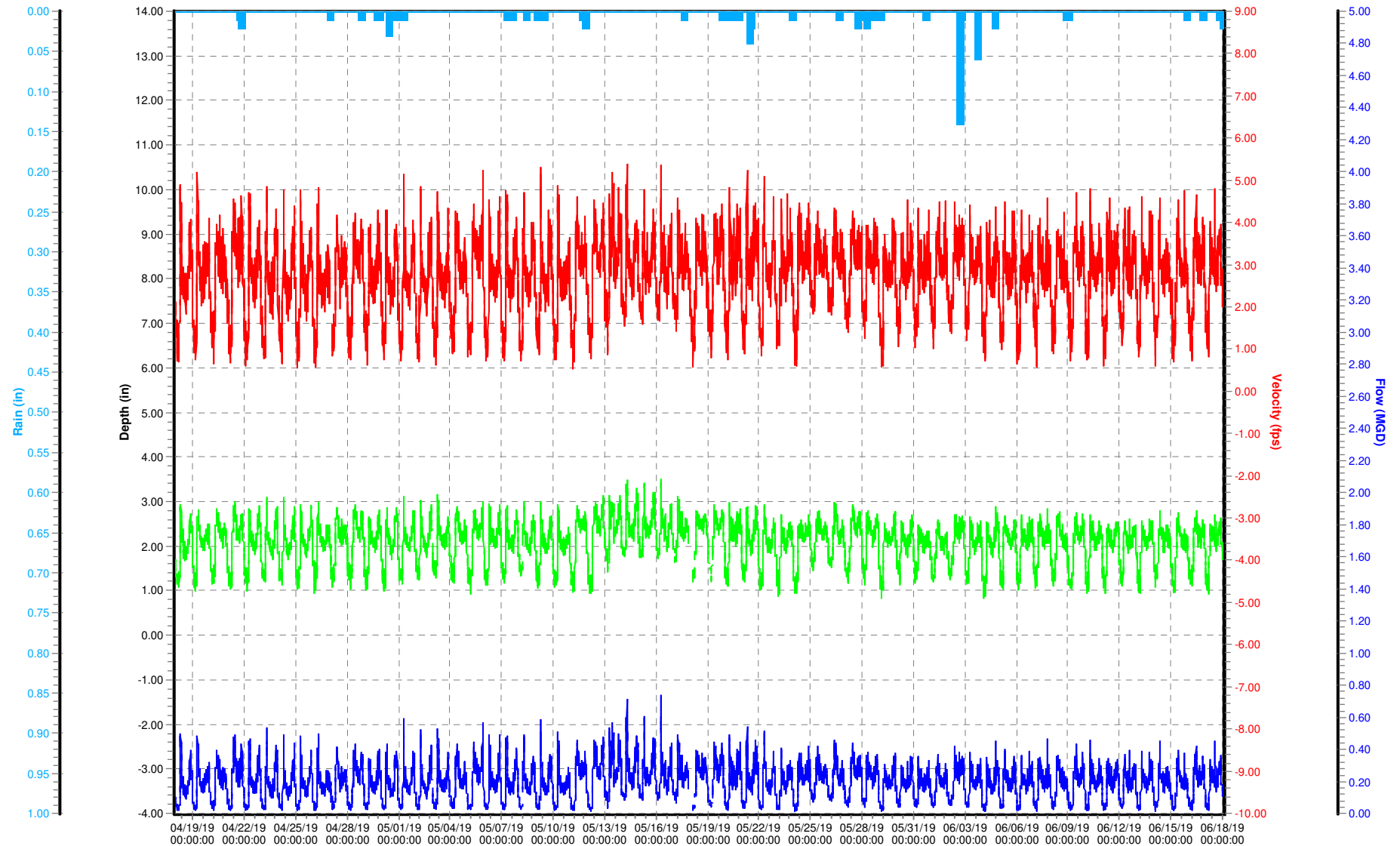
APPENDIX B

HYDROGRAPHS

FM01 (04/18/19 to 06/18/19) Pipe Dia: 14.28 in

DVQ w Rain

☒ 05 Dprocessed (in) ☒ 06 Vprocessed (f/s) ☒ 12 Qfinal (MGD) ☒ RG01.RG01.02 Rfinal (in)

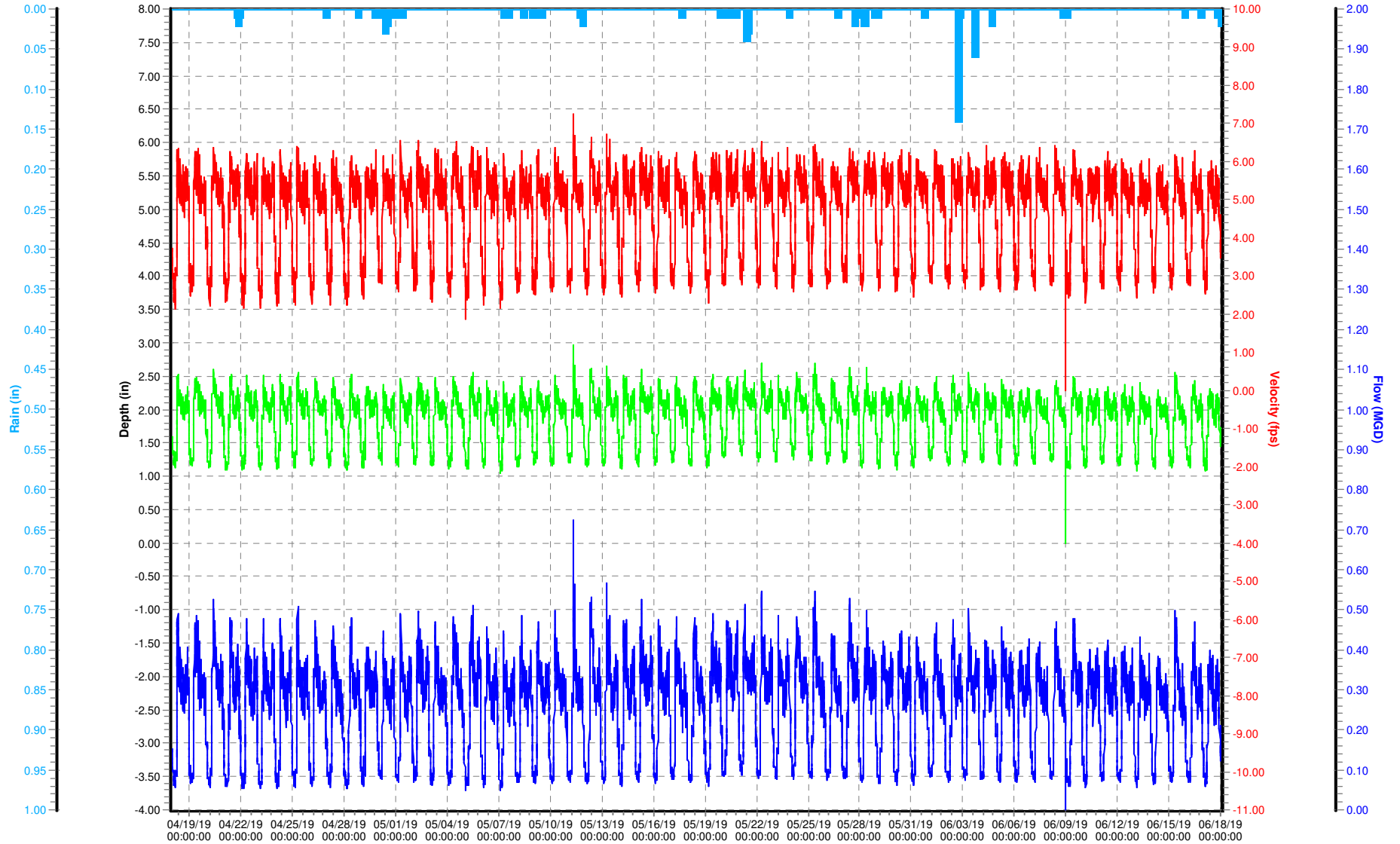


Print Date: 07/25/19 07:08:47

FM02 (04/18/19 to 06/18/19) Pipe Dia: 11.58 in

DVQ w Rain

☒ 05 Dprocessed (in) ☒ 06 Vprocessed (f/s) ☒ 12 Qfinal (MGD) ☒ RG01.RG01.02 Rfinal (in)

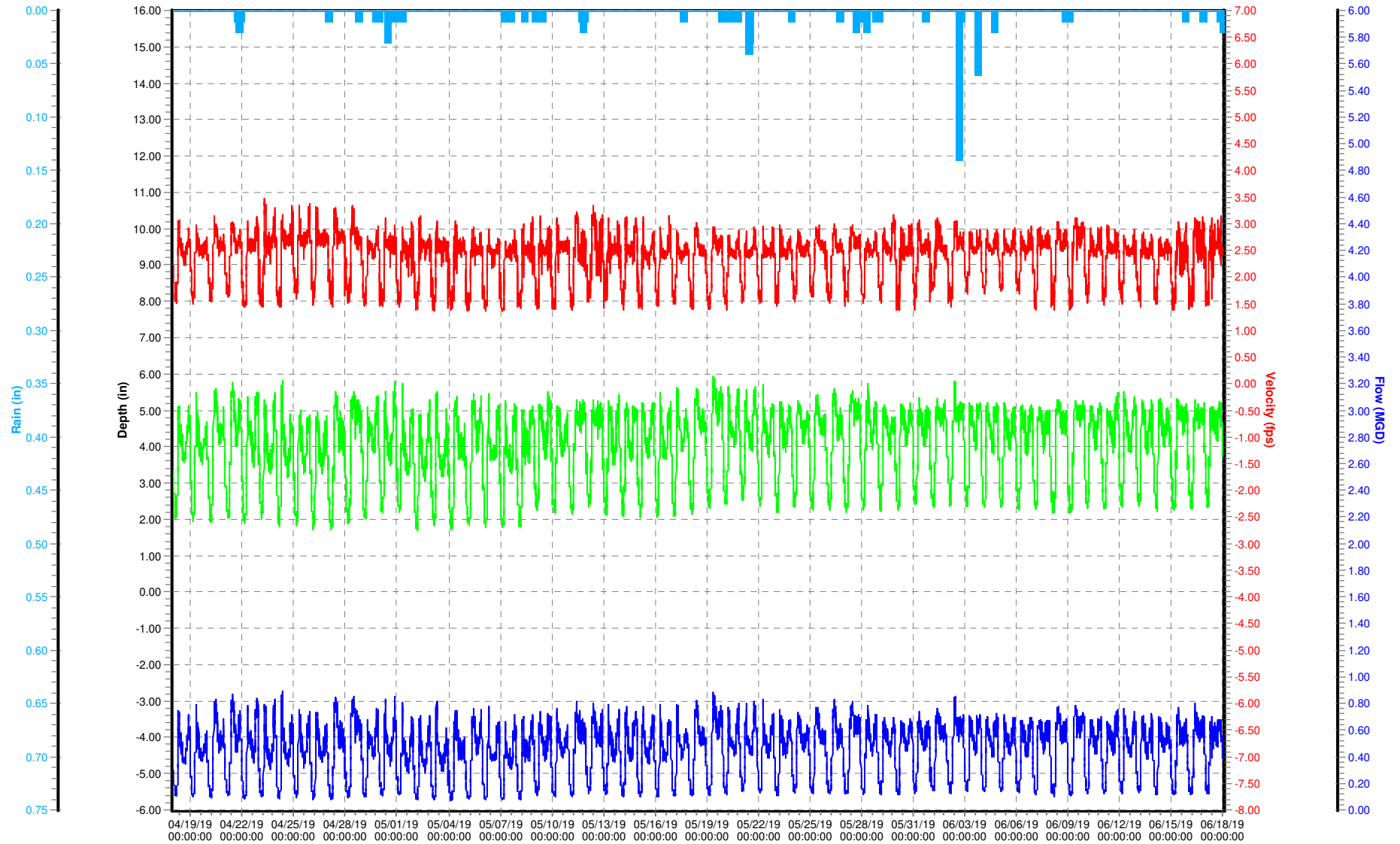


Print Date: 07/25/19 07:10:15

FM03 (04/18/19 to 06/18/19) Pipe Dia: 15.28 in

DVQ w Rain

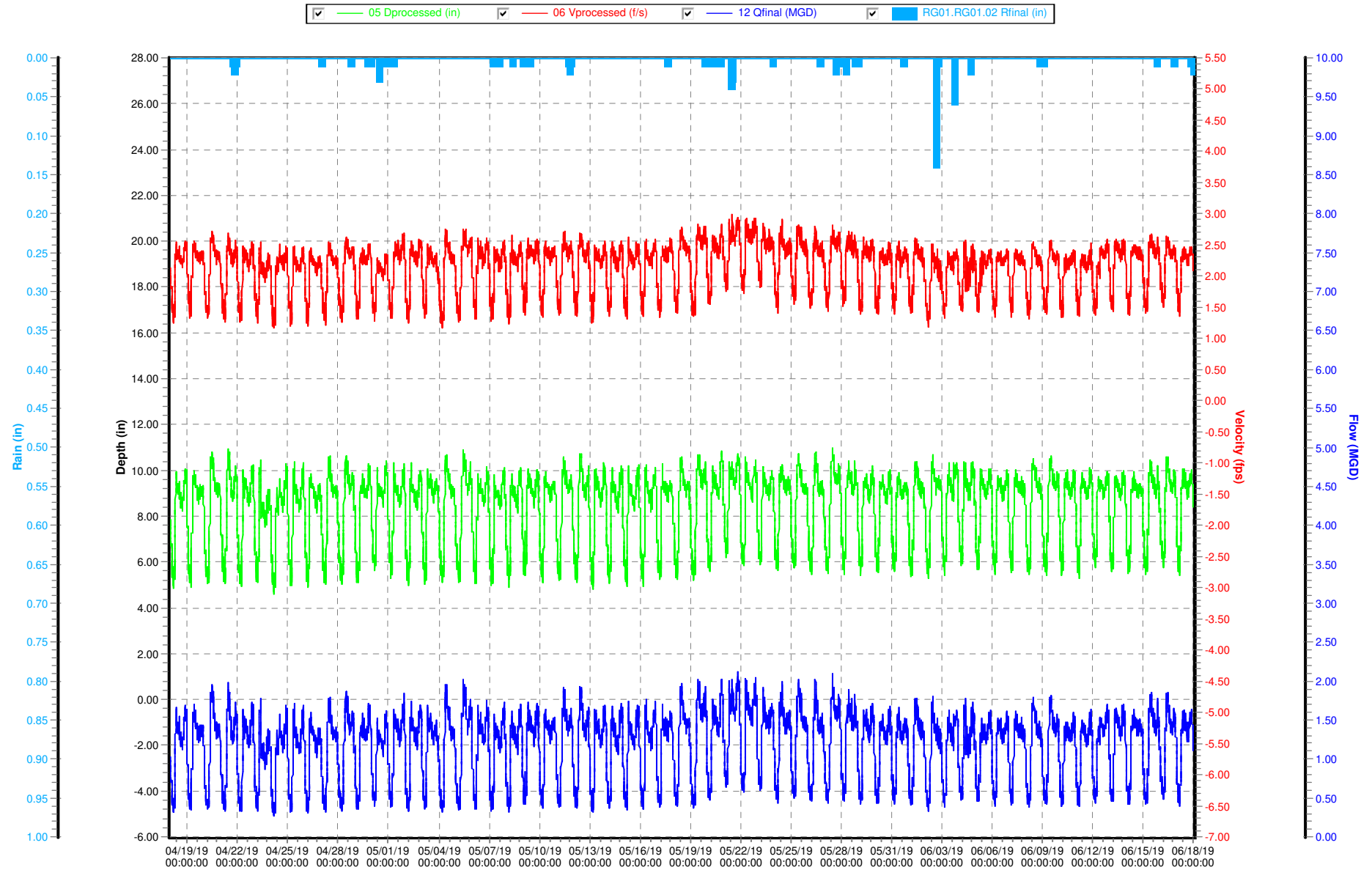
☒ 05 Dprocessed (in) ☒ 06 Vprocessed (f/s) ☒ 12 Qfinal (MGD) ☒ RG01.RG01.02 Rfinal (in)



Print Date: 07/25/19 07:11:45

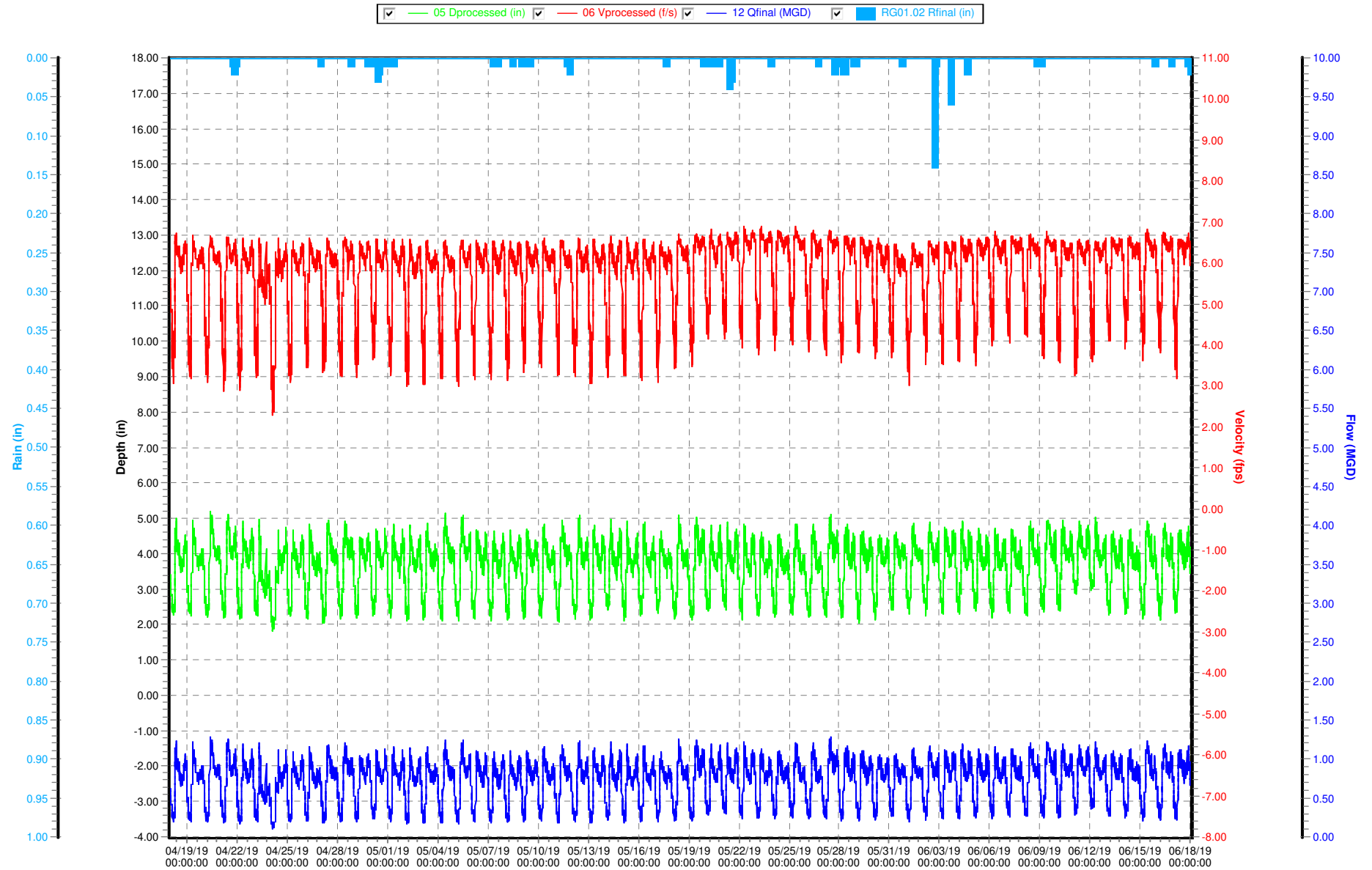
FM04 (04/18/19 to 06/18/19) Pipe Dia: 17.88 in

DVQ w Rain



FM05 (04/18/19 to 06/18/19) Pipe Dia: 10.18 in

DVQ w Rain

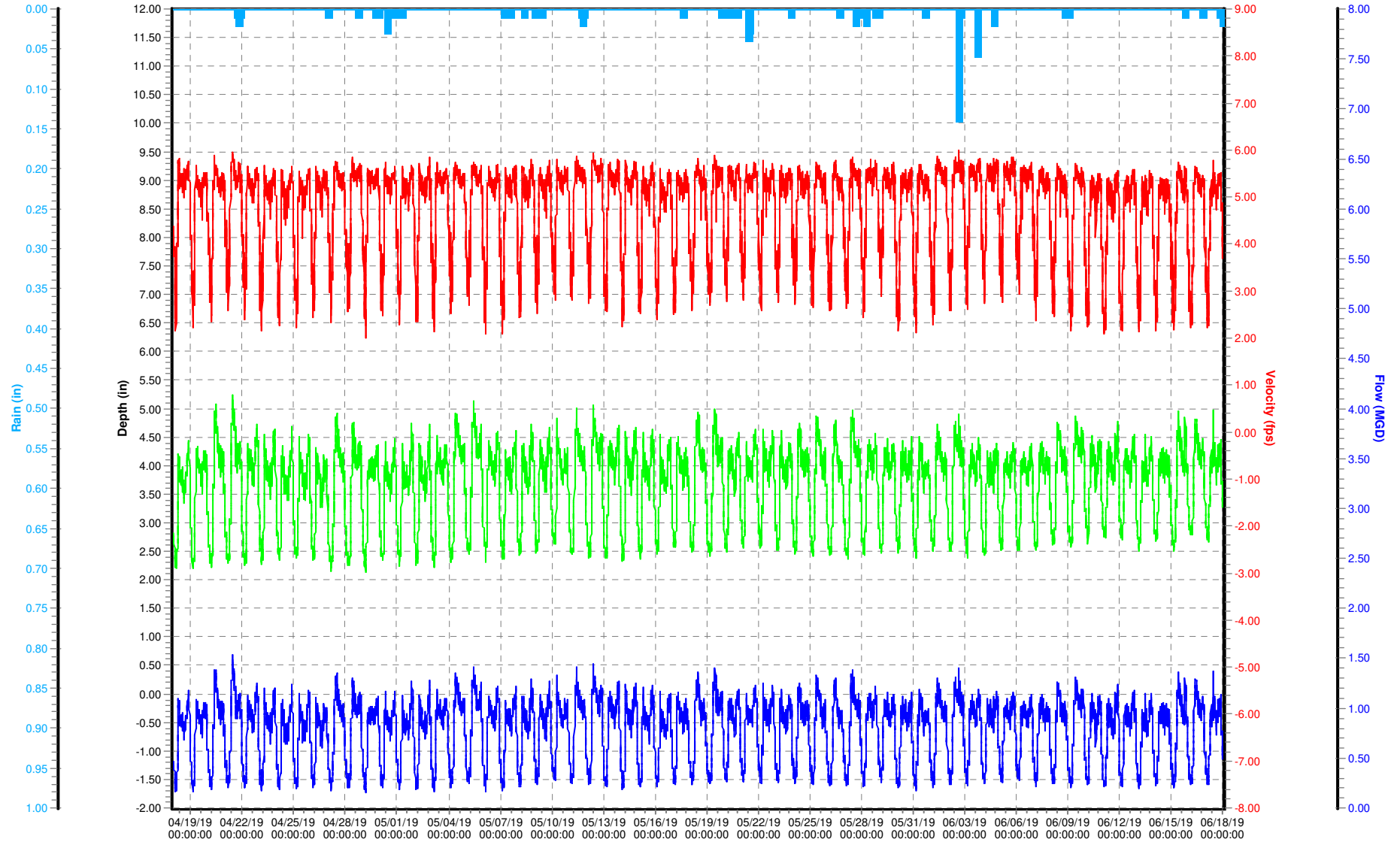


Print Date: 07/25/19 07:14:43

FM06 (04/18/19 to 06/18/19) Pipe Dia: 15.13 in

DVQ w Rain

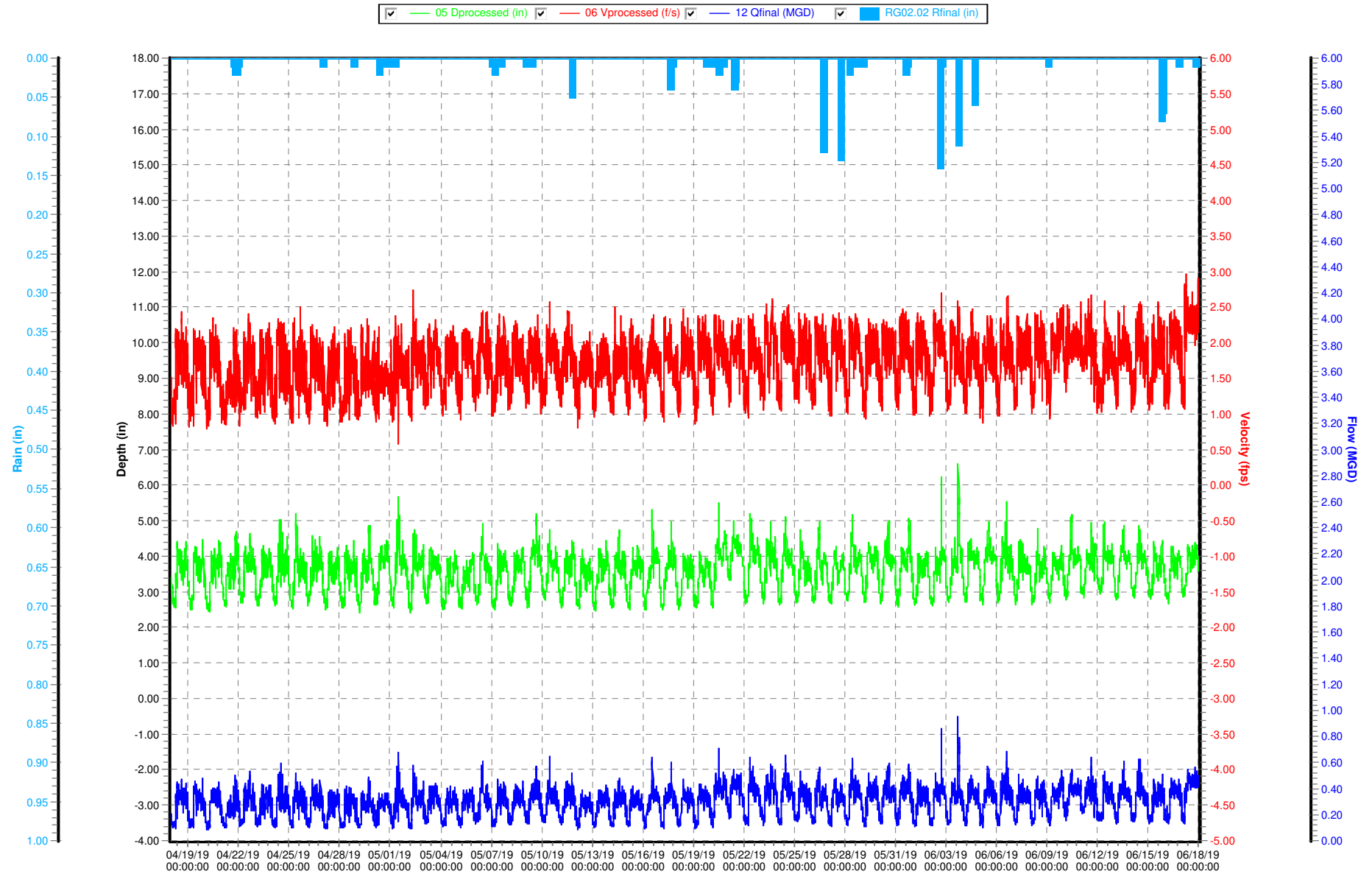
☒ 05 Dprocessed (in) ☒ 06 Vprocessed (f/s) ☒ 12 Qfinal (MGD) ☒ RG01.RG01.02 Rfinal (in)



Print Date: 07/25/19 07:16:12

FM07 (04/18/19 to 06/18/19) Pipe Dia: 19.90 in

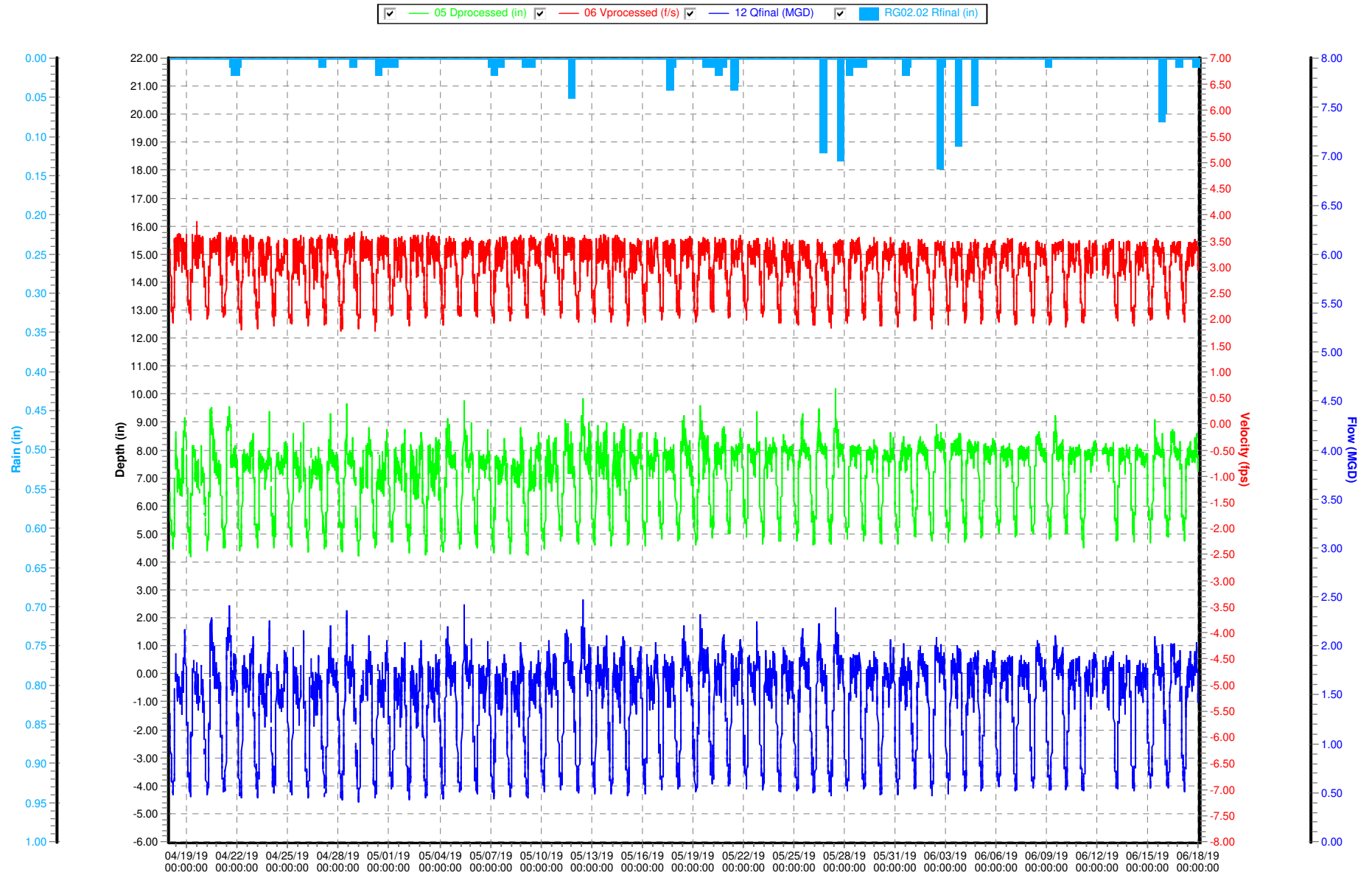
DVQ w Rain



Print Date: 07/25/19 07:17:43

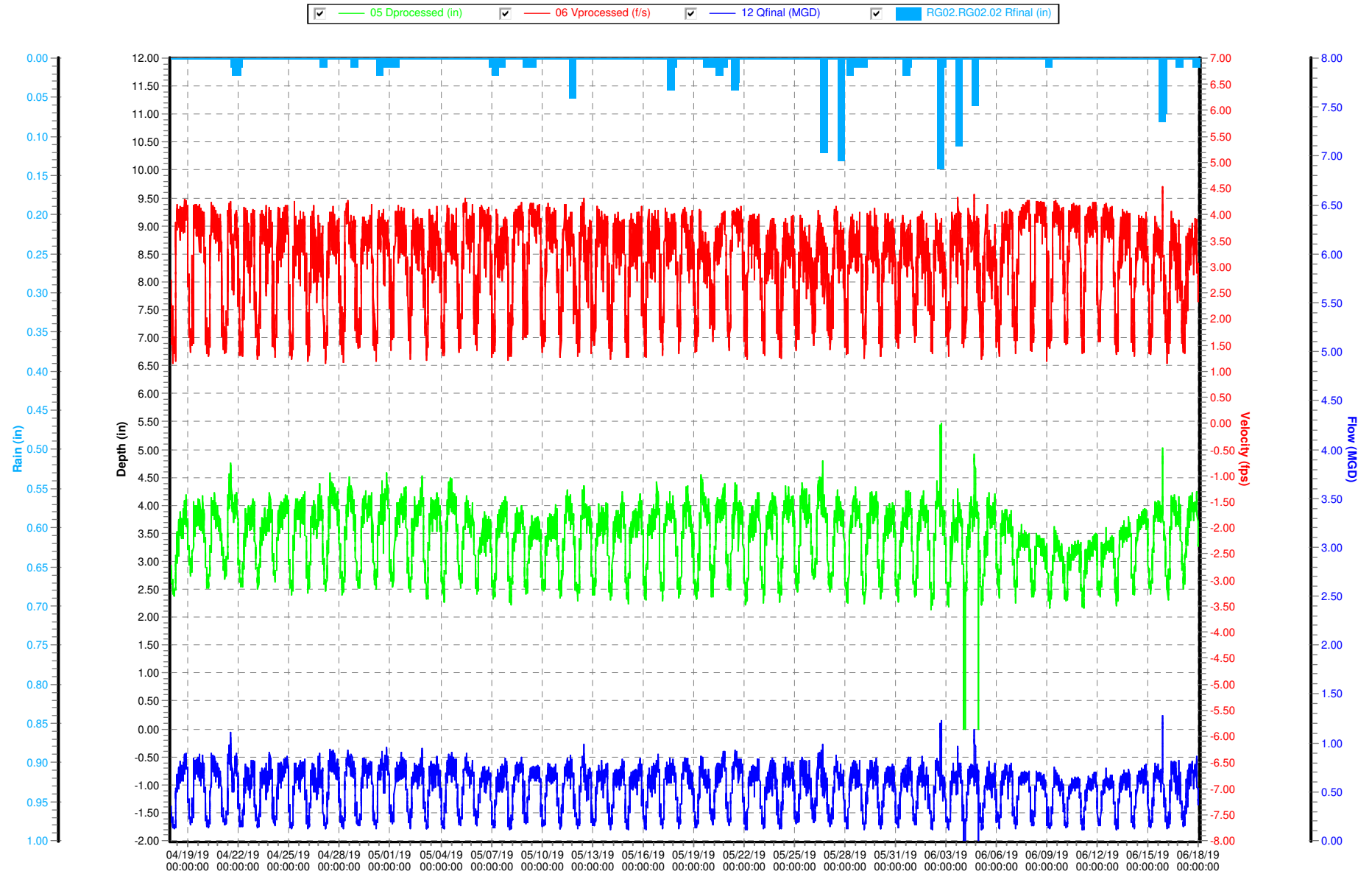
FM08 (04/18/19 to 06/18/19) Pipe Dia: 20.22 in

DVQ w Rain



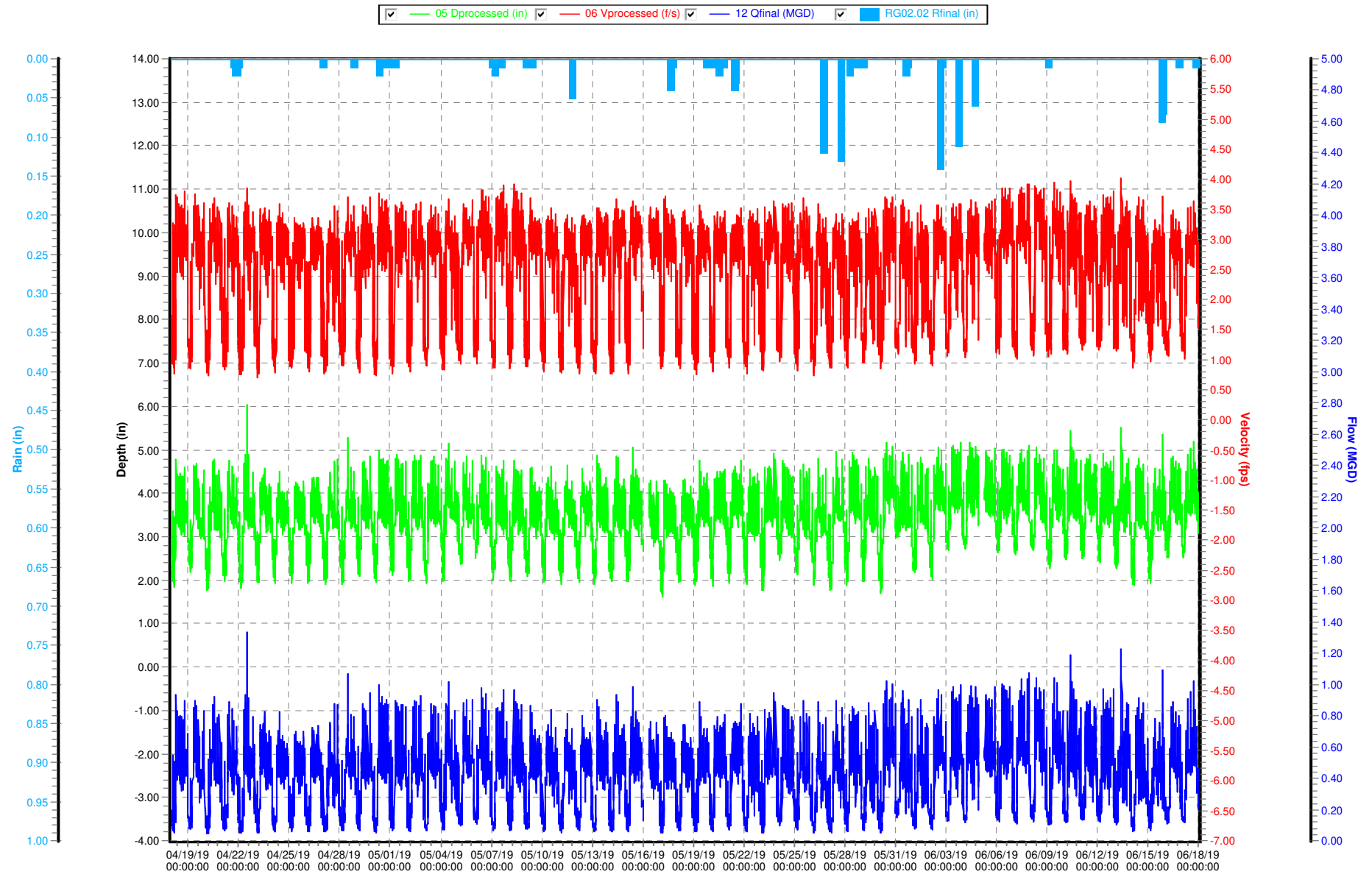
FM09 (04/18/19 to 06/18/19) Pipe Dia: 20.03 in

DVQ w Rain



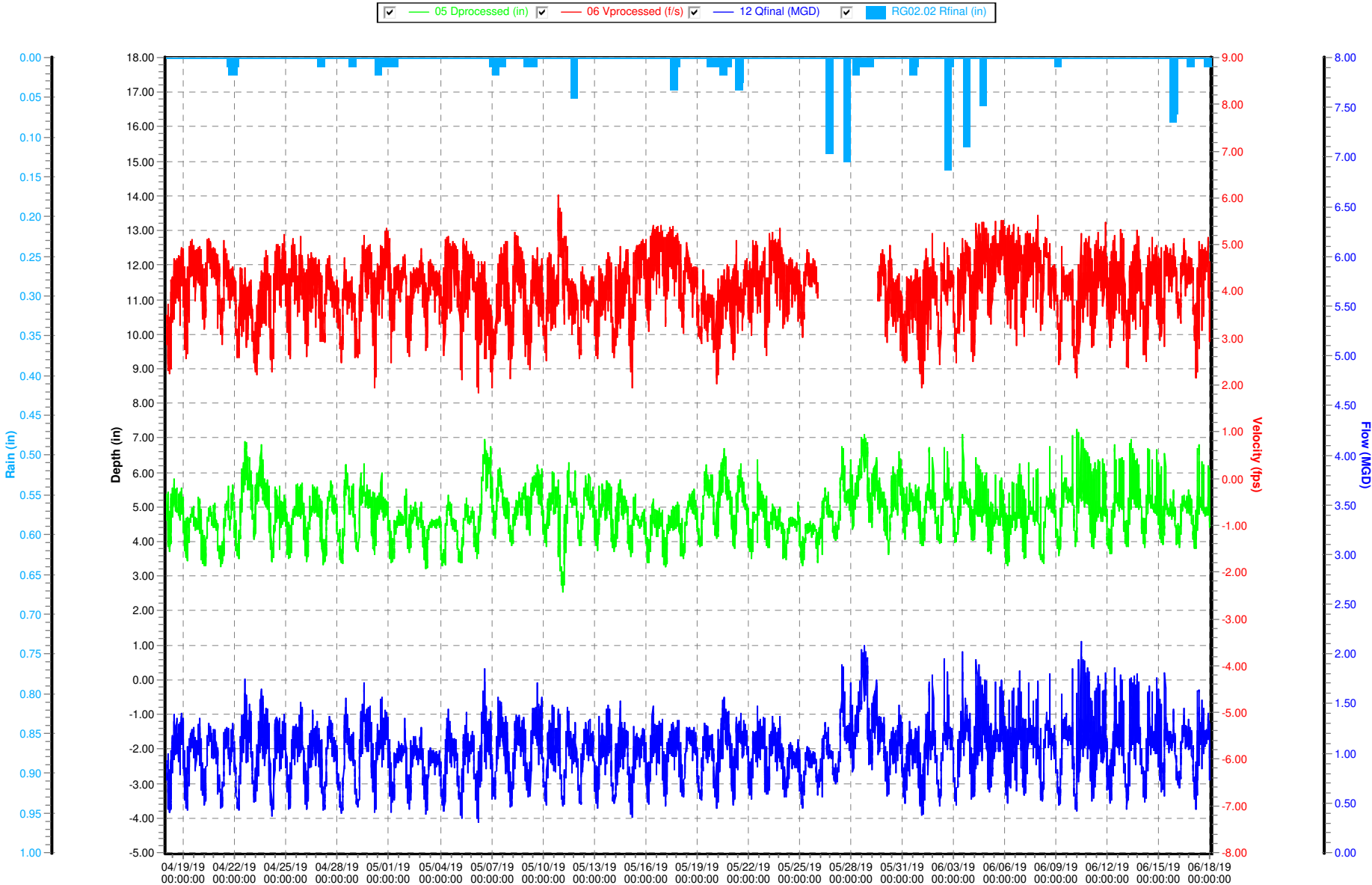
FM10 (04/18/19 to 06/18/19) Pipe Dia: 15 in

DVQ w Rain



FM11 (04/18/19 to 06/18/19) Pipe Dia: 18.00 in

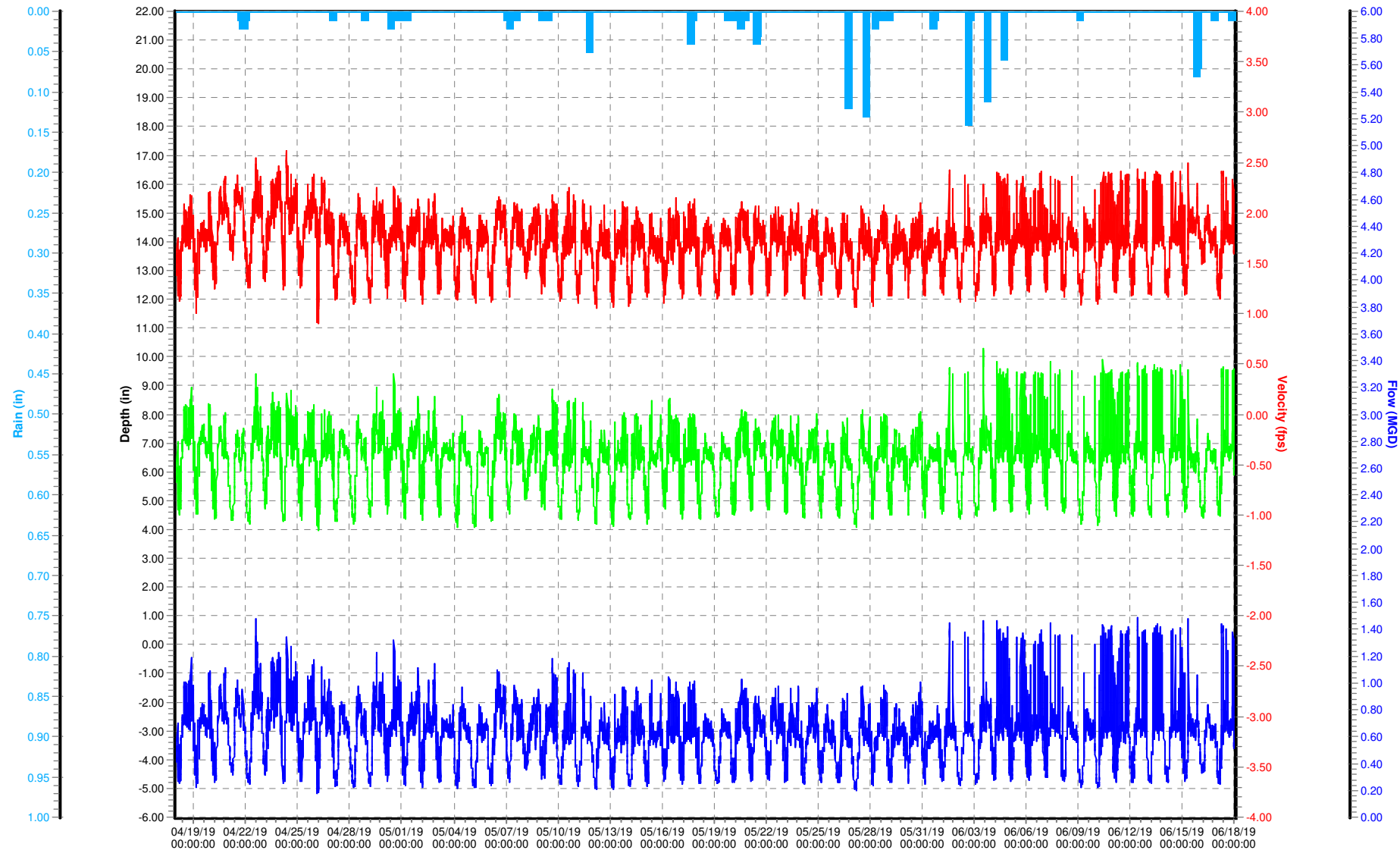
DVQ w Rain



FM12 (04/18/19 to 06/18/19) Pipe Dia: 17.16 in

DVQ w Rain

☒ 05 Dprocessed (in) ☒ 06 Vprocessed (f/s) ☒ 12 Qfinal (MGD) ☒ RG02.RG02.02 Rfinal (in)



Print Date: 07/25/19 07:25:08

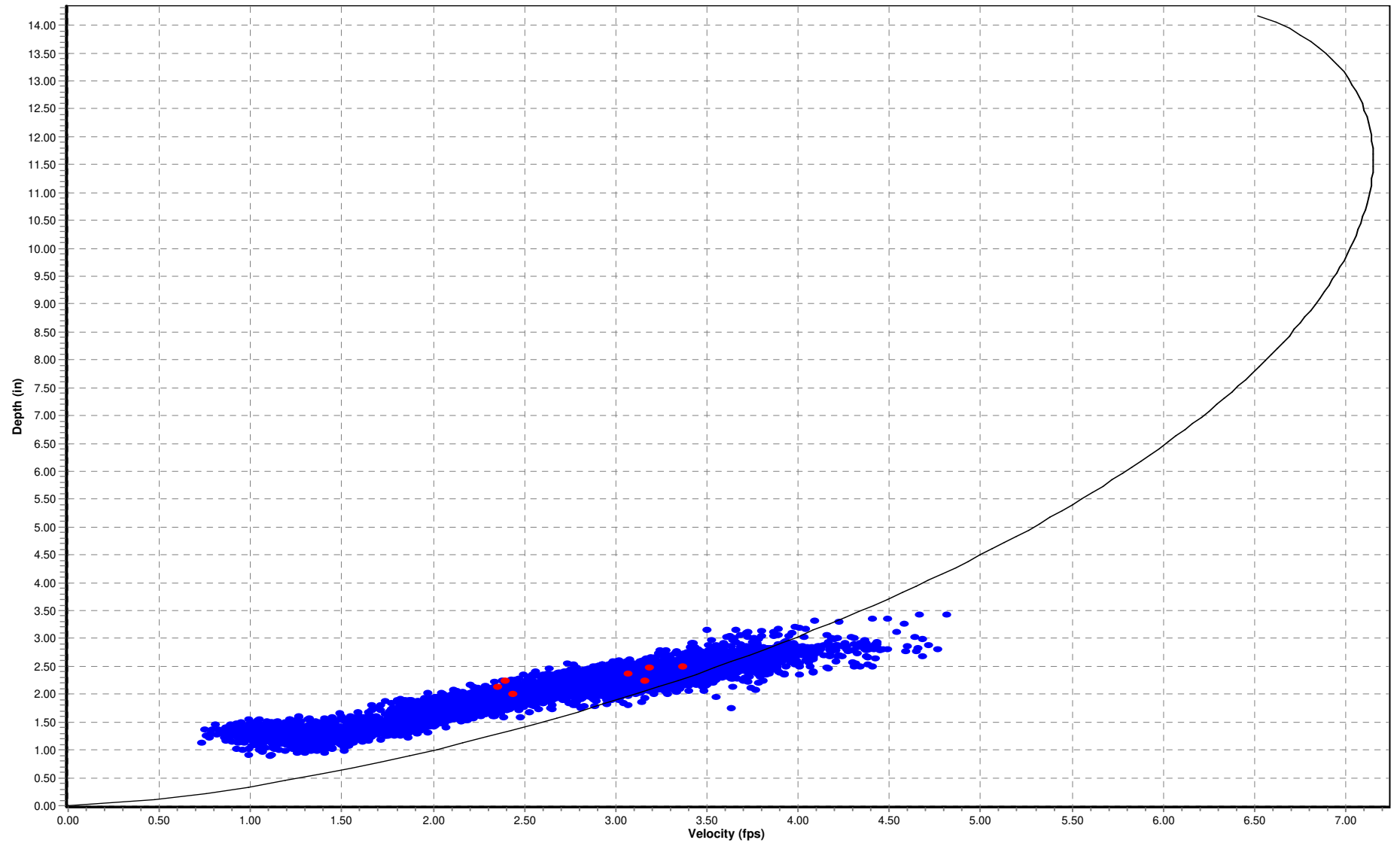
APPENDIX C

SCATTERGRAPHS

FM01 (04/18/19 to 06/18/19) Pipe Dia: 14.28 in

Scattergraph

☒ 08 Dfinal (in) ☒ Pipe Curve

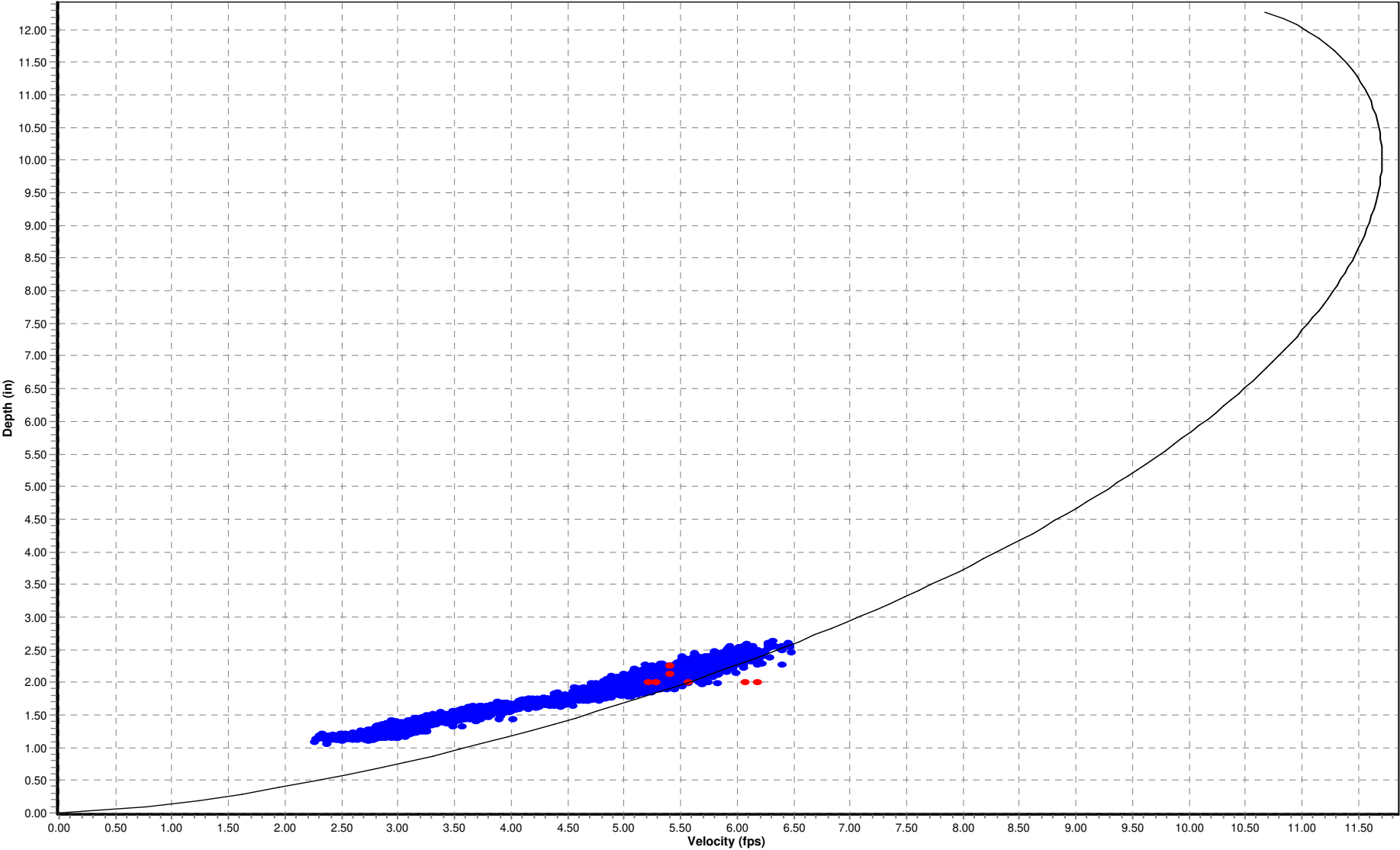


Print Date: 08/21/19 10:22:30

FM02 (04/18/19 to 06/18/19) Pipe Dia: 11.58 in

Scattergraph

☒ 08 Dfinal (in) ☒ Pipe Curve

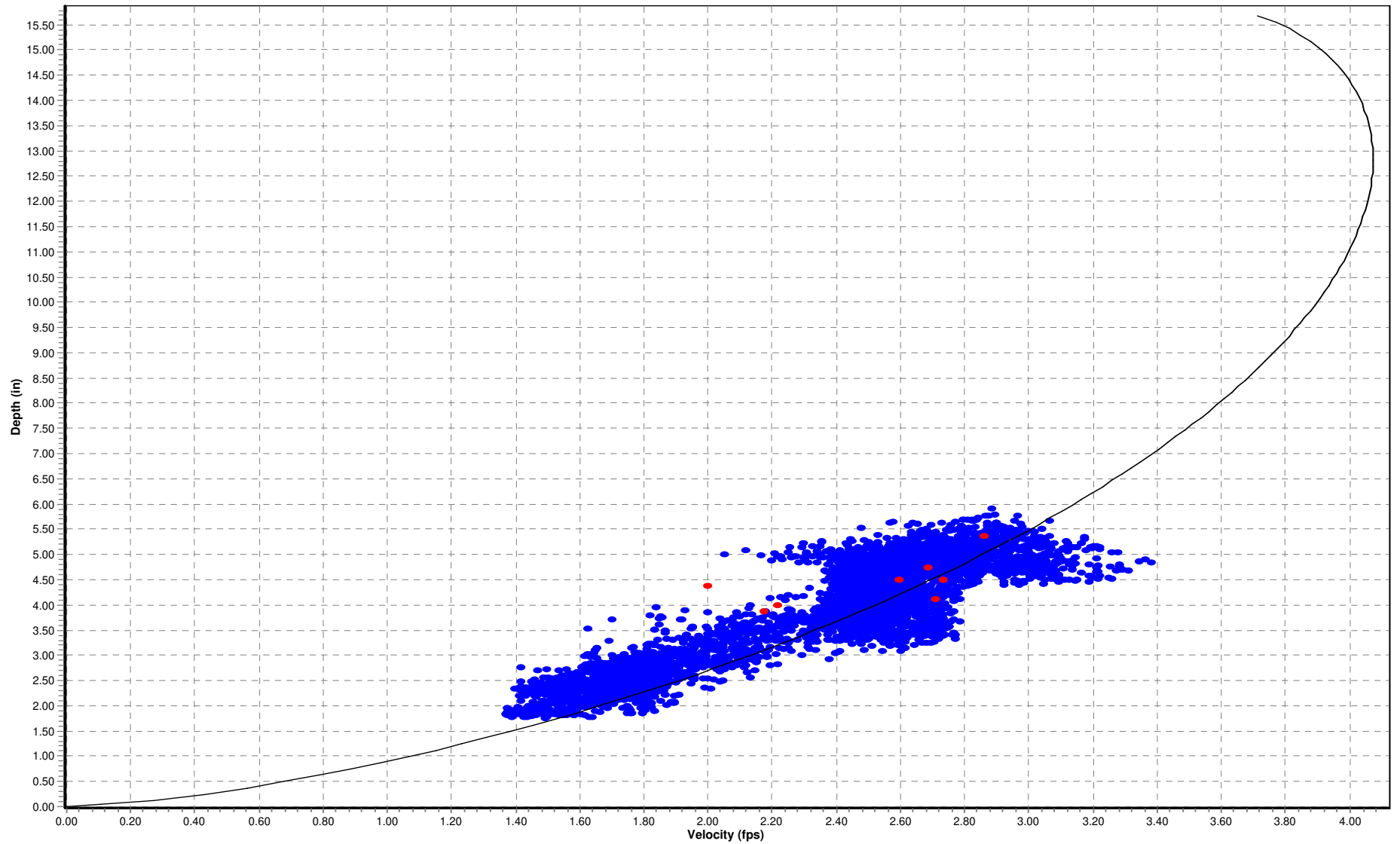


Print Date: 08/21/19 10:23:08

FM03 (04/18/19 to 06/18/19) Pipe Dia: 15.28 in

Scattergraph

☒ 08 Dfinal (in) ☒ Pipe Curve

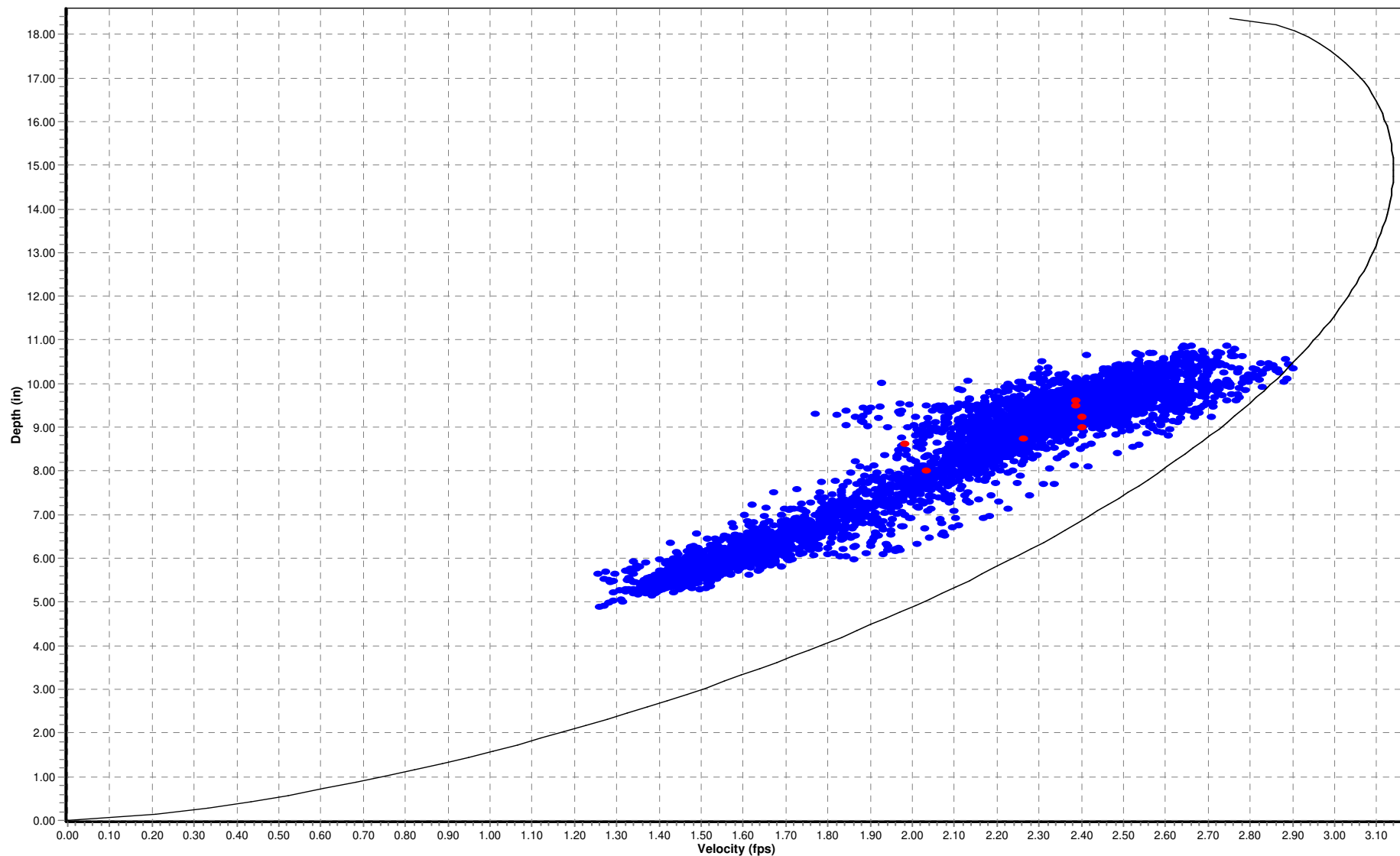


Print Date: 08/21/19 10:23:46

FM04 (04/18/19 to 06/18/19) Pipe Dia: 17.88 in

Scattergraph

☒ 08 Dfinal (in) ☒ Pipe Curve

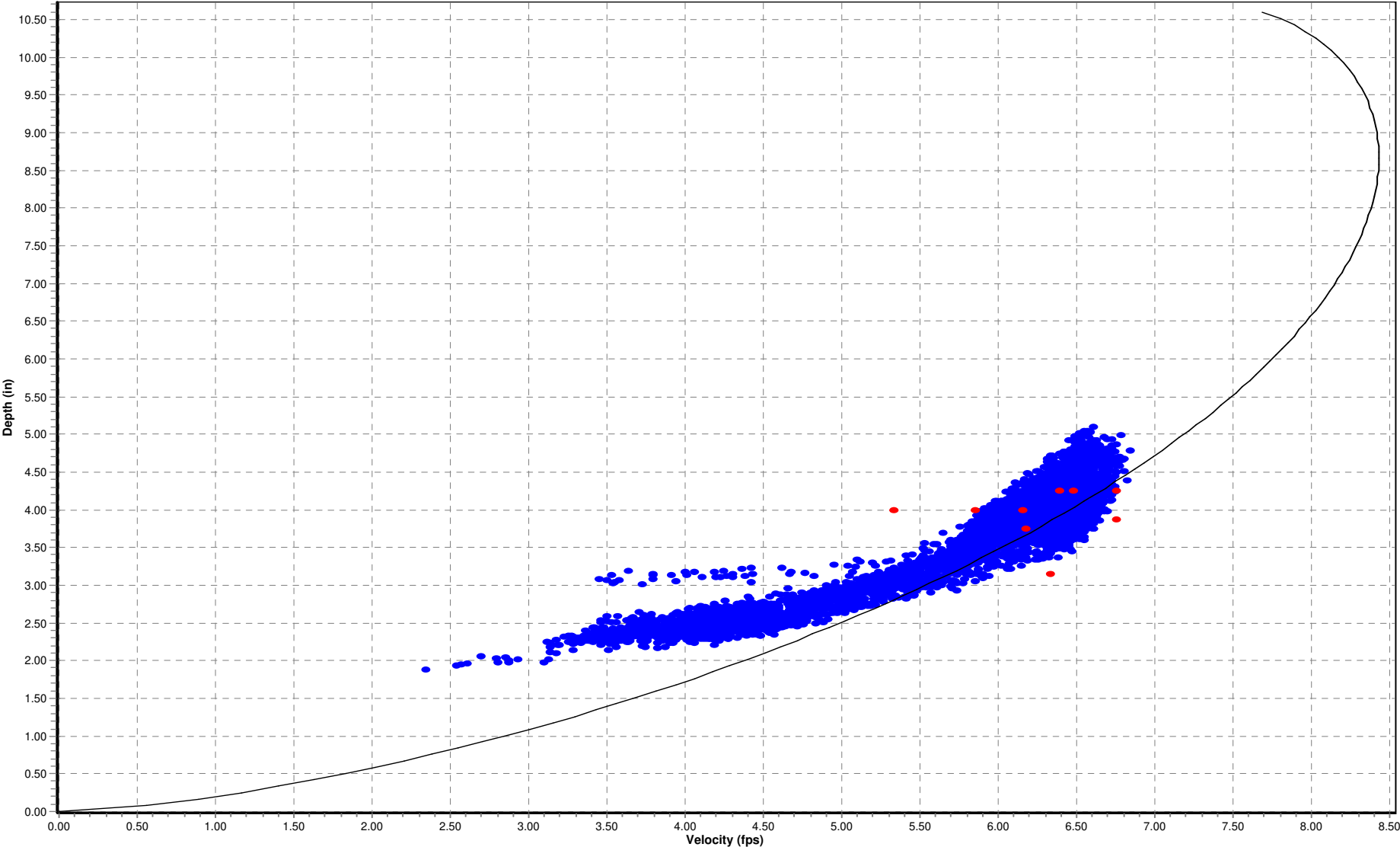


Print Date: 08/21/19 10:24:24

FM05 (04/18/19 to 06/18/19) Pipe Dia: 10.18 in

Scattergraph

☒ 08 Dfinal (in) ☒ Pipe Curve

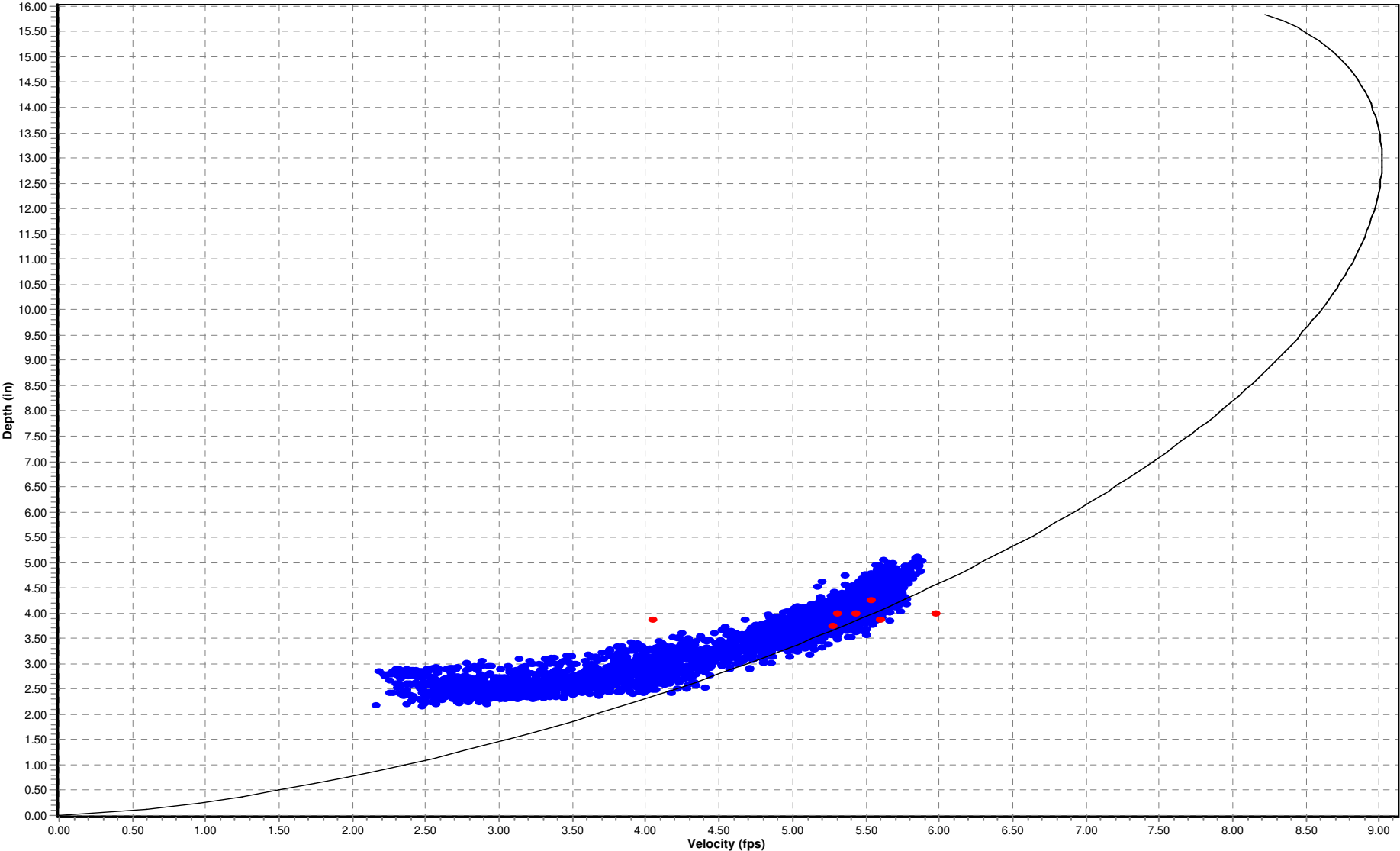


Print Date: 08/21/19 10:25:02

FM06 (04/18/19 to 06/18/19) Pipe Dia: 15.13 in

Scattergraph

☒ 08 Dfinal (in) ☒ Pipe Curve

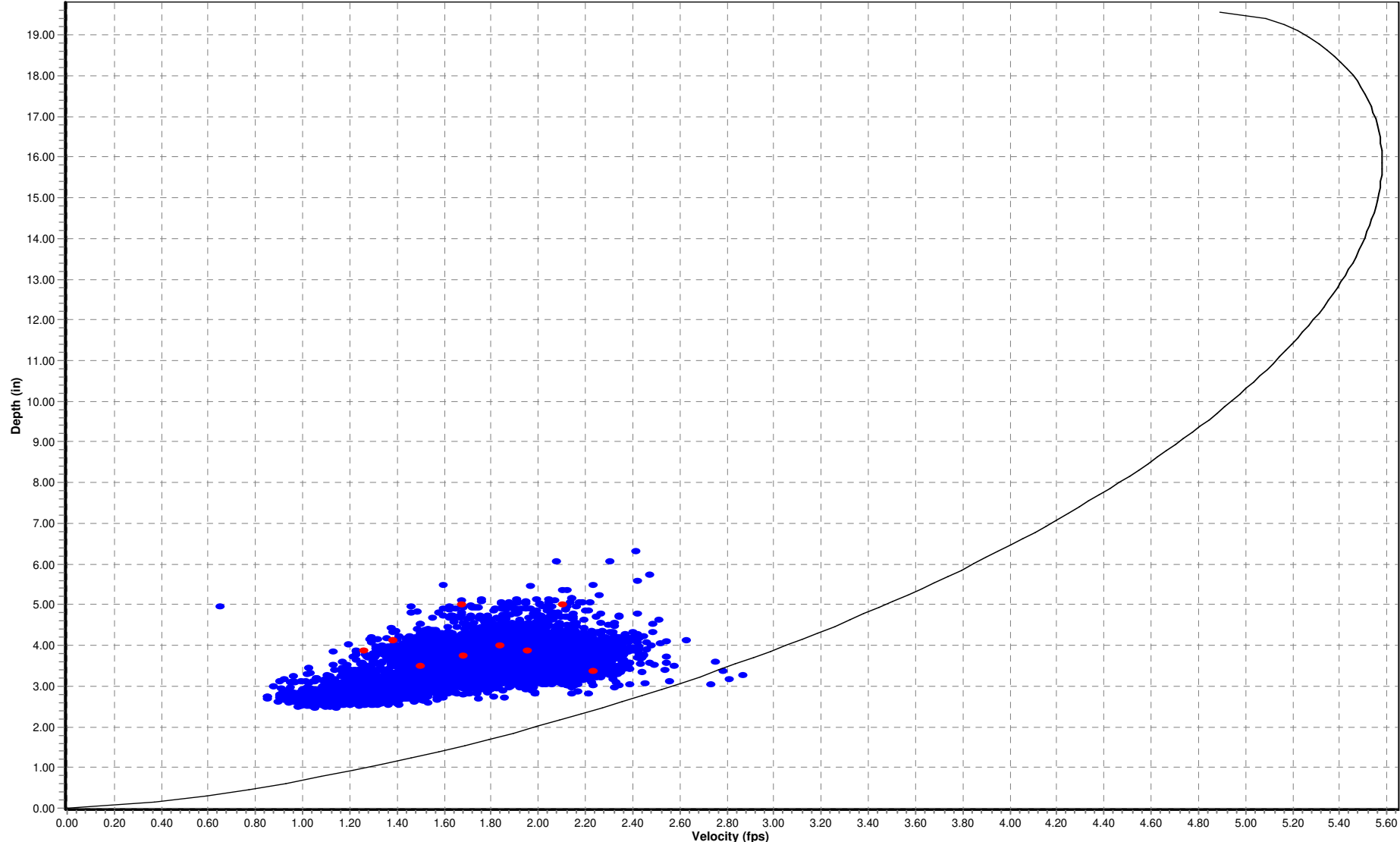


Print Date: 08/21/19 10:25:39

FM07 (04/18/19 to 06/18/19) Pipe Dia: 19.90 in

Scattergraph

☒ 08 Dfinal (in) ☒ Pipe Curve

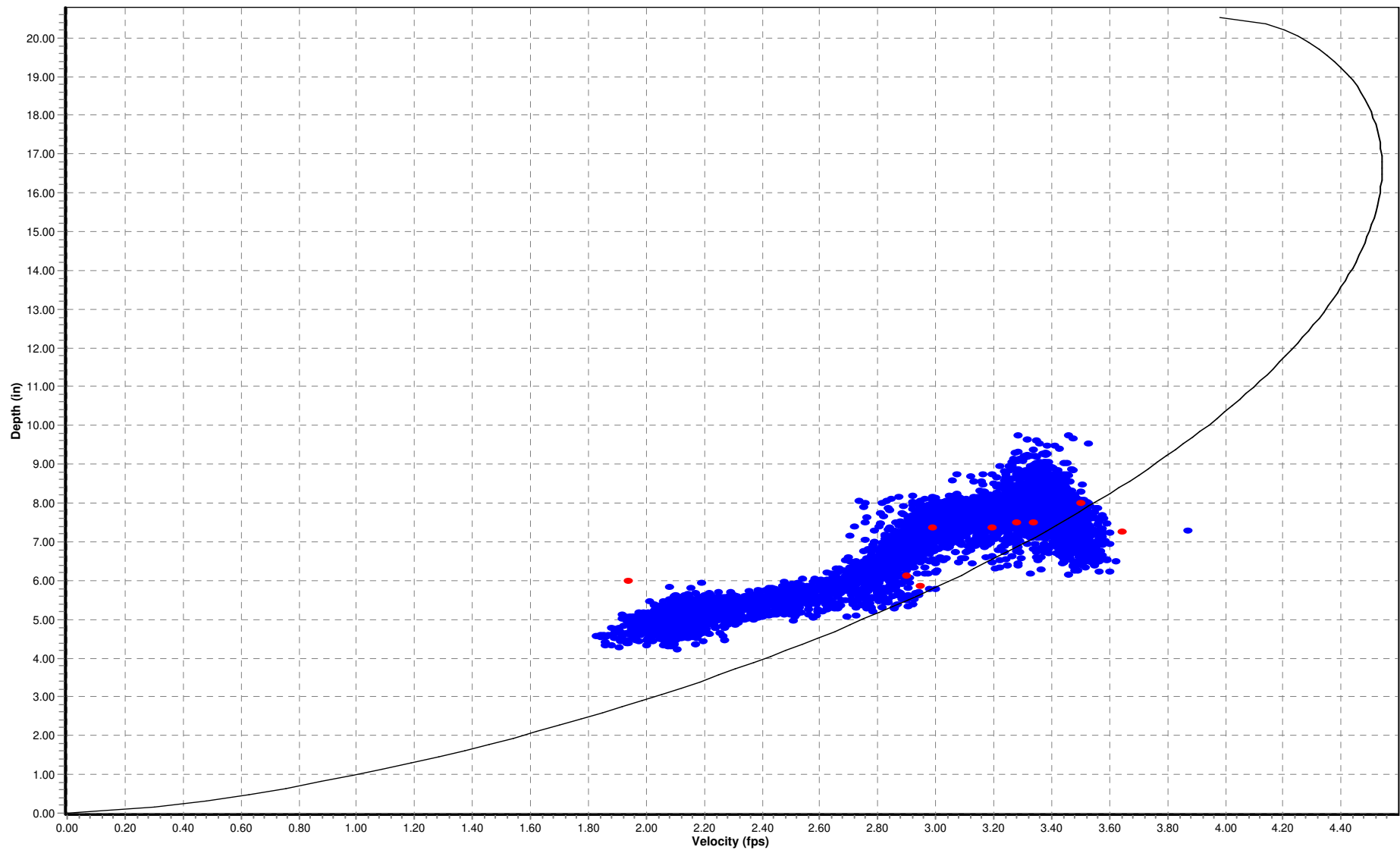


Print Date: 08/21/19 10:26:17

FM08 (04/18/19 to 06/18/19) Pipe Dia: 20.22 in

Scattergraph

☒ 08 Dfinal (in) ☒ Pipe Curve

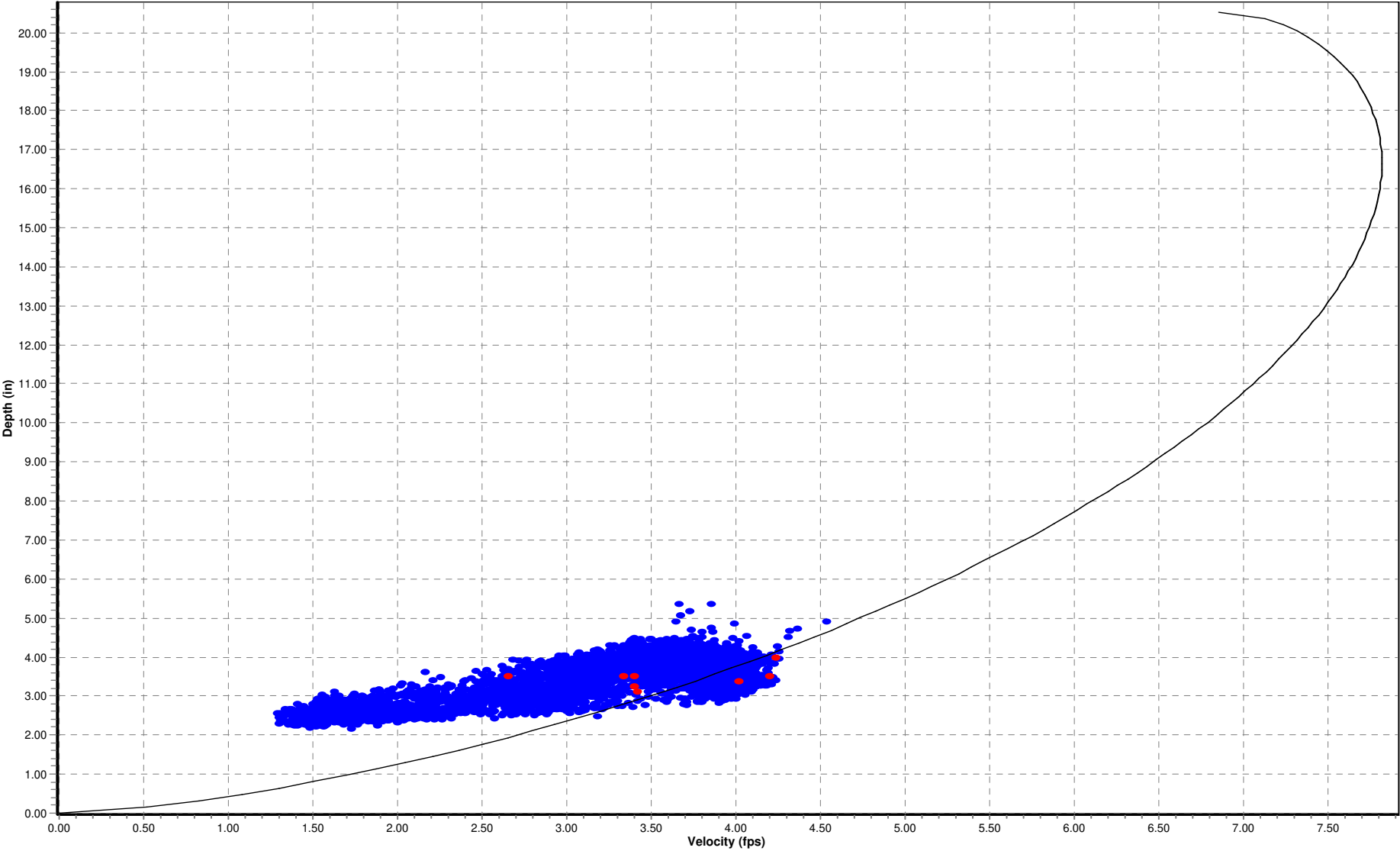


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FM09 (04/18/19 to 06/18/19) Pipe Dia: 20.03 in

Scattergraph

☒ 08 Dfinal (in) ☒ Pipe Curve

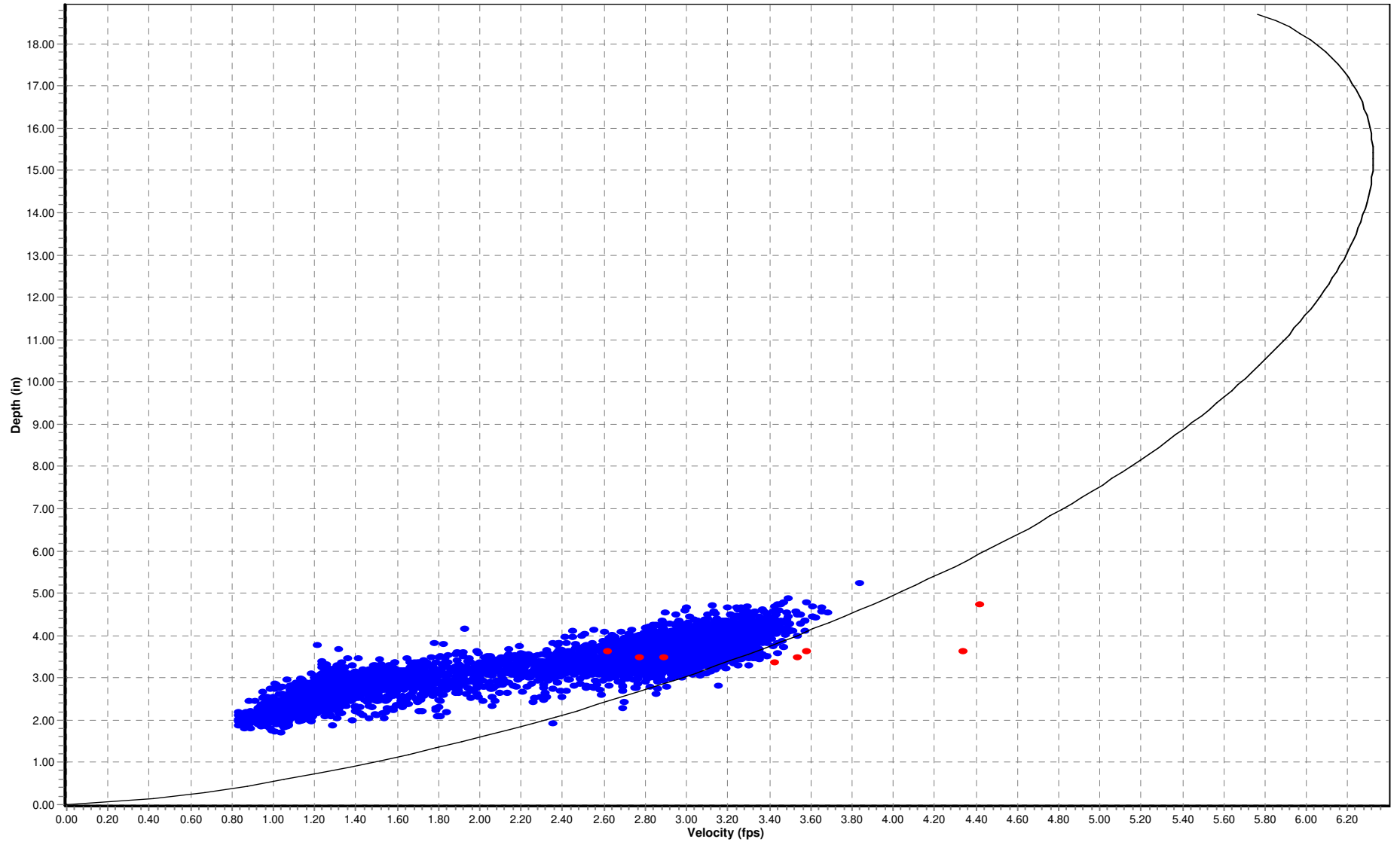


Print Date: 08/21/19 10:27:33

FM10 (04/18/19 to 06/18/19) Pipe Dia: 15 in

Scattergraph

☒ 08 Dfinal (in) ☒ Pipe Curve

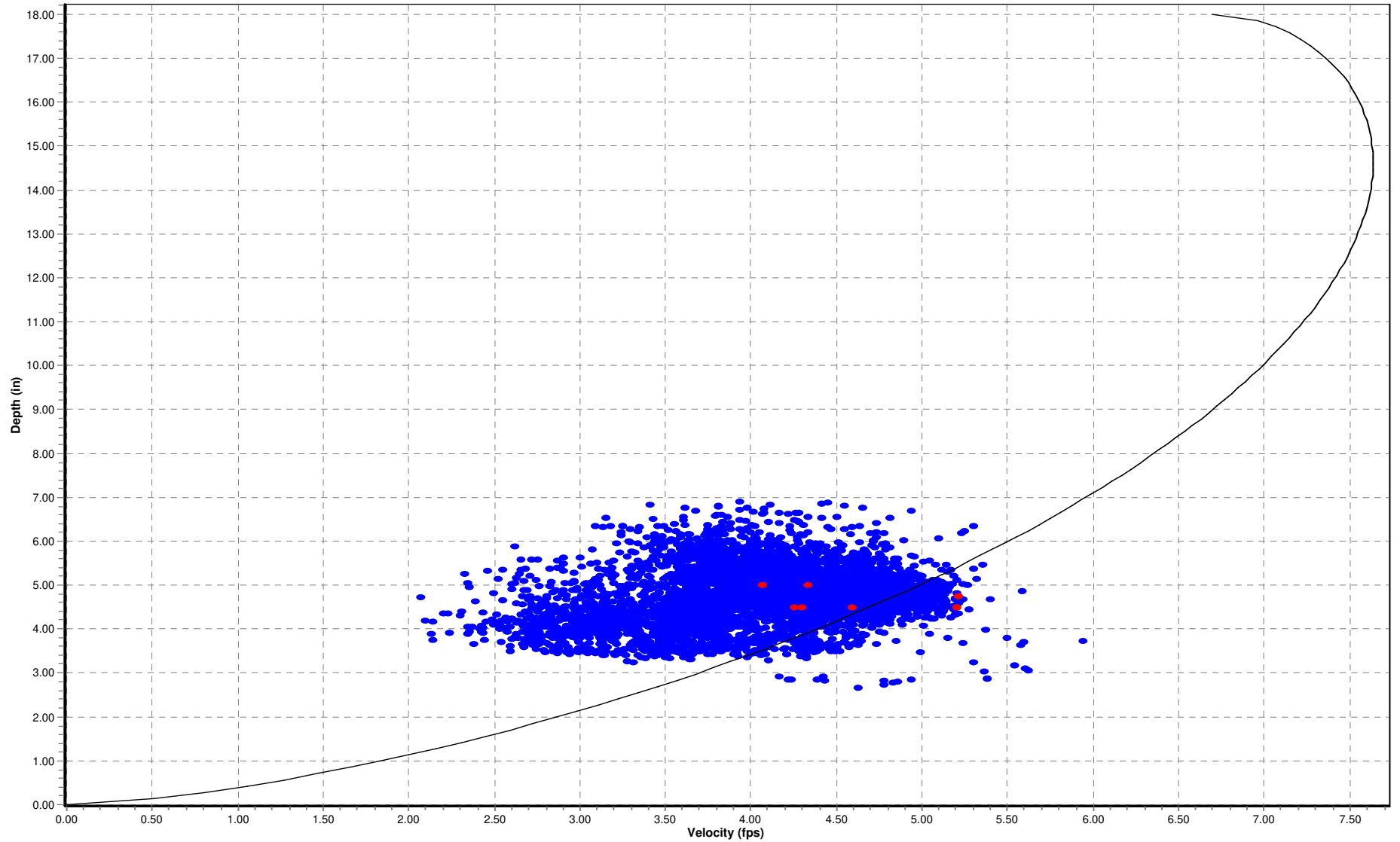


Print Date: 08/21/19 10:28:10

FM11 (04/18/19 to 06/18/19) Pipe Dia: 18.00 in

Scattergraph

☒ 08 Dfinal (in) ☒ Pipe Curve

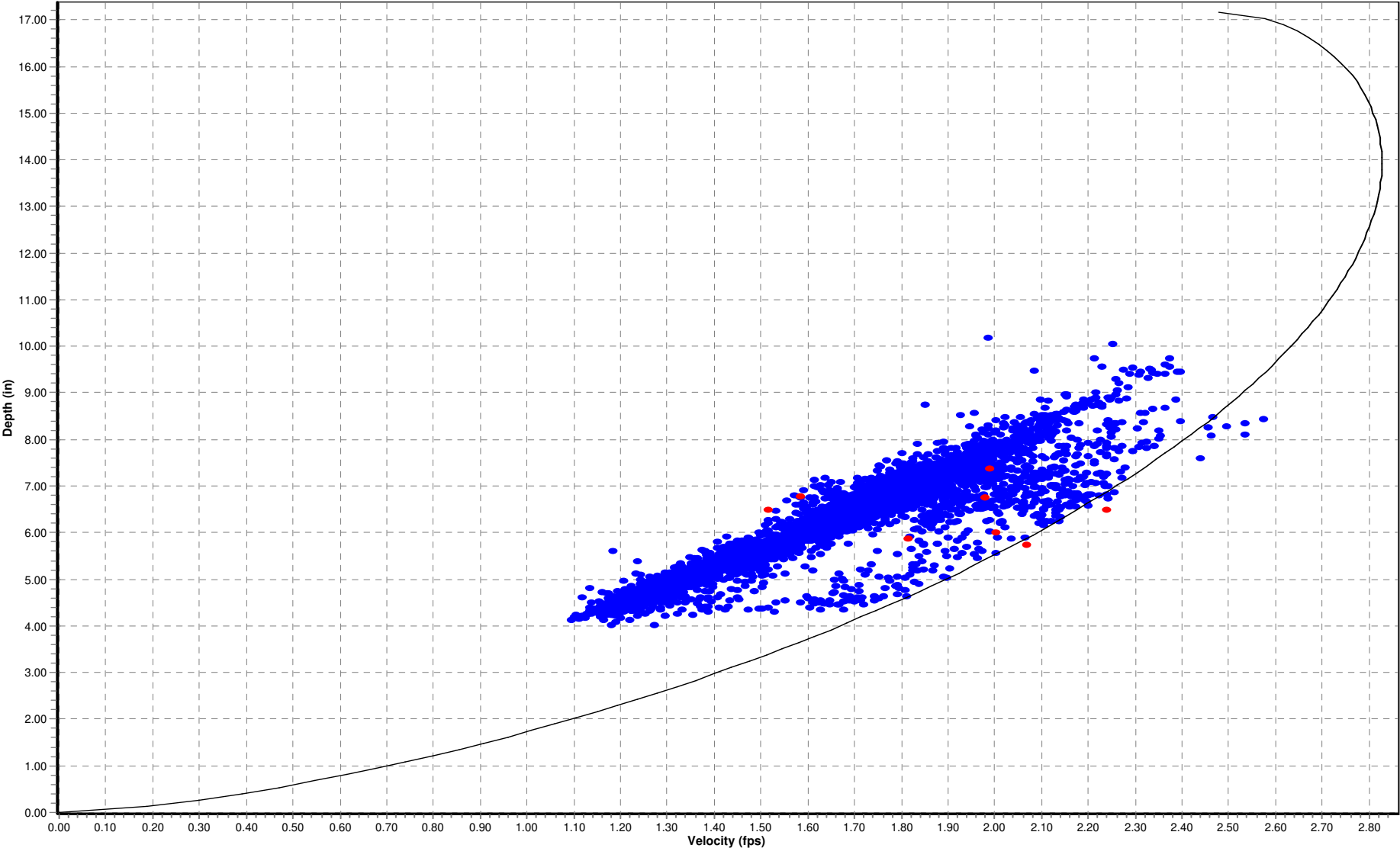


Print Date: 08/21/19 10:28:48

FM12 (04/18/19 to 06/18/19) Pipe Dia: 17.16 in

Scattergraph

☒ 08 Dfinal (in) ☒ Pipe Curve



Print Date: 08/21/19 10:29:31

APPENDIX D

DAILY FLOW SUMMARY TABLES

FM01

**DAILY MIN, MAX, & AVERAGE FLOW, AND RAINFALL - 4/18/19 to 6/17/19 - Flow values
extracted from 5-minute data**

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	RG01 Precipitation (inches)
4/18/2019	0.02	0.49	0.16	0.00
4/19/2019	0.02	0.48	0.17	0.00
4/20/2019	0.02	0.40	0.19	0.00
4/21/2019	0.02	0.49	0.21	0.15
4/22/2019	0.02	0.46	0.18	0.00
4/23/2019	0.02	0.53	0.17	0.00
4/24/2019	0.02	0.49	0.17	0.00
4/25/2019	0.02	0.48	0.17	0.00
4/26/2019	0.02	0.50	0.17	0.03
4/27/2019	0.03	0.42	0.19	0.00
4/28/2019	0.02	0.43	0.20	0.01
4/29/2019	0.02	0.40	0.18	0.03
4/30/2019	0.03	0.43	0.18	0.33
5/1/2019	0.03	0.59	0.18	0.10
5/2/2019	0.02	0.52	0.18	0.00
5/3/2019	0.02	0.53	0.17	0.00
5/4/2019	0.03	0.43	0.19	0.00
5/5/2019	0.02	0.56	0.21	0.00
5/6/2019	0.03	0.49	0.19	0.00
5/7/2019	0.02	0.48	0.18	0.05
5/8/2019	0.03	0.49	0.18	0.04
5/9/2019	0.03	0.58	0.17	0.19
5/10/2019	0.02	0.51	0.16	0.00
5/11/2019	0.02	0.46	0.21	0.14
5/12/2019	0.02	0.48	0.23	0.00
5/13/2019	0.03	0.56	0.25	0.00
5/14/2019	0.08	0.71	0.25	0.00
5/15/2019	0.08	0.60	0.25	0.00
5/16/2019	0.08	0.74	0.23	0.00
5/17/2019	0.07	0.49	0.22	0.06
5/18/2019	0.02	0.39	0.23	0.00
5/19/2019	0.04	0.44	0.24	0.03
5/20/2019	0.02	0.49	0.21	0.44
5/21/2019	0.03	0.54	0.20	0.55
5/22/2019	0.03	0.51	0.18	0.00
5/23/2019	0.02	0.41	0.18	0.01

Table (cont.)

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	Precipitation (inches)
5/24/2019	0.01	0.42	0.19	0.00
5/25/2019	0.07	0.42	0.21	0.00
5/26/2019	0.07	0.46	0.21	0.01
5/27/2019	0.04	0.44	0.22	0.05
5/28/2019	0.04	0.38	0.21	0.21
5/29/2019	0.02	0.37	0.18	0.01
5/30/2019	0.04	0.35	0.18	0.00
5/31/2019	0.04	0.36	0.17	0.01
6/1/2019	0.04	0.37	0.18	0.00
6/2/2019	0.05	0.42	0.21	0.31
6/3/2019	0.04	0.38	0.18	0.21
6/4/2019	0.02	0.45	0.17	0.04
6/5/2019	0.03	0.40	0.18	0.00
6/6/2019	0.02	0.39	0.17	0.00
6/7/2019	0.02	0.46	0.18	0.00
6/8/2019	0.03	0.36	0.17	0.02
6/9/2019	0.02	0.43	0.19	0.01
6/10/2019	0.02	0.46	0.18	0.00
6/11/2019	0.02	0.34	0.18	0.00
6/12/2019	0.03	0.39	0.18	0.00
6/13/2019	0.02	0.39	0.17	0.00
6/14/2019	0.02	0.45	0.17	0.00
6/15/2019	0.02	0.39	0.17	0.01
6/16/2019	0.02	0.42	0.19	0.04
6/17/2019	0.02	0.45	0.18	0.08

FM02

**DAILY MIN, MAX, & AVERAGE FLOW, AND RAINFALL - 4/18/19 to 6/17/19 - Flow values
extracted from 5-minute data**

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	RG01 Precipitation (inches)
4/18/2019	0.06	0.49	0.26	0.00
4/19/2019	0.07	0.49	0.27	0.00
4/20/2019	0.06	0.53	0.26	0.00
4/21/2019	0.06	0.48	0.25	0.15
4/22/2019	0.05	0.48	0.25	0.00
4/23/2019	0.05	0.48	0.25	0.00
4/24/2019	0.06	0.48	0.25	0.00
4/25/2019	0.06	0.51	0.26	0.00
4/26/2019	0.06	0.47	0.25	0.03
4/27/2019	0.06	0.46	0.24	0.00
4/28/2019	0.05	0.48	0.24	0.01
4/29/2019	0.06	0.41	0.25	0.03
4/30/2019	0.08	0.45	0.25	0.33
5/1/2019	0.07	0.49	0.25	0.10
5/2/2019	0.07	0.50	0.27	0.00
5/3/2019	0.06	0.47	0.25	0.00
5/4/2019	0.06	0.48	0.26	0.00
5/5/2019	0.05	0.51	0.26	0.00
5/6/2019	0.06	0.46	0.25	0.00
5/7/2019	0.05	0.45	0.24	0.05
5/8/2019	0.07	0.48	0.24	0.04
5/9/2019	0.07	0.47	0.25	0.19
5/10/2019	0.07	0.50	0.26	0.00
5/11/2019	0.07	0.72	0.26	0.14
5/12/2019	0.07	0.53	0.26	0.00
5/13/2019	0.07	0.57	0.27	0.00
5/14/2019	0.06	0.48	0.26	0.00
5/15/2019	0.07	0.53	0.28	0.00
5/16/2019	0.07	0.48	0.26	0.00
5/17/2019	0.08	0.48	0.25	0.06
5/18/2019	0.07	0.48	0.25	0.00
5/19/2019	0.06	0.49	0.26	0.03
5/20/2019	0.08	0.47	0.29	0.44
5/21/2019	0.09	0.51	0.28	0.55
5/22/2019	0.08	0.55	0.28	0.00
5/23/2019	0.08	0.49	0.27	0.01

Table (cont.)

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	Precipitation (inches)
5/24/2019	0.08	0.48	0.28	0.00
5/25/2019	0.08	0.55	0.27	0.00
5/26/2019	0.07	0.44	0.24	0.01
5/27/2019	0.08	0.53	0.27	0.05
5/28/2019	0.07	0.50	0.26	0.21
5/29/2019	0.07	0.42	0.26	0.01
5/30/2019	0.06	0.45	0.26	0.00
5/31/2019	0.06	0.43	0.26	0.01
6/1/2019	0.08	0.47	0.25	0.00
6/2/2019	0.07	0.48	0.25	0.31
6/3/2019	0.07	0.50	0.27	0.21
6/4/2019	0.08	0.43	0.26	0.04
6/5/2019	0.07	0.46	0.26	0.00
6/6/2019	0.07	0.43	0.26	0.00
6/7/2019	0.07	0.42	0.25	0.00
6/8/2019	0.08	0.47	0.25	0.02
6/9/2019	0.06	0.48	0.25	0.01
6/10/2019	0.06	0.41	0.26	0.00
6/11/2019	0.07	0.43	0.25	0.00
6/12/2019	0.07	0.41	0.25	0.00
6/13/2019	0.06	0.43	0.24	0.00
6/14/2019	0.06	0.38	0.24	0.00
6/15/2019	0.07	0.50	0.24	0.01
6/16/2019	0.07	0.47	0.24	0.04
6/17/2019	0.06	0.40	0.25	0.08

FM03

**DAILY MIN, MAX, & AVERAGE FLOW, AND RAINFALL - 4/18/19 to 6/17/19 - Flow values
extracted from 5-minute data**

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	RG01 Precipitation (inches)
4/18/2019	0.10	0.75	0.40	0.00
4/19/2019	0.10	0.79	0.39	0.00
4/20/2019	0.09	0.83	0.45	0.00
4/21/2019	0.11	0.87	0.47	0.15
4/22/2019	0.09	0.84	0.44	0.00
4/23/2019	0.10	0.83	0.43	0.00
4/24/2019	0.08	0.90	0.42	0.00
4/25/2019	0.09	0.76	0.42	0.00
4/26/2019	0.08	0.73	0.41	0.03
4/27/2019	0.08	0.85	0.45	0.00
4/28/2019	0.09	0.85	0.48	0.01
4/29/2019	0.10	0.76	0.42	0.03
4/30/2019	0.11	0.86	0.44	0.33
5/1/2019	0.11	0.81	0.39	0.10
5/2/2019	0.08	0.71	0.38	0.00
5/3/2019	0.08	0.82	0.36	0.00
5/4/2019	0.07	0.74	0.39	0.00
5/5/2019	0.08	0.76	0.42	0.00
5/6/2019	0.07	0.78	0.37	0.00
5/7/2019	0.08	0.72	0.37	0.05
5/8/2019	0.08	0.71	0.40	0.04
5/9/2019	0.11	0.74	0.45	0.19
5/10/2019	0.10	0.76	0.43	0.00
5/11/2019	0.10	0.82	0.47	0.14
5/12/2019	0.13	0.80	0.48	0.00
5/13/2019	0.11	0.80	0.44	0.00
5/14/2019	0.10	0.77	0.44	0.00
5/15/2019	0.10	0.78	0.42	0.00
5/16/2019	0.10	0.79	0.42	0.00
5/17/2019	0.10	0.79	0.43	0.06
5/18/2019	0.10	0.83	0.46	0.00
5/19/2019	0.11	0.89	0.50	0.03
5/20/2019	0.12	0.80	0.45	0.44
5/21/2019	0.14	0.82	0.46	0.55
5/22/2019	0.13	0.83	0.45	0.00
5/23/2019	0.11	0.76	0.45	0.01

Table (cont.)

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	Precipitation (inches)
5/24/2019	0.13	0.73	0.47	0.00
5/25/2019	0.13	0.77	0.47	0.00
5/26/2019	0.12	0.83	0.46	0.01
5/27/2019	0.12	0.82	0.49	0.05
5/28/2019	0.12	0.79	0.45	0.21
5/29/2019	0.11	0.70	0.46	0.01
5/30/2019	0.11	0.69	0.46	0.00
5/31/2019	0.12	0.74	0.47	0.01
6/1/2019	0.15	0.76	0.48	0.00
6/2/2019	0.12	0.85	0.51	0.31
6/3/2019	0.14	0.72	0.47	0.21
6/4/2019	0.14	0.73	0.46	0.04
6/5/2019	0.14	0.71	0.46	0.00
6/6/2019	0.13	0.69	0.46	0.00
6/7/2019	0.11	0.68	0.47	0.00
6/8/2019	0.10	0.78	0.49	0.02
6/9/2019	0.11	0.79	0.50	0.01
6/10/2019	0.12	0.70	0.47	0.00
6/11/2019	0.12	0.75	0.47	0.00
6/12/2019	0.12	0.76	0.45	0.00
6/13/2019	0.13	0.72	0.45	0.00
6/14/2019	0.11	0.70	0.44	0.00
6/15/2019	0.11	0.77	0.47	0.01
6/16/2019	0.12	0.80	0.48	0.04
6/17/2019	0.12	0.70	0.48	0.08

FM04

**DAILY MIN, MAX, & AVERAGE FLOW, AND RAINFALL - 4/18/19 to 6/17/19 - Flow values
extracted from 5-minute data**

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	RG01 Precipitation (inches)
4/18/2019	0.32	1.69	1.14	0.00
4/19/2019	0.34	1.70	1.15	0.00
4/20/2019	0.36	1.96	1.18	0.00
4/21/2019	0.34	1.99	1.17	0.15
4/22/2019	0.33	1.72	1.14	0.00
4/23/2019	0.34	1.78	0.99	0.00
4/24/2019	0.27	1.69	1.04	0.00
4/25/2019	0.31	1.72	1.10	0.00
4/26/2019	0.31	1.60	1.07	0.03
4/27/2019	0.32	1.80	1.12	0.00
4/28/2019	0.33	1.87	1.17	0.01
4/29/2019	0.35	1.71	1.15	0.03
4/30/2019	0.39	1.62	1.10	0.33
5/1/2019	0.38	1.85	1.19	0.10
5/2/2019	0.33	1.74	1.16	0.00
5/3/2019	0.36	1.69	1.14	0.00
5/4/2019	0.32	1.96	1.17	0.00
5/5/2019	0.34	2.02	1.24	0.00
5/6/2019	0.35	1.76	1.18	0.00
5/7/2019	0.33	1.73	1.12	0.05
5/8/2019	0.31	1.70	1.13	0.04
5/9/2019	0.42	1.73	1.22	0.19
5/10/2019	0.36	1.64	1.18	0.00
5/11/2019	0.39	1.92	1.22	0.14
5/12/2019	0.37	1.93	1.22	0.00
5/13/2019	0.32	1.69	1.16	0.00
5/14/2019	0.37	1.72	1.16	0.00
5/15/2019	0.35	1.74	1.16	0.00
5/16/2019	0.35	1.77	1.17	0.00
5/17/2019	0.38	1.70	1.17	0.06
5/18/2019	0.39	1.97	1.24	0.00
5/19/2019	0.37	2.02	1.29	0.03
5/20/2019	0.47	2.02	1.32	0.44
5/21/2019	0.63	2.12	1.49	0.55
5/22/2019	0.57	2.04	1.43	0.00
5/23/2019	0.60	1.91	1.34	0.01

Table (cont.)

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	Precipitation (inches)
5/24/2019	0.43	1.99	1.30	0.00
5/25/2019	0.49	2.02	1.32	0.00
5/26/2019	0.45	2.02	1.22	0.01
5/27/2019	0.44	2.09	1.31	0.05
5/28/2019	0.46	1.89	1.29	0.21
5/29/2019	0.42	1.72	1.22	0.01
5/30/2019	0.43	1.67	1.17	0.00
5/31/2019	0.42	1.66	1.18	0.01
6/1/2019	0.41	1.78	1.18	0.00
6/2/2019	0.33	1.80	1.09	0.31
6/3/2019	0.39	1.63	1.16	0.21
6/4/2019	0.47	1.78	1.16	0.04
6/5/2019	0.45	1.62	1.16	0.00
6/6/2019	0.39	1.61	1.16	0.00
6/7/2019	0.41	1.62	1.16	0.00
6/8/2019	0.38	1.79	1.17	0.02
6/9/2019	0.41	1.82	1.19	0.01
6/10/2019	0.39	1.60	1.15	0.00
6/11/2019	0.40	1.65	1.14	0.00
6/12/2019	0.44	1.71	1.20	0.00
6/13/2019	0.45	1.70	1.23	0.00
6/14/2019	0.42	1.64	1.19	0.00
6/15/2019	0.42	1.85	1.24	0.01
6/16/2019	0.48	1.86	1.26	0.04
6/17/2019	0.39	1.65	1.21	0.08

FM05

**DAILY MIN, MAX, & AVERAGE FLOW, AND RAINFALL - 4/18/19 to 6/17/19 - Flow values
extracted from 5-minute data**

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	RG01 Precipitation (inches)
4/18/2019	0.19	1.23	0.72	0.00
4/19/2019	0.20	1.22	0.71	0.00
4/20/2019	0.19	1.29	0.74	0.00
4/21/2019	0.17	1.25	0.75	0.15
4/22/2019	0.17	1.19	0.72	0.00
4/23/2019	0.20	1.21	0.54	0.00
4/24/2019	0.11	1.12	0.61	0.00
4/25/2019	0.19	1.10	0.70	0.00
4/26/2019	0.20	1.16	0.69	0.03
4/27/2019	0.18	1.19	0.72	0.00
4/28/2019	0.20	1.20	0.74	0.01
4/29/2019	0.19	1.07	0.73	0.03
4/30/2019	0.22	1.13	0.73	0.33
5/1/2019	0.19	1.16	0.72	0.10
5/2/2019	0.17	1.15	0.70	0.00
5/3/2019	0.17	1.16	0.70	0.00
5/4/2019	0.18	1.25	0.73	0.00
5/5/2019	0.17	1.24	0.74	0.00
5/6/2019	0.19	1.10	0.71	0.00
5/7/2019	0.18	1.09	0.69	0.05
5/8/2019	0.19	1.10	0.69	0.04
5/9/2019	0.19	1.11	0.72	0.19
5/10/2019	0.20	1.16	0.71	0.00
5/11/2019	0.18	1.18	0.72	0.14
5/12/2019	0.20	1.24	0.72	0.00
5/13/2019	0.17	1.15	0.71	0.00
5/14/2019	0.22	1.22	0.72	0.00
5/15/2019	0.18	1.19	0.70	0.00
5/16/2019	0.20	1.18	0.71	0.00
5/17/2019	0.20	1.09	0.70	0.06
5/18/2019	0.21	1.26	0.72	0.00
5/19/2019	0.20	1.24	0.77	0.03
5/20/2019	0.28	1.19	0.76	0.44
5/21/2019	0.29	1.20	0.77	0.55
5/22/2019	0.23	1.22	0.76	0.00
5/23/2019	0.24	1.13	0.73	0.01

Table (cont.)

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	Precipitation (inches)
5/24/2019	0.23	1.11	0.73	0.00
5/25/2019	0.25	1.21	0.74	0.00
5/26/2019	0.24	1.20	0.71	0.01
5/27/2019	0.23	1.29	0.78	0.05
5/28/2019	0.21	1.17	0.76	0.21
5/29/2019	0.21	1.10	0.74	0.01
5/30/2019	0.22	1.05	0.72	0.00
5/31/2019	0.26	1.07	0.72	0.01
6/1/2019	0.19	1.15	0.73	0.00
6/2/2019	0.21	1.16	0.75	0.31
6/3/2019	0.22	1.12	0.76	0.21
6/4/2019	0.23	1.19	0.76	0.04
6/5/2019	0.24	1.14	0.74	0.00
6/6/2019	0.23	1.15	0.75	0.00
6/7/2019	0.26	1.13	0.74	0.00
6/8/2019	0.26	1.21	0.76	0.02
6/9/2019	0.24	1.23	0.80	0.01
6/10/2019	0.25	1.19	0.78	0.00
6/11/2019	0.28	1.19	0.81	0.00
6/12/2019	0.36	1.22	0.80	0.00
6/13/2019	0.26	1.10	0.76	0.00
6/14/2019	0.25	1.13	0.72	0.00
6/15/2019	0.21	1.24	0.75	0.01
6/16/2019	0.22	1.19	0.77	0.04
6/17/2019	0.22	1.17	0.77	0.08

FM06

**DAILY MIN, MAX, & AVERAGE FLOW, AND RAINFALL - 4/18/19 to 6/17/19 - Flow values
extracted from 5-minute data**

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	RG01 Precipitation (inches)
4/18/2019	0.16	1.18	0.74	0.00
4/19/2019	0.17	1.09	0.75	0.00
4/20/2019	0.19	1.39	0.80	0.00
4/21/2019	0.21	1.53	0.84	0.15
4/22/2019	0.20	1.25	0.78	0.00
4/23/2019	0.18	1.20	0.75	0.00
4/24/2019	0.19	1.24	0.72	0.00
4/25/2019	0.19	1.18	0.74	0.00
4/26/2019	0.20	1.10	0.71	0.03
4/27/2019	0.17	1.35	0.79	0.00
4/28/2019	0.21	1.30	0.78	0.01
4/29/2019	0.15	1.12	0.75	0.03
4/30/2019	0.21	1.17	0.74	0.33
5/1/2019	0.18	1.27	0.75	0.10
5/2/2019	0.19	1.28	0.75	0.00
5/3/2019	0.16	1.19	0.78	0.00
5/4/2019	0.20	1.35	0.84	0.00
5/5/2019	0.24	1.41	0.86	0.00
5/6/2019	0.17	1.22	0.78	0.00
5/7/2019	0.18	1.22	0.77	0.05
5/8/2019	0.21	1.29	0.77	0.04
5/9/2019	0.23	1.27	0.79	0.19
5/10/2019	0.27	1.33	0.81	0.00
5/11/2019	0.25	1.41	0.83	0.14
5/12/2019	0.24	1.44	0.87	0.00
5/13/2019	0.22	1.27	0.82	0.00
5/14/2019	0.19	1.26	0.80	0.00
5/15/2019	0.21	1.23	0.77	0.00
5/16/2019	0.21	1.17	0.75	0.00
5/17/2019	0.24	1.16	0.77	0.06
5/18/2019	0.23	1.36	0.81	0.00
5/19/2019	0.24	1.40	0.83	0.03
5/20/2019	0.26	1.19	0.80	0.44
5/21/2019	0.26	1.23	0.82	0.55
5/22/2019	0.25	1.25	0.82	0.00
5/23/2019	0.25	1.19	0.78	0.01

Table (cont.)

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	Precipitation (inches)
5/24/2019	0.24	1.25	0.81	0.00
5/25/2019	0.24	1.33	0.81	0.00
5/26/2019	0.22	1.30	0.76	0.01
5/27/2019	0.23	1.39	0.82	0.05
5/28/2019	0.22	1.22	0.80	0.21
5/29/2019	0.26	1.16	0.80	0.01
5/30/2019	0.20	1.16	0.77	0.00
5/31/2019	0.18	1.19	0.75	0.01
6/1/2019	0.21	1.30	0.80	0.00
6/2/2019	0.23	1.40	0.84	0.31
6/3/2019	0.22	1.19	0.80	0.21
6/4/2019	0.24	1.17	0.80	0.04
6/5/2019	0.26	1.16	0.81	0.00
6/6/2019	0.27	1.14	0.80	0.00
6/7/2019	0.21	1.14	0.78	0.00
6/8/2019	0.24	1.26	0.80	0.02
6/9/2019	0.21	1.31	0.83	0.01
6/10/2019	0.23	1.15	0.77	0.00
6/11/2019	0.22	1.24	0.76	0.00
6/12/2019	0.22	1.18	0.76	0.00
6/13/2019	0.19	1.15	0.73	0.00
6/14/2019	0.22	1.06	0.73	0.00
6/15/2019	0.20	1.37	0.80	0.01
6/16/2019	0.23	1.29	0.80	0.04
6/17/2019	0.23	1.38	0.77	0.08

FM07

**DAILY MIN, MAX, & AVERAGE FLOW, AND RAINFALL - 4/18/19 to 6/17/19 - Flow values
extracted from 5-minute data**

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	RG02 Precipitation (inches)
4/18/2019	0.09	0.47	0.28	0.00
4/19/2019	0.10	0.48	0.26	0.00
4/20/2019	0.08	0.45	0.26	0.00
4/21/2019	0.10	0.50	0.24	0.37
4/22/2019	0.11	0.53	0.29	0.00
4/23/2019	0.11	0.44	0.27	0.00
4/24/2019	0.10	0.60	0.28	0.00
4/25/2019	0.10	0.52	0.28	0.00
4/26/2019	0.10	0.48	0.28	0.04
4/27/2019	0.09	0.40	0.26	0.00
4/28/2019	0.10	0.42	0.24	0.01
4/29/2019	0.10	0.49	0.25	0.00
4/30/2019	0.10	0.37	0.25	0.25
5/1/2019	0.10	0.68	0.28	0.10
5/2/2019	0.09	0.58	0.29	0.00
5/3/2019	0.13	0.44	0.29	0.00
5/4/2019	0.11	0.42	0.26	0.00
5/5/2019	0.10	0.41	0.27	0.00
5/6/2019	0.13	0.61	0.30	0.00
5/7/2019	0.11	0.47	0.27	0.07
5/8/2019	0.12	0.45	0.28	0.00
5/9/2019	0.13	0.57	0.31	0.22
5/10/2019	0.14	0.65	0.30	0.00
5/11/2019	0.12	0.52	0.29	0.12
5/12/2019	0.09	0.39	0.25	0.00
5/13/2019	0.10	0.43	0.27	0.00
5/14/2019	0.11	0.48	0.27	0.00
5/15/2019	0.11	0.42	0.27	0.00
5/16/2019	0.09	0.64	0.28	0.00
5/17/2019	0.09	0.60	0.29	0.24
5/18/2019	0.11	0.47	0.28	0.00
5/19/2019	0.09	0.43	0.29	0.01
5/20/2019	0.10	0.71	0.35	0.47
5/21/2019	0.17	0.55	0.37	0.61
5/22/2019	0.12	0.64	0.34	0.00
5/23/2019	0.12	0.59	0.35	0.00

Table (cont.)

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	Precipitation (inches)
5/24/2019	0.12	0.65	0.34	0.00
5/25/2019	0.15	0.53	0.31	0.00
5/26/2019	0.13	0.56	0.31	0.41
5/27/2019	0.11	0.48	0.30	0.31
5/28/2019	0.12	0.63	0.34	0.21
5/29/2019	0.11	0.52	0.32	0.02
5/30/2019	0.13	0.59	0.33	0.00
5/31/2019	0.12	0.59	0.34	0.06
6/1/2019	0.11	0.47	0.29	0.00
6/2/2019	0.11	0.86	0.32	0.42
6/3/2019	0.12	0.95	0.33	0.27
6/4/2019	0.11	0.51	0.31	0.16
6/5/2019	0.10	0.57	0.32	0.00
6/6/2019	0.11	0.69	0.33	0.00
6/7/2019	0.12	0.51	0.31	0.00
6/8/2019	0.12	0.50	0.31	0.00
6/9/2019	0.11	0.55	0.33	0.01
6/10/2019	0.16	0.55	0.35	0.00
6/11/2019	0.18	0.64	0.35	0.00
6/12/2019	0.15	0.54	0.31	0.00
6/13/2019	0.13	0.61	0.33	0.00
6/14/2019	0.14	0.63	0.32	0.00
6/15/2019	0.13	0.51	0.31	0.38
6/16/2019	0.13	0.48	0.32	0.01
6/17/2019	0.13	0.57	0.39	0.05

FM08

**DAILY MIN, MAX, & AVERAGE FLOW, AND RAINFALL - 4/18/19 to 6/17/19 - Flow values
extracted from 5-minute data**

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	RG02 Precipitation (inches)
4/18/2019	0.48	2.17	1.31	0.00
4/19/2019	0.45	1.85	1.24	0.00
4/20/2019	0.48	2.29	1.43	0.00
4/21/2019	0.51	2.41	1.44	0.37
4/22/2019	0.45	2.10	1.39	0.00
4/23/2019	0.45	2.25	1.35	0.00
4/24/2019	0.49	1.95	1.35	0.00
4/25/2019	0.47	2.15	1.28	0.00
4/26/2019	0.45	1.90	1.29	0.04
4/27/2019	0.46	2.21	1.44	0.00
4/28/2019	0.43	2.36	1.39	0.01
4/29/2019	0.41	2.10	1.31	0.00
4/30/2019	0.45	2.05	1.34	0.25
5/1/2019	0.54	2.04	1.34	0.10
5/2/2019	0.43	2.06	1.32	0.00
5/3/2019	0.45	1.91	1.33	0.00
5/4/2019	0.43	2.19	1.40	0.00
5/5/2019	0.51	2.42	1.43	0.00
5/6/2019	0.49	2.05	1.38	0.00
5/7/2019	0.44	1.91	1.35	0.07
5/8/2019	0.46	2.03	1.34	0.00
5/9/2019	0.45	1.96	1.36	0.22
5/10/2019	0.51	2.05	1.39	0.00
5/11/2019	0.53	2.17	1.44	0.12
5/12/2019	0.50	2.47	1.49	0.00
5/13/2019	0.49	2.10	1.45	0.00
5/14/2019	0.49	2.09	1.43	0.00
5/15/2019	0.46	1.99	1.41	0.00
5/16/2019	0.48	2.03	1.40	0.00
5/17/2019	0.53	1.91	1.41	0.24
5/18/2019	0.54	2.21	1.43	0.00
5/19/2019	0.51	2.32	1.46	0.01
5/20/2019	0.59	2.11	1.48	0.47
5/21/2019	0.57	2.07	1.47	0.61
5/22/2019	0.54	2.25	1.49	0.00
5/23/2019	0.53	1.95	1.42	0.00

Table (cont.)

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	Precipitation (inches)
5/24/2019	0.51	1.99	1.44	0.00
5/25/2019	0.52	2.17	1.45	0.00
5/26/2019	0.50	2.23	1.39	0.41
5/27/2019	0.47	2.39	1.46	0.31
5/28/2019	0.52	1.93	1.43	0.21
5/29/2019	0.53	1.94	1.42	0.02
5/30/2019	0.48	2.06	1.42	0.00
5/31/2019	0.47	2.03	1.41	0.06
6/1/2019	0.54	2.00	1.45	0.00
6/2/2019	0.47	2.08	1.48	0.42
6/3/2019	0.49	2.00	1.45	0.27
6/4/2019	0.52	1.95	1.46	0.16
6/5/2019	0.52	1.95	1.48	0.00
6/6/2019	0.56	1.90	1.46	0.00
6/7/2019	0.52	1.90	1.44	0.00
6/8/2019	0.55	2.05	1.46	0.00
6/9/2019	0.53	2.11	1.46	0.01
6/10/2019	0.53	1.89	1.45	0.00
6/11/2019	0.52	1.93	1.42	0.00
6/12/2019	1.35	1.94	1.70	0.00
6/13/2019	0.54	1.90	1.41	0.00
6/14/2019	0.52	1.85	1.40	0.00
6/15/2019	0.55	2.09	1.44	0.38
6/16/2019	0.55	2.02	1.48	0.01
6/17/2019	0.51	2.03	1.45	0.05

FM09

**DAILY MIN, MAX, & AVERAGE FLOW, AND RAINFALL - 4/18/19 to 6/17/19 - Flow values
extracted from 5-minute data**

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	RG02 Precipitation (inches)
4/18/2019	0.13	0.89	0.54	0.00
4/19/2019	0.16	0.88	0.59	0.00
4/20/2019	0.14	0.89	0.54	0.00
4/21/2019	0.16	1.11	0.56	0.37
4/22/2019	0.14	0.82	0.50	0.00
4/23/2019	0.14	0.90	0.52	0.00
4/24/2019	0.15	0.86	0.57	0.00
4/25/2019	0.12	0.83	0.56	0.00
4/26/2019	0.13	0.89	0.51	0.04
4/27/2019	0.12	0.93	0.58	0.00
4/28/2019	0.12	0.93	0.56	0.01
4/29/2019	0.15	0.84	0.55	0.00
4/30/2019	0.13	0.95	0.57	0.25
5/1/2019	0.18	0.91	0.59	0.10
5/2/2019	0.13	0.94	0.57	0.00
5/3/2019	0.12	0.86	0.56	0.00
5/4/2019	0.12	0.90	0.58	0.00
5/5/2019	0.16	0.90	0.56	0.00
5/6/2019	0.15	0.76	0.52	0.00
5/7/2019	0.13	0.85	0.51	0.07
5/8/2019	0.12	0.85	0.53	0.00
5/9/2019	0.18	0.77	0.56	0.22
5/10/2019	0.14	0.79	0.53	0.00
5/11/2019	0.12	0.88	0.54	0.12
5/12/2019	0.12	0.99	0.52	0.00
5/13/2019	0.16	0.82	0.53	0.00
5/14/2019	0.11	0.83	0.53	0.00
5/15/2019	0.12	0.84	0.55	0.00
5/16/2019	0.12	0.88	0.54	0.00
5/17/2019	0.12	0.84	0.56	0.24
5/18/2019	0.13	0.85	0.55	0.00
5/19/2019	0.13	0.86	0.52	0.01
5/20/2019	0.16	0.92	0.58	0.47
5/21/2019	0.15	0.93	0.60	0.61
5/22/2019	0.11	0.83	0.55	0.00
5/23/2019	0.12	0.84	0.51	0.00

Table (cont.)

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	Precipitation (inches)
5/24/2019	0.12	0.86	0.54	0.00
5/25/2019	0.17	0.86	0.54	0.00
5/26/2019	0.18	0.99	0.57	0.41
5/27/2019	0.15	0.88	0.52	0.31
5/28/2019	0.12	0.83	0.54	0.21
5/29/2019	0.12	0.84	0.53	0.02
5/30/2019	0.12	0.78	0.51	0.00
5/31/2019	0.13	0.86	0.52	0.06
6/1/2019	0.16	0.87	0.52	0.00
6/2/2019	0.12	1.23	0.53	0.42
6/3/2019	0.12	0.97	0.52	0.27
6/4/2019	0.16	1.14	0.58	0.16
6/5/2019	0.11	0.82	0.49	0.00
6/6/2019	0.13	0.80	0.53	0.00
6/7/2019	0.12	0.71	0.51	0.00
6/8/2019	0.15	0.71	0.49	0.00
6/9/2019	0.12	0.75	0.46	0.01
6/10/2019	0.14	0.66	0.47	0.00
6/11/2019	0.12	0.70	0.47	0.00
6/12/2019	0.15	0.74	0.49	0.00
6/13/2019	0.11	0.73	0.49	0.00
6/14/2019	0.13	0.79	0.52	0.00
6/15/2019	0.14	1.28	0.54	0.38
6/16/2019	0.12	0.82	0.50	0.01
6/17/2019	0.14	0.87	0.53	0.05

FM10

**DAILY MIN, MAX, & AVERAGE FLOW, AND RAINFALL - 4/18/19 to 6/17/19 - Flow values
extracted from 5-minute data**

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	RG02 Precipitation (inches)
4/18/2019	0.05	0.94	0.37	0.00
4/19/2019	0.07	0.90	0.38	0.00
4/20/2019	0.05	0.92	0.36	0.00
4/21/2019	0.07	0.89	0.36	0.37
4/22/2019	0.05	1.34	0.37	0.00
4/23/2019	0.05	0.83	0.40	0.00
4/24/2019	0.06	0.83	0.38	0.00
4/25/2019	0.06	0.70	0.37	0.00
4/26/2019	0.06	0.74	0.38	0.04
4/27/2019	0.05	0.88	0.35	0.00
4/28/2019	0.06	1.07	0.37	0.01
4/29/2019	0.06	0.94	0.39	0.00
4/30/2019	0.05	1.00	0.39	0.25
5/1/2019	0.06	0.90	0.40	0.10
5/2/2019	0.06	0.93	0.39	0.00
5/3/2019	0.07	0.88	0.40	0.00
5/4/2019	0.07	1.02	0.41	0.00
5/5/2019	0.09	0.90	0.41	0.00
5/6/2019	0.11	0.98	0.43	0.00
5/7/2019	0.07	0.97	0.39	0.07
5/8/2019	0.06	0.97	0.40	0.00
5/9/2019	0.08	0.87	0.38	0.22
5/10/2019	0.06	0.84	0.37	0.00
5/11/2019	0.05	0.82	0.36	0.12
5/12/2019	0.06	0.80	0.38	0.00
5/13/2019	0.06	0.90	0.38	0.00
5/14/2019	0.06	0.93	0.39	0.00
5/15/2019	0.06	0.98	0.41	0.00
5/16/2019	0.12	0.76	0.44	0.00
5/17/2019	0.05	0.80	0.36	0.24
5/18/2019	0.06	0.75	0.35	0.00
5/19/2019	0.06	0.89	0.38	0.01
5/20/2019	0.06	0.81	0.41	0.47
5/21/2019	0.07	0.88	0.41	0.61
5/22/2019	0.06	0.81	0.36	0.00
5/23/2019	0.05	0.95	0.39	0.00

Table (cont.)

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	Precipitation (inches)
5/24/2019	0.10	0.87	0.39	0.00
5/25/2019	0.07	0.89	0.36	0.00
5/26/2019	0.05	0.89	0.32	0.41
5/27/2019	0.05	0.90	0.35	0.31
5/28/2019	0.06	0.86	0.38	0.21
5/29/2019	0.07	0.88	0.35	0.02
5/30/2019	0.05	1.02	0.45	0.00
5/31/2019	0.15	0.96	0.38	0.06
6/1/2019	0.08	0.90	0.34	0.00
6/2/2019	0.07	0.97	0.41	0.42
6/3/2019	0.13	1.00	0.44	0.27
6/4/2019	0.12	0.99	0.46	0.16
6/5/2019	0.16	0.99	0.54	0.00
6/6/2019	0.12	1.01	0.47	0.00
6/7/2019	0.11	1.08	0.50	0.00
6/8/2019	0.12	1.04	0.46	0.00
6/9/2019	0.10	1.05	0.43	0.01
6/10/2019	0.12	1.19	0.43	0.00
6/11/2019	0.13	0.89	0.46	0.00
6/12/2019	0.12	0.97	0.42	0.00
6/13/2019	0.10	1.23	0.41	0.00
6/14/2019	0.06	0.91	0.36	0.00
6/15/2019	0.06	1.09	0.37	0.38
6/16/2019	0.11	0.89	0.40	0.01
6/17/2019	0.12	1.02	0.43	0.05

FM11

**DAILY MIN, MAX, & AVERAGE FLOW, AND RAINFALL - 4/18/19 to 6/17/19 - Flow values
extracted from 5-minute data**

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	RG02 Precipitation (inches)
4/18/2019	0.41	1.40	0.99	0.00
4/19/2019	0.43	1.35	0.96	0.00
4/20/2019	0.48	1.30	0.96	0.00
4/21/2019	0.45	1.30	0.93	0.37
4/22/2019	0.43	1.75	1.02	0.00
4/23/2019	0.50	1.65	1.03	0.00
4/24/2019	0.37	1.39	0.98	0.00
4/25/2019	0.44	1.52	1.00	0.00
4/26/2019	0.43	1.43	0.97	0.04
4/27/2019	0.43	1.38	0.94	0.00
4/28/2019	0.40	1.56	0.93	0.01
4/29/2019	0.45	1.71	1.05	0.00
4/30/2019	0.41	1.56	1.06	0.25
5/1/2019	0.40	1.35	0.90	0.10
5/2/2019	0.43	1.26	0.91	0.00
5/3/2019	0.39	1.06	0.86	0.00
5/4/2019	0.41	1.44	0.95	0.00
5/5/2019	0.35	1.41	0.94	0.00
5/6/2019	0.30	1.86	1.02	0.00
5/7/2019	0.54	1.57	1.04	0.07
5/8/2019	0.46	1.39	1.02	0.00
5/9/2019	0.56	1.71	1.09	0.22
5/10/2019	0.48	1.48	1.00	0.00
5/11/2019	0.47	1.46	0.97	0.12
5/12/2019	0.49	1.35	0.98	0.00
5/13/2019	0.44	1.49	1.00	0.00
5/14/2019	0.50	1.53	0.96	0.00
5/15/2019	0.36	1.27	0.94	0.00
5/16/2019	0.49	1.47	1.02	0.00
5/17/2019	0.47	1.33	1.00	0.24
5/18/2019	0.56	1.26	1.00	0.00
5/19/2019	0.53	1.31	0.96	0.01
5/20/2019	0.44	1.56	1.03	0.47
5/21/2019	0.48	1.40	1.03	0.61
5/22/2019	0.54	1.48	1.02	0.00
5/23/2019	0.59	1.37	1.01	0.00

Table (cont.)

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	Precipitation (inches)
5/24/2019	0.56	1.14	0.89	0.00
5/25/2019	0.45	1.07	0.85	0.00
5/26/2019	0.56	1.32	0.94	0.41
5/27/2019	0.69	1.89	1.15	0.31
5/28/2019	0.82	2.09	1.50	0.21
5/29/2019	0.84	1.74	1.25	0.02
5/30/2019	0.57	1.48	1.03	0.00
5/31/2019	0.50	1.32	0.97	0.06
6/1/2019	0.38	1.79	1.00	0.00
6/2/2019	0.47	1.95	1.04	0.42
6/3/2019	0.47	2.02	1.08	0.27
6/4/2019	0.54	1.95	1.12	0.16
6/5/2019	0.61	1.74	1.07	0.00
6/6/2019	0.49	1.83	1.04	0.00
6/7/2019	0.58	1.73	1.10	0.00
6/8/2019	0.52	1.80	1.04	0.00
6/9/2019	0.48	1.85	1.03	0.01
6/10/2019	0.42	2.13	1.08	0.00
6/11/2019	0.52	1.81	1.07	0.00
6/12/2019	0.50	1.86	1.05	0.00
6/13/2019	0.44	1.80	1.09	0.00
6/14/2019	0.51	1.76	1.05	0.00
6/15/2019	0.57	1.81	1.05	0.38
6/16/2019	0.65	1.46	1.05	0.01
6/17/2019	0.43	1.64	1.05	0.05

FM12

**DAILY MIN, MAX, & AVERAGE FLOW, AND RAINFALL - 4/18/19 to 6/17/19 - Flow values
extracted from 5-minute data**

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	RG02 Precipitation (inches)
4/18/2019	0.25	1.19	0.68	0.00
4/19/2019	0.22	1.09	0.65	0.00
4/20/2019	0.26	1.12	0.67	0.00
4/21/2019	0.32	1.02	0.66	0.37
4/22/2019	0.24	1.48	0.73	0.00
4/23/2019	0.31	1.23	0.77	0.00
4/24/2019	0.25	1.34	0.76	0.00
4/25/2019	0.26	1.18	0.68	0.00
4/26/2019	0.18	1.12	0.67	0.04
4/27/2019	0.23	0.86	0.58	0.00
4/28/2019	0.22	0.97	0.58	0.01
4/29/2019	0.23	1.23	0.67	0.00
4/30/2019	0.27	1.32	0.70	0.25
5/1/2019	0.24	1.11	0.64	0.10
5/2/2019	0.22	1.15	0.64	0.00
5/3/2019	0.26	0.84	0.60	0.00
5/4/2019	0.22	0.97	0.56	0.00
5/5/2019	0.22	0.84	0.53	0.00
5/6/2019	0.24	1.09	0.67	0.00
5/7/2019	0.26	0.98	0.64	0.07
5/8/2019	0.35	0.96	0.64	0.00
5/9/2019	0.28	1.18	0.63	0.22
5/10/2019	0.24	1.15	0.59	0.00
5/11/2019	0.23	1.07	0.56	0.12
5/12/2019	0.21	0.85	0.54	0.00
5/13/2019	0.20	0.97	0.58	0.00
5/14/2019	0.23	0.97	0.57	0.00
5/15/2019	0.23	1.02	0.57	0.00
5/16/2019	0.27	1.04	0.62	0.00
5/17/2019	0.25	1.02	0.60	0.24
5/18/2019	0.25	0.77	0.55	0.00
5/19/2019	0.25	0.81	0.53	0.01
5/20/2019	0.26	1.03	0.63	0.47
5/21/2019	0.27	0.90	0.62	0.61
5/22/2019	0.28	0.97	0.64	0.00
5/23/2019	0.26	0.98	0.61	0.00

Table (cont.)

Date	Minimum Flow (MGD)	Maximum Flow (MGD)	Average Flow (MGD)	Precipitation (inches)
5/24/2019	0.24	0.96	0.60	0.00
5/25/2019	0.26	0.84	0.55	0.00
5/26/2019	0.26	0.92	0.51	0.41
5/27/2019	0.20	0.98	0.55	0.31
5/28/2019	0.24	0.99	0.62	0.21
5/29/2019	0.26	0.85	0.56	0.02
5/30/2019	0.25	1.01	0.61	0.00
5/31/2019	0.25	0.83	0.56	0.06
6/1/2019	0.26	1.45	0.59	0.00
6/2/2019	0.24	1.38	0.56	0.42
6/3/2019	0.25	1.46	0.63	0.27
6/4/2019	0.27	1.46	0.70	0.16
6/5/2019	0.27	1.37	0.63	0.00
6/6/2019	0.27	1.40	0.63	0.00
6/7/2019	0.30	1.45	0.66	0.00
6/8/2019	0.27	1.36	0.57	0.00
6/9/2019	0.22	1.29	0.55	0.01
6/10/2019	0.22	1.44	0.62	0.00
6/11/2019	0.26	1.42	0.63	0.00
6/12/2019	0.26	1.49	0.64	0.00
6/13/2019	0.25	1.44	0.64	0.00
6/14/2019	0.26	1.41	0.63	0.00
6/15/2019	0.27	1.48	0.60	0.38
6/16/2019	0.33	0.84	0.57	0.01
6/17/2019	0.25	1.44	0.63	0.05

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Appendix D

Cost Development and CIP Information

D.1 Cost Development

D.1.1 Variability in Data

Data was obtained from past contractor bidding information provided by the City and by other Front Range communities as well as national sources which included unit costs for various, potential capital expenditures on wastewater, water, and non-potable projects. The data varied in the level of detail and in the definition of each cost element. For example, pipeline costs may or may not include dewatering, restoration, or paving project sites. Pipe cost data from the different sources also varied by construction depth, ground conditions, and method of installation for pipeline. For example, one data source may have identified unit price for a given pipe diameter size at a given depth while another data source provided unit costs for given pipe diameter sizes of various depths within developed or undeveloped land areas. Both data sources provide information regarding pipe installation costs, but the data needs to be considered based on the level of detail that is desired for project CIP development.

D.1.2 Unknown Elements and Assumptions

Assumptions made during CIP development can add to the variability of final bid project costs when compared to the planning level costs. The assumptions are necessary to capture costs for project elements that cannot be defined at a planning level. Examples of undefinable costs include dewatering project areas, utility pipeline crossings, permitting for project implementation, final contractor bid quantities, seasonal soil and ground conditions, and stormwater management of project sites. Assumptions are also made for method of pipe installation, timing of projects, and materials of construction. During design development, additional field information including survey, geotechnical data, groundwater levels, traffic control requirements, and final pipe alignment of project areas will be available to help refine the project elements and construction methods.

Trendlines and linear interpolation are used to develop costs for project elements for which the data was incomplete. For example, cost data was obtained for the installation of gravity sanitary sewer pipe for 8" through 48" diameter pipe, however, there was limited cost information for 15", 30", and 54" pipe. Trend line equations for linear, power, exponential, polynomial and their respective R2 values were compared to identify the most probable estimation equation. In this case, the trendline equation with an R2 value closest to 1 was selected as the most probable estimation equation. Because the trendline with the most pertinent R2 value may not reflect the true data trend, the City should readjust cost data throughout the planning horizon, which is defined as the length of time into the future for which projects are planned.

Figure D-1 shows an example of comparing different trend line equations and their respective R2 values for approximating missing data for the trenchless installation of the gravity sanitary sewer line item. In this example, the linear trend line (shown by the purple dotted line below) has the closest R2 value to 1 compared to the exponential and logarithmic trend lines (shown by the blue

and green dotted lines below, respectively) based on available data. As a result, without additional industry knowledge and experience, the linear trend line would be assumed to best approximate unit costs for trenchless pipe installation for pipe diameter sizes not available from the given data set. This assumption may conflict with actual trenchless pipe installation data trends known in the industry which may better be approximated by exponential or logarithmic trend lines. This is especially true when predicting trenchless pipe installations for large pipe diameter sizes (i.e., greater than 30" diameter) where predictions of data points of the trend lines begin to greatly diverge. At a planning level, this limitation is acceptable when a cushion of construction cost contingency (i.e., 35%) is added to help absorb this unit cost uncertainty. However, at an engineering design level, where construction cost contingency is lowered or removed, the chosen trend line that best reflects industry data trends should be used regardless of if the chosen trend line has an R2 value closest to 1 to avoid unnecessary error.

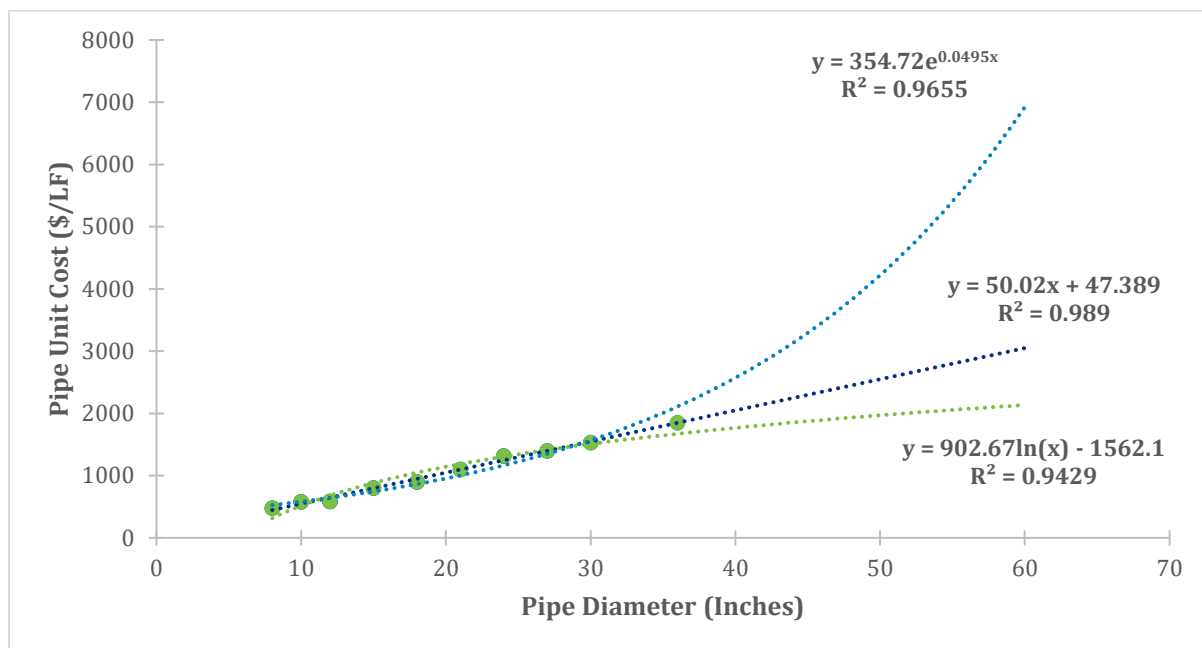


Figure D-1 Example of Different Trendlines for Finding Missing Data of a Line Item

D.1.3 Unpredictability

There is unpredictability to consider during CIP development, which is captured in the cost range provided for the overall CIP. Examples of unpredictability include future economic trends and inflation rates of CIPs. Prior to COVID-19, a global pandemic, cost inflation tools provided high confidence for predicting unit prices within a given year. However, after COVID-19, these cost inflation tools may not prove to be as accurate.

D.2 Cost Development

D.2.1 Data Sources

Major data sources for the cost factors included the following: water, non-potable, and wastewater master plans; past project and contractor construction bid tabs; CDM Smith's estimator group unit prices; vendor quotes for project components; and City data bases. A list of external sources used to develop unit costs for the City's CIP wastewater cost estimations is included below.

- 7th Avenue. Storm Drain, Sanitary Sewer – GMP (City of Greeley, 2019).
- 71st Avenue Bridge/Road Widening/Phase 2 of Ashcroft Draw Basin Sanitary Sewer (City of Greeley, 2018).
- Ashcroft Draw Sanitary Sewer Project Guaranteed Maximum Price (City of Greeley, 2016).
- City of Aurora Wastewater Master Plan (AECOM, 2017).
- City of Greeley Pipe Rehabilitation Cost Estimating Template (City of Greeley, 2019).
- Collection, Distributions, Transmission Projects Phase I – (Construction Manager at Risk or CMAR) (City of Greeley, 2019).
- Lift Station 15 (Auto Plaza) Upgrade Quotes (Canyon Systems, Inc. 2020).
- North Greeley Sewer Phase IIA (City of Greeley, 2016).
- Weld County Assessor's Website (Weld County Government, 2020).

The data was compiled in an Excel spreadsheet with line item data reflected as unit costs (e.g., dollars per linear foot, dollars per each, etc.). When needed, unit costs for specific line items were calculated using trend line equations. Line items that were not specific and/or harder to estimate using specific unit cost quantity were reflected as a percentage addition to project costs (e.g., mobilization and demobilization, erosion control/stormwater pollution prevention, etc.).

The costs estimated in the project CIPs are in August 2020 dollars. Historical data was adjusted to the equivalent August 2020 data by using Engineering News Record's Construction Cost Index (ENR-CCI). ENR estimates a project each month in 20 different cities around the U.S. and calculates the composite index. Costs are adjusted by multiplying a cost element with the ratio of the current day ENR-CCI and date of data.

$$\text{Construction Unit Cost (T2)} = \text{Construction Cost (T1)} \times \frac{\text{CCI(T2)}}{\text{CCI(T1)}}$$

T2 and T1 reflect the desired projected year and month desired and the originally year and month of unit costs, respectively.

D.2.2 Major Cost Elements

The OPCC is considered the costs incurred by the contractor to construct a capital project. The project CIP costs include the OPCC and project implementation costs such as planning and design, administration, and construction management. The CIP costs were developed using five general cost element categories as described below and in the following subsections:

- **Pipeline and Manholes:** Quantities are from bid tabs, past reports, and model results as described in **Sections 4 and 5**. Costs are developed by multiplying the estimated quantity by a unit price for that quantity.
- **Lift Stations:** Quantities for new lift stations are estimated using typical pump station costs based on flow rate capacity required for each station. Quantities for upgrades and rehabilitation of existing lift stations (e.g., flow rate increases) are estimated using price quotes from a local pump supplier familiar with the City's lift station preferences and using the desired head and flow rate capacity.
- **Land Considerations (easements):** Land considerations provide for permanent easements acquired outside of city right-of-way. Permanent easements ensure that there will be reserved land space for future project pipelines that do not follow City roadways. The easement acquisition was estimated as an allowance (5%) of the total OPCC for each project.
- **Dewatering:** Dewatering is the removal of water from soil by pumping where pipeline will be placed/replaced. Dewatering requirements are site specific and depend on ground water levels and soil conditions. No field data was obtained during the CIP development so dewatering costs have been estimated using a tiered approach based on proximity of the project to water and the depth of the excavation. The estimated cost for dewatering is subject to considerable variance.
- **Project Implementation and Contingency:** These cost elements are the most subjective of the five primary categories and are based on percentages of the subtotal for the first four elements. Project implementation and contingency factor in requirements to begin projects and uncertainty/risks associated with projects.

D.2.3 Pipeline and Manholes

D.2.3.1 Installation of Pipe

Gravity sewer pipe and force mains were generally assumed to be installed using open cut construction. Open cut construction is defined as when contractors remove surface soils to insert pipe, except for when pipe installation depth was greater than 20 feet, or for arterial roadway and highway, railroad, and irrigation ditch crossings. In such instances, trenchless pipe installation was assumed which inserts pipe through tunneling and boring methods. Open cut pipeline installation unit costs (in dollars per linear foot of pipe) include the pipe and bedding, excavation, by-pass pumping, installation including traffic control, tie-ins for service laterals, backfill, restoration, and removal of old pipe.

The open cut installation was divided into developed and undeveloped categories. The developed category includes pipe installed in developed areas such as in neighborhoods, along major city streets, across two lane roads, through developed commercial property, and designated agricultural land and around city boundaries. The undeveloped category was assigned to pipe installed on permanently open space such as city parks. For both categories, the pipe installation was further segregated by depth categories: (1) from 0-foot to 10-foot depth and (2) greater than 10-foot to 20-foot depth. Where depth of pipe was greater than 20 feet, trenchless pipe installation was assumed.

Trenchless installation costs (in dollars per liner foot of pipe) include the casing and carrier pipe, supports and contact grouting of the interstitial space, launching and receiving pits, and ground monitoring using jack and bore drilling. Unit prices were developed using bid tabs and CDM Smith's construction cost data base. Alternative methods of trenchless installation will be defined during project design development and based on field conditions.

Table D-1 provides the unit cost breakdown for installation and removal of polyvinyl chloride (PVC) gravity sewer pipe and force mains.

Table D-1 Unit Costs for PVC Gravity Sewer and Force Main installation and removal

Pipe Diameter Size (in.)	Unit Cost (\$/LF of Pipe)				
	Developed Land Designation		Undeveloped Land Designation		Trenchless (Crossings and >20 ft Depth)
	0 ft – 10 ft Depth	>10 ft – 20 ft Depth	0 ft – 10 ft Depth	>10 ft – 20 ft Depth	
8	88	188	45	78	478
10	95	196	50	83	581
12	105	206	59	92	584
15	119	220	68	10268	798
18	133	235	Not Used		897
21	152	254			1,098
24	179	268			1,314
27	194	299			1,398
30	240	347			1,531
36	286	397			1,848
42	372	488			2,148
48	446	566			2,448
54	588	712			2,748

D.2.3.2 Manholes

Four-foot diameter manholes were assumed for 8" and 12" diameter sanitary sewer pipe and five-foot diameter manholes were assumed for 15" to 27" diameter sanitary sewer based on the City's construction standards (City of Greeley, 2008). Six-foot diameter manholes were assumed for pipeline greater than 27" diameter up to and including 48" diameter sanitary sewers. Eight-foot diameter manholes were assumed for any sanitary sewer greater than 48" diameter. The unit cost per manhole was estimated assuming installation of new manholes across the entire pipe length of a given project. This conservative estimate accounts for removal and replacement of

existing manholes that are at the end of their service lifetime or would need to be upsized given their connection to pipe of increased diameter size. Manhole spacing was estimated at 250-foot between manholes. The following equation was used to estimate the number of manholes required as a function of total gravity sanitary sewer pipe length. One additional manhole was added per project for a conservative estimate.

$$\text{Total Manhole No.} = \frac{\text{Total Project Pipe Length}}{250} + 1$$

To determine the number of manholes in each depth category, the percentage of the total pipe in each depth class was multiplied by the total number of manholes as shown in the below equation:

$$\text{Manhole No. By Pipe Depth Class} = \text{Total Manhole No.} \times \frac{\text{Total Pipe Length Per Depth Class}}{\text{Total Project Pipe Length}}$$

Table D-2 shows the unit costs used for estimating installation of new manhole installation.

Table D-2 Unit Costs of 4-foot Diameter and 5-foot Diameter Manholes by Pipe Depth Class

Manhole Diameter (In.)	Unit Cost (\$/Each Manhole)		
	0 ft – 10 ft Pipe Depth	10 ft – 20 ft Pipe Depth	>20 ft Pipe Depth
4	4,118	5,777	7,937
5	6,543	9,540	13,302
6	15,998	22,839	29,359
8	31,896	48,162	64,429

D.2.4 Lift Stations

The construction costs of new lift stations were estimated using existing bid information and master planning information from the nearby community of Aurora. Aurora considered both high and low trend line estimates, which were escalated to August 2020 equivalents for the new East Greeley and Ashcroft lift stations. The cost estimates include construction of new lift station infrastructure including enclosures, wet wells, instrumentation, electrical, and pumps. The 2006 high, low, and averaged lift station equations are shown below:

$$\text{Low Limit New LS Cost(\$)} = \$1,583 \times \text{LS Flow Rate (gpm)}^{0.77}$$

$$\text{High Limit New LS Cost(\$)} = \$22,500 \times \text{LS Flow Rate (gpm)}^{0.62}$$

$$\text{Averaged Limit New LS Cost(\$)} = \$10,594 \times \text{LS Flow Rate (gpm)}^{0.66}$$

Figure D-2 depicts the comparison of the three equations used for new lift station construction estimations.

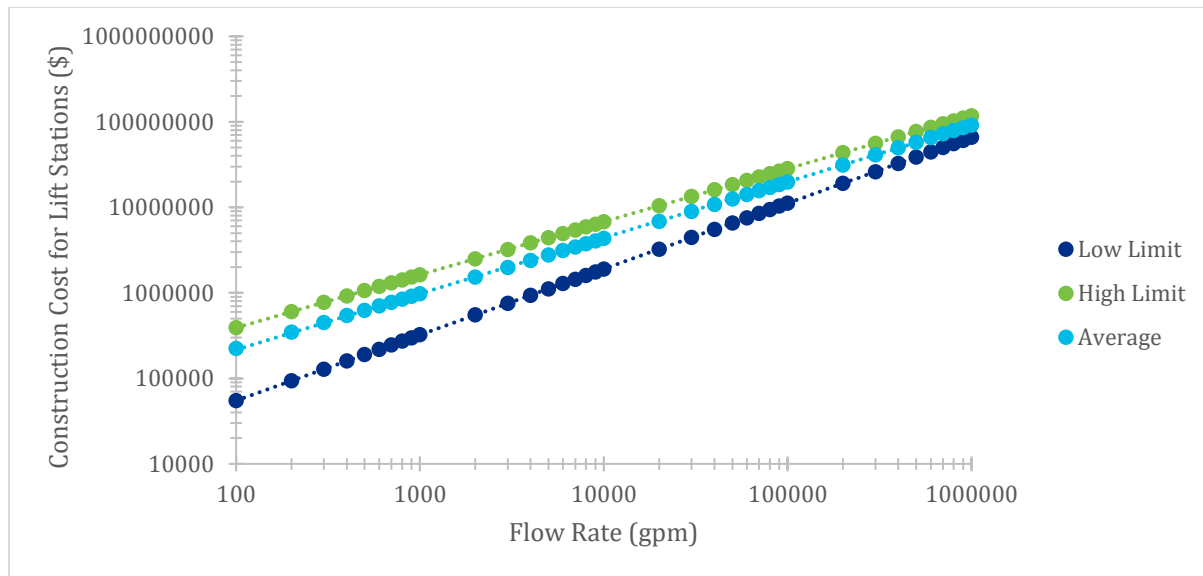


Figure D-2 Pumping Station High, Low, and Averaged Estimated Construction Costs (Jones et al. 2006).

Upgrades to existing lift stations were estimated using pump vendor quotes recommended by the City. The City uses Gorman-Rupp pumps at its lift stations and has also worked with Canyon Systems, Inc. in the past. Lift station rehabilitation includes the replacement of existing pumps, valves and piping; new wet wells and pads; and a new enclosure. (Canyon Systems, Inc., 2020).

D.2.5 Crossings and Land Considerations

D.2.5.1 Irrigation Ditch Crossings

ArcMap GIS and city-provided information was used to identify irrigation ditch locations. Irrigation ditch crossings were assumed as 100-feet in length and approximated by trenchless pipe installation regardless of pipe depth.

D.2.5.2 Utility, Roadway, and Railway Crossings

ArcMap GIS, the City's online GIS, and Google Maps were used to identify road, utility, and railroad crossings. Unit prices were developed assuming installation by jack and bore, where applicable, using the following assumptions:

- Roads were separated into typical (defined as two to three lane roads located on side streets and in neighborhoods), arterial (defined as major roadways of four lanes or more assumed at 200-foot wide), and highways (defined as major roadways with Colorado Department of Transportation right-of-way requirements at 250-foot wide). Widths were based on the U.S. Department of Transportation Federal Highway Administration (USDOT, 2014). Typical road crossings were included as part of overall open cut installation while arterial road and highway crossings were accounted as a part of trenchless pipe installation costs.

- Railway crossings were estimated as 150 feet in length and included in trenchless installation costs. The actual length of the railway crossings will depend on specific railway and buffer requirements.
- All City and non-city utilities were not included as individual unit cost items, but rather assumed as part of project contingency.

D.2.5.3 Easements

Easement acquisition was assumed to be required for all pipeline not in a city right-of-way or on city-owned property. Easement acquisition was assumed as 5% of the OPCC.

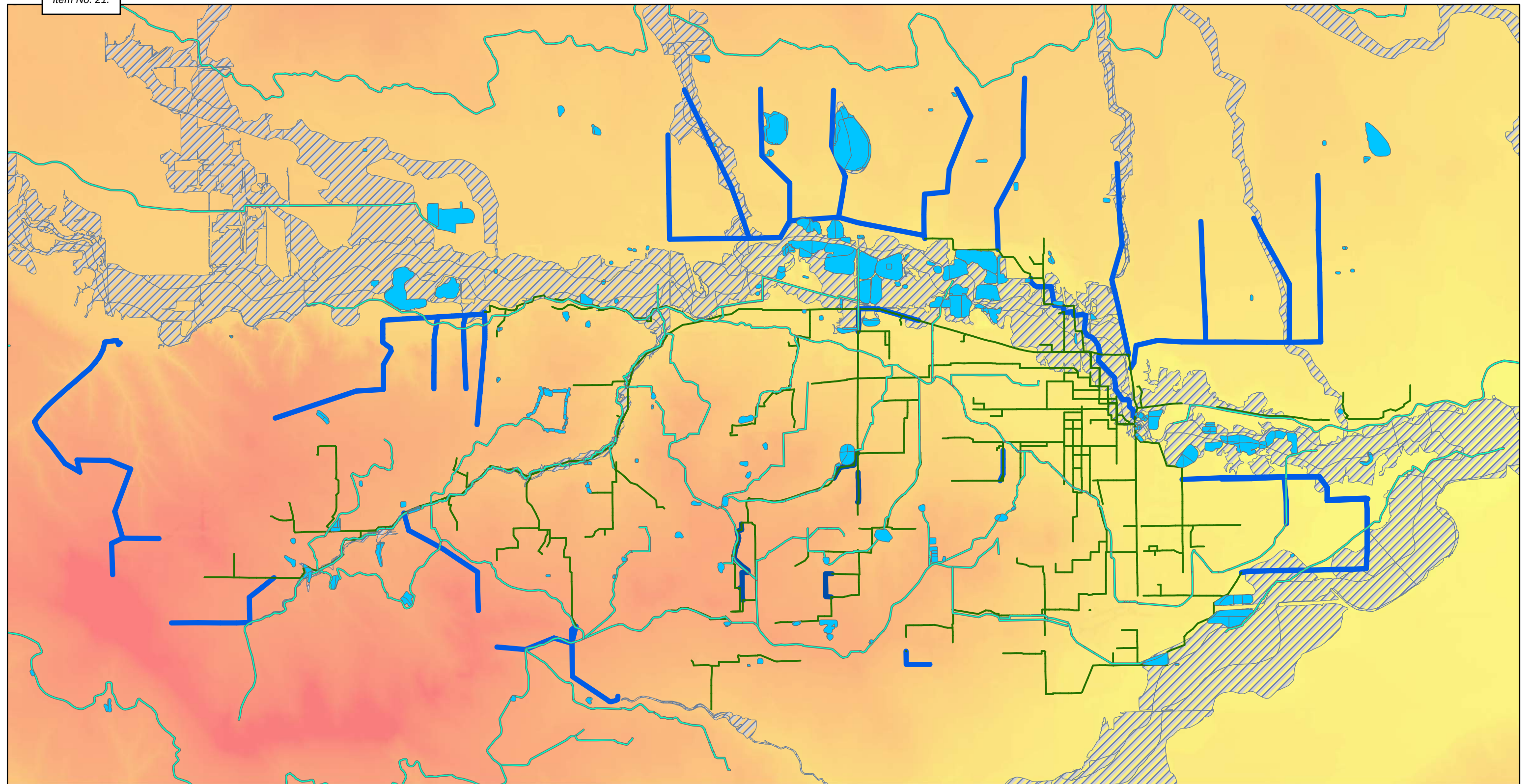
D.2.6 Dewatering

A three-tiered approach was used to determine projected dewatering costs. The three tiers used for unit cost estimations was developed considering land elevations in and around the City (between 4,596 feet to 5,059 feet), flood plain maps, and proximity to irrigation ditches and water bodies. Tier 1 includes pipe construction within the 100-year flood plain and/or within 50 feet of an irrigation ditch, pond, or lake. Tier 2 includes pipe that is not in Tier 1 and in locations where the ground elevation is below the median elevation of Greeley (4,828 feet). Tier 2 costs are assumed as 50% of the Tier 1 costs. Tier 3 includes pipe in areas where the ground elevation is above the median elevation of the City. Dewatering costs for Tier 3 are assumed as captured in the project contingency, since dewatering will be minimal. For pipe sections installed at average depths below 15 feet using open cut installation, the dewatering tier is reduced by one level. For example, if a gravity sewer pipe section is being installed in a Tier 3 area but is at 16-foot average depth, the pipeline section will be considered as Tier 2 classification for dewatering. Likewise, if a pipe section is within the Tier 2 category but is greater than 15 feet deep, that section would be moved to the Tier 1 category.

Figure D-3 illustrates the three-tiered dewatering profile for the five-year and 20-year planning horizons. **Table D-3** provides the unit costs of the three-tiered dewatering categories in dollars per linear foot of sanitary sewer pipe.

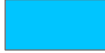
Table D-3 Unit Costs for Dewatering by Tier

Tier	Unit Cost (\$/LF of Pipe)
1	105
2	52.50
3	0



Legend

Tier 1

-  100 Yr Flood Plain
-  Lakes 50ft Buffer
-  Ditch 50ft Buffer

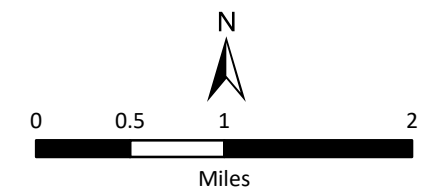
Tier 2

-  4828 ft
-  4596 ft

Tier 3

-  5059 ft
-  4828 ft

-  Future Pipe
-  Existing Interceptors



Dewatering Profile
Greeley Wastewater
System Master Plan
Figure 6-4

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D.3 Current/5 Year Planning Horizon Cost Development

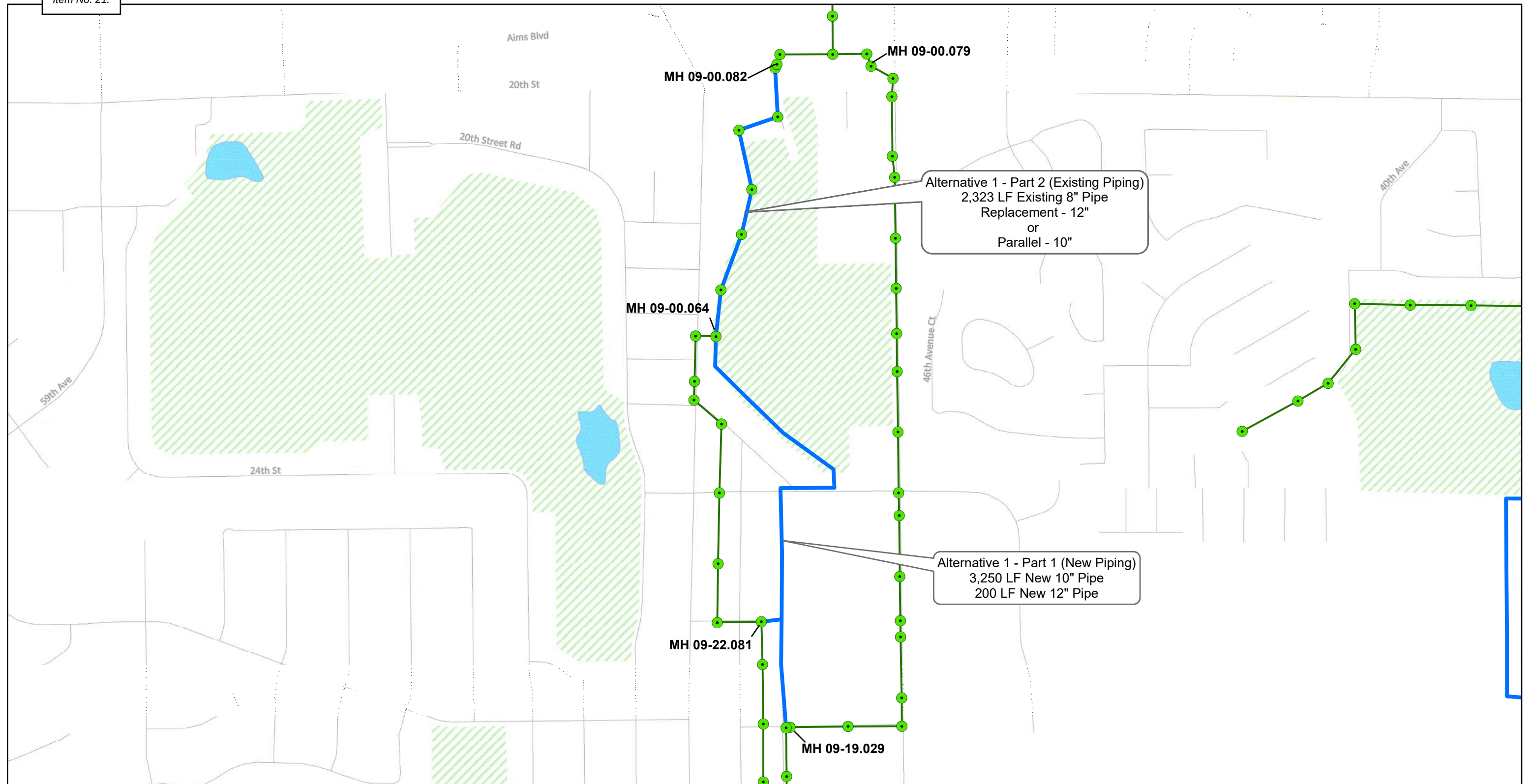
For each City project, a project location map is provided following the cost development information.

D.3.1 City CIP Projects

D.3.1.1 Highland Hills 47th Avenue Flow Diversion

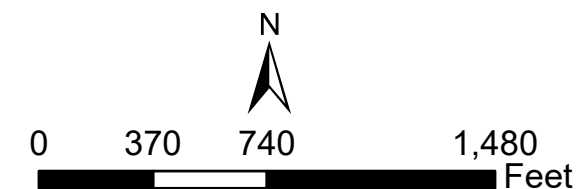
Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 10" <i>Depth 0–10ft</i>	786	\$95	\$75,035	\$75,035
PVC Gravity Sewer 10" <i>Depth 10–20ft</i>	1,313	\$196	\$257,209	\$257,209
PVC Gravity Sewer 10" (Undeveloped) <i>Depth 0–10ft</i>	1,256	\$49	\$61,547	\$61,547
PVC Gravity Sewer 12" <i>Depth 0–10ft</i>	395	\$105	\$41,561	\$41,561
PVC Gravity Sewer 12" (Undeveloped) <i>Depth 0–10ft</i>	1,405	\$58	\$82,153	\$82,153
PVC Sewer Trenchless 10"	100	\$581	\$58,148	\$58,148
PVC Sewer Trenchless 12"	200	\$584	\$116,856	\$116,856
Manhole 4ft <i>Depth 0-10ft</i>	16	\$4,118	\$65,894	\$65,894
Manhole 4ft <i>Depth 10-20ft</i>	8	\$5,777	\$46,217	\$46,217
Manhole 4ft <i>Depth >20ft</i>	1	\$7,937	\$7,937	\$7,937
Tier 1 Dewatering	1,351	\$105	\$141,855	\$141,855
Tier 2 Dewatering	135	\$52.50	\$7,088	\$7,088
Unit Cost Subtotal				\$961,500
Erosion Control/Stormwater Pollution Prevention			2%	\$19,230
Mobilization & Demobilization			5%	\$48,075
Subtotal				\$1,028,805
Contingency			35%	\$360,000
Opinion of Probable Construction Cost (rounded)				\$1,390,000
Easement			5% of OPCC	\$70,000
Feasibility and Site Studies			6% of OPCC	\$84,000
Preliminary and Final Design			6% of OPCC	\$84,000
Engineering Services During Construction			5% of OPCC	\$69,500
Outside Construction Management - not used if OPCC is < \$1M				\$70,000
Outside Project Management - not used if OPCC is < \$1M				\$42,000
Capital Improvement Plan Total (rounded)				\$1,810,000

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Legend

- | | | |
|-------------------|-----------------------------|-------------------------------------|
| LREGA | Existing Lift Stations | 5 Year Pipe Recommendations |
| 100-yr Floodplain | Existing Interceptors | 20 Year Pipe Recommendations |
| Lakes and Ponds | Existing Force Mains | Buildout Pipe Recommendations |
| Park | 5 Year LS Recommendations | 5 Year Force Main Recommendations |
| Existing Manholes | Buildout LS Recommendations | Buildout Force Main Recommendations |

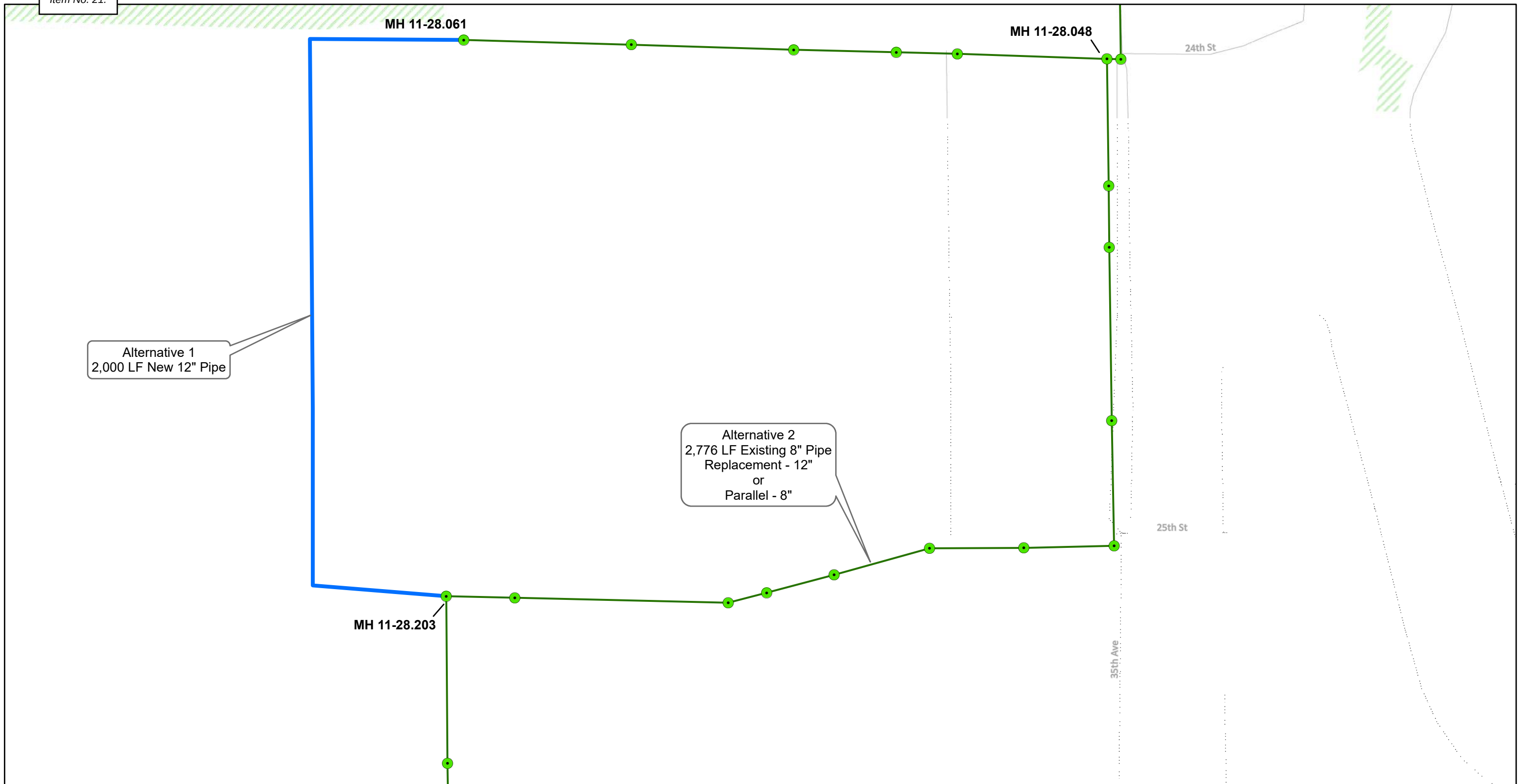


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D.3.1.2 Highland Hills 25th Street Flow Diversion

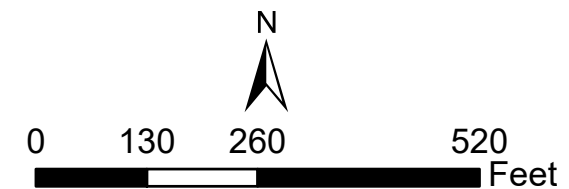
Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 12" <i>Depth 0–10ft</i>	1,793	\$105	\$188,601	\$188,601
PVC Sewer Trenchless 12"	200	\$584	\$116,856	\$116,856
Manhole 4ft <i>Depth 0–10ft</i>	8	\$4,118	\$32,947	\$32,947
Manhole 4ft <i>Depth >20ft</i>	1	\$7,937	\$7,937	\$7,937
Unit Cost Subtotal				\$346,342
Erosion Control/Stormwater Pollution Prevention			2%	\$6,927
Mobilization & Demobilization			5%	\$17,317
Subtotal				\$370,586
Contingency			35%	\$129,710
Opinion of Probable Construction Cost (rounded)				\$510,000
Easement			5% of OPCC	\$25,500
Feasibility and Site Studies			9% of OPCC	\$46,000
Preliminary and Final Design			9% of OPCC	\$46,000
Engineering Services During Construction			5% of OPCC	\$26,000
Outside Construction Management - not used if OPCC is < \$1M				\$0
Outside Project Management - not used if OPCC is <\$1M				\$0
Capital Improvement Plan Total (rounded)				\$660,000

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Legend

- | | | |
|-------------------|-----------------------------|-------------------------------------|
| LREGA | Existing Lift Stations | 5 Year Pipe Recommendations |
| 100-yr Floodplain | Existing Interceptors | 20 Year Pipe Recommendations |
| Lakes and Ponds | Existing Force Mains | Buildout Pipe Recommendations |
| Park | 5 Year LS Recommendations | 5 Year Force Main Recommendations |
| Existing Manholes | Buildout LS Recommendations | Buildout Force Main Recommendations |



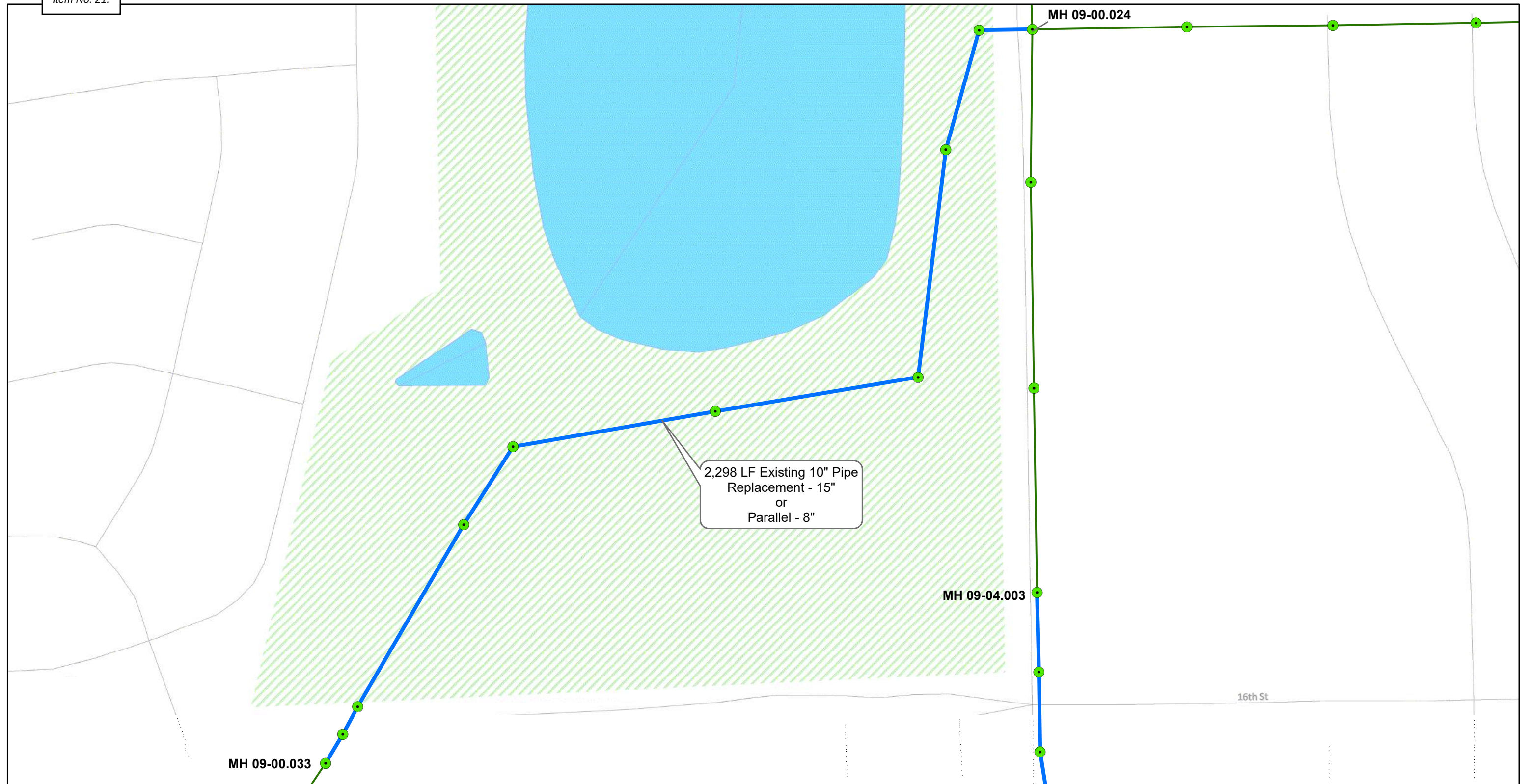
Highland Hills 25th St
Appendix D-1.1.2
Greeley Sewer
System Master Plan

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D.3.1.3 Highland Hills Bittersweet Park

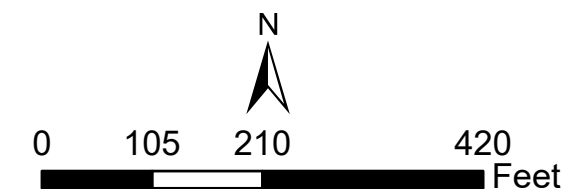
Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 15" <i>Depth 0–10ft</i>	126	\$119	\$14,975	\$14,975
PVC Gravity Sewer 15" <i>Depth 10–20ft</i>	103	\$220	\$22,733	\$22,733
PVC Gravity Sewer 15" (Undeveloped) <i>Depth 0–10ft</i>	785	\$68	\$53,376	\$53,376
PVC Gravity Sewer 15" (Undeveloped) <i>Depth 10–20ft</i>	1,084	\$103	\$111,334	\$111,334
PVC Sewer Trenchless 15"	200	\$798	\$159,538	\$159,538
Manhole 5ft <i>Depth 0-10ft</i>	4	\$6,543	\$26,171	\$26,171
Manhole 5ft <i>Depth 10-20ft</i>	6	\$9,540	\$57,240	\$57,240
Manhole 5ft <i>Depth >20ft</i>	1	\$13,302	\$13,302	\$13,302
Tier 2 Dewatering	2298	\$52.50	\$120,654	\$120,654
Unit Cost Subtotal				\$579,322
Erosion Control/Stormwater Pollution Prevention			2%	\$11,586
Mobilization & Demobilization			5%	\$28,966
Subtotal				\$619,875
Contingency			35%	\$216,960
Opinion of Probable Construction Cost (rounded)				\$840,000
Easement			5% of OPCC	\$42,000
Feasibility and Site Studies			9% of OPCC	\$76,000
Preliminary and Final Design			9% of OPCC	\$76,000
Engineering Services During Construction			5% of OPCC	\$42,000
Outside Construction Management - not used if OPCC is < \$1M				\$0
Outside Project Management - not used if OPCC is <\$1M				\$0
Capital Improvement Plan Total (rounded)				\$1,080,000

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Legend

- | | | |
|-------------------|-----------------------------|-------------------------------------|
| LREGA | Existing Lift Stations | 5 Year Pipe Recommendations |
| 100-yr Floodplain | Existing Interceptors | 20 Year Pipe Recommendations |
| Lakes and Ponds | Existing Force Mains | Buildout Pipe Recommendations |
| Park | 5 Year LS Recommendations | 5 Year Force Main Recommendations |
| Existing Manholes | Buildout LS Recommendations | Buildout Force Main Recommendations |



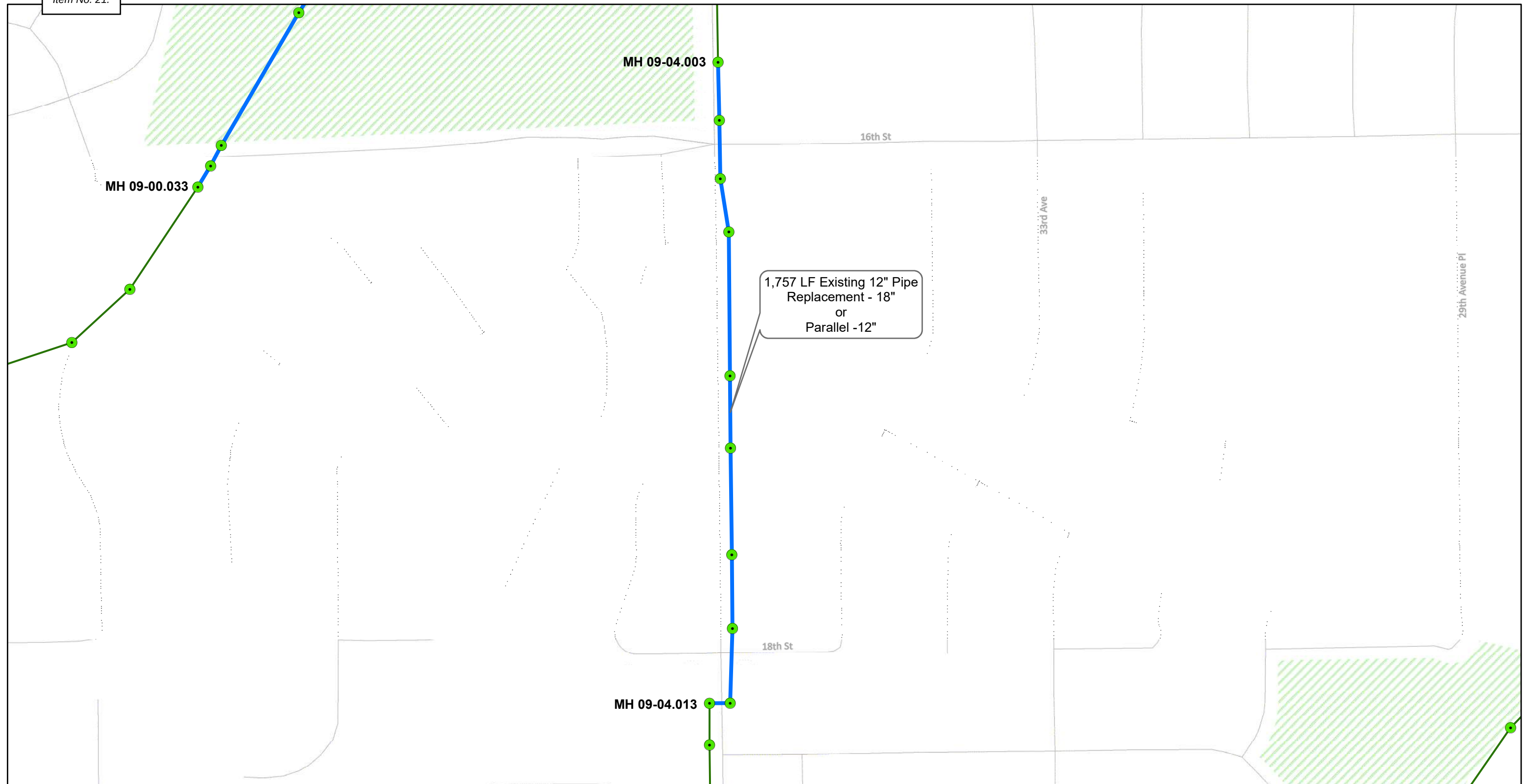
Highland Hills Bittersweet Park
Appendix D-1.1.3
Greeley Sewer
System Master Plan

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D.3.1.4 Highland Hills 35th Avenue 19th Street to 17th Street

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 18" <i>Depth 0–10ft</i>	634	\$133	\$84,398	\$84,398
PVC Gravity Sewer 18" <i>Depth 10–20ft</i>	923	\$235	\$217,066	\$217,066
PVC Trenchless 18"	200	\$897	\$179,454	\$179,454
Manhole 5ft <i>Depth 0-10ft</i>	3	\$6,543	\$19,628	\$19,628
Manhole 5ft <i>Depth 10-20ft</i>	5	\$9,540	\$47,700	\$47,700
Manhole 5ft <i>Depth >20ft</i>	1	\$13,302	\$13,302	\$13,302
Unit Cost Subtotal				\$561,547
Erosion Control/Stormwater Pollution Prevention			2%	\$11,231
Mobilization & Demobilization			5%	\$28,077
Subtotal				\$600,856
Contingency			35%	\$210,300
Opinion of Probable Construction Cost (rounded)				\$820,000
Feasibility and Site Studies			5% of OPCC	\$41,000
Feasibility and Site Studies			9% of OPCC	\$74,000
Preliminary and Final Design			9% of OPCC	\$74,000
Engineering Services During Construction			5% of OPCC	\$41,000
Outside Construction Management - not used if OPCC is < \$1M				\$0
Outside Project Management - not used if OPCC is <\$1M				\$0
Capital Improvement Plan Total				\$1,010,000

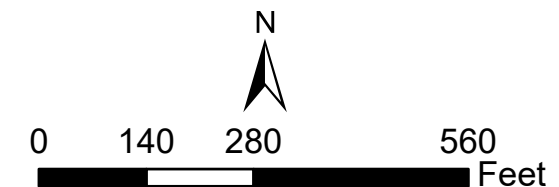
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Legend

- LREGA
- 100-yr Floodplain
- Lakes and Ponds
- Park
- Existing Manholes
- Existing Lift Stations
- Existing Interceptors
- Existing Force Mains
- 5 Year LS Recommendations
- Buildout LS Recommendations

- 5 Year Pipe Recommendations
- 20 Year Pipe Recommendations
- Buildout Pipe Recommendations
- 5 Year Force Main Recommendations
- Buildout Force Main Recommendations



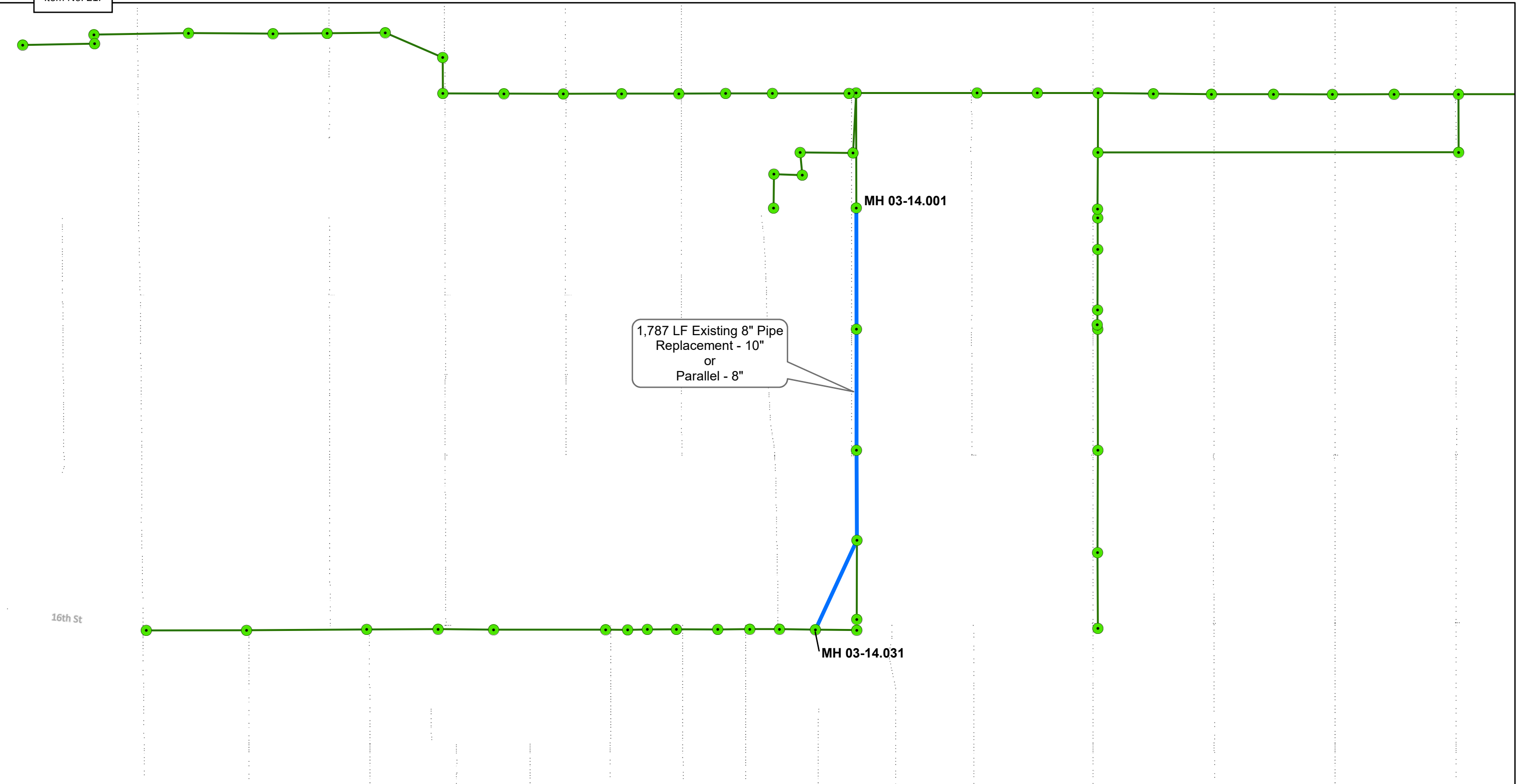
Highland Hills 35th Ave
(19th St Rd to 17th St)
Appendix D-1.1.4
Greeley Sewer
System Master Plan

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D.3.1.5 Central 16th Avenue

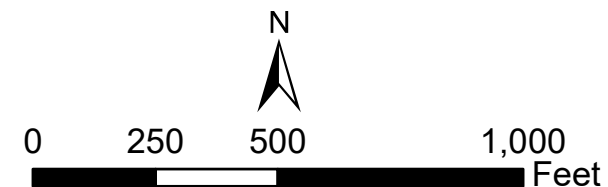
Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 10" <i>Depth 0–10ft</i>	717	\$95	\$68,471	\$68,471
PVC Gravity Sewer 10" (Undeveloped) <i>Depth 10–20ft</i>	670	\$82	\$55,073	\$55,073
PVC Sewer Trenchless 10"	400	\$581	\$232,590	\$232,590
Manhole 4ft <i>Depth 0–10ft</i>	7	\$4118	\$28,829	\$28,829
Manhole 4ft <i>Depth 10–20</i>	2	\$5777	\$11,554	\$11,554
Tier 2 Dewatering	1,787	\$52.50	\$93,818	\$93,818
Unit Cost Subtotal				\$490,336
Erosion Control/Stormwater Pollution Prevention			2%	\$9,807
Mobilization & Demobilization			5%	\$24,517
Subtotal				\$524,659
Contingency			35%	\$183,640
Opinion of Probable Construction Cost (rounded)				\$710,000
Easement			5% of OPCC	\$36,000
Feasibility and Site Studies			9% of OPCC	\$64,000
Preliminary and Final Design			9% of OPCC	\$64,000
Engineering Services During Construction			5% of OPCC	\$36,000
Outside Construction Management - not used if OPCC is < \$1M			5% of OPCC	\$0
Outside Project Management - not used if OPCC is < \$1M			3% of OPCC	\$0
Capital Improvement Plan Total (rounded)				\$910,000

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Legend

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|-------------------|-----------------------------|-------------------------------------|
| LREGA | Existing Lift Stations | 5 Year Pipe Recommendations |
| 100-yr Floodplain | Existing Interceptors | 20 Year Pipe Recommendations |
| Lakes and Ponds | Existing Force Mains | Buildout Pipe Recommendations |
| Park | 5 Year LS Recommendations | 5 Year Force Main Recommendations |
| Existing Manholes | Buildout LS Recommendations | Buildout Force Main Recommendations |



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D.3.2 Development Projects

D.3.2.1 East Greeley Lift Station

Item	Quantity	Unit Cost	Extended Cost	Total Cost
East Greeley Lift Station	LS	—	\$2,765,157	\$2,765,157
PVC Force main 18"	11,670	\$133	\$1,554,647	\$1,554,647
PVC Trenchless 18"	100	\$897	\$89,727	\$89,727
Tier 1 Dewatering	1,505	\$105	\$158,025	\$158,025
Tier 2 Dewatering	10,265	\$52.50	\$538,913	\$538,913
Unit Cost Subtotal				\$5,106,469
Erosion Control/Stormwater Pollution Prevention			2%	\$102,129
Mobilization & Demobilization			5%	\$255,323
Subtotal				\$5,463,922
Contingency			35%	\$1,912,380
Opinion of Probable Construction Cost (rounded)				\$7,380,000

D.3.2.2 LS15 Expansion

Item	Quantity	Unit Cost	Extended Cost	Total Cost
LS15 Expansion	1	LS	\$400,000	\$400,000
PVC Force main 6"	2,884	\$66	\$191,494	\$191,494
PVC Gravity Sewer 8" Depth 0-10ft	2,096	\$88	\$184,448	\$184,448
Manhole 4ft Depth 0-10ft	10	\$4118	\$41,184	\$41,184
Unit Cost Subtotal				\$817,125
Erosion Control/Stormwater Pollution Prevention			2%	\$16,343
Mobilization & Demobilization			5%	\$40,856
Subtotal				\$874,324
Contingency			35%	\$306,020
Opinion of Probable Construction Cost (rounded)				\$1,190,000

D.3.2.3 83rd Avenue Sanitary Sewer Project

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 8" <i>Depth 10-20ft</i>	2,075	\$188	\$390,928	\$390,928
PVC Gravity Sewer 10" <i>Depth 0-10ft</i>	202	\$95	\$19,338	\$19,338
PVC Gravity Sewer 10" <i>Depth 10-20ft</i>	3,607	\$196	\$706,418	\$706,418
PVC Trenchless 10"	325	\$581	\$189,023	\$189,023
Manhole 4ft <i>Depth 0-10ft</i>	1	\$4118	\$4,118	\$4,118
Manhole 4ft <i>Depth 10-20ft</i>	25	\$5777	\$144,428	\$144,428
Manhole 4ft <i>Depth >20ft</i>	1	\$7937	\$7,937	\$7,937
Tier 1 Dewatering	905	\$105	\$95,025	\$95,025
Tier 2 Dewatering	1,095	\$52.50	\$57,488	\$57,488
Unit Cost Subtotal				\$1,614,703
Erosion Control/Stormwater Pollution Prevention			2%	\$32,294
Mobilization & Demobilization			5%	\$80,735
Subtotal				\$1,727,732
Contingency			35%	\$604,710
Opinion of Probable Construction Cost (rounded)				\$2,340,000

D.3.2.4 Poudre Trunk Phase 2

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 30" <i>Depth 0-10ft</i>	2,607	\$240	\$624,663	\$624,663
PVC Gravity Sewer 30" <i>Depth 10-20ft</i>	7,522	\$347	\$2,606,607	\$2,606,607
PVC Trenchless 30"	100	\$1531	\$153,129	\$153,129
Manhole 5ft <i>Depth 0-10ft</i>	11	\$6543	\$71,969	\$71,969
Manhole 5ft <i>Depth 10-20ft</i>	31	\$9540	\$295,738	\$295,738
Tier 1 Dewatering	2,860	\$105	\$300,300	\$300,300
Tier 2 Dewatering	4,818	\$52.50	\$252,945	\$252,945
Unit Cost Subtotal				\$4,305,352
Erosion Control/Stormwater Pollution Prevention			2%	\$86,107
Mobilization & Demobilization			5%	\$215,268
Subtotal				\$4,606,727
Contingency			35%	\$1,612,360
Opinion of Probable Construction Cost (rounded)				\$6,220,000
Easement			5% of OPCC	\$311,000

D.3.2.5 Poudre Trunk Branch 1

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 8" <i>Depth 0-10ft</i>	3,558	\$88	\$314,679	\$314,679
PVC Gravity Sewer 10" <i>Depth 0-10ft</i>	678	\$95	\$64,782	\$64,782
PVC Trenchless 8"	100	\$478	\$47,808	\$47,808
Manhole 4ft <i>Depth 0-10ft</i>	19	\$4118	\$78,249	\$78,249
Tier 1 Dewatering	533	\$105	\$55,965	\$55,965
Tier 2 Dewatering	913	\$52.50	\$47,933	\$47,933
Unit Cost Subtotal				\$609,416
Erosion Control/Stormwater Pollution Prevention			2%	\$12,188
Mobilization & Demobilization			5%	\$30,471
Subtotal				\$652,076
Contingency			35%	\$228,230
Opinion of Probable Construction Cost (rounded)				\$890,000
Easement			5% of OPCC	\$45,000

D.3.2.6 Poudre Trunk Branch 2

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 8" <i>Depth 0-10ft</i>	916	\$88	\$80,980	\$80,980
PVC Gravity Sewer 10" <i>Depth 0-10ft</i>	1,215	\$95	\$116,029	\$116,029
PVC Gravity Sewer 10" <i>Depth 10-20ft</i>	1,896	\$196	\$371,319	\$371,319
PVC Trenchless 10"	100	\$581	\$58,148	\$58,148
Manhole 4ft <i>Depth 0-10ft</i>	9	\$4118	\$37,066	\$37,066
Manhole 4ft <i>Depth 10-20ft</i>	8	\$5777	\$46,217	\$46,217
Manhole 4ft <i>Depth >20 ft</i>	1	\$7937	\$7,937	\$7,937
Tier 1 Dewatering	100	\$105	\$10,500	\$10,500
Tier 2 Dewatering	1,483	\$52.50	\$77,858	\$77,858
Unit Cost Subtotal				\$806,052
Erosion Control/Stormwater Pollution Prevention			2%	\$16,121
Mobilization & Demobilization			5%	\$40,303
Subtotal				\$862,476
Contingency			35%	\$301,870
Opinion of Probable Construction Cost (rounded)				\$1,170,000
Easement			5% of OPCC	\$59,000

D.3.2.7 Poudre Trunk Phase 3

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 10" <i>Depth 0-10ft</i>	4,884	\$95	\$466,425	\$466,425
PVC Gravity Sewer 15" <i>Depth 0-10ft</i>	2,964	\$119	\$352,015	\$352,015
PVC Gravity Sewer 15" <i>Depth 10-20ft</i>	756	\$220	\$166,490	\$166,490
Manhole 4ft <i>Depth 0-10ft</i>	21	\$4118	\$86,486	\$86,486
Manhole 5ft <i>Depth 0-10ft</i>	12	\$6543	\$78,512	\$78,512
Manhole 5ft <i>Depth 10-20ft</i>	3	\$9540	\$28,620	\$28,620
Unit Cost Subtotal				\$1,178,547
Erosion Control/Stormwater Pollution Prevention			2%	\$23,571
Mobilization & Demobilization			5%	\$58,927
Subtotal				\$1,261,045
Contingency			35%	\$441,370
Opinion of Probable Construction Cost (rounded)				\$1,710,000
Easement			5% of OPCC	\$86,000

D.3.2.8 Evans 28th Street

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 8" <i>Depth 0-10ft</i>	1,547	\$88	\$136,830	\$136,830
PVC Gravity Sewer 10" <i>Depth 10-20ft</i>	1,351	\$196	\$264,556	\$264,556
PVC Gravity Sewer 12" <i>Depth 10-20ft</i>	1,956	\$206	\$402,795	\$402,795
PVC Trenchless 8"	100	\$478	\$47,808	\$47,808
PVC Trenchless 10"	400	\$581	\$232,590	\$232,590
PVC Trenchless 12"	100	\$584	\$58,428	\$58,428
Manhole 4ft <i>Depth 0-10ft</i>	7	\$4118	\$28,829	\$28,829
Manhole 4ft <i>Depth 10-20ft</i>	14	\$5777	\$80,880	\$80,880
Manhole 4ft <i>Depth >20ft</i>	2	\$7937	\$15,875	\$15,875
Tier 1 Dewatering	600	\$105	\$63,000	\$63,000
Unit Cost Subtotal				\$1,331,591
Erosion Control/Stormwater Pollution Prevention			2%	\$26,632
Mobilization & Demobilization			5%	\$66,580
Subtotal				\$1,424,802
Contingency			35%	\$498,690
Opinion of Probable Construction Cost (rounded)				\$1,930,000
Easement			5% of OPCC	\$97,000

D.3.2.9 Balsam East

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 8" <i>Depth 0-10ft</i>	1,693	\$88	\$149,735	\$149,735
PVC Gravity Sewer 12" <i>Depth 0-10ft</i>	3,214	\$105	\$338,026	\$338,026
PVC Gravity Sewer 12" <i>Depth 10-20ft</i>	13	\$206	\$2,737	\$2,737
PVC Gravity Sewer 15" <i>Depth 0-10ft</i>	2,767	\$119	\$328,720	\$328,720
PVC Gravity Sewer 18" <i>Depth 10-20ft</i>	2,988	\$235	\$702,574	\$702,574
PVC Gravity Sewer 21" <i>Depth 10-20ft</i>	78	\$254	\$19,807	\$19,807
PVC Trenchless 12"	1,335	\$584	\$780,015	\$780,015
Manhole 4ft <i>Depth 0-10ft</i>	32	\$4118	\$131,788	\$131,788
Manhole 4ft <i>Depth 10-20ft</i>	1	\$5777	\$5,777	\$5,777
Manhole 4ft <i>Depth >20ft</i>	5	\$7937	\$39,687	\$39,687
Manhole 5ft <i>Depth 0-10ft</i>	12	\$6543	\$78,512	\$78,512
Manhole 5ft <i>Depth 10-20ft</i>	12	\$9540	\$114,479	\$114,479
Tier 1 Dewatering	3,445	\$105	\$361,725	\$361,725
Tier 2 Dewatering	8,643	\$52.50	\$453,766	\$453,766
Unit Cost Subtotal				\$3,507,347
Erosion Control/Stormwater Pollution Prevention			2%	\$70,147
Mobilization & Demobilization			5%	\$175,367
Subtotal				\$3,752,862
Contingency			35%	\$1,313,510
Opinion of Probable Construction Cost (rounded)				\$5,070,000
Easement			5% of OPCC	\$254,000

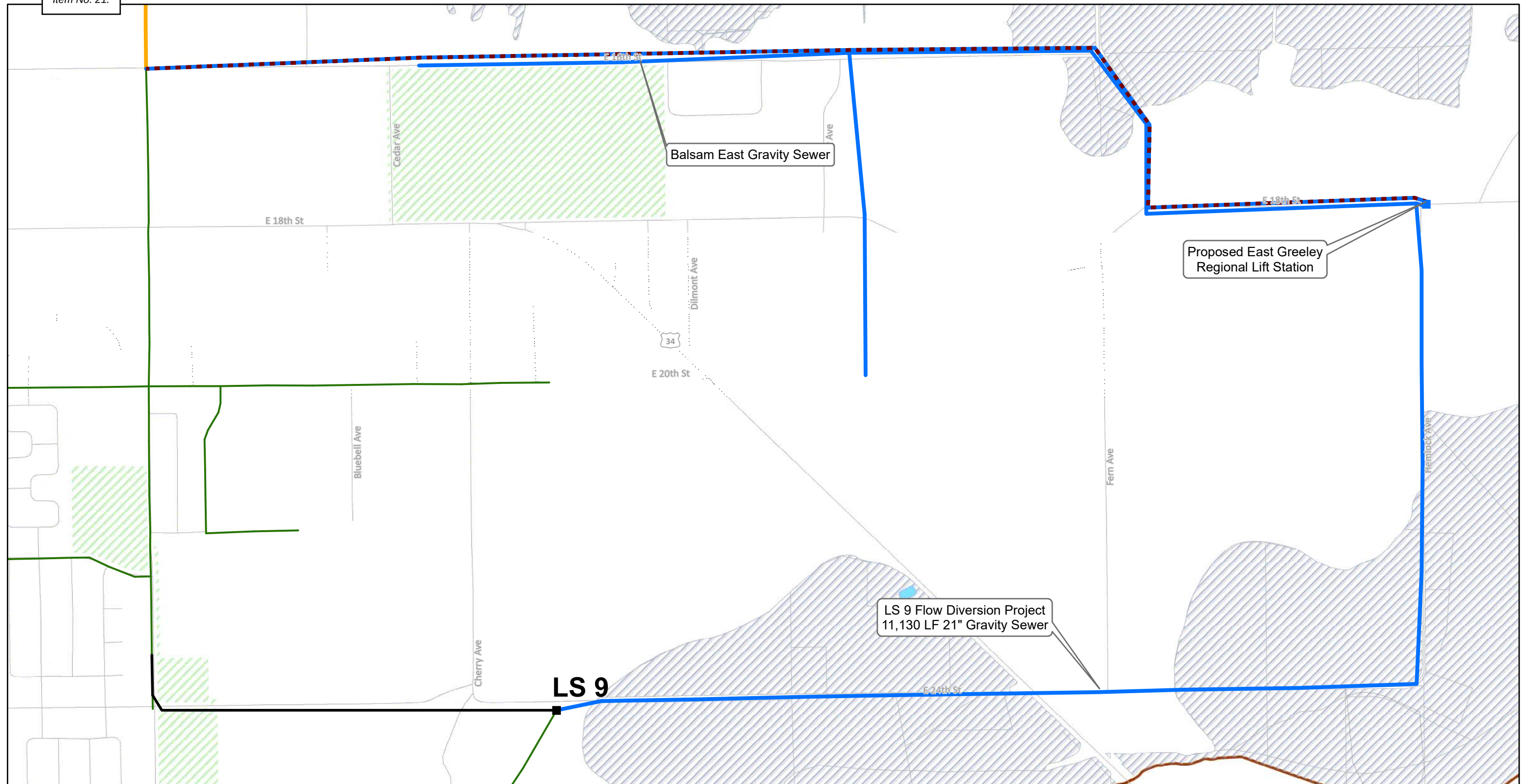
D.4 20 Year Planning Horizon Project Cost Development

D.4.1 City CIP Projects

For each City project, a project location map is provided following the cost development information.

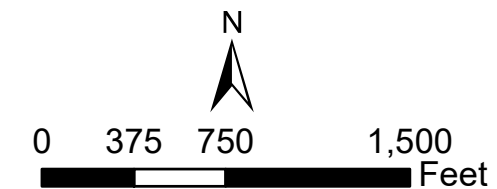
D.4.1.1 LS9 Diversion

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 21" <i>Depth 10–20ft</i>	10,930	\$254	\$2,778,999	\$2,778,999
PVC Sewer Trenchless 21"	200	\$1098	\$219,562	\$219,562
Manhole 5ft <i>Depth 10–20ft</i>	45	\$9540	\$429,297	\$429,297
Tier 1 Dewatering	7,992	\$105	\$839,160	\$839,160
Tier 2 Dewatering	3,138	\$52.50	\$164,745	\$164,745
Unit Cost Subtotal				\$4,431,763
Erosion Control/Stormwater Pollution Prevention			2%	\$88,635
Mobilization & Demobilization			5%	\$221,588
Subtotal				\$4,742,000
Contingency			35%	\$1,659,700
Opinion of Probable Construction Cost (rounded)				\$6,410,000
Easement			5% of OPCC	\$321,000
Feasibility and Site Studies			6% of OPCC	\$385,000
Preliminary and Final Design			6% of OPCC	\$385,000
Engineering Services During Construction			5% of OPCC	\$321,000
Outside Construction Management - not used if OPCC is < \$1M			5% of OPCC	\$321,000
Outside Project Management - not used if OPCC is < \$1M			3% of OPCC	\$193,000
Capital Improvement Plan Total (rounded)				\$8,340,000



Legend

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|-------------------|-----------------------------|-------------------------------------|
| LREGA | Existing Lift Stations | 5 Year Pipe Recommendations |
| 100-yr Floodplain | Existing Interceptors | 20 Year Pipe Recommendations |
| Lakes and Ponds | Existing Force Mains | Buildout Pipe Recommendations |
| Park | 5 Year LS Recommendations | 5 Year Force Main Recommendations |
| Existing Manholes | Buildout LS Recommendations | Buildout Force Main Recommendations |



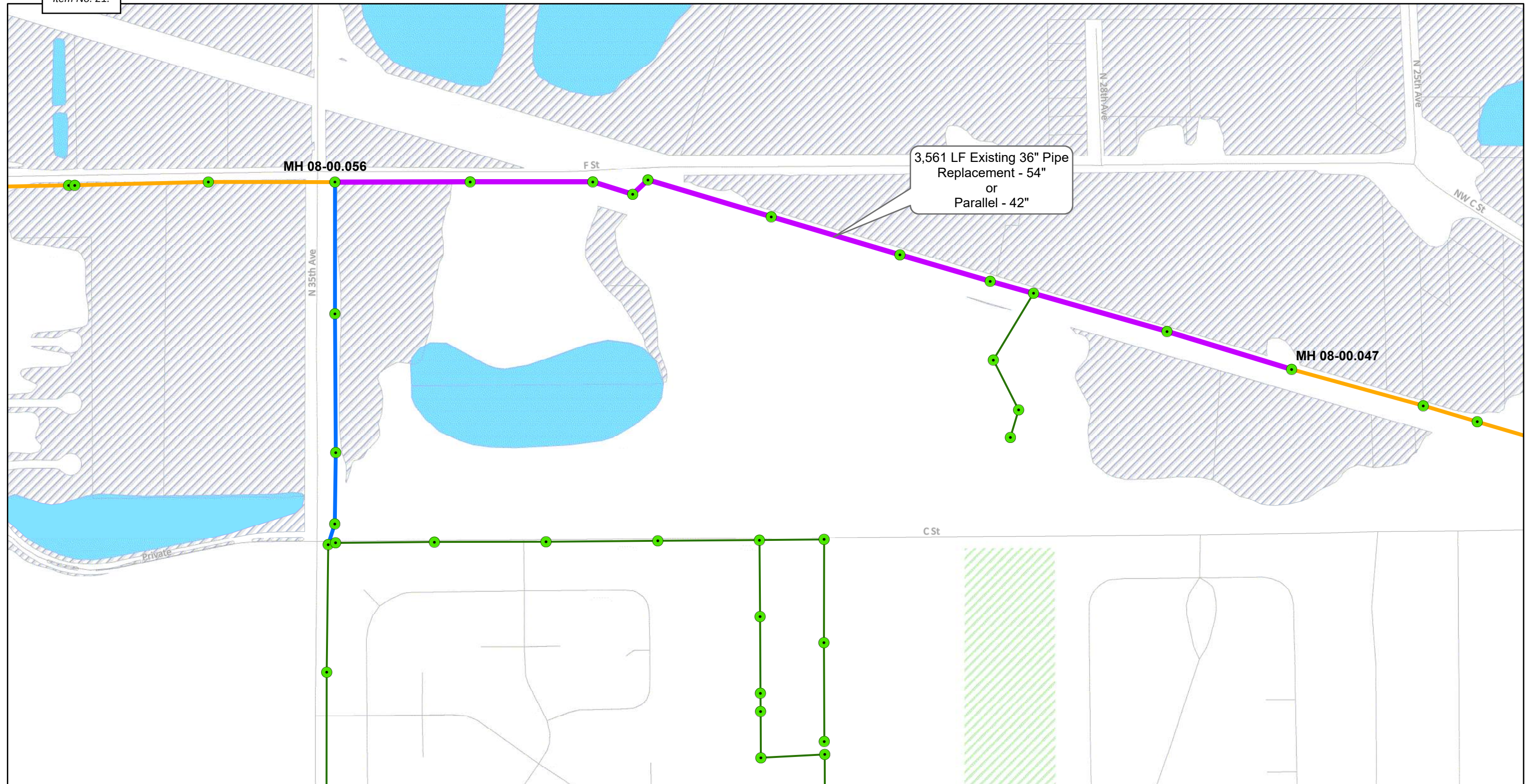
LS 9 Flow Diversion Appendix D-3.1.1 Greeley Sewer System Master Plan

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D.4.1.2 N. Poudre RR Phase 1

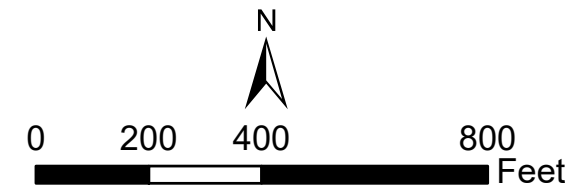
Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 54" <i>Depth 0–10ft</i>	225	\$588	\$132,439	\$132,439
PVC Gravity Sewer 54" <i>Depth 10–20ft</i>	3,185	\$712	\$2,267,980	\$2,267,980
PVC Sewer Trenchless 54"	150	\$2748	\$412,271	\$412,271
Manhole 8ft <i>Depth 0-10ft</i>	1	\$31896	\$31,896	\$31,896
Manhole 8ft <i>Depth 10-20ft</i>	14	\$48162	\$674,268	\$674,268
Manhole 8ft <i>Depth >20ft</i>	1	\$64429	\$64,429	\$64,429
Tier 1 Dewatering	2,979	\$105	\$312,795	\$312,795
Tier 2 Dewatering	582	\$52.50	\$30,555	\$30,555
Unit Cost Subtotal				\$3,926,633
Erosion Control/Stormwater Pollution Prevention			2%	\$78,533
Mobilization & Demobilization			5%	\$196,332
Subtotal				\$4,201,497
Contingency			35%	\$1,470,530
Opinion of Probable Construction Cost (rounded)				\$5,680,000
Easement			5% of OPCC	\$284,000
Feasibility and Site Studies			6% of OPCC	\$341,000
Preliminary and Final Design			6% of OPCC	\$341,000
Engineering Services During Construction			5% of OPCC	\$284,000
Outside Construction Management - not used if OPCC is < \$1M			5% of OPCC	\$284,000
Outside Project Management - not used if OPCC is <\$1M			3% of OPCC	\$171,000
Capital Improvement Plan Total (rounded)				\$7,390,000

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Legend

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|---|---|---|
|  LREGA |  Existing Lift Stations |  5 Year Pipe Recommendations |
|  100-yr Floodplain |  Existing Interceptors |  20 Year Pipe Recommendations |
|  Lakes and Ponds |  Existing Force Mains |  Buildout Pipe Recommendations |
|  Park |  5 Year LS Recommendations |  5 Year Force Main Recommendations |
|  Existing Manholes |  Buildout LS Recommendations |  Buildout Force Main Recommendations |



N Poudre Railroad
Phase 1 (East of 35th Ave)
Appendix D-3.1.2
Greeley Sewer
System Master Plan

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D.4.1.3 N Poudre East C Street

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 30" <i>Depth 0-10ft</i>	1,797	\$240	\$430,554	\$430,554
PVC Gravity Sewer 36" <i>Depth 10-20ft</i>	3,006	\$397	\$1,194,691	\$1,194,691
PVC Gravity Sewer 42" <i>Depth 0-10ft</i>	1,373	\$372	\$511,412	\$511,412
PVC Gravity Sewer 42" <i>Depth 10-20ft</i>	2,948	\$488	\$1,438,743	\$1,438,743
PVC Trenchless 36"	100	\$1848	\$184,811	\$184,811
PVC Trenchless 42"	2,751	\$2148	\$5,910,747	\$5,910,747
Manhole 6ft <i>Depth 0-10ft</i>	13	\$15998	\$207,974	\$207,974
Manhole 6ft <i>Depth 10-20ft</i>	24	\$22839	\$548,136	\$548,136
Manhole 6ft <i>Depth >20ft</i>	12	\$29359	\$352,308	\$352,308
Tier 1 Dewatering	7,926	\$105	\$832,230	\$832,230
Tier 2 Dewatering	4,051	\$52.50	\$212,657	\$212,657
Unit Cost Subtotal				\$11,824,264
Erosion Control/Stormwater Pollution Prevention			2%	\$236,485
Mobilization & Demobilization			5%	\$591,213
Subtotal				\$12,651,963
Contingency			35%	\$4,428,190
Opinion of Probable Construction Cost (rounded)				\$17,090,000
Easement			5% of OPCC	\$855,000
Feasibility and Site Studies			5% of OPCC	\$855,000
Preliminary and Final Design			5% of OPCC	\$855,000
Engineering Services During Construction			5% of OPCC	\$855,000
Outside Construction Management - not used if OPCC <\$1M			5% of OPCC	\$855,000
Outside Project Management - not used if OPCC <\$1M			3% of OPCC	\$513,000
Capital Improvement Plan Total (rounded)				\$21,880,000

D.4.1.4 N. Greeley O Street

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 36" <i>Depth 0-10ft</i>	1,963	\$286	\$561,629	\$561,629
PVC Gravity Sewer 36" <i>Depth 10-20ft</i>	13,458	\$397	\$5,348,291	\$5,348,291
Manhole 6ft <i>Depth 0-10ft</i>	8	\$15998	\$127,984	\$127,984
Manhole 6ft <i>Depth 10-20ft</i>	55	\$22839	\$1,256,145	\$1,256,145
Tier 1 Dewatering	6,387	\$105	\$670,635	\$670,635
Tier 2 Dewatering	9,034	\$52.50	\$474,273	\$474,273
Unit Cost Subtotal				\$8,438,957
Erosion Control/Stormwater Pollution Prevention			2%	\$168,779
Mobilization & Demobilization			5%	\$421,948
Subtotal				\$9,029,684
Contingency			35%	\$3,160,390
Opinion of Probable Construction Cost (rounded)				\$12,200,000
Easement			5% of OPCC	\$610,000
Feasibility and Site Studies			5% of OPCC	\$610,000
Preliminary and Final Design			5% of OPCC	\$610,000
Engineering Services During Construction			5% of OPCC	\$610,000
Outside Construction Management- not used if OPCC <\$1M			5% of OPCC	\$610,000
Outside Project Management- not used if OPCC <\$1M			3% of OPCC	\$366,000
Capital Improvement Plan Total (rounded)				\$15,620,000

D.4.2 Development Projects

D.4.2.1 N. Poudre Fern Avenue

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 15" <i>Depth 10-20ft</i>	5,557	\$220	\$1,223,292	\$1,223,292
PVC Gravity Sewer 18" <i>Depth 0-10ft</i>	3,321	\$133	\$442,362	\$442,362
PVC Gravity Sewer 21" <i>Depth 0-10ft</i>	659	\$152	\$99,977	\$99,977
Manhole 5ft <i>Depth 0-10ft</i>	17	\$6543	\$111,225	\$111,225
Manhole 5ft <i>Depth 10-20ft</i>	23	\$9540	\$219,419	\$219,419
Tier 2 Dewatering	9,537	\$52.50	\$500,687	\$500,687
Unit Cost Subtotal				\$2,596,962
Erosion Control/Stormwater Pollution Prevention			2%	\$51,939
Mobilization & Demobilization			5%	\$129,848
Subtotal				\$2,778,749
Contingency			35%	\$972,570
Opinion of Probable Construction Cost (rounded)				\$3,760,000
Feasibility and Site Studies			6% of OPCC	\$226,000
Preliminary and Final Design			6% of OPCC	\$226,000
Engineering Services During Construction			5% of OPCC	\$188,000
Outside Construction Management - not used if OPCC <\$1M			5% of OPCC	\$188,000
Outside Project Management - not used if OPCC <\$1M			3% of OPCC	\$113,000
Capital Improvement Plan Total (rounded)				\$4,710,000

D.4.2.2 N Poudre Cherry Avenue E

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 15" <i>Depth 10-20ft</i>	4,185	\$220	\$921,182	\$921,182
PVC Gravity Sewer 21" <i>Depth 10-20ft</i>	1,710	\$254	\$434,865	\$434,865
PVC Gravity Sewer 24" <i>Depth 10-20ft</i>	1,623	\$268	\$435,624	\$435,624
PVC Sewer Trenchless 15"	100	\$798	\$79,769	\$79,769
Manhole 5ft <i>Depth 10-20ft</i>	32	\$9540	\$305,278	\$305,278
Tier 1 Dewatering	4,962	\$105	\$521,010	\$521,010
Tier 2 Dewatering	2,656	\$52.50	\$139,452	\$139,452
Unit Cost Subtotal				\$2,837,181
Erosion Control/Stormwater Pollution Prevention			2%	\$56,744
Mobilization & Demobilization			5%	\$141,859
Subtotal				\$3,035,783
Contingency			35%	\$1,062,530
Opinion of Probable Construction Cost (rounded)				\$4,100,000
Easement			5% of OPCC	\$205,000

D.4.2.3 N. Poudre Cherry Avenue W

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 18" <i>Depth 0-10ft</i>	5,464	\$133	\$727,938	\$727,938
PVC Gravity Sewer 21" <i>Depth 10-20ft</i>	1,447	\$254	\$367,861	\$367,861
Manhole 5ft <i>Depth 0-10ft</i>	23	\$6543	\$150,481	\$150,481
Manhole 5ft <i>Depth 10-20ft</i>	6	\$9540	\$57,240	\$57,240
Tier 2 Dewatering	6,911	\$52.50	\$362,836	\$362,836
Unit Cost Subtotal				\$1,666,356
Erosion Control/Stormwater Pollution Prevention			2%	\$33,327
Mobilization & Demobilization			5%	\$83,318
Subtotal				\$1,783,000
Contingency			35%	\$624,060
Opinion of Probable Construction Cost (rounded)				\$2,410,000
Easement			5% of OPCC	\$121,000

D.4.2.4 N Poudre N 1st Ave W

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 15" <i>Depth 0-10ft</i>	1,589	\$119	\$188,790	\$188,790
PVC Gravity Sewer 15" <i>Depth 10-20ft</i>	1,540	\$220	\$338,983	\$338,983
PVC Gravity Sewer 18" <i>Depth 0-10ft</i>	1,821	\$133	\$242,581	\$242,581
PVC Gravity Sewer 18" <i>Depth 10-20ft</i>	1,038	\$235	\$244,120	\$244,120
PVC Trenchless 18"	2,579	\$897	\$2,314,061	\$2,314,061
Manhole 5ft <i>Depth 0-10ft</i>	14	\$6543	\$91,597	\$91,597
Manhole 5ft <i>Depth 10-20ft</i>	11	\$9540	\$104,939	\$104,939
Manhole 5ft <i>Depth >20ft</i>	11	\$13302	\$146,319	\$146,319
Tier 1 Dewatering	4,208	\$105	\$441,840	\$441,840
Tier 2 Dewatering	6,938	\$52.50	\$364,245	\$364,245
Unit Cost Subtotal				\$4,477,475
Erosion Control/Stormwater Pollution Prevention			2%	\$89,550
Mobilization & Demobilization			5%	\$223,874
Subtotal				\$4,790,898
Contingency			35%	\$1,676,820
Opinion of Probable Construction Cost (rounded)				\$6,470,000
Easement			5% of OPCC	\$324,000

D.4.2.5 N Greeley Centennial Hwy

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 8" <i>Depth 0-10ft</i>	1,376	\$88	\$121,673	\$121,673
PVC Gravity Sewer 10" <i>Depth 10-20ft</i>	3,157	\$196	\$618,241	\$618,241
PVC Gravity Sewer 12" <i>Depth 10-20ft</i>	5,463	\$206	\$1,125,033	\$1,125,033
PVC Sewer Trenchless 12"	200	\$584	\$116,856	\$116,856
Manhole 4ft <i>Depth 0-10ft</i>	6	\$4118	\$24,710	\$24,710
Manhole 4ft <i>Depth 10-20ft</i>	36	\$5777	\$207,976	\$207,976
Tier 1 Dewatering	4,348	\$105	\$456,540	\$456,540
Tier 2 Dewatering	5,848	\$52.50	\$306,998	\$306,998
Unit Cost Subtotal				\$2,978,028
Erosion Control/Stormwater Pollution Prevention			2%	\$59,561
Mobilization & Demobilization			5%	\$148,901
Subtotal				\$3,186,490
Contingency			35%	\$1,115,280
Opinion of Probable Construction Cost (rounded)				\$4,310,000
Easement			5% of OPCC	\$216,000

D.4.2.6 N. Greeley N. 23rd Avenue

	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 10" <i>Depth 0-10ft</i>	1,759	\$95	\$167,953	\$167,953
PVC Gravity Sewer 12" <i>Depth 10-20ft</i>	4,581	\$206	\$943,406	\$943,406
PVC Gravity Sewer 15" <i>Depth 0-10ft</i>	1,181	\$119	\$140,333	\$140,333
PVC Gravity Sewer 15" <i>Depth 10-20ft</i>	2,490	\$220	\$548,143	\$548,143
Manhole 4ft <i>Depth 0-10ft</i>	8	\$4118	\$32,947	\$32,947
Manhole 4ft <i>Depth 10-20ft</i>	19	\$5777	\$109,765	\$109,765
Manhole 5ft <i>Depth 0-10ft</i>	4	\$6543	\$26,171	\$26,171
Manhole 5ft <i>Depth 10-20ft</i>	11	\$9540	\$104,939	\$104,939
Tier 1 Dewatering	2,607	\$105	\$273,735	\$273,735
Tier 2 Dewatering	7,405	\$52.50	\$388,742	\$388,742
Unit Cost Subtotal				\$2,736,134
Erosion Control/Stormwater Pollution Prevention			2%	\$54,723
Mobilization & Demobilization			5%	\$136,807
Subtotal				\$2,927,663
Contingency			35%	\$1,024,690
Opinion of Probable Construction Cost (rounded)				\$3,960,000
Easement			5% of OPCC	\$198,000

D.4.2.7 N. Greeley Seeley Lake

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 10" <i>Depth 0-10ft</i>	1,536	\$95	\$146,675	\$146,675
PVC Gravity Sewer 12" <i>Depth 10-20ft</i>	3,556	\$206	\$732,375	\$732,375
PVC Gravity Sewer 15" <i>Depth 10-20ft</i>	2,376	\$220	\$523,045	\$523,045
Manhole 4ft <i>Depth 0-10ft</i>	6	\$4118	\$24,710	\$24,710
Manhole 4ft <i>Depth 10-20ft</i>	15	\$5777	\$86,657	\$86,657
Manhole 5ft <i>Depth 10-20ft</i>	10	\$9540	\$95,399	\$95,399
Tier 1 Dewatering	3,556	\$105	\$373,380	\$373,380
Tier 2 Dewatering	3,913	\$52.50	\$205,409	\$205,409
Unit Cost Subtotal				\$2,187,650
Erosion Control/Stormwater Pollution Prevention			2%	\$43,753
Mobilization & Demobilization			5%	\$109,382
Subtotal				\$2,340,785
Contingency			35%	\$819,280
Opinion of Probable Construction Cost (rounded)				\$3,170,000
Easement			5% of OPCC	\$159,000

D.4.2.8 N. Greeley 47th Avenue

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 10" <i>Depth 0-10ft</i>	1,849	\$95	\$176,594	\$176,594
PVC Gravity Sewer 12" <i>Depth 0-10ft</i>	1,980	\$105	\$208,238	\$208,238
PVC Gravity Sewer 15" <i>Depth 0-10ft</i>	2,228	\$119	\$264,668	\$264,668
PVC Gravity Sewer 18" <i>Depth 10-20ft</i>	2,161	\$235	\$508,263	\$508,263
Manhole 4ft <i>Depth 0-10ft</i>	15	\$4118	\$61,776	\$61,776
Manhole 5ft <i>Depth 0-10ft</i>	10	\$6543	\$65,426	\$65,426
Manhole 5ft <i>Depth 10-20ft</i>	9	\$9540	\$85,859	\$85,859
Tier 2 Dewatering	8,219	\$52.50	\$431,482	\$431,482
Unit Cost Subtotal				\$1,802,306
Erosion Control/Stormwater Pollution Prevention			2%	\$36,046
Mobilization & Demobilization			5%	\$90,115
Subtotal				\$1,928,467
Contingency			35%	\$674,970
Opinion of Probable Construction Cost (rounded)				\$2,610,000
Easement			5% of OPCC	\$131,000

D.4.2.9 N. Greeley 47th Avenue W

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 8" <i>Depth 0-10ft</i>	1,257	\$88	\$111,184	\$111,184
PVC Gravity Sewer 10" <i>Depth 0-10ft</i>	3,500	\$95	\$334,239	\$334,239
PVC Gravity Sewer 12" <i>Depth 0-10ft</i>	3,410	\$105	\$358,704	\$358,704
PVC Gravity Sewer 15" <i>Depth 0-10ft</i>	1,128	\$119	\$133,958	\$133,958
Manhole 4ft <i>Depth 0-10ft</i>	34	\$4118	\$140,025	\$140,025
Manhole 5ft <i>Depth 0-10ft</i>	5	\$6543	\$32,713	\$32,713
Tier 1 Dewatering	7,317	\$105	\$768,285	\$768,285
Tier 2 Dewatering	1,978	\$52.50	\$103,845	\$103,845
Unit Cost Subtotal				\$1,982,954
Erosion Control/Stormwater Pollution Prevention			2%	\$39,659
Mobilization & Demobilization			5%	\$99,148
Subtotal				\$2,121,760
Contingency			35%	\$742,620
Opinion of Probable Construction Cost (rounded)				\$2,870,000
Easement			5% of OPCC	\$144,000

D.4.2.10 N. Greeley N 59th Avenue

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 8" <i>Depth 0-10ft</i>	2,420	88	\$214,044	\$214,044
PVC Gravity Sewer 10" <i>Depth 0-10ft</i>	2,227	95	\$212,664	\$212,664
PVC Gravity Sewer 15" <i>Depth 10-20ft</i>	1,329	220	\$292,623	\$292,623
Manhole 4ft <i>Depth 0-10ft</i>	19	4118	\$78,249	\$78,249
Manhole 5ft <i>Depth 10-20ft</i>	6	9540	\$57,240	\$57,240
Tier 2 Dewatering	5,976	53	\$313,754	\$313,754
Unit Cost Subtotal				\$1,168,574
Erosion Control/Stormwater Pollution Prevention			2%	\$23,371
Mobilization & Demobilization			5%	\$58,429
Subtotal				\$1,250,374
Contingency			35%	\$437,640
Opinion of Probable Construction Cost (rounded)				\$1,690,000

D.4.2.11 Sheep Draw 29th Street

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 8" <i>Depth 0-10ft</i>	2,550	\$88	\$225,508	\$225,508
PVC Gravity Sewer 12" <i>Depth 0-10ft</i>	1,590	\$105	\$167,277	\$167,277
PVC Gravity Sewer 27" <i>Depth 0-10ft</i>	778	\$194	\$150,732	\$150,732
PVC Gravity Sewer 27" <i>Depth 10-20ft</i>	2,367	\$299	\$706,550	\$706,550
PVC Sewer Trenchless 8"	250	\$478	\$119,521	\$119,521
PVC Sewer Trenchless 12"	100	\$584	\$58,428	\$58,428
PVC Sewer Trenchless 27"	100	\$1,398	\$139,793	\$139,793
Manhole 4ft <i>Depth 0-10ft</i>	19	\$4118	\$78,249	\$78,249
Manhole 5ft <i>Depth 0-10ft</i>	3	\$6543	\$19,628	\$19,628
Manhole 5ft <i>Depth 10-20ft</i>	10	\$9540	\$95,399	\$95,399
Tier 1 Dewatering	200	\$105	\$2,446	\$21,000
Unit Cost Subtotal				\$1,782,085
Erosion Control/Stormwater Pollution Prevention			2%	\$35,642
Mobilization & Demobilization			5%	\$89,104
Subtotal				\$1,906,831
Contingency			35%	\$667,400
Opinion of Probable Construction Cost (rounded)				\$2,580,000
Easement			5% of OPCC	\$129,000

D.4.2.12 Sheep Draw US34

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 8" <i>Depth 10-20ft</i>	1,172	\$188	\$220,843	\$220,843
PVC Gravity Sewer 10" <i>Depth 0-10ft</i>	1,892	\$95	\$180,706	\$180,706
PVC Gravity Sewer 10" <i>Depth 10-20ft</i>	1,982	\$196	\$388,195	\$388,195
PVC Gravity Sewer 12" <i>Depth 10-20ft</i>	2,364	\$206	\$486,870	\$486,870
PVC Sewer Trenchless 10 In.	450	\$581	\$261,664	\$261,664
Manhole 4ft <i>Depth 0-10ft</i>	8	\$4,118	\$32,947	\$32,947
Manhole 4ft <i>Depth 10-20ft</i>	23	\$5777	\$132,874	\$132,874
Tier 1 Dewatering	396	\$105	\$41,580	\$41,580
Unit Cost Subtotal				\$1,745,679
Erosion Control/Stormwater Pollution Prevention			2%	\$34,914
Mobilization & Demobilization			5%	\$87,284
Subtotal				\$1,867,876
Contingency			35%	\$653,760
Opinion of Probable Construction Cost (rounded)				\$2,530,000
Easement			5% of OPCC	\$127,000

D.4.2.13 Windsor W

Item	Quantity	Unit Cost	Extended Cost	Total Cost
PVC Gravity Sewer 8" <i>Depth 0-10ft</i>	3,748	\$88	\$331,510	\$331,510
PVC Gravity Sewer 10" <i>Depth 0-10ft</i>	825	\$95	\$78,821	\$78,821
PVC Gravity Sewer 12" <i>Depth 0-10ft</i>	4,191	\$105	\$440,759	\$440,759
PVC Gravity Sewer 12" <i>Depth 10-20ft</i>	2,099	\$206	\$432,239	\$432,239
PVC Gravity Sewer 18" <i>Depth 0-10ft</i>	2,932	\$133	\$390,620	\$390,620
PVC Gravity Sewer 18" <i>Depth 10-20ft</i>	9,101	\$235	\$2,139,992	\$2,139,992
PVC Sewer Trenchless 12"	250	\$584	\$146,070	\$146,070
PVC Sewer Trenchless 18"	600	\$897	\$538,362	\$538,362
Manhole 4ft <i>Depth 0-10ft</i>	36	\$4118	\$148,262	\$148,262
Manhole 4ft <i>Depth 10-20ft</i>	9	\$5777	\$51,994	\$51,994
Manhole 4ft <i>Depth >20ft</i>	1	\$7937	\$7,937	\$7,937
Manhole 5ft <i>Depth 0-10ft</i>	11	\$6543	\$71,969	\$71,969
Manhole 5ft <i>Depth 10-20ft</i>	36	\$9540	\$343,438	\$343,438
Manhole 5ft <i>Depth >20ft</i>	2	\$13302	\$26,603	\$26,603
Tier 2 Dewatering	501	\$52.50	\$26,303	\$26,303
Unit Cost Subtotal				\$5,174,880
Erosion Control/Stormwater Pollution Prevention			2%	\$103,498
Mobilization & Demobilization			5%	\$258,744
Subtotal				\$5,537,122
Contingency			35%	\$1,938,000
Opinion of Probable Construction Cost (rounded)				\$7,480,000
Easement			5% of OPCC	\$374,000

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Appendix E

Coordination and Engagement with Adjacent Communities

E.1 Goals of the Stakeholder Engagement Plan

The stakeholder engagement process was incorporated to involve local communities in the City's sewer system master plan and to seek regional options that benefit the area in planning for future growth. The stakeholder engagement process allowed the City to share information and consider future opportunities in which various stakeholders can support planned growth and development in the region. This stakeholder process was intended to help form a collaborative environment with the identified stakeholders.

E.2 Key Stakeholders

The key stakeholders were identified based on their current system connections with the City, proximity to City boundaries, and historical interest in opportunities for shared service. For many of the stakeholders, the City has an intergovernmental agreement (IGA) in place. The list of key stakeholders and IGA summary are presented in **Table E-1**.

Table E-1. Stakeholders for Sewer System Master Plan

Stakeholder	IGA Status and Summary
Evans	The current IGA calls for Evans to treat wastewater from the Ashcroft Basin at the Hill-N-Park wastewater plant (except for the T-Bone Ranch subdivision, which has a separate IGA wherein Evans only provides treatment in an emergency). The wastewater delivery system is operated and maintained by Greeley. However, due to proposed development that would exceed the capacity of the Hill-N-Park plant, Greeley plans to renegotiate the Ashcroft IGA by October 1 st , 2022 and construct sewer lines and a lift station to serve the entire Ashcroft Basin themselves.
Windsor	The existing IGA establishes terms and conditions for land use, site and building standards and utility services within the Cooperative Planning, Land Use and Utility Areas (CPUA). Greeley agrees to deliver sewage originating within the CPUA to the Windsor sewer system for treatment by Windsor.
Eaton	The City does not have an IGA with Eaton as Eaton is north of the City where little population growth has occurred; however, both parties are in continued communication for opportunities of IGA development as the City's population is projected to expand northward across the Cache la Poudre River where shared wastewater treatment and services may be required.
Kersey	The City does not have an IGA with Kersey as Kersey has a much smaller population than the City and Kersey is separated from the City by the South Platte River; however, there has been communication between the City and Kersey for future IGA opportunities.
Milliken	The City does not have an IGA with Milliken as Milliken is south of the City where little population growth has occurred; however, there has been communication between the City and Milliken for future IGA opportunities.
Johnstown	The City will coordinate separately with Johnstown

E.3 Level of Stakeholder Engagement

Stakeholder engagement in a project will vary depending on the interest of the stakeholders, potential impact on their customers and systems, and ability to contribute to the project. **Figure E-1** illustrates various levels of stakeholder engagement that can be achieved depending upon overall goals and objectives ranging from simply being informed to being fully a part of the decision-making process.

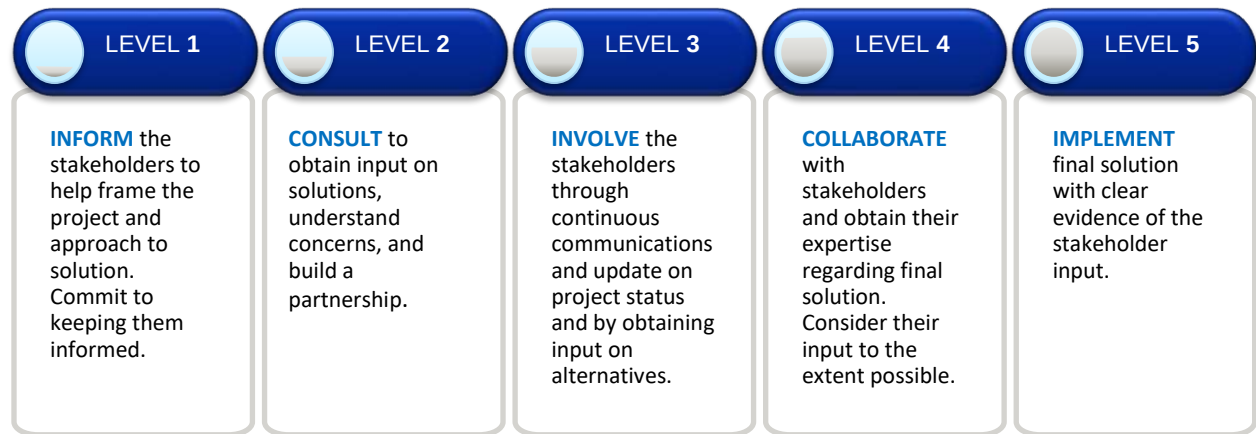


Figure E-1 Stakeholder Engagement Levels

Stakeholder planning defines the existing level of engagement for each stakeholder then develops a plan to reach the desired level of engagement. The existing level of engagement is subjectively determined by considering how active and informed each stakeholder is about the WWMP and associated infrastructure and how much interest they have historically shown in partnering with the City for services. Stakeholders who have an existing IGA tend to be more informed than those who do not have an existing agreement in place. The perceived existing level of engagement and the City's desired level of engagement for each stakeholder is shown in **Table E-2**.

Table E-2 Stakeholder Existing and Desired Level of Engagement

Stakeholder	Level of Engagement	
	Existing	Desired
Evans	2: Consult	5: Implement
Kersey	1: Inform	2: Consult
Eaton	1: Inform	4: Collaborate
Windsor	2: Consult	5: Implement
Milliken	1: Inform	4: Collaborate

E.4 Collaboration Opportunities

The City's stakeholder goal is to involve participants to the desired level through outreach and engagement in the City's overall planning process. This includes identifying opportunities for collaboration between stakeholders. Through a series of one-on-one and group meetings between the City and their regional neighbors, several collaboration opportunities were identified as summarized below and shown on **Figure E-2** (provided at the end of this section).

E.4.1 Individual Collaboration Opportunities

E.4.1.1 Greeley

The City has one WWTP that is adequately sized for current demand (rated at 14.7 mgd with an ADF of 7.8 mgd). The City's most recent wastewater master plan outlines the following four-phased approach to treatment improvements to meet regulatory and capacity requirements: (1) WWTP process upgrades to meet Regulation 85, (2) renewal of existing assets (replacement), (3) flow and loading increases, and (4) improvements to meet Regulation 31 discharge limits. Addressing the four-phased approach, the City is concerned with expanding its assets (infrastructure such as pipelines, tanks, and pump stations) and how it will achieve full lifecycle value of its existing assets.

E.4.1.2 Milliken

Milliken's 208 Boundary overlaps the City's LREGA and Milliken would need a lift station to serve this area. A portion of wastewater from Milliken's 208 boundary area is directed toward the City's Sheep Draw sewer system in the City of Greeley's wastewater planning. The City suggested Milliken revise their 208 boundary to match the City's LREGA boundary and provide a schedule for changes moving forward.

The initial feedback from the City's discussion with Milliken was that the area may be best served by Greeley due to limitations of the existing infrastructure and future wastewater plant needs and capacity limitations. However, Milliken staff needed to engage their City Management to further discuss. Their current plant is rated for 0.7 mgd with plans to expand to 0.95 mgd. They are also evaluating replacement of the existing lift station #5 with a 0.5 mgd plant but are in preliminary stages of assessment as there are other locations where a second treatment plant may be warranted depending on development. The existing sewer infrastructure has not been sized to serve this area and would require upsizing in addition to significant new infrastructure to serve this area.

Opportunity for Collaboration:

- Adjustment to area of overlap between the City's LREGA and Milliken's 208 boundary

E.4.1.3 Kersey

Kersey wants to maintain a natural buffer between the City and Kersey's service area by defining Kersey Road as the actual boundary rather than the South Platte River. Kersey's population growth will result in the need for additional treatment capacity or connection to the East Greeley lift station.

Opportunity for Collaboration:

- Additional service to western side of Kersey (connection to East Greeley LS or regional treatment plant)

E.4.1.4 Windsor

The IGA between the City and Windsor has a conflict in language on service for the Greeley Annexation Area indicated both entities will provide treatment to this area. Windsor has indicated they may not have treatment capacity to serve the Greeley Annexation area. The City can maintain the gravity sewer pipelines and keep the effluent water rights with Windsor treating

the wastewater from the Annexation area. Windsor's current plant is rated for 2.8 mgd maximum month daily flow and they are current at approximately 60% of the rated capacity. They anticipate starting planning for expansion in 2023, at which point they will be at approximately 80%. The estimated 5 mgd future capacity was not intended to include development within Greeley being treated by Windsor. If Greeley were to send flows to Windsor it would need to be evaluated and the treatment plant capacity adjusted. Any flows from Greeley to Windsor are subject to the terms of the IGA.

Opportunity for Collaboration:

- Wastewater service to the Greeley Annexation Area (provided by Windsor)

E.4.1.5 Eaton

Eaton's WWTP is located on the east side of their service area, is at approximately 25% capacity (rated at 0.75 mgd) and can be expanded to approximately 1.75 mgd. Eaton's growth is projected to occur south and west of the town making gravity flow of wastewater to their plant difficult. Eaton has one plant operator for its water and wastewater treatment facilities, limiting ability to expand without additional staff. Eaton has submitted a boundary update to the county.

Eaton provided information for future development resulted in ADF of 9.86 mgd from the Eaton development area. Greeley and Eaton will evaluate in the future if the flow estimate is realistic and requirements for service to this area. The anticipated gravity sewer pipe size for this flow is conceptually estimated at 36" and would require a separate detailed evaluation including routing to the plant. These flow projections were not included in the master plan infrastructure analysis. A summary of the information provided by Eaton and resulting infrastructure sizing is show on **Figure E-3**.

Opportunity for Collaboration:

- Wastewater service to Eaton's growth area provided by the City

E.4.1.6 Evans

Evans has expressed interest in working with the City and Eaton to develop a regional solution to providing wastewater services and meet more stringent discharge regulations. Evans' single lift station has a maximum daily flow capacity of 2.07 mgd or 1.8 mgd when the T-Bone section of its lift station is not included. Their wastewater treatment plant is rated at 2.88 mgd but is currently operating at approximately 2.65 mgd with BOD loading at 80% of capacity. Their service area is experience high rates of infill.

The City's IGA with Evans states the Ashcroft subdivision will be served by the City once its constructs the Ashcroft LS. The Evans sewer system near LS15 (Auto Plaza) is at capacity and Evans is unlikely to accommodate additional wastewater flows projected by future population growth. LS15 will need to be relocated or replaced with expanded wastewater flow capacity.

Opportunity for Collaboration:

- Wastewater service in the area of LS15
- Regional treatment or capacity sharing

Legend

- Future Buildout Piping
- LREGA
- Eaton Piping**
- Flows Directly to WPCF

City of Greeley
Eaton Review
Greeley Sewer
System Master Plan

Total Flow from Eaton
9.86 MGD

8 DU/Ac @ 2.7 People/DU

5960 acres

50% 20 DU/Ac @ 1.7 People/DU
50% C-H

1205 acres

36-inch Pipe*

23,370 ft
4.42 miles

*Note - Preliminary sizing
and routing shown.
Detailed evaluation should
be done to develop actual
alignment and pipe size.

Greeley WTRF

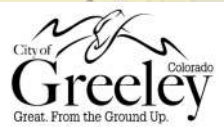


Figure E-3: Eaton Service to Greeley

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E.4.1.7 Johnstown

The City will coordinate with Johnstown separately from this stakeholder process. Johnstown's collection system and wastewater treatment plant are reported as inadequate for their current population growth, resulting in Johnstown planning a \$50 million wastewater treatment improvement by 2025.

The City's discussion with Johnstown indicate Johnstown is open to serving areas of overlap depending on how the property was annexed. Johnstown has plans for expanding their Low Point Treatment Plant from 0.5 mgd to 1.5 mgd in 2021 with full build out of 2.5 mgd. The Low Point Plant is indicated to serve the area of overlap per Johnstown's 208 Boundary. There is no sewer infrastructure east of the Low Point Plant. Johnstown also noted that the Central Treatment Plant could serve the area of overlap and there are plans to expand the plant to 2.5 mgd in the 2025 time-frame. In either case it would require significant infrastructure including crossing barriers including the Big Thompson River and railroad crossings.

E.4.2 Regional Opportunities

The following collaboration opportunities were identified during a workshop that focused on identifying regional solutions including service area connections, emergency overflows, and wastewater treatment. The following opportunities for regional collaboration were discussed by the stakeholders.

Residuals disposal and/or land application

Stakeholders are facing additional challenges with management of residuals and final disposal and expressed interest in exploring regional solutions including a consolidated management facility. Stakeholders noted challenges such as the limited ability of some stakeholders to dewater residuals, varying management and class designations of biosolids between the stakeholders and concern over PFAS requirements. The stakeholders also noted potential overall cost savings and opportunities for energy recovery from a larger regional biosolids management approach.

Effluent temperature discharge compliance

Several stakeholders have effluent temperature compliance concerns during shoulder months and noted a regional approach to stream segment improvements may be of interest to the CDPHE. A regional approach would allow stakeholders to develop an overall stream management strategy instead of individualized discharge requirements.

Industrial pretreatment

Several stakeholders are (re)implementing industrial wastewater pre-treatment programs and expressed interest in sharing program requirements and implementation strategies/challenges. Stakeholders have noted the opportunity for shared staff enforcement and sampling of dischargers.

Laboratory analysis and testing resources

The City may consider expanding its testing laboratory to including testing for metals and whole effluent toxicity (WET). Several stakeholders are interested in either using the City's testing laboratory and/or developing joint testing programs with the City.

Wastewater conveyance and treatment

Stakeholders have interest in regional wastewater treatment to serve as a secondary treatment facility with emphasis on locations north and/or west of the Poudre River. Stakeholders noted the areas south of the Platte River and challenges in providing service, suggesting a regional treatment plant or conveyance solution may be warranted.

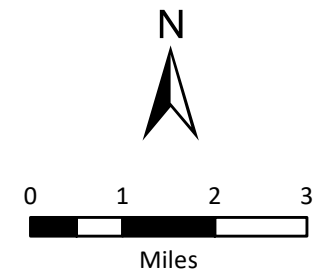
Staffing and training

Several stakeholders expressed concerns regarding employment and staffing of their treatment facilities and would like to consider sharing local experienced plant operators and developing a regional plan to train or attract operators to the region. The City is working to develop a program for operator trainings at Aims Community College including internships and an evaluation intern process that can be used for hiring future plant operators. Red Rocks Community College and local high schools offer potential plant operator recruitment opportunities through potential regional job fairs. Regionally the stakeholders can work to develop higher level operators through training and experience at the treatment plants.

Stakeholders also noted opportunities to share training and expertise for staff through annual meetings, technical and regulations learning, and job specific training.

City of Greeley Regional Stakeholders - Wastewater

Greeley Sanitary Sewer System Master Plan



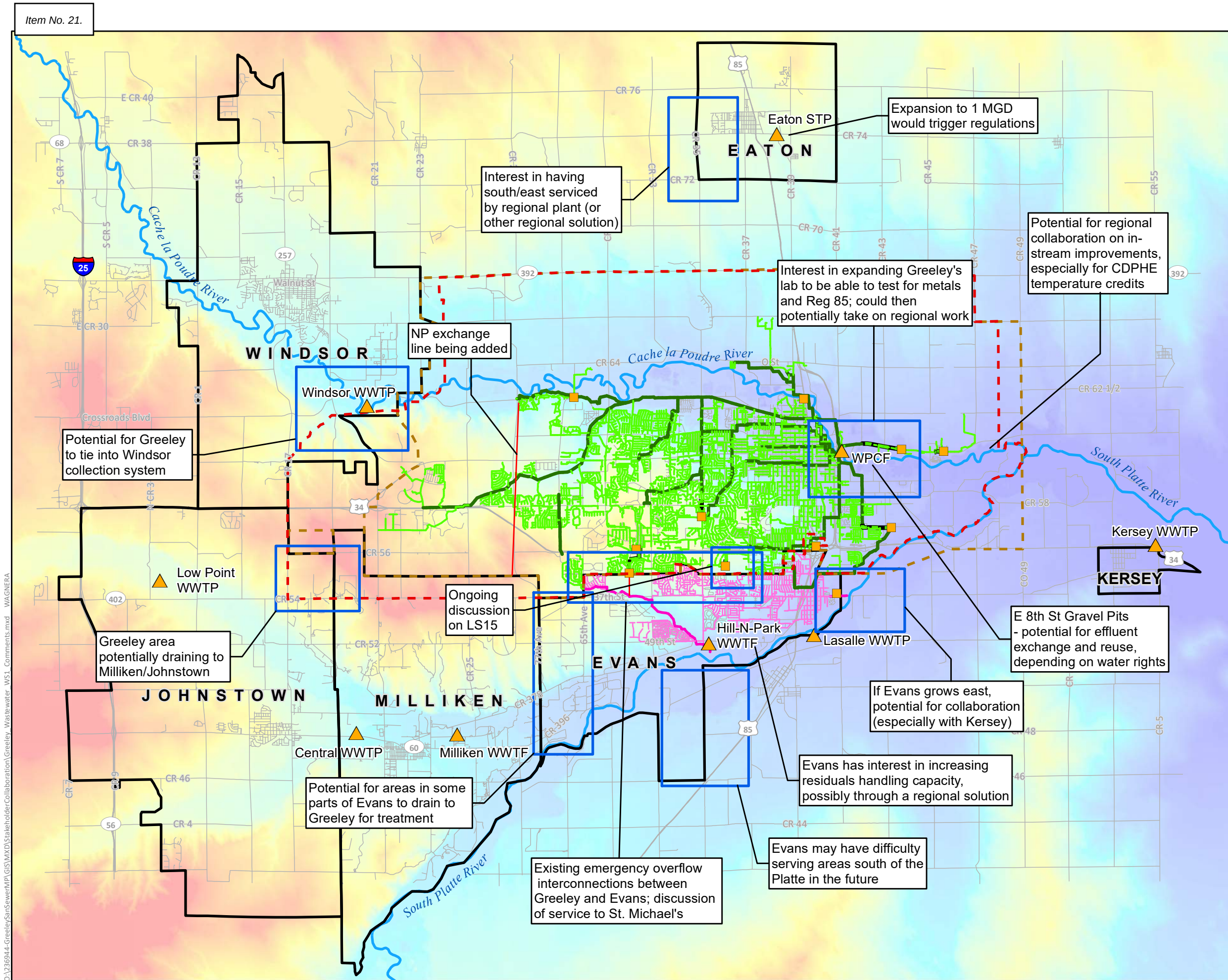
Legend

- ▲ WWTP
- Lift Station
- Sewer Mains**
 - Collector Line
 - Force Main
 - Overflow Line
 - Trunk Line
 - Stakeholder Sewer Mains
- Greeley LREGA
- Greeley 208 Boundary (existing)
- Stakeholders 208 Boundary (existing)
- Notes/Potential Regional Collaboration
- River

Elevation

High : 5172 ft
Low : 4564 ft

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Appendix F

Comprehensive Plan for Demand Projections

Markup Areas	Area	% of Total Area per Non-Residential Land Use Category				% of Total Area per Residential DU/Acre Category				Projected Population Increase	Projected Residential Flow	Projected Non-Residential Flow
	(acres)	C-L	C-H	I-L	(gpd)	1.0	2.5	4.0	20	(people) ^{1,2}	(gpd)	(gpd)
83 rd Avenue/Highway 34	578		65%						35%	6,878	412,680	563,550
83 rd Avenue/10 th Street	650		15%					45%	40%	12,467	748,020	146,250
20 th Street North	883		25%					50%	25%	12,980	778,800	331,125
Southeast Bluffs	123		15%					45%	40%	2,359	141,540	27,675
North of the River – East 1	1,969		10%		80%	10%				610	36,600	1,082,950
North of the River – East 2	5,708		20%		30%			35%	15%	53,884	3,233,040	2,568,600
North of the River – West 1	4,410		15%		10%	10%		50%	15%	51,200	3,072,000	1,212,750
North of the River – West 2	3,783		10%		20%	30%		30%	10%	30,453	1,827,180	945,750
East Greeley	1,292				30%	40%		30%		6,408	384,480	193,800
Southwest Greeley	2,860						100%			22,165	1,329,900	0
Interchange 34 West	3,719		20%		10%			50%	20%	48,347	2,900,820	1,301,650
Total										247,751	14,865,060	8,374,100

¹ For 20 DU/acre, 1.7 people per DU was assumed. For 1-4 DU/acre, 3.1 people per DU was assumed.

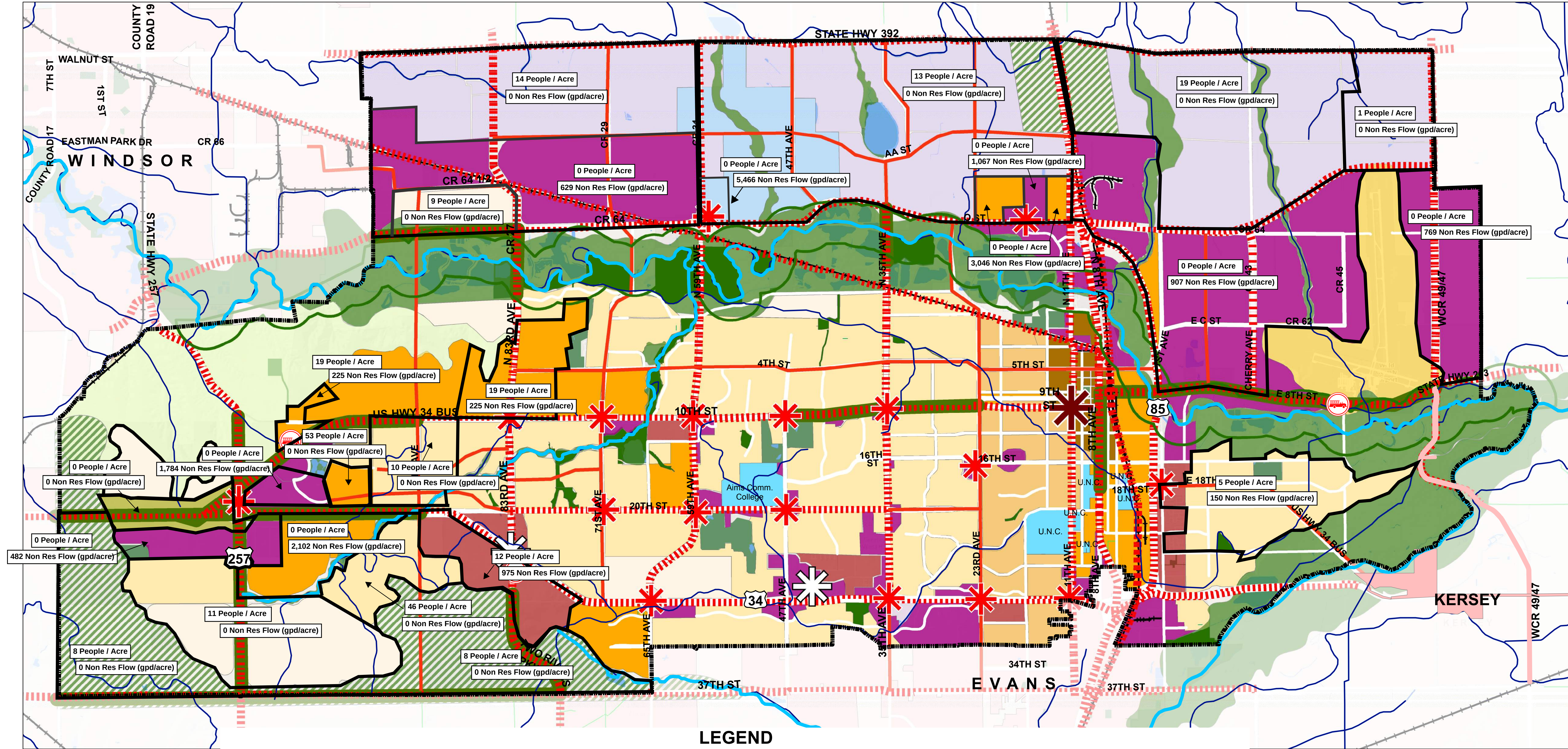
² The estimated population increase of 247,751 people is assumed to occur by “buildout”, which is estimated to be in approximately 2116.

Note:

- The following map shows the areas from Table F-1. Each area has been subdivided to vary the density similarly to the original comprehensive plan. The City directed CDM Smith to distribute the residential/nonresidential demand to each of the subdivided areas.
- Each subdivided area is shown in black outline with labels for the resulting projected growth.
- To enable comparison to future development, the resulting people/acre and nonresidential flow/acre has been shown.

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LAND USE GUIDANCE MAP



Downtown Center

 Regional Center

 Neighborhood Center

CORRIDORS

- Multi-Modal Corridor
- Special Multi-Modal Corridor Landscaping
- Poudre River Greenway

SPECIAL RECOMENDATIONS

- Potential Fire Station Locations

AREAS

- Airport Area
- Higher Education Hubs
- Employment, Industrial, and Commercial Areas
- North Annexation Area
- Mixed Use High Intensity
- Urban Reserve

OPEN LANDS & NATURAL AREAS

- Bluffs
- Community Separator
- Entryway Character Corridor
- Riparian Land
- City Owned Natural Areas

Town of Kersey

- Town of Kersey

NEIGHBORHOODS

- Rural
- Suburban
- Legacy Urban
- Mixed Use
- Downtown

0 0.375 0.75 1.5 2.25 3 Miles

Date of Preparation 12/1/17

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Appendix G

Goals from Comprehensive Plan



ECONOMIC HEALTH & DIVERSIFICATION (ED)

IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal ED-1: Promote a healthy, progressive, and competitive local economy.			
IMP ED-1.1 Conduct a market analysis of the Greeley trade area to: – Determine which products and/or services are sought by consumers; – Identify segments of the Greeley market that are experiencing sales tax leakage to other communities; and – Analyze market or other local conditions to identify impediments to the attraction of desired goods and services to the area.	Lead Economic Development Partners Chamber of Commerce	Policies and Programs	Ongoing
IMP ED-1.2 Conduct “business retention visits” to facilitate communication and resource sharing in support of local business expansion.	Lead Economic Development Partners Chamber of Commerce SBDC Northern Colorado Economic Alliance Update Colorado Economic Development	Policies and Programs	Ongoing
IMP ED-1.3 Follow-up with new and expanding businesses to offer support and a personal contact for questions in the early stages of business development.	Lead Economic Development Partners Chamber of Commerce	Policies and Programs	Ongoing
IMP ED-1.4 Evaluate existing codes, ordinances, regulations, taxes and fees, and permit processes to identify opportunities to streamline these processes and reduce costs of doing business in Greeley, balancing these considerations with the City’s fiscal needs and the health and welfare of residents.	Lead Economic Development Partners Community Development Finance	Regulatory Revision	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP ED-1.5 Develop informational guides for businesses and employers describing: – Available local resources; – Relevant municipal codes and regulations; – Incentive programs; – A checklist of things to consider when starting, relocating, and expanding a business in Greeley; and – A “Frequently Asked Question” guide for start-ups, expanding businesses, and businesses looking to relocate to Greeley.	Lead Economic Development Partners Community Development Communication & Engagement Chamber of Commerce SBDC Northern Colorado Economic Alliance Update Colorado Economic Development	Policies and Programs	Near-Term
IMP ED-1.6 Identify areas where the use of Enterprise Zones, Urban Renewal Areas, and other similar tools to encourage business use and development in established areas. Pursue the use or adoption of these tools as needed.	Lead Economic Development Partners Community Development Greeley Urban Renewal Authority	Policies and Programs	Near-Term
IMP ED-1.7 Evaluate needs for reinvestment in and improvements to public infrastructure in existing employment areas, commercial centers, and other retail areas and prioritize those which are most necessary for improving the economic vitality of these areas.	Lead Public Works Partners Economic Development Community Development	Public Investments	Long-Term
IMP ED-1.8 Develop a process and/or platform for making demographic, market, and related City information readily available to those seeking such information for use in the management and growth of their business.	Lead Economic Development Partners Community Development Information Technology Communication & Engagement	Policies and Programs	Long-Term
Goal ED-2: Promote desired economic sectors.			
IMP ED-2.1 Maintain an inventory of vacant commercial and industrial land within Greeley and its LREGA that is suitable to support development of desired industries.	Lead Community Development Partners Economic Development	Policies and Programs	Ongoing
IMP ED-2.2 Develop an economic development strategy for the City.	Lead Economic Development Partners Community Development Finance Public Works Chamber of Commerce Communication & Engagement	Plans	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP ED-2.3 Review, and modify as appropriate, the City's zoning code to ensure that zoning and development regulations applied to employment areas identified on the Land Use Guidance Map support desired uses and industries envisioned in those areas.	Lead Community Development Partners Planning Commission Economic Development Chamber of Commerce Public Works	Regulatory Revision	Near-Term
IMP ED-2.4 Finalize a scope of work and timeline for developing a coordinated economic development strategy. Once finished, work to develop the strategy. Ensure the strategy includes guidance on those elements identified in Objective EC-2.1.	Lead Economic Development Partners Finance City Manager's Office Community Development Chamber of Commerce SBDC Northern Colorado Economic Alliance Update Colorado Economic Development	Plans	Near-Term
IMP ED-2.5 Review, and revise as needed, existing economic development incentives and programs to ensure such efforts support and encouraged economic development in desired industries.	Lead Economic Development	Regulatory Revisions	Near-Term
IMP ED-2.6 Develop and disseminate marketing materials advertising Greeley's incentive programs, amenities, quality of life, and other aspects of the city/community that will help attract businesses in desired industries to Greeley.	Lead Economic Development Partners Communication & Engagement	Policies and Programs	Near-Term
IMP ED-2.7 Identify staff and resources needed to support the economic activities and programs identified in this Comprehensive Plan or a more detailed economic development strategy. Allocate resources as possible to address identified needs.	Lead Economic Development Partners City Manager's Office City Council Finance	Public Investments	Near-Term
Goal ED-3: Attract and maintain an employed, skilled, and adaptable workforce.			
IMP ED-3.1 Regularly review and report the City's performance in its service delivery by meeting with and/or surveying business consumers as to their customer satisfaction level. Use this review to identify areas for improvement.	Lead Economic Development Partners Finance Communication & Engagement Office	Policies and Programs	Ongoing



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP ED-3.2 Work with the school district, University of Northern Colorado, Aims Community College, and local businesses to identify and promote internship opportunities for students.	Lead City Manager's Office Partners All City Departments Chamber of Commerce	Policies and Programs	Near-Term
IMP ED-3.3 Develop and maintain an inventory of emerging employment needs and skills necessary to successfully perform such jobs in order to cultivate education and training programs for students and/or workers.	Lead Economic Development Partners Chamber of Commerce University of Northern Colorado Aims Community College School District	Policies and Programs	Long-Term
IMP ED-3.4 Promote employee association networks that foster interest, growth, and satisfaction related to business activities, such as with the Young Professionals group.	Lead Economic Development Partners Chamber of Commerce Communication & Engagement	Policies and Programs	Long-Term
IMP ED-3.5 Monitor community-wide employee workplace services and amenities, such as childcare, in order to proactively address gaps in facilities and/or services needed to attract and support a diversified work force.	Lead Economic Development	Policies and Programs	Long-Term
IMP ED-3.6 Support and recognize efforts by local business organizations to provide affordable and competitive employee benefit options.	Lead Economic Development Partners Communication & Engagement Chamber of Commerce	Policies and Programs	Long-Term
IMP ED-3.7 Develop and disseminate marketing materials advertising Greeley, its amenities, quality of life, and advantages compared to other Front Range communities to potential workers/residents.	Lead Economic Development Partners Communication & Engagement	Programs and Policies	Long-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal ED-4: Facilitate intergovernmental and public/private partnerships which foster successful economic development.			
IMP ED-4.1 Develop programs, informational materials, and other methods to support: – Special financing programs to increase access to capital; – Research and develop referral systems; – Training and support programs; – The availability of suitable business facilities and/or sites; – Development of appropriate initiatives and innovative programs; – Home occupations and/or – Provide business incubation support.	Lead Economic Development Partners Chamber of Commerce SBDC University of Northern Colorado Aims Community College Northern Colorado Economic Alliance Update Colorado Economic Development	Policies and Programs	Ongoing
IMP ED-4.2 Promote Greeley's quality local convention space to attract events and visitors.	Lead Economic Development Partners Chamber of Commerce Communication & Engagement University of Northern Colorado Aims Community College	Policies and Programs	Long-Term
IMP ED-4.3 Explore opportunities with local educational institutions to expand their roles in providing research, professional, and technical assistance to industrial and economic development projects, including programs which involve the implementation of technology transfer programs.	Lead Economic Development Partners Chamber of Commerce University of Northern Colorado Aims Community College	Policies and Programs	Long-Term



EDUCATION, HEALTH, AND HUMAN SERVICES (EH)

IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal EH-1: Promote community excellence related to a fully-integrated health care system.			
IMP EH-1.1 Develop programs and promotions which provide basic safety and first-aid training, including CPR, first aid, life guard training and other related programs.	Lead Fire Department Partners Culture, Parks, and Recreation Police Department Communication & Engagement	Policies and Programs	Ongoing
IMP EH-1.2 Develop and disseminate promotional and marketing materials advertising Greeley's exceptional medical services, such as those provided by North Colorado Medical Center and its affiliated service providers as a method for attracting top health care professionals to Greeley.	Lead Communication & Engagement Partners Economic Development	Policies and Programs	Long-Term
IMP EH-1.3 Evaluate the City's zoning code and map to identify any barriers to the development of a full continuum of health care services, clinics, and facilities ranging from neighborhood clinics, emergency response and urgent care facilities to fully-equipped and staffed hospital care. Also consider zoning changes to encourage the development of health care service facilities in areas where gaps in the continuum of service exist.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Long-Term
Goal EH-2: Integrate healthy living into community planning and development.			
IMP EH-2.1 Identify and address safety issues within neighborhoods that are perceived by residents as a barrier to active lifestyles, such as sidewalk gaps, busy street intersections, or narrow sidewalks.	Lead Neighborhood Resource Office Partners Culture, Parks, and Recreation Community Development Public Works Communication & Engagement	Public Investments	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP EH-2.2 Evaluate the feasibility of providing healthy food and drink choices through vendors and vending machines in City facilities.	Lead Culture, Parks, and Recreation	Policies and Programs	Near-Term
IMP EH-2.3 Develop a marketing/informational campaign to encourage greater participation in the City's employee wellness program.	Lead Human Resources Partners Culture, Parks, and Recreation Communication & Engagement	Policies and Programs	Near-Term
IMP EH-2.4 Encourage development proposals and site plans to include considerations for supporting healthy living and providing access to nearby services, particularly food retailers and health and human service providers, for a range of modes.	Lead Community Development Partners Planning Commission	Policies and Programs	Near-Term
IMP EH-2.5 Identify and address gaps in transportation systems and services in order to effectively link residents with community recreational facilities and essential health services.	Lead Community Development Partners Public Works Greeley-Evans Transit	Public Investments	Long-Term
IMP EH-2.6 Explore the feasibility of, and opportunities for integrating community gardens and/or food and nut trees into parks, neighborhoods, or other locations where irrigation can be provided using existing facilities, and formal maintenance agreements can be established, such as with a homeowners association or neighborhood organization.	Lead Neighborhood Resources Office Partners Public Works Sewer and Water Community Development	Public Investments	Long-Term
Goal EH-3: Ensure that residents are aware of and have access to efficient and effective health and human services.			
IMP EH-3.1 Assess special population and service needs and opportunities to coordinate response through the City's Neighborhood Building Blocks program.	Lead Neighborhood Resource Office Partners Culture, Parks, and Recreation	Policies and Programs	Ongoing
IMP EH-3.2 Regularly convene meetings of the Urgent Responders Coalition of area emergency, human service and related service providers to share information, service challenges and strategies to optimize service response and encourage self-sufficiency of community members.	Lead City Manager's Office Partners Neighborhood Resource Office	Policies and Programs	Ongoing



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP EH-3.3 Create a single online platform where residents can easily access information on all of City services and programs.	Lead City Manager's Office Partners All Departments	Policies and Programs	Near-Term
IMP EH-3.4 Regularly update the City's contact and program information on directory resources, such as the United Way 211 Information and Referral Line, to facilitate the effective referral of service request questions to appropriate City departments. Ensure such information is readily available, particularly on the City's website.	Lead Neighborhood Resource Office Partners Communication & Engagement Information Technology	Policies and Programs	Near-Term
IMP EH-3.5 Explore the feasibility of establishing a 311 line to provide ready access to residents needing to access government services.	Lead City Manager's Office Partners Communication & Engagement	Policies and Programs	Near-Term
IMP EH-3.6 Promote resident involvement in the City's "Neighbor Labor" program which works with United Way to match volunteers with special needs residents to address property care issues that may limit quality of life and impact neighborhood well-being.	Lead Neighborhood Resource Office Partners Communication & Engagement	Policies and Programs	Long-Term
IMP EH-3.7 Develop a survey or other feedback mechanism to allow customers or other participants in health and human service-related programs managed or funded by the City of Greeley to provide input on the service and/or provide recommendations for improvements.	Lead Neighborhood Resource Office Partners Communication & Engagement	Policies and Programs	Long-Term
IMP EH-3.8 Develop a set of performance measures or metrics that allows the City to gauge the performance and results of health and human service programs managed or funded by the City.	Lead Neighborhood Resource Office Partners Communication & Engagement	Policies and Programs	Long-Term
Goal EH-4: Support and collaborate with the city's school districts.			
IMP EH-4.1 Review and provide comments on new academic facilities being developed as they relate to site design, architectural elements and related improvements in order to complement neighborhood features.	Lead Community Development Partners Culture, Parks, and Recreation	Policies and Programs	Ongoing



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP EH-4.2 Assess the feasibility of adopting school site dedication requirements as part of subdivision requests.	Lead Community Development Partners City Manager's Office Culture, Parks, and Recreation	Regulatory Revision	Near-Term
IMP EH-4.3 Explore the feasibility of creating a land dedication or 'cash-in-lieu' fee to support land acquisition for school sites commensurate with new residential growth. Such a fee should be universally applied within all school districts serving Greeley residents.	Lead Community Development Partners City Manager's Office Finance	Policies and Programs	Long-Term
Goal EH-5: Be an education center of excellence.			
IMP EH-5.1 Develop and promote a consolidated list or online calendar of educational programs, classes, and other offerings for persons of all ages and abilities.	Lead Culture, Parks, and Recreation Partners Communication & Engagement Information Technology	Policies and Programs	Ongoing
IMP EH-5.2 Develop intergovernmental agreements with area educational institutions which define a coordinated approach to such matters as school location and construction, facility maintenance and joint use objectives.	Lead City Manager's Office Partners Culture, Parks, and Recreation Community Development	Policies and Programs	Near-Term
IMP EH-5.3 Research and promote the expanded use of communication and creative technologies for off-site educational learning and community information access.	Lead Information Technology Partners Communication & Engagement Culture, Parks, and Recreation	Policies and Programs	Long-Term
IMP EH-5.4 Stimulate opportunities for access to educational resources for all age groups, ranging from early childhood development programs to "Elder-garden" settings.	Lead Culture, Parks, and Recreation	Policies and Programs	Long-Term



GROWTH & CITY FORM (GC)

IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal GC-1: Manage growth effectively.			
IMP GC-1.1 Update the Community Indicators report at 5-year intervals as a means to monitor trends that have an impact on Greeley's quality of life. Work with community agencies and organizations to formulate a strategic response to correct the conditions leading to the negative trend.	Lead Community Development	Policies and Programs	Ongoing
IMP GC-1.2 Consider interim development opportunities within the North Annexation Area in the near-term, provided the uses and development configurations proposed will not preclude the viability of future development and/or transportation networks needed to serve adjacent areas.	Lead Community Development Partners Planning Commission	Policies and Programs	Ongoing
IMP GC-1.3 Develop land use tools to assist in the preservation of important natural features, farmland, community separators, and open space in targeted areas.	Lead Community Development Partners Culture, Parks, and Recreation Planning Commission	Policies and Programs	Near-Term
IMP GC-1.4 Amend the Development Code to formalize the method of establishing the APFA by: – Establishing a system that graduates the development fees due by the development, in addition to the infrastructure expansion, proportionate to its distance from the APFA; and – Developing a mechanism for subsequent developers who benefit from the new infrastructure to reimburse a pro-rata share of the cost of the new infrastructure if subsequent development occurs within ten years of its initial installation or expansion.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP GC-1.5 Develop a method the City can use to anticipate, monitor and respond to the cumulative fiscal impacts of new development as build-out occurs.	Lead Community Development Partners Finance	Policies and Programs	Near-Term
IMP GC-1.6 Conduct a sub-area plan process for urban reserve lands within Greeley's Long Range Expected Growth Area (LREGA), to engage property owners, the community, and other stakeholders in a discussion regarding future land uses and adequate public facilities, for these areas.	Lead Community Development Partners Planning Commission	Policies and Programs	Near-Term
IMP GC-1.7 Work with Windsor, Severance, Eaton, Kersey, and other regional partners to develop IGAs for urban reserve lands within Greeley's Long Range Expected Growth Area (LREGA), as shown on the Land Use Guidance Map.	Lead Community Development Partners City Manager's Office City Council Adjacent municipalities	Policies and Programs	Near-Term
IMP GC-1.8 Review and update, as appropriate, Development Code provisions associated with sand and gravel mining to assure that reasonable mitigation and accommodation of potential impacts to adjacent land uses, such as from transportation, environmental quality, and nuisance conditions, are provided.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Long-Term
Goal GC-2: Promote a balanced mix and distribution of land uses.			
IMP GC-2.1 Update the Development Code and/or amend the zoning map so that zoning districts that are consistent with the Land Use Guidance Map.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Near-Term
IMP GC-2.2 Develop and adopt a mixed-use zone--or amend existing zoning districts--to support a greater mix of uses in Greeley. Review Development Code standards to utilize parking standards to promote mixed-use developments with joint use and opportunity for parking space reduction.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Near-Term
Goal GC-3: Ensure new development, infrastructure investments, and public realm improvements enhance the character of the community.			
IMP GC-3.1 Update the City's Development Code to include additional design standards that will encourage more innovative and high-quality design that reflect contemporary, progressive and sustainable building design trends.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP GC-3.2 Update the City's design standards to require new development to offer unique physical elements or improvements that contribute to the area's character and identity including: – Distinct site elements or architecture; – Historic or cultural resources; – Amenities such as views, open space, water courses, varied topography, or connectivity to existing or new trails; or – A central gathering place for residents of the neighborhood or subdivision.	Lead Community Development Partners Planning Commission Historic Preservation Commission	Regulatory Revisions	Near-Term
IMP GC-3.3 Explore the feasibility of re-establishing the citizen Architectural Review Advisory Committee, which would acts as a technical and community resource to City staff and applicants in evaluating and trouble- shooting specific project design issues, as requested.	Lead Community Development Partners Planning Commission	Policies and Programs	Near-Term
IMP GC-3.4 Update the City's Sign Code to reflect contemporary design elements and construction options and promote the attractive appearance of commercial corridors through functional and appealing property and business identification that is well- integrated into other site improvements.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Long-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal GC-4: Prioritize infill and redevelopment			
IMP GC-4.1 Assess and amend as needed the Development Code and other City regulations related to infill development and redevelopment to protect the existing neighborhood areas. Regulations (or lack thereof) that address, among other issues: – Site design and building massings and forms that are compatible with or complimentary of the surrounding neighborhood; – Mitigation of any compatibility issues (such as parking, noise, hours of operation) that could arise from non-residential land uses/developments; – Transitions between higher-intensity development and lower-intensity development (particularly single-family neighborhoods); – The development of a diverse range of higher-density housing types, not just multi-family apartment buildings; – The development of accessory dwelling units; and – Protection, preservation, and adaptive re-use of historic buildings or other structures.	Lead Community Development Partners Planning Commission Historic Preservation Commission Public Works Greeley Urban Renewal Authority	Regulatory Revisions	Near-Term
IMP GC-4.2 Amend municipal, building, and fire codes to eliminate barriers which would prevent, or place unreasonable costs on property-owners looking to rehabilitate and/or re-use older structures.	Lead Community Development Partners Historic Preservation Commission Fire	Regulatory Revisions	Near-Term
IMP GC-4.3 Where the adoption of regulations are not possible, or not desired by the neighborhood, explore developing non-regulatory design guidelines, or other materials that provide guidance to developers on how their projects can best complement the existing qualities and characteristics of that neighborhood.	Lead Community Development Partners Planning Commission Historic Preservation Commission	Policies and Programs	Long-Term
IMP GC-4.4 Explore the feasibility of establishing a financial resource whereby existing buildings may be improved to comply with or meet the intent of building and fire code standards through low interest-rate loans or similar incentives.	Lead Community Development Partners Fire	Policies and Programs	Long-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal GC-5: Facilitate the rebirth of Downtown Greeley as a regional multi-use activity area while preserving and promoting the cultural aspects of the area.			
IMP GC-5.1 Explore expanding existing programs or establishing new programs which encourage the development of attainable housing, particularly “to own” housing, for Downtown workers, such as with the Urban Homesteader program.	Lead Neighborhood Resources Office Partners Community Development Downtown Development Authority Greeley Urban Renewal Authority	Policies and Programs	Near-Term
IMP GC-5.2 Update the menu of incentives available to Downtown landowners and provide information about such resources in broad formats and in a timely manner.	Lead Community Development Partners Downtown Development Authority Historic Preservation Commission	Policies and Programs	Long-Term
IMP GC-5.3 Explore regulatory amendments to the Model Traffic Code which would allow for multiple, alternative and special forms of transportation to be allowed in a defined Downtown area, such as Smart cars, horse drawn carriages, trolley, and other similar devices.	Lead Public Works Partners Community Development Downtown Development Authority	Regulatory Revisions	Long-Term
Goal GC-6: Maintain and enhance the character and inter-connectivity of Greeley’s neighborhoods.			
IMP GC-6.1 Continue to work with the University of Northern Colorado and its affiliated off-campus student organizations (such as fraternities/sororities) to educate students on how to be a respectful tenant and maintain “good neighbor conduct” in order to ensure that residences occupied by students are well-maintained and compatible with surrounding properties.	Lead Neighborhood Resources Office Partners University of Northern Colorado	Policies and Programs	Ongoing



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP GC-6.2 Review, and update as needed, the Subdivision Regulations and Development Code to assure: – Aesthetics are well- integrated in public places, roadways, adjacent uses; – Natural land features or forms are well integrated into the overall design of the subdivision; – Inclusion of a range of housing types is encouraged; – The integration of non-residential uses are encouraged; – New subdivisions provide for a range of transportation options (such as bike and pedestrian pathways) within the development; and – Connections to adjacent neighborhoods and/or non-residential areas (such as neighborhood centers) are provided.	Lead Community Development Partners Planning Commission Public Works Culture, Parks, and Recreation	Regulatory Revisions	Near-Term
IMP GC-6.3 Work with the community to explore the possibilities of establishing a “character overlay district” to support neighborhood driven covenants or design characteristics to protect the distinctiveness of an area. Also explore the establishment of local historic districts in neighborhoods that contain a preponderance of historic resources and such a designation is supported by property owners.	Lead Community Development Partners Planning Commission Historic Preservation Commission	Policies and Programs	Near-Term
IMP GC-6.4 Review and update Development Code standards related to the redevelopment of land lease or manufactured home communities to promote homeownership and a stable neighborhood setting.	Lead Community Development Partners Neighborhood Resources Office	Regulatory Revisions	Long-Term
IMP GC-6.5 Review and update as appropriate the requirement for perimeter landscape treatment plans for new subdivisions in order to better link neighborhood via complimentary perimeter treatment schemes.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Long-Term
IMP GC-6.6 Prohibit the siting of residential uses immediately adjacent to medium- or high-intensity industrial uses and/or zoning districts without a Development Concept Master Plan or a neighborhood area master plan (within the Redevelopment District).	Lead Community Development Partners Planning Commission	Regulatory Revisions	Ongoing

**HISTORIC & CULTURAL RESOURCES (HC)**

IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal HC-1: Preserve and promote local heritage.			
IMP HC-1.1 Implement, and regularly update, the Greeley Historic Preservation Plan.	Lead Historic Preservation Commission Partners Community Development	Plans	Ongoing
IMP HC-1.2 Periodically research and publicize other financial sources of support for historic preservation activities, including state, federal and private foundation sources.	Lead Community Development Partners Historic Preservation Commission Communication & Engagement	Policies and Programs	Ongoing
IMP HC-1.3 Catalogue and promote places in the community which have special significance to the development of the area, such as the Cache la Poudre River, the Union Pacific Railroad, irrigation ditches and improvements, and similar features which provide an important context of community identity. Seek grants and other resources to provide markers, plaques and other identification, as appropriate.	Lead Culture, Parks and Recreation Partners Historic Preservation Commission Poudre Heritage Alliance Visit Greeley	Policies and Programs	Near-Term
IMP HC-1.4 Identify and prioritize areas of the city that may contain historic resources that have yet to be surveyed. In addition, identify and prioritize areas or neighborhoods that need to be re-surveyed or have completed surveys updated.	Lead Community Development Partners Historic Preservation Commission	Policies and Programs	Near-Term
IMP HC-1.5 Produce materials which describe and illustrate elements associated with historic structures, architectural styles, the care or maintenance of historic structures, provide interpretive displays and exhibits, and other related topics.	Lead Community Development Partners Historic Preservation Commission Communication & Engagement Culture, Parks, and Recreation	Policies and Programs	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP HC-1.6 Explore technological opportunities to expose the public to historic preservation programs and resources.	Lead Community Development Partners Historic Preservation Commission Information Technology	Policies and Programs	Near-Term
IMP HC-1.7 Explore ways in which the City of Greeley can facilitate the availability of private loans at attractive rates and terms through local lenders for landowners seeking financial support in the renovation, rehabilitation, or restoration of an historic structure.	Lead Community Development Partners Historic Preservation Commission Culture, Parks, and Recreation Finance	Policies and Programs	Long-Term
Goal HC-2: Support and celebrate the rich diversity of human experience within the community.			
IMP HC-2.1 Continue to fund the Greeley Unexpected campaign as a means to promote the city's diversity and unique cultural offerings.	Lead City Manager's Office	Policies and Programs	Ongoing
IMP HC-2.2 Solicit citizen participation on City boards and commissions which represents a broad geographic, cultural, gender, age, and ability cross-section of the community.	Lead City Clerk's Office Partners All Boards and Commissions	Policies and Programs	Ongoing
IMP HC-2.3 Continue efforts to achieve a City workforce which is a reflection of the cultural and demographic population of the community.	Lead All City Departments	Policies and Programs	Ongoing
IMP HC-2.4 Continue support for the Community Mediation program and explore new programs, venues, or opportunities to support residents, businesses, and government work through differences and resolve conflicts in an amicable and mutually respectful way. Publicize existing and future programs to build awareness within the community.	Lead Neighborhood Resources Office Partners Human Relations Commission Communication & Engagement	Policies and Programs	Ongoing
IMP HC-2.5 Develop and expand resources, exhibits, and programs through the city's museums, libraries, and other public venues which educate residents in a thoughtful manner about the diverse cultures within the community.	Lead Culture, Parks and Recreation Partners High Plains Library District University of Northern Colorado Model Railroad Museum	Policies and Programs	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP HC-2.6 Explore new opportunities to increase the involvement of diverse groups of residents in community issues and City-sponsored events.	Lead Communication & Engagement Partners All City Departments Human Relations Commission	Policies and Programs	Near-Term
IMP HC-2.7 Explore venues, events, and ongoing programs to expand knowledge, understanding, and appreciation of differences between people in order to diminish stereotypes and reduce intolerance and disparities between various community populations.	Lead Culture, Parks and Recreation Partners Human Relations Commission Area Non-Profit Organizations Neighborhood Resources Office Communication & Engagement	Policies and Programs	Long-Term
Goal HC-3: Develop and promote art and culture experiences.			
IMP HC-3.1 Promote the City's One Percent for Art Program which incorporates artistic design and art works installation as component of its capital construction projects, thereby enriching the interest, quality and relevance of public improvements and the community areas in which they are located.	Lead Culture, Parks and Recreation Partners Greeley Art Commission Communication & Engagement	Policies and Programs	Ongoing
IMP HC-3.2 As the city grows, promote and expand local museum facilities and/or programming to provide a context for residents to understand those who preceded them in the development of the community, as well as to provide a mechanism to document key events, people and community features to help bring history alive for area residents and visitors.	Lead Culture, Parks and Recreation Partners Communication & Engagement	Public Investments	Ongoing
IMP HC-3.3 Retool the City's art program to expand community awareness, experience, and involvement through hands-on demonstrations and outreach by bringing artwork out into various parts of the community through the use of a "mobile gallery."	Lead Culture, Parks and Recreation Partners Greeley Art Commission Greeley Creative Arts District School Districts Aims Community College	Policies and Programs	Long-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP HC-3.4 Evaluate the City's Development Code to assess whether current regulations limit or create barriers to the creation of arts and culture venues or hosting of arts and culture events. Address any such barriers in order to expand access to arts and culture venues and events throughout the city.	Lead Community Development Partners Planning Commission Greeley Art Commission Greeley Creative Arts District	Regulatory Revisions	Long-Term
IMP HC-3.5 Explore locations in West Greeley for the establishment of a commercial regional outdoor amphitheater.	Lead Culture, Parks, and Recreation Partners Community Development	Policies and Programs	Long-Term
IMP HC-3.6 Continue to promote music-focused events, such as the UNC Jazz Festival, the Blues Jam, and FridayFests	Lead Economic Development	Policies and Programs	Ongoing



HOUSING (HO)

IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal HO-1: Improve access to housing for all income-levels, ages, and physical abilities.			
IMP HO-1.1 Conduct and maintain an inventory of public, deed-restricted, subsidized, Section 8 or other types of designated affordable housing units in Greeley. Include if the units are rental or ownership units, the size (including number of bedrooms and bathrooms), and the population/income range to which the unit is affordable. Monitor to understand how the supply of affordable housing in the city is changing over time.	Lead Greeley Urban Renewal Authority Partners Greeley-Weld Housing Authority Community Development	Policies and Programs	Near-Term
IMP HO-1.2 Conduct an inventory of City-owned properties and identify parcels that could be used to support the City's housing goals (e.g., for disposition to an affordable housing developer).	Lead Community Development Partners City Manager's Office	Policies and Programs	Near-Term
IMP HO-1.3 Following the development of a comprehensive housing strategy (see Objective HO-2.1), assess the need to increase staff capacity and/or resources to implement the strategy's recommended actions. Increase capacity as needed.	Lead Community Development Partners City Manager's Office	Public Investments	Long-Term
IMP HO-1.4 Explore public/private partnerships to encourage home ownership through services like first-time home buyer's assistance programs, and other home ownership incentive programs.	Lead Greeley Urban Renewal Authority Partners Neighborhood Resource Office	Policies and Programs	Long-Term
IMP HO-1.5 Provide new and prospective home buyers with information concerning property maintenance, budgeting, community resources and related areas to support a successful transition from renting to ownership.	Lead Greeley Urban Renewal Authority Partners Neighborhood Resource Office	Policies and Programs	Long-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal HO-2: Encourage a broad diversity of housing options.			
IMP HO-2.1 Monitor the local housing market in order to evaluate trends, identify gaps in types of housing or price-points, adjust housing-related programs and policies, and understand the effectiveness and impact of the City's housing strategy, once determined. Trends to be monitored should include: – The types of housing units built in the city each (including tenure and housing type); – Number of public, subsidized, or deed restricted (for purposes of affordable housing) housing units; – The composition (by tenure and housing type) of the city's housing stock; – The cost of housing, home sales prices and rents; – Vacancy rates; and – Area median income and the housing affordable to varying AMI levels (e.g., 80% AMI, 60% AMI, etc.).	Lead Community Development Partners Greeley Urban Renewal Area University of Northern Colorado Colorado Housing Division	Policies and Programs	Ongoing
IMP HO-2.2 Review and update, as appropriate, Development Code standards to update zoning districts or adopt new zoning districts that are consistent with the Land Use Guidance Map in order to allow for a greater diversity of housing options.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Near-Term
IMP HO-2.3 Develop and adopt an accessory dwelling unit (ADU) ordinance.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Near-Term
IMP HO-2.4 Explore modifications to existing programs or establishing new programs which provide information and resources to renters and landlords on topics such as maintenance and safety of rental properties, rights and responsibilities of tenants and landlords, evictions, and crime prevention.	Lead Neighborhood Resource Office Partners Community Development Greeley Urban Renewal Authority Greeley Police Department	Policies and Programs	Long-Term



INFRASTRUCTURE (IN)

IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal IN-1: Ensure developed areas in Greeley are served by adequate public facilities and services.			
IMP IN-1.1 Annually review and update the City's Adequate Public Facilities Area (APFA) concurrent with annual growth and development projections to assist in the planning and funding of municipal infrastructure to accommodate growth. Prepare maps depicting the boundaries of existing and budgeted service areas for infrastructure included in the APFA requirements.	Lead Community Development Partners Planning Commission Public Works Police Fire Water and Sewer Culture, Parks, and Recreation	Policies and Programs	Ongoing
IMP IN-1.2 Continue to support timely and effective development in the Long Range Expected Growth Area as it relates to 208 Wastewater planning and treatment. Where possible and practical, look for opportunities to share and/or coordinate such capital improvements with other jurisdictions to efficiently use public resources.	Lead Water and Sewer Partners Community Development	Policies and Programs	Ongoing
IMP IN-1.3 Through the annual Population Growth and Projections and Capital Improvements Plan, identify the location for new fire stations, parks and other public facilities commensurate with the City's expected growth.	Lead Community Development Partners Culture, Parks, and Recreation Police Department Fire Department	Policies and Programs	Ongoing
IMP IN-1.4 Complete and implement a basin-wide study that addresses drainage improvements through larger, shared, facilities which could also achieve an attractive, functional community or regional park use.	Lead Public Works Partners Culture, Parks, and Recreation	Plans	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP IN-1.5 Evaluate existing capacity within established areas of the city to understand where investments in expanding infrastructure will be needed in order to support the type and/or intensity of development envisioned in the Land Use Guidance Map	Lead Water and Sewer Partners Public Works Culture, Parks, and Recreation Community Development	Policies and Programs	Near-Term
IMP IN-1.6 Update existing functional master plans for infrastructure and services as needed to account for changes in land uses and intensities that result from the adoption of this Comprehensive Plan and completion of implementation actions.	Lead All City Departments	Policies and Programs	Near-Term
IMP IN-1.7 Develop functional master plans detailing the maintenance, operation, and expansion of infrastructure and public facilities where such documents do not currently exist.	Lead All City Departments	Plans	Near-Term
IMP IN-1.8 Consider the extension of water lines to serve larger groups of users and along primary roadways to provide non-potable water to landscaped medians and parkways.	Lead Water and Sewer Partners Culture, Parks, and Recreation Community Development	Public Investments	Long-Term
Goal IN-2: Ensure the design, construction, and appearance of City infrastructure and facilities contributes to the character of the community.			
IMP IN-2.1 Evaluate current best practices in designing, developing, and constructing green infrastructure and incorporate appropriate practices into the City's approach to stormwater management.	Lead Public Works Partners Culture, Parks, and Recreation Community Development	Policies and Programs	Near-Term
IMP IN-2.2 Evaluate, and update as needed, existing design guidelines for infrastructure and public facilities to ensure aesthetics and considerations for the visual or quality of life impacts on surrounding neighborhoods are considered.	Lead Public Works Partners Water and Sewer Culture, Parks and Recreation Community Development	Regulatory Revisions	Long-Term



NATURAL RESOURCES & OPEN LANDS (NR)

IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal NR-1: Protect, conserve, maintain, and improve the quality and quantity of water available to Greeley.			
IMP NR-1.1 Develop and maintain incentive programs which induce water conservation installations and practices, including irrigation systems.	Lead Water and Sewer Partners City Manager's Office Finance	Policies and Programs	Ongoing
IMP NR-1.2 Develop and maintain a water rate structure that provides incentives for the efficient use of water and reflects actual costs for service.	Lead Water and Sewer Partners Finance	Policies and Programs	Ongoing
IMP NR-1.3 Monitor and comment on development proposals, land uses, or other activities within the Cache la Poudre, Big Thompson, or Upper Colorado watersheds which may impact or threaten the quality of water obtained by Greeley from these sources. Include those proposals outside of the City of Greeley.	Lead Community Development Partners Water and Sewer	Policies and Programs	Ongoing
IMP NR-1.4 Audit water use associated with City facilities and review options to convert to xeric landscape treatments or strategically redesign sites for water conservation.	Lead Water and Sewer Partners Public Works Culture, Parks and Recreation	Policies and Programs	Near-Term
IMP NR-1.5 Develop incentives to encourage use of non-potable water in landscape irrigation and other appropriate applications.	Lead Water and Sewer Partners Community Development Finance	Policies and Programs	Near-Term
IMP NR-1.6 Implement and periodically update the City's <i>Water Master Plan</i> to ensure that the City's future needs for raw water are estimated and planned for.	Lead Water and Sewer	Plans	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP NR-1.7 Review Development Code standards, and updated as needed, to assure regulations encourage the sensitive, effective and desirable incorporation of water and irrigation elements into the design of the site in such a way as to protect water quality, promote conservation and efficiency, and create more natural and appealing development design and function.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Long-Term
Goal NR-2: Manage emissions, effluents, waste, and other sources of pollution that impact our quality of life and natural environment.			
IMP NR-2.1 Identify and employ methods to minimize and mitigate noise impacts generated from existing and planned traffic corridors, transit operations, and other capital improvements.	Lead Public Works Partners Community Development CDOT North Front Range MPO Weld County	Policies and Programs	Ongoing
IMP NR-2.2 Minimize the exposure to excessive and disturbing noise through the enforcement of daytime and nighttime noise ordinances, as well as through assertive traffic enforcement actions.	Lead Community Development Partners Police Department	Policies and Programs	Near-Term
IMP NR-2.3 Update, as appropriate, Development Code standards to limit impacts caused by errant light on adjacent properties and rights-of-way (such as requirements for downward directed lighting), and create standard illumination levels for various types of development.	Lead Community Development Partners Planning Commission Public Works	Regulatory Revisions	Near-Term
IMP NR-2.4 Consider and provide comment on land use applications which may generate ground and surface water pollution from point and non-point sources, such as from industrial or manufacturing uses, practices associated with agriculture, and landscape maintenance and seasonal roadway treatments (e.g., pest control, fertilizers, de-icing applications). Develop appropriate management and mitigation strategies or requirements to address areas of concern.	Lead Community Development Partners Planning Commission Public Works Culture, Parks and Recreation	Policies and Programs	Near-Term
IMP NR-2.5 Explore the feasibility of adopting local design standards for future construction and major redevelopment projects to reduce impervious surfaces and the heat emitted from the completed development.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP NR-2.6 Evaluate Low-Impact Development techniques and best practices to determine which are most appropriate to Greeley, its climate, and soils. Develop informational materials and guidelines for LID practices and features, and consider incorporating some or all into the Development Code.	Lead Community Development Partners Public Works Water and Sewer Culture, Parks and Recreation	Policies and Programs	Near-Term
IMP NR-2.7 Work with community partners to assess the effects of household hazards in the form of lead-based paint, radon, asbestos, carbon monoxide, mold, and other potential indoor hazards; and support continued efforts to educate residents on the identification and management of such household hazards.	Lead Community Development Partners Weld County Department of Public Health and Environment Communication & Engagement	Policies and Programs	Near-Term
IMP NR-2.8 Evaluate and implement best practices for mitigating the impacts of air pollution generated from road sanding and other snow/ice treatments, wood burning fireplaces and stoves, and agricultural and ditch burning practices.	Lead Community Development Partners Public Works	Policies and Programs	Long-Term
IMP NR-2.9 Identify and encourage crop management practices that limit air quality impacts.	Lead Community Development Partners Farm Bureau Colorado State University Extension	Policies and Programs	Long-Term
IMP NR-2.10 Monitor traffic-related noise levels throughout the community to establish baseline standards and evaluate noise 'hot spots' to ascertain mitigation or management alternatives to address noise pollution from transportation activity.	Lead Public Works Partners Community Development Neighborhood Resources Office	Policies and Programs	Long-Term
Goal NR-3: Demonstrate stewardship of the environment.			
IMP NR-3.1 Work with neighborhoods, community facilities, and institutions to define the character of neighborhoods by the types and locations of trees and major vegetation in order to provide guidance and incentives for replacing in-kind when such trees and vegetation must be removed.	Lead Community Development Partners Culture, Parks and Recreation	Policies and Programs	Long-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP NR-3.2 Develop promotional materials to build awareness of the City's Backyard and Natural Areas Certification Program.	Lead Culture, Parks, and Recreation Partners Community Development Communication & Engagement	Policies and Programs	Ongoing
IMP NR-3.3 Provide on-going education to the public, area plant nurseries, and landscape businesses about noxious weeds, their threat to local habitats and wildlife, and regulatory provisions and fines related to the presence of such weeds on property.	Lead Culture, Parks, and Recreation Partners Community Development Communication & Engagement	Policies and Programs	Ongoing
IMP NR-3.4 Periodically review and revise the location and extent of wetland resources to ensure accuracy in the identification and preservation of these natural resources.	Lead Culture, Parks and Recreation Partners Community Development	Policies and Programs	Ongoing
IMP NR-3.5 Develop intergovernmental agreements or similar arrangements with other jurisdictions and conservation organizations to preserve open space areas, either through acquisition, conservation easements, or other approach.	Lead Culture, Parks and Recreation Partners Community Development Town of Windsor City of Evans Colorado Division of Parks and Wildlife Colorado Open Lands Trust for Public Lands	Policies and Programs	Near-Term
IMP NR-3.6 Develop minimum standards for acceptance of land for natural areas, public open space, greenways, or parks. Consider a requirement for establishment of native vegetation for such areas.	Lead Community Development Partners Culture, Parks and Recreation Planning Commission Parks & Recreation Advisory Board	Regulatory Revisions	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP NR-3.7 Establish a multi-departmental Open Space Team, including representation by companion citizen boards and community at large members to provide comprehensive interface and coordinated attention to oversee open space planning and management.	Lead Culture, Parks and Recreation Partners Community Development Public Works City Manager's Office Parks & Recreation Advisory Board Planning Commission	Policies and Programs	Near-Term
IMP NR-3.8 Identify and secure a range of funding sources and other financial mechanisms that will enable the implementation of the Open Lands and Natural Areas program and community separator concept in a way that balances individual property interests while securing important visual and natural areas for public enjoyment and/or protection of habitat and other environmentally sensitive areas.	Lead Culture, Parks and Recreation Partners City Manager's Office Finance Community Development	Policies and Programs	Near-Term
IMP NR-3.9 Develop intergovernmental agreements with Weld County to assure that the manner of mineral extraction and reclamation is consistent with City standards within its Long Range Expected Growth Area. Such an agreement should address the provision of buffer areas from existing development and sensitive natural areas.	Lead Community Development Partners Weld County	Policies and Programs	Near-Term
IMP NR-3.10 Develop and implement management plans for all open lands or natural areas in the city. Management plans should focus primarily on sustaining and enhancing the natural and ecological functions of the area, but should seek opportunities to promote and support low-impact recreation opportunities when possible.	Lead Culture, Parks and Recreation Partners Community Development	Plans	Near-Term
IMP NR-3.11 Work with the property owner early in the aggregate mining land use permitting process to establish expectations for reclamation of the site upon completion. Incorporate these standards into the initial land use permitting process.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Long-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP NR-3.12 Review and revise as appropriate, local regulations related to the extraction of subsurface aggregate material to create mitigation requirements to protect the natural environment, surrounding neighborhoods and properties, and provide for the review of reclamation plans.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Long-Term
IMP NR-3.13 Undertake a study of the Poudre River sand and gravel mining corridor to establish a comprehensive design scheme for this important reclaimed mining area and identify means by which to ensure its accomplishment.	Lead Culture, Parks and Recreation Partners Community Development Water and Sewer	Plans	Long-Term
IMP NR-3.14 Review various community master plans including the <i>Parks, Trails, and Open Lands Master Plan</i> , <i>Poudre River Trail Master Plan</i> , and the <i>Comprehensive Drainage Master Plan</i> to ascertain areas to develop a prioritized list of parcels that could be protected as open lands. Higher priority should be given to parcels or areas that help implement or advance the greatest number of plans.	Lead Community Development Partners Culture, Parks and Recreation Water and Sewer Planning Commission	Policies and Programs	Long-Term
IMP NR-3.15 Evaluate the feasibility of establishing a program to aid in the protection, enhancement or development of wetland areas in order to restore natural habitats, improve water quality, or provide flood protection. Consider the merits of the development of a “wetlands bank” as part of this evaluation in order to provide additional options for mitigating wetland destruction (when permitted).	Lead Culture, Parks and Recreation Partners Community Development	Policies and Programs	Long-Term
Goal NR-4: Use resources efficiently and sustainably.			
IMP NR-4.1 Provide the public and the building community with information about the short- and long-term return on investment (monetarily and environmentally) associated with the use of energy-wise products, water-conserving products, and other green building practices.	Lead Community Development Partners Communication & Engagement	Policies and Programs	Near-Term
IMP NR-4.2 Evaluate the feasibility of standardizing the use of energy-efficient lights, such as LEDs, in City facilities, street and other outdoor lights maintained by the City, and in other municipal applications in new facilities or devices, or through upgrades to existing facilities and devices.	Lead Public Works Partners Culture, Parks, and Recreation City Manager’s Office	Policies and Programs	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP NR-4.3 Periodically review and consider adoption of the most current edition of the International Energy Conservation Code.	Lead Community Development Partners Public Works Water and Sewer	Regulatory Revisions	Near-Term
IMP NR-4.4 Periodically update the Greeley <i>Natural Resources and Wildlife Master Plan</i> to keep it relevant and up-to-date in order to address emerging issues and incorporate best management practices into the Plan.	Lead Community Development Partners Culture, Parks, and Recreation Colorado Division of Parks and Wildlife	Plans	Near-Term
IMP NR-4.5 Encourage agencies which develop housing for lower income residents to maximize energy efficient installations to help reduce housing costs as it relates to energy consumption.	Lead Community Development Partners Greeley-Weld Housing Authority	Policies and Programs	Long-Term
IMP NR-4.6 Consider requiring all new or renovated City buildings and facilities to meet green building standards, such as LEED, Energy Star, or the International Green Construction Code. In addition, evaluate and consider adoption of a green building program and/or develop incentives to encourage the incorporation of green building techniques and practices into private development.	Lead Public Works Partners Community Development	Policies and Programs	Long-Term
Goal NR-5: Engage all members of the community in the process of supporting the stewardship of our natural and built environments.			
IMP NR-5.1 Prepare an annual report to the community that provides an inventory of environmental resources, their use, considerations, and emerging stewardship accomplishments, needs, and opportunities.	Lead Community Development Partners Culture, Parks and Recreation Communication & Engagement	Policies and Programs	Ongoing
IMP NR-5.2 Catalogue the trees and plantings which carry such significance and share such information with land owners and the public to enhance the protection and appreciation of such natural elements.	Lead Culture, Parks and Recreation Partners Community Development Historic Preservation Commission	Policies and Programs	Ongoing



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP NR-5.3 Continue tree planting and replacement incentive programs accompanied by educational materials to support a successful establishment of the new installations.	Lead Culture, Parks, and Recreation Partners Community Development Communication & Engagement	Policies and Programs	Near-Term
IMP NR-5.4 Explore and develop programs which cultivate citizen stewardship and responsibility for the care and protection of special natural areas in the community, such as an Adopt-a-Trail program..	Lead Culture, Parks, and Recreation Partners Community Development Communication & Engagement	Policies and Programs	Long-Term



PARKS & RECREATION (PR)

IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal PR-1: Develop and maintain an inter-connected system of parks, trails, and recreational facilities.			
IMP PR-1.1 Periodically review and update the functional organization structure of the Parks Division set forth in the <i>PTOL Master Plan</i> , and validate recommended staffing levels.	Lead Culture, Parks and Recreation Partners City Manager's Office Finance	Policies and Programs	Ongoing
IMP PR-1.2 Periodically survey the city's residents to gauge whether current park amenities, recreational facilities, and recreation programming meet their needs. Adjust amenities, facilities, and programming as needed to address gaps or shifts in residents' preferences.	Lead Culture, Parks and Recreation Partners Parks and Recreation Advisory Board Communication & Engagement	Policies and Programs	Ongoing
IMP PR-1.3 Create a Recreation Facility Master Plan to address the opportunities and needs for indoor recreation.	Lead Culture, Parks and Recreation Partners Parks and Recreation Advisory Board	Plans	Near-Term
IMP PR-1.4 Develop outreach and marketing materials advertising Greeley's parks, trails, recreational facilities, and programs targeted to active seniors, minority populations, and persons with disabilities.	Lead Culture, Parks and Recreation Partners Parks and Recreation Advisory Board Communication & Engagement	Policies and Programs	Near-Term
IMP PR-1.5 Review City-owned parcels and explore opportunities to use such parcels for public recreation, as appropriate. Parcels considered should include public rights-of-way, streets, utility easements, and stormwater retention sites.	Lead Culture, Parks and Recreation Partners Community Development Public Works Water and Sewer City Manager's Office	Policies and Programs	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP PR-1.6 Review subdivision requirements and the Development Code to ensure that new development is required to provide quality streetscape improvements and connections to parks and trails.	Lead Community Development Partners Culture, Parks and Recreation Public Works Planning Commission	Regulatory Revisions	Near-Term
IMP PR-1.7 Identify opportunities to co-locate or develop parks through reviewing development plans of other entities, such as University of Northern Colorado or the school district.	Lead Culture, Parks and Recreation Partners Community Development University of Northern Colorado Aims Community College School Districts Parks and Recreation Advisory Board	Policies and Programs	Long-Term
IMP PR-1.8 Develop a plan to implement the vision for the Cache la Poudre set forth in the <i>Comprehensive Cache la Poudre Greenway Guide – Greeley-Windsor Reach</i> .	Lead Culture, Parks and Recreation Partners Community Development	Plans	Long-Term
Goal PR-2: Ensure the City's system of parks, trails, and recreational facilities align with and support other community goals.			
IMP PR-2.1 Evaluate the feasibility of providing non-potable water for irrigation of parks.	Lead Water and Sewer Partners Culture, Parks and Recreation	Policies and Programs	Near-Term
IMP PR-2.2 Assess existing parks, recreation areas, trails, and open lands for opportunities to incorporate interpretive elements which provide educational information on the environment, history, or other notable aspects of the site.	Lead Culture, Parks and Recreation Partners Parks and Recreation Advisory Board Historic Preservation Commission	Policies and Programs	Long-Term

**PUBLIC SAFETY (PS)**

IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal PS-1: Minimize loss of life and property from hazards			
IMP PS-1.1 Provide regular education and training to citizens and businesses to enable educated lay parties to initiate appropriate emergency and medical response until professional response is on scene.	Lead Police Department Partners Fire Department Communication & Engagement	Policies and Programs	Ongoing
IMP PS-1.2 Regularly and proactively update floodplain data and, as necessary, modify designated boundaries and classifications to minimize potential for property damage.	Lead Community Development	Policies and Programs	Ongoing
IMP PS-1.3 Publish and distribute an annual Emergency Response Community Guide and expand current home and safety guides to educate residents and businesses on the emergency protocol in the event of an area emergency.	Lead Police Department Partners Fire Department Communication & Engagement	Policies and Programs	Ongoing
IMP PS-1.4 Evaluate the impacts of prohibiting or severely limiting new development in flood hazard areas and consider the possibility of dedicating floodplains as a wetlands “bank” to mitigate loss of wetlands due to development.	Lead Community Development Partners Public Works Culture, Parks, and Recreation Planning Commission	Regulatory Revisions	Near-Term
IMP PS-1.5 Evaluate the feasibility of participating in the Federal Emergency Management Administration’s (FEMA) Community Rating System in order to reduce National Flood Insurance Program premiums.	Lead Community Development Partners City Manager’s Office	Policies and Programs	Near-Term
IMP PS-1.6 Review, and update as needed, existing hazard-related regulations within the Development Code, such as the Hillside Development Standards and the Floodplain Overlay District to ensure these incorporate best practices that are appropriate to Greeley’s situation and risk of hazards.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP PS-1.7 Develop a Community Wildfire Protection Plan.	Lead Fire Department Partners Community Development Culture, Parks, and Recreation Weld County Emergency Services	Plans	Near-Term
Goal PS-2: Maintain high-quality public safety and emergency response services.			
IMP PS-2.1 Train and maintain the City's workforce emergency preparedness level through accepted standards such as the National Incident Management System (NIMS) and practice preparedness on a regular basis to maximize response effectiveness.	Lead Fire Department Partners Police Department	Policies and Programs	Ongoing
IMP PS-2.2 Regularly evaluate staffing levels within the Greeley Fire Department and Police Department to ensure adequate staff levels needed to ensure public safety, particularly as Greeley's population grows.	Lead City Manager's Office Partners Police Department Fire Department	Public Investments	Ongoing
IMP PS-2.3 Maintain the level of training and preparedness as recommended by the federal Department of Homeland Security (DHS) to provide community safety at levels deemed to be "best practices" and to qualify the City to access to emergency preparedness and response funding grants and services.	Lead Fire Department Partners Police Department	Policies and Programs	Ongoing
IMP PS-2.4 Continue to convene informal service provider networks, such as the Urgent Responders Cooperative, to complement coordination of communication related to common community response needs.	Lead Fire Department	Policies and Programs	Ongoing
IMP PS-2.5 Develop a continuity of government plan or protocol in order to maintain the basic services required by residents to be available in times of emergency.	Lead City Manager's Office Partners All City Departments	Plans	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal PS-3: Develop and maintain a safe, aesthetically pleasing, and livable community.			
IMP PS-3.1 Provide active code enforcement to limit the negative impacts to neighborhoods from “broken window” conditions (e.g. weeds, trash, inoperable vehicles, general property neglect) with greater attention and penalties to properties with chronic neglect and code violations.	Lead Community Development Partners Police Department Culture, Parks, and Recreation	Policies and Programs	Ongoing
IMP PS-3.2 Continue educational and rewards programs that encourage property owners, property managers, and tenants to provide a high level of maintenance and care for their property.	Lead Neighborhood Resource Office Partners Community Development	Policies and Programs	Long-Term
IMP PS-3.3 Explore the feasibility of adopting minimum standards for the condition of rental housing properties.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Long-Term
IMP PS-3.4 Evaluate the Development Code for opportunities to incorporate design standards or best practices for discouraging or preventing crime or criminal activity, such as CPTED (crime prevention through environmental design).	Lead Community Development Partners Planning Commission	Regulatory Revisions	Long-Term



TRANSPORTATION & MOBILITY (TM)

IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal TM-1: Develop and maintain an integrated, safe, and efficient transportation system			
IMP TM-1.1 Revise, as appropriate, traffic design standards to match actual experience with various land use types.	Lead Public Works Partners Community Development Citizen Transportation Advisory Board Planning Commission	Regulatory Revisions	Near-Term
IMP TM-1.2 Develop standards which control volume and speed on local streets through pro-active traffic calming strategies.	Lead Public Works Partners Community Development Citizen Transportation Advisory Board	Regulatory Revisions	Near-Term
IMP TM-1.3 Review Development Code standards to evaluate and update parking requirements for various zoning districts to ensure that excessive parking areas are not created, and attractive parking lot design is required.	Lead Community Development Partners Planning Commission Public Works Downtown Development Authority	Regulatory Revisions	Near-Term
IMP TM-1.4 Establish minimum short- and long-term off-street parking requirements for new development that incorporate special vehicles and purposes including areas for those with disabilities, car pools, van pools, and bicycles	Lead Community Development Partners Public Works	Regulatory Revisions	Near-Term
IMP TM-1.5 Develop and enforce an Access Control Plan which supports efficient travel on major roadways through a combination of access management and the number and spacing of driveways and intersections. The Access Control Plan should support the efficient, functional and attractive development of land through compatible design measures.	Lead Public Works Partners Community Development Citizen Transportation Advisory Board Planning Commission	Plans	Long-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal TM-2: Provide residents with a range of transportation choices and options.			
IMP TM-2.1 Explore design features or incentives to induce greater use of pedestrian or bicycle travel to school.	Lead Public Works Partners Community Development Culture, Parks and Recreation School Districts	Policies and Programs	Ongoing
IMP TM-2.2 Utilize a wide variety of public service messages such as information concerning Greeley's level of air quality and emissions to encourage the use of transit, carpooling and the other forms of travel as an alternative to single-occupant travel.	Lead Community Development Partners Greeley-Evans Transit Communication & Engagement	Policies and Programs	Ongoing
IMP TM-2.3 Continue to implement, and updated as needed, the <i>Greeley Bicycle Master Plan</i> . Where needed, updated City regulations and design standards to align with the recommendations of that plan.	Lead Public Works Partners Culture, Parks, and Recreation Community Development Citizen Transportation Advisory Board Planning Commission	Policies and Programs/ Regulatory Revisions	Ongoing
IMP TM-2.4 Continue to implement, and update as needed, the <i>Greeley Evans Transit Strategic Plan</i> .	Lead Greeley-Evans Transit Partners Public Works Citizen Transportation Advisory Board Planning Commission	Policies and Programs	Ongoing
IMP TM-2.5 Develop standards for and implement the recently adopted Complete Streets Policy for new City and developer initiated street projects.	Lead Public Works Partners Community Development	Policies and Programs	Near-Term
IMP TM-2.6 Evaluate the feasibility of requiring subdivision applications to include, where applicable, a "Safe Routes to School" plan which clearly shows intended pedestrian and bicycle routes to nearby schools.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Near-Term
IMP TM-2.7 Retain rights-of-way to accommodate potential future transportation corridors, such as light rail capacity.	Lead Public Works Partners Community Development	Policies and Programs	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal TM-3: Ensure that land use and transportation decisions, strategies, and investments are coordinated and complementary.			
IMP TM-3.1 Monitor vehicle trips by land use types on a periodic basis in order to measure the accuracy of transportation demand expectations (e.g. daily and peak hour activity).	Lead Public Works Partners Greeley-Evans Transit Community Development	Policies and Programs	Ongoing
IMP TM-3.2 Where appropriate, explore development incentives that will encourage and promote adjacent transit networks.	Lead Community Development Partners Planning Commission	Policies and Programs	Near-Term
IMP TM-3.3 Identify TOD corridors in City maps and through the Development Code to alert developers and landowners to the desired intensity of development in these areas.	Lead Community Development Partners Public Works	Policies and Programs	Near-Term
IMP TM-3.4 Develop a users' manual of locally-approved practices which guide development in transit- oriented design.	Lead Community Development Partners Public Works Greeley-Evans Transit Planning Commission	Policies and Programs	Long-Term
Goal TM-4: Promote the orderly movement of goods and services throughout the city and region.			
IMP TM-4.1 Commence negotiations with landowners to reserve adequate rights-of-way to assure that orderly and effective development of the roadways is achieved. Immediate attention needs to be focused on the following roadways: – Two rivers Parkway (83rd Avenue) – North City east/west bypass routes (SH392 and also “O” Street) – 4th Street extension from 83rd Avenue to SH 257	Lead Community Development Partners Public Works	Policies and Programs	Ongoing
IMP TM-4.2 Coordinate with the Airport Authority in the implementation of an Airport Infrastructure Plan to install capital improvements needed to realize the full development of the airport as a regional air transportation facility.	Lead Public Works Partners Greeley/Weld Airport Authority Community Development	Plans	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP TM-4.3 Amend the City's Development Code to incorporate structure height limitations in restricted Airport Influence Areas as may be necessary.	Lead Community Development Partners Greeley/Weld Airport Authority	Regulatory Revisions	Near-Term
IMP TM-4.4 Pursue the installation of "Quiet Zones" in sensitive rail corridors where the train whistles are incompatible with and disruptive to adjacent uses.	Lead Community Development Partners Citizen Transportation Advisory Board Planning Commission	Policies and Programs	Near-Term
IMP TM-4.5 Enhance the main travel corridors used to travel to and from the airport with special attention to way-finding signage, well-defined and complete roadway systems, and attractive landscaping, public art or other distinctive community features. Particular attention should be paid to the improvement, appearance and function of the following road corridors: – State Hwy 263 (E. 8th Street), which should also be considered for expansion to meet the diverse and growing number of industrial users in the area – US Hwy 85 – 8th Street from US Hwy 85 to Downtown – Consider carefully the types of land uses in these corridors and promote those which provide compatible and complementary uses to the airport.	Lead Public Works Partners Citizen Transportation Advisory Board Community Development Greeley/Weld Airport Authority	Public Investments	Long-Term
IMP TM-4.6 Undertake a study to develop a Rail Master Plan which evaluates the safe, compatible and effective use of rail to, from and through the City.	Lead Public Works Partners Community Development Citizen Transportation Advisory Board Planning Commission	Plans	Long-Term
IMP TM-4.7 To the degree practical provide a trailhead or loop trail from the Poudre Trail Corridor to the airport.	Lead Culture, Parks and Recreation Partners Public Works	Public Investments	Long-Term
IMP TM-4.8 Establish minimum design standards for properties adjacent to rail lines to assure compatibility between different uses.	Lead Community Development Partners Planning Commission	Regulatory Revisions	Long-Term



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GLOSSARY

A

Access Control Plan - a plan that identifies the location and type of access for properties along a state or federal highway.

Action step/strategy - specific activities or strategies intended to accomplish the goals of the Comprehensive Plan.

Adaptive reuse - the development of a new use for an older building or for a building originally designed for a specific or special purpose.

Adequate public facilities - the public facilities and services needed to maintain the adopted level or service standards.

Adequate Public Facilities Area (APFA) - that area within which a full complement of City infrastructure is available to support growth and development. .

Affordable housing - housing costs that do not exceed 30% of a household's income.

Airport Authority - the governing body of the Greeley-Weld County Airport.

Airport Influence Area - the area affected by noise and/or safety considerations, as identified on the airport layout plan drawings as contained in the Greeley/Weld County Airport Master Plan.

Airport Zoning Overlay District - those lands depicted within the airport development area as contained within the Greeley-Weld County Airport Master Plan.

Alternative mode - a different method or type of transportation than is typically used.

Amendment - a change to the adopted Comprehensive Plan, which must be approved by the City Council and be processed in the same manner as the original adoption of the plan.

Amenity - a natural or built feature that enhances the aesthetic quality, visual appeal, or makes more attractive or satisfying a particular property, place, or area.

Americans with Disabilities Act (ADA) - adopted in 1990, a civil rights law that prohibits discrimination on the basis of disability.

Annexation - the incorporation of land into an existing community with a resulting change in the boundaries of that community.

Annual Growth and Population Projections - projections prepared annually by the Greeley Planning Office to estimate future population growth in Greeley.

Aquifer - a geologic formation that contains a usable supply of water.

Architectural Review Advisory Committee - a citizen design review committee responsible for resolving architecture and design issues on development proposals.

Areas of ecological significance - areas which have significant environmental features and attributes, including critical wildlife habitat and populations, native and unique plant communities and valuable natural features.

Arts & Entertainment District - a district proposed by the Downtown Development Authority's Plan of Development that emphasizes Downtown Greeley as an area for activities and events related to arts and entertainment.

B

Big box - a retail or commercial use or combination of retail or commercial uses in a structure that exceeds forty thousand (40,000) square feet of gross floor area.

Bike lane - an area on a street that is striped and identified as an area for bicyclists, which is generally located between the travel lane and curb.

Bike path - a path for bicyclists that is separated from or located off- street.

Buffer yard - a landscaped area used to physically separate or screen one use or property from another.

Building Code - One of several building codes adopted by the City of Greeley, and administered through its Building Inspection Division, which allows the alteration of an existing building to consider and follow the code standards in place when the building was constructed under certain conditions.

C

Capital Improvements Plan (CIP) - a plan for future capital improvements to be carried out during a specific time period and prioritized, along with cost estimates and the anticipated means and sources of financing each project. Improvements include acquisition of property major construction projects or acquisition of equipment expected to have a long life.

Cash-in-lieu - money collected instead of providing a land dedication for purposes such as for schools, or parks.

Central Business District - the centrally—located business area within a community which is often referred to as the “downtown”.

Character Overlay District - an overlay district established for the purpose of maintaining and preserving the attributes which make up the character of a particular and definable area within the city.

City Council - the City Council of the City of Greeley, Colorado.

Citizen Transportation Advisory Board (CTAB) - an appointed board of citizens that provides advice to the Greeley Public Works Department on transportation-related matters.

Cluster development - a design technique that concentrates buildings on a portion of the site while allowing the remaining area to be used for common open space, recreation, and/or protection of environmentally sensitive areas.

Colorado Primary Drinking Water Standards - those standards used for treating drinking water in Colorado.

Community Policing - a policing strategy and philosophy based on the concept that community interaction and support can help control crime.

Community park - a park intended to serve the entire community, ranging in size from 34 to 100 acres.

Community separator - an area that serves as a physical and/or visual separation between communities.

Compatibility - having harmony in design, appearance, use and/ or function of the characteristics of a building or structure, a neighborhood, or an area.

Complete neighborhoods - neighborhoods designed to provide a full-range of services and products, such as education, shopping, employment, and recreation opportunities, for residents of the neighborhood.

Complete streets - roadways designed and operated to enable safe, comfortable, and attractive access and travel for all users.

Comprehensive Plan - a long-range plan intended to guide the growth and development of a community or region.

Comprehensive Drainage Master Plan - the storm drainage plan for the City of Greeley, adopted in 1998, revised in 1999.

Comprehensive Transportation Plan - a long-range transportation plan for the City of Greeley to the year 2015, adopted in 1996.

Concurrency - the requirement for the provision of adequate public facilities and/or services at the time the demand for those facilities or services is created.

Connectivity or interconnectivity - the ability to be linked, such as through transportation systems, between areas.

Conservation - management of a natural resource to prevent exploitation or destruction.

Cooperative Planning Area (CPA) - areas of mutual development interest between Greeley and its adjacent communities for which it has formal agreements.

Covenants - a set of restrictions and conditions that are intended to maintain neighborhood or character and prevent improper use of land and which are administered by a homeowners' or property owners' association.

Coving - subdivision design characterized by non-uniform lot shapes and home placement, and when combined with winding roads, results in increased lot area, fewer intersections, and decreased road area.

Creative class - individuals who work as lawyers, physicians, architects, educators, researchers and scientists, artists, designers, and in technology-related fields who tend to be problem-solvers, with a high level of formal education.

Culture - elements relating to customary beliefs, social forms, physical structures and related traits of racial, religious or social groups, and, aspects of intellectual or artistic taste.

D

Density - the number of dwelling units per acre of land area.

Design review - a process for reviewing development proposals within a Neighborhood Development District.

Development Code - the City of Greeley's Zoning and Subdivision regulations, adopted in 1998 and amended in 1999.

Development rights - the right to develop property.

Downtown Development Authority (DDA) - The organization responsible for maintaining and improving the economical viability of a 55-block area around downtown Greeley.

Downtown Development District - the boundaries of the Downtown Development Authority, within which a range of land uses and special districts exist to support the vitality and preservation of Downtown.

Downtown Greeley Historic District - locally designated historic district located between 7th – 10th Streets, between 8th and 9th Avenues, which is the area around which Greeley developed.

Dwelling unit - one (1) room, or rooms connected together, constituting a separate, independent housekeeping establishment for owner occupancy, or rental or lease as a single unit, on a monthly basis or longer, physically separated from any other room or

dwelling unit which may be in the same structure and served by no more than one (1) gas meter and one (1) electric meter.

E

Employment corridors - a land use corridor typically located along a major community arterial/entryway which is primarily intended for employment and major employers.

Employment sector - one of the major groupings of jobs by nature of work, including agriculture/fisheries/forestry; professional/scientific/ technical/business services; natural resources/mining/construction; leisure; transportation/utilities; manufacturing; and information.

Enterprise Zone - areas where development and reinvestment is encouraged through the use of state tax credits and related support for starting or expanding businesses within the zone.

F

Federal Emergency Management Administration (FEMA) - the federal agency responsible for the management of natural disasters.

Flood plain - an area which is adjacent to a stream or watercourse and which is subject to flooding as a result of the occurrence of an intermediate regional flood and which is so adverse to past, current or foreseeable construction or land use as to constitute a significant hazard to public health and safety or to property. This term includes but is not limited to, mainstream flood plains, debris fan flood plains and dry wash channels and flood plains.

Floodway - the channel of a river or other watercourse and the adjacent land areas that shall be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot.

Food shed - the system that describes the flow of food used to feed a particular area, starting with the origins of the food, its destination, and transportation to the destination.

Foreclosure - the process where a mortgagee or lien holder obtains a court order to terminate the mortgagor or homeowner's interest in the property.

Form-based zoning - an approach to regulating development to achieve a specific urban form, by creating a predictable public realm through controlling physical form, with less emphasis on land use.

G

Greeley-Evans Transit (GET).

Goal - a broad statement of the community's desired future.

Greeley National Register - the City of Greeley's listing of locally designated historic landmarks, as designated by the Historic Preservation Commission and City Council.

Greeley Urban Renewal Authority (GURA) - a political subdivision of the state, formed by and with members appointed by local government to carry out a variety of urban renewal activities on behalf of the City and in accordance with state and often federal grant requirements.

Greeley-Weld County Airport Master Plan - a plan for future development of the Greeley Weld County Airport, adopted in 1978 with subsequent amendments in 1984 and 1993, and 2004.

Greenways - a linear open space or natural area or corridor typically used by pedestrians and bicyclists.

Greenfield development - development on property that has not been previously developed.

Groundwater - the supply of freshwater under the surface in an aquifer or geological formation that forms the natural reservoir for potable water.

H

Hazardous materials/waste - shall mean any substance or materials that by reason of their toxic, caustic, corrosive, abrasive, or otherwise injurious properties may be detrimental or deleterious to the health of any person handling or otherwise coming into contact with such material or substance, or which may be detrimental to the natural environment and/or wildlife inhabiting the natural environment.

Historic - the public and private resources in the City, including buildings, homes, replicas, structures, objects, properties, parks and sites that have importance in the history, architecture, archeology or culture of the City, State or Nation, as determined by the Historic Preservation Commission.

Historic preservation - the protection, rehabilitation, and restoration of districts, sites, buildings, structures, objects, and artifacts that are significant in history, architecture, archaeology, or culture.

Human Relations Commission - an 11-member Council-appointed citizen commission responsible for fostering mutual respect and understanding among all members of the community.

I

Implementation - carrying out or fulfilling plans and proposals.

Incentive - a way to encourage a particular action that is considered desirable or beneficial.

Infill - a lot or grouping of lots or tracts of land with the majority of their perimeter boundary adjacent to existing development.

Infrastructure - facilities and services needed to sustain residential, commercial, industrial and all other land use activities including utility lines, streets and roadways, communication systems and public facilities such as fire stations, parks, schools and police stations.

Interconnectivity or connectivity - the ability to be linked, such as through transportation systems, between areas.

L

Land lease community - a housing development where homeowners lease the land under their homes from a landowner who typically provides community infrastructure and amenities and which is most commonly found in mobile home parks.

Land use Guidance Map - a map used to guide future land use planning decisions in Greeley, and including such things as employment and industrial uses; parklands and open space; commercial nodes; special uses; and multi-modal corridors.

Level of Service (LOS) - an indicator of the extent or degree of service provided by, or proposed to be provided by a facility based on and related to the operational characteristics of the facility.

Living history - an activity that incorporates historical tools, activities and dress into an interactive presentation that gives observers and participants a sense of stepping back in time.

Long-Range Expected Growth Area (LREGA) - the area within which community growth is expected for the next 20 plus years and which encompasses all other growth and service area boundaries for the City.

Low-income - income levels at 0 – 50.0% of area median income.

M

Median - the central area between travel lanes of streets and highways, which may be covered with landscape materials, hard- surfaced, or a combination of materials.

Mediation - a form of dispute resolution intended to assist two or more parties to reach agreement.

Metropolitan Planning Organization (MPO) - a regional transportation planning group consisting of the municipal areas within Larimer and Weld counties.

Mini-park - a park that range in size from 0.5 – 5.0 acres in size, intended to serve the immediate residential or commercial area.

Mitigate - mechanism for addressing undesirable impacts on the natural environment, alleviating or lessening the impact of development.

Mixed-use - a building or structure that contains two (2) or more different uses.

Mobile source emissions - air quality emissions that come from mobile or moving sources, such as automobiles.

Moderate-income - incomes at 50.0 – 80.0% of area median income.

Multi-modal - offering a number of different types or modes of transportation.

Multi-modal corridor - a transportation corridor that offers different types or modes of transportation.

Municipal Code - the adopted code of the City of Greeley.

Municipal Services Suitability Area (MSSA) - full range of municipal services is currently available in this area.

N

National Incident Management System (NIMS) - a system used in the United States, through its Homeland Security Department, to coordinate emergency preparedness and incident management among various federal, state, and local agencies.

National Register of Historic Places - the US government's official list of districts, sites, buildings, structures, and objects deemed worthy of preservation.

Native species - plants or animals that are naturally found within an area.

Natural resources - natural elements relating to land, water, air, plant and animal life of an area or community and the interrelationship of these elements.

Neighborhood center - a grocery-based commercial area of 5-20 acres in size, located at the intersection of arterial/arterial roads or major collector/arterial roads and which has a typical trade area of 1.5-3 miles.

Neighborhood park - a park intended to serve a smaller portion of the community, or a neighborhood, ranging in size from 1 to 34 acres.

Neighborhood plan - a plan for the future development or redevelopment of a land area which includes lots or areas which are adjacent to one another and have a community of shared interest.

Neighborhood Watch - a voluntary program where neighbors work together with City representatives to address crime, property maintenance, traffic and noise issues in their neighborhood.

New urbanism/neo-traditional development - a form of development which is characterized by the integration of housing, shops, work places, parks and civic facilities into communities that are walkable, served by transit and area designed around a central public place such as a school, park, church, meeting hall or other civic use.

Non-native vegetation - vegetation that is not naturally found within an area.

Non-point source pollution - air pollution from a non-definable source.

Non-potable water - water that is not suitable for drinking or cooking purposes.

O

Open space - any parcel of land or water which is essentially unimproved and which may include crop land, areas of ecological significance or other natural features.

P

Planning Commission - the Planning Commission of the City of Greeley.

Policy - a statement of intent against which individual actions and decisions are evaluated.

Potable water - water that is suitable for drinking and cooking purposes.

Primary employment - business that is usually industrial in nature, which generates revenue from outside the community and does not include support or service type businesses.

Public nuisance - a nuisance that unreasonably interferes with a right that is common to the general public.

Q

Quality of life - is the degree of well-being felt by an individual or group of people, consisting of physical and psychological.

Quiet zones - areas established under federal rules where the use of railroad locomotive horns at crossings will be discontinued or minimized to reduce noise levels.

R

Raw water - the water rights a developer must dedicate to the City of Greeley in return for water service.

Recycling/pre-cycling - the process by which waste products are collected, separated, stored and reduced to raw materials and transformed into new and often different products.

Redevelopment - development activities intended to enhance the existing social, economic, physical and environmental nature of a community and which may include restoration or re-use of existing buildings and structures, as well as construction of new buildings and structures in developed areas.

Regional Activity Center - a commercial area intended to serve a population of 50,000 – 75,000 and which is located on major arterial roads. Regional activity centers are found in Downtown, Greeley Mall/ Gallery Green/Elk Lakes PUD/Gateway PUD area and the Promontory PUD area.

Regional park - a park in excess of 100 acres, intended to serve the community, as well as areas beyond.

Rehabilitate - the upgrading of an area which is in a dilapidated or substandard condition for human habitation or use.

Renovate - to restore a building, structure, or object to a previous or better condition.

Resource management - the management of natural resources so that such resources are protected and enhanced.

Riparian - an area where the presence of surface and/or high subsurface water levels permits the existence of increased vegetative diversity and abundance as contrasted to surrounding areas.

Rural - a sparsely populated area, where the land is primarily used for agricultural purposes.

S

School Resource Officer - a law enforcement officer stationed at a high school and occasionally middle school during the school year to provide education and enforcement strategies for students.

Scrape-off - the removal of all structures, buildings, and objects from a site.

Single occupant vehicle (SOV) - a motor vehicle occupied by only one (1) person.

Smart growth - an urban planning and transportation approach that concentrates growth in the center of a city to reduce urban sprawl and advocates compact development that is transit-oriented, walkable, and bicycle-friendly with a mix of land uses and a wide range of housing choices.

Sprawl - development that is usually low-density in nature and located in areas that were previously rural and typically some distance from existing development and infrastructure.

Strategic plan - a plan that lets an organization know where they are currently and where they want to be some time in the future, as well as the actions needed to get there.

Streetscape - the overall character and appearance of a street that is formed by elements and features that frame the street, such as building façades, street trees and plants, lighting, furniture, or paving.

Sustainable - meeting the needs of the present without sacrificing the ability for future generations to meet their own needs.

Sustainable design - the art of designing and producing places, products, and services in a way that reduces the use of non-renewable resources, also known as “green design”, “eco-design” or “design for the environment”.

T

Tax increment district - a state-defined special district for redevelopment and community improvement projects which are financed through the growth of tax revenue resulting from the redevelopment of a distressed area.

Traffic calming - methods and techniques used to slow or “calm” traffic on streets and roadways.

Transit-Oriented Design - design intended to encourage and facilitate the use of public transit and which may include a mix of land uses, as well as such things as the spacing of collector streets, location and nature of sidewalks and pedestrian paths, and transit stop location and design.

Transportation Demand Management (TDM) - strategies aimed at reducing the number of vehicular trips, shortening trip lengths and changing the timing of trips from peak hours.

U

Urban - a highly developed area that includes a central city or place and contains a variety of residential, commercial, industrial, recreational and cultural uses.

Urban forest - the trees growing within an urbanized community.

Urban heat island - a dome or bubble of increased air temperature that forms over a city or community that results in increased day and night temperatures; impacts and enhances the production of harmful ground level ozone layers (smog); causes greater stress on humans and machinery; increases financial expenses; creates a community’s own weather system. Urban heat islands are created when vegetation is removed and replaced by large areas of dark material, usually asphalt on roads, parking lots, and roofs.

Urban renewal - the clearing, rebuilding and/or redevelopment of declining urban areas.

Urgent Responders Cooperative - an informal consortium of urgent responder professionals, such as enforcement, emergency response, and health and human services,

from a range of public agencies that meet monthly to coordinate their service delivery to the community.

V

Vehicle miles traveled (VMT) - the total distance traveled by all motor vehicles.

View shed - the surface areas from which a viewpoint is seen.

W

Walkable - the ability of a community to be accessible by walking, often measured by such things as land use mix, street connectivity, residential density, and orientation and proximity of homes and buildings to “watch over” the street.

Waste energy - new energy that is captured as a by-product from the decomposition or new generation of waste products.

Water rights - a decreed right to use, in accordance with its priority, a portion of the waters of the state by reason of the appropriation and use of the water.

Way-finding - the way in which people orient themselves in physical space and navigate from place to place, including signage.

Wetlands mitigation - compensation for wetlands that are lost or impacted by restoring, enhancing, or creating new wetlands.

X

Xeric - a form of landscaping intended to conserve water.

Y

Youth Commission - a 14-member Council-appointed commission of youth, ages 11-18, responsible for promoting understanding of youth concerns and contributions and encouraging youth participating in the community.



Item No. 21.



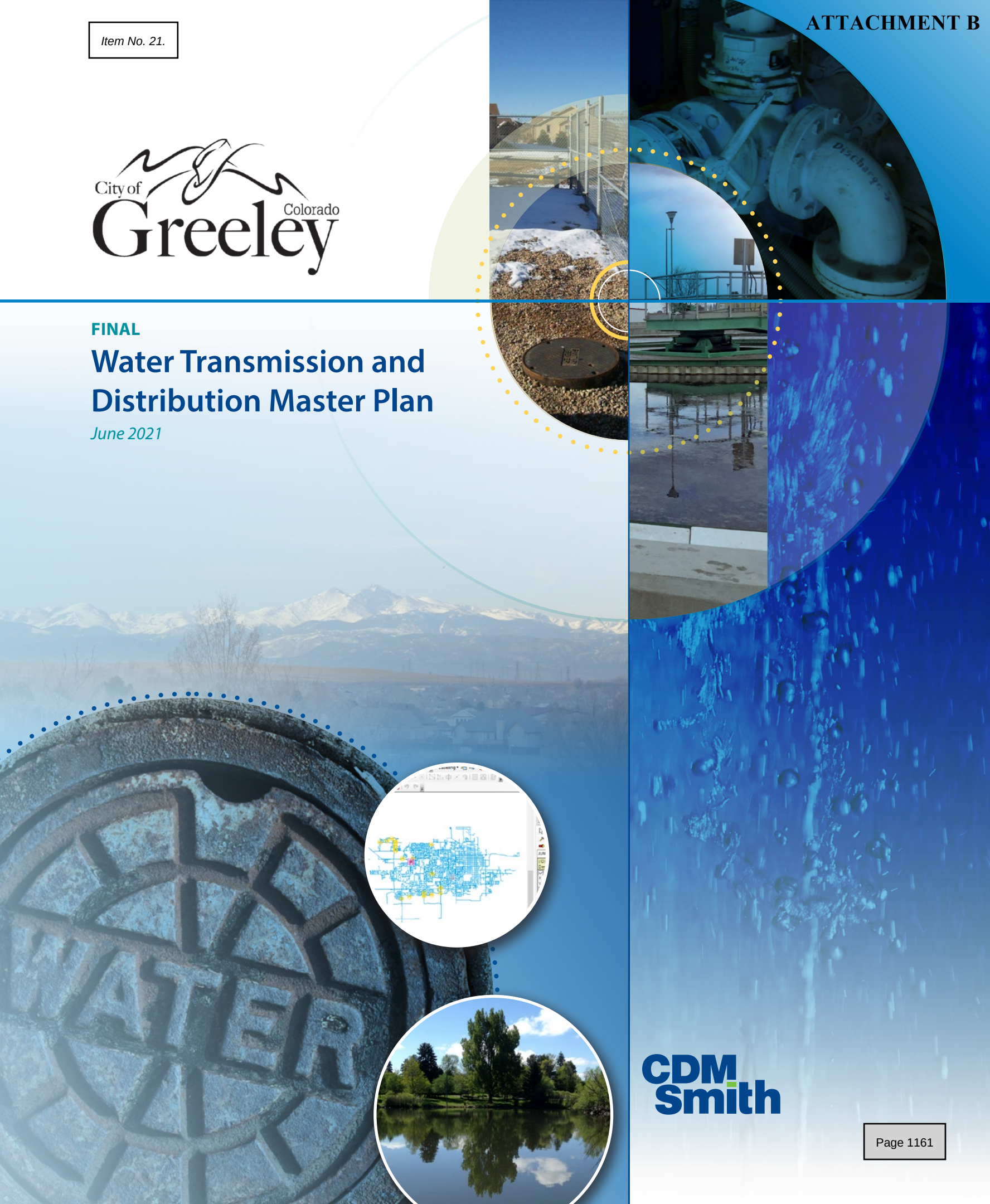
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Water Transmission and Distribution Master Plan

June 2021



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Appendices

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Appendix B Construction Cost and Capital Improvement Plan Tables
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Appendix D Non-Potable System Demands
Appendix E North Weld Intergovernmental Agreement
Appendix F Comprehensive Plan for Demand Projections
Appendix G Comprehensive Plan Action Item List

Abbreviations and Acronyms

\$/LF	dollars per linear foot
2003 MP	2003 Water Master Plan
AFY	acre-feet per year
AWWA	American Water Works Association
BBC report	City of Greeley Population and Water Demand Projections
CDPHE	Colorado Department of Public Health & Environment
C-H	commercial high intensity
CIP	capital improvement plan or program
City's Specifications	City of Greeley Design Criteria and Construction Specifications
C-L	commercial low intensity
DBP	disinfection byproduct
DU/acre	dwelling units per acre
DU	dwelling unit
EDR	engineering development review
ENR-CCI	Engineering News Record Cost Construction Index
EPA	U.S. Environmental Protection Agency
EPS	extended period simulation
fps	feet per second
GIS	geographic information system
gpd	gallons per day
gpd/acre	gallons per day per acre
gpm	gallons per minute
HDD	horizontal direct drilling
HGL	hydraulic grade line
I-H	industrial high intensity
I-L	industrial low intensity
I-M	industrial medium intensity
J&B	jack and bore
LRAA	locational running annual average
LREGA	long-range expected growth area
MCL	maximum contaminant levels
MG	million gallons
mg/L	milligrams per liter
MGD	Million gallons per day
NPDWR	National Primary Drinking Water Regulations
NPMP	Non-Potable Water System Master Plan
OPCC	opinion of probable construction cost
ppb	parts per billion
PRV	pressure reducing valve
psi	pounds per square inch
PUD	Planned Unit Development
R-E	residential estate
R-H	residential high density

R-L	residential low density
R-M	residential medium density
R-MH	residential mobile home
SCADA	supervisory control and data acquisition
SSMP	Sanitary Sewer Master Plan
TOC	total organic carbon
UNC	University of Northern Colorado
WTDMP	Water Transmission and Distribution Master Plan
WTP	water treatment plant

Definitions

Buildout - the theoretical point in time where the City has experienced complete development within the LREGA, expected to be sometime after year 2090.

Capital improvement - a recommended City construction project to improve or expand the system, summarized in the capital improvement plan.

Extended period simulation - a hydraulic modeling methodology that shows how the system performs over a set timescale, during which demands and operating conditions can vary.

Fire flow - the theoretical water demand that would be used to put out a fire; this value is added to other demands and is used for pipe and storage sizing.

Flow factor - value used to estimate the water demand that a given amount of land will produce once its developed, depending on its land use.

Long range expected growth area - the limits of the City's expected growth and where it plans to provide water and wastewater services.

Minimum month demand - the average demand anticipated during a minimum one-month period for a typical year, typically experienced during the winter.

Non-potable water - raw (untreated) water from agricultural ditches used to irrigate certain areas within the City.

North of the River - the geographic area north of the Poudre River and within the City's LREGA.

Opinion of probable construction cost - the costs borne by the contractor to construct a capital project.

Peak day demand - the maximum demand anticipated to occur during a one-day period expressed as the daily average.

Peak hour demand - the average demand anticipated during a maximum one-hour period for a typical year; this is considered to be a conservative value for infrastructure sizing.

Peak month demand - the average demand anticipated during a maximum one-month period for a typical year, typically experienced during July.

Planning horizon - a timeframe used to estimate expected demands and infrastructure needs; for this master plan, the three planning horizons are 5-year (2025), 20-year (2040) and buildout.

Pressure zone - geographic areas (labeled 1, 2, 3, and 4) within the City that are at similar elevations and operate at the same HGL, as regulated by storage tanks, PRVs, and closed valves.

Summer water use - the amount of water used in summer months, defined as July and August.

Tier 1, 2 or 3 - tier of information used to distribute future flow parameters to currently undeveloped areas or areas of redevelopment.

Water age - a measurement of how long a given volume of water has been in the piped water transmission and distribution system; this value is typically used as a stand-in for water quality, as disinfection byproducts degenerate the more aged water is.

Executive Summary

The City of Greeley, Colorado (the City) is in Weld County approximately 60 miles northeast of Denver, east of Fort Collins and Loveland. Greeley is the twelfth largest city in Colorado and has developed into a cultural and academic hub, hosting educational institutions such as the University of Northern Colorado (UNC) and Aims Community College. The City offers an affordable cost of living with many options for housing and economic growth. The City's population grew from 20,354 in 1950 to an estimated 108,175 in 2019. The City continues to experience strong population growth through both infill and expansion of residential, industrial, and commercial development within the City's defined service area.

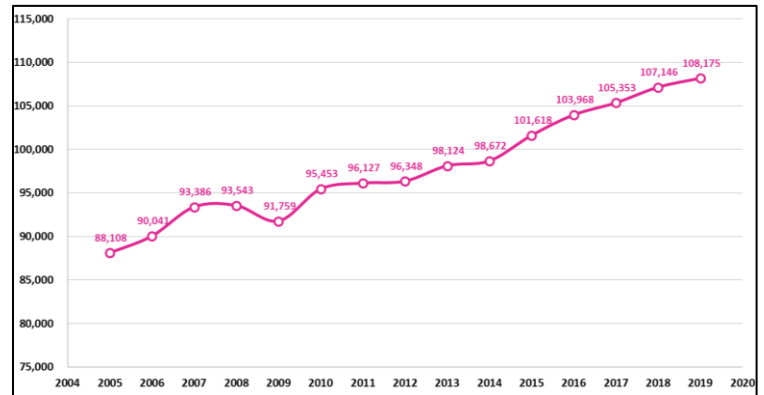


Figure ES-1. Historical Population for the City of Greeley

ES.1 Greeley Master Plan Integration

To address existing and future system needs, the City developed their 2003 Water Master Plan (2003 MP) and model to reflect changes in the system and forecast needs for water supply, transmission, distribution, treatment, and storage. The 2021 Water Transmission and Distribution Master Plan (WTDMP) update occurred concurrently with updates to the City's Sanitary Sewer Master Plan (SSMP) and Non-Potable Water Master Plan (NPMP) providing consistent data for population and growth; common planning horizons of 5-year, 20-year, and buildout; and an integrated planning approach to capital improvement plan (CIP) development. This approach to integrated master planning provides the City with a defensible and coordinated CIP and allows for scheduling of CIP projects to minimize impacts to citizens. **Figure ES-2** illustrates the critical points of coordination between the three master plans.

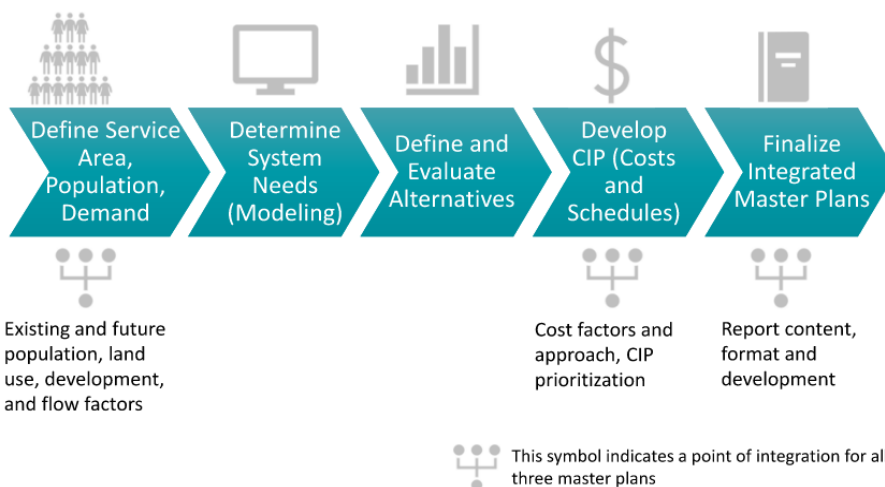


Figure ES-2. Master Plan Approach and Integration with Other Master Plans

ES.2 Conservatism and Uncertainty in Planning

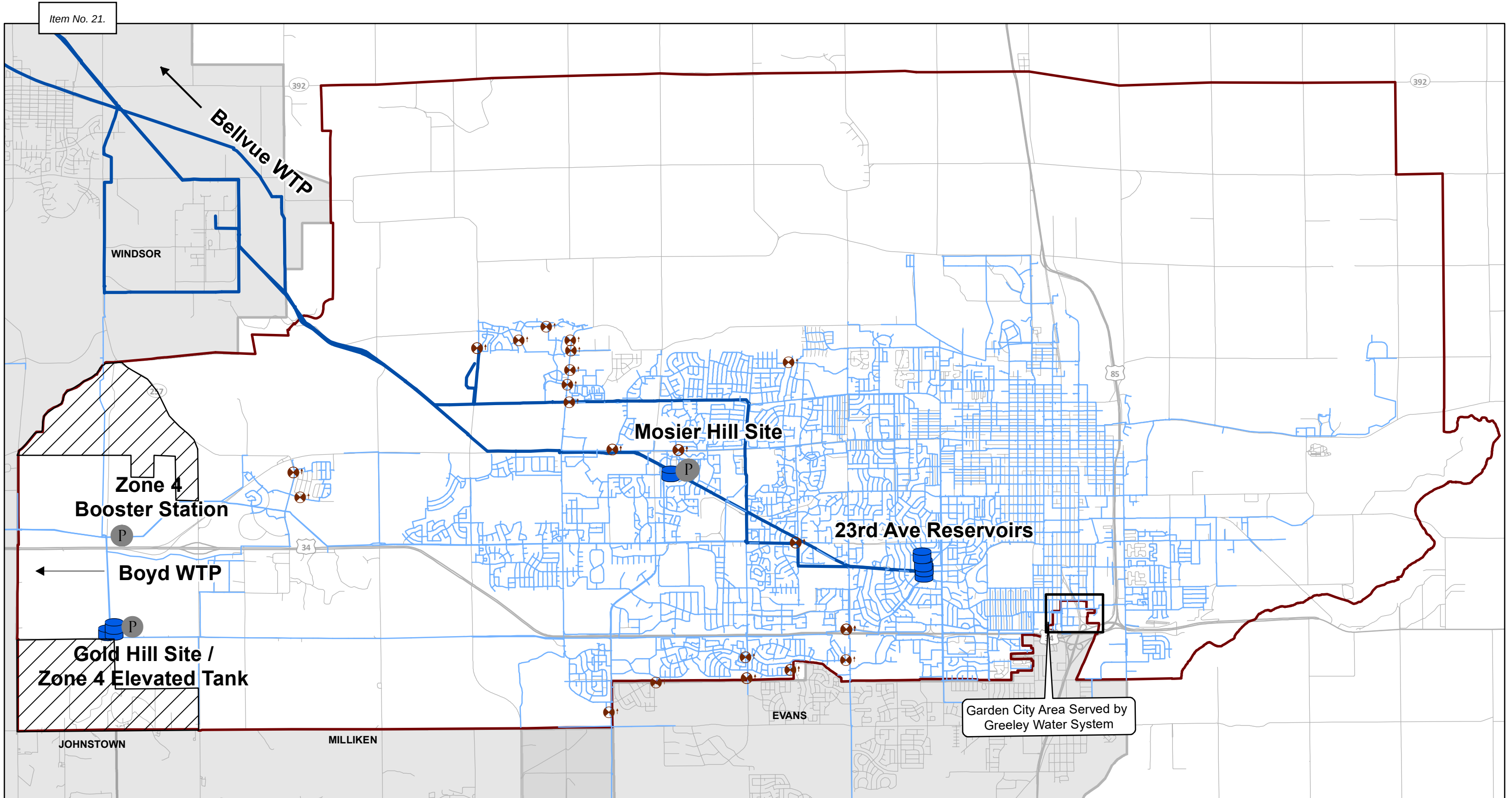
During master plan development, assumptions were made for existing and future conditions. These included population distribution and flow factors to develop water demand projections for growth and development under future conditions with considerations for extreme seasonal conditions that would emphasize higher demands while also considering future water conservation planning to help reduce these impacts. The master planning assumptions trended toward conservative values, which may result in the predicted demands being higher than actual. Care is taken to consider the modeling results and needs for capital improvements or timing of improvements. This WTDMP analyzes the existing system and defines future needs, which should be validated by the City as new data becomes available.

The water system model, in conjunction with its non-potable companion model, is a tool for analyzing the existing system and defining future capacity needs, but this tool has limitations. Knowing the limitations is important in making decisions regarding improvement projects. Actual planning and timing of development will inevitably vary from the best planning projections, resulting in the need to review areas where the model indicates system deficiencies.

Additional uncertainty occurs during the development of the CIP. Planning-level cost development considers major categories of capital projects and does not include the finite detail available during the preliminary and final design stages of projects. The CIP was developed based on anticipated growth, modeling results, and planning information. The CIP is subject to change if the planning information and forecasts differ from those used to develop the CIP. Prior to COVID-19, a global pandemic, cost inflation tools provided high confidence for predicting unit prices within a given year. However, during and after COVID-19, these cost inflation tools may not be as accurate.

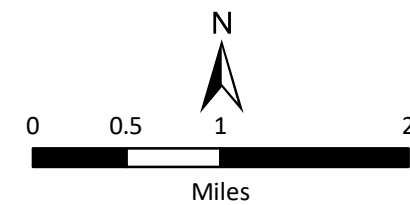
ES.3 Existing System Information and Model Development

City-provided information was used to inform the development of the master plan update. This included mapping, asset information, planning data, development plans, and physical data like reservoir and water treatment plant (WTP) flow records and summer water billing data. The basis for the water transmission and distribution model used in this master plan was a calibrated existing system model developed by others from which future planning and development extensions and upgrades could be constructed and evaluated. Although this existing model included hard calibration synced up with supervisory control and data acquisition (SCADA) records, multi-year water storage and treatment plant production records were used to develop system-wide diurnal demand patterns for peak, average, and minimum demand conditions hourly. Future developments that would be considered largely residential in nature, with less emphasis on industrial and commercial development associated with the existing system, were simulated using a more aggressive residential peaking pattern with expected higher demands during summer irrigation seasons, resulting in more conservative stressing of the transmission and distribution system with the goal to avoid undersizing future water mains and appurtenances. All future planning was based on time-based milestones established as 5-year (2025), 20-year (2040), and buildout within the long-range expected growth area (LREGA), as shown in **Figure ES-3**.



Legend

- Existing Pump Stations
- Existing Storage
- PRV
- LREGA
- Distribution Mains
- Transmission Mains
- Overlapping Growth Area (to be negotiated in future IGAs)
- Neighboring Towns



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ES.4 Service Area, Population, and Demand Projections

The City's LREGA is the area where it plans to provide water and sewer services. The future population (and resulting demands) that were distributed over the LREGA for each planning horizon was the "middle" projection from the *City of Greeley Population and Water Demand Projections* (BBC Research & Consulting 2018), referred to as the BBC report, as shown in **Figure ES-4**. Because the 2075 projection does not represent the buildout year for the City within the LREGA boundary, a buildout population was extrapolated using planning data and factors.

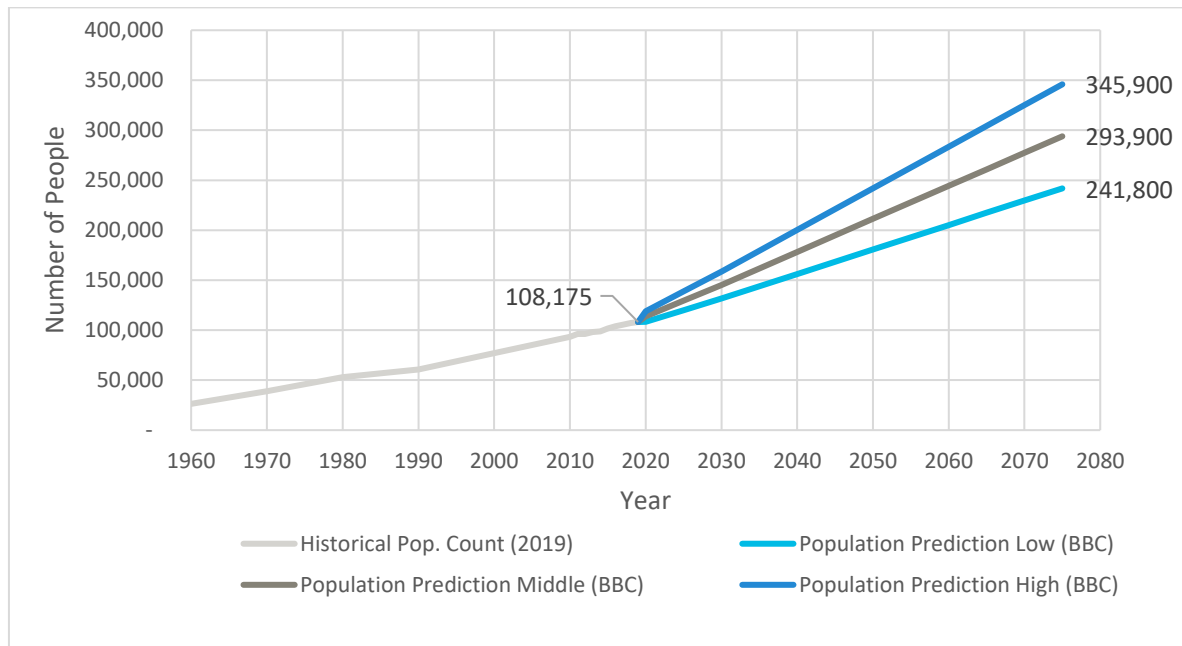


Figure ES-4. Historical and Projected Population

Future demand parameters were distributed to currently undeveloped areas or areas of redevelopment using a three-tiered approach. **Figure ES-5** shows the distribution of growth areas and tier designations throughout the LREGA planning area.

It is assumed that the Tier 1 projects will be completed first. For this reason, most of the Tier 1 projects are assumed to be 100 percent (%) complete at the 2025 planning horizon and all of them complete at the 2040 planning horizon.

Because of the large areas within the Tier 2 projections category, the Tier 2 percent complete values for the 2025 and 2040 planning horizons have been developed through close discussion with the City. The Tier 2 areas that the City and CDM Smith have identified for growth at the 2025 and 2040 planning horizons are the areas that the City's planning department identified as the most likely growth areas.

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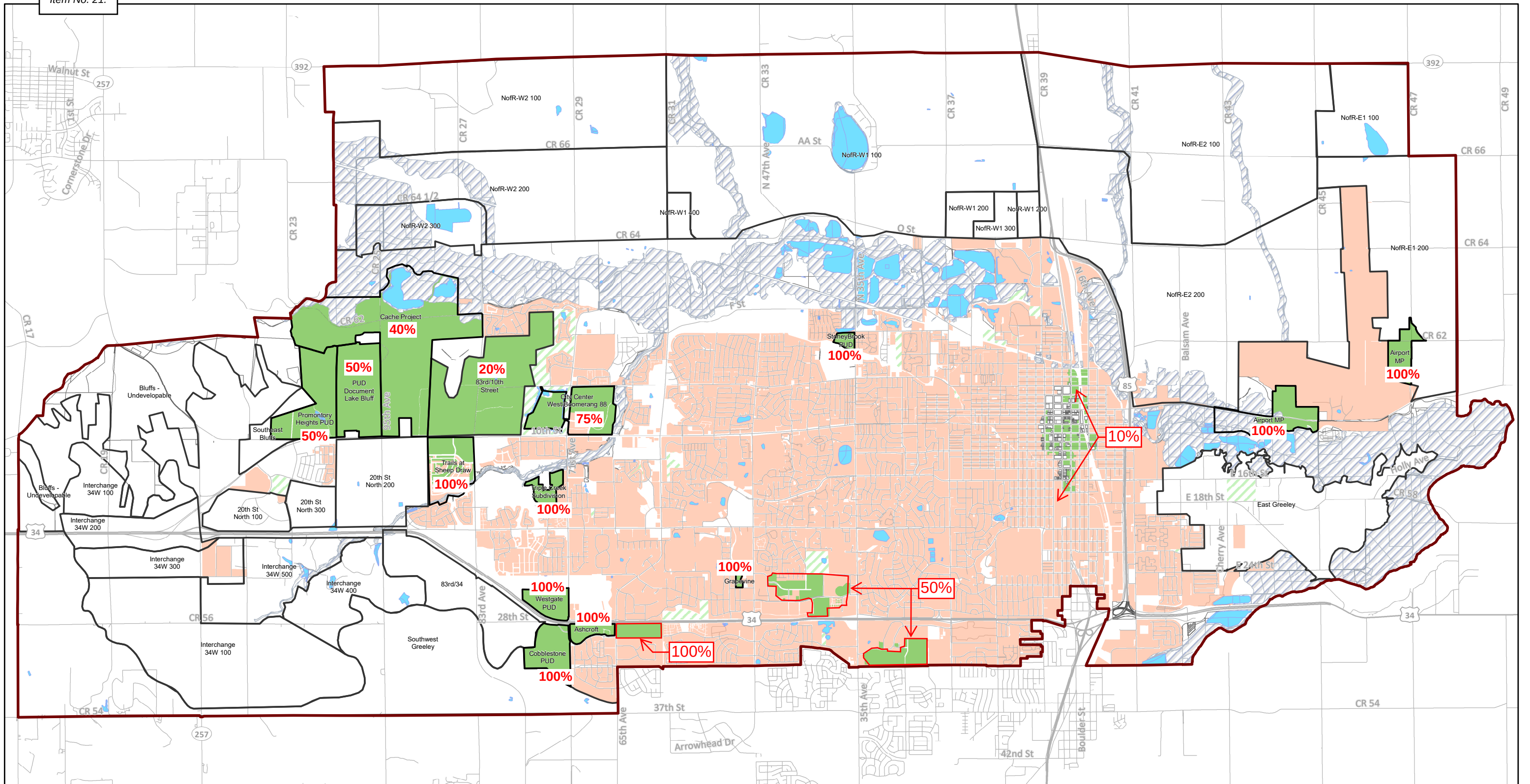
The Tier 3 growth identified for the 2025 planning horizon was chosen through discussions with the City. Tier 3 growth included at the 2040 planning horizon is assumed to include all the infill around the Tier 1 and Tier 2 projected growth areas. The percent complete values for each tier were chosen through discussions with the City. **Figure ES-6, Figure ES-7, and Figure ES-8** show a visual representation of the assumed growth areas for each planning horizon.

It is likely that the water demands will be decreased in the future if some of the irrigation demands can be met with non-potable water. In particular, larger irrigated areas such as parks, schools, commercial and industrial areas, and large residential developments may be eligible for non-potable irrigation, although potential non-potable customers should be evaluated on a case-by-case basis for feasibility. The projected water demands could be offset by non-potable water by either servicing future developments with non-potable water or by converting existing areas from potable to non-potable service. Because non-potable service would only decrease the water demands, the analysis conducted for this WTDMP represents a conservative “worst case” scenario, where potable water is used to meet all water demands. For more information on non-potable demand projections, please refer to the NPMP.

Ultimately, two demand scenarios were modeled: the system if all water demands are met by water (all potable demands scenario), and the system if some water demands are offset by non-potable water (non-potable offsets demand scenario). Considering both scenarios will help the City avoid under-sizing either system (potable or non-potable).

Demand projects under all future scenarios are included in **Table ES-1**, but do not include non-potable offsets, which are further clarified later in the WTDMP.

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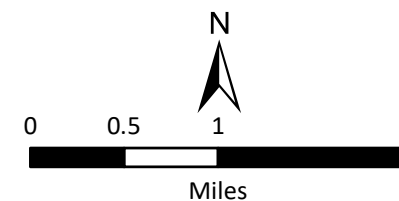


Legend

- LREGA
- Demand Projection Area
- 100-yr Floodplain
- Lakes and Ponds

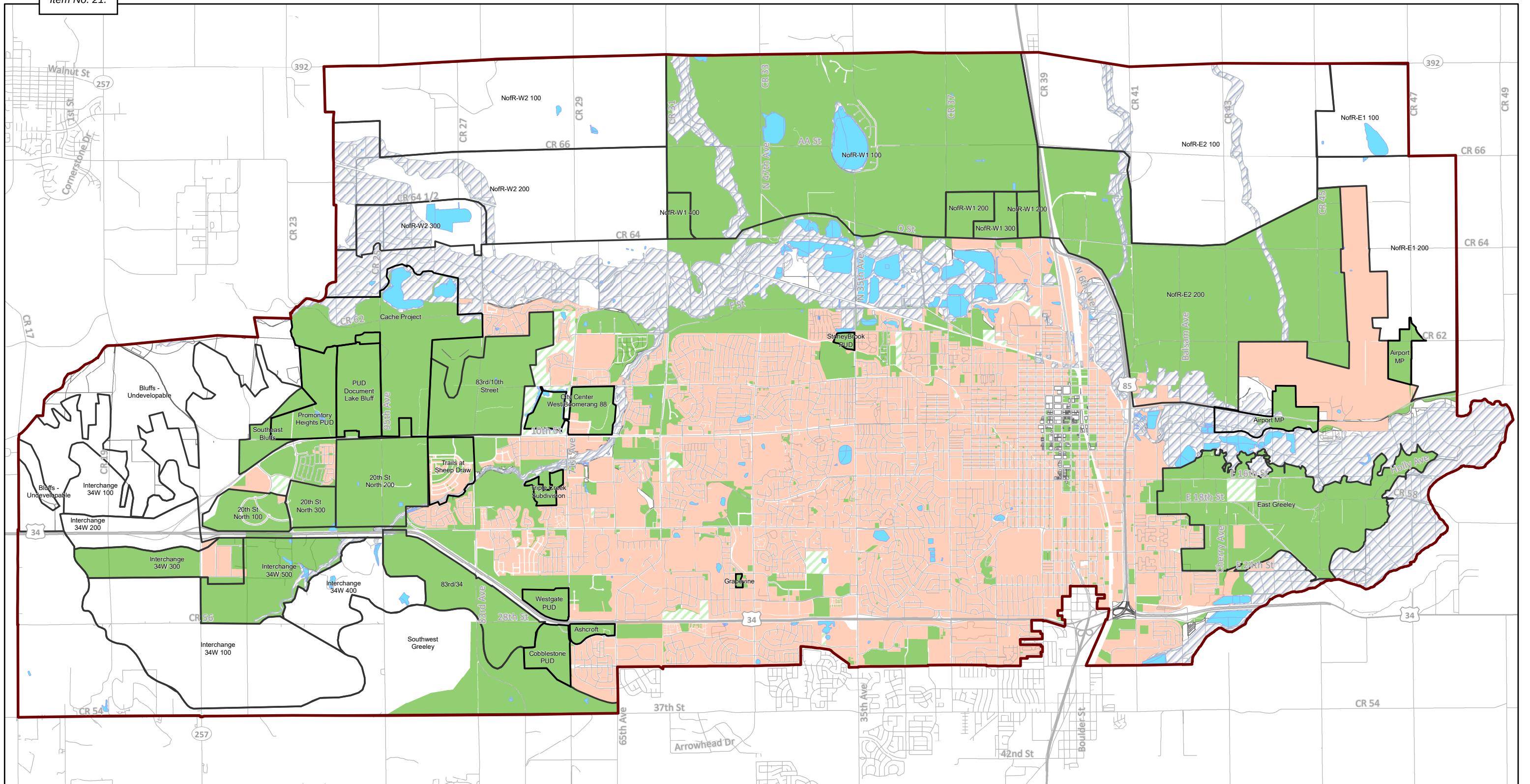
% = Percent Developed

- Future Development
- Existing Service Area
- No Development
- Park



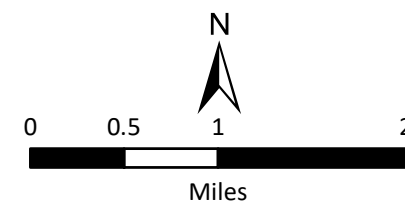
Developed Area
Projections: 2025
Figure ES-6
Greeley Water System
Master Plan

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Legend

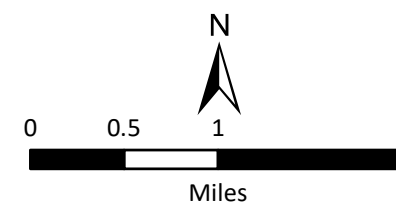
- | | | | |
|---|------------------------|---|-----------------------|
|  | LREGA |  | Future Development |
|  | Demand Projection Area |  | Existing Service Area |
|  | 100-yr Floodplain |  | No Development |
|  | Lakes and Ponds |  | Park |



Developed Area
Projections: 2040
Figure ES-7
Greeley Water System
Master Plan

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-  Future Development
-  Existing Service Area
-  No Development
-  Park



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Table ES-1. Future Peak Month Demand Projections

Projection Tier	Acres	Population	Residential Demand	Nonresidential Demand	Total Demand
			(MGD)	(MGD)	(Million gallons per day [MGD])
Existing	11,883	107,146	N/A	N/A	46.0
2025	15,116	128,458	2.4	2.1	50.5
2040	29,467	179,430	8.2	5.5	59.7
Buildout	44,914	425,271	35.9	20.4	102.4

While the WTDMP is primarily focused on planning for infrastructure needs based on peak summer demands, it is also important for the City to plan for the total annual water demands through buildout. Water conservation methods, such as improved landscaping practices and the encouragement and adoption of NP water for irrigation, may help reduce the City's annual potable water demands. The City previously conducted a water resources planning study (BBC report), which focused on developing three alternative scenarios for annual water demands. The total annual demands developed for the WTDMP under the NP offsets demand scenario at buildout are captured in **Table ES-2**. This demand scenario was modeled for certain demand scenarios, as discussed in **Section 4.2.4**.

Table ES-2. NPMP Annual Demand Projections at Buildout

Demand	Total Water Demand (AFY)	Potable Water Demand (AFY)	NP Water Demand (AFY)
Existing	30,500	28,600	1,900
Future Demands	33,500	28,300	5,200
New I-H Users (6)	10,300	10,300	0
Total	74,300	67,200	7,100

¹ Potable demand shown in this table is for NP offset scenario

ES.5 Model Evaluation and Infrastructure Planning

The future modeling effort was an extension of the existing system model as previously discussed and represents anticipated development through buildout within the LREGA. To fully evaluate the system, it was necessary to analyze various demand conditions that would stress the transmission and distribution system under each timing milestone. These scenarios include the following:

- Peak demands – Equivalent to peak hour during the high demand (summer) season
- Peak demands with fire flow – Utilizing the peak day with fire flow conditions applied
- Water quality – A function of water age evaluated under minimum month conditions

To best accomplish these evaluations, the model was populated with diurnal patterns applied to demands within an extended period simulation (EPS). Peak hour and day analysis was conducted on 48-hour diurnal EPS while water age analysis was conducted for a 24-day continuous simulation (576 hours) to ensure stability in water age.

ES.5.1 Water Quality Evaluation

Water quality concerns are defined as insufficient disinfection residual for purposes within the WTDMP. Based on historical conditions under which comprehensive disinfection sampling was conducted and for which historical water age modeling had been completed (by others), a comparison was made to determine if a correlation could be found for residual concentration vs. water age. A general trend was established that shows a decay condition over time with a residual level of about 0.2 milligrams per liter (mg/L) corresponding to approximately 190 hours of water age. As a result, predictions of water age above 190 hours were considered a flag for concern that may justify further system investigations.

Recent changes to tank operations at Gold Hill, a storage facility with two reservoirs, have improved turnover in the tanks and reduced water age throughout the system. The new 60-inch Bellvue transmission line will also enable water to be delivered to the west side of the City directly from Bellvue WTP with reduced water age. Additionally, the increased demands shown with each planning horizon can improve turnover in the tanks, improving initial water age over time. A clear conclusion is that water age and disinfection residual will improve with future growth and development; therefore, present conditions represent a general worse case. **Figure ES-9** depicts predicted water age across the system under these existing conditions.

The 2025 and 2040 evaluations showed similar water age trends to the existing system. In general, water ages from west to east, as distance from the Bellvue WTP supply source increases. The exception to this is where water is delivered directly to Mosier Hill from Bellvue WTP and distributed to the central portions of Zones 2 and 3. This results in fresher water and reduced water age in the eastern portions of Zones 2 and 3. Although some areas may appear to have older water than other areas, ongoing sampling throughout the year has confirmed that the City is in compliance with chlorine residuals standards and all other water quality standards required by the Colorado Department of Public Health & Environment (CDPHE), meaning that the older areas are providing safe drinking water for all customers.

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ES.5.2 Fire Flow Analysis

Fire flow criteria established for the WTDMP were defined as sufficient if a flow under peak day conditions could be maintained at 1,500 gallons per minute (gpm) at existing hydrant locations or established nodes in the future system. Deficient nodes may occur at dead-ends undersized lines or locations with insufficient operating pressure. Some areas such as Spanish Colony and the Evans/Milliken service area are served by alternate fire departments and were not addressed as part of this WTDMP effort. Deficient nodes are summarized in **Table ES-3** to be addressed under the 2025 planning horizon. These values were found to generally correlate with field results provided by the City's fire department. In total, 11,285 feet of existing pipe are recommended to be upsized to meet fire flow, as shown in **Figure ES-11**.

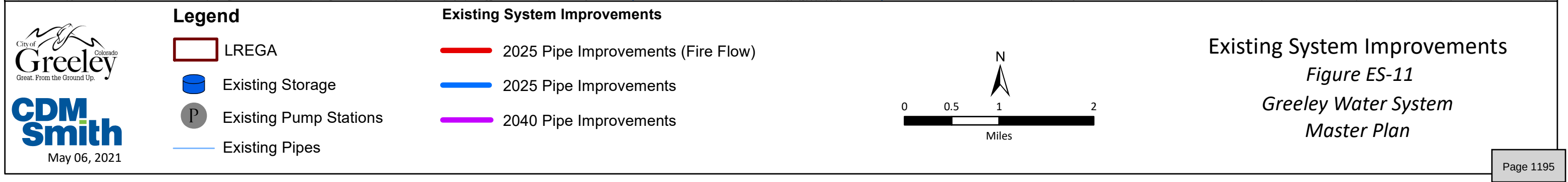
The future system model did not reveal any new deficiencies under either demand scenario for all planning horizons. However, developers should ensure that their designs allow for appropriate fire flow capacity, especially in areas where a full distribution grid may not be fully built yet.

Table ES-3. Fire Flow Improvements (2025)

Deficient Node	Preliminary Available Fire Flow (gpm)	Description of Upgrades Needed to Improve Fire Flow	Final Available Fire Flow (gpm)
CR01373023	640	Upsize lines along 9th Street (from 21st Avenue to 19th Ave) from 4 to 8 inches	2,020
PC01480006	470	Upsize lines along 5th Avenue (from 21st Street to 20th St) from 4 to 8 inches	2,190
RD01304037	320	Upsize some lines along 9th Avenue and 2nd Street from 4 to 8 inches and some from 8 to 12 inches	1,570
TEE01268014	630	Upsize lines along Vern Schaffer Blvd from 4 to 8 inches	2,190
TEE01373033	480	Upsize lines along 21st Avenue (from 11th Street to 10th St) and 10th Street (from 21st Avenue to 20th Avenue) from 4 to 8 inches	1,700
TEE01411006	390	Upsize lines along 1st Avenue and 12th Street from 4 and 6 inches to 8 inches	1,570
TEE01619002	440	Upsize lines from 17th Avenue along 30th Street Rd from 4 and 6 inches to 8 inches	2,210
PC03508001	670	Upsize lines along 22nd Street from 4 to 8 inches	2,980
RD02371020	740	Upsize lines along 31st Avenue from 4 to 8 inches	2,100
RD02371021	470	Upsize line between 32nd Avenue and 31st Avenue from 4 to 8 inches	920 ¹
TEE03475001	750	Upsize lines along W Wagon Trail Road and Homestead Road from 6 to 8 inches	1,550

¹Adjacent nodes are above 1,500 gpm due to piping upsizing.

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ES 5.3 Buildout Configuration

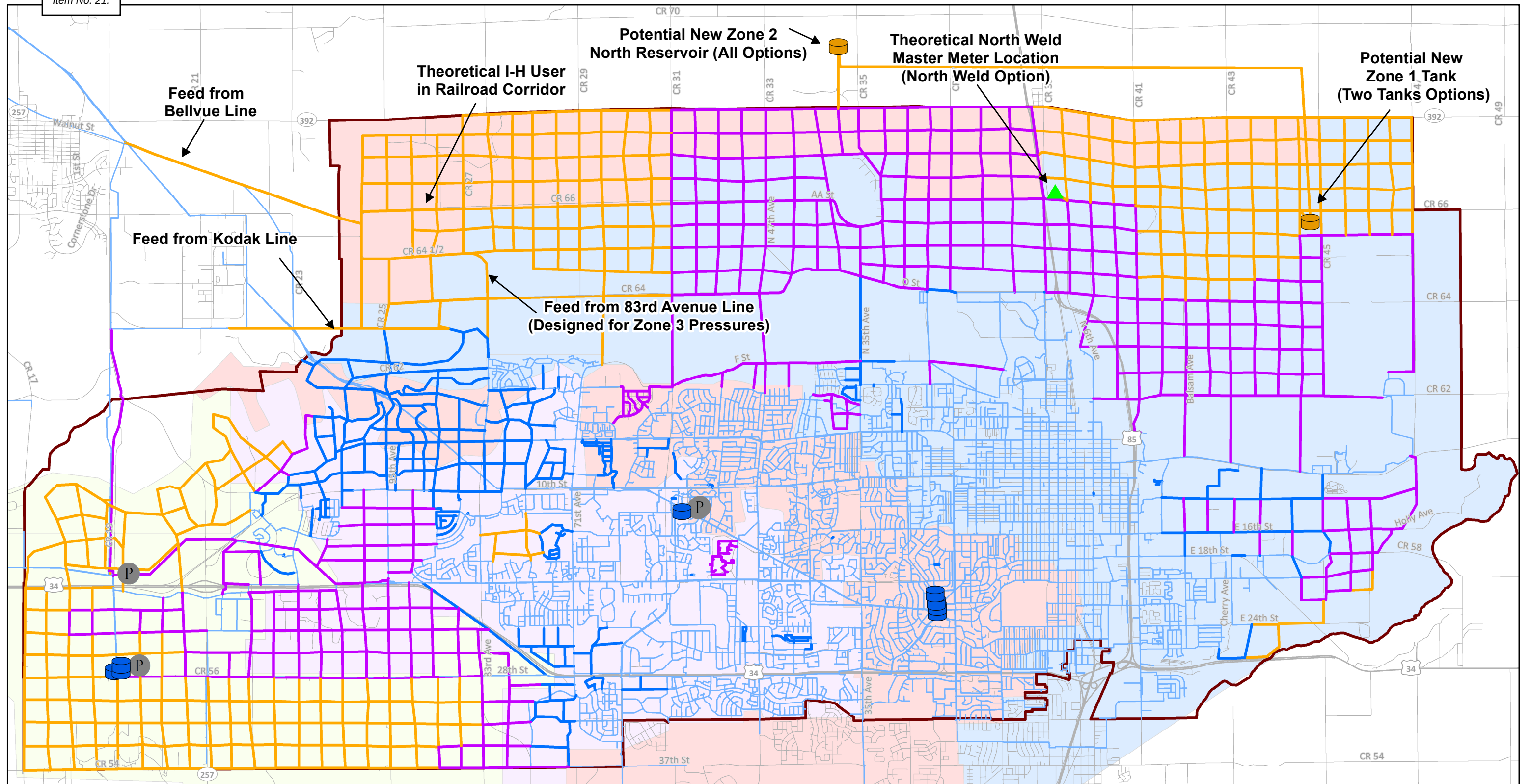
At buildout, many areas are expected to fully develop that are farther out from the City's existing infrastructure. In particular, the North of the River area is expected to see some areas with large pressure swings or consistently low pressures without additional infrastructure. Alternatives were considered for serving this area, as shown in **Figure ES-12**. Because the buildout scenario is so far in the future, additional study will be needed as more information becomes available regarding growth patterns and density.

It was determined that the North Weld option would be considered for additional analysis and system optimization, as the existing intergovernmental agreement would make this a feasible and preferred option to enhance service to the North of River area although additional planning and coordination would be required.

Under all scenarios, it is anticipated that a new reservoir would be needed in Zone 2 North to provide pressure stability in this area as well as emergency short term supply. The location shown in **Figure ES-12** was placed in the model at a point with highest elevation. More detailed studies should be conducted to identify an ideal location, size, and design for this reservoir. The City may also consider coordinating with other regional stakeholders for a potential shared storage to serve this area. At current projections, this new reservoir is not expected for at least 20 years.

It is anticipated that additional pumping capacity would be needed at the Zone 4 pump station by buildout. This pump station was designed with this expansion in mind, and already has empty pump slots that would be filled to meet buildout growth and demands.

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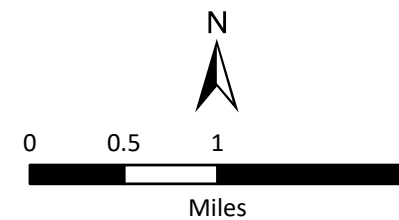
Legend

- LREGA
- Existing Storage
- Existing Pump Stations
- Master Meter

- Future Storage (Buildout)
- Existing Pipes
- 2025 Pipes
- 2040 Pipes
- Buildout Pipes

Future Pressure Zones

- Zone 1
- Zone 2
- Zone 3
- Zone 4



Buildout Options Evaluation
Figure ES-12
Greeley Water System
Master Plan

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ES 5.4 Summary of Recommended Water System Infrastructure

The total population for the City is projected to increase from about 107,000 to 428,000 between the existing and buildout planning horizons. To accommodate the increase in projected population and resulting demands, future system evaluations indicate a need for a new reservoir in Zone 2 North and additional pumping capacity at the Zone 4 pump station by the buildout planning horizon. The City's water system would need about 400 miles of additional pipe to serve buildout demands, as shown in **Table ES-4**. A good portion of the new pipes are development-driven and therefore will be the responsibility of the developer rather than the City.

Table ES-4. Length of New Pipe by Diameter and Planning Horizon

Planning Horizon	Length of Pipe by Diameter (Miles)								Total
	8-inch	12-inch	16-inch	20-inch	24-inch	27-inch	36-inch	60-inch	
2025	26.7	24.3	8.1	1.7	-	-	-	0.8	61.6
2040	99.3	41.5	18.9	2.1	7.1	-	3.3	1.9	174.1
Buildout	88.9	32.6	31.2	2.8	11.8	2.8	-	-	170.2
Total	214.9	98.4	58.2	6.7	19.0	2.8	3.3	2.7	405.9

¹Table does not include existing pipes that would need to be upsized in the future.

²Table includes both City and development-driven projects. Projects will be broken out by responsible party in CIP.

ES.6 Capital Improvement Plan Projects and Schedule

The opinion of probable construction cost (OPCC) is considered the costs borne by the contractor to construct a capital project. The project CIP costs include the OPCC and project implementation costs, such as planning and design, administration, and construction management. Assumptions made during CIP development can add to the variability of final bid project costs when compared to the planning level costs. The assumptions are necessary to capture costs for project elements that cannot be defined at a planning level. Project CIPs were developed using modeled pipeline quantity estimates and data multiplied by unit cost estimates. During design development, the more specific data will be used to inform the design and resulting project cost estimate. **Table ES-5** provides a breakdown of the different costing factor assumptions used for project implementation and contingency.

Table ES-5. Costing Factors for Construction Bid and Total CIP Project Costs

Category	Item	Costing Factor
Construction Bid Cost (includes infrastructure and contractor overhead, profit, bonds, and insurance)	Erosion Control/Stormwater Pollution Prevention ¹	2%
	Mobilization and Demobilization ¹	5%
	Contingency ²	35%
Project Implementation ³	Feasibility and Site Studies	9% for OPCC ≤ \$1 million 6% for OPCC of \$1 million to \$10 million 5% for OPCC > \$10 million
	Preliminary and Final Design	9% for OPCC ≤ \$1 million 6% for OPCC of \$1M to \$10 million 5% for OPCC > \$10 million
	Engineering Services During Construction	5%
Additional Project-Related Costs ³	Outside Construction Management - not used if OPCC is < \$1M	5%
	Outside Project Management - not used if OPCC value is < \$1M	3%

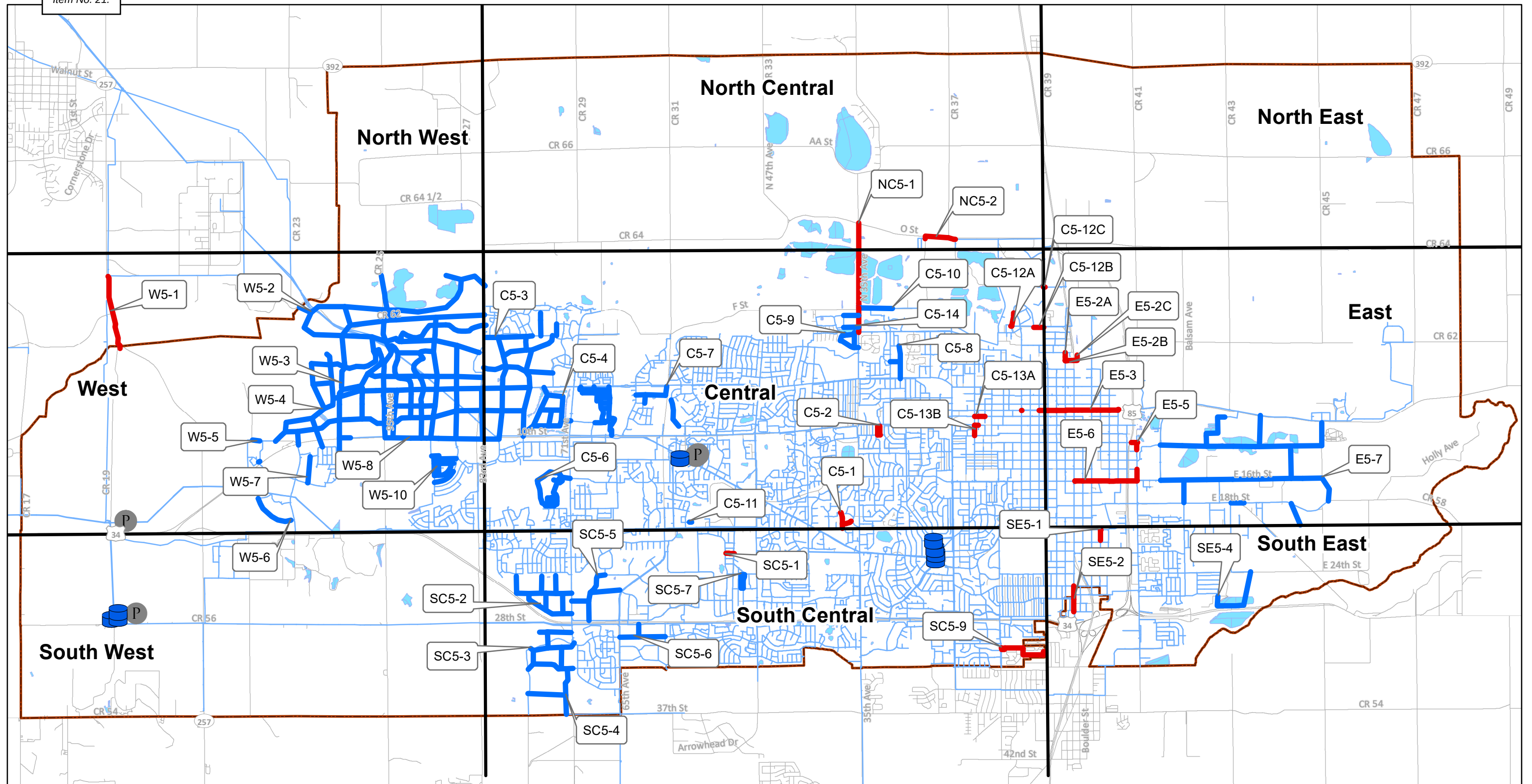
¹ Construction costing factors for erosion control/stormwater pollution prevention, mobilization, and demobilization are added to the subtotal of unit cost items.

² Contingency is 35% of the subtotal of the unit cost items and contractor born costs determined by costing factors.

³ Project implementation and additional project-related cost categories are determined as a percentage of the construction cost and part of the total CIP project costs.

ES.6.1 Identified CIP Projects

Figures ES-13 and **ES-14** show locations of 5-year and 20-year recommended capital improvements based on the hydraulic analysis associated with the WTDMP. Identified projects were categorized into two groups—City and development projects for the 2025 (projects for 2020 through 2025) and 2040 (projects for 2026 through 2040) time frames. Unique project tag identifiers were assigned for each project based on directional grids system across the LREGA. Detailed cost estimates (breakdowns of OPCC and/or total CIP costs) per project can be found in **Appendix B**.



Legend

LREGA

Tanks

Pump Station

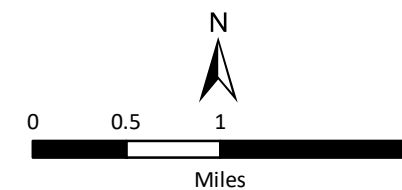
Lakes and Ponds

Existing Pipes

2025 City CIP Projects

2025 Development Projects

CIP Grids



Recommended 5-Year Improvements

Figure ES-13

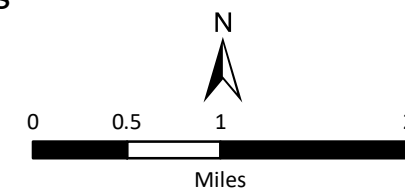
Greeley Water System
Master Plan

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 Lakes and Ponds

— 2040 City CIP Projects

— CIP Grids



Recommended 20-Year Improvements

Figure ES-14

*Greeley Water System
Master Plan*

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ES.6.2 CIP Implementation Schedule

The CIP schedule implementation process considered several other factors that influence a project schedule in addition to the hydraulic evaluation. The City provided Water and Sewer 10-year CIP, public works CIP, and parks CIP to integrate with projects identified in the WTDMP for developing CIP implementation schedules.

Table ES-6 provides cost information for the 5-year and 20-year CIP projects with anticipated planning, design, and construction start dates. **Table ES-7** presents City rehabilitation projects with anticipated construction start dates and projected total costs. The growth-driven projects will be funded by either the City or developer (or combination), depending on the project driver.

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Executive Summary

Table ES-6. 5- and 20-Year City CIP Summary

Projects	Project Type	Project Driver	Project Location	Planning Start Year	Design Start Year	Construction Start Year	OPCC (Millions)	CIP Total Cost (Millions)
5-Year Planning Horizon								
C5-12C	Pipe Replacement	Capacity Improvement	H St. & 11th Ave.	2021	2022	2023	\$0.1	\$0.1
C5-14	New Pipe	Projected Development	35th Ave. (F St. to C St.)	2021	2022	2022	\$0.7	\$0.9
C20-2B	New Pipe	F St. Water & Wastewater Operations Facility	F St. (47th Ave. to 35th Ave.) & 47th Ave. (F St. to B St.)	2021	2022	2023	\$3.1	\$4.0
W5-1	New Pipe	Projected Development	Gold Hill: Windsor Phase (Hwy 257)	2022	2023	2024	\$6.2	\$8.0
C5-12B	Pipe Replacement	Capacity Improvement	Island Grove Park (D St.)	2022	2023	2024	\$0.3	\$0.4
NC5-2	New Pipe	Projected Development	O St. (23rd Ave. to 25th Ave.)	2022	2023	2024	\$0.3	\$0.4
NC5-1	New Pipe	Projected Development	35th Ave. (O St. to F St.)	2024	2025	2026	\$3.3	\$4.1
C5-1	Pipe Replacement	Fire Flow Improvement	Homestead Rd. & W Wagon Trail Rd.	2025	2026	2027	\$0.4	\$0.5
C5-2	Pipe Replacement	Fire Flow Improvement	11th St. (32nd Ave. to 31st Ave.)	2025	2026	2027	\$0.4	\$0.5
C5-12A	Pipe Replacement	Fire Flow Improvement	Island Grove Park (Vern Schaffer Blvd.)	2025	2026	2027	\$0.2	\$0.3
C5-13A	Pipe Replacement	Fire Flow Improvement	9th St. (19th Ave. to 21st Ave.)	2025	2026	2027	\$0.2	\$0.3
C5-13B	Pipe Replacement	Fire Flow Improvement	10th St. (20th Ave. to 21st Ave.) & 21st Ave. (10th St. to 11th St.)	2025	2026	2027	\$0.3	\$0.4
E5-2A	Pipe Replacement	Fire Flow Improvement	9th Ave. (1st St. to 2nd St.)	2026	2027	2028	\$0.2	\$0.3
E5-2B	Pipe Replacement	Fire Flow Improvement	2nd St. (West of 8th Ave. to 9th Ave.)	2026	2027	2028	\$0.4	\$0.5
E5-2C	Pipe Replacement	Fire Flow Improvement	West of 8th Ave. (1st St to 2nd St.)	2026	2027	2028	\$0.1	\$0.2
E5-5	Pipe Replacement	Fire Flow Improvement	12th St. & 1st Ave.	2026	2027	2028	\$0.3	\$0.4
SC5-1	Pipe Replacement	Fire Flow Improvement	22nd St. (50th Ave. to 51st Ave.)	2026	2027	2028	\$0.1	\$0.2
5-Year Subtotal							\$16.6	\$21.2

Projects	Project Type	Project Driver	Project Location	Planning Start Year	Design Start Year	Construction Start Year	OPCC (Millions)	CIP Total Cost (Millions)
20-Year Planning Horizon								
E5-6	Pipe Replacement	Capacity Improvement	1st Ave., 16th St., & 18th St. (1st Ave. to 7th Ave.)	2027	2028	2029	\$2.5	\$3.2
W20-1	New Pipe	Projected Development	Gold Hill Segment Phase 2 (Bellvue Line)	2027	2028	2029	\$10.8	\$13.9
C20-1	New Pipe	Projected Development	59th Ave. (O St. to F St.)	2027	2028	2029	\$3.9	\$4.8
C20-3	Pipe Replacement & New Pipe	Projected Development and Capacity Improvement	25th Ave. (O St. to F St.)	2027	2028	2029	\$2.2	\$2.8
SE5-1	Pipe Replacement	Fire Flow Improvement	5th Ave. (20th St. to 21st Ave.)	2028	2029	2030	\$0.2	\$0.3
C20-4	Pipe Replacement	Capacity Improvement	1st St. (56th Ave. to 59th Ave. Ct.)	2028	2029	2030	\$0.4	\$0.4
E5-3	Pipe Replacement	Capacity Improvement	8th St. (3rd Ave. to 12th Ave.)	2029	2030	2031	\$2.4	\$3.0
SC5-9	Pipe Replacement	Fire Flow Improvement	30th St. Rd. (11th Ave. to 17th Ave.)	2029	2030	2031	\$1.2	\$1.5
E20-1	Pipe Replacement	Capacity Improvement	A St. (6th Ave. to 9th Ave.)	2030	2031	2032	\$1.1	\$1.4
E20-2	Pipe Replacement	Capacity Improvement	9th St. (1st Ave. to 3rd Ave.)	2032	2033	2034	\$1.1	\$1.4
C20-5	Pipe Replacement	Capacity Improvement	Island Grove Park	2034	2035	2036	\$0.3	\$0.4
W20-2	New Pipe	Projected Development	Boyd WTP Transmission Line (North of US 34 from 95th Ave. to CR 17)	2036	2037	2038	\$12.3	\$15.8
C20-2A	New Pipe	Projected Development	47th Ave. (O St. to F St.)	2037	2038	2039	\$3.5	\$4.6
SE5-2	Pipe Replacement	Fire Flow Improvement	8th Ave. (25th St. to 27th St. Rd.)	2038	2039	2040	\$0.5	\$0.6
C20-6	Pipe Replacement	Capacity Improvement	St. U (F St. to St. W)	2039	2040	2041	\$0.2	\$0.2
20-Year Subtotal							\$42.4	\$54.1
Total							\$59.0	\$75.3

Note: CIP schedule was adjusted based on other master plans and public works CIP projects.

Executive Summary

Table ES-7. 5-Year City Rehab Summary

Projects	Construction Start Year	Total Cost (Millions)
19th Avenue - 6th Street Road to 7th Street and 6th Street Road – 18th Avenue to 19th Ave	2022	\$0.1
1800 block of 28th Avenue CDS	2022	\$0.02
400 and 500 block of E 20th Street	2022	\$0.1
500 block N 9th Avenue	2022	\$0.1
5500 27th Street	2022	\$0.1
200 23rd Avenue	2022	\$0.1
1st Street - 23rd Avenue to mobile home park master meter	2022	\$1.0
2100 30th Street Apartment Complex	2023	\$0.3
6500 and 6400 28th Street	2023	\$0.2
11th Avenue and Highway 34 bypass	2025	\$0.4
30th Street - 17th Avenue to 23rd Avenue	2026	\$0.5
49th Street between 65th Avenue and 47th Avenue	TBD	—
49th Street - 83rd Avenue to 95th Avenue Grid Line	TBD	\$1.1
5th Avenue – 14th Street to 15th Street	TBD	—
Tie-in 13th Street 2900 Block/Scott School Lane, new fire hydrant and major valve work	TBD	\$0.01
83rd Avenue and 49th St	TBD	\$0.1
Kodak Water Line Replacement	2021	\$3.0
24018 West County Road 15 (Line 1)	2022	\$0.2
Lemay (Line 3)	2022	\$0.2
Forest Hills (Line 1)	2022	\$0.2
20th/95th Avenue	2023	\$0.7
Highway 257	2024	\$1.6

Based on the 5- and 20-year CIP schedule, annual funding requirements for City water projects from 2021 through 2040 are shown in **Figure ES-15**.

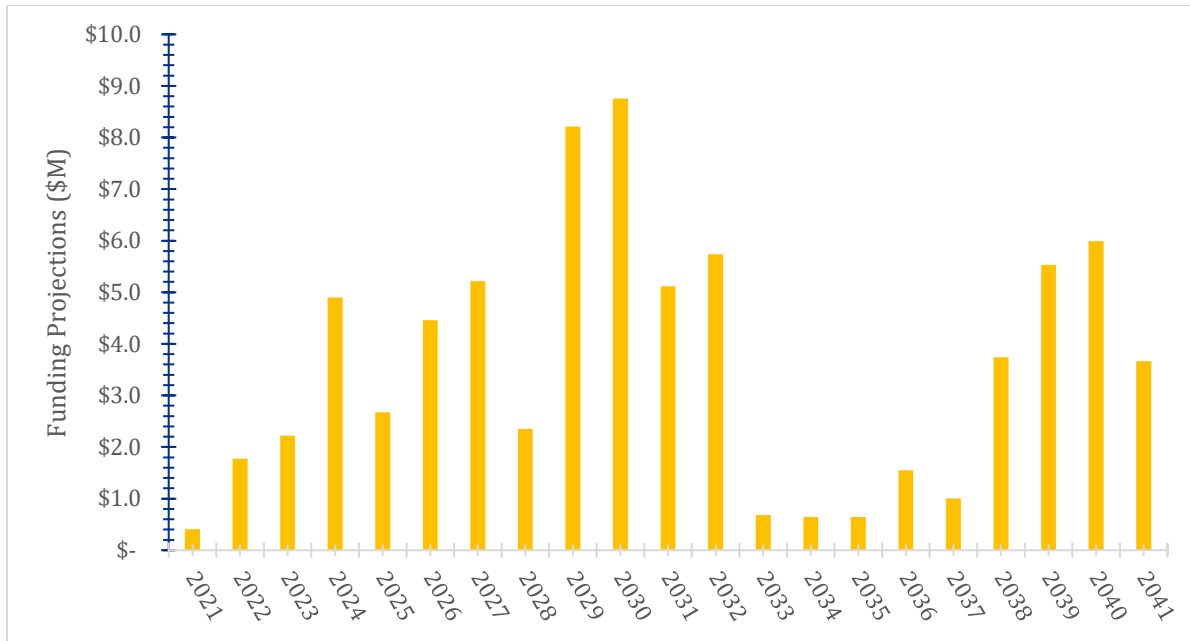


Figure ES-15. Annual Water Funding Projections for City CIP Projects

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Section 1

Background and Project Purpose

The City continues to experience strong growth in population through both infill and expansion of residential, industrial, and commercial development within the City's defined service area. To address existing and future system needs with consideration of growth, existing system performance, and improvements required to meet their committed level of service to the new growth areas, the City has developed a new WTDMP (2021). This master plan documents the approach and assumptions used to evaluate the system and define the capital improvements needed for the long-range CIP for the water transmission and distribution system through the year 2040.

1.1 Master Planning Process and Organization

The WTDMP was developed in conjunction with the City's SSMP and NPMP. The City integrated the three master created a consistent approach to determining existing and future population and water demands and to define capital projects and costs. A schematic of the City's integrated water system for water, wastewater, and non-potable water is shown in **Figure 1-1**.



Figure 1-1. Greeley's Integrated Water System

The future population projections and associated water demand, planning horizons, and approach to capital and project cost development are consistent between the three master plans, as shown in **Figure 1-2**. This figure also shows the critical points of coordination between the three master plans.

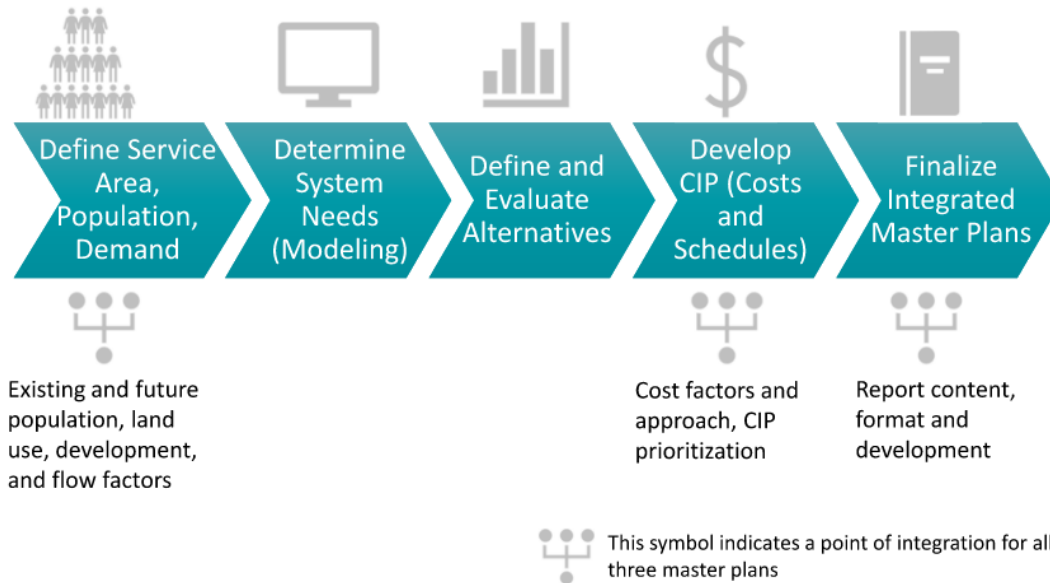


Figure 1-2. Master Plan Approach and Integration with other Master Plans

1.1.1 Report Organization

The WTDMP is organized into the following sections:

- Section 1 – Background and Project Purpose
- Section 2 – Future Population and Water Demand Projections
- Section 3 – Future System Model Development
- Section 4 – Future System Model Evaluation
- Section 5 – Capital Improvements Plan
- Section 6 – Findings and Recommendations

1.2 Existing System Overview

The City's existing water distribution system is described in this section. In general, the system has two components: transmission and distribution. The transmission system brings water from two WTPs into four storage facilities, which helps balance out fluctuating demands and provides emergency storage. From there, the distribution system piping conveys water to customers in four pressure zones. Three pump stations support this system. The system also uses pressure reducing valves (PRVs) to supply water across certain pressure zone boundaries. **Figure 1-3** illustrates the highlights of the City's existing water system.

1.2.1 Treatment

Water is supplied to the distribution system from the Bellvue WTP and Boyd Lake WTP. The Bellvue WTP supplies water from a clearwell through 30 miles of various transmission pipelines to all storage facilities. The Boyd Lake WTP supplies water from a clearwell by pumping directly

into the Zone 3 distribution system, which fills the Gold Hill reservoirs. The Boyd Lake WTP only operates during peak months and is considered to be a peaking plant to help the primary Bellvue WTP, which operates year-round. Bellvue WTP has a capacity of 35 MGD and Boyd Lake WTP has a capacity of 38 MGD.

1.2.2 Pressure Zones

The City's water system operates under four pressure zones to provide adequate service at acceptable pressures as shown in **Figure 1-3**. Four pressure zones are served by a combination of flows and sources.

- Zone 1 is served entirely by gravity flow from the Bellvue WTP. This Zone starts at 4,740 feet and extends to the far east.
- Zone 2 is served by PRVs from Zone 3. This Zone extends from 4,840 feet to 4,740 feet.
- Zone 3 is served directly from the Boyd Lake WTP lines and from the Gold Hill reservoirs (which receive water from both Bellvue WTP and the Boyd Lake WTP). This Zone extends from 4,940 feet to 4,840 feet.
- Zone 4 currently has the least development. It is served from the Zone 4 elevated tank, which is filled from Bellvue WTP and Boyd Lake WTP via the Zone 4 pump station. This Zone extends from 5,100 feet to 4,940 feet.

1.2.3 Storage Facilities

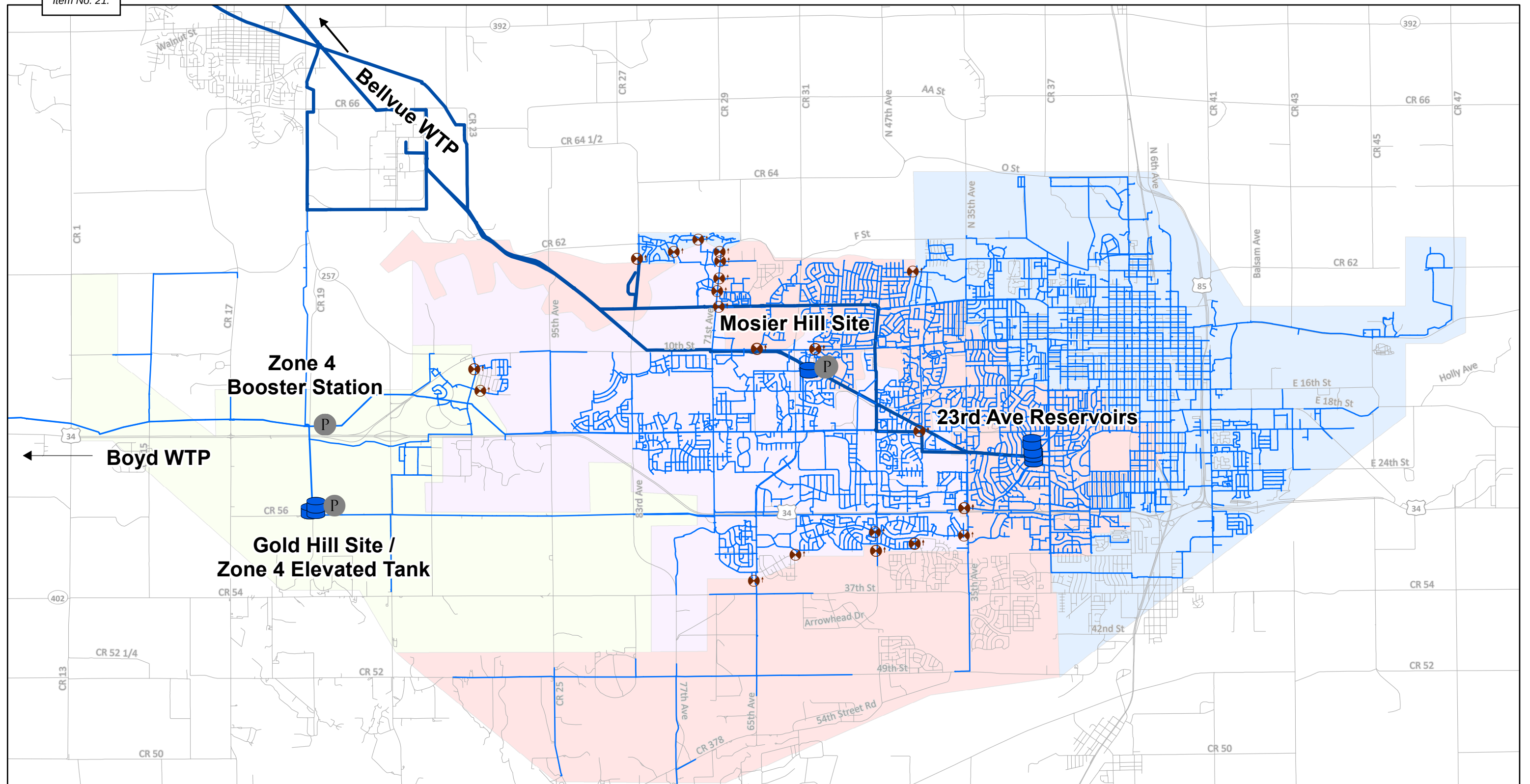
The distribution system includes four treated water storage facilities (eight total tanks) with a total storage capacity of 74.5 million gallons (MG). The tank type, names, location, and capacity per tank are summarized in **Table 1-1**. The 23rd Avenue reservoirs facility consists of four storage tanks connected to each other, which float on the hydraulic grade line (HGL) in the zone. The Gold Hill facility consists of two reservoirs (15 MG and 5 MG) on the same HGL. In total, the system has 74.5 MG of storage, including the additional storage at 23rd Avenue Reservoir #4.

Table 1-1. Storage Facilities

Storage Tank	Type	Overflow Elevation (feet)	Pressure Zone Served	Capacity (MG)
23rd Avenue Reservoirs	3 underground; 1 aboveground	4841	1	30 ¹
Mosier Hill Tank	underground	4868	2/3	15
Gold Hill Reservoirs	2 underground	5073	3	20
Zone 4 Elevated Tank	elevated	5225	4	2

¹ Reservoir #4 can also provide an additional 7.5 MG of emergency storage via pumping into the other reservoirs, bringing the total potential storage at 23rd Avenue Reservoirs to 37.5 MG.

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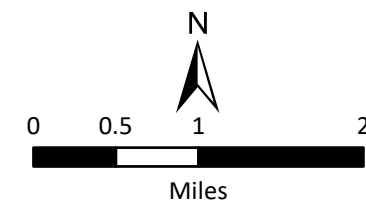


Legend

-  Existing Pump Stations
-  Existing Storage
-  PRV
-  Distribution Mains
-  Transmission Mains

Existing Pressure Zones

-  Zone 1
-  Zone 2
-  Zone 3
-  Zone 4



Existing Water System
Figure 1-3
Greeley Water System
Master Plan

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1.2.4 Pump Stations

The City's water system includes four pump stations. One of these is used to pump treated water from Boyd Lake WTP to Zones 3 and 4. The remaining three are part of the distribution system. The Zone 4 jockey pump acts as a booster pump, taking suction directly from Zone 3 to supply the Zone 4 elevated tank and serve the higher-pressure Zone 4. This pump is not used regularly. During higher Zone 4 demands, flow to the elevated tank is supplemented by a higher-capacity Zone 4 pump station, which takes suction directly from the Bellvue WTP and Boyd Lake WTP transmission lines. Water from the Mosier Hill storage tank is pumped to Zone 3 through Mosier Hill North and South pump stations. **Table 1-2** summarizes rated capacities of all the pump stations.

Table 1-2. Pump Stations Summary

Pump Station	Pump Number	Pressure Zone Served	Rated Capacity (gpm)	Rated Head (feet)
Boyd Lake WTP North ¹	6	3	7,000	312
	7		7,000	312
	8		7,000	312
	9		7,000	312
	10		7,000	312
Zone 4 Pump Station	1	4	200	250
	2		500	250
	3		750	250
	4		2,500	300
	5		2,500	300
Mosier Hill North	1	3	1,500	262
	5		2,800	190
	6		2,800	210
	7		2,800	210
Mosier Hill South	2	3	2,100	190
	3		1,000	198
	4		1,000	198
	T1		100	20
	T2		100	20
Zone 4 Jockey Pump	1	4	230	164

¹Boyd Lake WTP South was recently put out of service.

1.2.5 Pipelines

The water distribution and transmission system consist of about 641 miles of piping, ranging in size from 1- to 60-inches in diameter. There are three major transmission lines from Bellvue WTP and two major transmission lines from Boyd Lake WTP with sizes ranging from 20-inch to 60-inch. Pipe materials include cast iron, concrete, ductile iron, steel, and PVC. Pipe lengths for various pipe sizes are tabulated in **Table 1-3**. The 12-inch and smaller diameter pipes account for 67% of total pipe length and 16-inch and larger pipes account for 33% of total pipe length.

Table 1-3. Pipes Summary

Pipe Diameter (inches)	Pipe Length (miles)
< 8	133
8	231
10	9
12	52
16	34
20	46
24	19
27	52
30	16
34	8
36	6
38	2
48	3
54	6
60	25
Total Miles of Pipe	641

1.2.6 Valves

The City's water distribution system includes several PRVs that regulate downstream pressure when there is substantial drop in topographical elevations and thereby control delivery of excessive pressures to customers. These PRVs are generally located along the boundary between Zones 4 and 3 and the boundary between Zones 3 and 2. There are also three main control valves on the transmission system that regulate flow to the 23rd Avenue reservoirs. Zone valves or isolation valves which are normally closed separate the pressure zones across boundaries, especially along the boundary between Zones 2 and 1.

1.3 Summary of Previous Water Master Plan

This master plan builds on information and analysis completed in the 2003 MP, which is summarized below. Refer to **Section 4.5** for more information on how the conclusions and modeling results of this WTDMP correlate with the 2003 MP.

The 2003 MP focused on evaluating projects necessary for the 2020 planning horizon, along with longer-term plans for 2050. It focused on meeting demands through the urban growth boundary, instead of the LREGA. A 2.5% population growth was assumed through 2020, and a 2.0% population was assumed from 2020 to 2050.

While the scope of the 2003 MP and this WTDMP overlap, the WTDMP focuses more on distribution, and the 2003 MP focused more on supply. The 2003 MP looked at 57 potential new raw water supply sources, five treatment plant alternatives, and associated transmission options. It emphasized the need for water conservation, including maximizing non-potable water usage, which is still a key goal for the City. Financial recommendations, such as the establishment of a

future water account, were discussed in greater detail in the 2003 MP than in the WTDMP. Ultimately, the 2003 MP provided a CIP through 2012.

1.4 Summary of Available Data

The City-provided information used to inform the development of the master plan update is described in the following sections. This information includes mapping, asset information, planning data, and historical data like SCADA and sampling records.

1.4.1 Water System Hydraulic Model

The City provided a hydraulic model of their existing water system, developed in InfoWater under a separate contract by others. The existing system model was built on 2018 SCADA and geographic information system (GIS) data. The existing system model was calibrated to September 2018 SCADA data (using time-based controls for the 24-day run), and included scenarios for average month, minimum month, and peak month demands. The existing model was also evaluated for power costs, water age, source tracing, and fire flow analyses. This calibrated existing system model was used to build and evaluate future water systems as part of the WTDMP.

The existing model was accompanied by a report, *2018 Water Distribution System Model* (2019), which summarized key components of the existing system and described the model development, validation, calibration, and various analyses conducted.

1.4.2 GIS Data

The City provided their current GIS files (November 2019) including planning, land use, population, water system, and drainage information. Although comprehensive GIS data on the existing system was provided, this data was primarily supplemental to the existing water system model, which was the primary source of the existing system network.

1.4.3 Historical Data Collection Records

The City provided historical reservoir, WTP, and water quality sampling data, as summarized in **Table 1-4**.

Table 1-4. Historic Data Records

Data Provided	Description
Reservoir Flow	Spreadsheet of hourly influent and effluent flow data for the 23rd Avenue reservoirs, Mosier Hill, and Gold Hill from 7/18/16 through 7/24/16
Plant Production	Spreadsheet of daily flow data for Bellvue WTP and Boyd Lake WTP from 1/1/10 through 1/1/20
Plant Peak Week Production	Spreadsheet of hourly flow data for Bellvue WTP and Boyd Lake WTP from 7/18/16 through 7/24/16
Sampling Data	PDF records of monthly water quality sampling and a pdf of sampling locations

1.4.4 Planning Information

Tables 1-5 and 1-6 review the previous studies, reports, planning information, and intergovernmental agreements provided by the City. The City of Greeley adopted the *Imagine Greeley Comprehensive Plan* in 2018, which is a policy guide that provides framework for public and private growth and development decisions made by the City of Greeley over the next ten to twenty years. As a part of the Comprehensive Plan, a list of recommended actions was identified in Chapter 5 to assist in implementation of this plan. A summary of action items addressed with the development of this WTDMP to ensure implementation of the Comprehensive Plan can be found in **Appendix G**. In addition to this data, the City provided the City of Greeley Design Criteria and Construction Specifications (City's Specifications) and monthly water billing data (2014–2019).

Table 1-5. Previous Studies and Reports

Report	Year
2018 Water Distribution System Model	2019
Aims and University of Northern Colorado (UNC) Reports	2020
Airport Master Plan	2016
Annual Growth and Development Projections Report	2019
Boomerang 88 Subdivision Sewer System Analysis	2007
Cache Project Planned Unit Development (PUD)	2020
City Center West Hydraulics Report	2019
City of Greeley Population and Water Demand Projections	2018
City of Greeley Strategic Housing Plan	2018
Cobblestone PUD	2019
Downtown Redevelopment Plan	2020
Final Hydraulic Report – The Trails at Sheep Draw	2018
Gold Hill Overview	2019
Grapevine PUD	2019
Imagine Greeley Comprehensive Plan	2018
Imagine Greeley Comprehensive Plan Appendices	2018
Imagine Greeley Comprehensive Plan Economic Analysis	2017
Initial Distribution System Evaluation Report	2009
Lake Bluffs PUD 2019	2019
Lake Bluffs PUD 2020	2020
Lakes Bluffs East Area	2013
North of the River Study	2010
Promontory Heights PUD	2019
Stoneybrook PUD	2019
Triple Creek Subdivision PUD	2019
Water Facilities Master Plan	1977
Water Master Plan	2003
Westgate PUD	2019

Table 1-6. Intergovernmental Agreements

Name	Type	Year
Garden City	Water and sewer service	2018
Milliken	Water service	2017
Windsor	Water service	2017
North Weld Water Service	Water service	2013
Windsor Greeley Intergovernmental Agreement Cooperative Land Use Agreement	Development and utility service	2008
Town of Windsor	Development and utility service	2004
Evans	Water service	1998

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Section 2

Future Water Demand Projections

To plan for the water needs of the City, current and future demands on the system were analyzed to help determine what steps the City should take to ensure that sufficient supply is available. This section presents the methodology for projecting and distributing future water demands for the water transmission and distribution system hydraulic model (water model). This methodology was coordinated with the SSMP flow projections. It was also extended to project and distribute non-potable water demands the methods should overlap, thereby creating consistency between the SSMP, NPMP, and WTDMP, as illustrated in **Figure 2-1**.

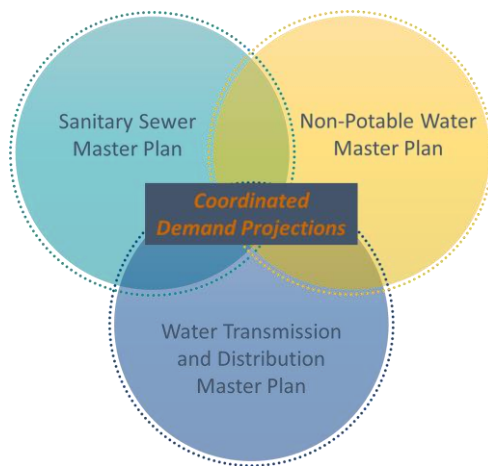


Figure 2-1. Coordinated Demand Projections

The goal of the process described herein is to develop the values and parameters related to modeling water demands for each of the planning horizons, which are defined as existing, 2025, 2040, and buildout. An overview of the methodology is outlined below:

- For existing conditions, demands were previously calibrated by Bohannon Huston, Inc. during the creation of the water system model. These demands were left unchanged for modeling the future system.
- The next step was to define the buildout scenario. All areas not currently developed or planned for redevelopment within the service area boundary were assigned demands based on planned development, zoning, and future land use information provided by the City. Density factors recommended for each land use type to describe residential or nonresidential demands per acre were applied to the additional acreage to be developed, including new development, redevelopment, and infill.
- The final step was to define and spatially distribute the demands for the 2025 and 2040 planning horizons. Planned development progress information from the City was used for this step.

This section presents the parameters derived from the information available and the necessary calculations and assumptions needed to distribute that information spatially for each planning horizon. The parameters are presented in terms of how they are used for the WTDMP. The SSMP and NPMP use similar parameters as appropriate for determining wastewater flows and non-potable water demands.

2.1 Existing Demands

The demands for the existing system were previously developed by others and were allocated in the existing water model. These demands were determined based on existing billing and metering data from June 2017 to June 2018. Certain billed customers were not allocated within the existing model, such as those who use well water or those from neighboring water districts that are tracked for sewer billing purposes. In addition to monthly billing data, hourly automatic meter reading data was collected from the largest 316 water users, known as profilers. This data was used to better understand usage patterns and locational effects, instead of just total consumption.

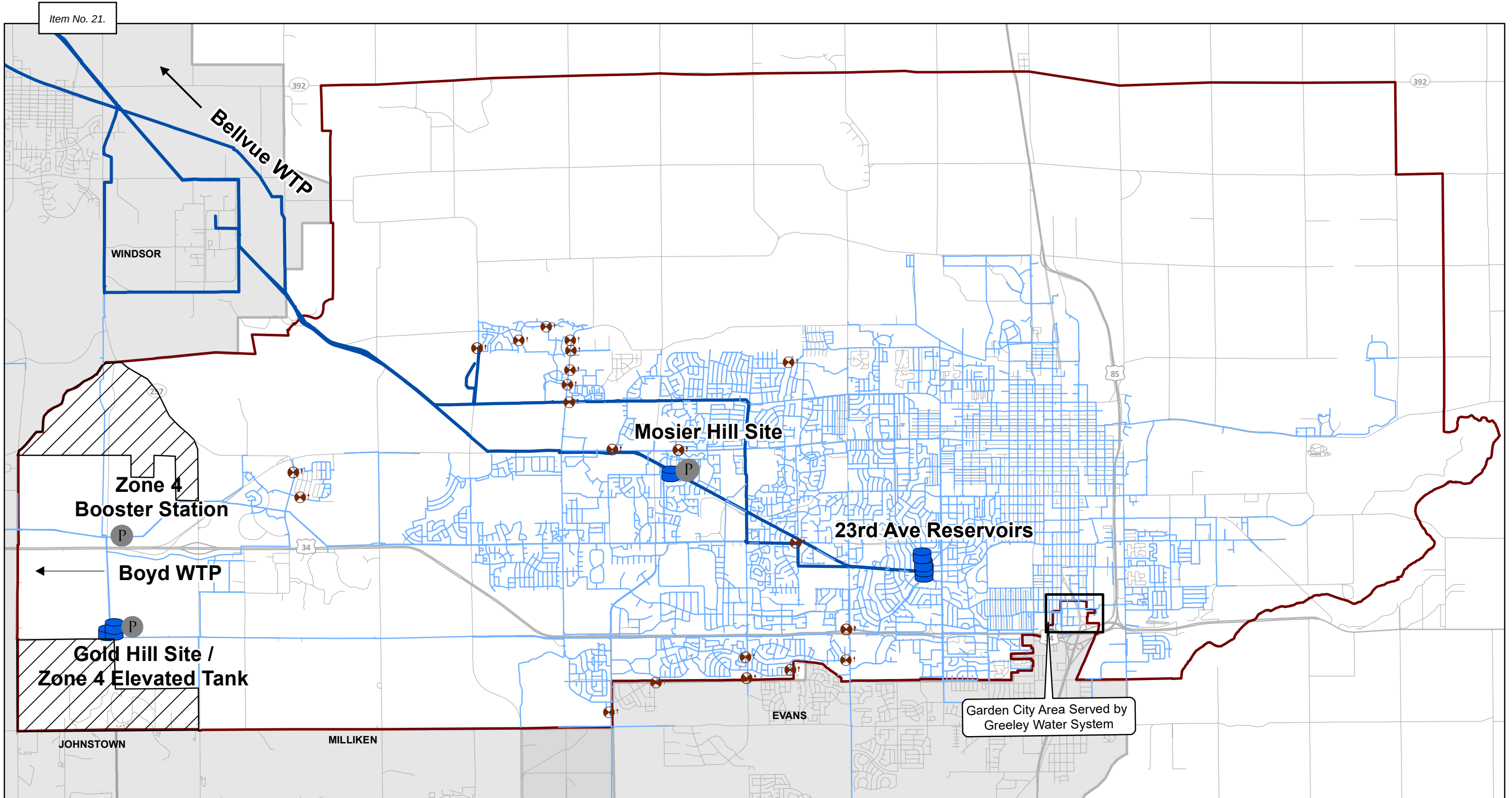
Ultimately, these demand sources were used to create various demand datasets, including average month, minimum month, peak month, a calibration month, and September 2018. The demands were allocated into the water model using InfoWater's "Demand Allocation Manager" tool, with the "closest junction" method.

Calibration of the existing system, including the existing demands, was completed by others as part of the existing water system model development. These existing demands were left unchanged for future modeling scenarios and will be the same for every planning horizon.

2.2 Service Area and Population Projections

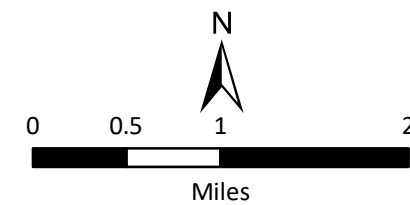
The planning information used to calculate demands was spatially distributed through the LREGA boundary, as shown in **Figure 2-2**. This represents the limits of the City's expected growth and where they plan to provide water and wastewater services in the future.

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Legend

- Existing Pump Stations
- Existing Storage
- PRV
- LREGA
- Distribution Mains
- Transmission Mains
- Overlapping Growth Area (to be negotiated in future IGAs)
- Neighboring Towns



Water Master Plan Area
Figure 2-2
Greeley Water System
Master Plan

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Population projections represent the timing of population growth to be distributed throughout the LREGA. Various sources of population projections were reviewed and discussed with the City. The most relevant projections come from the *City of Greeley Population and Water Demand Projections* (BBC Research & Consulting 2018), referred to as the BBC report. Historical, low, middle, and high population projections are shown in **Figure 2-3**. The three population projections result in a linear annual growth rate of 2.2% for the low scenario, 3.1% for the middle scenario, and 4.0% for the high scenario. The current population and projected 2075 populations for each growth rate is noted. Based on discussions with the City and their knowledge from other studies, it is assumed that 2075 does not represent the buildout year for the City within the LREGA boundary. The BBC report notes that the buildout scenario is likely even later than 2090.

The City estimates that the population currently served by the water system is approximately 107,146. To project future water demand, the proposed population increases from the BBC report are used to spatially distribute demands for each planning horizon. Following agreement with the City, the “middle” projection has been selected for wastewater and water system analysis and is the basis of population projections. A buildout population is extrapolated beyond 2075 based on the planning data and factors as described in the following sections.

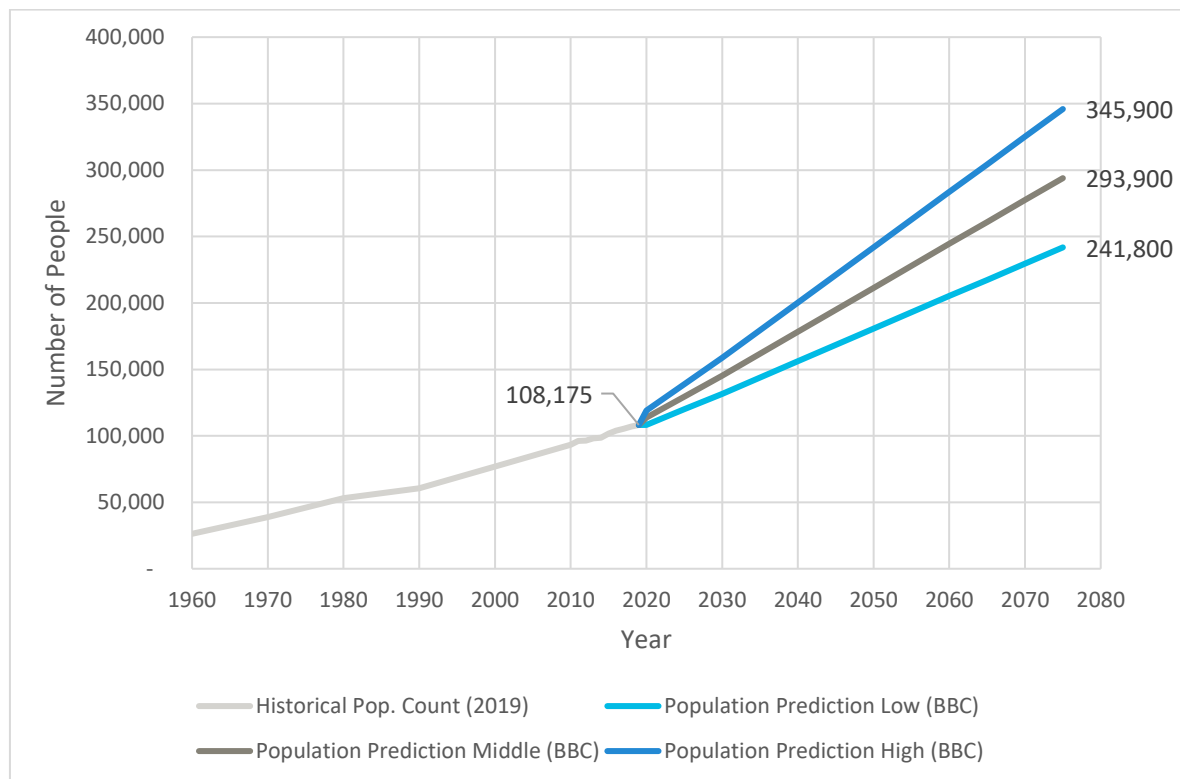


Figure 2-3. Historical and Projected Population (BBC Report 2019)

To project future water demand, the proposed population increases from the BBC report are used to spatially distribute flows for each planning horizon. (i.e., the spatially distributed additional population plus the existing population at each planning horizon is set to match the “middle” population projection). The “middle” projection was selected for system analysis and as the basis of the projections methodology. A buildout population is extrapolated beyond 2075 based on the

planning data and factors described in the following sections. **Table 2-1** lists the population for each decade and planning horizon year out to the BBC report 2075 population. Residential demand is calculated by multiplying the population by gallons per day per person (gpd/person). This is not the same as gallons per capita per day because residential demand does not include nonresidential demand contributions.

Table 2-1. Middle Population Projection (BBC Report 2019)

Year	Middle Population Projection
2018	107,146
2020	113,700
5-year, 2025	129,450
2030	145,200
20-year, 2040	178,300
2050	211,400
2060	244,400
2065	260,900
2070	277,400
2075	293,900
Buildout	428,148

2.3 Water Billing Data

The existing water demand was largely established through analysis of monthly water billing data, provided by the City from 2014 through 2019. Summer (July/August) water billing data from 2018 and 2019 was used to initially develop the demands. To determine the distribution of the future population, the total of dwelling units (DUs) were multiplied by the appropriate factors from the City's Specifications:

- Low-density residential (R-L): 3.1 people per unit.
- Medium-density residential (R-M): 2.7 people per unit.
- High-density residential (R-H): 1.7 people per unit.

The nonresidential billing data from the same period was joined with zoning data and converted to gallons per day per acre (gpd/acre) to compare summer water use among various nonresidential zoning categories. Based on conversations with the City, it was decided that irrigation meters should be removed from the billing data to more accurately reflect true commercial and industrial flow factors. Irrigation meters were identified by assuming that irrigation meters meet the following criteria: were in the list of water customers but not wastewater customers; had demand in August but not January; and were billed to commercial, school districts/UNC, or the City. This information was used to project water demands in future development areas where only zoning information is available. While there are no industrial high (I-H) areas identified for future development in the WTDMP, it is expected that the City could see

up to six future I-H users. The zoning categories for nonresidential water use include the following:

- C-H: commercial high intensity
- C-L: commercial low intensity
- I-L: industrial low intensity
- I-M: industrial medium intensity

A box and whisker plot of gpd/acre for the 2018–19 nonresidential summer water use by zoning category is shown in **Figure 2-4**. This plot includes the following statistics:

- The bottom and top of the vertical lines represent the minimum to maximum values excluding outliers. Outliers are defined as any point that lies 1.5 times the interquartile range or the length of the “box” in the plots shown.
- The bottom and top of the box are the 25th and 75th percentiles, respectively.
- The line inside the box is the median.
- The “x” is the average.

The recommended values are rounded from the 75th percentile of all data within each category based on discussions with the City.

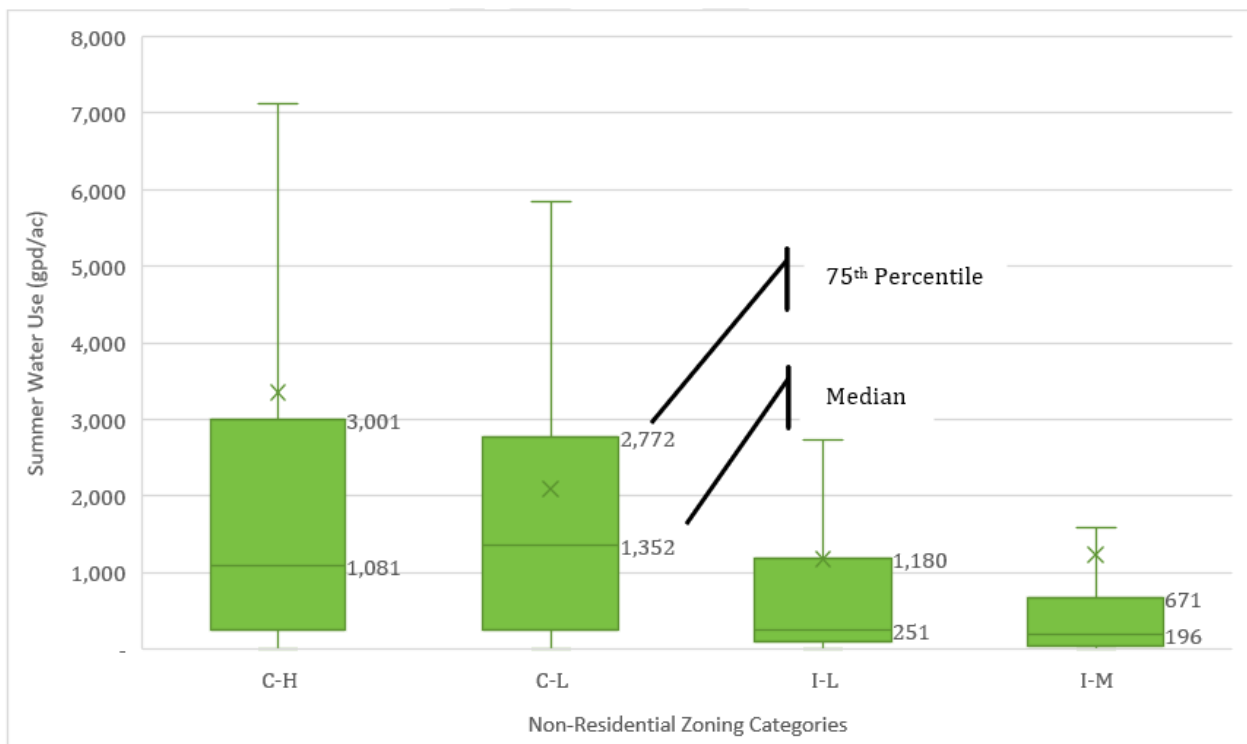


Figure 2-4. Box and Whisker Plot: 2019 Nonresidential Summer Water Use by Commercial Class

Table 2-2 summarizes the median and 75th percentile values for the zoning categories, with the recommended values rounded up from the 75th percentile. This information was used as part of projecting future water demands.

Table 2-2. Nonresidential Summer Water Billing Data Summary

Nonresidential Zoning Categories	Median (gpd/acre)	75th Percentile (gpd/acre)	Recommended Value for Future Demand Projections (gpd/acre)
Commercial Low Intensity, C-L	1,352	2,772	2,800
Commercial High Intensity, C-H	1,081	3,001	3,000
Industrial Low Intensity, I-L	251	1,180	1,500
Industrial Medium Intensity, I-M	196	671	750

¹I-L and I-M flow factor values were established based on historic billed water use. The C-L, C-H, I-L, and I-M categories are for zoning purposes only, and do not necessarily represent low and medium water demand.

2.4 Demand Projection Methodology

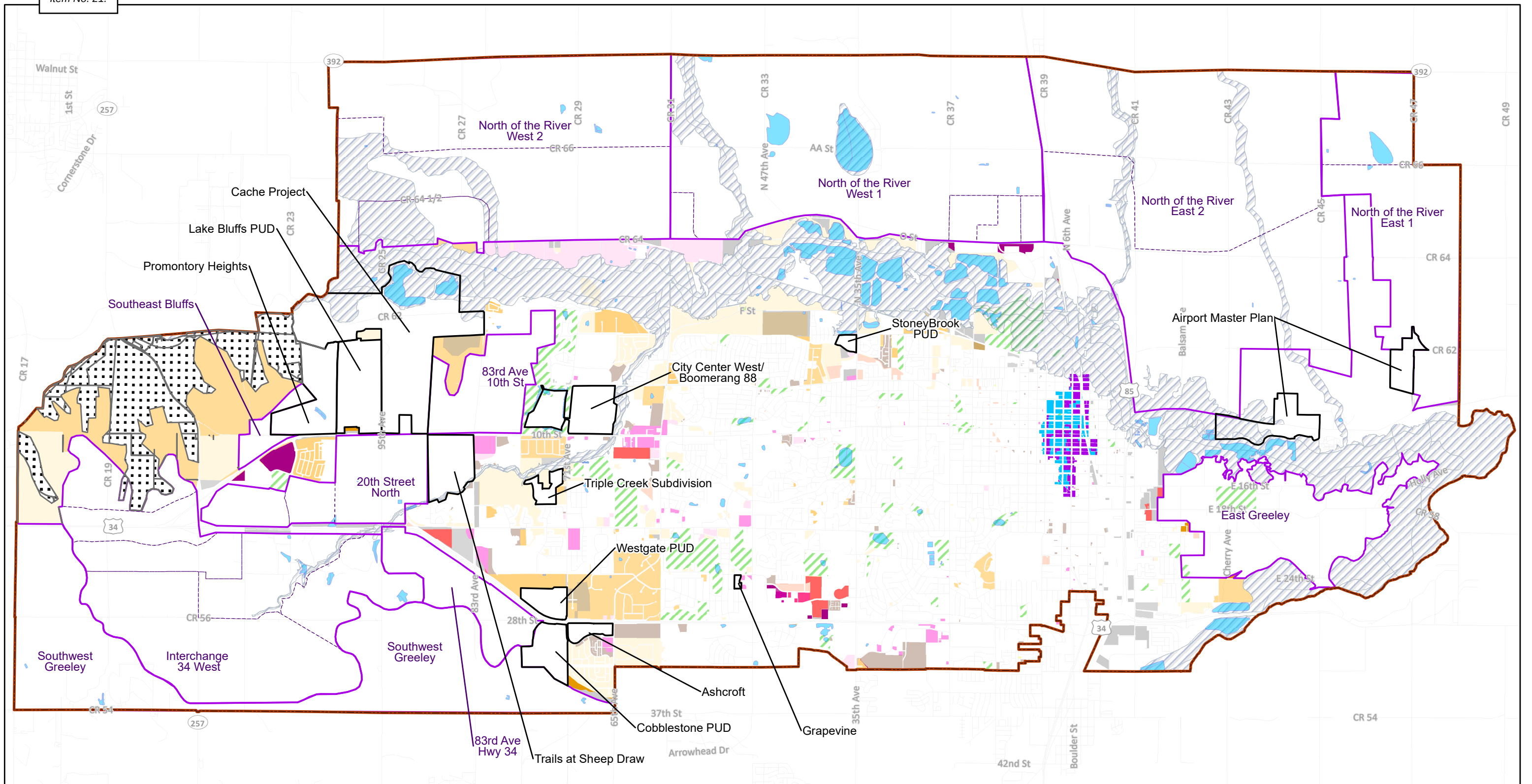
Many areas in the City are already fully developed. These areas do not represent a future demand and were left out of the demand projection calculations. Existing demands from these areas were previously calibrated within the InfoWater model, and were used for the hydraulic model of the future system.

Future demand parameters are distributed to currently undeveloped areas or areas of redevelopment based on the best available information for each area. Three tiers of information are described below:

1. Tier 1: Planned Developments.
2. Tier 2: City of Greeley Land Use (Sub-Areas) and Zoning Markup Map (Greeley Markup).
3. Tier 3: Zoning and Comprehensive Plan Information.
 - a. Zoning from the *Annual Growth & Development Projections Report* (City of Greeley 2019).
 - b. Land use guidance from the *Imagine Greeley Comprehensive Plan* (City of Greeley Community Development Department 2018).

Refer to **Figure 2-5** below for a map showing the future projection areas by tier and growth type.

The City of Greeley adopted the *Imagine Greeley Comprehensive Plan* in 2018, which is a policy guide that provides framework for public and private growth and development decisions made by the City of Greeley over the next ten to twenty years. As a part of the Comprehensive Plan, a list of recommended actions was identified in Chapter 5 to assist in implementation of this plan. A summary of action items addressed with the development of this WTDMP to ensure implementation of the Comprehensive Plan can be found in **Appendix G**.





Great. From the Ground Up.



February 25, 2021

Legend

- LREGA
- Tier 1 (Planned Developments)
- Tier 2 (Greeley Markup)
- Tier 2 (Sub-Areas)

Tier 3

C-H	R-H
C-L	R-L
I-L	R-M
I-M	R-MH
R-E	

Downtown Development Authority (Existing Flow)

Downtown Development Authority (Redevelopment)

Employment, Industrial, and Commercial

Mixed Use

Mixed Use High Intensity

Residential

Rural

Bluffs - No Development

100-yr Floodplain

Lakes and Ponds

Parks

0 0.5 1 2 Miles

Future Projection Areas by Growth Type

Figure 2-5

Greeley Water System Master Plan

Page 1233

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2.4.1 Tier 1: Planned Developments

Several development plans have been submitted to the City for areas within the LREGA. This information was used to delineate areas and distribute future populations for modeling future demands. The various planned developments are described in **Table 2-3** and shown in **Figure 2-5**.

Table 2-3. Planned Development Information (Tier 1)

Planned Development	Area	Projected Population	Projected Residential Demand	Projected Nonresidential Demand
	(acres)	(people)	(gpd)	(gpd)
Airport Master Plan	196	0	0	749,122
Cache Project	800	8,444	954,172	74,685
City Center West/Boomerang 88	214	3,001	339,113	0
Cobblestone PUD	145	3,049	344,537	76,031
Grapevine	6	119	13,447	0
Lake Bluffs PUD	305	2,308	260,804	601,920
Promontory Heights	276	2,936	331,768	148,452
StoneyBrook PUD	20	350	39,550	0
Trails at Sheep Draw	93	2,304	260,352	417,816
Triple Creek Subdivision	51	282	31,866	0
UCHealth – Ashcroft	45	0	0	141,120
Westgate PUD	85	1,012	114,356	47,717
Total	2,237	23,805	2,689,965	2,256,862

2.4.2 Tier 2: City of Greeley Land Use and Zoning Markup Map

Outside of the planned development areas described in **Table 2-3**, available information for the remaining areas was the 2019 Zoning Map and the 2018 *Imagine Greeley Comprehensive Plan*. The City reviewed the data sets and marked up 11 areas to which a specific growth distribution was applied. The City's planning department assigned percentages of land use type to each growth area. **Table 2-4** describes the distribution of land use projections for each growth area. For example, for the area within the 83rd Avenue/Highway 34 boundary, 65% of the total acreage is assumed to be C-H, while 35% of the total acreage is assumed to be R-H at 20 dwelling units per acre (DU/acre).

The population for each area was calculated by multiplying the DU/acre (as determined by the City's planning department) by the percentage of the total area marked for residential and then applying the appropriate population factors (people/DU) described above. The nonresidential demand was calculated by multiplying the total area by the percentage of nonresidential use and then applying the appropriate density factor (gpd/acre) developed in **Table 2-2**.

Section 2 • Future Water Demand Projections**Table 2-4. City of Greeley Markup Map Summary (Tier 2)**

Markup Areas	Area	Percent of Total Area per Nonresidential Land Use Category				Percent of Total Area per Residential DU/Acre Category				Projected Population Increase	Projected Residential Demand	Projected Nonresidential Demand
	(acres)	C-L	C-H	I-L	I-M	1.0	2.5	4.0	20	(people) ¹	(gpd)	(gpd)
83rd Avenue/Highway 34	589		65%						35%	7,003	791,339	1,147,601
83rd Avenue/10 th Street	649		15%					45%	40%	12,456	1,407,528	292,247
20 th Street North	895		25%					50%	25%	13,162	1,487,306	671,516
Southeast Bluffs	130		15%					45%	40%	2,499	282,387	58,626
North of the River – East 1	2,006		10%		80%	10%				622	70,286	1,805,587
North of the River – East 2	5,734		20%		30%			35%	15%	54,128	6,116,464	4,730,450
North of the River – West 1	4,417		15%		10%	10%		50%	15%	51,285	5,795,205	2,319,069
North of the River – West 2	3,793		10%		20%	30%		30%	10%	30,531	3,450,003	1,706,727
East Greeley	1,358				30%	40%		30%		6,736	761,168	305,549
Southwest Greeley	2,906						100%			22,520	2,544,760	0
Interchange 34 West	3,676		20%		10%			50%	20%	47,786	5,399,818	2,481,177
Total										248,728	28,106,264	15,518,549

¹ For 20 DU/acre, 1.7 people per DU was assumed. For 1-4 DU/acre, 3.1 people per DU was assumed.

To spatially distribute the calculated demands within each Tier 2 growth area, the total demand is split into sub-areas within each Tier 2 growth area based on direction from the City. The distribution of demand to each sub-area intended to follow the density distribution of the original *Imagine Greeley Comprehensive Plan* and was reviewed and verified with the City.

2.4.3 Tier 3: Zoning and Land Use Guidance (Infill)

For the remaining area within the LREGA, zoning and land use information was used to distribute future populations and water demand parameters. The 2019 Zoning Map was used except in areas defined as Planned Unit Development or Holding Agriculture (H-A). In these zones and areas outside the 2019 Zoning Map, the *Imagine Greeley Comprehensive Plan* land use guidance was used to define future population and water demand parameters.

The City's Specifications provide a typical range of density (population per acre) within each zoning type. To project future demands, a typical density was chosen for each zoning type. The recommended densities were based on discussions with the City and a review of the following sources:

- Existing summer water billing data for nonresidential areas (in gpd/acre by category).
- *Imagine Greeley Comprehensive Plan* (City of Greeley Community Development Department 2018).
- The City of Greeley's "Design Criteria and Construction Specifications," which includes zoning district development standards.
- Similar future projection studies.

Table 2-5 summarizes the recommended densities by zoning and land use guidance category used for the projection methodology. Values recommended for nonresidential water demands are based on the values previously presented in **Table 2-2**. **Table 2-6** shows the resulting population and nonresidential demand projection from the Tier 3 areas.

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Table 2-5. Recommended Zoning and Land Use Guidance Densities (Tier 3)

Zoning or Land Use Guidance Category	Design Criteria Residential Density ¹ (DU/acre)	Recommended Residential Density for Planning (DU/acre)	People Per Unit ²	Recommended Nonresidential Water Demand Density (gpd/acre) ³
Residential Estate (R-E)		1	3.1	
Residential Low Density (R-L)	3 to 5	4	3.1	
Residential Medium Density (R-M)	6 to 10	6	2.7	
Residential High Density (R-H)	11 to 20	20	1.7	
Residential Mobile Home (R-MH)		6	2.7	
Commercial Low Intensity (C-L) ⁵				2,800
Commercial High Intensity (C-H) ⁵				3,000
Industrial Low Intensity (I-L) ⁵				1,500
Industrial Medium Intensity (I-M) ⁵				750
For areas zoned as – Planned Unit Development (PUD) or Holding Agriculture (H-A) The projection categories from the 2018 <i>Imagine Greeley Comprehensive Plan</i> are used. See below:				
Employment, Industrial, and Commercial				3,000
Mixed Use High Intensity (assume 50% R-H, 50% C-L)	4 to 20	15	1.7	1,400
Mixed Use (assume 50% R-M, 50% C-L)	4 to 20	10	2.7	1,400
Suburban	2 to 10	10	2.7	
Residential	3 to 5	4	3.1	
Legacy Urban	4 to 20	10	2.7	
Downtown Development Authority (Redevelopment)	N/A	45	1.7	
Rural	0 to 2	2	3.1	

¹The City's Specifications provided as reference values for the recommended residential zoning densities. Reference values from the *Imagine Greeley Comprehensive Plan* provided for the Mixed Use, Suburban, Legacy Urban Residential, and Rural areas.

²People per unit are based on the City's Specifications, described above.

³Recommended nonresidential water demand densities per **Table 2-2**.

⁴Recommended density of 45 units/acre within the Downtown Development Authority area is per discussions with the City.

⁵ Commercial and industrial land use categories and their associated intensity designations (C-L, C-M, C-H, I-L, I-M, and I-H) are for zoning purposes only and do not indicate volume of water use.

Table 2-6. Zoning and Comprehensive Plan Projections (Tier 3)

Zone	Acres	Projected Population	Projected Residential Demand	Projected Nonresidential Demand
		(people)	(gpd)	(gpd)
Commercial High Intensity (C-H)	167	0	-	501,060
Commercial Low Intensity (C-L)	460	0	-	1,286,964
Industrial High Intensity (I-H) ¹	0	0	-	0
Industrial Low Intensity (I-L)	91	0	-	136,800
Industrial Medium Intensity (I-M)	200	0	-	150,240
Residential Estate (R-E)	934	2,894	327,022	0
Residential High Density (R-H)	194	6,597	745,461	0
Residential Low Density (R-L)	1,629	20,196	2,282,148	0
Residential Medium Density (R-M)	143	2,317	261,821	0
Residential Mobile Home (R-MH)	2	34	3,842	0
Comprehensive Plan Area Category	Acres	Projected Population	Projected Residential Demand	Projected Nonresidential Demand
		(people)	(gpd)	(gpd)
Downtown Development Area	91	6,966	787,158	0
Employment, Industrial, and Commercial	131	0	-	391,860
Legacy Urban	0	0	-	0
Mixed Use	25	199	22,487	34,468
Mixed Use High Intensity	122	2,076	234,588	170,982
Residential	250	3,102	350,526	0
Rural	196	1,213	137,069	0
Total	4,635	45,594	5,152,122	2,672,387

¹ An I-H user with demands of 1 MGD was used for one model sensitivity test. See **Sections 4.2.5** and **4.3.5** for additional information.

2.5 Growth Estimates by Planning Horizon

To distribute the future demand parameters in the model at each planning horizon, the percent to which each future development tier is built out at the end of each planning horizon was estimated as shown in **Table 2-7** and **Table 2-8**, based on the BBC report. At the 2025 and 2040 planning horizons, the calculated population was matched to the BBC report. The overall buildout population was assumed to exceed the 2075 BBC projected population. The total buildout population is projected to be 425,271.

The percent complete values listed in **Table 2-7** and **Table 2-8** and development areas included for each tier were chosen through discussions with the City. **Figure 2-6**, **Figure 2-7**, and **Figure 2-8** are visual representations of the information within **Table 2-7** and **Table 2-8** as well as depictions of the assumed growth areas for each planning horizon.

It is assumed that the Tier 1 projects will be completed first. For this reason, most of the Tier 1 projects are assumed to be complete at the 2025 planning horizon, and all of them complete at the 2040 planning horizon.

Because of the large areas within the Tier 2 projections category, the Tier 2 percent complete values for the 2025 and 2040 planning horizons have been developed through close discussion with the City. The Tier 2 areas identified for growth at the 2025 and 2040 planning horizons are the areas that the City's planning department identified as the most likely growth areas.

The Tier 3 growth identified below for the 2025 planning horizon was chosen through discussions with the City. Tier 3 growth included at the 2040 planning horizon was assumed to include all the infill around the Tier 1 and Tier 2 projected growth areas.

Table 2-7. Planned Development/Markup Area Information (Tier 1)

Planned Development – Tier 1	2025 (Percentage Complete)	2040 (Percentage Complete)	Buildout (Percentage Complete)
Airport Master Plan	100%	100%	100%
Cache Project	40%	100%	100%
City Center West/Boomerang 88	75%	100%	100%
Cobblestone PUD	100%	100%	100%
Grapevine	100%	100%	100%
Lake Bluffs PUD	50%	100%	100%
Promontory Heights	40%	100%	100%
StoneyBrook PUD	100%	100%	100%
Trails at Sheep Draw	100%	100%	100%
Triple Creek Subdivision	100%	100%	100%
UCHealth – Ashcroft	100%	100%	100%
Westgate PUD	100%	100%	100%
Total Population Increase – Tier 1	15,072	23,804	23,804

Table 2-8. Planned Development/Markup Area Information (Tiers 2 and 3)

Markup Areas – Tier 2	2025 (Percentage Complete)	2040 (Percentage Complete)	Buildout (Percentage Complete)
83rd Avenue/Highway 34	0%	10%	100%
83rd Avenue/10th Street	20%	25%	100%
20th Street North (100)	0%	10%	100%
20th Street North (200)	0%	15%	100%
20th Street North (300)	0%	10%	100%
Southeast Bluffs	0%	75%	100%
North of the River – East 1 (100)	0%	0%	100%
North of the River – East 1 (200)	0%	0%	100%
North of the River – East 2 (100)	0%	0%	100%
North of the River – East 2 (200)	0%	5%	100%
North of the River – West 1 (100)	0%	5%	100%
North of the River – West 1 (200)	0%	25%	100%
North of the River – West 1 (300)	0%	25%	100%
North of the River – West 1 (400)	0%	5%	100%
North of the River – West 2 (100)	0%	0%	100%
North of the River – West 2 (200)	0%	0%	100%
North of the River – West 2 (300)	0%	0%	100%
East Greeley	5%	10%	100%
Southwest Greeley	0%	10%	100%
Interchange 34 West (100)	0%	0%	100%
Interchange 34 West (200)	0%	0%	100%
Interchange 34 West (300)	0%	50%	100%
Interchange 34 West (400)	0%	0%	100%
Interchange 34 West (500)	0%	5%	100%
Total Population Increase – Tier 2	2,828	10,520	244,212
Zoning and Land Use Guidance – Tier 3	5-Year	20-Year	Buildout
Tier 3 Areas	7% ⁽¹⁾	76% ⁽¹⁾	100%
Total Population Increase – Tier 3	3,501	37,960	50,110
Summary	5-Year	20-Year	Buildout
Projected Population Increase – Tier 1–3 Total	21,402	72,284	318,125
BBC report – Population Increase	21,275	70,125	N/A

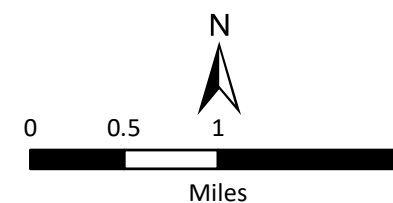
¹Percentage increases for the Tier 3 area are relative to total Tier 3 population increase. This increase will occur in specific areas per discussions with the City.

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-  LREGA
-  Demand Projection Area
-  100-yr Floodplain
-  Lakes and Ponds

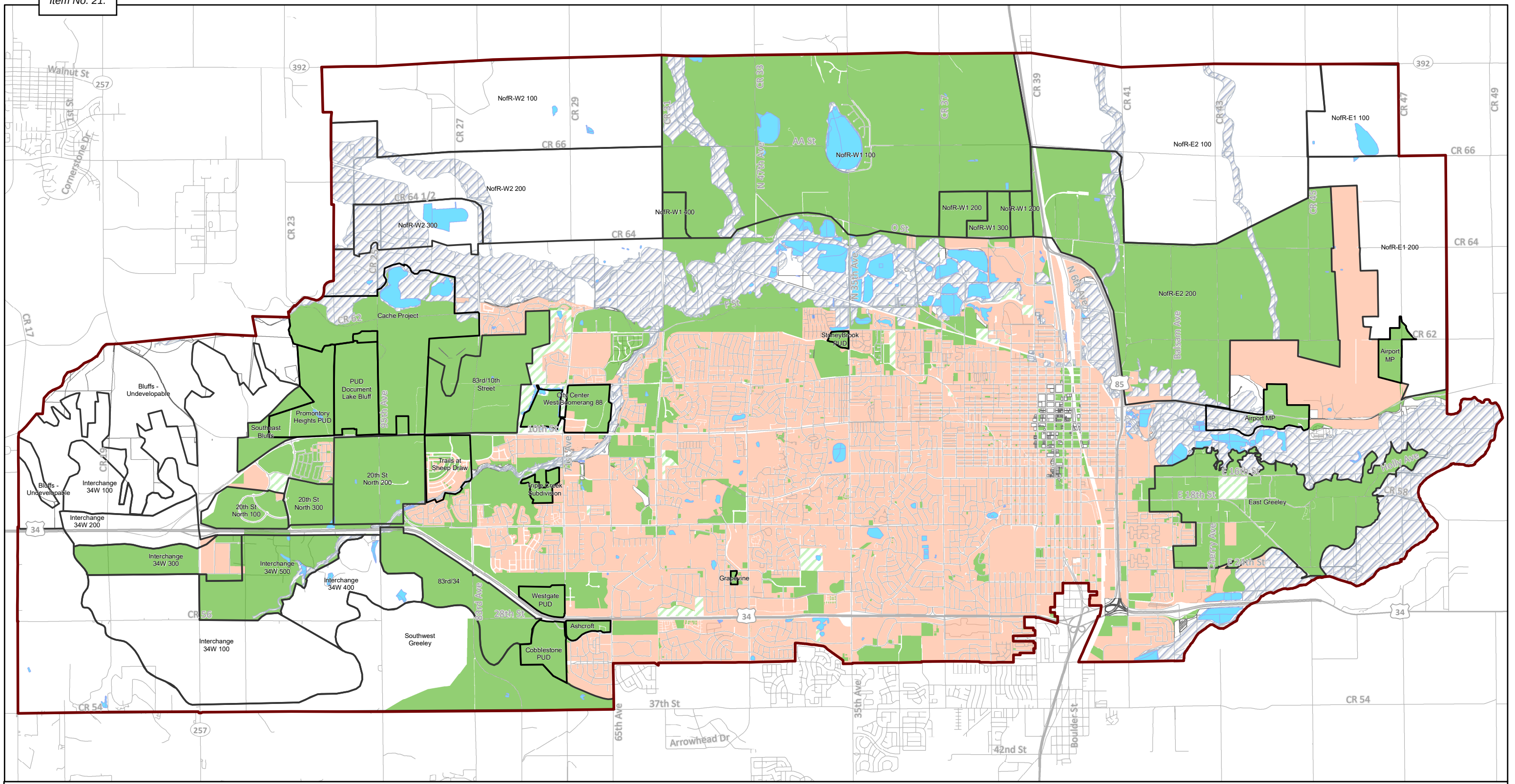
% = Percent Developed

-
-  Future Development
 Existing Service Area
 No Development
 Park



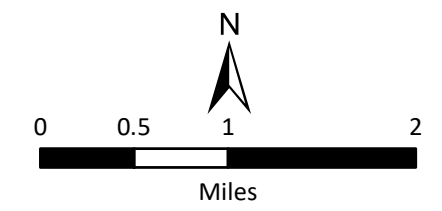
Developed Area
Projections: 2025
Figure 2-6
Greeley Water System
Master Plan

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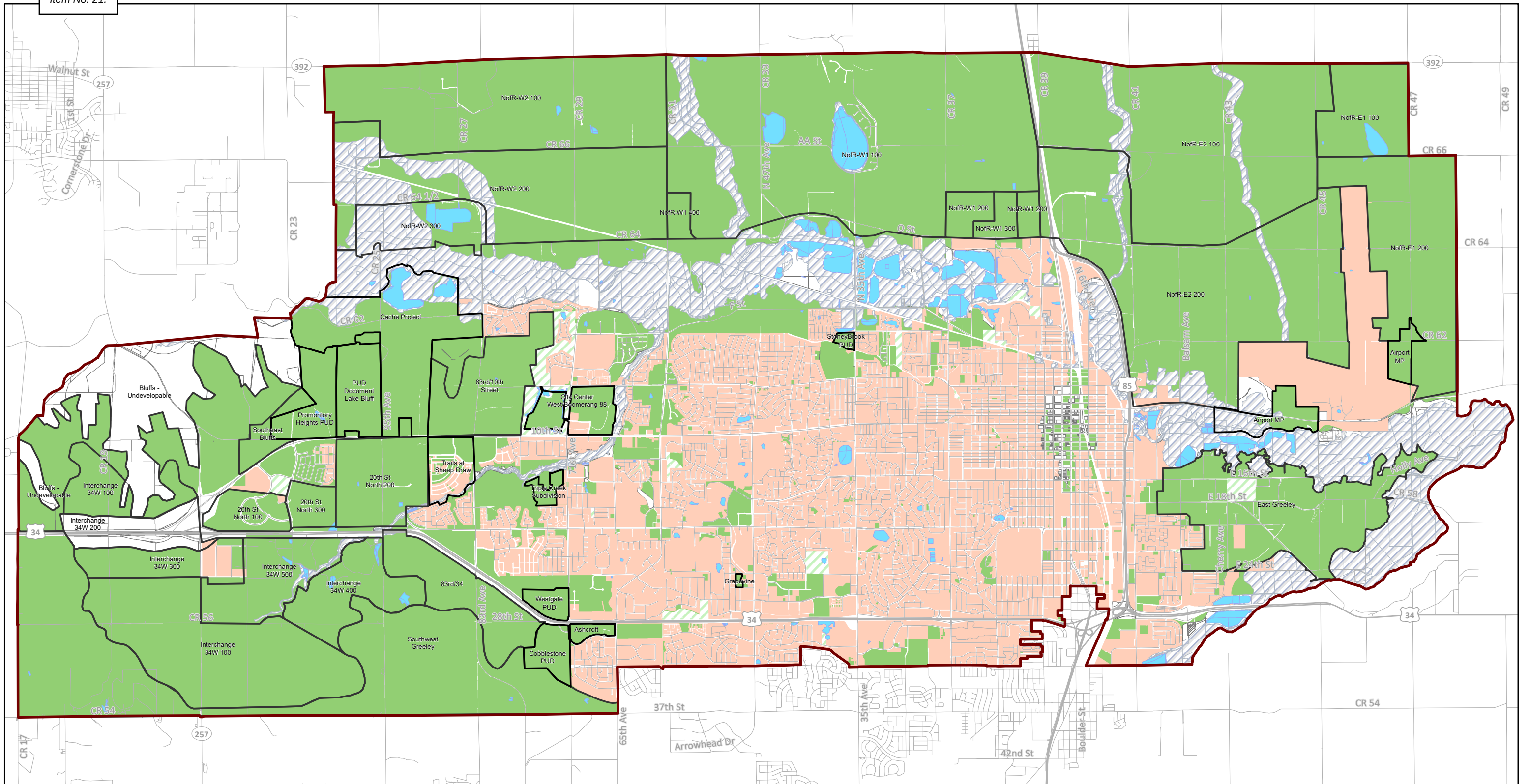
Legend

-  LREGA
-  Demand Projection Area
-  100-yr Floodplain
-  Lakes and Ponds
-  Future Development
-  Existing Service Area
-  No Development
-  Park



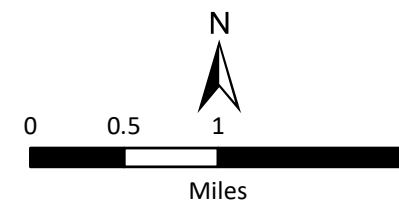
Developed Area
Projections: 2040
Figure 2-7
Greeley Water System
Master Plan

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Legend

- LREGA
- Demand Projection Area
- 100-yr Floodplain
- Lakes and Ponds
- Future Development
- Existing Service Area
- No Development
- Park



Buildout Developed Area
Figure 2-8
Greeley Water System
Master Plan

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2.6 Non-Potable Demands

The demand projections conducted in this section represent a total summer water demand, with irrigation demands accounted for within the demand factors. It is likely that the water demands will be decreased in the future if some of the irrigation demands can be met with non-potable water. In particular, larger irrigated areas such as parks, schools, and large residential developments or commercial/industrial areas may be required to use non-potable irrigation. The projected water demands could be offset by non-potable water by either servicing future developments with non-potable water or by converting existing areas from potable to non-potable service. Because non-potable service would only decrease the water demands, the analysis done throughout **Section 2** represents a conservative “worst case” scenario, where potable water is used to meet all water demands.

The projections for non-potable demands are discussed in greater detail in the NPMP, which projects demands throughout the LREGA and within the current City limits. Per discussion with the City, the non-potable demands created by conversion areas will not be removed from the existing water demands for projection purposes. For more information on the development of the non-potable demands, see **Appendix D**.

Ultimately, two demand scenarios were modeled: the system if all water demands are met by water (all potable demands scenario), and the system if some water demands are offset by non-water (non-potable offsets demand scenario). Considering both scenarios will help the City to avoid undersizing either system (potable or non-potable). The demands for the non-potable offsets demand scenario are included in **Table 2-9**. The total future water demand for the non-potable offsets demand scenario (59.0 MGD) is slightly different from the all potable total future water demand (56.4 MGD) to reconcile the fact that conversion areas were not removed from the water demands under the all potable scenario. Additional discussion of modeling of the non-potable offsets demand scenario is included in **Section 4.2.4** and **Section 4.4**.

Table 2-9. Peak Month Non-Potable Offsets Demand Scenario by Planning Horizon

Planning Horizon	Total Future (additional) Water Demand (MGD)	Future Potable Water Demand (MGD)	Future Non-Potable Water Demand (MGD)
Existing	47.3	46.0	1.3
2025	51.8	49.4	2.4
2040	61.0	56.9	4.1
Buildout	106.3	93.5	12.8

2.7 Water Resources Correlation

It is important for the City to plan for the total annual water demands through buildout. Water conservation methods, such as improved landscaping practices and encouragement and adoption of non-potable water for irrigation, may help reduce the City’s annual water demands. The City previously conducted a water resources planning study (BBC report), which focused on developing three alternative scenarios for annual water demands. The WTDMP primarily focused on planning for future infrastructure needs based on peak summer and fire flow demands.

Table 2-10 provides a comparison summary between the BBC report and the WTDMP.

Table 2-10. WTDMP and BBC report Comparison

WTDMP Approach	BBC Approach
Focused on infrastructure sizing, particularly during peak month demands	Focused on supply-side annual demands for water resources planning
Used a peak month: average month ratio of 1.8 for potable demands and 2.5 for non-potable demands to estimate annual demands from the calculated peak month demands	Only calculated annual demands and did not calculate demands for peak seasons
Separated residential and nonresidential demands to account for different customer diurnal curves and peak hours	Established a universal gallons per capita per day value that included commercial, industrial, and residential demands
Correlated population projections to the BBC report and other City planning department data	Developed three population projections (low, medium, high)
Geolocated demands based on land use to incorporate demand density for infrastructure planning	Used bulk demands for water resources planning, and did not spatially locate demands within the City
Conducted sensitivity analyses for how a large industrial user would impact the buildout water distribution system (see Section 4.2.5)	Estimated that the City will take on six large industrial users by buildout
Estimated a single most-likely demand scenario for 2025, 2040, and buildout based on historic data and planning data	Provided detailed water resources planning for three scenarios every 5 years through 2075 and a less detailed buildout scenario

The total annual demands developed for the WTDMP under the non-potable offsets demand scenario at buildout are captured in **Table 2-11**. These demands are within the range established by the BBC report of 62,000 to 84,000 acre-feet per year (AFY) for total water demands at buildout. Although the six I-H users are included in these totals, these users were not used for modeling purposes, as their location is unknown and could lead to oversizing the system. Each large user's location will require specific evaluation of how each additional user could have adverse impacts on the supplies or infrastructure of the system. The City may consider using the water distribution system InfoWater model to examine the impacts of a large industrial user when more definitive information becomes available. A sensitivity analysis for a single I-H user was conducted in the water model, as discussed in **Section 4.2.5** and **Section 4.3.5**.

Table 2-11. WTDMP Annual Demand Projections at Buildout (Non-Potable Offsets Demand Scenario)

Demand	Total Water Demand (AFY)	Potable Water Demand (AFY)	Non-Potable Water Demand (AFY)
Existing	30,500	28,600	1,900
Future Demands	33,500	28,300	5,200
New I-H Users (6)	10,300	10,300	0
Total	74,300	67,200	7,100

It is recommended that the City rely on the BBC report for supply-side planning, and the WTDMP for infrastructure and distribution system planning.

2.8 Demand Projections Summary

In summary, the total residential and nonresidential water demands are spatially projected throughout the LREGA. To calculate the final projected water demands, population must be converted into gallons per day (gpd). To do this, a summer water demand of 113 gpd/person is used. This value was provided by the City's water conservation department, which conducts many studies of water use for both single family and multifamily customers.

Table 2-12 below summarizes the total demands calculated for each tier, using the factors from **Table 2-2** and **Table 2-5**. Notably, 67.2% of the total Tier 3 area (9,743 acres) is designated as having no future water demand. This designation is due to flood zone designations and the Bluffs Region. **Table 2-13** summarizes the demands by planning horizon.

Table 2-12. Peak Month Buildout Demand Projections by Tier

Projection Tier	Acres	Population	Residential Demand	Nonresidential Demand	Total Demand
			(gpd)	(gpd)	(MGD)
Tier 1	2,237	23,805	2,689,965	2,256,862	4.95
Tier 2	26,153	248,728	28,106,264	15,518,549	43.62
Tier 3	14,106	45,594	5,152,122	2,672,387	7.82
Total	42,496	318,125	35,948,125	20,447,797	56.40 ¹

¹ All population and demands shown in Table 2-12 are additional future demands. Buildout total demand is 46 MGD (existing) + 56.4 MGD (future) = 102.4 MGD

Table 2-13. Peak Month Demand Projections by Planning Horizon

Projection Tier	Acres	Population	Residential Demand	Nonresidential Demand	Total Demand
			(MGD)	(MGD)	(MGD)
Existing	11,883	107,146	N/A	N/A	46.0
2025	15,116	128,458	2.4	2.1	50.5
2040	29,467	179,430	8.2	5.5	59.7
Buildout	44,914	425,271	35.9	20.4	102.4

¹ In **Table 2-9**, the total demand for both potable and NP water is 106.0 MGD. The 106.0 MGD includes both the existing NP demand of 1.3 MGD (not accounted for in the all potable demands scenario calculations shown in **Table 2-13**), and the conversion area demand of 2.3 MGD (which was added to the NP demand but not removed from the potable demand for projection purposes, as discussed in **Section 2.6**).

² The future potable water infrastructure should be designed for a buildout demand of 102.4 MGD. This could be decreased to 93.2 MGD or lower depending on future NP policy, as discussed in **Section 2.6** and the NPMP.

Demand scenarios with all water and with non-potable irrigation will both be incorporated into the future model to plan for sufficient system capacity at all planning horizons. The projected demands are future peak month (summer) water demands that come directly from water use and follow a diurnal pattern with a peaking factor. These demands are divided into residential and nonresidential demand components in the model. Other demand scenarios, such as minimum month and fire flow, will be based on the peak month demands set for future analyses.

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Section 3

Future System Model Development

This section presents the future system hydraulic model set up, underlying assumptions, inputs, and methodology used to complete static modeling runs as well as results from preliminary modeling runs of the City's water model through all planning horizons. A pipe network was developed to meet demands throughout the LREGA.

A pipe network was developed for the 2025, 2040, and ultimate buildout scenario, building on the existing system model. Updates to the model included incorporating additional pipes to areas already within the City's current service area (infill) and expanding/adding the pipe network necessary to serve demands throughout the LREGA (new development). Pipe network, pressure zones, preliminary pipe sizing, and other model setup requirements were incorporated into the peak month static model. Modeling scenarios such as fire flows, minimum month, and other scenarios captured by EPS runs were used to refine the model, as described in **Section 4**.

3.1 Review of the Existing System Model

To facilitate development of the future model, the existing system model and accompanying report was provided, which was developed under a separate contract and was not part of the WTDMP scope. The existing system model became the backbone of the future model. Although it was assumed that the existing model is an accurate representation of the City's water system and no further calibration was needed, cursory checks of the model were completed to ensure usability and validate that it was a sound baseline for future model development. The existing system model was built on 2018 SCADA and GIS data. Ultimately, the existing system model was calibrated to September 2018 SCADA data (using time-based controls for the 24-day run), and included scenarios for average month, minimum month, and peak month demands. The existing model was also set up for power costs, water age, source tracing, and fire flow analyses. In this model, the WTPs were modeled as infinite reservoirs, meaning they were modeled as being able to provide an unlimited supply of water. Other controls, such as valves, limit the amount of water coming from the plants.

In addition to the existing system model and report, the City provided background information on the existing model. This included a geodatabase of the City's existing pipes and information on the existing pressure zones. After review of the provided background information, CDM Smith made the following observations and changes:

- Limited documentation was available for the existing model's diurnal curves. Creation of new diurnal curves is discussed in the peaking factors technical memorandum, included in **Appendix A**.
- The City's most recent GIS data was compared with the existing model to reconcile any differences.
- Certain orphan nodes in the existing model were found to be duplicates and were removed.

- Limited documentation was available on the derivation of the existing model's water quality calculations, which correlate water age and free chlorine. Discussion in the existing system model report that correlates water age to chlorine residual for a limited subset of comparisons indicates that there is some correlation of residual decline to water age, which is likely heavily impacted by initial water age established in the storage reservoirs. Seasonal and operational factors can also impact water quality in the system. Please see **Section 4.2.2** for additional information on water age to chlorine residual correlation.
- The Bellvue transmission lines were over pressurized in the existing model. This was remedied by changing the settings on Reichert's valve, which had been incorrectly set as closed, creating a backfeed from the distribution system.
- Certain areas in the existing model were exhibiting negative pressures. These areas were examined and resolved or explained. In most of these cases, it was decided that it was due to minor elevation datum differences that were not ultimately affecting the operation of the model and specific changes were avoided to minimize possible impacts on the previous Bohannon Huston, Inc.-prepared calibration analysis.
- The existing model had selection sets of "demand nodes" and "non-demand nodes," but the non-demand nodes set had existing demands allocated to many of them. It was decided to not change the existing demand allocations, and to only allocate future demands to the demand nodes.
- Some valves were incorrectly set as open or closed, based on the description. These changes were corrected and documented.

3.2 Future Model Setup, Inputs, and Assumptions

As discussed above, the preliminary future model was first set up for the buildout scenario, which involves setting up a grid throughout the LREGA to account for a 129% increase in demands from existing (2018) demands. The current City limit is 31,346 acres, while the LREGA is 58,306 acres, representing an 86% increase in land area by buildout. This includes some areas that are currently served by North Weld but are expected to be taken over by the City by 2040 and onward. While it is impossible to completely predict future development needs, this model should provide a roadmap for pressure zone boundaries, the size of main pipes, and potential interconnections between key areas. Developers should work with the City's engineering development review (EDR) and water and sewer departments to discuss how new developments fit into the City's overall plan to provide water service at acceptable pressures in both new and existing areas.

3.2.1 Future Pipe Network

To establish a proposed grid through the LREGA, pipes were added in from the following sources:

- **Greeley Geodatabase.** Pipes included in the City's pipe geodatabase that were not included in the existing model were assumed to have been built after the creation of the existing model. These pipes have known diameter, connectivity, etc., and were added into the master plan model as future pipes.

- **Planned Development Reports.** Some PUDs in later stages of planning have design reports and/or hydraulic modeling reports that include proposed pipe layouts. These pipes were translated into GIS and added into the future model. Although many of these development reports do not represent final construction, they are assumed to be sufficient to capture the overall pipe network in these areas. These reports are not limited to the areas defined as PUDs for demand projection purposes. For many of these areas, pipe diameters were provided.
- **Other Areas.** All other areas were modeled based on the City's Specifications and typical methodology. Generally, 16-inch pipes were placed every mile, 12-inch pipes every half section, and 8-inch pipes every quarter section, although piping was refined in later modeling stages (see **Section 4.4**) to meet hydraulic criteria required per the City's Specifications (see **Section 3.4.3**). Where possible, pipelines were set up to follow roads but minimize railroad and river crossings. Dead ends were minimized to protect water quality, although not all dead ends in the existing system were addressed in this study. The City also provided input on specific areas or projects that were not yet captured in formal design reports.

The elevation of future nodes was based on ground surface elevation. Future pipes were modeled with a roughness ("C") of 130. The overall future pipe network for the buildout scenario is shown in **Figure 3-1**. This figure highlights key areas of interest, such as the North of the River area, the Bluffs Region, all PUDs, and the existing pump stations and reservoirs.

It was assumed that all parcels with a water demand will require some amount of water (i.e., no parcel will have demand fully met by non-potable water). Additionally, it was assumed that future piping will only serve areas within the LREGA. Some additional demands are expected from external stakeholders at existing master meters, but no additional piping was constructed to these stakeholders.

3.2.2 Pressure Zone Development

Most areas throughout the LREGA were already within the City's established pressure zones, with the exception of the North of the River area. In this area, a new boundary between Zone 1 and Zone 2 North was established in the model. This boundary was primarily based on existing elevations and contours, using the existing pressure zone elevation criteria and boundaries, as shown in **Figure 3-2**.

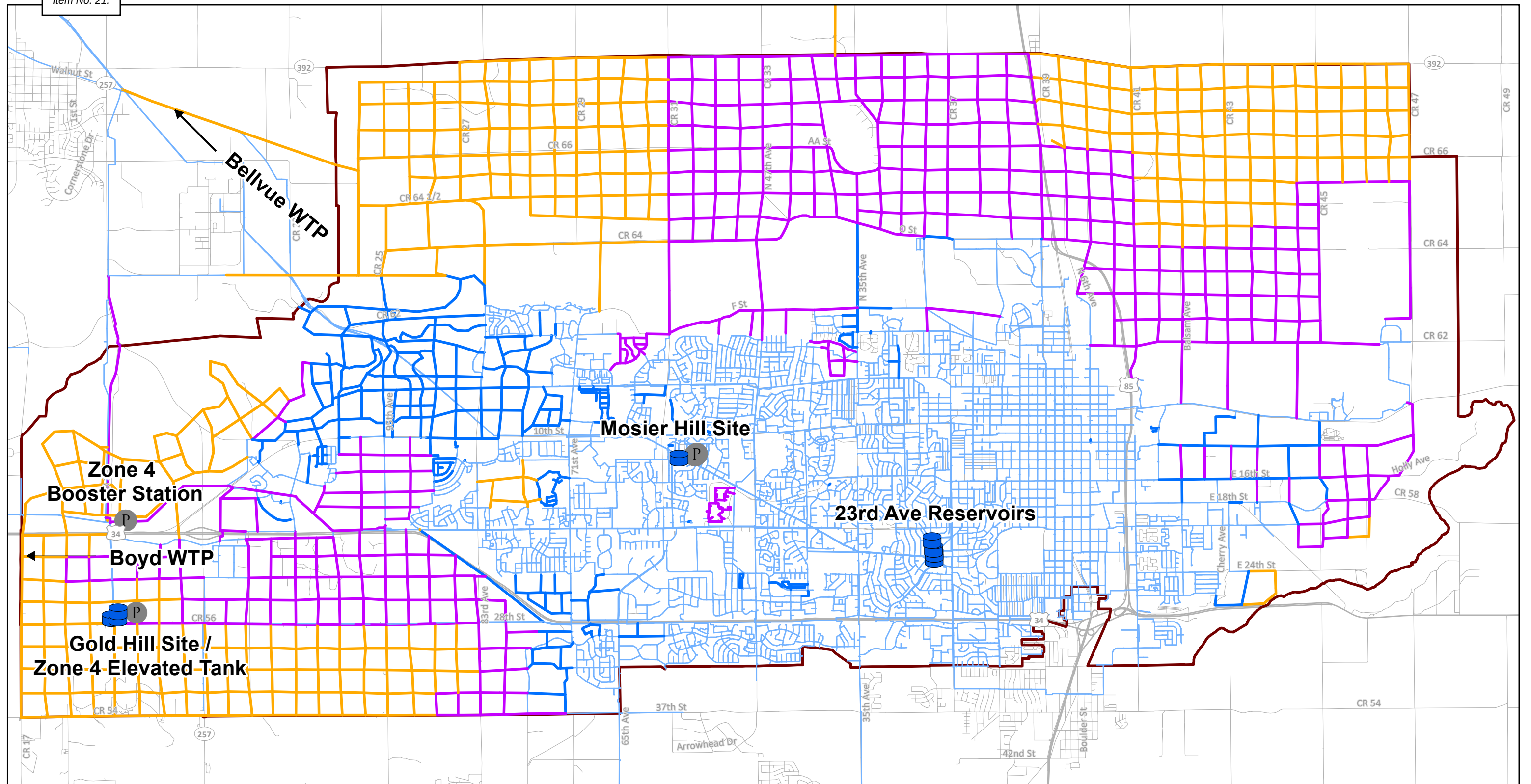
The overall pressure zone boundary for the North of the River area is shown in **Figure 3-2**. To separate the two zones, closed PRVs were set every mile (reducing from Zone 2 pressures into Zone 1), with normally closed valves on all other intersections along the boundary. The pipeline that runs along the boundary was sized as 24-inch to provide a "backbone" to the entire area, providing sufficient volume to meet demands while staying within the hydraulic design criteria in the City's Specifications (see **Section 3.4.3**). Specific pipe sizes should be refined during design stages. Zone 2 North includes inputs from the 60-inch Bellvue line, the Kodak line, and the 83rd Avenue line (which is designed for Zone 3 pressures). Zone 1 includes inputs from various lines crossing from the south of the Poudre River, and the various PRVs from the North of the River Zone 2. PRV settings were based on their elevation and the required head for the pressure zone;

valve settings may change during the model analysis phase. Some hydraulic challenges with the North of the River area (pressure swings in Zone 2 and low pressures in Zone 1) will require unique solutions outside of a simple grid of pipes. These solutions are discussed in greater detail in **Section 4.3.4**.

3.2.3 Models by Planning Horizon

Based on the buildout model, modeling scenarios were created for the peak month for the 5-year (2025) and 20-year (2040) planning horizons, as depicted in **Figure 3-1**. These models were driven by the location of demands at each planning horizon. Pipes were maintained from the buildout model in areas where future demand was anticipated. Please see **Section 2.5** for more information on demands by planning horizon. Some pipes will need to be upsized at different planning horizons.

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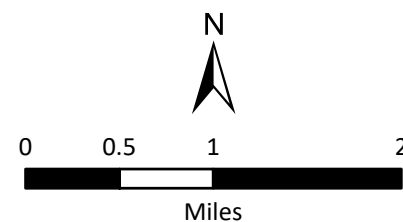


Legend

- LREGA
- Existing Storage
- Existing Pump Stations

Pipes (Planning Horizon)

- Existing
- 2025
- 2040
- Buildout

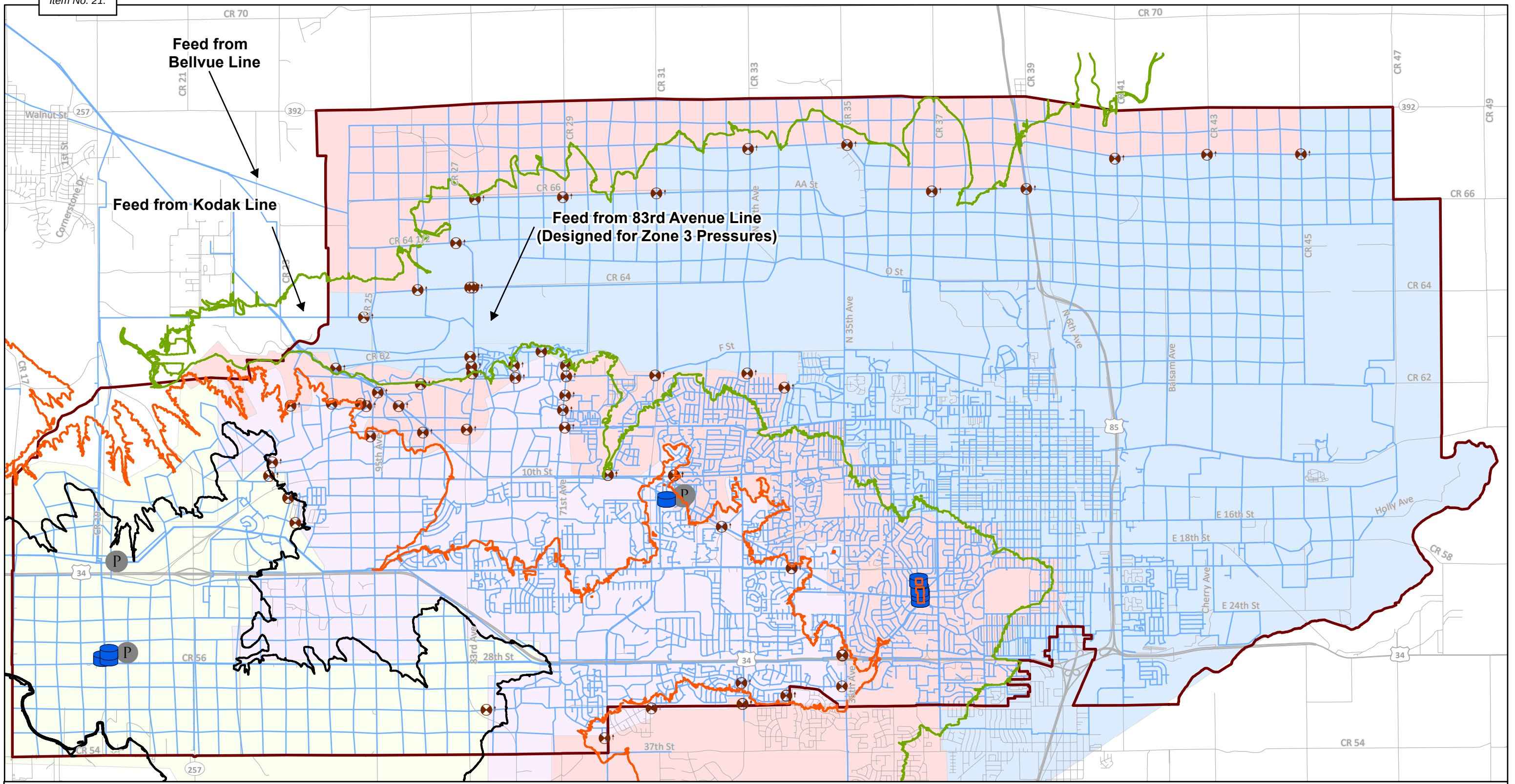


Future Water System Network

Figure 3-1

Greeley Water System
Master Plan

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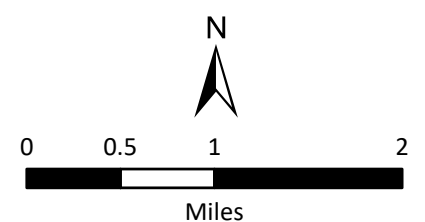


Legend

- LREGA
- Existing Storage
- Existing Pump Stations
- PRV
- Pipe
- Contour (Ft)**
 - 4740
 - 4840
 - 4940

Future Pressure Zones

- Zone 1 HGL - 4740
- Zone 2 HGL - 4840
- Zone 3 HGL - 4940
- Zone 4 HGL - 5100



Pressure Zones
Figure 3-2
Greeley Water System
Master Plan

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3.3 Future Demand Allocation

After the piped network was established, the future demands were allocated throughout the system. Details on demand projections at the 2025, 2040, and buildout planning horizons can be found in **Section 2.5**.

Existing system model demands were previously allocated to existing system nodes based on metered data. The existing model included multiple demand sets such as the average month, minimum month, peak month, a calibration month, and September 2018. The model consisted of a set of “non-demand nodes,” which included “facilities such as PRV vaults, pump stations and tanks, and pipelines running through a pressure zone with service provided by another zone (*City of Greeley 2018 Water Distribution System Model*, 2019).”

A future demands data set was created for each planning horizon that used the existing peak month demand set for existing water users along with future peak month demands developed for new and infill areas. Future residential and nonresidential demands were set as separate demands within the InfoWater demands database. A new selection set of junctions with demands was created, which excluded “non-demand nodes,” nodes outside of the LREGA, and other facilities such as nodes near pump stations and on certain transmission lines. All future residential and nonresidential demands were distributed to the nearest demand nodes.

3.4 Extended Period Simulation Setup

After establishment of the buildout network and incorporation of demands, the model was transitioned to EPS to evaluate how the peak month model would respond to diurnal variation. The 2025 and 2040 models were run in EPS after the buildout model was used for general setup.

3.4.1 Run Setup

A 48-hour runtime was used for the peak month model, as the existing system model was calibrated to this runtime. For water quality runs during model analysis, a 576-hour (7-day) runtime was used to simulate longer-term impacts.

Two diurnal curves were incorporated into the model to represent peaks in residential and nonresidential demands. The curve for residential demands was based on typical usage patterns for single family residential homes with irrigation, and the nonresidential demands were based on historical SCADA data for the outflow from the City’s existing reservoirs. For further information on the development of these diurnal curves, please see the peaking factors technical memorandum in **Appendix A**. The existing demands continue to use the summer diurnal curve developed as part of the existing system model, as these demands are not separated by residential and nonresidential demands.

3.4.2 Pump Controls

Many of the pump controls for the existing system model were hardwired based on timesteps, or had pumps permanently set to open or closed. To design for the buildout scenario, level-based controls were used for pump stations for added flexibility, as described in **Table 3-1**. The new controls will allow more pumps to run to meet the increased demands. The pump controls are the same for all planning horizons, although additional pumping will likely be necessary at the Zone 4

pump station after 2040. This table is only intended to capture modeling methodology; for additional information on general operational recommendations, please see **Section 4.7** and **Section 6.2**.

Table 3-1. Pump Station Controls for Modeling

Pump Station	Controls Description and Changes
Zone 4 Pump Station	Controlled based on the level of the Zone 4 water tower. Additional pumping capacity will be necessary by buildout. Flow control valves were added to ensure pumping within range.
Boyd Lake Pump Station	The southern pump station is no longer in use. The northern pump station is controlled based on the level of the Gold Hill 15-MG reservoir.
Mosier Hill	Controlled based on the level of the Gold Hill 20-MG tanks.

3.4.3 Design Criteria

The primary goal of the water model is to ensure that all demands are met through buildout, while maintaining pressures, velocities, and water age within the City's acceptable range. Pressure should be 40 to 125 pounds per square inch (psi), velocity should be less than 10 feet per second (fps) at fire flow, and typically less than 5 fps under all other conditions. The sizing of pipes and other infrastructure will primarily be based on a balance of creating sufficient capacity to meet fire flow demands, without creating water quality issues because of low velocities during other demand scenarios (especially minimum month).

The model was also set up to maintain steady water supply from the WTPs, and instead allow tank levels to fluctuate with demands. Although the WTPs are modeled as having an infinite supply, valve controls were used to control flow from the WTPs. This WTDMP is primarily focused on the transmission and distribution system; water supply should be coordinated with the City's treatment and supply master plan.

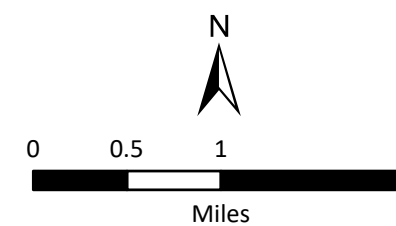
3.5 Review of Preliminary EPS Results

The future system steady state model development achieved the following modeling goals:

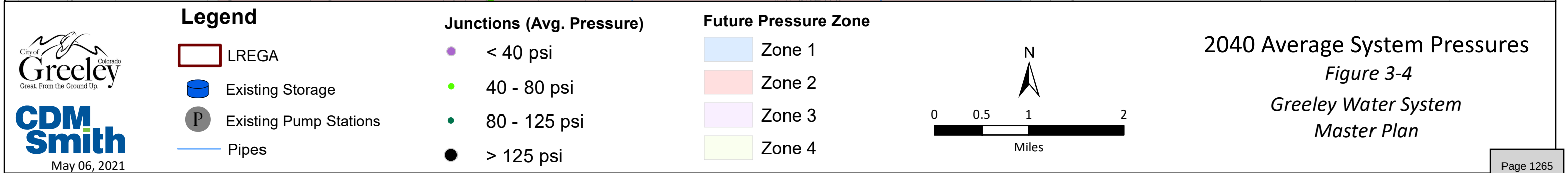
- Establish a piped network that can serve all areas through the LREGA
- Allocate projected demands throughout the system
- Check overall system connectivity
- Establish future pressure zones throughout the LREGA
- Maintain pressures within the City's acceptable range of 40 to 125 psi for all conditions except fire flow (discussed in **Section 4.2.3**)

Other modeling goals such as maintaining acceptable water age, refining pipe sizing, and checking system resiliency under fire flow are discussed in **Section 4**. Preliminary static model runs were performed to check for adequate pressures and velocities throughout the LREGA before transitioning to EPS. The average pressures under peak month demand scenario for each planning horizon are shown in **Figure 3-3**, **Figure 3-4**, and **Figure 3-5**. Maximum and minimum pressures were found to be acceptable during these analyses, except for some buildout pressures (as evaluated in **Section 4.3.4**).

*Greeley Water System
Master Plan*



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Two areas required careful consideration because of their unique geographic features and elevation shifts: the Cache Project Area and the Bluffs Region. The Cache Project Area is expected to begin development by 2025 and finish construction by 2040. By working with the City's staff, pressure zones were established in these areas to meet the City's pressure requirements during static runs. It is expected that valve settings and pipe sizes will need to be adjusted in these complex areas during design to ensure they are within the City's Specifications. Maps of these two regions can be found in **Figure 3-6**.

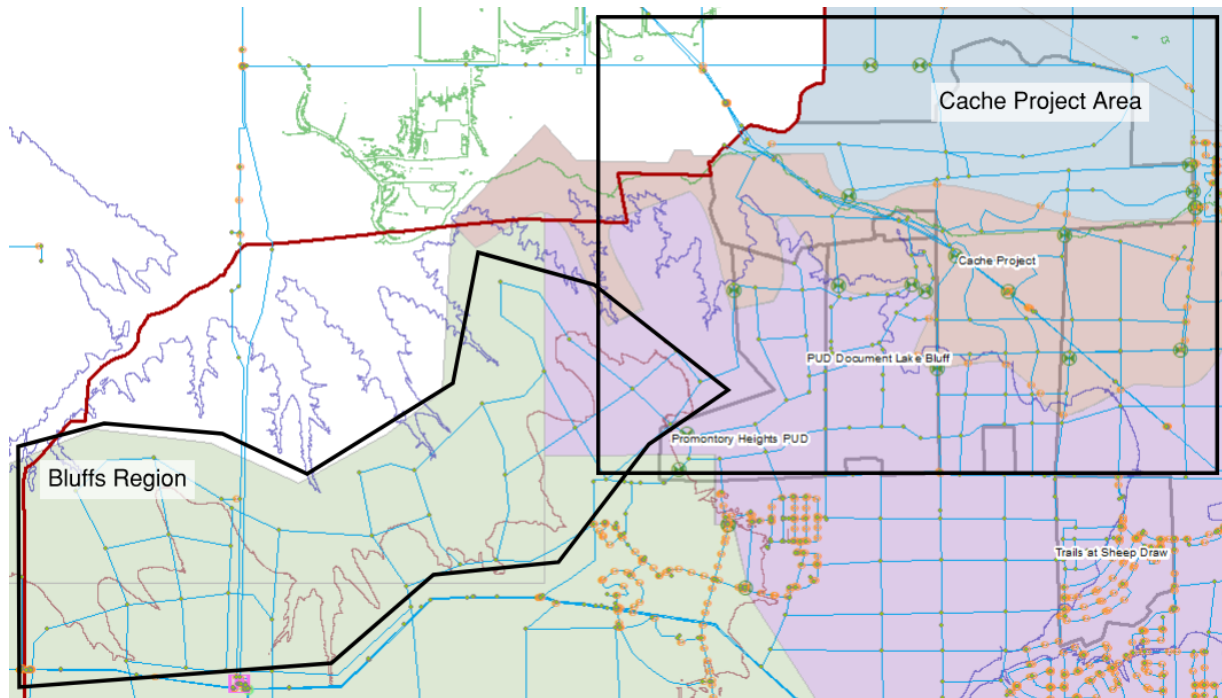


Figure 3-6. Bluffs Region and Cache Project Area (Buildout)

The North of the River also requires unique engineering approaches to appropriately serve it because of its distance from existing infrastructure. At buildout, there is expected to be additional transmission and storage required to serve this area, as discussed in **Section 4.3.4**. However, in 2040, there is only limited development, meaning that very low demands are expected. To avoid constructing large transmission pipes and storage tanks decades before they would be fully used (and to avoid the water quality concerns this would raise), an interim solution was created for the 2040 model. At this planning horizon, the 47th Avenue line would be used as an isolated Zone 2 line, instead of using a PRV to change it to Zone 1 pressures (as is planned at buildout). Additionally, some of the pipelines in North of the River may be put in at a smaller diameter by 2040, then upsized by buildout to avoid water quality concerns. This area is shown in **Figure 3-7**.

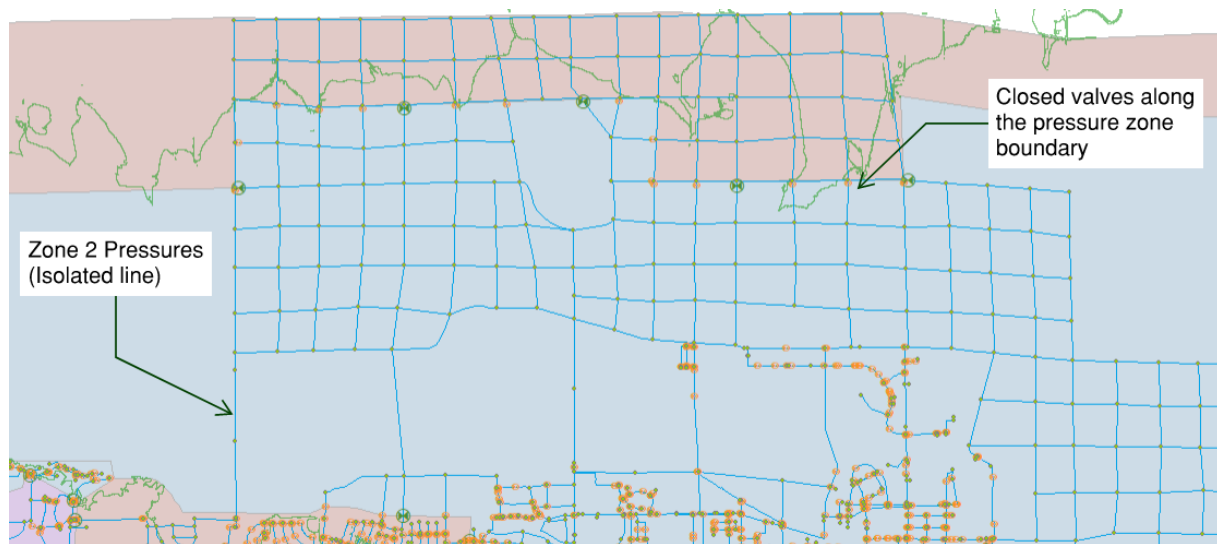


Figure 3-7. North of the River (2040)

Preliminary EPS results revealed that two areas will need additional infrastructure by buildout to meet these criteria: Zone 4 and the North of the River area, which includes some areas currently served by North Weld that are expected to be taken over by the City starting in 2040. Zone 4 currently has very little development, and additional pumping will be needed at the Zone 4 pump station to meet future demands. The Zone 4 pump station was designed with pump cans for three additional 7,500-gpm pumps. The North of the River area experienced large swings in pressure, and constant low pressures in the northeast corner of the LREGA. Storage will likely be required to regulate pressure swings. Additional information on the North of the River area at buildout is discussed in **Section 4.3.4**.

As Zone 1 develops, certain operational changes may also help maintain the supply to the east. In particular, the system has two valves that help control the amount of water going to Zone 1: the 47th Avenue ball valve and the bypass valve near Mosier Hill. Because less growth is expected in Zones 2 and 3 than in Zone 1, it is recommended to divert water into Zone 1 through these as development occurs. Regular maintenance and assessment should be completed to ensure that these valves can support increased flow.

Using these models, it was possible to examine how plant production and tank levels vary by planning horizon. Based on this preliminary analysis, Bellvue WTP will reach capacity around 2040; therefore, expansion is not expected to be necessary until after this planning horizon. Boyd Lake WTP will likely not need expansion, even through buildout. The City generally intends to use Bellvue WTP as the primary supply and Boyd Lake WTP as the secondary supply to supplement peak demands. An operational goal for storage tanks is to absorb demand fluctuations so that the treatment plants can operate steadily. Any future plant upgrades or expansions should be coordinated with the City's future supply and treatment master plan.

Section 4

Future System Model Evaluation

This section presents the future system hydraulic analysis to confirm the feasibility of proposed solutions and identify any hydraulic deficiencies in the existing or proposed system at all planning horizons. Analyses include water quality evaluations, fire flow evaluations, sensitivity analysis for non-potable offsets, and resiliency to handle a large industrial development in addition to base demands. Ultimately, infrastructure is sized based on a balance of water age concerns and fire flow concerns, to maintain a robust and resilient water distribution system.

4.1 Model Limitations

The existing system model developed under a separate contract in 2018 has been updated and calibrated to support master planning efforts using best available data; however, there are limitations, as in any model. Knowing those limitations is important in making decisions regarding capital improvement projects. The limitations and how they will be addressed are outlined below:

- Many areas of the model are based on preliminary development and PUD reports provided by developers. The pipe layouts were based on either the developers' planned layouts, or on the preliminary street layouts. As these development areas are finalized, their piping may be revised to produce more appropriate system-wide modeling.
- The current system is generally operated based on operator discretion instead of programmed rules for pumps and tanks. As a result, these model results represent typical or expected scenarios for various conditions, but operators should continue to follow established best practices to address daily changes in demand and balance multiple inputs. The City may also consider increased automation, the development of a system-wide standard operation procedure, and/or a detailed operations study to further evaluate current operations, as described in **Section 4.7**.
- Water resources planning outside of this master plan (BBC report) has indicated the possibility for six large industrial users to be constructed in the City by buildout, which could pose a significant stress to the water system and lead to local piping being undersized. Although some preliminary sensitivity tests were run to stress the system with such large user demand, it is impossible to predict the exact location and demands for all potential industrial customers. Continuing to construct larger lines as a backbone to the system in developing areas may help prepare the system to handle an unexpected large user. The water model developed to inform the WTDMP could serve as a valuable tool to evaluate feasibility of adding additional customers as more information becomes available in future years.
- The modeling methods used here represent a flowrate for a specific time frame (i.e., peak month or minimum month based on gpm or MGD) to aid in infrastructure sizing and should

not be used to calculate total annual water demands in AFY under water resource planning horizons.

- This model is primarily focused on the transmission and distribution pipe network and does not address treatment or supply. The WTDMP should be coordinated with the City's treatment and supply master plan to address any concerns with the plants.

4.2 Evaluation Criteria and Methodology

This section discusses the criteria used to analyze the water system model. **Table 4-1** summarizes analyses conducted at different planning horizons under two demand scenarios. The “all potable demands scenario” refers to the scenario where all future demands are met by potable water, and the “non-potable offsets demand scenario” refers to the scenario where some of the water demands are offset by non-potable irrigation. For more information on demand scenarios, see **Section 2**.

Table 4-1. Analyses by Planning Horizon

Planning Horizon		All Potable Demands Scenario				Non-Potable Offsets Demand Scenario	
		Peak Month	Peak Month + Fire Flow	Minimum Month Water Age	I-H User	Peak Month	Peak Month + Fire Flow
2025		X	X	X	-	X	X
2040		X	X	X	-	X	X
Buildout ¹	North Weld ²	X	X	-	X	X	-
	Two Tanks	X	-	-	-	-	-
	PRVs	X	-	-	-	-	-
	Shifted Pressure Zone Boundary	X	-	-	-	-	-

¹ Four different options were considered for serving the buildout scenario through North of the River, as described in **Section 4.3.4**.

² The North Weld option was selected for additional modeling based on feasibility and the existing intergovernmental agreement criteria. This does not guarantee that this is a final design or the final selected option. Additional coordination will be needed between Greeley and North Weld as this area develops.

This section discusses the evaluation criteria used for each analysis and describes the methodology and setup for each analysis. **Section 4.3** includes key results and findings from each analysis.

4.2.1 Water Quality Evaluation (Minimum Month)

Treated water produced at the Bellvue and Boyd Lake WTPs is disinfected with chlorine to provide a residual disinfectant to protect water quality in the pipelines before it reaches the City's customers. When the treated water remains in the pipeline for an extended period (which can occur because of low flows), the residual chlorine dissipates over time, creating increased vulnerability to contamination. To evaluate the potential for this issue to occur, water age analyses were conducted at the 2025 and 2040 planning horizons. These analyses were run during the minimum month (December), which represents the lowest demands and therefore the highest average water age annually to be conservative. Water age analyses can help identify

oversized pipe, possible connection or looping improvements, or the need for additional chlorine injection stations with the goal to shorten water age and thereby improve disinfection protection within the distribution system.

Recent changes to tank operations at Gold Hill have improved turnover in the tanks and reduced water age throughout the system. The new Gold Hill transmission lines enable water to be delivered to the west side of town directly from Bellvue WTP with reduced water age. Additionally, the increased demands shown with each planning horizon can improve turnover in the tanks, improving initial water age over time.

Based on historical water demands (July and December 2016), the peak month to minimum month demands ratio is 3.1. This factor was applied globally to the peak month demands to calculate the minimum months' demands. A daily hour to hour diurnal curve based on existing winter demand patterns was applied to all demands, as shown in **Figure 4-1**.

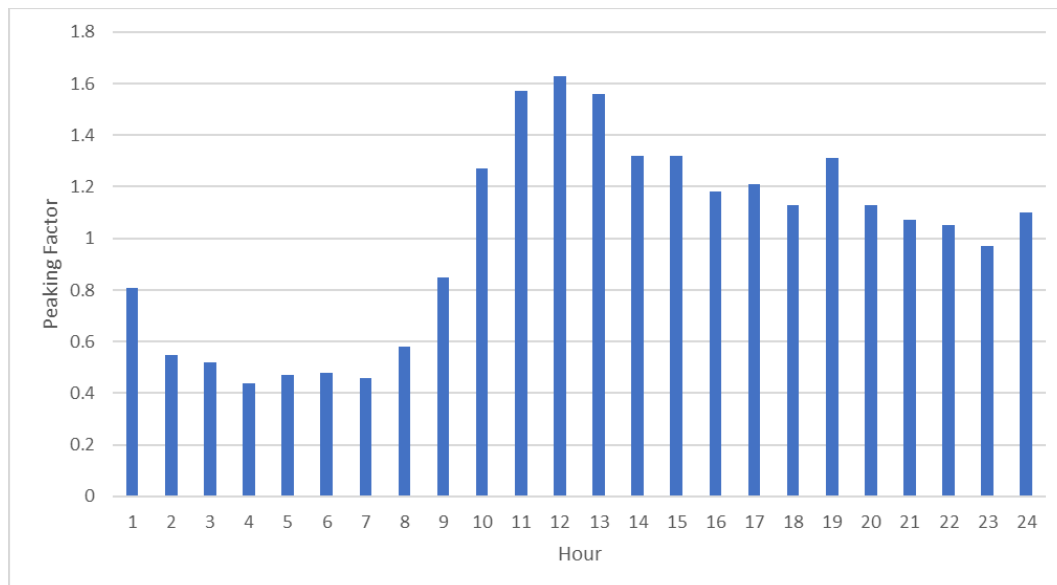


Figure 4-1. Winter Diurnal Curve

4.2.2 Correlation of Water Age to Chlorine Residual

It is typical that disinfection residual will decay with time, but the rate of decay can be highly variable depending on the water characteristics, distribution piping, seasonal temperatures, and numerous other factors. The City tracks chlorine residual and other constituent parameters within the distribution system monthly for reporting and regulatory compliance purposes. As part of the WTDMP, an effort was made to correlate chlorine residual to water age. Because hydraulic modeling can easily track water age within the distribution network, a reliable trend would help to determine an age threshold at which residual decay would be of concern.

Records were obtained for the month of November 2018 for residual testing conducted across the City network and compared with water age predicted by the existing hydraulic model for the same time period. An advantage of the lower demand months analyses is that all water supply traveling within the network comes from the Bellvue WTP and represents a single supply source with consistent water treatment without mixing supplies between the Bellvue and Boyd treatment sources (which could further complicate a residual to water age comparison exercise). The model analyzed a continuous operating period of 24 days to predict stabilized average water age within the network and potable storage facilities.

Although there is reasonable confidence in the water age analysis prediction, there are uncertainties that could impact water age prediction at specific locations across the network. Similarly, the testing results can be subject to sampling and testing errors that can impact the reliability of comparison results. Both testing and water age prediction indicated that water age and residual decay is highest along pressure zone boundaries in areas where water moves more slowly and could become old. This is because water flows to lower zones through PRVs that occur only at specific points and operate less frequently during lower demand periods, when there is lower local demand to freshen the water in these locations. If continued sampling were to identify a problem with water age, additional connections between zones and case-by-case piping improvements to promote circulation around dead end locations could be evaluated as potential solutions. Additionally, further investigation of chlorine residual and water age may be required in the future if additional storage is constructed in the North of the River, as discussed in **Section 4.5**.

A correlation trend was developed for water age vs. chlorine residual using approximately 35 measurement points spread across pressure zones throughout the existing distribution network. These points were considered reliable measurements, but a few of these were discarded as anomalies when trying to establish a trend line. Although there is still a wide scattering of residual levels vs. water age, an averaging trend clearly shows a decay condition over time with a residual level of about 0.2 mg/l corresponding to approximately 190 hours of water age. As a result, predictions of water age above 190 hours were considered a benchmark that may justify further field testing to evaluate if water age predictions truly represent insufficient disinfection residual. Reports to date indicate that disinfection within the network is not a major concern for any particular month but might be worth further investigation during the lowest demand periods of the year. The results of the correlation trend are shown in **Figure 4-2**.

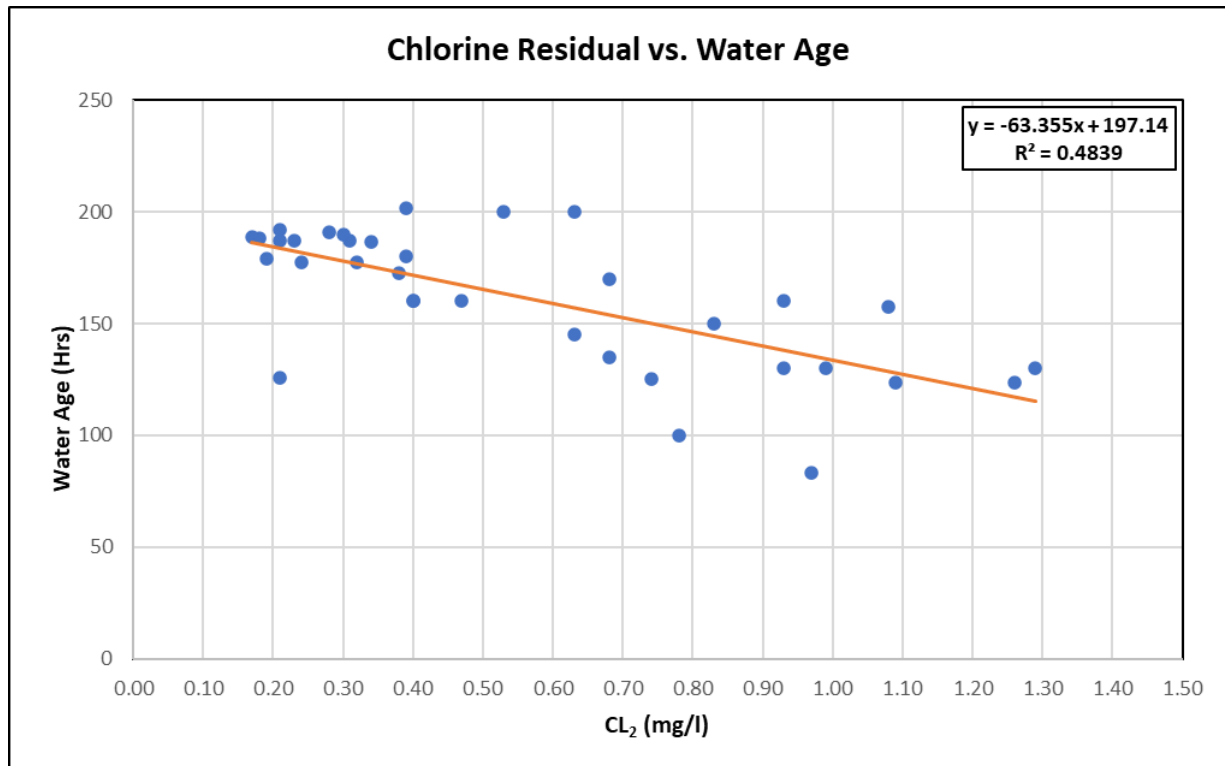


Figure 4-2. Correlation of Chlorine Residual and Water Age

Information from the water model related to chlorine residual and disinfection byproducts (DBP) indicates there are areas in the distribution system where water age can approach 8 days (190 hours) during low demand periods, which results in the free chlorine residual approaching the minimum CDPHE required residual of 0.2 mg/L. These are also areas where disinfection byproducts, THMs and HAAs are expected to reach the highest levels. The high quality of the City's raw water supply typically results in treated water total organic carbon (TOC) less than 2.0 mg/L from the Bellevue WTP and 3.0 mg/L from the Boyd WTP, which results in locational running annual average (LRAA) THMs and HAAs that are approximately 40-50% below the maximum contaminant levels (MCLs) of 80 parts per billion (ppb) and 60 ppb respectively. The low concentration of THMs and HAAs normally provides the City with the flexibility to increase the free chlorine residual leaving the WTP to maintain the minimum 0.2 mg/L residual in the distribution system during low demand periods without exceeding the THM and HAA MCLs.

Future trends that could impact compliance with DBP regulations are poorer treated water quality due to changes in the raw water supply that increase treated water TOC and chlorine demand and the increases in chlorine residual leaving the WTPs to maintain the minimum residual in the distribution system. The THM and HAA data provided in the 2009 Initial Distribution System Evaluation Report for DBP sampling locations indicates that DBPs typically spike in July and August. This can result in the LRAA DBPs approaching the MCLs when treating raw water with high TOCs, as occurred in 2003, when it was a unusually wet spring and high run-off. The TOC in the treated water from Bellevue WTP was 3.9 mg/L and the TOC from the Boyd WTP was 4.1 mg/L. Changes in raw water quality could also result from droughts and wildfires that will increase the raw water TOC or chlorine demand.

The U.S. Environmental Protection Agency (EPA) is also considering potential revisions to the microbial and DBP rules as a result of the mandated six-year review of the National Primary Drinking Water Regulations (NPDWR). This review considered new information related to public health risks, treatment technologies and system operations to identify NPDWRs for potential updates or revisions. Data identified an increased risk of microbial contamination associated with opportunistic organisms such as *Legionella*, nontuberculosis mycobacteria (NTM) and *Pseudomonas aeruginosa*. These can be associated with increases in heterotrophic bacteria and biofilms in the distribution system downstream of final disinfection. As a result, the EPA may consider increasing the minimum disinfection residual concentrations in the distribution system. Increasing the disinfection residual to reduce the microbial risk could impact DBPs, so the surface water treatment rule and Long Term Enhanced Surface Water Treatment Rule could also be updated or revised. EPA identified the following eight NPDWR as potential candidates for revision: Chlorite, Cryptosporidium, Haloacetic acids, heterotrophic bacteria, Giardia lamblia, Total Trihalomethanes, and viruses. There is also the potential that two currently unregulated DBPs, chlorate and nitrosamines, would be added to the list of NPDWRs.

The potential change in the regulations is uncertain, and adoption of any changes is not expected for several years. This would allow time for the City to evaluate and implement potential changes in water treatment processes and disinfection practices to comply with the revised regulations such as pre-treatment with chlorine dioxide, enhanced coagulation, pH adjustment or conversion to chloramines for the distribution system residual.

4.2.3 Fire Flow Evaluation

Fire flow evaluations test if the distribution system can provide sufficient flow and pressure to meet the high demands required to put out a fire. To determine that the City's water system can meet fire code, fire flow analyses were conducted at the 2025 and 2040 planning horizons (under both demand scenarios), and for one potential buildout scenario (North Weld option) under the all potable demands scenario. Typically, fire flow represents the highest demand on a system. Fire flow analyses can help identify undersized pipes or storage deficiencies.

Fire flow requirements vary based on building size, construction, occupancy, and exposure, and typically range from 500 to 12,000 gpm over a specified duration (typically 2 hours). Individual developers should check the fire flow requirements for their land use and unique property during construction. Additionally, the City criteria requires maintenance of a residual pressure of 20 psi and a maximum velocity of 10 fps.

For master planning purposes, a target fire flow of 1,500 gpm was selected, which is a typical value for design of a single hydrant with a 4-inch outlet nozzle (per American Water Works Association [AWWA] C-502). It is considered acceptable if two adjacent nodes combined can provide 1,500 gpm of fire flow. Initial tank levels set to half full with no pumps running represented the most conservative demand scenario to test fire flows. The maximum velocity was set to 10 fps, to align with the City's Specifications. Steady-state simulation was used (with time step at 15:00), where the diurnal curve corresponds closest to 1.0 (meaning peak day instead of peak hour conditions, which is a typical approach because fire flow on top of peak hour demands is usually considered too extreme of a criterion). The fire flow analysis was conducted for all

demand nodes within the existing and future system. These junctions do not necessarily correspond to physical hydrant locations.

4.2.4 Non-Potable Offset Demands Scenario – Peak Month and Fire Flow

The City has historically used non-potable irrigation to offset potable demands as part of ongoing conservation efforts. If non-potable irrigation offers significant offsets, it may be possible to downsize some future pipes because of decreased potable demand. Because the use of non-potable irrigation is often driven by policy and economic feasibility decisions, it is important to find a balance between taking advantage of the cost savings of downsizing pipes, while mitigating the risk of undersizing pipes in the main gridline by relying on non-potable irrigation. For more information on non-potable irrigation demands by planning horizon, please see **Appendix D**.

The non-potable offsets peak month demands were run for all three planning horizons to optimize the size of pipes in the main grid system. Additionally, fire flow analyses were conducted for the non-potable offsets demand scenario in 2025 and 2040 to determine whether downsizing lines would risk the system's ability to meet fire demand. The non-potable offsets demand scenario may also be used to inform certain CIP projects.

4.2.5 Large Industrial User

Although the City's zoning does not currently have any areas zoned as I-H¹, it is possible that large industrial users with high water demands will develop in the City. A hypothetical industrial user was added into the system to test system performance under peak month buildout scenario (North Weld option).

Based on City knowledge of potential customers, it was decided to conduct a sensitivity analysis for a hypothetical I-H user in the northwest railroad industrial corridor with a 1 MGD base demand, with additional demand during the peak hour (up to 1.9 MGD). This location is identified in **Figure 4-3** and is in Zone 2 North. Because this user already represents a conservative sensitivity analysis, fire flow analysis was not conducted for this location.

4.3 Future Water System Evaluation

This section describes the analyses conducted at the 2025, 2040, and buildout planning horizons to ensure that the future system is resilient and meets City standards. These analyses were used to finalize the future system models. All analyses described in this section were conducted under the all potable demands scenario.

4.3.1 Peak Month Evaluation

As described in **Section 3**, the peak month model primarily served to check if the system was within the acceptable pressure and velocity ranges defined in the City's Specifications. Model results indicated most of the system was within acceptable ranges. Some areas have existing high or low pressures, especially along the pressure zone boundaries, meaning their average pressure was higher than 125 psi or lower than 40 psi—these were considered acceptable because the water system has already been built for these pressures or they were within the margin of error.

¹ As discussed in previous sections, land use designations employed by planning (I-L, I-M, and I-H) do not necessarily refer to the amount of water the user consumes. For this analysis, it was assumed that the theoretical I-H user requires high demands.

The City may consider doing field tests in areas with high pressures to confirm the actual pressures in these areas and decide whether pipe improvements are necessary. Peak month results for all planning horizons can be found in **Section 3.5**.

Certain existing lines are recommended to be upsized by 2025 or 2040 to support phased growth and to strengthen the distribution system's backbone. These lines are shown in **Figure 4-5** (see **Section 4.3.3**).

4.3.2 Water Quality Evaluation

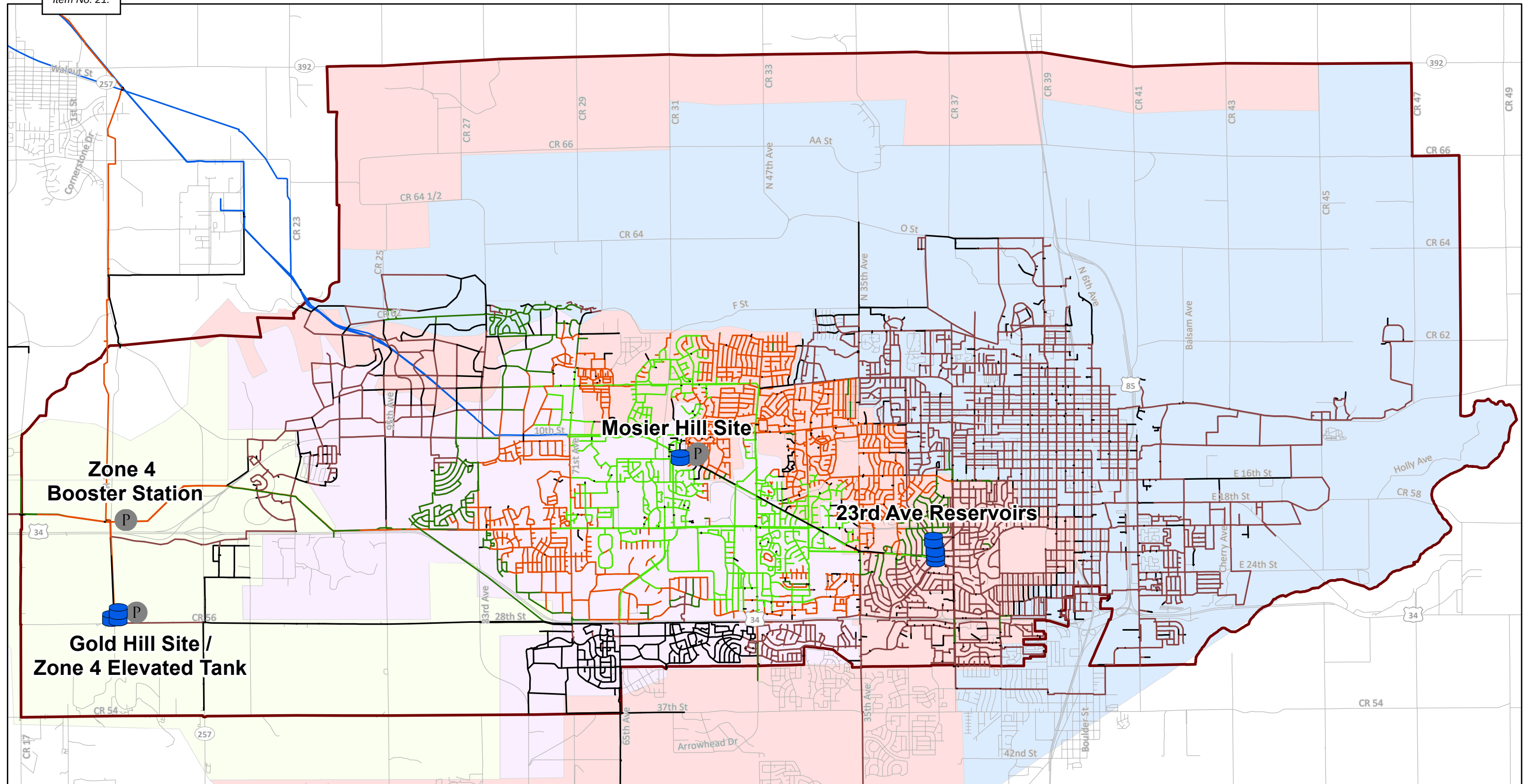
Water age analyses were conducted under the all potable demands scenario to evaluate water quality under low demand conditions. The resulting average age during the minimum month is shown in **Figure 4-3** for 2025 and **Figure 4-4** for 2040.

The 2025 and 2040 evaluations showed similar water age trends to the existing system. In general, water ages from west to east, as distance from the Bellvue WTP supply source increases. As a result, there is lower water age near zone boundaries. Boyd Lake WTP is not expected to operate during minimum months through 2040, which can contribute to higher water age in the west (especially Zone 4). This may be improved in the future by additional development and the completion of the 60-inch Gold Hill line, which will bring water directly from Bellvue WTP at a higher flowrate, shortening the time the water is spent in the transmission and distribution system. Although some areas receive water with a higher water age than other areas, ongoing sampling throughout the year has confirmed that the City is in compliance with chlorine residuals standards and all other water quality standards required by CDPHE, meaning that the City is providing safe drinking water for all customers.

Large storage volumes may be contributing to higher water age during the minimum month, especially in areas where the tanks are not fed directly from Bellvue WTP, such as at Gold Hill. Monitoring the tanks and reservoirs during low demand months may help validate modeling results and determine whether water is staying in storage for longer than a typical industry standard of 30 days. If results of monitoring show that water is staying in storage for longer than a typical industry standard of 30 days, the City may consider improving water age by promoting circulation via additional baffling or changes to the inflow and outflow configuration, or by adding a chlorine booster station at the tank discharge. Detailed hydraulic models of the tanks may help identify preferred solutions or improvements.

As the City develops in phases, some areas may experience higher water age as the pipes will be sized for full development. One example of this is the Cache Project Area. This area shows higher water age in 2025 than it does in 2040 because the full demand is not expected to be met until after 2025, resulting in low flows until then. Developers should work with the City to ensure that water quality standards are met throughout the interim growth phases.

The North of the River area is expected to develop intermittently, starting after 2025, and not fully developed until buildout. During this time, developers should work with the City to ensure that lines are designed for future demands, without leading to extended water age before then. Additionally, it may be beneficial for the City to establish feeds from North Weld, which may provide fresher water because of the proximity of their existing system to this area.



Legend

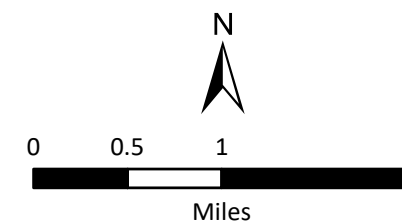
- LREGA
- Existing Storage
- Existing Pump Stations

Pipes - Average Water Age (hr)

- Less than 24
- 24 - 72
- 72 - 120
- 120 - 168
- 168 - 240
- Greater than 240

Future Pressure Zone

- Zone 1
- Zone 2
- Zone 3
- Zone 4

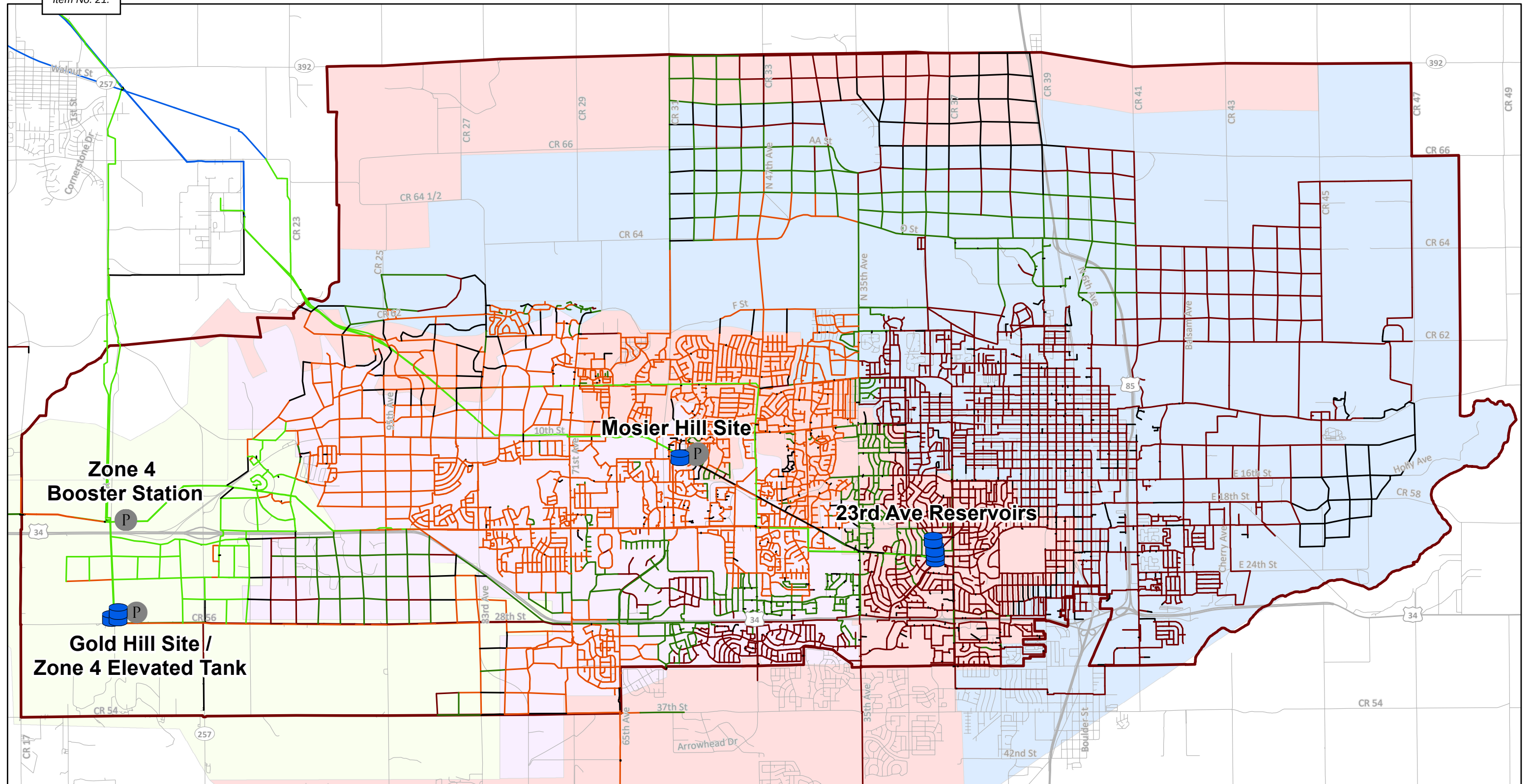


2025 Water Age (Min. Month)

Figure 4-3

Greeley Water System
Master Plan

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Legend

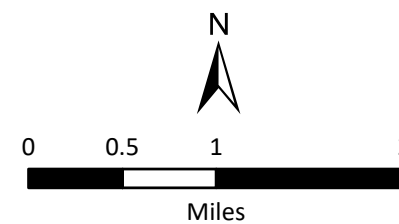
- LREGA
- Existing Storage
- Existing Pump Stations

Pipes - Average Water Age (hr)

- Less than 24
- 24 - 72
- 72 - 120
- 120 - 168
- 168 - 240
- Greater than 240

Future Pressure Zone

- Zone 1
- Zone 2
- Zone 3
- Zone 4



2040 Water Age (Min. Month)

Figure 4-4

Greeley Water System
Master Plan

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4.3.3 Fire Flow Evaluation

Modeling efforts predating the WTDMP had previously identified limited potential fire flow improvements in the existing system. Nodes that were at dead ends, on a line running through a different zone, or not near a hydrant were removed from the list of improvements, as these lines are not intended for fire flow. Additionally, some areas such as Spanish Colony and the Evans/Milliken service area are served by alternate fire departments and were not addressed as part of this master planning effort. The remaining nodes, summarized in **Table 4-2**, were addressed under the 2025 planning horizon, where short-term CIP projects will be recommended. These values generally correlated with field results provided by the City's fire department. In total, 11,285 feet of existing pipe are recommended to be upsized to meet fire flow, as shown in **Figure 4-5**; however, these are preliminary planning results, and the system may be improved through other methods (such as adding connections between pipes instead of upsizing an existing pipe). Further design is necessary to finalize and refine these projects. Here, "available fire flow" refers to the amount of water that a specific node can supply without the system dropping below 20 psi or 10 fps.

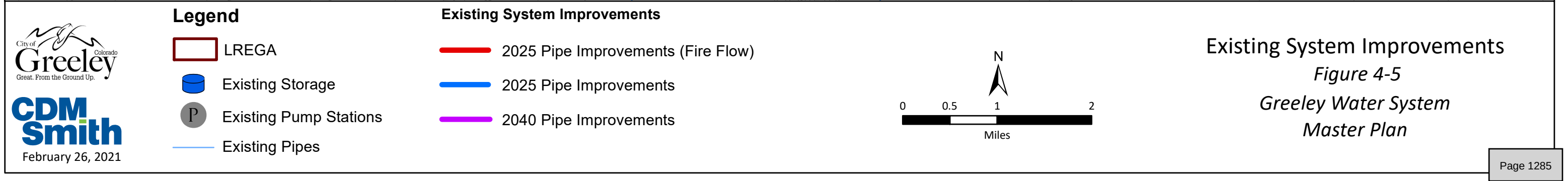
Table 4-2. Fire Flow Improvements (2025)

Deficient Node	Preliminary Available Fire Flow (gpm)	Description of Upgrades Needed to Improve Fire Flow	Final Available Fire Flow (gpm)
CR01373023	640	Upsize pipelines along 9th Street (from 21st Avenue to 19th Avenue) from 4 to 8 inches	2,020
PC01480006	470	Upsize pipelines along 5th Avenue (from 21st Street to 20th Street) from 4 to 8 inches	2,190
RD01304037	320	Upsize some pipelines along 9th Avenue and 2nd Street from 4 to 8 inches and some from 8 to 12 inches	1,570
TEE01268014	630	Upsize pipelines along Vern Schaffer Boulevard from 4 to 8 inches	2,190
TEE01373033	480	Upsize pipelines along 21st Avenue (from 11th Street to 10th Street) and 10th Street (from 21st Avenue to 20th Ave) from 4 to 8 inches	1,700
TEE01411006	390	Upsize pipelines along 1st Avenue and 12th Street from 4 and 6 inches to 8 inches	1,570
TEE01619002	440	Upsize pipelines from 17th Avenue along 30th Street Road from 4 and 6 inches to 8 inches	2,210
PC03508001	670	Upsize pipelines along 22nd Street from 4 to 8 inches	2,980
RD02371020	740	Upsize pipelines along 31st Avenue from 4 to 8 inches	2,100
RD02371021	470	Upsize pipelines between 32nd Avenue and 31st Avenue from 4 to 8 inches	920 ¹
TEE03475001	750	Upsize pipelines along W Wagon Trail Road and Homestead Road from 6 to 8 inches	1,550

¹ Adjacent nodes are above 1,500 gpm because of piping upsizing.

The future system model did not reveal any new deficiencies under either demand scenario for all planning horizons. However, developers should ensure that their designs allow for appropriate fire flow capacity, especially in areas where a full distribution grid may not be fully built yet.

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4.3.4 Buildout Options Evaluation

At the buildout scenario, many areas are expected to fully develop that are farther out from the City's existing infrastructure. In particular, the North of the River area is expected to see some areas with large pressure swings or consistently low pressures without additional infrastructure. Four alternatives were considered to serve this area, as described below and shown in **Figure 4-6**. Because the buildout scenario is so far in the future (expected later than 2090), future study will be needed of this area to reevaluate alternative feasibility to reflect any changes to planned growth.

- **North Weld Option.** Under this option, the City would take water from North Weld through strategically placed master meters, in line with the existing intergovernmental agreement (attached in **Appendix E**). Although a location was selected for preliminary modeling purposes, the City would need additional coordination with North Weld for this option to be feasible. The current location was based on the City's pressure needs (in the City's Zone 1 area) and on North Weld's existing infrastructure (along an existing 16-inch line). The flowrate of 4.9 MGD used for modeling was based on applying a peak month: average month factor to the annual volumes specified in the existing intergovernmental agreement; specific demand would be coordinated with North Weld as this area develops.
- **Two Tanks Option.** This option would add two new reservoirs in the North of the River area—one in each pressure zone (Zone 1 and Zone 2 North). The exact size and location of these tanks would need to be evaluated under a separate dedicated study. For preliminary feasibility modeling efforts, the Zone 1 tank was sized at 5 MG, and the Zone 2 North reservoir was sized at 10 MG. Additional transmission lines would be needed to supply water to these tanks. Although this option is feasible and may create a more robust system for the long term, it does present some water quality concerns due to water age in the tanks and it is the most expensive option.
- **PRVs Option.** Under this option, the City would open some of the PRVs along the Zone 1/Zone 2 North boundary. This option may be the least expensive, as the PRVs would already be constructed, but is less hydraulically efficient than other options. While this option did improve some pressures in Zone 1, it lowered pressures in Zone 2 North, ultimately not improving the overall system. In general, the City would prefer not to rely on PRVs for normal operation.
- **Shifted Pressure Zone Boundary Option.** This option involves adjusting pressure zone boundaries to moving the Zone 1/Zone 2 North boundary further south, serving more of the areas preliminarily identified as Zone 1 with Zone 2 North pressures. While this solution improved pressures in some areas, it also created low pressures in other areas.

After discussions with the City, it was determined that the North Weld option would be considered for additional analysis and system optimization, as the existing intergovernmental agreement would make this a feasible and preferred option. However, this does not represent a final design recommendation, and additional coordination would be needed with North Weld if this plan was followed closer to buildout. A copy of the existing intergovernmental agreement is found in **Appendix E**.

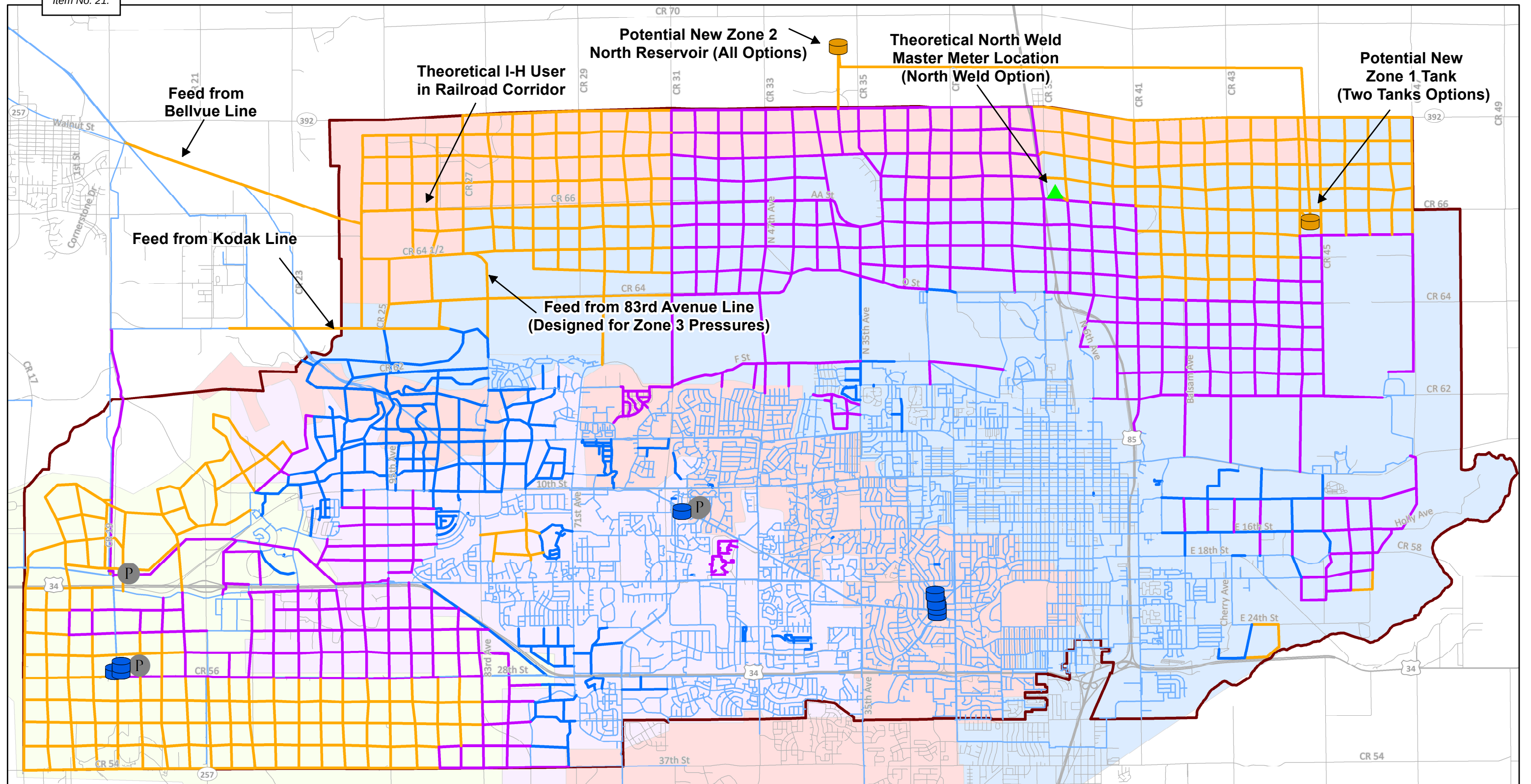
Under all scenarios, it is anticipated that a new reservoir would be needed in Zone 2 North to balance out pressure swings in this area. The preliminary location, shown in **Figure 4-6**, was placed in the model at a point with highest elevation. More detailed studies should be conducted to identify an optimal location, size, and design for this reservoir. An elevated tank in the City's LREGA could be considered as an alternate, as less piping would be required. The City may also consider coordinating with other regional stakeholders for a potential shared storage to serve this area.

It is anticipated that additional pumping capacity would be needed at the Zone 4 pump station by buildout. This pump station was designed with this expansion in mind, and already has empty pump slots that would be filled to meet buildout growth and demands.

4.3.5 Large Industrial User Evaluation

The addition of a large industrial (I-H) user to the North Weld option model showed that the system can handle the additional demand while still maintaining the City's pressure and velocity standards. While the I-H user was added in Zone 2 North, as shown in **Figure 4-6**, the planned pipe network would also be easy to reconfigure to serve a large user in Zone 1. Further evaluation and modeling analysis would be necessary to check that the system could handle a new user when more information on those users' demands and location becomes available.

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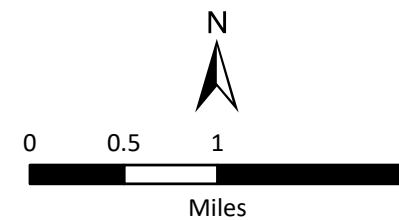
Legend

- LREGA
- Existing Storage
- Existing Pump Stations
- Master Meter

- Future Storage (Buildout)
- Existing Pipes
- 2025 Pipes
- 2040 Pipes
- Buildout Pipes

Future Pressure Zones

- Zone 1
- Zone 2
- Zone 3
- Zone 4



Buildout Options Evaluation
Figure 4-6
Greeley Water System
Master Plan

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4.4 Pipe Network Optimization

After initial modeling, pipe size optimization was conducted in the model under the all potable demands scenario to identify new lines that could be smaller, or existing lines that did not need to be upsized. This was done by identifying lines that were still showing low velocities, even during the peak month at buildout. The fire flow analyses were used to ensure that downsizing future lines did not put the system at risk of not meeting fire flow demands. Additionally, a grid system was preserved, so that long stretches of pipe retained the pipe size even if some individual segments were showing low velocity with the potential to reduce pipe size.

A similar pipe size optimization approach was then used for the non-potable offset demand scenario, to determine if some pipes could be downsized under a scenario where potable demands were lower because of non-potable irrigation. For example, some lines in the North of the River area and in Zone 3 were able to be downsized from 12 to 8 inches. The lower demands presented in this scenario also somewhat improved pressures in the North of the River area. While water quality analyses were not conducted for the non-potable offsets demand scenario, it is expected that the smaller pipe sizes would also improve water age during minimum months. As expected, there is no difference between the all potable and non-potable offsets demand scenarios during months where there is no irrigation.

The non-potable offset demand scenario optimization helped to establish a rough estimate of cost savings because it used more non-potable offsets. The cost savings in this scenario came from two methods: using smaller diameter pipes for new lines and avoiding upsizing existing lines. A very high-level cost estimate was developed and compared for two pipe sizes with and without non-potable offset demands. This comparison showed potential savings² around \$441,000 by 2025 and \$1,615,000 between 2025 and 2040 by downsizing potable lines and avoiding upsizing existing lines. However, this does not consider the cost of the non-potable infrastructure. Non-potable demands are also hyper-localized to a specific parcel, meaning that there may not actually be non-potable irrigation in the areas planned for downsizing. It is recommended that the City carry a CIP budget for the all potable demands scenario to avoid undersizing key infrastructure, unless specific cases of non-potable irrigation are identified during design.

4.5 Storage Desktop Analysis

In addition to hydraulic modeling efforts described in this section, a separate analysis was conducted to assess additional storage needs in the system through buildout. The CDPHE Design Criteria for Potable Water Systems states that “storage tanks must have sufficient capacity, as determined from engineering studies, to meet domestic demands, and...fire flow demands.” The CDPHE requires a minimum storage capacity equal to the “average daily consumption” and notes that “excessive storage capacity should be avoided,” but it does not define specific emergency storage or fire flow storage requirements. In general, storage requirements are a sum of operational storage (the amount of water that fluctuates throughout the day to supply water to customers), fire storage (the amount of water required to put out fires), and emergency storage (an operational assessment of storage needs to handle a short- or long-term supply shortage caused by a system disruption). For more information on planning, modeling, and design of water

² Based on August 2020 dollars.

distribution storage, please see AWWA M32: Computer Modeling of Water Distribution Systems, AWWA M42: Steel Water-Storage Tanks, and AWWA M50: Water Resources Planning.

- **Operational storage** is the amount of water that fluctuates throughout the day to supply water to customers. To calculate this, the buildout demands were summarized for average day, peak day, and peak hour for each pressure zone. Operational storage is calculated based on the difference between the peak hour demands and the peak day demands with the understanding that peak day production is met by the WTPs.
- **Fire storage** is the amount of water required to put out fires in the system. Because storage reservoirs are large infrastructure investments and may need to handle simultaneous fire flow events, a more conservative fire flow requirement was estimated than in the node-to-node analysis described in **Section 4.2.3**. Consistent with previous studies and AWWA guidance, it was assumed that each zone should be able to supply 3,500 gpm for a duration of 3 hours. For more information on fire storage requirements, see AWWA M31: Distribution System Requirements for Fire Protection.
- **Emergency storage** is an additional storage volume of water reserved for disruptions to normal operations that prevent the WTPs or in-system conveyance or pumping facilities from refilling the reservoirs in a timely manner. The emergency storage requirement was assumed to be 2 times the operational storage, meaning the reservoirs would be able to supply two extra days of emergency storage. Per conversations with the City, the transmission and distribution system has been reliable with redundancy within the water system. The volume of emergency storage seems reasonable.

The existing storage volume was then compared to the calculated storage requirements by planning horizon, as summarized in **Figure 4-7** and **Table 4-3**. The CDPHE requirement for average day storage was compared to the calculated storage requirements described above, and the larger volume was selected to be more conservative.

Zone 1, served by the 23rd Avenue reservoirs, is expected to have sufficient capacity through buildout. Zones 2 and 3 were combined because these two zones are served by the Gold Hill and Mosier Hill reservoirs. These zones are also expected to have sufficient storage through buildout. Although the analysis initially showed that Zone 4 may need additional storage by buildout, this may not actually be the case. Based on discussions with the City, it is expected that Zone 4 will be served directly from the Zone 4 pump station, bypassing the Zone 4 elevated tank and reducing operational storage requirements. Zone 4 also is projected with very limited development until after 2040. Storage requirements in this area should be monitored based on when a development comes in.

Table 4-3. Buildout Storage Calculations

Pressure Zone	Average Day Demand (gpm)	Peak Hour Demand (gpm)	Peak Day Demand (gpm)	Operational Storage ¹ (MG)	Fire Storage ² (MG)	Emergency Storage ³ (MG)	Total Storage Required ⁴ (MG)
Zone 1	14,774	46,435	31,615	5.34	0.63	10.67	21.27
Zone 2	9,807	30,675	20,987	3.49	0.63	6.97	14.12
Zone 3	10,087	32,685	21,585	4.00	0.63	7.99	14.52
Zone 4	3,489	15,958	7,467	3.06	0.63	6.11	6.11

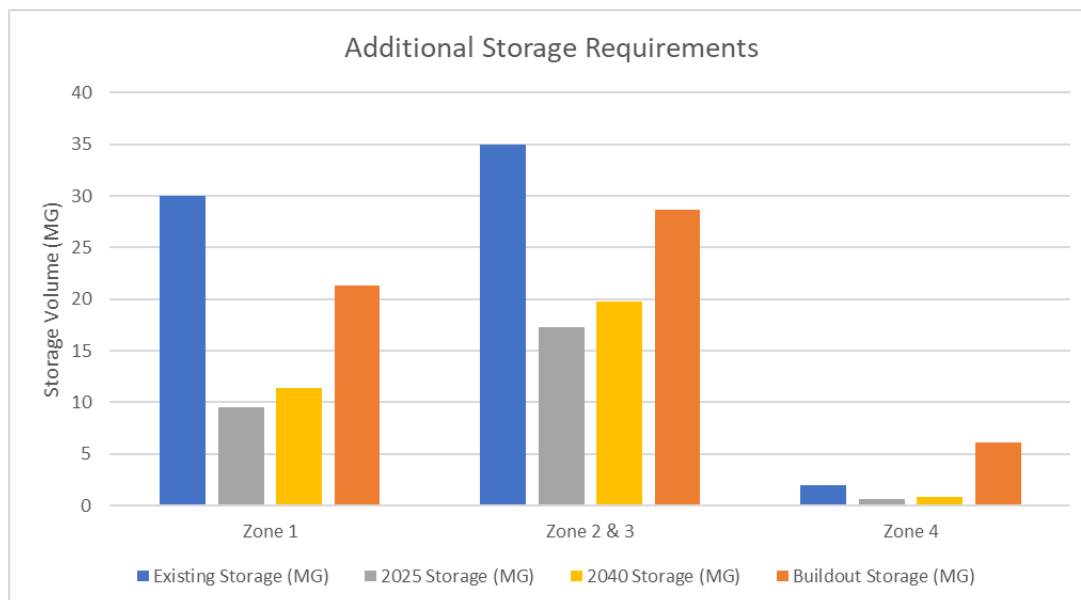
¹ Operational storage is based on the difference between peak day and peak hour demand.

² Fire storage assumes a demand of 3,500 gpm for three hours.

³ Emergency storage is twice the operational storage.

⁴ Total storage requirement selects the higher of emergency storage or operation + fire storage. It was found that the emergency storage was the maximum required storage.

⁵ Some demands not associated with a specific zone, such as those located on the transmission system or related to external stakeholders, are excluded from this analysis.

**Figure 4-7. Storage Requirements by Pressure Zone and Planning Horizon**

This analysis was based on bulk volume and does not consider how reservoirs impact the hydraulics of the system. Hydraulic modeling showed that while the existing reservoirs have sufficient storage, there is likely a need for additional storage to help balance out pressure fluctuations in the North of the River area at buildout because of this area's distance from existing reservoirs. Additional discussion is included in **Section 4.3.4**.

4.6 Coordination with the 2003 Master Plan

The 2003 MP identified various vulnerabilities throughout the water system. Many of these have been addressed by the City since 2003 and are no longer a concern. This section comments on improvements that have been made to the system. In general, this WTDMP focused more on analyzing the distribution system, while the 2003 MP was focused on other items such as

treatment, water resources, and high mountain reservoirs. Please see **Section 1.2** for more information on the 2003 MP.

- The 2003 MP identified vulnerabilities along the Bellvue lines due to poor condition and undersized pipes. The 60-inch parallel line has been constructed and is in limited service now. The 60-inch Gold Hill segment, when complete, will further address these issues.
- Reconstruction of the Gold Hill 15-MG inlet/outlet and construction of the Gold Hill 5-MG reservoir have improved water quality and reduced reliance on the Gold Hill 15-MG reservoir. This has increased storage for Zone 3.
- The 2003 MP evaluated potential storage needs using very high emergency storage requirements, to be conservative. However, improvements to the piping system, including the new 60-inch transmission pipeline from Bellvue, since the 2003 MP was adopted have led to increased redundancy protection compared to before. The new 60-inch Bellvue line improves reliability of the entire transmission system, as it can still supply large volumes of water to the distribution system if the other transmission lines experience an outage. The updated storage analyses as part of this WTDMP have shown that there is not expected to be a need for additional storage before 2040.

Because this WTDMP is focused on the transmission and distribution systems, it does not address concerns related to water resources planning or treatment. Additional studies are recommended to ensure that vulnerabilities identified in the 2003 MP related to these topics have been addressed, and to identify any new needs or vulnerabilities.

4.7 Summary of Recommended Water System Improvements

The total population for the City is projected to increase from about 107,000 to 428,000 between the existing and buildout planning horizons. To accommodate the increase in projected population and resulting demands, future system evaluations indicate a need for a new reservoir in Zone 2 North and additional pumping capacity at the Zone 4 pump station by the buildout planning horizon. The Zone 4 pump station was originally designed for additional pumps, which should facilitate this growth after 2040. No necessary improvements to storage or pumping were identified before 2040. The City's water system would need 400 miles of additional pipe to serve buildout demands, as shown in **Table 4-4**. Most of the new pipes are development-driven and therefore will be the responsibility of the developer rather than the City. This additional piping includes the 60-inch Gold Hill expansion and the construction of an additional transmission line starting at the Zone 4 pump station in parallel with the existing lines from Boyd Lake WTP.

This recommended expansion of the water system allows the City to plan for future growth and development and to manage, operate, and maintain all parts of the water system while providing highly reliable service to the citizens of Greeley.

Table 4-4. Length of New Pipe by Diameter and Planning Horizon

Planning Horizon	Length of Pipe by Diameter (Miles)								Total
	8-inch	12-inch	16-inch	20-inch	24-inch	27-inch	36-inch	60-inch	
2025	26.7	24.3	8.1	1.7	-	-	-	0.8	61.6
2040	99.3	41.5	18.9	2.1	7.1	-	3.3	1.9	174.1
Buildout	88.9	32.6	31.2	2.8	11.8	2.8	-	-	170.2
Total	214.9	98.4	58.2	6.7	19.0	2.8	3.3	2.7	405.9

¹ Table does not include existing pipes that would need to be upsized in the future.

² Table includes both City and development-driven projects. Projects will be broken out by responsible party in CIP section.

While the WTDMP is primarily focused on projected infrastructure and CIP projects, operational practices were also considered. In general, no significant operational concerns were identified. The following general recommendations may help the City improve operational efficiency:

- Complete a detailed operations study of the system, which could include looking at pumping costs, historic tank and reservoir fluctuations, and staffing needs. This study could help identify recommendations for automated setpoints.
- Work with City operations staff to identify and promote automation of certain systems, such as pump and valve controls. Well-calibrated automation can reduce energy consumption by identifying the most efficient way to operate pumps.
- Develop a system-wide standard operating procedure, to help create a consistent operational plan and train new operations staff.
- Monitor tanks and reservoirs during low demand months to determine whether water is staying in storage for longer than a typical industry standard of 30 days. If results of monitoring show that this is the case, the City may improve water age within storage by adding baffling or changing the inflow and outflow lines to promote circulation. Detailed hydraulic models of the tanks may help identify preferred solutions or improvements.

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Section 5

Capital Improvements Plan

5.1 Approach to Capital Improvement Plan Development

Section 4 modeled water transmission and distribution system improvements to address anticipated renewal and replacement needs and provide system capacity to accommodate growth. This section builds on the CIP projects identified in **Section 4** at the 2025 and 2040 planning horizons and defines the approach for development of the 5-year and 20-year CIPs. The identified CIPs were developed with consideration of the City's current and long-range population and projected flows using City growth projections and planning information, existing CIP projects in the budgeting process, and improvement needs identified using the hydraulic model associated with this WTDMP. Conditions will change with time and uncertainties will impact the accuracy of each plan in later years. As projects approach implementation, it is important that the City reevaluate each CIP to better reflect growth and development.

This section provides planning-level cost estimates for capital improvement project scheduling. Major capital elements are itemized with unit prices. Information from past projects and outside resources, both locally and nationwide, was relied upon to develop unit prices for major capital categories. CIP projects were developed using pipeline quantity estimates and modeling data. GIS mapping was used to identify areas of interest, such as utilities and road crossings. The unit prices were then multiplied by the quantity of each element. Project elements that were difficult to estimate during the planning stage are included in the overall cost as either allowances or as a percentage of the total for the itemized project elements. During design development, more specific data will be available to inform the design and resulting project cost estimate.

5.2 Cost Development

Unit costs were developed to aid in CIP budgeting, as described below. Cost estimating is considered the Association for the Advancement of Cost Engineering Class 5 – Conceptual engineering phase.

5.2.1 Project Implementation and Additional Project-Related Costs

Apart from the unit costs used to build-up project material costs (e.g., pipes, valves, and fire hydrants), several other project elements were added as factors. Construction factors include items such as erosion control/stormwater pollution prevention and contractor mobilization and demobilization. These costs are estimated as a percentage of the construction unit costs. Contingency is applied to the subtotal of these construction cost elements to account for variations in unit prices or quantity estimates. Programmatic elements include engineering, permitting, legal, and administration and are estimated as a percentage of the construction cost. **Table 5-1** provides a breakdown of the different assumptions used for project implementation and contingency.

Table 5-1. Costing Factors for Construction Bid and Total CIP Project Costs

Category	Item	Costing Factor
Construction Bid Cost (includes infrastructure and contractor overhead, profit, bonds, and insurance)	Erosion Control/Stormwater Pollution Prevention ¹	2%
	Mobilization and Demobilization ¹	5%
	Contingency ²	35%
Project Implementation ³	Feasibility and Site Studies	9% for OPCC ≤ \$1 million 6% for OPCC of \$1 million to \$10 million 5% for OPCC > \$10 million
	Preliminary and Final Design	9% for OPCC ≤ \$1 million 6% for OPCC of \$1 million to \$10 million 5% for OPCC > \$10 million
	Engineering Services During Construction	5%
Additional Project-Related Costs ³	Outside Construction Management - not used if OPCC value is < \$1 million	5%
	Outside Project Management - not used if OPCC value is < \$1 million	3%

¹ Construction bid cost costing factors erosion control/stormwater pollution prevention and mobilization and demobilization are added to the subtotal of unit cost items.

² Contingency costing factor is 35% of the subtotal of the unit cost items and contractor born costs determined by costing factors.

³ Project implementation and additional project-related cost categories are determined as a percentage of the construction cost and part of the total CIP project costs.

5.2.1.1 Project Erosion Control/Stormwater Pollution Prevention

Project erosion control and stormwater pollution prevention includes the contractor's cost to manage the stormwater during construction through best management practices such as silt fences, rock socks, vehicle tracking, and silt prevention at storm inlets. This category is assumed as 2% of the OPCC subtotal of the items that have unit costs and is based on estimator's judgement. This costing factor is added to calculate project OPCC totals.

5.2.1.2 Mobilization and Demobilization

Contractor mobilization and demobilization includes the contractor's startup costs (moving equipment and personnel to the project location, obtaining permits and bonds, etc.) and closeout costs (project cleanup, moving equipment and personnel from the project location, etc.). The mobilization and demobilization category is assumed as 5% of the OPCC subtotal of the items that have unit costs and is based on estimator's judgement. This costing factor is added to calculate project OPCC totals.

5.2.1.3 Contingency

During the planning phase, the field work and design have not been completed for the projects. Therefore, the cost development relies on estimated quantities for each construction element. Project contingency provides for these uncertainties by adding additional costs to the project total. The contingency at the planning level is typically 35% of the OPCC subtotal after erosion control/stormwater pollution prevention and mobilization and demobilization costing factors have been included. Project contingency also provides for cost associated with items that are difficult to itemize at a planning level.

5.2.1.4 Feasibility and Site Studies

This cost element includes the planning and field investigations (geotechnical, survey, ground sampling, subsurface utility engineering (SUE) and locates, etc.) required to implement a project. This are estimated as a percentage of the subtotal of the previous elements. The percentage varies based on the OPCC (plus contingency).

5.2.1.5 Preliminary and Final Design

The preliminary and final design cost element includes the cost for engineering services to develop biddable plans and specifications in accordance with applicable standards. This cost is estimated using a percentage of the OPCC (plus contingency).

5.2.1.6 Engineering Services During Construction

Engineering services during construction include review of contractor submittals, requested changes, and design adjustments that may be required during construction. A flat percentage of the OPCC is used to estimate this cost element.

5.2.1.7 Additional Project-Related Costs

Outside construction and project management costs are estimated for projects that are not directly managed by the City. For purposes of this master plan, only projects in excess of \$1 million were assigned these cost elements.

5.3 Identified Capital Improvement Plan Projects

Development of the water system hydraulic model involved incorporating planning data, PUDs, and demand projections to predict where new pipes would need to be constructed to support future development, and where existing pipes would need to be upsized to handle additional demand and increase hydraulic efficiency. See **Figure 5-1** for the proposed water system network through buildout. All pipes were sized for the buildout scenario to avoid future upsizing. In general, pipes were sized to ensure they are big enough for the peak hour or fire flow demands scenario, without creating expensive oversized pipes that negatively impact water age. Pipe size optimization was used to identify the smallest pipe diameter that could be used, to avoid unnecessary construction costs. Specifically, the minimum pipe diameter recommended for the proposed water system network through buildout was 8 inches. From there, projects were

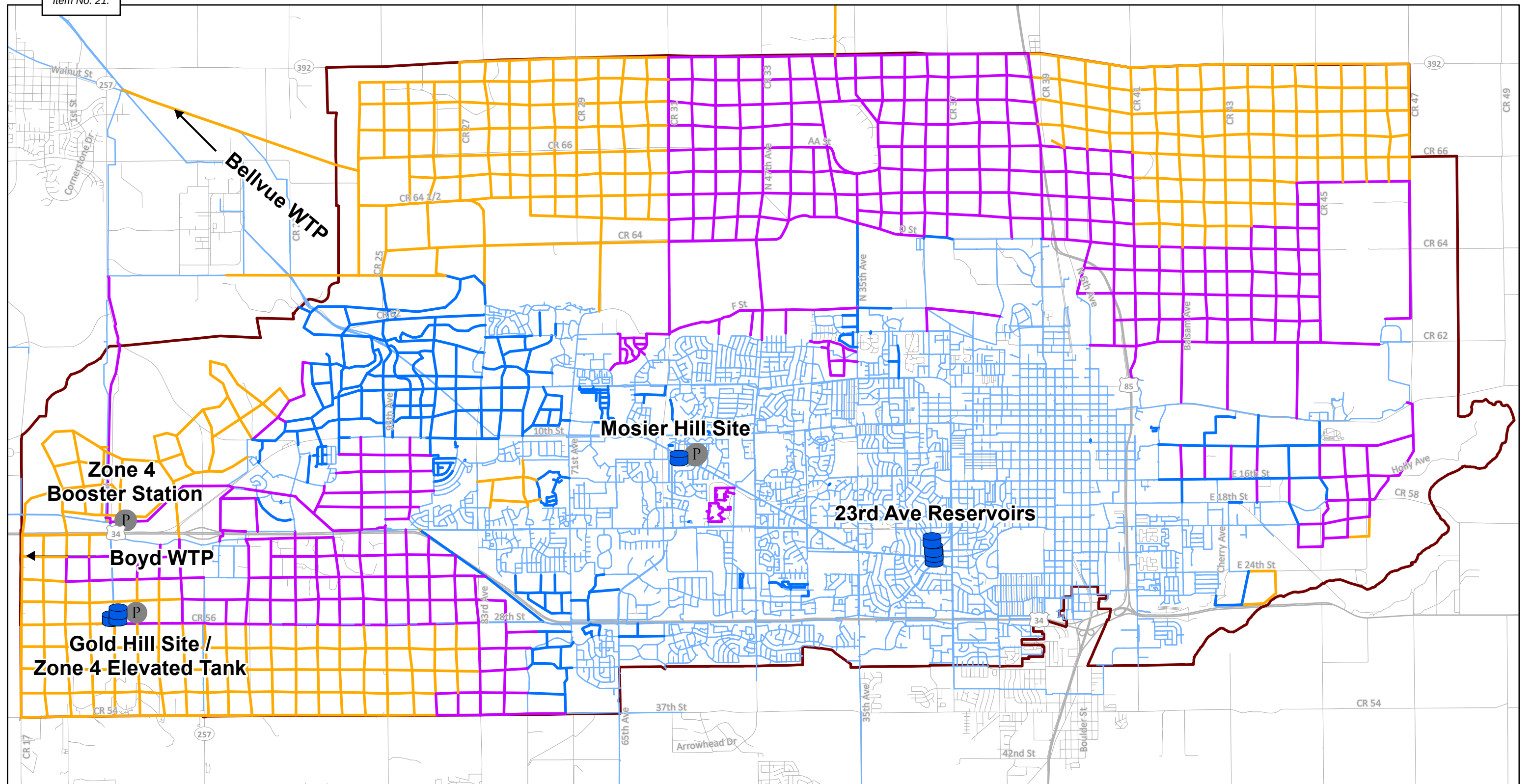
identified within 2025 and 2040 project improvement time frames based on the following criteria:

- Upsize pipes to accommodate additional capacity needed from population growth and development by planning horizon at the peak hour.
- Address capacity limitations resulting from pipes not being able to supply fire flow demands.
- Construct new transmission or main distribution lines to serve new development.
- Upgrade existing pipelines to convey water to new development areas and/or a PUD.

Identified projects were categorized into two groups—City and development projects for the 2025 (projects for 2020 through 2025) and 2040 (projects for 2026 through 2040) time frames. Unique project tag identifiers were assigned for each project based on directional grids system across the LREGA. The City and development projects were grouped based on the following criteria:

- Pipe Size: When applicable, sections of water distribution and transmission pipeline were grouped based on similar pipe size. For example, a section of pipe with a 60-inch diameter was classified as a separate project than pipe sections of 8- and 12-inch pipe sizes.
- Project Purpose: When applicable, sections of water distribution and transmission pipeline were grouped based on whether such sections were new pipe being installed or pipe being replaced and upsized to accommodate capacity or fire flow improvements.
- Location: When applicable, sections of water distribution and transmission pipeline were grouped based on proximity to each other. For example, several pipeline segments passing through a park were grouped as one project while two parallel pipelines recommended for upsizing to address fire flow improvements were grouped together as another project.

Detailed cost estimates (breakdowns of OPCC and/or total CIP costs) per project can be found in **Appendix B**. The estimations included in **Appendix B** for development projects are to be used as a guide for high-level planning purposes only and are not inclusive of all potential project costs. Given the Development projects are not funded by the City, OPCC estimates for each project only include the unit cost item of pipe lengths based on pipe size. OPCCs do not include additional line item units such as fire hydrants, PRV stations, dewatering, and crossings.

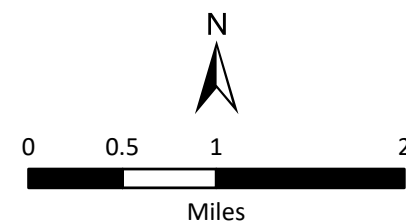


Legend

- LREGA
- Existing Storage
- P Existing Pump Stations

Pipes (Planning Horizon)

- Existing
- 2025
- 2040
- Buildout



New Pipes at Buildout
Figure 5-1
Greeley Water System
Master Plan

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5.3.1 5-year Project Improvements

City CIP and development projects identified within the 5-year project improvement time frame based on the future modeled system hydraulic requirements are listed in **Tables 5-2** and **5-3**, respectively, along with the respective drivers and whether new pipe is installed or replaced for each. City CIP total cost estimations and development project OPCCs are included as well. Not all potential City projects are included in the CIP estimation. Generally, projects identified from the water transmission and distribution model, as discussed in **Section 4**, were included in CIP cost estimations. The following project was not included in City CIP estimations:

- F Street – West of Stoney Brook PUD: A project was identified by the City west of the Stoney Brook PUD along F Street; however, the project was not included in CIP cost estimations because there was no information provided for the project during future system model development and the project is pending.

Figure 5-2 illustrates the recommended 5-year project improvements with unique project tags. Naming convention of each project tag is by location (e.g., north = N, south = S, east = E, west = W, etc.), CIP year (e.g., 5), and project number (e.g., -1, -2, -3). As an example, W5-1 equates to Project West No. 1 within 5-year project improvements. OPCC and CIP breakdowns for each project are included in **Appendix B1**. For development-driven projects, the City will provide developers with the material cost difference for installation of upsized piping (if required) to accommodate service needs under future projected conditions. High-level OPCC estimations for development projects are included in **Appendix B3**.

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Table 5-2. 5-year City CIP Projects

Project Tag ^{1,2}	Project Type	Project Driver	Location of Project	CIP Total Cost (Millions)
W5-1	New Pipe	Projected Development	Gold Hill: Windsor Phase (Highway 257)	\$8.0
C5-1	Pipe Replacement	Fire Flow Improvement	Homestead Road & W Wagon Trail Road	\$0.5
C5-2	Pipe Replacement	Fire Flow Improvement	11th Street (32nd Avenue to 31st Avenue)	\$0.5
C5-12A	Pipe Replacement	Fire Flow Improvement	Island Grove Park (Vern Schaffer Boulevard, D Street)	\$0.3
C5-12B	Pipe Replacement	Capacity Improvement	Island Grove Park (Vern Schaffer Boulevard)	\$0.4
C5-12C	Pipe Replacement	Capacity Improvement	H Street & 11th Avenue	\$0.1
C5-13A	Pipe Replacement	Fire Flow Improvement	9th Street (19th Avenue to 21st Avenue)	\$0.3
C5-13B	Pipe Replacement	Fire Flow Improvement	10th Street (20th Avenue to 21st Avenue) & 21st Street (10th Street to 11th Street)	\$0.4
C5-14	New Pipe	Projected Development	35th Avenue (F Street to C Street)	\$0.9
E5-2A	Pipe Replacement	Fire Flow Improvement	9th Avenue (1st Street to 2nd Street)	\$0.3
E5-2B	Pipe Replacement	Fire Flow Improvement	2nd Street (West of 8th Avenue to 9th Avenue)	\$0.5
E5-2C	Pipe Replacement	Fire Flow Improvement	West of 8th Avenue (1st Street to 2nd Street)	\$0.2
E5-3	Pipe Replacement	Capacity Improvement	8th Street (3rd Avenue to 12th Avenue)	\$3.0
E5-5	Pipe Replacement	Fire Flow Improvement	12th Street & 1st Avenue	\$0.4
E5-6	Pipe Replacement	Capacity Improvement	1st Avenue, 16th Street, & 18th Street (1st Avenue to 7th Avenue)	\$3.2
NC5-1	New Pipe	Projected Development	35th Avenue (O Street to F Street)	\$4.1
NC5-2	New Pipe	Projected Development	O Street (23rd Avenue to 25th Avenue)	\$0.4
SC5-1	Pipe Replacement	Fire Flow Improvement	22nd Street (50th Avenue to 51st Avenue)	\$0.2
SC5-9	Pipe Replacement	Fire Flow Improvement	30th Street Road (11th Avenue to 17th Avenue)	\$1.5
SE5-1	Pipe Replacement	Fire Flow Improvement	5th Avenue (20th Street to 21st Avenue)	\$0.3
SE5-2	Pipe Replacement	Fire Flow Improvement	8th Avenue (25th Street to 27th Street Road)	\$0.6

¹ Projects listed do not include development projects.

² W = west; C = central; E = east; NC = north central; NE = north east; SC = south central; SE = south east

Table 5-3. 5-year Development Projects

Project Tag ^{1,2}	Project Task	Project Driver	Location of Project	OPCC (Millions)
W5-2	New Pipe	PUD	Cache Project	\$18.5
W5-3	New Pipe	PUD	PUD Document Lake Bluff	\$5.9
W5-4	New Pipe	PUD	Promontory Heights PUD	\$5.3
W5-5	New Pipe	Projected Development	Southeast Bluffs	\$0.1
W5-6	New Pipe	Projected Development	20th Street North 100	\$0.7
W5-7	New Pipe	Projected Development	105th Avenue (12th Street to 16th Street)	\$0.4
W5-8	Pipe Replacement & New Pipe	Capacity Improvement & Projected Development	20th Street North 200	\$1.3
W5-10	New Pipe	PUD	Trails at Sheep Draw	\$2.4
C5-3	New Pipe	Projected Development	83rd/10th Street	\$14.1
C5-4	New Pipe	PUD	City Center West/Boomerang 88	\$5.6
C5-6	New Pipe	PUD	Triple Creek Subdivision	\$2.7
C5-7	New Pipe	Projected Development	West of 59th Ave, South of 4th Street, & East of 63rd Avenue	\$1.2
C5-8	New Pipe	Projected Development	East of 30th Avenue, South of C St, & North of 4th Street	\$0.6
C5-9	New Pipe	PUD	Stoney Brook PUD	\$1.0
C5-10	New Pipe	Growth	35th Avenue (C Street to F Street) - Branches	\$0.9
E5-7	New Pipe	Projected Development	East Greeley	\$7.9
SC5-2	New Pipe	PUD	Westgate PUD	\$3.2
SC5-3	New Pipe	PUD	Cobblestone PUD	\$3.1
SC5-4	New Pipe	Projected Development	Southwest Greeley	\$1.0
SC5-5	New Pipe	Projected Development	East of 71st Avenue, West of 65th Avenue, South of 24th Street, & North of 28th Street	\$2.5
SC5-6	New Pipe	Projected Development	29th Street Multifamily	\$0.8
SC5-7	New Pipe	PUD	Grapevine	\$0.6
SE5-4	New Pipe	Projected Development	East Greeley	\$1.0

¹ City CIP projects are not included in this list.

² W= west; C = central; E = east; SC = south central; SE = south east

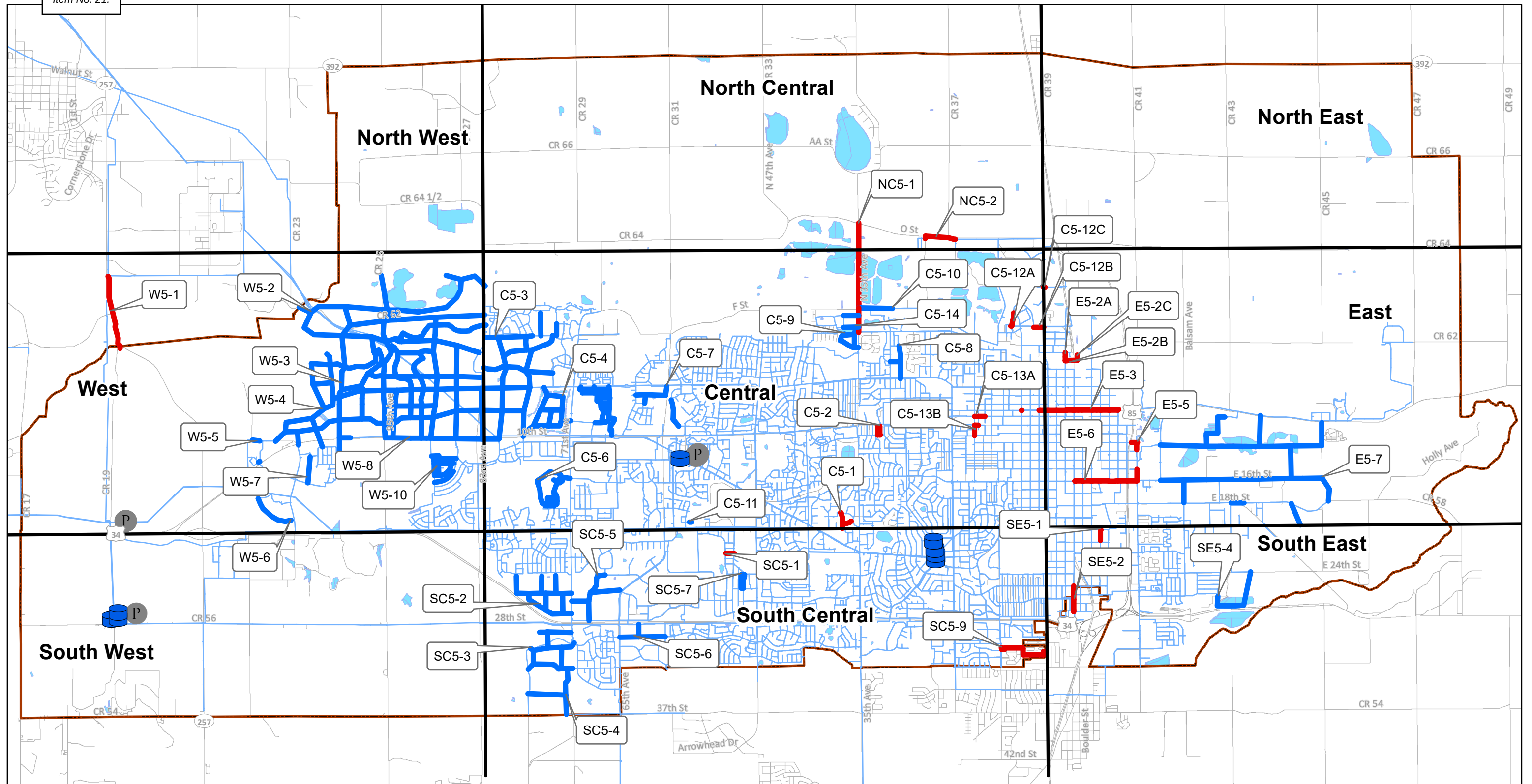
City rehabilitation projects were included from the City's current Operation Rehab Project 2021–2025 Excel spreadsheet. Such identified projects, summarized in **Table 5-4**, were not included within the water transmission and distribution system model; however, such projects were included to help identify projects within the 5-year project improvements where pipe segments needed to be updated based on aging condition rather than hydraulic deficiencies. Although these projects are included as a part of 5-year project improvements, the rehabilitation projects will be prioritized after other City CIP projects that needed capacity and/or fire flow improvements. **Table 5-4** summarizes identified project locations, tasks, estimated construction years, and reasons for inclusion as part of the City's rehabilitation projects (City of Greeley 2021).

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Table 5-4. 5-year City Rehabilitation Projects (City of Greeley 2021)

Project Area	Project Type	Project Driver	Construction Start Year	Total Cost (Millions)
19th Avenue - 6th Street Rd to 7th Street and 6th Street Rd - 18th Avenue to 19th Ave	Pipe Replacement	Age	2022	\$0.1
1800 block 28th Avenue CDS	Pipe Replacement	—	2022	\$0.02
400 and 500 block of E 20th Street	Pipe Replacement	Age	2022	\$0.1
500 block of N 9th Avenue	Pipe Replacement	Age	2022	\$0.1
5500 27th Street (do soil samples)	Pipe Replacement	Age	2022	\$0.1
200 23rd Avenue	Pipe Replacement	Age	2022	\$0.1
1st Street - 23rd Avenue to mobile home park master meter	Pipe Replacement	Age	2022	\$1.0
2100 30th Street apartment complex	Pipe Replacement	Age	2023	\$0.3
6500 and 6400 28th Street	Pipe Replacement	Age	2023	\$0.2
11th Avenue and Highway 34 bypass	Pipe Replacement	Age	2025	\$0.4
30th Street - 17th Avenue to 23rd Avenue	Pipe Replacement	Age	2026	\$0.5
49th Street between 65th Avenue and 47th Ave	Pipe Replacement	Age	TBD	—
49th Street - 83rd Avenue to 95th Avenue Grid Line	Pipe Replacement	Age	TBD	\$1.1
5th Avenue – 14th Street to 15th Street	Pipe Looping Project	—	TBD	—
Tie-in 13th Street 2900 Block/Scott School Lane, new fire hydrant and major valve work	Pipe Looping Project	—	TBD	\$0.01
83rd Avenue and 49th Street	Pipe Replacement	Age	TBD	\$0.1
Kodak Water Line Replacement	Transmission Line Replacement	Age	2021	\$3.0
24018 West County Road 15 (Chicken Lady) (Line 1)	Transmission Line Installation	Valve, actuator, pressure and flow meters, vault, SCADA, electrical (automated flow control)	2022	\$0.2
Lemay (Line 3)	Transmission Line Installation	Valve, actuator, pressure and flow meters, vault, SCADA, electrical	2022	\$0.2
Forest Hills (Line 1)	Transmission Line Installation	Valve, actuator, pressure and flow meters, vault, SCADA, electrical	2022	\$0.2
20th/95th Avenue	Transmission Line Replacement	Age	2023	\$0.7
Highway 257	Transmission Line Replacement	High pressures	2024	\$1.6

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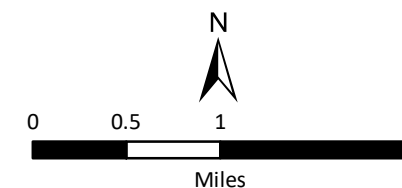


Legend

- LREGA
- Tanks
- Pump Station
- Lakes and Ponds

- Existing Pipes
- 2025 City CIP Projects
- 2025 Development Projects

CIP Grids



Recommended 5-Year Improvements

Figure 5-2
Greeley Water System
Master Plan

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5.3.2 20-year Project Improvements

City CIP projects identified within the 20-year project improvements are listed in **Table 5-5**, while identified 20-year development projects are summarized in **Table 5-6**. The project location, type, and motivation for including each project are included. City CIP total cost estimations and development project OPCCs are also included. Not all potential City projects are included in the CIP estimation. Generally, projects identified from the water transmission and distribution model, described in **Section 4**, were included in CIP cost estimations. The following project was not included in City CIP estimations:

- Central No. 12 (Amour Hill Drive): A small segment of pipe, less than 6 feet, was recommended for replacement and upsizing to 12-inch diameter pipe based on the hydraulic model. The pipe section was not included in City CIP cost estimations because of the pipe length.

Figure 5-3 illustrates the recommended 20-year City CIP improvements with unique project tags. Naming convention of each project tag is by location (e.g., north = N, south = S, east = E, west = W), and CIP year (e.g., 20), and project number (e.g., -1, -2, -3). As an example, W20-1 equates to Project West No. 1 within 20-year project improvements. OPCC breakdowns for each project are included in **Appendix B2**. For development-driven projects, the City will provide developers with the material cost difference for installation of upsized piping (if required) to accommodate service needs under future projected conditions. High-level OPCC estimations for development projects are included in **Appendix B4**.

Table 5-5. 20-year City CIP Projects

Project Tag ^{1,2}	Project Type	Project Driver	Location of Project	CIP Total Cost (Millions)
W20-1	New Pipe	Projected Development	Gold Hill Segment Phase 2 (Bellvue Line)	\$13.9
W20-2	New Pipe	Projected Development	Boyd WTP Transmission Line (North of US 34 from 95th Avenue to County Road 17)	\$15.8
C20-1	New Pipe	Projected Development	59th Avenue (O Street to F Street)	\$4.8
C20-2A	New Pipe	Projected Development	47th Avenue (O Street to F Street)	\$4.6
C20-2B	New Pipe	F Street Water & Wastewater Operations Facility	F Street (47th Avenue to 35th Avenue) & 47th Avenue (F Street to B Street)	\$4.0
C20-3	Pipe Replacement & New Pipe	Projected Development and Capacity Improvement	25th Avenue (O Street to F Street)	\$2.8
C20-4	Pipe Replacement	Capacity Improvement	1st Street (56th Avenue to 59th Avenue Court)	\$0.4
C20-5	Pipe Replacement	Capacity Improvement	Island Grove Park	\$0.4
C20-6	Pipe Replacement	Capacity Improvement	Street U (F Street to Street W)	\$0.2
E20-1	Pipe Replacement	Capacity Improvement	A Street (6th Avenue to 9th Avenue)	\$1.4
E20-2	Pipe Replacement	Capacity Improvement	9th Street (1st Avenue to 3rd Ave)	\$1.4

¹ Projects listed do not include development projects.

² W = west; C = central; E = east

Table 5-6. 20-year Development Projects

Project Tag ^{1,2}	Project Type	Project Driver	Location of Project	OPCC (Millions)
W20-3	Pipe Replacement & New Pipe	Projected Development and Capacity Improvement	83rd/10th Street	\$2.4
W20-4	New Pipe	PUD	Promontory Heights	\$0.9
W20-5	New Pipe	PUD	Southeast Bluffs	\$0.9
W20-6	New Pipe	Projected Development	20th Street North 100	\$2.4
W20-7	New Pipe	Projected Development	20th Street North 300	\$0.5
W20-8	New Pipe	Projected Development	20th Street North 200	\$10.5
C20-7	New Pipe	Projected Development	East of F Street, West of Island Grove Park, North of C Street, & South of F Street	\$1.5
C20-8	New Pipe	Projected Development	East of 66th Avenue, West of 60th Avenue, North of 4th Street, & South of C Street	\$3.3
C20-9	New Pipe	Projected Development	F Street (61st Avenue to 47th Avenue) & F Street Branch (44th Avenue)	\$2.8
C20-10	New Pipe	Projected Development	East of 40th Avenue, West of 35th Avenue, North of 4th Street, & South of C Street	\$2.3
C20-11	Pipe Replacement	Capacity Improvement	Aims Community College	\$1.2
E20-3	New Pipe	Projected Development	Greeley-Weld County Airport	\$2.0
E20-4	New Pipe	Projected Development	West of Highway 85 (7th Avenue to A Street)	\$2.2
E20-5	New Pipe	Projected Development	East of Highway 85, West of Greeley-Weld County Airport, South of O Street, & North of 8th Street	\$29.8
E20-6	New Pipe	Projected Development	East of Highway 85, West of Weld County Parkway, South of 8th Street, & North of 24th Street	\$12.9
NC20-1	New Pipe	Projected Development	North of the River (North of O Street from 59th Avenue to 11th Avenue)	\$95.7
NE20-1	New Pipe	Projected Development	East of Highway 85, West of Greeley-Weld County Airport, South of CR 66, & North of O Street	\$22.0
NE20-2	New Pipe	Projected Development	Greeley-Weld County Airport (CR 47)	\$3.6
SW20-1	New Pipe	Projected Development	Interchange 34W 300	\$5.5
SW20-2	New Pipe	Projected Development	Interchange 34W 100	\$3.6
SW20-3	New Pipe	Projected Development	Interchange 34W 500	\$12.0
SW20-4	New Pipe	Projected Development	Interchange 34W 400	\$12.5
SW20-5	New Pipe	Projected Development	Southwest Greeley	\$8.4
SW20-6	New Pipe	Projected Development	83rd/34	\$6.4
SC20-1	New Pipe	Projected Development	Highway 34 (20th Street to 28th Street)	\$2.9

¹ City CIP projects are not included on this list.

² W = west; C = central; E = east, NC = north central; NE = north east; SC = south central; SE = south east; SW = south west

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5.4 CIP Implementation Schedule

CDM Smith developed an Excel-based CIP tool called the “CIP Planning Tool: WTDMP, NPMP, and SSMP City of Greeley Excel Spreadsheet” to integrate capital projects for water, sanitary sewer, and non-potable water systems (CDM Smith, 2021). The City provided the existing 10-year CIP and public works and stormwater CIPs to inform the CIP implementation schedule.

Projects identified within the 5- and 20-year improvements based on hydraulic evaluations were given projected planning, design, and construction start years. It was assumed that each stage (planning, design, and construction) will take at least 1 year with the construction phase spread out over 2, 3, or 4 years if the total CIP cost for a project was greater than \$1 million, \$5 million, or \$10 million, respectively. For scheduling purposes, 5-year improvements were identified from 2022 through 2027 design start year while 20-year improvements were identified from 2028 through 2042 design start year. The recommended improvements were strictly tied to hydraulic evaluation under a planning horizon (2025, 2040, etc.). The CIP schedule implementation process considered several other factors that influence a project schedule in addition to the hydraulic evaluation. Projects will be referred to as 5- and 20-year projects in this section.

CIP schedule implementation included the following sequential steps:

1. Within the WTDMP, identified improvement projects were prioritized based on capacity improvement, new pipeline installation, and fire flow projects. Several fire flow projects identified within 5-year improvements may be shifted to 20-year improvements to accommodate City rehabilitation projects which would typically take a higher priority.
2. The prioritized City CIP water projects were then overlaid in GIS with other master plan CIP projects, the City’s current rehabilitation projects, and roadwork and park improvements to identify overlapping projects. Construction start years were adjusted to align multiple infrastructure projects and known initiatives across the City. See adjusted CIP schedules for City projects in **Table 5-7** within the 5- and 20-year water improvements.
3. Projects that exceeded \$1 million had project construction costs spread out over the 5-year time frame, across each fiscal year.
4. Above steps were repeated for the 20-year City CIP projects to establish a 20-year CIP schedule.

Section 5 • Capital Improvements Plan**Table 5-7. 5- and 20-Year City CIP Summary**

Projects	Project Type	Project Driver	Project Location	Planning Start Year	Design Start Year	Construction Start Year	OPCC (Millions)	CIP Total Cost (Millions)
5-Year Planning Horizon								
C5-12C	Pipe Replacement	Capacity Improvement	H St. & 11th Ave.	2021	2022	2023	\$0.1	\$0.1
C5-14	New Pipe	Projected Development	35th Ave. (F St. to C St.)	2021	2022	2022	\$0.7	\$0.9
C20-2B	New Pipe	F St. Water & Wastewater Operations Facility	F St. (47th Ave. to 35th Ave.) & 47th Ave. (F St. to B St.)	2021	2022	2023	\$3.1	\$4.0
W5-1	New Pipe	Projected Development	Gold Hill: Windsor Phase (Hwy 257)	2022	2023	2024	\$6.2	\$8.0
C5-12B	Pipe Replacement	Capacity Improvement	Island Grove Park (D St.)	2022	2023	2024	\$0.3	\$0.4
NC5-2	New Pipe	Projected Development	O St. (23rd Ave. to 25th Ave.)	2022	2023	2024	\$0.3	\$0.4
NC5-1	New Pipe	Projected Development	35th Ave. (O St. to F St.)	2024	2025	2026	\$3.3	\$4.1
C5-1	Pipe Replacement	Fire Flow Improvement	Homestead Rd. & W Wagon Trail Rd.	2025	2026	2027	\$0.4	\$0.5
C5-2	Pipe Replacement	Fire Flow Improvement	11th St. (32nd Ave. to 31st Ave.)	2025	2026	2027	\$0.4	\$0.5
C5-12A	Pipe Replacement	Fire Flow Improvement	Island Grove Park (Vern Schaffer Blvd.)	2025	2026	2027	\$0.2	\$0.3
C5-13A	Pipe Replacement	Fire Flow Improvement	9th St. (19th Ave. to 21st Ave.)	2025	2026	2027	\$0.2	\$0.3
C5-13B	Pipe Replacement	Fire Flow Improvement	10th St. (20th Ave. to 21st Ave.) & 21st Ave. (10th St. to 11th St.)	2025	2026	2027	\$0.3	\$0.4
E5-2A	Pipe Replacement	Fire Flow Improvement	9th Ave. (1st St. to 2nd St.)	2026	2027	2028	\$0.2	\$0.3
E5-2B	Pipe Replacement	Fire Flow Improvement	2nd St. (West of 8th Ave. to 9th Ave.)	2026	2027	2028	\$0.4	\$0.5
E5-2C	Pipe Replacement	Fire Flow Improvement	West of 8th Ave. (1st St to 2nd St.)	2026	2027	2028	\$0.1	\$0.2
E5-5	Pipe Replacement	Fire Flow Improvement	12th St. & 1st Ave.	2026	2027	2028	\$0.3	\$0.4
SC5-1	Pipe Replacement	Fire Flow Improvement	22nd St. (50th Ave. to 51st Ave.)	2026	2027	2028	\$0.1	\$0.2
5-Year Subtotal							\$16.6	\$21.2

Projects	Project Type	Project Driver	Project Location	Planning Start Year	Design Start Year	Construction Start Year	OPCC (Millions)	CIP Total Cost (Millions)
20-Year Planning Horizon								
E5-6	Pipe Replacement	Capacity Improvement	1st Ave., 16th St., & 18th St. (1st Ave. to 7th Ave.)	2027	2028	2029	\$2.5	\$3.2
W20-1	New Pipe	Projected Development	Gold Hill Segment Phase 2 (Bellvue Line)	2027	2028	2029	\$10.8	\$13.9
C20-1	New Pipe	Projected Development	59th Ave. (O St. to F St.)	2027	2028	2029	\$3.9	\$4.8
C20-3	Pipe Replacement & New Pipe	Projected Development and Capacity Improvement	25th Ave. (O St. to F St.)	2027	2028	2029	\$2.2	\$2.8
SE5-1	Pipe Replacement	Fire Flow Improvement	5th Ave. (20th St. to 21st Ave.)	2028	2029	2030	\$0.2	\$0.3
C20-4	Pipe Replacement	Capacity Improvement	1st St. (56th Ave. to 59th Ave. Ct.)	2028	2029	2030	\$0.4	\$0.4
E5-3	Pipe Replacement	Capacity Improvement	8th St. (3rd Ave. to 12th Ave.)	2029	2030	2031	\$2.4	\$3.0
SC5-9	Pipe Replacement	Fire Flow Improvement	30th St. Rd. (11th Ave. to 17th Ave.)	2029	2030	2031	\$1.2	\$1.5
E20-1	Pipe Replacement	Capacity Improvement	A St. (6th Ave. to 9th Ave.)	2030	2031	2032	\$1.1	\$1.4
E20-2	Pipe Replacement	Capacity Improvement	9th St. (1st Ave. to 3rd Ave)	2032	2033	2034	\$1.1	\$1.4
C20-5	Pipe Replacement	Capacity Improvement	Island Grove Park	2034	2035	2036	\$0.3	\$0.4
W20-2	New Pipe	Projected Development	Boyd WTP Transmission Line (North of US 34 from 95th Ave. to CR 17)	2036	2037	2038	\$12.3	\$15.8
C20-2A	New Pipe	Projected Development	47th Ave. (O St. to F St.)	2037	2038	2039	\$3.5	\$4.6
SE5-2	Pipe Replacement	Fire Flow Improvement	8th Ave. (25th St. to 27th St. Rd.)	2038	2039	2040	\$0.5	\$0.6
C20-6	Pipe Replacement	Capacity Improvement	St. U (F St. to St. W)	2039	2040	2041	\$0.2	\$0.2
20-Year Subtotal							\$42.4	\$54.1
Total							\$59.0	\$75.3

Note: CIP schedule was adjusted based on other master plans and parks and public works CIP projects.

Once the 5- and 20-year CIP schedules were developed, annual funding requirements were established for City water projects from 2021 through 2042, as shown in **Figure 5-4. Appendix B5** presents a summary of the annual funding breakdown by project in tabular format. Funding requirements across the three systems—sewer, water, and non-potable systems—are shown in **Figure 5-5.**

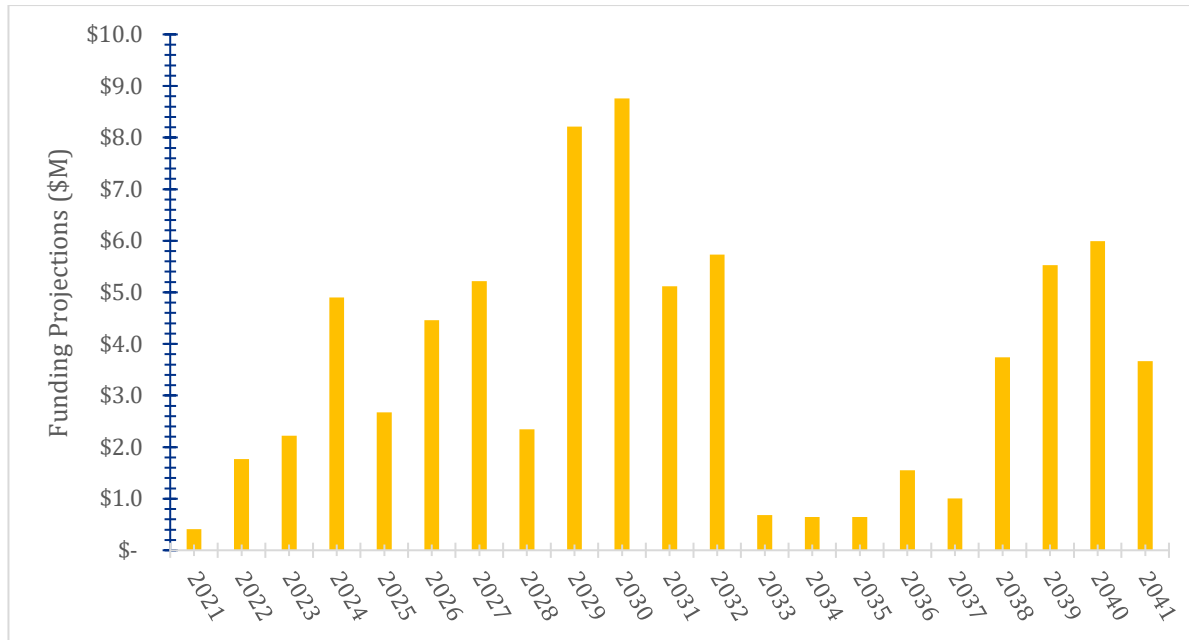


Figure 5-4. Annual Water Funding Projections for City CIP Projects

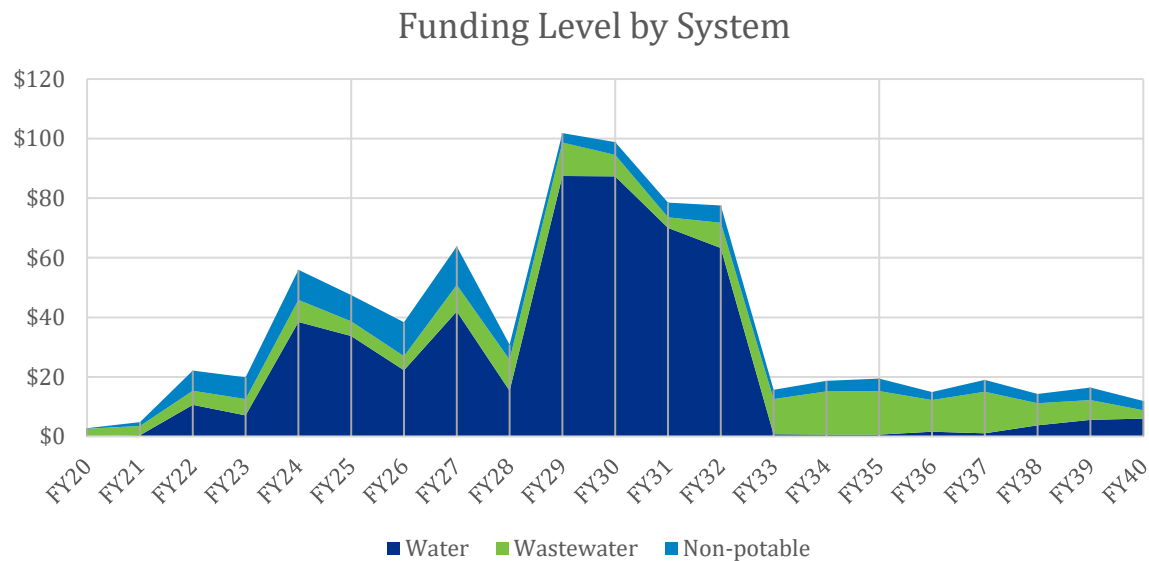


Figure 5-5. Annual Funding by System

5.4.1 Cost Sharing Evaluation

There is a high level of uncertainty when it comes to development projects; therefore, they were not considered in the schedule implementation process. However, when more information about a development becomes available, the City may consider integrating these into their CIP schedule to plan their cost sharing commitments. The City will provide reimbursement to developers for upsizing pipes to support growth into the future. For budgetary planning purposes, pipe material cost differences were calculated for new development pipes sized greater than 8 inches (i.e., 12- and 16-inch pipe) for buildout demand conditions. **Table 5-8** provides the cumulative lengths of 12- and 16-inch pipe across all development projects within the 5-year planning horizon and the estimated financial reimbursement the City should budget per year in the form of material cost differences. Pipe material cost is typically between one-third to half of the total pipe installed cost. As a conservative planning estimate, the pipe material cost was assumed to be half of the total pipe installed cost.

Table 5-8. Estimated Reimbursement Costs for 5-Year Development Projects

Pipe Size (inches)	Cumulative Length (LF)	Pipe Material Unit Cost (\$/LF)	Cumulative Developer Reimbursement (Millions)	Fiscal Year Developer Reimbursement (Millions)
8	—	86	—	—
12	132,403	92	\$0.8	\$0.2
16	45,225	112	\$1.2	\$0.2
Total			\$2.0	\$0.4

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Section 6

Findings and Recommendations

The findings and recommendations summarized in this section have been drawn from the planning and evaluation sections of this WTDMP. The recommendations identify system needs, actions, and capital improvements through the buildout planning horizon. However, the actual implementation time frame will depend on actual growth rates, the order of development, and the level of available capital funding. Additionally, the actual scope and implementation of these recommendations may vary with detailed planning and design.

6.1 Key Findings

Key findings identified as part of the WTDMP include:

- The City has a comprehensive and well-maintained GIS system for their water utilities. Other key data collection mechanisms include SCADA data and monthly billing data. For more information, see **Section 1**.
- The most likely population projection expects about a 3% growth per year. This growth is primarily expected in the west side of the City for the 2025 planning horizon, as multiple developments are expected to begin construction in the near future. Total peak month demand is expected to double by buildout, which is anticipated to be later than 2090. For more information, see **Section 2**.
- In general, the City's distribution system is robust and the WTDMP did not identify any significant existing system deficiencies. Most drivers for CIP projects and other improvements are to support ongoing development. No additional pumping or storage needs are anticipated until after the 2040 planning horizon. For more information, see **Section 3** and **Section 4**.
- Interim growth in undeveloped areas, such as North of the River, may create temporary water age concerns until the area is more developed. The City should coordinate with developers to plan for both buildout and interim demands. Other areas may also represent hydraulic challenges due to drastic elevation changes (Cache Project Area, Bluffs Region) or distance from existing storage facilities (such as North of the River). For more information, see **Section 4**.
- Water age analysis showed correlation with chlorine residuals during the minimum month. The City's sampling records do not show any water quality concerns, even during periods of low demand. For more information, see **Section 4**.
- Industrial users represent a large uncertainty in demands and may create additional stress on the system in the future. The location and demand of these users is unknown. Preliminary sensitivity analyses demonstrated that the water system is capable of serving a high-demand industrial user. For more information, see **Section 2** and **Section 4**.

6.2 Recommendations

The recommendations for the WTDMP include:

- Continue maintenance of both the City's water system GIS databases and the InfoWater model. Maintaining the InfoWater model can include adding new pipes, adjusting demands, deleting abandoned pipes, tracking open and closed valves along the pressure zone boundaries, and reflecting operational changes as the system continues to expand.
- Monitor residential and nonresidential diurnal trends to observe any major shifts in demand usage that would impact peak demands and related system performance.
- Coordinate this WTDMP with other relevant planning documents, including the City's treatment and supply master plan. It is recommended to use this WTDMP as a guide for infrastructure planning and to use the BBC report as a guide for water resources planning.
- Continue investing in conservation and non-potable irrigation to reduce water treatment needs and avoid upsizing. Integrating future water and non-potable projects and developments can help efficient infrastructure planning and water usage.
- Continue water quality sampling practices to maintain compliance with regulations. Conducting focused studies on tank water quality, especially at Gold Hill, may be used to better inform/evaluate water quality in the system. Bringing in additional feeds from Bellvue WTP, such as the planned Gold Hill 60-inch line, is expected to help with system reliability and water quality in the west.
- Increased flow through the control valves—the 47th Avenue Ball valve and Mosier bypass valve—may support further development in Zone 1. Perform routine maintenance to assess valve condition/operation to support additional flow.
- New pipe and tank layouts are purely conceptual in nature and are primarily intended to show hydraulic feasibility for master planning purposes. Conduct a detailed evaluation of pipe and tank layout and sizing (for buildout) as projects move into design and implementation stages when there is more certainty of demands and pipe locations. The InfoWater model can be used as a tool to support future planning decisions, if regularly maintained.
- Complete a detailed operations study of the system, which could include looking at pumping costs, historic tank and reservoir fluctuations, and staffing needs. This study could help identify recommendations for automation setpoints.
- Monitor tanks and reservoirs during low demand months to determine whether water is staying in storage for longer than a typical industry standard of 30 days. If results of monitoring show that this is the case, the City may improve water age within storage by adding baffling or changing the inflow and outflow lines to promote circulation. Detailed hydraulic models of the tanks may help identify preferred solutions or improvements.

- Work with City operations staff to identify and promote automation of certain systems, such as pump and valve controls.
- Develop a system-wide standard operating procedure to help create a consistent operational plan and train new operations staff.
- Complete the capital improvements recommended in **Section 5**, prioritizing the 5-year CIP-recommended projects. Coordinate closely with the City's rehab projects, other utility and City projects, and developers to regularly update the scheduling of these projects. The City should consider using the InfoWater model as a tool to inform developer plans while coordinating with them. Coordination with developers is particularly critical in the Cache Project Area because of the varying elevation in this area.
- Coordinate with the fire department to help prioritize fire flow improvements.
- Update the WTDMP every 5 years, including reevaluating demand and population projections every 5 to 10 years. Planning assumptions made for the water system in the next 20 years and beyond is subject to change with time.
- Collaborating with other regional stakeholders can help identify regional solutions and meet multiple parties' needs. Consider holding at least annual regional workshops to revisit potential regional solutions needed to meet growing demands. Coordinate potential takeover of the North Weld service area in the North of the River area and discuss potential master meters or shared storage in this area, per the existing intergovernmental agreement.
- No changes to existing policies are recommended.

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Section 7

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Appendix A

Peaking Factors Analysis

The following technical memorandum explains the methodology used to produce peaking factors used for the hydraulic model, as discussed in **Section 3**.



Memorandum

To: Dan Moore, City of Greeley

From: Tom Charles P.E., Shilpa Shivakumar P.E.

Date: August 25, 2020

Subject: Peaking Factors Selection - DRAFT

Peaking Analysis

Approach

To fully determine future infrastructure sizing, it is necessary to simulate performance under a variety of conditions such as fire events, maximum normal demands, and minimum demand conditions. While transmission and larger distribution mains are sized to minimize high velocities and excessive head loss under high demand conditions, it is also necessary to evaluate storage and circulation patterns within the distribution system under a variety of demand conditions to minimize the negative effects of water quality degradation due to excessively aged water.

Recent modeling performed for the City of Greeley (COG) by another consultant team in 2018 was based on establishing system accuracy utilizing system response based on real historical conditions derived using SCADA records showing demand history for major user accounts and fluctuations in storage tanks and metering at pressure reducing valves (PRVs). This resulted in a hardwiring approach to the existing distribution system that does not lend itself well to extending peaking assumptions into the future system, particularly if land use patterns and future effects of conservation programs, etc. emphasize changes not reflective of the existing distribution areas and zone performance patterns.

In conjunction with COG staff, it was determined that CDM Smith would use a hybrid approach to establish appropriate peaking assumptions for the future system modeling. These steps included the following:

1. Evaluate system wide maximum, seasonal, and average day conditions based on water treatment plant production records for recent periods (last 5 years if available).
2. Utilize storage performance records (hourly) to establish peak hour conditions based on recent available records during high demand conditions (July). Evaluate this by zone where possible and on a combined basis.

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3. Establish an acceptable peaking factor to capture peak hour and integrate this into a diurnal curve suitable for extended period simulation in the hydraulic model.
4. Compare the peaking factors identified for COG existing conditions to other front range communities for reasonableness.

Maximum Day

Most communities summarize peaking factors for their systems in terms of maximum to average day and peak hour to average day. Therefore, the goal of the analysis was to determine these factors based on historical conditions for direct comparison to both COG design criteria and other similar communities to COG. COG staff were able to provide daily water treatment plant production rates for the years 2015 through 2019 for evaluation (for both the Bellvue and Boyd water treatment plants). Using this data, it was feasible to develop values for average day, maximum day and peak month productions and compare them across the 5 year record.

Table 1 shows the various production conditions and associated daily peaking factors for each year of the record for comparison.

Table 1 – Daily Production Summary and peaking factors for Bellvue and Boyd Water Treatment Plants

Year	Production (mgd)			Peaking Factor (PF)		
	Average Day	Peak Month (Average Day July)	Max Day	Peak Month/ Average Day	Max Day/ Average Day	Max Day/ Peak Month
2015	21.75	38.28	44.00	1.76	2.02	1.15
2016	23.32	42.49	49.90	1.82	2.14	1.17
2017	23.19	40.86	46.12	1.76	1.99	1.13
2018	19.81	32.31	41.58	1.63	2.10	1.29
2019	18.52	29.93	38.49	1.62	2.08	1.29

All production values are in million gallon per day (mgd) units and peaking factors are ratios of these values. 2016 was the year of highest average and maximum day productions and includes the highest peak month production during the 5 year period of record. However, peaking factors are relatively consistent across the 5 year period of record.

A consistent peaking factor for Maximum to Average day is 2.0 to 2.1. Likewise, the Maximum Day to Peak Month factor is fairly consistent at about 1.15 to 1.30. There do not appear to be any trends that would show a downward movement in these factors across the 5 year period of record based on conservation measures or other demand control strategies and policies. These effects may exist, but the variability of weather and summer extremes would seem to be a bigger controlling factor on both production maximums as well as peaking factors.

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Peak Hour Analysis

COG staff provided storage reservoir data (inflow and outflow) for 23rd Avenue, Gold Hill, and Mosier reservoirs. These hourly fluctuations during peak periods were plotted to determine hourly changes in peaking across an 8-day continuous period during July of 2016.

Additional data was provided for some hourly peaking at the Water Treatment Plants during this same period, but this shows a maximum shift in production of about 15 percent, timed to coincide with a period when production is ramped up to help refill storage. Given the travel time within the system to reach the tanks and some offset in demands within the system, this production increase was deemed to have little influence on the hourly fluctuations in storage and, therefore, should not be directly factored into an overall peak hour calculation for the COG distribution system.

Figures 1 through 4 show the hourly fluctuation patterns for each of the storage reservoirs referenced above along with the pattern for all three storage reservoirs combined.

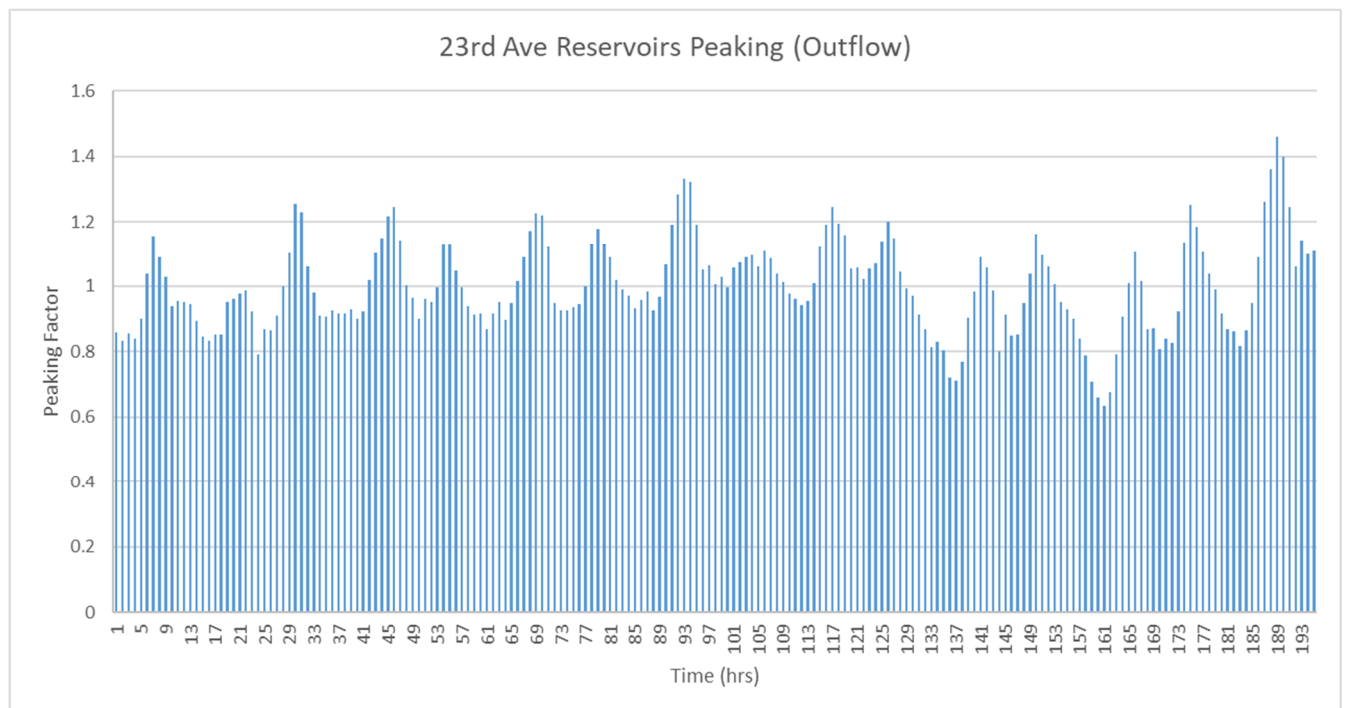


Figure 1 – 2016 Peak Period Outflow Pattern for 23rd Avenue Reservoirs

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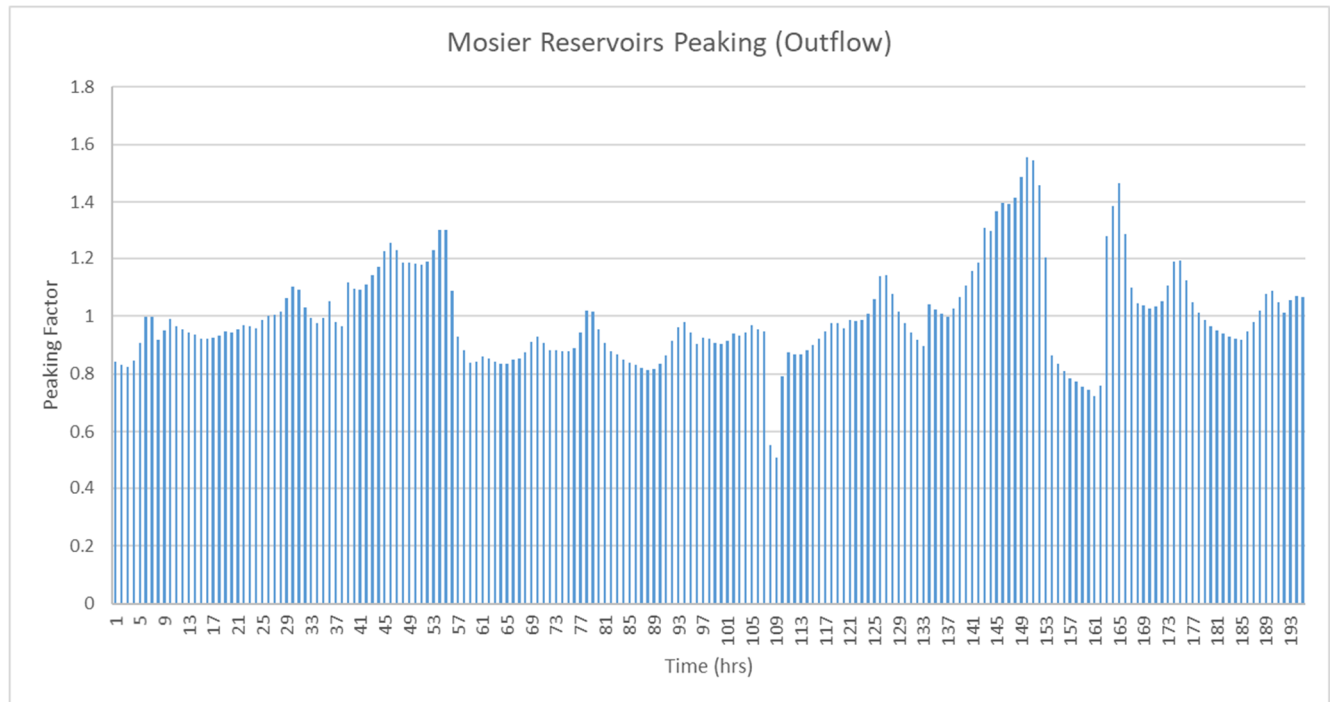


Figure 2 – 2016 Peak Period Outflow Pattern for Mosier Reservoirs

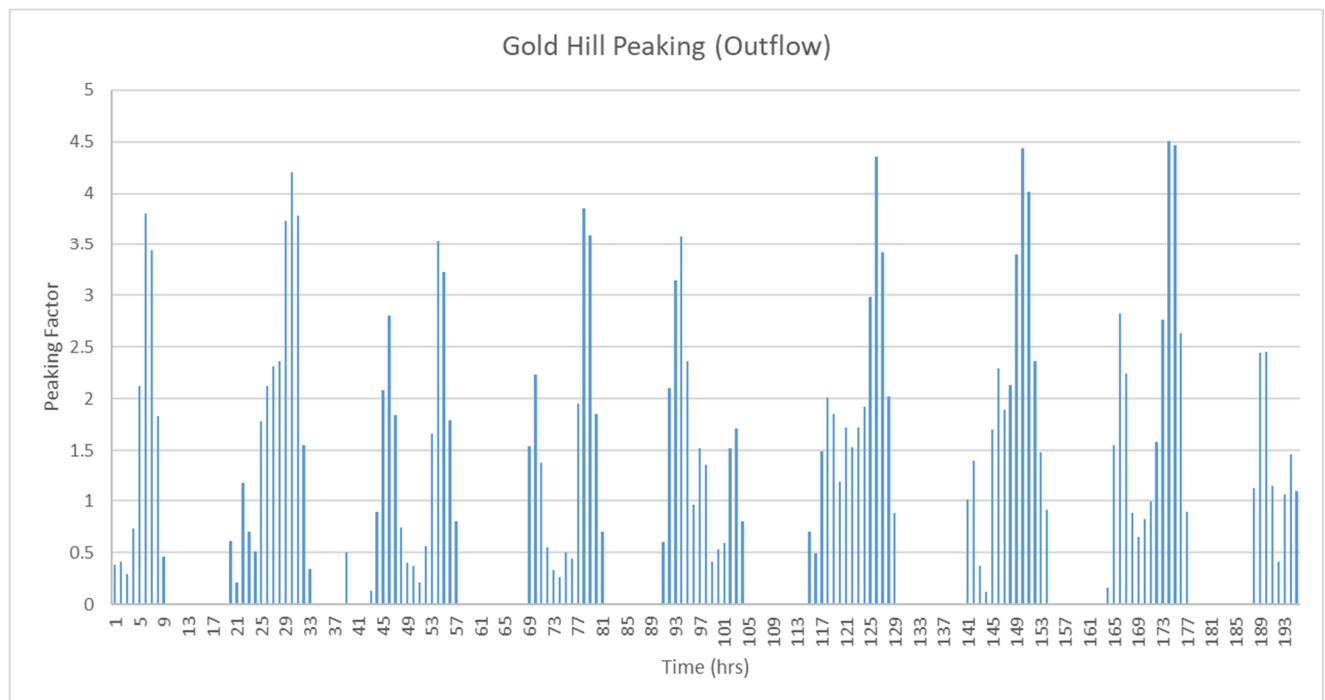


Figure 3 – 2016 Peak Period Outflow Pattern for Gold Hill Reservoirs

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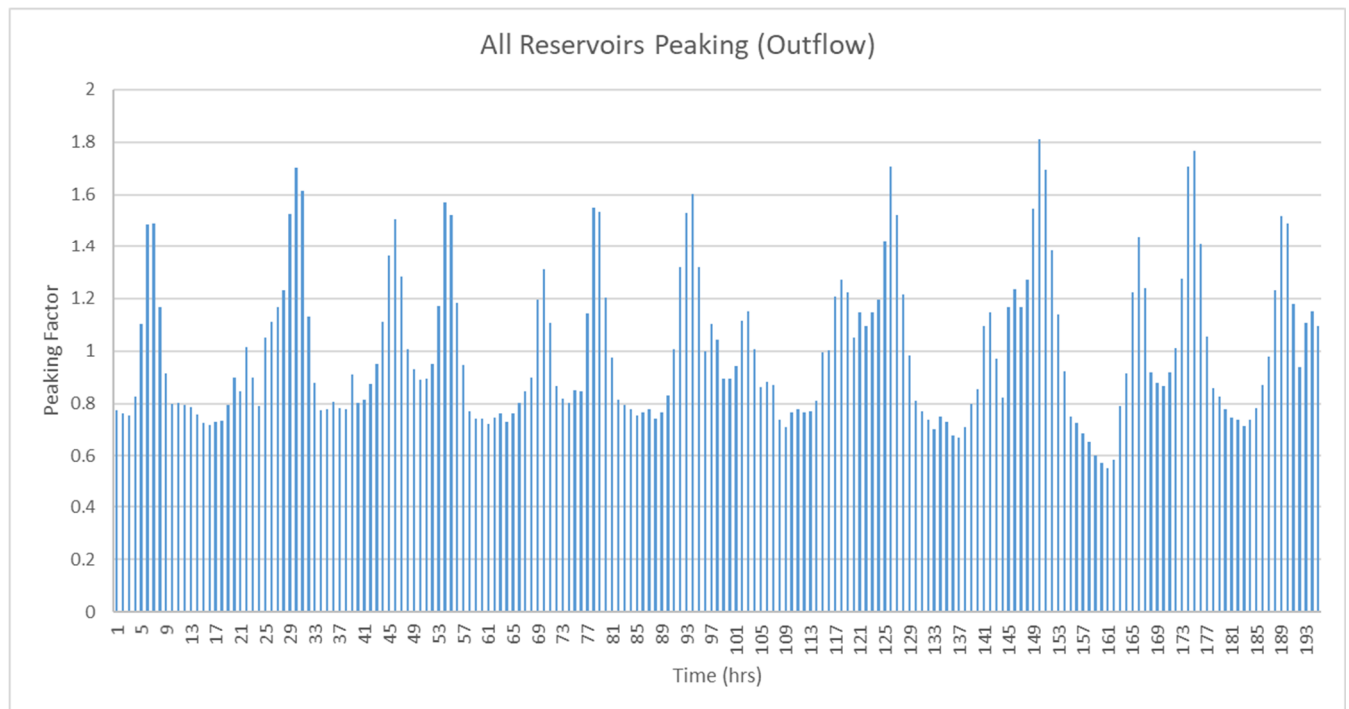


Figure 4 – 2016 Peak Period Outflow Combined Pattern for All Reservoirs

Under combined reservoir conditions, the maximum hourly peaking factor under the maximum day condition for July of 2016 is 1.8 (July 24, 2016 – 6:00 am).

Combining the Maximum to Average Day and Peak Hour to Maximum Day factors for the year 2016 results in a COG system wide condition of:

- Maximum Day/Average Day: 2.14
- Peak Hour/Average Day: 3.85

Comparison with Greeley and Front Range Community Factors

Comparison of peaking factors with front range communities researched by CDM Smith is included in **Table 2**. It shows a range of Maximum to Average Day peaking of 2.5 to 2.8. This compares with COG values based on the most recent 5 years of 2 to 2.15. Peak hour to average day ranges from 4.0 to 6.0 for these same communities, as compared with a 2016 calculated value for COG of about 3.85. The lower factors for COG may be reflective of Greeley community factors and strong conservation measures, but it is also important to recognize that most of these published values for the other communities represent standards and guidelines as opposed to measured actual historic data. While there are expected differences between design peaking factors and historic peaking factors, this research shows that Greeley is reasonably close to what other communities have published. It

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should be noted that the researched communities only used one peaking factor for the whole system, and did not break out peaking factors by land use (or residential vs. non-residential peaking).

Table 2 – Front Range Communities Peaking Criteria

Community	Max Day ¹	Peak Hour ²	Source
Loveland	2.5	6.0	Loveland Design Standards
Castle Rock	2.5	5.5	Castle Rock Water Criteria Manual
Westminster	2.5	4.0	Westminster Design Manual
Aurora	2.8	4.5	Aurora 2020 Water Specs
Average	2.6	5.0	

¹Maximum Day = (Peaking factor) * (Average Day)

²Peak Hour = (Peaking Factor) * (Average Day)

Comparison with COG design standards shows that it is not easy to compare actual data across the distribution network with the land use-specific published criteria as shown in **Table 3**. Peak hour design criteria for residential land uses appear to be quite conservative when compared with system wide actual conditions, but it is unknown what base demand condition is being peaked and, therefore, challenging to compare it with one of the standard Front Range patterns or COG record data. Using the provided summer average residential demands (113 gpcd) results in very conservative peaking. However, established criteria for commercial applications appear to be much closer to the system wide actual conditions. Again, a direct apples-to-apples comparison is not applicable based on combined uses vs. land use specific criteria and actual data vs. published design standards.

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Table 3 – Greeley Water Demand Design Criteria for New Development

Residential ADD (SUMMER) =		113 gpcd (provided by COG as part of WTDMP)							
	Use	Occupancy (ppl/DU)	PHD (gpm/unit)	PHD (gpcd)¹	Peaking Factor				
	R-L	3.1	1.9	883	7.8				
	R-M	2.7	1.7	907	8.0				
	R-H	1.7	1.1	932	8.2				
						8.0 = average residential peaking factor			
¹ PHD (gpcd) = PHD (gpm/unit) / Occupancy (ppl/unit) * 1440 min/day									
Commercial:									
	Use	ADD (gpm)	PHD (gpm)	Peaking Factor					
	Office Building	0.14	0.6	4.3					
	Restaurant	0.35	1.5	4.3					
	Small Business	0.14	0.6	4.3					
	Supermarket	0.14	0.6	4.3					
	Big Box/Dept. Store	0.14	0.6	4.3					
	Laundry, Dry Cleaning	0.7	2.9	4.1					
	Service Station	0.02	0.08	4.0					
	Car Wash	1.32	5.5	4.2					
	Hotel/Motel	0.24	1	4.2					
	Warehouse	0.07	0.3	4.3					
						4.2 = average commercial peaking factor			
GENERAL NOTE: Greeley does not provide peak day									

Diurnal Curve Development

For extended period simulation in the hydraulic model, it is desirable to simulate real life (COG-specific) demand conditions on an hourly basis to reflect the most accurate anticipated system response. In addition, the peak hour condition should be captured within the diurnal curve simulation to ensure the most stressful condition on the system is simulated.

As mentioned above, the hour-by-hour extended period model simulation is the condition under which evaluations will be conducted for modeling and inclusion in the analysis for infrastructure sizing impacts on distribution and transmission mains, storage, and other distribution items (PRVs, etc.). Development of a realistic 24-hour diurnal curve pattern that incorporates the peak hour condition is critical to model simulations under these conditions.

The existing water model provided by COG for CDM Smith use in developing the future model has a diurnal pattern for summer peaks within it. The intent is to use the peak month model for the basis for these stress inducing conditions. A comparison of the values in the provided model of the existing system (created by the other consultant team) compared with the pattern associated with the 2016 maximum day (hour by hour) is shown in **Figure 6**.

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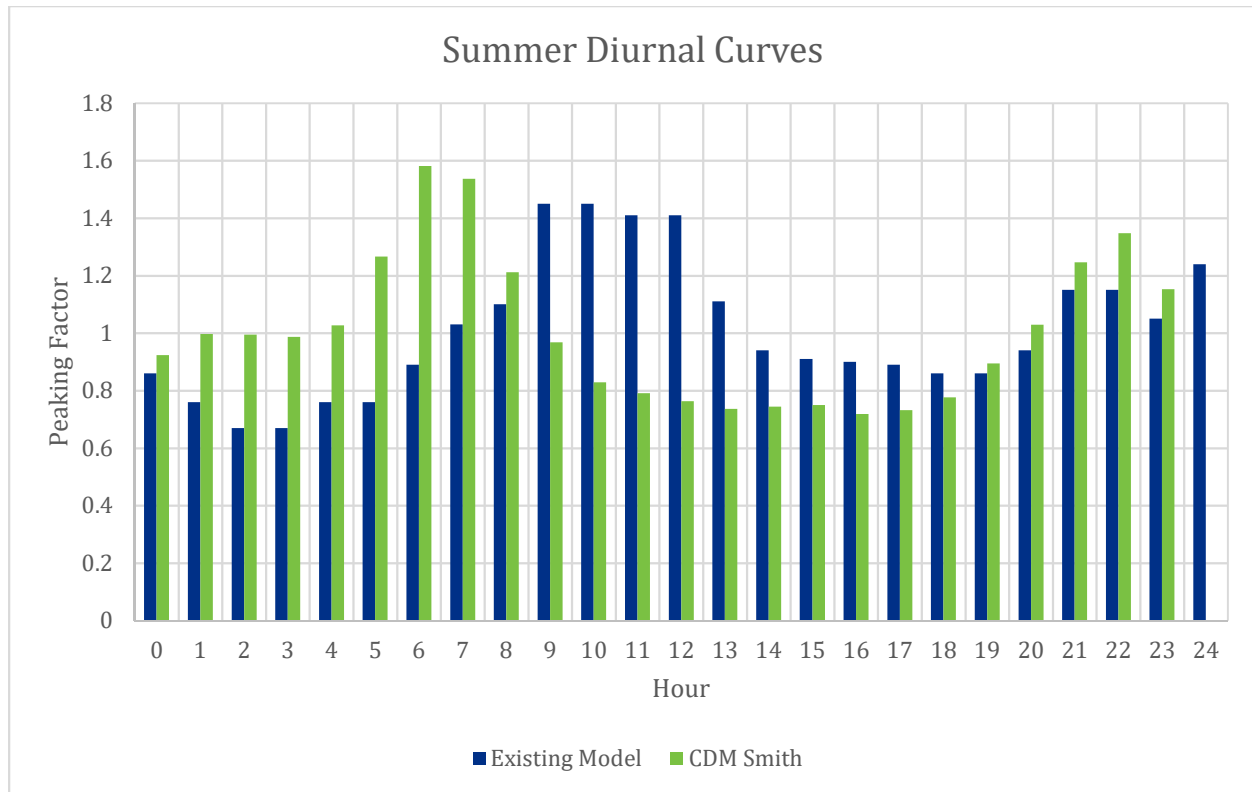


Figure 6 – Summer Diurnal Pattern Comparison – COG provide model vs. 2016 All Reservoirs

The source of information for the pattern provided in the previous water model is unknown. Discussions with COG staff indicate that the morning and evening hourly peaks included in the 2016 data are consistent with expectations.

Since the selected diurnal pattern is to be applied to the peak month model, an adjustment is needed to go from peak month to maximum day. For 2016, this value is 1.17 and when applied to the 2016 pattern, results in a peaking factor pattern shown in **Figure 7**. It is recommended to use the pattern shown in **Figure 7** (reflective of maximum day and peak hour for July of 2016) for general peaking analysis in the extended period model for future conditions.

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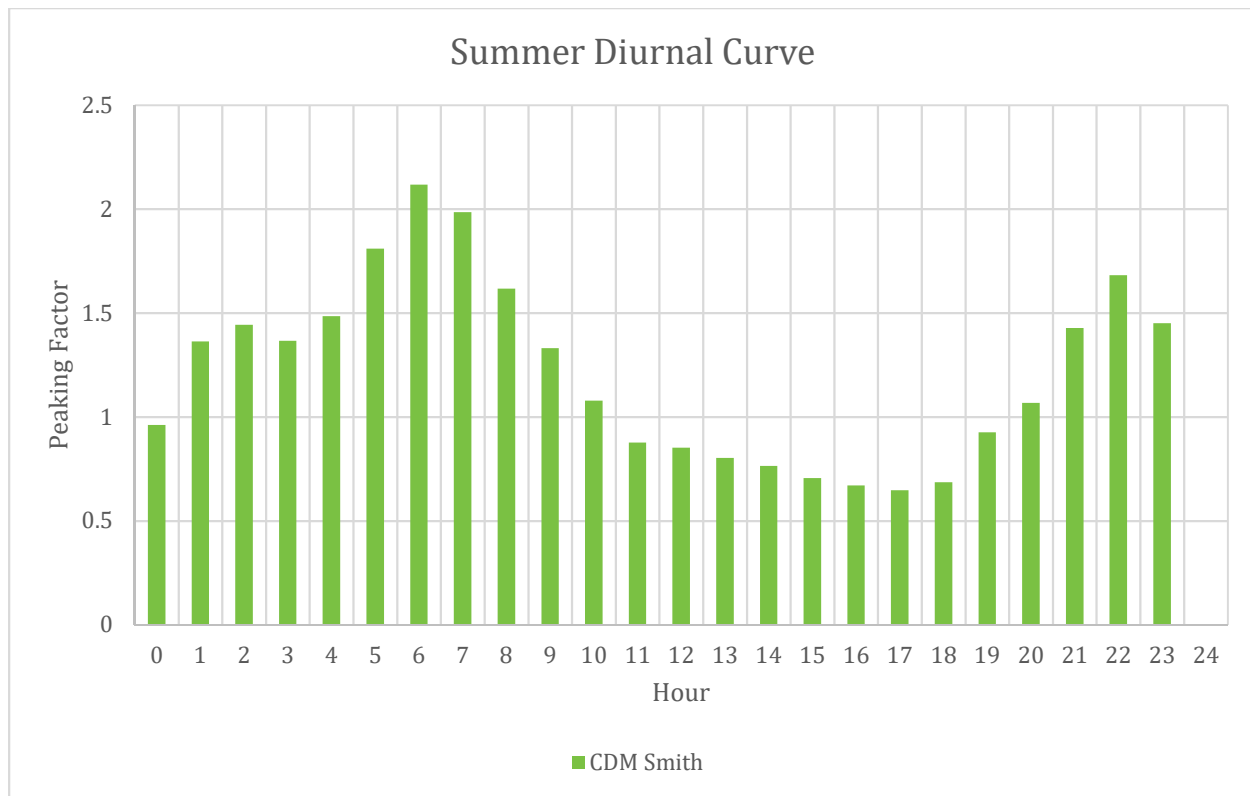


Figure 7 – Recommended Summer Composite Diurnal Pattern

Residential Diurnal Peaking

Further discussion with COG indicates that a single diurnal pattern, while representative of current overall City conditions, will likely not be entirely appropriate for future and infill development that will be largely residential in nature. Although there are metering records available for large COG user customers, there are no readily available metering records for large blocks of residential-only customers that can be used to establish a peak summer, hour-by-hour diurnal pattern. As a result, CDM Smith was requested to review other communities' previous master planning efforts that would produce a reasonable residential peaking pattern appropriate for use with this COG Water master planning effort.

CDM Smith conducts distribution system modeling and master planning in many areas across the United States with experience in many geographical regions as well as both larger and smaller urban communities. A common set of diurnal patterns has been used in recent years. This set of patterns is considered generally representative for patterns to be adopted by communities that lack actual customer use patterns based on metering records. These general patterns are being used by CDM Smith most recently for small and medium size communities in Texas, considered representative of drier arid regions.

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Representative patterns include the following land use and seasonal demand categories:

- Single Family Residential (SFR)
- Single Family Residential with Irrigation (SFR-Irrigator)
- Multi-Family Residential
- Office
- Retail
- School

All patterns are based on a heavy demand period typical of summer use conditions. Weekly (7 day) patterns were examined and the peak weekday 24-hour pattern was selected in each case for further evaluation. **Figure 8** represents the SFR – Irrigator 24-hour pattern, which has the highest single hourly demand factor of any of these patterns.

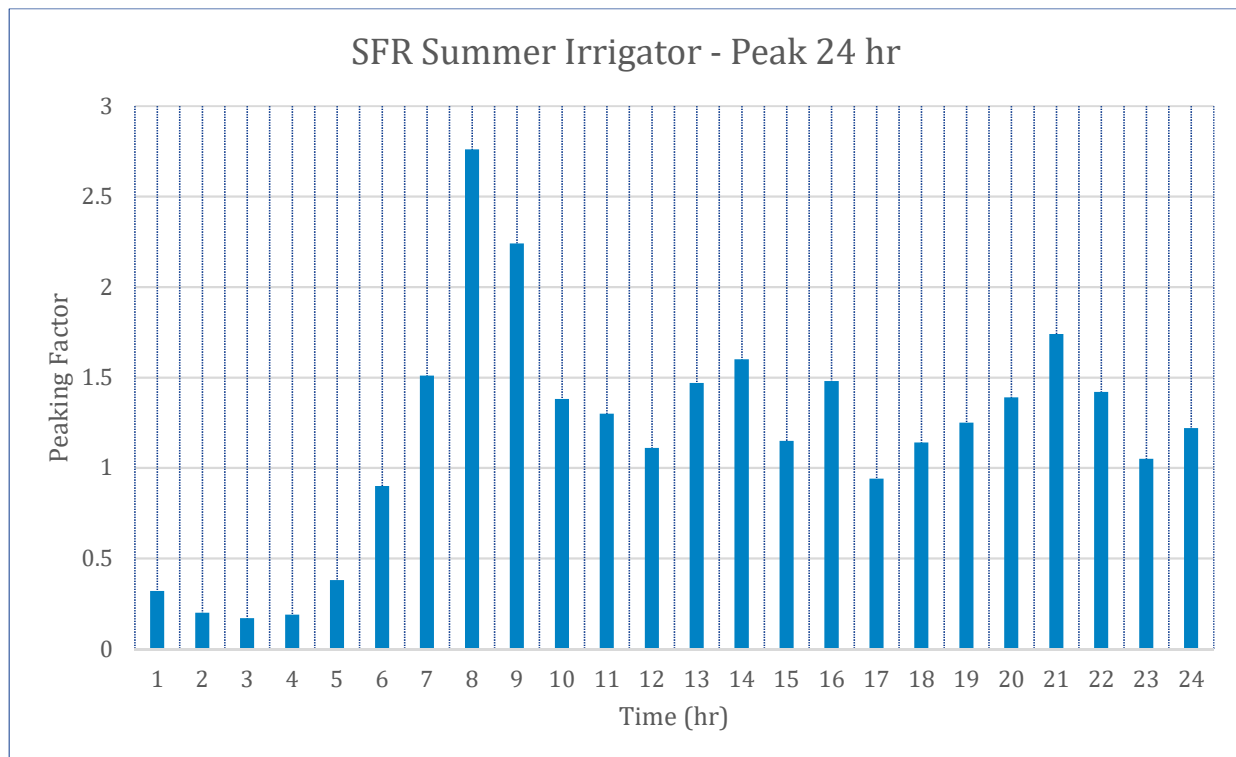


Figure 8 – Representative Single Family Residential Irrigator Diurnal Pattern

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Comparison with the overall COG pattern in **Figure 7** shows a peak hour condition in the morning (about 8 am) consistent with the COG-specific pattern which shows a morning peak a couple of hours earlier. It is notable that the SFR-Irrigator peak hour factor is higher (approximately 2.75) than the peak hour for the COG-specific pattern (approximately 2.1), which would be expected. However, the early morning hours show much lower demands than in the COG specific pattern with a very rapid morning buildup and moderating pattern in the afternoon and evening hours. Rigid adherence with afternoon watering restrictions would likely show lower demands in this afternoon period, but there may not be universal adherence to such restrictions and, thus, the SFR – Irrigator pattern would tend to stress system needs harder in daytime hours than a more restrictive pattern indicative of a more conservative approach for single family users.

Although a direct comparison of this SFR-Irrigator pattern with COG overall peaking factors is not possible, using the overall 2016 maximum day to average day peaking factor of 2.14 multiplied against the SFR-Irrigator peak hour factor results in an overall peak hour/average day factor of 5.9 (applicable to single family residential only). This compares favorably with information presented in **Tables 2** and **3** above for regional peaking factors and COG design criteria for residential use. Likewise, using the COG overall diurnal pattern peak hour factor in conjunction with the maximum day factor results in a peak hour/average day factor of 4.5 (3.85 before the pattern is adjusted for model use from peak month to maximum day). Again, these overall peaking factors compare well with the regional conditions summarized in **Table 2**.

It is recommended that the SFR-Irrigator diurnal pattern (**Figure 8**) be used for future single and multi-family residential users in the master plan simulation model associated with peak demand conditions. Specific recommendations for application of the SFR-Irrigator pattern are as follows;

- Tier 1 – all residential demand is single family, apply the SFR-Irrigator pattern
- Tier 2 – apply the SFR-Irrigator pattern to all residential generally (difficult to differentiate between single and multi-family in this Tier group, but application of the revised pattern is a conservative approach)
- Tier 3 – apply the SFR-Irrigator pattern to R-L, R-M, RMH (mobile home), R-E (residential estate) and multi-family areas (similar to Tier 2 as a conservative approach).

This pattern should also apply for infill users in the same single and multi-family land use categories. The general COG diurnal pattern (**Figure 7**) is recommended for all other land use categories under future condition simulations.

cc: Adam Prior, Erin Walsh

Appendix B

Construction Cost and Capital Improvement Plan Tables

The cost development methodology (Appendix B1) for recommended 5- and 20-year City CIP improvements is discussed in this appendix along with detailed cost breakdowns of each recommended City CIP and development projects (Appendices B2 through B5). Annual funding requirements for recommended 5- and 20-year City CIP improvements follow (Appendix B6).

B1 – Cost Development

B1.1 – Variability in Data

Data was obtained from past contractor bidding information provided by the City, other Front Range communities, and national sources, which included unit costs for potential capital expenditures within wastewater, water, and non-potable projects. The data varied in level of detail and definition of each cost element. For example, pipeline costs may or may not include dewatering, restoration, or paving project sites. Pipe cost data from the different sources also varied by construction depth, ground conditions, and method of installation for pipeline. For example, one data source may have identified unit price for a given pipe size at a given depth while another data source provided unit costs for given pipe sizes of various depths within developed or undeveloped land areas. Both data sources provide information regarding pipe installation costs but need to be considered based on the level of detail that is desired for project CIP development.

B1.2 – Unknown Elements and Assumptions

Assumptions made during CIP development can add to the variability of final bid project costs when compared to the planning-level costs. The assumptions are necessary to capture costs for project elements that cannot be defined at a planning level. Examples of undefinable costs include dewatering areas, utility pipeline crossings, permitting for project implementation, final contractor bid quantities, seasonal soil and ground conditions, and stormwater management of project sites. Assumptions are also made for pipe installation method, project timings, and construction materials. During design development, additional field information, including survey, geotechnical data, groundwater levels, traffic control requirements, and final pipe alignment of project areas will be available to help refine the project elements and construction methods.

Trendlines and linear interpolation are used to develop costs for project elements for which data was incomplete. For example, cost data was obtained for the trenchless installation of water distribution and transmission lines for 4- through 60-inch diameter pipe; however, there was limited cost information for 36-inch pipe. Trend line equations for linear, polynomial, and logarithmic and their respective coefficient of determination (R^2) values were compared to identify the most probable estimation equation. The coefficient of determination is used to statistically assess the correlation between two independent variables—in this case, data points and trendline equations used to predict additional data points. When a trendline has an R^2 value close to one, there is a high correlation between the trendline and the data set it predicts. A trendline with an R^2 value closest to 1 was selected as the most probable estimation equation. Because the trendline with the most pertinent R^2 value may not reflect the true data trend, CDM Smith recommends the City readjust cost data throughout the planning horizon, which is the length of time into the future for which projects are planned.

An example of comparing different trend line equations and their respective R^2 values for approximating missing data for the jack and bore (J&B) trenchless installation of water distribution and transmission pipeline items is shown in **Figure B1-1**. In this example, the second order polynomial trend line (shown by the purple dotted line below) has the closest R^2 value to 1 compared to the exponential and logarithmic trend lines (shown by the blue and green dotted

lines below, respectively) based on available data. As a result, without additional industry knowledge and experience, the linear trend line would be assumed to best approximate unit costs for J&B trenchless pipe installation for pipe sizes not available from the given data set. This assumption may conflict with actual J&B trenchless pipe installation data trends known in industry, which may better be approximated by exponential or logarithmic trend lines—especially when predicting trenchless pipe installation for large pipe sizes (i.e., greater than 24 inches) where predictions of data points of the trend lines begin to greatly diverge. At a planning level, this limitation is acceptable given a cushion of construction cost contingency (i.e., 35%) is added to help absorb this unit cost uncertainty. However, at an engineering design level where construction cost contingency is lowered and/or removed, the chosen trend line that best reflects industry data trends should be used to model trenchless pipe installation (and for all unit cost items where trendlines are used), regardless of if the chosen trend line has an R² value closest to 1 to avoid unnecessary error.

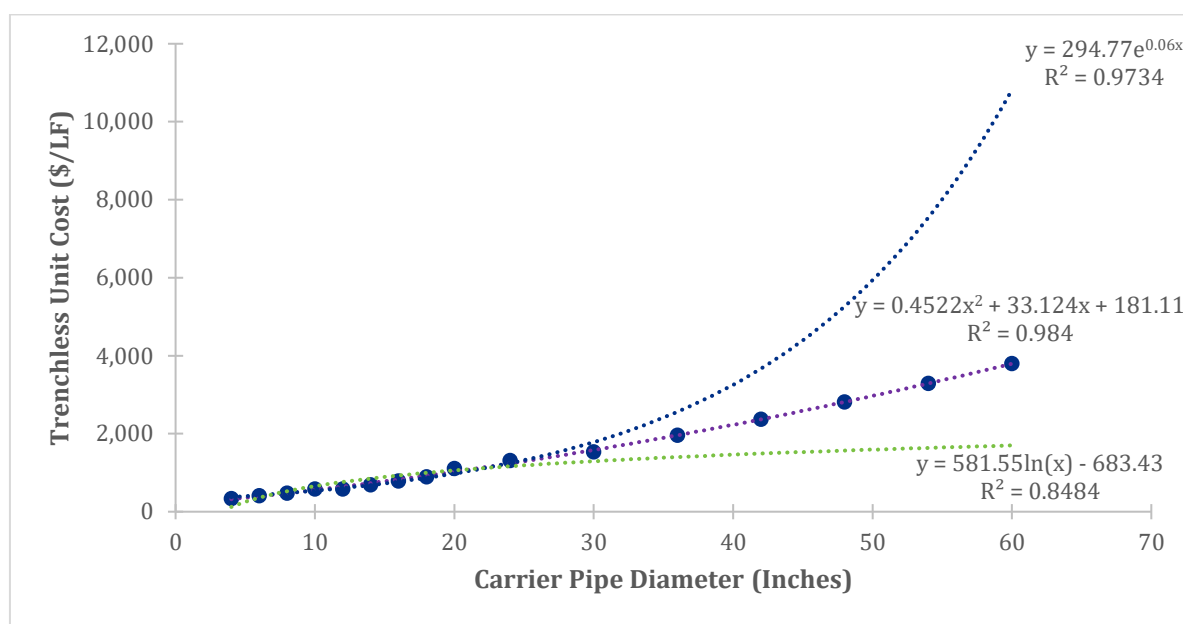


Figure B1-1 – Example of Different Trendlines for Finding Missing Data of a Line Item

B1.3 – Unpredictability

There is unpredictability to consider during CIP development, which is captured in the cost range provided for the overall CIP. Examples of unpredictability include future economic trends and inflation rates of CIPs. Prior to COVID-19, a global pandemic, cost inflation tools provided high confidence for predicting unit prices within a given year. However, after COVID-19, these previous assumptions for economic inflation may not be as accurate.

B1.4 – Data Sources

Major sources of cost factors included City bid tabs and databases, CDM Smith past project and contractor construction bid tabs, CDM Smith estimator group probable costs, and vendor quotes for project components. A list of external sources that CDM Smith used to develop unit costs and/or

to plan the scheduling for the City's CIP water transmission and distribution cost estimates included:

- City of Greeley Project Initiation Form (City of Greeley 2021)
- Operation Rehab Project 2021–2025 Spreadsheet (City of Greeley 2021)
- Water and Sewer Department 10-Year CIP 2021–2030 Spreadsheet (City of Greeley 2021)
- Collection, Distributions, Transmission Projects Phase I – (Construction Management at Risk) (City of Greeley 2019)
- City of Greeley Pipe Rehabilitation Cost Estimating Template (City of Greeley 2019)
- Keep Greeley Moving Phase 2 by Neighborhood 2023–2029 (City of Greeley 2021)

The data for cost estimates was compiled in a single file with line item data reflected as unit costs (e.g., dollars per linear foot of pipe installed [\$/LF], dollars per each PRV, etc.). When needed, unit costs for specific line items were calculated using trend line equations. Line items that were not specific and/or harder to estimate using specific unit cost quantities were reflected as a percentage addition to project costs (e.g., mobilization and demobilization, erosion control/stormwater pollution prevention).

The costs estimated in the project CIPs are in August 2020 dollars. Historical data was adjusted to the equivalent August 2020 data by using Engineering News Record's 20-City Construction Cost Index (ENR-CCI). ENR estimates a project each month in 20 different cities around the U.S. and calculates the composite index. Costs are adjusted by multiplying a cost element with the ratio of the current day 20-City ENR-CCI and date of data.

$$\text{Construction Unit Cost (T2)} = \text{Construction Cost (T1)} \times \frac{\text{CCI(T2)}}{\text{CCI(T1)}}$$

T2 and T1 reflect the desired projected year and month desired and the original year and month of unit costs, respectively.

B1.5 – Major Cost Elements

Water transmission and distribution system CIP costs were developed using five general cost element categories, as shown in **Figure B1-2** and described below.



Figure B1-2 – CIP Cost Elements

- Pipeline and Valves: Quantities are derived from model results. Costs are developed by multiplying the estimated quantity by a unit price for that quantity.
- Fire Hydrants: Quantities are determined per unit length of newly installed, fire flow, and/or upsize of pipeline.
- Crossings and Land Considerations: Quantities for each category are determined from GIS mapping. Unit costs are more subjective than with pipe and valves. Land considerations provide for permanent easements acquired outside of City right-of-way. Permanent easements ensure that there will be reserved land space for future project pipelines that do not follow City roadways. The easement acquisition was estimated as a costing factor multiplier of the total OPCC for each project. OPCCs provide cost estimates of some specific project material and labor costs, including water distribution and transmission pipeline, reservoirs, and tank installations; removal of water from soils, major road, railway, and irrigation ditch crossings; erosion control; project implementation and cleanup; and project contingency, but not generic project administration and engineering costs.
- Dewatering: Dewatering, removal of water from soil by pumping where pipeline will be placed/replaced, relies on estimated quantities based on project location and depth and assumed cost applied on a linear foot basis using GIS mapping. The estimated cost for dewatering is subject to considerable variance.
- Construction Bid Cost: This cost element includes the previous cost elements with the addition of percentage additions. The percentage additions are taken from the subtotal of the first two cost elements. The total of the first two cost elements with the percentage additions create the construction bid cost element.
- Project Implementation: This cost element is most subjective of the five primary categories and are based on percentage additions of the subtotal of the construction bid cost element.
- Additional Project-Related Costs: This cost element is similar to the project implementation cost element and is based on percentage additions of the of the construction bid cost and project implementation cost elements.

Each of these cost elements is discussed in more detail in the following subsections. Unit priced line items, mobilization and demobilization, and stormwater pollution prevention/erosion control were reflected to the nearest whole dollar. Project contingency was rounded to the nearest \$10 and added to the OPCC subtotals to determine the OPCC project totals, which were rounded to the nearest \$10,000. Subsequent costing factors were added to the OPCC project totals to determine CIP estimations used in high-level planning of water transmission and distribution, sewer, and non-potable master plans.

B1.6 – Pipeline, Valves, and Fire Hydrants

B1.6.1 – Installation of Pipe

Water distribution and transmission lines were generally assumed to be installed using open cut construction, where contractors remove surface soils to insert pipe, except for arterial roadway and highway, railroad, irrigation ditch, river, and lake crossings. In such instances, trenchless pipe

installation was conservatively assumed, which inserts pipe through tunneling and boring—J&B or horizontal directional drilling (HDD) methods. Although during project construction, not all crossings described may require trenchless installation, trenchless installation was assumed for all cases where pipe intersected described crossings as a conservative approach. Open cut and trenchless pipeline installation unit costs (in \$/LF) include the pipe and bedding, excavation, installation including traffic control, tie-ins for service laterals, backfill, restoration, removal of old pipe, and flow and control valves. Water distribution pipelines were classified with pipe diameters up to 20 inches while water transmission lines were classified with pipe diameters 24 inches and above.

The open cut installation was divided into developed and undeveloped categories. The developed category includes pipe installed in developed areas such as in neighborhoods, along major City streets, across two-lane roads, through developed commercial property and designated agricultural land, and around City boundaries. The undeveloped category was assigned to pipe installed in permanent open space designated as city parks and open space such as agricultural land. It was assumed that all water distribution and transmission lines were installed at less than 10-foot depth unless using trenchless installation for crossings.

Trenchless installation costs (in \$/LF) include the casing and carrier pipe, supports and contact grouting of the interstitial space, launching and receiving pits, and ground monitoring using J&B drilling or HDD. Unit prices were developed using bid tabs and CDM Smith's construction cost database.

Table B1-1 gives the unit cost breakdown for installation and replacement of water distribution and transmission lines.

Table B1-1 – Unit Costs for Water Distribution and Transmission Lines Installation and Replacement

Pipe Diameter (inches)	Unit Cost (\$/LF of Pipe)			
	Undeveloped Land Designation	Developed Land Designation	Trenchless J&B (Crossings)	Trenchless HDD (River Crossings)
8	119	172	478	585
12	131	184	584	803
16	158	224	791	944
18	171	256	897	1,023
20	184	289	1,105	1,107
24	211	315	1,314	1,272
30	237	368	1,531	1,530
36	264	421	1,960	1,796
42	302	486	2,370	2,054
48	355	566	2,813	2,312
54	395	657	3,288	2,570
60	460	763	3,796	2,827

B1.6.2 – Valves

New PRVs, which included valves and vaults, accompanied some water distribution and transmission lines, where required. The unit cost for each new PRV installed was based on the upstream and downstream water distribution or transmission line pipe size and included PRV and bedding, excavation, installation including traffic control, tie-ins for connection to water distribution or transmission lines, backfill, and restoration. **Table B1-2** lists the unit costs used for installing new PRVs.

Table B1-2 – Unit Costs of PRVs and Vaults

PRV Station Connection Pipe Size (inches)	Unit Cost (\$/Each PRV)
8	20,000
12	30,000
16	40,000
20	50,000

B1.6.3 – Fire Hydrants

The unit cost per fire hydrant was estimated assuming installation of new fire hydrants across the entire pipe length of a given project at \$5,646 per fire hydrant. This conservative estimate accounts for removal and replacement of existing fire hydrants that are at the end of their service lifetime or would need to be upsized given their connection to pipe of increased diameter size. Fire hydrant spacing was estimated at 400-foot spacing and quantity estimates factored into costing were only considered for water distribution pipe diameters up to 20 inches (distribution pipe typically within subdivision). The following equation was used to estimate the number of fire hydrants required as a function of total water distribution and transmission pipe length. One additional fire hydrant was added per project for a conservative estimate:

$$\text{Total Fire Hydrant No.} = \frac{\text{Total Project Pipe Length}}{400} + 1$$

B1.7 – Crossings, Land Considerations, and Dewatering

B1.7.1 – Irrigation Ditch, River Crossings, and Lake Crossings

ArcMap GIS was used to identify irrigation ditch, river, and lake crossing locations. Irrigation ditch, river, and lake crossings were assumed as 100 feet in length, 250 feet in length, and estimated crossing length, respectively. Unit costs for irrigation ditch, river, and lake crossings were approximated by trenchless pipe installation regardless of pipe depth using J&B for ditch crossings and HDD drilling for river and lake crossings.

B1.7.2 – Utility, Roadway, and Railway Crossings

ArcMap GIS was used to identify road, utility, and railroad crossings. Unit prices were developed assuming installation by J&B, where applicable, using the following assumptions:

- Roads were separated into typical (two- to three-lane roads located on side streets and in neighborhoods), arterial (major roadways of four lanes or more assumed at 200 feet wide), and highways (major roadways with Colorado Department of Transportation right-of-way requirements at 250 feet wide). Widths were based on the U.S. Department of

Transportation Federal Highway Administration guidelines (USDOT 2014). Typical road crossings were included as part of overall open cut installation, while arterial road and highway crossings were accounted as a part of trenchless pipe installation costs.

- Railway crossings were estimated as 150 feet in length and included in trenchless installation costs.
- Other City and non-City utilities were not included in unit cost estimates but assumed to be covered under project contingency.

B1.7.3 – Easements

Easement acquisition was assumed to be required for all new pipeline not in City right-of-way or on City-owned property. Easement acquisition was assumed as a costing factor multiplier of the total OPCC at 5%.

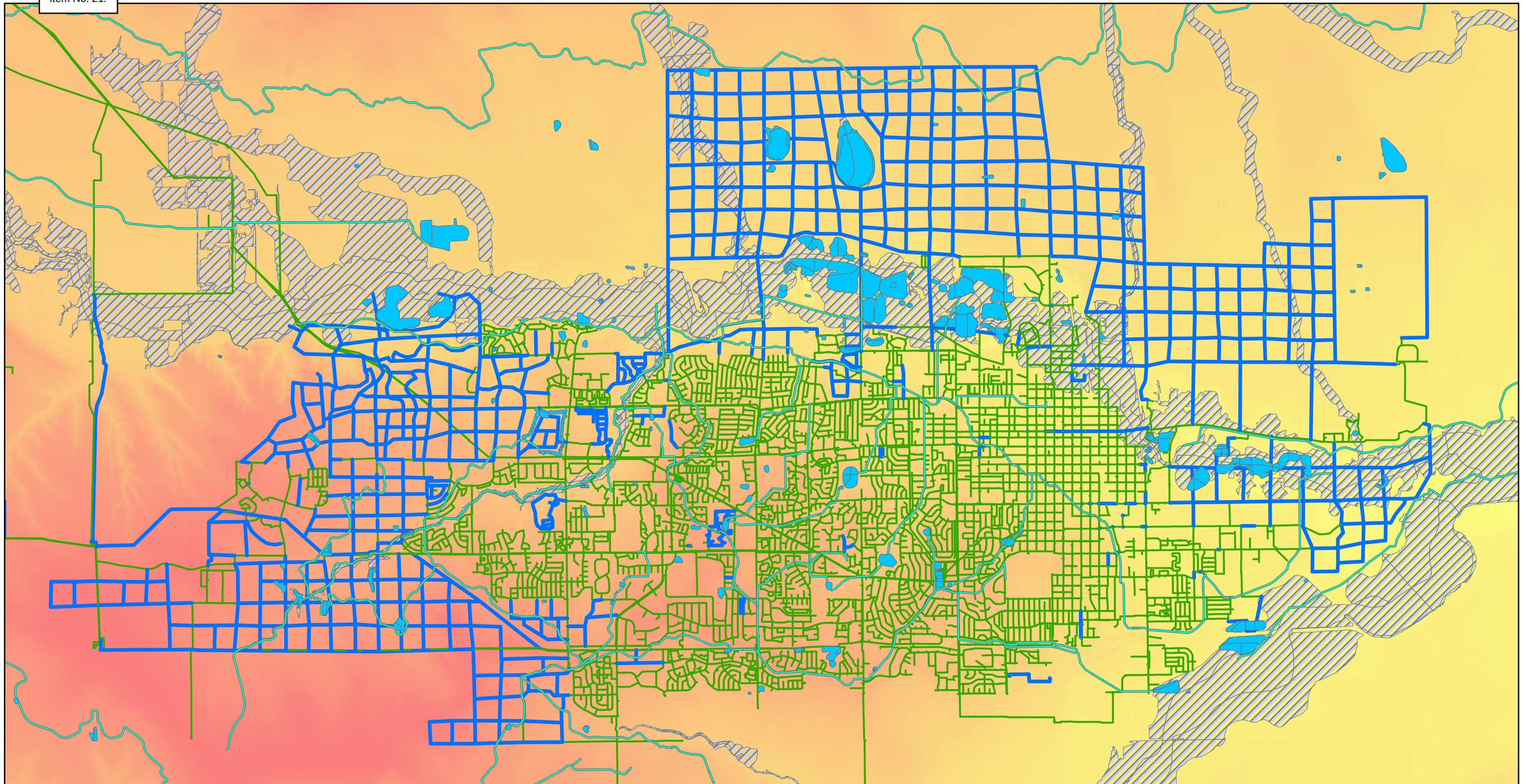
B1.7.4 – Dewatering

A three-tiered approach was used to determine projected dewatering requirements for 2025 and 2040 City CIP project improvements. The three tiers used for unit cost estimations were developed considering land elevations in and around the City (between approximately 4,600 to 5,060 feet), 100-year floodplain maps, and proximity to irrigation ditches and water bodies. Tier 1 includes water distribution and transmission line construction within the 100-year floodplain and/or within 50 feet of an irrigation ditch, pond, or lake. Tier 2 includes pipe that is not in Tier 1, is below the median elevation of the City (4,828 feet), and is assumed to require 50% of the dewatering needed for Tier 1. Tier 3 includes pipe in areas above the median elevation and assumes no dewatering is required.

Figure B1-3 illustrates the three-tiered dewatering profile for the 2025 and 2040 project improvements. **Table B1-3** lists the unit costs developed for the three-tiered dewatering categories in \$/LF of water pipe.

Table B1-3 – Dewatering Unit Costs

Tier	Unit Cost (\$/LF of Pipe)
1	105
2	52.5
3	0



Legend

Tier 1

-  100-yr FloodPlain
-  Lakes 50ft Buffer
-  Ditch 50ft Buffer

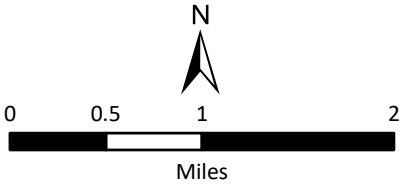
Tier 2

-  4828 ft
-  4596 ft

Tier 3

-  5059 ft
-  4828 ft

-  Existing Pipe
-  Future Pipe



Dewatering Profile
Figure B1-3
Greeley Water System
Master Plan

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B1.8 – Project Implementation and Additional Project-Related Costs

Project elements considered part of project implementation and additional project related costs are difficult to quantify at the planning level. Construction elements include items such as erosion control/stormwater pollution prevention and contractor mobilization and demobilization. These costs are estimated as a percentage of the subtotal pipe, fire hydrants, and equipment.

Contingency is applied to the subtotal of these construction cost elements to account for variations in unit prices or quantity estimates. Programmatic elements include engineering, permitting, legal, and administration and are estimated as a percentage of the construction cost.

Table B1-4 provides a breakdown of the different assumptions used for project implementation and contingency.

Table B1-4 – Costing Factors for Construction Bid and Total CIP Project Costs

Category	Item	Costing Factor
Construction Bid Cost (includes infrastructure and contractor overhead, profit, bonds, and insurance)	Erosion Control/Stormwater Pollution Prevention ¹	2%
	Mobilization and Demobilization ¹	5%
	Contingency ²	35%
Project Implementation ³	Feasibility and Site Studies	9% for OPCC ≤ \$1 million 6% for OPCC of \$1 million to \$10 million 5% for OPCC > \$10 million
	Preliminary and Final Design	9% for OPCC ≤ \$1 million 6% for OPCC of \$1 million to \$10M 5% for OPCC > \$10 million
	Engineering Services During Construction	5%
Additional Project-Related Costs ³	Outside Construction Management - not used if OPCC value is < \$1 million	5%
	Outside Project Management - not used if OPCC value is < \$1 million	3%

¹ Construction bid cost costing factors erosion control/stormwater pollution prevention and mobilization and demobilization are added to the subtotal of unit cost items.

² Contingency costing factor is 35% of the subtotal of the unit cost items and contractor born costs determined by costing factors.

³ Project implementation and additional project-related cost categories are determined as a percentage of the construction cost and part of the total CIP project costs.

B1.8.1 – Project Erosion Control/Stormwater Pollution Prevention

Project erosion control and stormwater pollution prevention includes the contractor's cost to manage the stormwater during construction through best management practices such as silt fences, rock socks, vehicle tracking, and silt prevention at storm inlets. This category is assumed as 2% of the OPCC subtotal of the items that have unit costs and is based on estimator's judgement and prior reports. This costing factor is added to calculate project OPCC totals.

Mobilization and Demobilization

Contractor mobilization and demobilization includes the contractor's startup costs (moving equipment and personnel to the project location, obtaining permits and bonds, etc.) and closeout costs (project cleanup, moving equipment and personnel from the project location, etc.). The mobilization and demobilization category is assumed as 5% of the OPCC subtotal of the items that have unit costs and is based on estimator's judgement and prior reports. This costing factor is added to calculate project OPCC totals.

B1.8.2 – Contingency

During the planning phase, the field work and design have not been completed for the CIPs and therefore the cost development relies on estimated quantities for each construction element. Project contingency provides for these uncertainties by adding additional costs to the project total. The contingency at the planning level is typically 35% of the OPCC subtotal after erosion control/stormwater pollution prevention and mobilization and demobilization costing factors have been included. Project contingency also provides for cost associated with items that are difficult to itemize at a planning level.

B1.8.3 – Feasibility and Site Studies

This cost element includes the planning and field investigations (geotechnical, survey, ground sampling, utility locates, etc.) required to implement a project and is estimated as a percentage of the subtotal of the previous elements. The percentage varies based on the OPCC (plus contingency).

B1.8.4 – Preliminary and Final Design

The preliminary and final design cost element includes the cost for engineering services to develop biddable plans and specifications in accordance with applicable standards. This cost is estimated using a percentage of the OPCC (plus contingency).

B1.8.5 – Engineering Services During Construction

Engineering services during construction include review of contractor submittals, requested changes, and design adjustments that may be required during construction. A flat percentage of the OPCC is used to estimate this cost element.

B1.8.6 – Additional Project-Related Costs

Outside construction and project management costs are estimated for projects that are not directly managed by the City. For purposes of this master plan, only projects in excess of \$1 million were assigned these cost elements.

B2 – Opinion of Probable Construction and Capital Improvement Plan Costs: 5-Year City Projects

OPCCs and CIP total estimates for 5-Year City CIP Projects are presented in order of priority in on pages B1-1 through B1-9. The estimated cost for each line item, also known as the extended cost, within a project is determined by multiplying the line item quantity times the unit cost. Each line item extended cost is added to the project total cost column to determine OPCC estimates. August 2020 dollars from ENR-CCI was used for project OPCCs and CIPs.

C5-12C OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 12"	97	\$184/LF	\$17,865	\$17,865
Fire Hydrants	2	\$5,646/EA	\$11,292	\$11,292
Tier 2 Dewatering	97	\$52.50/LF	\$5,093	\$5,093
Unit Cost Subtotal				\$34,250
Erosion Control/Stormwater Pollution Prevention		2%		\$685
Mobilization & Demobilization		5%		\$1,713
Subtotal				\$36,648
Contingency		35%		\$12,830
Opinion of Probable Construction Cost (rounded)				\$50,000
Feasibility and Site Studies		9% of OPCC		\$5,000
Preliminary and Final Design		9% of OPCC		\$5,000
Engineering Services During Construction		5% of OPCC		\$3,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$70,000

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C5-14 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	968	224/LF	\$216,740	\$216,740
Water Distribution 20"	421	289/LF	\$121,631	\$121,631
Fire Hydrants	5	5,646/EA	\$28,231	\$28,231
Tier 1 Dewatering	1,304	105/LF	\$136,920	\$136,920
Tier 2 Dewatering	85	52.50/LF	\$4,463	\$4,463
Unit Cost Subtotal				\$507,984
Erosion Control/Stormwater Pollution Prevention		2%		\$10,160
Mobilization & Demobilization		5%		\$25,399
Subtotal				\$543,543
Contingency		35%		\$190,250
Opinion of Probable Construction Cost (rounded)				\$740,000
Feasibility and Site Studies		9% of OPCC		\$67,000
Preliminary and Final Design		9% of OPCC		\$67,000
Engineering Services During Construction		5% of OPCC		\$37,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$920,000

C20-2B OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 12"	5,444	184/LF	\$1,002,675	\$1,002,675
Water Distribution 16"	449	224/LF	\$100,533	\$100,533
Water Distribution 20"	1,153	289/LF	\$333,113	\$333,113
Water Distribution 20" (Trenchless J&B)	100	1,105/LF	\$110,546	\$110,546
PRV Station 20"	1	50,000/EA	\$50,000	\$50,000
Fire Hydrants	19	5,646/EA	\$107,278	\$107,278
Tier 1 Dewatering	946	105/LF	\$99,330	\$99,330
Tier 2 Dewatering	6200	52.50/LF	\$325,500	\$325,500
Unit Cost Subtotal				\$2,128,974
Erosion Control/Stormwater Pollution Prevention		2%		\$42,579
Mobilization & Demobilization		5%		\$106,449
Subtotal				\$2,278,002
Contingency		35%		\$797,310
Opinion of Probable Construction Cost (rounded)				\$3,080,000
Easement		5% of OPCC		\$154,000
Feasibility and Site Studies		6% of OPCC		\$185,000
Preliminary and Final Design		6% of OPCC		\$185,000
Engineering Services During Construction		5% of OPCC		\$154,000
Outside Construction Management - not used if OPCC value is < \$1M		5% of OPCC		\$154,000
Outside Project Management - not used if OPCC value is < \$1M		3% of OPCC		\$93,000
Capital Improvement Plan Total				\$4,010,000

W5-1 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Transmission 60"	4,023	\$763/LF	\$3,070,364	\$3,070,364
Water Transmission 60" (Trenchless J&B)	250	\$3,796/LF	\$949,118	\$949,118
Tier 1 Dewatering	2,339	\$105/LF	\$245,595	\$245,595
Unit Cost Subtotal				\$4,265,076
Erosion Control/Stormwater Pollution Prevention		2%		\$85,302
Mobilization & Demobilization		5%		\$213,254
Subtotal				\$4,563,631
Contingency		35%		\$1,597,280
Opinion of Probable Construction Cost (rounded)				\$6,170,000
Easement		5% of OPCC		\$309,000
Feasibility and Site Studies		6% of OPCC		\$371,000
Preliminary and Final Design		6% of OPCC		\$371,000
Engineering Services During Construction		5% of OPCC		\$309,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$309,000
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$186,000
Capital Improvement Plan Total				\$8,030,000

C5-12B OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	301	\$224/LF	\$67,395	\$67,395
Water Distribution 16" (Undeveloped)	280	\$158/LF	\$44,155	\$44,155
Fire Hydrants	3	\$5,646/EA	\$16,939	\$16,939
Tier 1 Dewatering	581	\$105/LF	\$61,005	\$61,005
Unit Cost Subtotal				\$189,494
Erosion Control/Stormwater Pollution Prevention		2%		\$3,790
Mobilization & Demobilization		5%		\$9,475
Subtotal				\$202,759
Contingency		35%		\$70,970
Opinion of Probable Construction Cost (rounded)				\$280,000
Feasibility and Site Studies		9% of OPCC		\$26,000
Preliminary and Final Design		9% of OPCC		\$26,000
Engineering Services During Construction		5% of OPCC		\$14,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$350,000

NC5-2 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	451	224/LF	\$100,981	\$100,981
Water Distribution 16" (Trenchless J&B)	100	791/LF	\$79,107	\$79,107
Fire Hydrants	3	5,646/EA	\$16,939	\$16,939
Tier 2 Dewatering	551	52.50/LF	\$28,928	\$28,928
Unit Cost Subtotal				\$225,955
Erosion Control/Stormwater Pollution Prevention		2%		\$4,519
Mobilization & Demobilization		5%		\$11,298
Subtotal				\$241,771
Contingency		35%		\$84,630
Opinion of Probable Construction Cost				\$330,000
Feasibility and Site Studies		9% of OPCC		\$30,000
Preliminary and Final Design		9% of OPCC		\$30,000
Engineering Services During Construction		5% of OPCC		\$17,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$410,000

NC5-1 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 20"	4,468	289/LF	\$1,290,847	\$1,290,847
Water Distribution 20" (Trenchless J&B)	150	1,105/LF	\$165,818	\$165,818
Water Distribution 20" (Trenchless HDD)	250	1,107/LF	\$276,862	\$276,862
Fire Hydrants	14	5,646/EA	\$79,047	\$79,047
Tier 1 Dewatering	3,460	105/LF	\$363,300	\$363,300
Tier 2 Dewatering	1,408	52.50/LF	\$73,920	\$73,920
Unit Cost Subtotal				\$2,249,795
Erosion Control/Stormwater Pollution Prevention		2%		\$44,996
Mobilization & Demobilization		5%		\$112,490
Subtotal				\$2,407,281
Contingency		35%		\$842,550
Opinion of Probable Construction Cost (rounded)				\$3,250,000
Feasibility and Site Studies		6% of OPCC		\$195,000
Preliminary and Final Design		6% of OPCC		\$195,000
Engineering Services During Construction		5% of OPCC		\$163,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$163,000
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$98,000
Capital Improvement Plan Total				\$4,070,000

C5-1 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	1,415	\$172/LF	\$243,581	\$243,581
Fire Hydrants	2	\$5,646/EA	\$11,292	\$11,292
Unit Cost Subtotal				\$254,873
Erosion Control/Stormwater Pollution Prevention		2%		\$5,097
Mobilization & Demobilization		5%		\$12,744
Subtotal				\$272,714
Contingency		35%		\$95,460
Opinion of Probable Construction Cost (rounded)				\$370,000
Feasibility and Site Studies		9% of OPCC		\$34,000
Preliminary and Final Design		9% of OPCC		\$34,000
Engineering Services During Construction		5% of OPCC		\$19,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$460,000

C5-2 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	1,008	\$172/LF	\$173,519	\$173,519
Fire Hydrants	4	\$5,646/EA	\$22,585	\$22,585
Tier 2 Dewatering	1,008	\$52.50/LF	\$52,920	\$52,920
Unit Cost Subtotal				\$249,024
Erosion Control/Stormwater Pollution Prevention		2%		\$4,980
Mobilization & Demobilization		5%		\$12,451
Subtotal				\$266,456
Contingency		35%		\$93,260
Opinion of Probable Construction Cost (rounded)				\$360,000
Easement		5% of OPCC		\$18,000
Feasibility and Site Studies		9% of OPCC		\$33,000
Preliminary and Final Design		9% of OPCC		\$33,000
Engineering Services During Construction		5% of OPCC		\$18,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$470,000

C5-12A OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8" (Undeveloped)	657	\$119/LF	\$78,298	\$78,298
Fire Hydrants	3	\$5,646/EA	\$16,939	\$16,939
Tier 1 Dewatering	657	\$105/LF	\$68,985	\$68,985
Unit Cost Subtotal				\$164,222
Erosion Control/Stormwater Pollution Prevention		2%		\$3,284
Mobilization & Demobilization		5%		\$8,211
Subtotal				\$175,717
Contingency		35%		\$61,510
Opinion of Probable Construction Cost (rounded)				\$240,000
Feasibility and Site Studies		9% of OPCC		\$22,000
Preliminary and Final Design		9% of OPCC		\$22,000
Engineering Services During Construction		5% of OPCC		\$12,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$300,000

C5-13A OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	602	\$172/LF	\$103,629	\$103,629
Fire Hydrants	3	\$5,646/EA	\$16,939	\$16,939
Tier 2 Dewatering	602	\$52.50/LF	\$31,605	\$31,605
Unit Cost Subtotal				\$152,173
Erosion Control/Stormwater Pollution Prevention		2%		\$3,043
Mobilization & Demobilization		5%		\$7,609
Subtotal				\$162,825
Contingency		35%		\$56,990
Opinion of Probable Construction Cost (rounded)				\$220,000
Feasibility and Site Studies		9% of OPCC		\$20,000
Preliminary and Final Design		9% of OPCC		\$20,000
Engineering Services During Construction		5% of OPCC		\$11,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$280,000

C5-13B OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	820	\$172/LF	\$141,156	\$141,156
Fire Hydrants	4	\$5,646/EA	\$22,585	\$22,585
Tier 2 Dewatering	820	\$52.50/LF	\$43,050	\$43,050
Unit Cost Subtotal				\$206,791
Erosion Control/Stormwater Pollution Prevention		2%		\$4,136
Mobilization & Demobilization		5%		\$10,340
Subtotal				\$221,267
Contingency		35%		\$77,450
Opinion of Probable Construction Cost (rounded)				\$300,000
Feasibility and Site Studies		9% of OPCC		\$27,000
Preliminary and Final Design		9% of OPCC		\$27,000
Engineering Services During Construction		5% of OPCC		\$15,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$370,000

E5-2A OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 12"	460	\$184/LF	\$84,723	\$84,723
Fire Hydrants	3	\$5,646/EA	\$16,939	\$16,939
Tier 1 Dewatering	460	\$105/LF	\$48,300	\$48,300
Unit Cost Subtotal				\$149,961
Erosion Control/Stormwater Pollution Prevention		2%		\$2,999
Mobilization & Demobilization		5%		\$7,498
Subtotal				\$160,459
Contingency		35%		\$56,170
Opinion of Probable Construction Cost (rounded)				\$220,000
Easement		5% of OPCC		\$11,000
Feasibility and Site Studies		9% of OPCC		\$20,000
Preliminary and Final Design		9% of OPCC		\$20,000
Engineering Services During Construction		5% of OPCC		\$11,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$290,000

E5-2B OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	491	\$172/LF	\$84,522	\$84,522
Water Distribution 8" (Trenchless J&B)	200	\$478/LF	\$95,617	\$95,617
Fire Hydrants	3	\$5,646/EA	\$16,939	\$16,939
Tier 1 Dewatering	691	\$105/LF	\$72,555	\$72,555
Unit Cost Subtotal				\$269,632
Erosion Control/Stormwater Pollution Prevention	2%			\$5,393
Mobilization & Demobilization	5%			\$13,482
Subtotal				\$288,506
Contingency	35%			\$100,980
Opinion of Probable Construction Cost (rounded)				\$390,000
Easement	5% of OPCC			\$20,000
Feasibility and Site Studies	9% of OPCC			\$36,000
Preliminary and Final Design	9% of OPCC			\$36,000
Engineering Services During Construction	5% of OPCC			\$20,000
Outside Construction Management - not used if OPCC value is <\$1M	5% of OPCC			\$0
Outside Project Management - not used if OPCC value is <\$1M	3% of OPCC			\$0
Capital Improvement Plan Total				\$510,000

E5-2C OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	303	\$172/LF	\$52,159	\$52,159
Fire Hydrants	2	\$5,646/EA	\$11,292	\$11,292
Tier 1 Dewatering	303	\$105/LF	\$31,815	\$31,815
Unit Cost Subtotal				\$95,266
Erosion Control/Stormwater Pollution Prevention	2%			\$1,905
Mobilization & Demobilization	5%			\$4,763
Subtotal				\$101,935
Contingency	35%			\$35,680
Opinion of Probable Construction Cost (rounded)				\$140,000
Easement	5% of OPCC			\$7,000
Feasibility and Site Studies	9% of OPCC			\$13,000
Preliminary and Final Design	9% of OPCC			\$13,000
Engineering Services During Construction	5% of OPCC			\$7,000
Outside Construction Management - not used if OPCC value is <\$1M	5% of OPCC			\$0
Outside Project Management - not used if OPCC value is <\$1M	3% of OPCC			\$0
Capital Improvement Plan Total				\$180,000

E5-5 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	793	172/LF	\$136,509	\$136,509
Fire Hydrants	3	5,646/EA	\$16,939	\$16,939
Tier 2 Dewatering	793	52.50/LF	\$41,633	\$41,633
Unit Cost Subtotal				\$195,080
Erosion Control/Stormwater Pollution Prevention		2%		\$3,902
Mobilization & Demobilization		5%		\$9,754
Subtotal				\$208,735
Contingency		35%		\$73,060
Opinion of Probable Construction Cost (rounded)				\$290,000
Easement		5% of OPCC		\$15,000
Feasibility and Site Studies		9% of OPCC		\$27,000
Preliminary and Final Design		9% of OPCC		\$27,000
Engineering Services During Construction		5% of OPCC		\$15,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$380,000

SC5-1 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	455	172/LF	\$78,325	\$78,325
Fire Hydrants	3	5,646/EA	\$16,939	\$16,939
Unit Cost Subtotal				\$95,263
Erosion Control/Stormwater Pollution Prevention		2%		\$1,905
Mobilization & Demobilization		5%		\$4,763
Subtotal				\$101,932
Contingency		35%		\$35,680
Opinion of Probable Construction Cost				\$140,000
Feasibility and Site Studies		9% of OPCC		\$13,000
Preliminary and Final Design		9% of OPCC		\$13,000
Engineering Services During Construction		5% of OPCC		\$7,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$180,000

B3 – Opinion of Probable Construction and Capital Improvement Plan Costs: 20-Year City CIP Projects

OPCCs and CIP total estimates for 20-Year City CIP Projects are presented in order of priority on pages B2-1 through B2-8. August 2020 dollars from ENR-CCI was used for project OPCCs and CIPs.

E5-6 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	617	172/LF	\$106,212	\$106,212
Water Distribution 16"	28	224/LF	\$6,269	\$6,269
Water Transmission 30"	3,182	368/LF	\$1,172,120	\$1,172,120
Water Transmission 30" (Trenchless J&B)	400	421/LF	\$168,531	\$168,531
Fire Hydrants	12	5,646/EA	\$67,754	\$67,754
Tier 2 Dewatering	4,227	52.50/LF	\$221,918	\$221,918
Unit Cost Subtotal				\$1,742,803
Erosion Control/Stormwater Pollution Prevention		2%		\$34,856
Mobilization & Demobilization		5%		\$87,140
Subtotal				\$1,864,800
Contingency		35%		\$652,680
Opinion of Probable Construction Cost (rounded)				\$2,520,000
Feasibility and Site Studies		6% of OPCC		\$152,000
Preliminary and Final Design		6% of OPCC		\$152,000
Engineering Services During Construction		5% of OPCC		\$126,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$126,000
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$76,000
Capital Improvement Plan Total				\$3,160,000

W20-1 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Transmission 60"	9,813	\$763/LF	\$7,489,306	\$7,489,306
Unit Cost Subtotal				\$7,489,306
Erosion Control/Stormwater Pollution Prevention		2%		\$149,786
Mobilization & Demobilization		5%		\$374,465
Subtotal				\$8,013,557
Contingency		35%		\$2,804,750
Opinion of Probable Construction Cost (rounded)				\$10,820,000
Easement		5% of OPCC		\$541,000
Feasibility and Site Studies		5% of OPCC		\$541,000
Preliminary and Final Design		5% of OPCC		\$541,000
Engineering Services During Construction		5% of OPCC		\$541,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$541,000
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$324,600
Capital Improvement Plan Total				\$13,850,000

C20-1 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 20"	4,709	\$289/LF	\$1,360,475	\$1,360,475
Water Distribution 20" (Trenchless J&B)	350	\$1,105/LF	\$386,910	\$386,910
Water Distribution 20" (Trenchless HDD)	250	\$1,107/LF	\$276,862	\$276,862
PRV Station 20"	1	\$50,000/EA	\$50,000	\$50,000
Fire Hydrants	15	\$5,646/EA	\$84,693	\$84,693
Tier 1 Dewatering	4455	\$105/LF	\$467,775	\$467,775
Tier 2 Dewatering	854	\$52.50/LF	\$44,835	\$44,835
Unit Cost Subtotal				\$2,671,550
Erosion Control/Stormwater Pollution Prevention	2%			\$53,431
Mobilization & Demobilization	5%			\$133,577
Subtotal				\$2,858,558
Contingency	35%			\$1,000,500
Opinion of Probable Construction Cost (rounded)				\$3,860,000
Feasibility and Site Studies	6% of OPCC			\$232,000
Preliminary and Final Design	6% of OPCC			\$232,000
Engineering Services During Construction	5% of OPCC			\$193,000
Outside Construction Management - not used if OPCC value is < \$1M	5% of OPCC			\$193,000
Outside Project Management - not used if OPCC value is < \$1M	3% of OPCC			\$116,000
Capital Improvement Plan Total				\$4,830,000

C20-3 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	3,721	\$224/LF	\$833,150	\$833,150
Water Distribution 16" (Trenchless HDD)	250	\$944/LF	\$235,907	\$235,907
Fire Hydrants	11	\$5,646/EA	\$62,108	\$62,108
Tier 1 Dewatering	3086	\$105/LF	\$324,030	\$324,030
Tier 2 Dewatering	885	\$52.50/LF	\$46,463	\$46,463
Unit Cost Subtotal				\$1,501,658
Erosion Control/Stormwater Pollution Prevention	2%			\$30,033
Mobilization & Demobilization	5%			\$75,083
Subtotal				\$1,606,774
Contingency	35%			\$562,380
Opinion of Probable Construction Cost (rounded)				\$2,170,000
Easement	5% of OPCC			\$109,000
Feasibility and Site Studies	6% of OPCC			\$131,000
Preliminary and Final Design	6% of OPCC			\$131,000
Engineering Services During Construction	5% of OPCC			\$109,000
Outside Construction Management - not used if OPCC value is < \$1M	5% of OPCC			\$109,000
Outside Project Management - not used if OPCC value is < \$1M	3% of OPCC			\$66,000
Capital Improvement Plan Total				\$2,830,000

SE5-1 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	568	172/LF	\$97,777	\$97,777
Fire Hydrants	3	5,646/EA	\$16,939	\$16,939
Tier 2 Dewatering	568	52.50/LF	\$29,820	\$29,820
Unit Cost Subtotal				\$144,535
Erosion Control/Stormwater Pollution Prevention		2%		\$2,891
Mobilization & Demobilization		5%		\$7,227
Subtotal				\$154,653
Contingency		35%		\$54,130
Opinion of Probable Construction Cost (rounded)				\$210,000
Feasibility and Site Studies		9% of OPCC		\$19,000
Preliminary and Final Design		9% of OPCC		\$19,000
Engineering Services During Construction		5% of OPCC		\$11,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$260,000

C20-4 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16" (Trenchless J&B)	288	\$791/LF	\$227,829	\$227,829
Fire Hydrants	2	\$5,646/EA	\$11,292	\$11,292
Unit Cost Subtotal				\$239,122
Erosion Control/Stormwater Pollution Prevention		2%		\$4,782
Mobilization & Demobilization		5%		\$11,956
Subtotal				\$255,860
Contingency		35%		\$89,560
Opinion of Probable Construction Cost (rounded)				\$350,000
Feasibility and Site Studies		9% of OPCC		\$32,000
Preliminary and Final Design		9% of OPCC		\$32,000
Engineering Services During Construction		5% of OPCC		\$18,000
Outside Construction Management - not used if OPCC value is < \$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is < \$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$440,000

E5-3 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	3,600	224/LF	\$806,057	\$806,057
Water Distribution 16" (Undeveloped)	503	158/LF	\$79,321	\$79,321
Water Distribution 16" (Trenchless J&B)	500	791/LF	\$395,537	\$395,537
Fire Hydrants	13	5,646/EA	\$73,401	\$73,401
Tier 1 Dewatering	630	105/LF	\$66,150	\$66,150
Tier 2 Dewatering	3,973	52.50/LF	\$208,583	\$208,583
Unit Cost Subtotal				\$1,629,049
Erosion Control/Stormwater Pollution Prevention		2%		\$32,581
Mobilization & Demobilization		5%		\$81,452
Subtotal				\$1,743,082
Contingency		35%		\$610,080
Opinion of Probable Construction Cost (rounded)				\$2,360,000
Feasibility and Site Studies		6% of OPCC		\$142,000
Preliminary and Final Design		6% of OPCC		\$142,000
Engineering Services During Construction		5% of OPCC		\$118,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$118,000
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$71,000
Capital Improvement Plan Total				\$2,960,000

SC5-9 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 12"	4,018	184/LF	\$740,034	\$740,034
Fire Hydrants	12	5,646/EA	\$67,754	\$67,754
Unit Cost Subtotal				\$807,789
Erosion Control/Stormwater Pollution Prevention		2%		\$16,156
Mobilization & Demobilization		5%		\$40,389
Subtotal				\$864,334
Contingency		35%		\$302,520
Opinion of Probable Construction Cost (rounded)				\$1,170,000
Easement		5% of OPCC		\$59,000
Feasibility and Site Studies		6% of OPCC		\$71,000
Preliminary and Final Design		6% of OPCC		\$71,000
Engineering Services During Construction		5% of OPCC		\$59,000
Outside Construction Management - not used if OPCC value is <\$1M		5% of OPCC		\$59,000
Outside Project Management - not used if OPCC value is <\$1M		3% of OPCC		\$36,000
Capital Improvement Plan Total				\$1,530,000

E20-1 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	1,106	\$224/LF	\$247,639	\$247,639
Water Distribution 16" (Trenchless J&B)	400	\$791/LF	\$316,430	\$316,430
Fire Hydrants	5	\$5,646/EA	\$28,231	\$28,231
Tier 1 Dewatering	1506	\$105/LF	\$158,130	\$158,130
Unit Cost Subtotal				\$750,429
Erosion Control/Stormwater Pollution Prevention		2%		\$15,009
Mobilization & Demobilization		5%		\$37,521
Subtotal				\$802,960
Contingency		35%		\$281,040
Opinion of Probable Construction Cost (rounded)				\$1,090,000
Feasibility and Site Studies		6% of OPCC		\$66,000
Preliminary and Final Design		6% of OPCC		\$66,000
Engineering Services During Construction		5% of OPCC		\$55,000
Outside Construction Management - not used if OPCC value is < \$1M		5% of OPCC		\$55,000
Outside Project Management - not used if OPCC value is < \$1M		3% of OPCC		\$33,000
Capital Improvement Plan Total				\$1,370,000

E20-2 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	715	\$224/LF	\$160,092	\$160,092
Water Distribution 16" (Trenchless J&B)	250	\$791/LF	\$197,769	\$197,769
Water Distribution 16" (Trenchless HDD)	250	\$944/LF	\$235,907	\$235,907
Fire Hydrants	5	\$5,646/EA	\$28,231	\$28,231
Tier 1 Dewatering	1215	\$105/LF	\$127,575	\$127,575
Unit Cost Subtotal				\$749,573
Erosion Control/Stormwater Pollution Prevention		2%		\$14,991
Mobilization & Demobilization		5%		\$37,479
Subtotal				\$802,044
Contingency		35%		\$280,720
Opinion of Probable Construction Cost (rounded)				\$1,090,000
Feasibility and Site Studies		6% of OPCC		\$66,000
Preliminary and Final Design		6% of OPCC		\$66,000
Engineering Services During Construction		5% of OPCC		\$55,000
Outside Construction Management - not used if OPCC value is < \$1M		5% of OPCC		\$55,000
Outside Project Management - not used if OPCC value is < \$1M		3% of OPCC		\$33,000
Capital Improvement Plan Total				\$1,370,000

C20-5 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16" (Undeveloped)	705	\$158/LF	\$111,176	\$111,176
Fire Hydrants	3	\$5,646/EA	\$16,939	\$16,939
Tier 1 Dewatering	705	\$105/LF	\$74,025	\$74,025
Unit Cost Subtotal				\$202,140
Erosion Control/Stormwater Pollution Prevention		2%		\$4,043
Mobilization & Demobilization		5%		\$10,107
Subtotal				\$216,289
Contingency		35%		\$75,710
Opinion of Probable Construction Cost (rounded)				\$300,000
Feasibility and Site Studies		9% of OPCC		\$27,000
Preliminary and Final Design		9% of OPCC		\$27,000
Engineering Services During Construction		5% of OPCC		\$15,000
Outside Construction Management - not used if OPCC value is < \$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is < \$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$370,000

W20-2 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	70	\$224/LF	\$15,673	\$15,673
Water Transmission 36"	17,039	\$421/LF	\$7,178,979	\$7,178,979
Water Transmission 36" (Trenchless J&B)	500	\$1,960/LF	\$979,813	\$979,813
Water Transmission 48"	439	\$566/LF	\$248,378	\$248,378
Fire Hydrants	2	\$5,646/EA	\$11,292	\$11,292
Tier 1 Dewatering	986	\$105/LF	\$103,530	\$103,530
Unit Cost Subtotal				\$8,537,665
Erosion Control/Stormwater Pollution Prevention		2%		\$170,753
Mobilization & Demobilization		5%		\$426,883
Subtotal				\$9,135,301
Contingency		35%		\$3,197,360
Opinion of Probable Construction Cost (rounded)				\$12,340,000
Easement		5% of OPCC		\$617,000
Feasibility and Site Studies		5% of OPCC		\$617,000
Preliminary and Final Design		5% of OPCC		\$617,000
Engineering Services During Construction		5% of OPCC		\$617,000
Outside Construction Management - not used if OPCC value is < \$1M		5% of OPCC		\$617,000
Outside Project Management - not used if OPCC value is < \$1M		3% of OPCC		\$371,000
Capital Improvement Plan Total				\$15,800,000

C20-2A OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 20"	4,522	\$289/LF	\$1,306,449	\$1,306,449
Water Distribution 20" (Trenchless J&B)	250	\$1,105/LF	\$276,364	\$276,364
Water Distribution 20" (Trenchless HDD)	250	\$1,107/LF	\$276,862	\$276,862
Fire Hydrants	14	\$5,646/EA	\$79,047	\$79,047
Tier 1 Dewatering	4322	\$105/LF	\$453,810	\$453,810
Tier 2 Dewatering	700	\$52.50/LF	\$36,750	\$36,750
Unit Cost Subtotal				\$2,429,282
Erosion Control/Stormwater Pollution Prevention		2%		\$48,586
Mobilization & Demobilization		5%		\$121,464
Subtotal				\$2,599,332
Contingency		35%		\$909,770
Opinion of Probable Construction Cost (rounded)				\$3,510,000
Easement		5% of OPCC		\$176,000
Feasibility and Site Studies		6% of OPCC		\$211,000
Preliminary and Final Design		6% of OPCC		\$211,000
Engineering Services During Construction		5% of OPCC		\$176,000
Outside Construction Management - not used if OPCC value is < \$1M		5% of OPCC		\$176,000
Outside Project Management - not used if OPCC value is < \$1M		3% of OPCC		\$106,000
Capital Improvement Plan Total				\$4,570,000

SE5-2 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	1,324	172/LF	\$227,916	\$227,916
Fire Hydrants	5	5,646/EA	\$28,231	\$28,231
Tier 2 Dewatering	1,324	52.50/LF	\$69,510	\$69,510
Unit Cost Subtotal				\$325,657
Erosion Control/Stormwater Pollution Prevention		2%		\$6,513
Mobilization & Demobilization		5%		\$16,283
Subtotal				\$348,453
Contingency		35%		\$121,960
Opinion of Probable Construction Cost (rounded)				\$480,000
Feasibility and Site Studies		9% of OPCC		\$44,000
Preliminary and Final Design		9% of OPCC		\$44,000
Engineering Services During Construction		5% of OPCC		\$24,000
Outside Construction Management - not used if OPCC value is < \$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is < \$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$600,000

C20-6 OPCC and CIP Total

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 12"	405	\$184/LF	\$74,593	\$74,593
Fire Hydrants	3	\$5,646/EA	\$16,939	\$16,939
Tier 2 Dewatering	405	\$52.50/LF	\$21,263	\$21,263
Unit Cost Subtotal				\$112,794
Erosion Control/Stormwater Pollution Prevention		2%		\$2,256
Mobilization & Demobilization		5%		\$5,640
Subtotal				\$120,690
Contingency		35%		\$42,250
Opinion of Probable Construction Cost (rounded)				\$170,000
Feasibility and Site Studies		9% of OPCC		\$16,000
Preliminary and Final Design		9% of OPCC		\$16,000
Engineering Services During Construction		5% of OPCC		\$9,000
Outside Construction Management - not used if OPCC value is < \$1M		5% of OPCC		\$0
Outside Project Management - not used if OPCC value is < \$1M		3% of OPCC		\$0
Capital Improvement Plan Total				\$220,000

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B4 – Opinion of Probable Construction Costs: 5-Year Development Projects

OPCCs for 5-Year Development projects are presented (generally going from west to east and from north to south) in pages B3-1 through B3-7. Given the Development projects are not funded by the City, OPCC estimates for each project only include the unit cost item of pipe lengths based on pipe size. OPCCs do not include additional line item units such as fire hydrants, PRV stations, dewatering, and crossings. August 2020 dollars from ENR-CCI was used for project OPCCs.

W5-2 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	49,105	\$172/LF	\$8,453,027	\$8,453,027
Water Distribution 12"	23,608	\$184/LF	\$4,348,116	\$4,348,116
Unit Cost Subtotal				\$12,801,144
Erosion Control/Stormwater Pollution Prevention	2%			\$256,023
Mobilization & Demobilization	5%			\$640,057
Subtotal				\$13,697,224
Contingency	35%			\$4,794,030
Opinion of Probable Construction Cost (rounded)				\$18,500,000
Easement	5% of OPCC			\$925,000

W5-3 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	4,303	\$172/LF	\$740,727	\$740,727
Water Distribution 12"	12,256	\$184/LF	\$2,257,307	\$2,257,307
Water Distribution 16"	4,777	\$224/LF	\$1,069,593	\$1,069,593
Unit Cost Subtotal				\$4,067,627
Erosion Control/Stormwater Pollution Prevention	2%			\$81,353
Mobilization & Demobilization	5%			\$203,381
Subtotal				\$4,352,361
Contingency	35%			\$1,523,330
Opinion of Probable Construction Cost (rounded)				\$5,880,000
Easement	5% of OPCC			\$294,000

W5-4 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	2,858	\$172/LF	\$491,982	\$491,982
Water Distribution 12"	12,280	\$184/LF	\$2,261,728	\$2,261,728
Water Distribution 16"	3,988	\$224/LF	\$892,932	\$892,932
Unit Cost Subtotal				\$3,646,642
Erosion Control/Stormwater Pollution Prevention	2%			\$72,933
Mobilization & Demobilization	5%			\$182,332
Subtotal				\$3,901,907
Contingency	35%			\$1,365,670
Opinion of Probable Construction Cost (rounded)				\$5,270,000
Easement	5% of OPCC			\$264,000

W5-5 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	403	\$172/LF	\$69,373	\$69,373
Water Distribution 16"	86	\$224/LF	\$19,256	\$19,256
Unit Cost Subtotal				\$88,629
Erosion Control/Stormwater Pollution Prevention		2%		\$1,773
Mobilization & Demobilization		5%		\$4,431
Subtotal				\$94,833
Contingency		35%		\$33,200
Opinion of Probable Construction Cost (rounded)				\$130,000
Easement		5% of OPCC		\$7,000

W5-6 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 12"	2,478	\$184/LF	\$456,397	\$456,397
Unit Cost Subtotal				\$456,397
Erosion Control/Stormwater Pollution Prevention		2%		\$9,128
Mobilization & Demobilization		5%		\$22,820
Subtotal				\$488,345
Contingency		35%		\$170,930
Opinion of Probable Construction Cost (rounded)				\$660,000
Easement		5% of OPCC		\$33,000

W5-7 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	1,521	\$172/LF	\$261,828	\$261,828
Unit Cost Subtotal				\$261,828
Erosion Control/Stormwater Pollution Prevention		2%		\$5,237
Mobilization & Demobilization		5%		\$13,091
Subtotal				\$280,156
Contingency		35%		\$98,060
Opinion of Probable Construction Cost (rounded)				\$380,000
Easement		5% of OPCC		\$19,000

W5-8 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	3,982	\$224/LF	\$891,589	\$891,589
Unit Cost Subtotal				\$891,589
Erosion Control/Stormwater Pollution Prevention		2%		\$17,832
Mobilization & Demobilization		5%		\$44,579
Subtotal				\$954,000
Contingency		35%		\$333,910
Opinion of Probable Construction Cost (rounded)				\$1,290,000
Easement		5% of OPCC		\$65,000

W5-10 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	7,248	\$224/LF	\$1,622,862	\$1,622,862
Unit Cost Subtotal				\$1,622,862
Erosion Control/Stormwater Pollution Prevention	2%			\$32,457
Mobilization & Demobilization	5%			\$81,143
Subtotal				\$1,736,463
Contingency	35%			\$607,770
Opinion of Probable Construction Cost (rounded)				\$2,350,000

C5-3 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	6,954	\$172/LF	\$1,197,075	\$1,197,075
Water Distribution 12"	36,091	\$184/LF	\$6,647,232	\$6,647,232
Water Distribution 16"	8,677	\$224/LF	\$1,942,822	\$1,942,822
Unit Cost Subtotal				\$9,787,129
Erosion Control/Stormwater Pollution Prevention	2%			\$195,743
Mobilization & Demobilization	5%			\$489,356
Subtotal				\$10,472,228
Contingency	35%			\$3,665,280
Opinion of Probable Construction Cost (rounded)				\$14,140,000
Easement		5% of OPCC		\$707,000

C5-4 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	11,380	\$172/LF	\$1,958,975	\$1,958,975
Water Distribution 12"	10,330	\$184/LF	\$1,902,577	\$1,902,577
Unit Cost Subtotal				\$3,861,552
Erosion Control/Stormwater Pollution Prevention	2%			\$77,231
Mobilization & Demobilization	5%			\$193,078
Subtotal				\$4,131,860
Contingency	35%			\$1,446,160
Opinion of Probable Construction Cost (rounded)				\$5,580,000
Easement		5% of OPCC		\$279,000

C5-6 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	8,331	\$224/LF	\$1,865,351	\$1,865,351
Unit Cost Subtotal				\$1,865,351
Erosion Control/Stormwater Pollution Prevention	2%			\$37,307
Mobilization & Demobilization	5%			\$93,268
Subtotal				\$1,995,926
Contingency	35%			\$698,580
Opinion of Probable Construction Cost (rounded)				\$2,700,000
Easement		5% of OPCC		\$135,000

C5-7 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 12"	4,302	\$184/LF	\$792,341	\$792,341
Unit Cost Subtotal				\$792,341
Erosion Control/Stormwater Pollution Prevention		2%		\$15,847
Mobilization & Demobilization		5%		\$39,617
Subtotal				\$847,805
Contingency		35%		\$296,740
Opinion of Probable Construction Cost (rounded)				\$1,150,000
Easement		5% of OPCC		\$58,000

C5-8 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	2,485	\$172/LF	\$427,773	\$427,773
Unit Cost Subtotal				\$427,773
Erosion Control/Stormwater Pollution Prevention		2%		\$8,555
Mobilization & Demobilization		5%		\$21,389
Subtotal				\$457,717
Contingency		35%		\$160,210
Opinion of Probable Construction Cost (rounded)				\$620,000
Easement		5% of OPCC		\$31,000

C5-9 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	3,099	\$224/LF	\$693,881	\$693,881
Unit Cost Subtotal				\$693,881
Erosion Control/Stormwater Pollution Prevention		2%		\$13,878
Mobilization & Demobilization		5%		\$34,694
Subtotal				\$742,453
Contingency		35%		\$259,860
Opinion of Probable Construction Cost (rounded)				\$1,010,000
Easement		5% of OPCC		\$51,000

C5-10 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	3,652	\$172/LF	\$628,662	\$628,662
Unit Cost Subtotal				\$628,662
Erosion Control/Stormwater Pollution Prevention		2%		\$12,573
Mobilization & Demobilization		5%		\$31,433
Subtotal				\$672,669
Contingency		35%		\$235,440
Opinion of Probable Construction Cost (rounded)				\$910,000
Easement		5% of OPCC		\$46,000

E5-7 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	21,703	\$172/LF	\$3,735,995	\$3,735,995
Water Distribution 12"	9,211	\$184/LF	\$1,696,480	\$1,696,480
Unit Cost Subtotal				\$5,432,475
Erosion Control/Stormwater Pollution Prevention	2%			\$108,650
Mobilization & Demobilization	5%			\$271,624
Subtotal				\$5,812,749
Contingency	35%			\$2,034,470
Opinion of Probable Construction Cost (rounded)				\$7,850,000
Easement	5% of OPCC			\$393,000

SC5-2 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 12"	8,130	\$184/LF	\$1,497,382	\$1,497,382
Water Distribution 16"	3,145	\$224/LF	\$704,181	\$704,181
Unit Cost Subtotal				\$2,201,562
Erosion Control/Stormwater Pollution Prevention	2%			\$44,031
Mobilization & Demobilization	5%			\$110,078
Subtotal				\$2,355,672
Contingency	35%			\$824,490
Opinion of Probable Construction Cost (rounded)				\$3,190,000
Easement	5% of OPCC			\$160,000

SC5-3 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	870	\$172/LF	\$149,763	\$149,763
Water Distribution 12"	10,733	\$184/LF	\$1,976,802	\$1,976,802
Unit Cost Subtotal				\$2,126,565
Erosion Control/Stormwater Pollution Prevention	2%			\$42,531
Mobilization & Demobilization	5%			\$106,328
Subtotal				\$2,275,425
Contingency	35%			\$796,400
Opinion of Probable Construction Cost (rounded)				\$3,080,000
Easement	5% of OPCC			\$154,000

SC5-4 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	3,950	\$172/LF	\$679,960	\$679,960
Unit Cost Subtotal				\$679,960
Erosion Control/Stormwater Pollution Prevention	2%			\$13,599
Mobilization & Demobilization	5%			\$33,998
Subtotal				\$727,558
Contingency	35%			\$254,650
Opinion of Probable Construction Cost (rounded)				\$990,000
Easement	5% of OPCC			\$50,000

SC5-5 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	6,755	\$172/LF	\$1,162,818	\$1,162,818
Water Distribution 12"	2,984	\$184/LF	\$549,592	\$549,592
Unit Cost Subtotal				\$1,712,411
Erosion Control/Stormwater Pollution Prevention		2%		\$34,248
Mobilization & Demobilization		5%		\$85,621
Subtotal				\$1,832,280
Contingency		35%		\$641,300
Opinion of Probable Construction Cost (rounded)				\$2,480,000
Easement		5% of OPCC		\$124,000

SC5-6 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	3,323	\$172/LF	\$572,027	\$572,027
Unit Cost Subtotal				\$572,027
Erosion Control/Stormwater Pollution Prevention		2%		\$11,441
Mobilization & Demobilization		5%		\$28,601
Subtotal				\$612,069
Contingency		35%		\$214,230
Opinion of Probable Construction Cost (rounded)				\$830,000
Easement		5% of OPCC		\$42,000

SC5-7 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	1,892	\$224/LF	\$423,628	\$423,628
Unit Cost Subtotal				\$423,628
Erosion Control/Stormwater Pollution Prevention		2%		\$8,473
Mobilization & Demobilization		5%		\$21,181
Subtotal				\$453,282
Contingency		35%		\$158,650
Opinion of Probable Construction Cost (rounded)				\$620,000
Easement		5% of OPCC		\$31,000

SE5-4 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	4,018	\$172/LF	\$691,666	\$691,666
Unit Cost Subtotal				\$691,666
Erosion Control/Stormwater Pollution Prevention		2%		\$13,833
Mobilization & Demobilization		5%		\$34,583
Subtotal				\$740,083
Contingency		35%		\$259,030
Opinion of Probable Construction Cost (rounded)				\$1,000,000
Easement		5% of OPCC		\$50,000

B5 – Opinion of Probable Construction Costs: 20-Year Development Projects

OPCCs for 20-Year Development projects are presented (generally going from west to east and from north to south) in pages **B4-1** through **B4-7**. Given the Development projects are not funded by the City, OPCC estimates for each project only include the unit cost item of pipe lengths based on pipe size. OPCCs do not include additional line item units such as fire hydrants, PRV stations, dewatering, and crossings. August 2020 dollars from ENR-CCI was used for project OPCCs.

W20-3 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	11	\$172/LF	\$1,894	\$1,894
Water Distribution 20"	5,665	\$289/LF	\$1,636,672	\$1,636,672
Unit Cost Subtotal				\$1,638,566
Erosion Control/Stormwater Pollution Prevention	2%			\$32,771
Mobilization & Demobilization	5%			\$81,928
Subtotal				\$1,753,265
Contingency	35%			\$613,650
Opinion of Probable Construction Cost (rounded)				\$2,370,000

W20-4 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 12"	3,300	\$184/LF	\$607,793	\$607,793
Unit Cost Subtotal				\$607,793
Erosion Control/Stormwater Pollution Prevention	2%			\$12,156
Mobilization & Demobilization	5%			\$30,390
Subtotal				\$650,339
Contingency	35%			\$227,620
Opinion of Probable Construction Cost (rounded)				\$880,000
Easement	5% of OPCC			\$44,000

W20-5 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	1,937	\$172/LF	\$333,439	\$333,439
Water Distribution 12"	1,671	\$184/LF	\$307,764	\$307,764
Unit Cost Subtotal				\$641,203
Erosion Control/Stormwater Pollution Prevention	2%			\$12,824
Mobilization & Demobilization	5%			\$32,060
Subtotal				\$686,087
Contingency	35%			\$240,140
Opinion of Probable Construction Cost (rounded)				\$930,000
Easement	5% of OPCC			\$47,000

W20-6 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	1,908	\$172/LF	\$328,447	\$328,447
Water Distribution 12"	7,060	\$184/LF	\$1,300,309	\$1,300,309
Unit Cost Subtotal				\$1,628,756
Erosion Control/Stormwater Pollution Prevention		2%		\$32,575
Mobilization & Demobilization		5%		\$81,438
Subtotal				\$1,742,769
Contingency		35%		\$609,970
Opinion of Probable Construction Cost (rounded)				\$2,360,000
Easement		5% of OPCC		\$118,000

W20-7 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 12"	1,702	\$184/LF	\$313,474	\$313,474
Unit Cost Subtotal				\$313,474
Erosion Control/Stormwater Pollution Prevention		2%		\$6,269
Mobilization & Demobilization		5%		\$15,674
Subtotal				\$335,417
Contingency		35%		\$117,400
Opinion of Probable Construction Cost (rounded)				\$460,000
Easement		5% of OPCC		\$23,000

W20-8 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	21,163	\$172/LF	\$3,643,039	\$3,643,039
Water Distribution 12"	11,652	\$184/LF	\$2,146,063	\$2,146,063
Water Distribution 16"	6,025	\$224/LF	\$1,349,027	\$1,349,027
Water Transmission 24"	360	\$315/LF	\$113,541	\$113,541
Unit Cost Subtotal				\$7,251,670
Erosion Control/Stormwater Pollution Prevention		2%		\$145,033
Mobilization & Demobilization		5%		\$362,583
Subtotal				\$7,759,286
Contingency		35%		\$2,715,760
Opinion of Probable Construction Cost (rounded)				\$10,480,000
Easement		5% of OPCC		\$524,000

C20-7 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	4,253	\$172/LF	\$732,119	\$732,119
Water Distribution 16"	1,312	\$224/LF	\$293,763	\$293,763
Unit Cost Subtotal				\$1,025,883
Erosion Control/Stormwater Pollution Prevention		2%		\$20,518
Mobilization & Demobilization		5%		\$51,294
Subtotal				\$1,097,694
Contingency		35%		\$384,200
Opinion of Probable Construction Cost (rounded)				\$1,490,000
Easement		5% of OPCC		\$75,000

C20-8 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 12"	6,656	\$184/LF	\$1,225,901	\$1,225,901
Water Distribution 16"	4,571	\$224/LF	\$1,023,469	\$1,023,469
Unit Cost Subtotal				\$2,249,370
Erosion Control/Stormwater Pollution Prevention	2%			\$44,987
Mobilization & Demobilization	5%			\$112,468
Subtotal				\$2,406,825
Contingency	35%			\$842,390
Opinion of Probable Construction Cost (rounded)				\$3,250,000
Easement	5% of OPCC			\$163,000

C20-9 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 12"	10,506	\$184/LF	\$1,934,993	\$1,934,993
Unit Cost Subtotal				\$1,934,993
Erosion Control/Stormwater Pollution Prevention	2%			\$38,700
Mobilization & Demobilization	5%			\$96,750
Subtotal				\$2,070,442
Contingency	35%			\$724,660
Opinion of Probable Construction Cost (rounded)				\$2,800,000
Easement	5% of OPCC			\$140,000

C20-10 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	9,192	\$172/LF	\$1,582,328	\$1,582,328
Unit Cost Subtotal				\$1,582,328
Erosion Control/Stormwater Pollution Prevention	2%			\$31,647
Mobilization & Demobilization	5%			\$79,116
Subtotal				\$1,693,091
Contingency	35%			\$592,590
Opinion of Probable Construction Cost (rounded)				\$2,290,000
Easement	5% of OPCC			\$115,000

C20-11 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	4,252	\$172/LF	\$731,947	\$731,947
Water Distribution 16"	264	\$224/LF	\$59,111	\$59,111
Unit Cost Subtotal				\$791,058
Erosion Control/Stormwater Pollution Prevention	2%			\$15,821
Mobilization & Demobilization	5%			\$39,553
Subtotal				\$846,432
Contingency	35%			\$296,260
Opinion of Probable Construction Cost (rounded)				\$1,150,000

E20-3 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	4,338	\$172/LF	\$746,751	\$746,751
Water Distribution 12"	3,365	\$184/LF	\$619,765	\$619,765
Unit Cost Subtotal				\$1,366,516
Erosion Control/Stormwater Pollution Prevention	2%			\$27,330
Mobilization & Demobilization	5%			\$68,326
Subtotal				\$1,462,173
Contingency	35%			\$511,770
Opinion of Probable Construction Cost (rounded)				\$1,980,000
Easement	5% of OPCC			\$99,000

E20-4 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	3,003	\$172/LF	\$516,942	\$516,942
Water Distribution 12"	3,626	\$184/LF	\$667,836	\$667,836
Water Distribution 16"	1,400	\$224/LF	\$313,467	\$313,467
Unit Cost Subtotal				\$1,498,245
Erosion Control/Stormwater Pollution Prevention	2%			\$29,965
Mobilization & Demobilization	5%			\$74,912
Subtotal				\$1,603,122
Contingency	35%			\$561,100
Opinion of Probable Construction Cost (rounded)				\$2,170,000
Easement	5% of OPCC			\$109,000

E20-5 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	54,255	\$172/LF	\$9,339,558	\$9,339,558
Water Distribution 12"	33,327	\$184/LF	\$6,138,160	\$6,138,160
Water Distribution 16"	22,867	\$224/LF	\$5,120,032	\$5,120,032
Unit Cost Subtotal				\$20,597,749
Erosion Control/Stormwater Pollution Prevention	2%			\$411,955
Mobilization & Demobilization	5%			\$1,029,887
Subtotal				\$22,039,592
Contingency	35%			\$7,713,860
Opinion of Probable Construction Cost (rounded)				\$29,760,000
Easement	5% of OPCC			\$1,488,000

E20-6 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	45,734	\$172/LF	\$7,872,737	\$7,872,737
Water Distribution 12"	5,875	\$184/LF	\$1,082,056	\$1,082,056
Unit Cost Subtotal				\$8,954,793
Erosion Control/Stormwater Pollution Prevention	2%			\$179,096
Mobilization & Demobilization	5%			\$447,740
Subtotal				\$9,581,629
Contingency	35%			\$3,353,580
Opinion of Probable Construction Cost (rounded)				\$12,940,000
Easement	5% of OPCC			\$647,000

NC20-1 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	124,711	\$172/LF	\$21,467,987	\$21,467,987
Water Distribution 12"	79,826	\$184/LF	\$14,702,335	\$14,702,335
Water Distribution 16"	77,948	\$224/LF	\$17,452,934	\$17,452,934
Water Distribution 20"	4,065	\$289/LF	\$1,174,417	\$1,174,417
Water Transmission 24"	36258	\$315/LF	\$11,435,513	\$11,435,513
Unit Cost Subtotal				\$66,233,185
Erosion Control/Stormwater Pollution Prevention	2%			\$1,324,664
Mobilization & Demobilization	5%			\$3,311,659
Subtotal				\$70,869,508
Contingency	35%			\$24,804,330
Opinion of Probable Construction Cost (rounded)				\$95,680,000
Easement	5% of OPCC			\$4,784,000

NE20-1 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	27,192	\$172/LF	\$4,680,882	\$4,680,882
Water Distribution 12"	32,981	\$184/LF	\$6,074,433	\$6,074,433
Water Distribution 16"	19,959	\$224/LF	\$4,468,916	\$4,468,916
Unit Cost Subtotal				\$15,224,232
Erosion Control/Stormwater Pollution Prevention	2%			\$304,485
Mobilization & Demobilization	5%			\$761,212
Subtotal				\$16,289,928
Contingency	35%			\$5,701,480
Opinion of Probable Construction Cost (rounded)				\$22,000,000
Easement	5% of OPCC			\$1,100,000

NE20-2 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	14,515	\$172/LF	\$2,498,639	\$2,498,639
Unit Cost Subtotal				\$2,498,639
Erosion Control/Stormwater Pollution Prevention	2%			\$49,973
Mobilization & Demobilization	5%			\$124,932
Subtotal				\$2,673,544
Contingency	35%			\$935,750
Opinion of Probable Construction Cost (rounded)				\$3,610,000
Easement	5% of OPCC			\$181,000

SW20-1 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	11,345	\$172/LF	\$1,952,950	\$1,952,950
Water Distribution 12"	9,920	\$184/LF	\$1,827,063	\$1,827,063
Unit Cost Subtotal				\$3,780,013
Erosion Control/Stormwater Pollution Prevention		2%		\$75,600
Mobilization & Demobilization		5%		\$189,001
Subtotal				\$4,044,614
Contingency		35%		\$1,415,620
Opinion of Probable Construction Cost (rounded)				\$5,470,000
Easement		5% of OPCC		\$274,000

SW20-2 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	5,306	\$172/LF	\$913,385	\$913,385
Water Distribution 16"	6,348	\$224/LF	\$1,421,348	\$1,421,348
Water Distribution 20"	608	\$289/LF	\$175,657	\$175,657
Unit Cost Subtotal				\$2,510,390
Erosion Control/Stormwater Pollution Prevention		2%		\$50,208
Mobilization & Demobilization		5%		\$125,519
Subtotal				\$2,686,117
Contingency		35%		\$940,150
Opinion of Probable Construction Cost (rounded)				\$3,630,000
Easement		5% of OPCC		\$182,000

SW20-3 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	29,091	\$172/LF	\$5,007,780	\$5,007,780
Water Distribution 12"	4,887	\$184/LF	\$900,087	\$900,087
Water Distribution 16"	10,549	\$224/LF	\$2,361,972	\$2,361,972
Unit Cost Subtotal				\$8,269,838
Erosion Control/Stormwater Pollution Prevention		2%		\$165,397
Mobilization & Demobilization		5%		\$413,492
Subtotal				\$8,848,727
Contingency		35%		\$3,097,060
Opinion of Probable Construction Cost (rounded)				\$11,950,000
Easement		5% of OPCC		\$598,000

SW20-4 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	30,440	\$172/LF	\$5,239,999	\$5,239,999
Water Distribution 12"	10,357	\$184/LF	\$1,907,550	\$1,907,550
Water Distribution 16"	6,752	\$224/LF	\$1,511,805	\$1,511,805
Unit Cost Subtotal				\$8,659,354
Erosion Control/Stormwater Pollution Prevention		2%		\$173,187
Mobilization & Demobilization		5%		\$432,968
Subtotal				\$9,265,509
Contingency		35%		\$3,242,930
Opinion of Probable Construction Cost (rounded)				\$12,510,000
Easement		5% of OPCC		\$626,000

SW20-5 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	15,353	\$172/LF	\$2,642,894	\$2,642,894
Water Distribution 12"	8,400	\$184/LF	\$1,547,110	\$1,547,110
Water Distribution 16"	7,368	\$224/LF	\$1,649,731	\$1,649,731
Unit Cost Subtotal				\$5,839,735
Erosion Control/Stormwater Pollution Prevention		2%		\$116,795
Mobilization & Demobilization		5%		\$291,987
Subtotal				\$6,248,517
Contingency		35%		\$2,186,990
Opinion of Probable Construction Cost (rounded)				\$8,440,000
Easement		5% of OPCC		\$422,000

SW20-6 OPCC

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 8"	20,973	\$172/LF	\$3,610,332	\$3,610,332
Water Distribution 12"	1,489	\$184/LF	\$274,244	\$274,244
Water Distribution 16"	2,497	\$224/LF	\$559,090	\$559,090
Unit Cost Subtotal				\$4,443,666
Erosion Control/Stormwater Pollution Prevention		2%		\$88,873
Mobilization & Demobilization		5%		\$222,183
Subtotal				\$4,754,722
Contingency		35%		\$1,664,160
Opinion of Probable Construction Cost (rounded)				\$6,420,000
Easement		5% of OPCC		\$321,000

SC20-1 OPCC¹

Item	Quantity	Unit Cost	Extended Cost	Total Cost
Water Distribution 16"	8,786	\$224/LF	\$1,967,228	\$1,967,228
Unit Cost Subtotal				\$1,967,228
Erosion Control/Stormwater Pollution Prevention		2%		\$39,345
Mobilization & Demobilization		5%		\$98,361
Subtotal				\$2,104,934
Contingency		35%		\$736,730
Opinion of Probable Construction Cost (rounded)				\$2,850,000
Easement		5% of OPCC		\$143,000

¹ Although originally considered as a 5-year development project, it was determined that this project was unlikely to occur in the 5-year planning horizon and consequently shifted to the 20-year planning horizon.

B6 – Annual Funding Requirements for City Water CIP Projects (2020 – 2042)

Project Names	Planning Start Year	Design Start Year	Construction Start Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
C5-14	2021	2022	2022	\$ -	\$ 67,000	\$ 844,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C5-12C	2021	2022	2023	\$ -	\$ 5,000	\$ 5,000	\$ 53,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C20-2B	2021	2022	2023	\$ -	\$ 339,000	\$ 185,000	\$ 1,740,500	\$ 1,740,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
NCS-2	2022	2023	2024	\$ -	\$ -	\$ 30,000	\$ 30,000	\$ 347,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C5-12B	2022	2023	2024	\$ -	\$ -	\$ 26,000	\$ 26,000	\$ 294,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
W5-1	2022	2023	2024	\$ -	\$ -	\$ 680,000	\$ 371,000	\$ 2,324,333	\$ 2,324,333	\$ 2,324,333	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
NCS-1	2024	2025	2026	\$ -	\$ -	\$ -	\$ -	\$ 195,000	\$ 195,000	\$ 1,836,500	\$ 1,836,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C5-1	2025	2026	2027	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 34,000	\$ 34,000	\$ 389,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C5-2	2025	2026	2027	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 51,000	\$ 33,000	\$ 378,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C5-13B	2025	2026	2027	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 27,000	\$ 27,000	\$ 315,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C5-13A	2025	2026	2027	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ 20,000	\$ 231,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C5-12A	2025	2026	2027	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 22,000	\$ 22,000	\$ 252,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
E5-5	2026	2027	2028	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 42,000	\$ 27,000	\$ 305,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
E5-2C	2026	2027	2028	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ 13,000	\$ 147,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
E5-2A	2026	2027	2028	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 31,000	\$ 20,000	\$ 231,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
E5-2B	2026	2027	2028	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 56,000	\$ 36,000	\$ 410,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SC5-1	2026	2027	2028	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 13,000	\$ 13,000	\$ 147,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C20-3	2027	2028	2029	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 240,000	\$ 131,000	\$ 1,226,500	\$ 1,226,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
W20-1	2027	2028	2029	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,082,000	\$ 541,000	\$ 3,056,750	\$ 3,056,750	\$ 3,056,750	\$ 3,056,750	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
E5-6	2027	2028	2029	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 152,000	\$ 152,000	\$ 1,424,000	\$ 1,424,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C20-1	2027	2028	2029	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 232,000	\$ 232,000	\$ 2,181,000	\$ 2,181,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C20-4	2028	2029	2030	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 32,000	\$ 32,000	\$ 368,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SE5-1	2028	2029	2030	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 19,000	\$ 19,000	\$ 221,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SC5-9	2029	2030	2031	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 130,000	\$ 71,000	\$ 661,500	\$ 661,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
E5-3	2029	2030	2031	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 142,000	\$ 142,000	\$ 1,333,500	\$ 1,333,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
E20-1	2030	2031	2032	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 66,000	\$ 66,000	\$ 616,500	\$ 616,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
E20-2	2032	2033	2034	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 66,000	\$ 66,000	\$ 616,500	\$ 616,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C20-5	2034	2035	2036	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 27,000	\$ 27,000	\$ 315,000	\$ -	\$ -	\$ -	\$ -	\$ -
W20-2	2036	2037	2038	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,234,000	\$ 617,000	\$ 3,486,250	\$ 3,486,250	\$ 3,486,250	\$ 3,486,250	\$ 3,486,250
C20-2A	2037	2038	2039	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 387,000	\$ 211,000	\$ 1,983,500	\$ 1,983,500	\$ 1,983,500	\$ -
SE5-2	2038	2039	2040	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 44,000	\$ 44,000	\$ 504,000	\$ -	\$ -
C20-6	2039	2040	2041	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 16,000	\$ 16,000	\$ 179,000	\$ -
Grand Total				\$ -	\$ 411,000	\$ 1,770,000	\$ 2,220,500	\$ 4,900,833	\$ 2,673,333	\$ 4,458,833	\$ 5,216,500	\$ 2,347,000	\$ 8,211,250	\$ 8,756,250	\$ 5,117,750	\$ 5,734,250	\$ 682,500	\$ 643,500	\$ 643,500	\$ 1,549,000	\$ 1,004,000	\$ 3,741,250	\$ 5,529,750	\$ 5,989,750	\$ 3,665,250

¹ Refer to 5- and 20-year recommended improvements map in Section 5 for project locations

² Construction span was set based on total CIP cost estimates per project: \$10M – 4 years, \$5M – 3 years, \$1M – 2 years, < \$1M – 1 year

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Appendix C

Stakeholder Engagement

The following technical memorandum explains the methodology for stakeholder engagement factored in during the development of the WTDMP.



Memorandum

To: Dan Moore, P.E., City of Greeley

*From: Shilpa Shivakumar, P.E., PMP
Jacqueline Wesley, P.E.
Ryan Keliher, EIT
Erin Walsh, EIT*

Date: February 19, 2021

*Subject: City of Greeley Water Transmission and Distribution Master Plan (WTDMP)
Technical Memorandum: Stakeholder Plan (DRAFT)*

The City of Greeley (“the City”) has contracted CDM Smith to update their water, sewer, and non-potable water master plans. The Water Transmission and Distribution Master Plan (WTDMP) will help the City provide potable water to all residents of Greeley and support larger development goals within the City. To understand regional trends and develop creative solutions, CDM Smith coordinated stakeholder engagement meetings between the City and regional stakeholders of surrounding municipalities. These meetings discussed population growth projections, future water demands, and water infrastructures needs so that of the City could integrate such information and regional stakeholder needs into the WTDMP.

This technical memorandum (TM) presents key regional stakeholders and their relationship to the City, the methodology for stakeholder engagement, summaries from individual stakeholder meetings and stakeholder RWs, and how such takeaways from the stakeholder engagement process were considered and/or integrated into the City’s WTDMP.

The purpose of the stakeholder engagement process was to involve local communities in the City’s WTDMP and to collaborate on regional options that benefit the area in planning for future growth. The stakeholder engagement process allowed the City to share information and consider future opportunities in which various stakeholders could support planned growth and development in the region. This stakeholder process was intended to help form a collaborative environment with the identified stakeholders. An overview of key goals is outlined below:

- Learn current estimates of population growth projects for regional stakeholders within 5-year, 20-year, and buildout planning horizons and consider resultant water demands for each planning horizon.
- Discuss regional stakeholder water infrastructure challenges and needs.

- Provide regional stakeholders with overview of the City’s WTDMP to facilitate discussion of identifying regional needs between the City and stakeholders. From discussion, come up with regional solutions to meet future water demand projections.

This TM is divided into the following sections:

- Key Stakeholders
- Level of Stakeholder Engagement
- Approach to Stakeholder Engagement
- Regional Solutions Summary
- Integration of Regional Stakeholder Needs into Master Plan

Key Stakeholders

The key stakeholders were identified based on their current system connections with the City, proximity to City boundaries, and historical interest in opportunities for shared service. For many of the stakeholders, the City has an intergovernmental agreement (IGA) in place. These includes potable water service IGAs with North Weld County Water District (North Weld), Windsor, and Garden City.

Level of Stakeholder Engagement

Stakeholder engagement tends to vary depending upon the interest of the stakeholders, potential impact on their customers and systems, and ability to contribute to the project. **Figure1** illustrates various levels of stakeholder engagement that can be achieved depending upon overall goals and objectives ranging from simply being informed to being fully a part of the decision-making process.

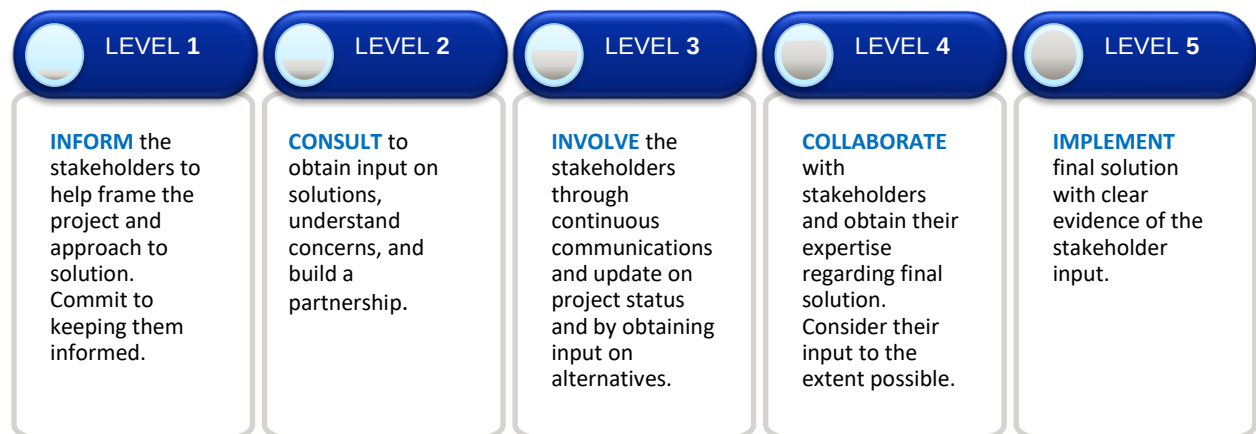


Figure 1. Stakeholder Engagement Levels

Stakeholder planning defines the existing level of engagement for each stakeholder then develops a plan to reach the desired level of engagement. The existing level of engagement is subjectively determined by considering how active and informed each stakeholder is about the WTDMP and associated infrastructure and how much interest they have historically shown in partnering with the City for services. Stakeholders who have an existing IGA tend to be more informed than those who do not have an existing agreement in place. The perceived existing level of engagement and the City's desired level of engagement for each stakeholder is shown in **Table 1**.

Table 1 - Stakeholder Existing and Desired Level of Engagement

Stakeholder	Level of Engagement	
	Existing	Desired
Evans	1: Inform	5: Implement
Kersey	1: Inform	2: Consult
Johnstown	1: Inform	2: Consult
Windsor	2: Consult	5: Implement
Milliken	1: Inform	2: Consult
Elco	1: Inform	2: Consult
Severance	1: Inform	2: Consult
Eaton	1: Inform	2: Consult
Loveland	1: Inform	2: Consult
North Weld	1: Inform	2: Consult

To keep stakeholders engaged and aligned, it is important to recognize that they each can provide meaningful input in the WTDMP development and ensure that they are provided the opportunity to comment on regionalization and collaboration opportunities.

Approach to Stakeholder Engagement

The stakeholder plan to reach the desired level of engagement has common elements for each stakeholder: communications about ongoing master planning, sharing of information to and from the stakeholders about potential areas of collaboration, and discussion about the path forward to achieve regional or partnering projects. This was accomplished through one-on-one meetings with some stakeholders, workshops with all stakeholders, and individual outreach as required to achieve the engagement goal. CDM Smith did not participate at all the one-on-one stakeholder meetings held in 2019, only the ones shown below.

One-on-One Meetings

Milliken (meeting on June 24th, 2019)

During the one-on-one meeting between the City and Milliken, Milliken's water rates, challenges, and future needs were discussed. Specifically, Milliken shared that it needed to update its rate model and that it may need up to 650 acre-feet per year (AFY) of water from the City and/or Weld

County in the future, although it is currently connected with Central Weld County. Milliken brought up the following challenges: (1) Although two years ago, Milliken requested an additional connection to the Gold Hill Line which is operated by the City, the pressure of 20 pounds per square inch (psi) is insufficient to include an additional connection. (2) Milliken has rights to treat its water at the City's Boyd Lake water treatment plan (WTP); however, the plant does not operate year-round and Milliken does not currently have access to the plant. As solutions to these issues, it was discussed that the City's 19 & 37 subdivision could serve water to Milliken and that the City could transfer Farmstead to Milliken. In response, the City requested that Milliken determine water demand projections for the town's future needs, maps of probable growth areas, timing of future connections, expectations desired for connections with existing water meters, and Milliken's Comprehensive Plan Map.

Kersey (meeting on July 29th, 2019)

During the one-on-one meeting between the City and Kersey, Kersey's current water demands, future needs, and solutions were discussed. Currently, Kersey has water and sewer service lines up to the Cache de la Poudre River and is growing towards the southeast and east with the area served by United Water. Additionally, Kersey has single source for water from CBT and Windy Gap and is interested in potential back-up water service connections from the City south of US 34 and County Road 49. The following potential solutions were discussed: (1) A back-up connection from North Weld via a 2" agricultural line, although such a connection could not serve as an emergency back-up connection. (2) Connection to the City via a 16" line from Greeley-Weld County Airport, although the City has not established many lines by the airport. (3) Connection to Evans with an emergency service line. (4) North Weld although the town has made changes to their housing rates structure limiting development. Kersey and the City will continue discussing which opportunity seems most feasible as Kersey expands.

Windsor Meeting No. 1 (meeting on July 31st, 2019)

During the one-on-one meeting between Windsor and the City, the two parties discussed water-related topics and action items. Specifically, Windsor is a part of the Northern Integrated Service Plan (NISP) and will receive its water supply from NISP in the future. Additionally, the City and Windsor are negotiating Windsor serving the Oklahoma District (located by Highway 34) as miscellaneous residential connections would transfer to Windsor when the development area is complete. Finally, several private properties were connected to the City's water transmission line (located by Windsor), although private wells providing water to the properties were no longer functioning properly. As a future action item, the City would like Windsor's support as it removes such tie-ins from the main water transmission line passing through the area.

Windsor Meeting No. 2 (meeting on November 11, 2020)

In the follow-up one-on-one meeting between the City and Windsor, the following points were discussed: (1) projected potable requirements for Windsor, (2) water storage, and (3) connecting transmission lines and water treatment between the City and Windsor.

Specifically, Windsor is expecting its potable demands to increase at a minimum by 8% to 9% per year but projections are estimated to be higher once it completes its water transmission and distribution plan. The City proposed having a storage tank(s) towards the southwest of the Windsor to accommodate shared storage, as this area is expected to experience future population growth with opportunities for transmission line connection as long as water storage does not occur in residential areas. However, Windsor is interested in sharing water storage at Gold Hill. Likewise, Windsor proposed having its own 5,000-gallon storage tanks that it could share with other stakeholders towards the south of Windsor or north such as with Loveland. Regardless, maintaining pressure within the water distribution lines is a priority. For example, having 150 psi in pipes along the river bottom and 35 to 40 psi at the bottom of the storage tanks would suffice. Regarding transmission lines, Windsor is expecting to add 4,200 ft of transmission line by 2023 while adding three miles to connect to Boyd Lake WTP within the next 10 years. Potential transmission connection areas could be at Southgate with Zones 33 or 34 as potential storage and connection points.

Eaton (meeting on July 31st, 2019)

During the one-on-one meeting between Eaton and the City, Eaton discussed how it is looking for an additional emergency water connection that could be supplied from the City; however, no location was identified. Currently, Eaton has only one emergency connection with North Weld. In response, the City suggested that a new transmission line on County Road 33 which feeds the City's west tank could supply Eaton; however, Eaton would need to provide the base demand size for the potential emergency connection in order to make such consideration more feasible.

Evans (meeting on November 11, 2020)

In the one-one-one meeting between the City and Evans, several topics were discussed including Evan's new water transmission and distribution master plan, current construction, projected flows, water storage, collaboration, and water treatment.

Specifically, the City is incorporating changes into its WTDMP such as the updating of its Centennial Park which may affect water distribution to Evans. Consolidating master meters to Evans may help alleviate issues, although the planning horizon projections for the next five to 20 years by Evans is unknown at this time. Additionally, Evans also noted that they are growing to the west which would mean the City should expect increased water demands in that region in the future. Regarding water storage, Evans is considering renting or buying water storage from the City although the City is not planning to increase its water storage until the next 10 years; however, the City is considering resizing its reservoirs at 23rd Avenue and Gold Hill. The City shared that billing rates to Evans would increase for peak use periods although getting storage could negate that charge. Another solution by Evans was creating its own storage tank out west on the hill or west of Twin Rivers, although increased water storage is a goal, not a current need. Evans agreed to share their pressure zone boundaries with the City to make sure that both boundaries align and to help determine pumping needs. The pressure zone boundaries included 35th Avenue at Freedom Park to 77th avenue, 65th to Twin Rivers, and O St. and 54th St. Regarding the Boyd Lake WTP, the City plans on

wintering it soon and adding a chemical building such as ozone treatment which could help distribute additional water supplies to Evans, although serving Evans from Boyd Lake WTP may be cost-prohibitive.

Regional Workshops

The City conducted a series of regional workshops (RWs) with all stakeholders, to provide a forum for discussion between all stakeholders and allow them to talk about their current water systems, highlight future population growth needs, and collaborate on potential solutions with other stakeholders. The City served as the primary point of contact with stakeholders and CDM Smith functioned in a technical support role by providing meeting materials, presentation, and coordination.

Regional Workshop Number One (RW No. 1) focused on identifying regional solutions to address population growth and resulting increasing water demand which included upgrading existing WTP and water storage capacity, securing service area and emergency connections, expanding non-potable water use, meeting additional water quality regulations, and maintaining qualified WTP operators. During the workshop, participants brainstormed ways to consolidate or provide services with other stakeholders. The follow-up Regional Workshop Number Two (RW No. 2) provided a summary of takeaways brought up during RW No. 1, shared an overview of the City's WTDMP, and discussed in more detail regional service options which needed more input to develop practical solutions.

Regional Workshop No. 1 Current Status

RW No. 1 began with each stakeholder providing an update of their current status, as described in this section.

The City of Greeley

The City hosted RW No. 1 to build interactive cooperation and increase resilience between stakeholders through regional partnerships. The City wanted to discuss the following points: (1) water quality, (2) water staff, and (3) improving future capacity and expansion. The City's population is expected to grow annually by 2.5% to 261,000 by 2065 just in its metropolitan area and planning to expand its drinking water production and service capacity out to its borders is a major concern. Currently, the City's population consumes a base demand of 14 to 15 million gallons per day (MGD) in the winter and 50 MGD in the summer. The City's transmission lines go through other districts. Because there are shared customers between the City and other stakeholders, the City is interested in collaborating with stakeholders to ensure that the relevant entity has the capacity to properly serve these customers. Additionally, the City is looking for opportunities to train new staff to work at its WTPs. The City is developing a program with AIMS Community College to train and recruit WTP operators. The City hopes to use conservation to limit the increase of water demands by using non-potable water for agriculture, city greenery, and private entities. The City's Bellvue WTP has expansion capability to help address growing water demands.

Windsor

In the RW No. 1, Windsor brought up concerns for its rapid growth towards the north—approximately 9% annually with a future population of 60,000. Windsor is addressing its rapid growth through transfer of water demand to non-potable water demand. It is looking to acquire public non-potable pumping systems and continue using dual use potable and non-potable water systems to help meet its growing water demand. Additionally, Windsor is interested in sharing its potable and non-potable water distribution lines, emergency connections, and storage facilities with other stakeholders and the City. For example, Windsor will soon build a water storage tank that could be shared with other stakeholders for water service distribution needs. Windsor is participating in the NISP. Its base flow (average daily flow) is 1.3 to 1.4 MGD, with winter demands of 1 to 2 MGD and summer (max day) demands of 4 MGD.

Loveland

In the RW No. 1, Loveland discussed needs for addressing population growth. With a current population of approximately 78,000, Loveland is planning for a population of 140,000 with a projected 180,000 population at buildout. Loveland's WTP has a capacity of 38 MGD but can be expanded to 46 MGD. Its current peak day flow is 27 MGD, with interconnections between Fort Collins and Loveland Water Districts. Additionally, Loveland is looking for partnership to help address water demand needs. Loveland is considering forming interconnection ties with the City to get water to its citizens during peak conditions (from the City's Boyd Lake WTP or Little Thompson Water District). However, Loveland's water rights are not fully used, including those from Chimney Hollow Reservoir, and it has 4 to 6 million gallons (MG) of spare storage capacity. Johnstown in particular could potentially be served by Loveland. Loveland does not use non-potable water to help decrease water demand. It is planning to have a water quality lab that can evaluate water samples for secondary standards (odor and taste).

Johnstown

In the RW No. 1, Johnstown addressed its concern for population growth in the north and west and expanded WTP capacity needs. Currently, Johnstown's population is projected to grow at an annual 5% growth rate to between 40,000 and 50,000 by 2050. With an average flow of 2 MGD and a peak flow of 5 MGD, the Johnstown WTP can increase by 15% capacity up to 10 MGD. While increased plant capacity will help address some growing water demand, Johnstown is also looking for alternatives such as gaining emergency supplies from Thornton off the new NISP pipeline, making existing temporary agreements with service from the Boyd Lake WTP, and using more non-potable water to decrease demand. Some demand constraints could be decreased by constructing a regional WTP and having Loveland be serviced by Hillsboro Lake WTP.

Severance

In the RW No. 1, Severance brought up increasing water demand needs from its projected growing population of 8,000 to 16,000 over the next three to four years, with a goal of serving 25,000 people in the future. The town's average daily flow is 1,000 AFY and its maximum daily flow is 1,000 gallons per minute (gpm). While the town has adequate water supplies for its current population and is participating in the NISP, Severance is concerned with supplying adequate water needs for current development prior to NISP integration and for areas not served by NISP, such as nearby the Soldier Canyon WTP. Additionally, Severance is aiming to draft a drought plan and is discussing how to treat water acquired from the NISP. Severance is interested in a five- to ten-year water lease.

Eaton

In the RW No. 1, Eaton discussed the town's growing population in the south and west, along with staffing issues. Currently Eaton only has one water service connection with North Weld but is looking for an additional emergency connection. Eaton uses non-potable systems and wells to supply some water demands. While Eaton is participating in NISP, all new developments will need to bring in their own water supplies.

Evans

In the RW No. 1, Evans is looking to serve its growing population of 21,000. It has concerns with its raw water supply, which only serves platted lots. Water comes from the City, but Evans is looking to reduce cost rates by increasing storage capacity. Evans is interested in sharing water storage and is looking for a backup and emergency water supply. The NISP will help alleviate water shortages, but Evans is concerned how the raw water will be treated. Evans has an outdated water plan that will need to be updated to address service areas, plan and develop growth, outline collaboration methods with the City, discuss water conservation, and be adequate for future water demands.

North Weld

In the RW No. 1, North Weld discussed its increasing water demand (8,000-acre feet to 16,000-acre feet by 2050) and lack of capacity on its water transmission lines and infrastructure as the town transitions from rural to urban communities. Currently, its WTP treats 40 MGD with expansion capacity to 65 MGD. North Weld has ties with Elco, Fort Collins, and Loveland Water Districts at Soldier Canyon WTP. Currently, it is concerned with drinking water quality pertaining to copper and lead contamination. North Weld is interested in learning more about non-potable water as it does not manage any non-potable systems currently.

Regional Workshop No. 1 Discussed Topics

During the RW No. 1, the stakeholders and the City concluded the following based on several categories pertaining to water:

Qualified Technical Staff

- Hiring qualified technical staff is an important priority as water demand increases across the City and stakeholders. The City is partnering with AIMS community college through internships to grow the local pool of future WTP operators.

Non-Potable Systems

- Many stakeholders, including the City, discussed non-potable water supplies as a viable method for meeting increased water demands. If collective non-potable infrastructure was to be constructed, trading between stakeholders and the City could increase currently treated drinking water capacity.
- Agricultural water from converted land is a main contender for non-potable use.
- Dual use potable and non-potable systems could be used to help meet increasing demand.
- The City will require stricter non-potable usage for future developments and several stakeholders will take over non-potable water management from homeowner associations (HOAs) to address water management needs.
- Stakeholders may be interested in a subcommittee on regional NP usage.

Water Storage

- Several stakeholders, including Evans, need additional water storage, while some stakeholders such as Windsor want to avoid adding additional storage near Gold Hill.
- While there is available water storage regionally, the City and stakeholders are looking to better collaborate on water storage capacity.
- The City could share storage north of the Poudre River.
- Loveland has underused storage tanks north of US 34 and Larimer County 3, which could help stakeholders including Johnstown.

Shared Infrastructure Funding and Grant Opportunities

- There are several opportunities to address aging and undersized infrastructure. For example, the Boyd Lake WTP is undersized. With potential improvements including ozone treatment in 2022 to 2023 and an updated capacity of 38 MGD handling 10 to 20 MGD in summer months, several stakeholders could benefit, including Evans.

Regional Drought, Water Supply, and Water Quality

- Several stakeholders such as Loveland may need another master water meter in the future to cover annual summer peaks.

- As water quality regulations continue to grow in stringency, upgrades to existing WTPs will be necessary.
- Main concern of water quality regulations focuses on trihalomethanes (THMs) and disinfection byproducts (DBPs). For some stakeholders, including North Weld, lead and copper are a concern.
- There is the opportunity for a regional water quality lab at the City or in Loveland by 2020, especially given that several stakeholders send water quality samples out of the region for testing, which presents problems. Sampling collaboration could be conducted.
- Several stakeholders, including Evans and Johnstown, desire developers to bring in water over cash-in-lieu supply.
- There is opportunity for technical subcommittees to help collaborate on treatment issues, while stakeholders and the City could conduct a regional drought study to understand when the Colorado River curtailment occurs and affects to the region.

Northern Integrated Supply Project

- While several stakeholders are participating in NISP, there is a gap between when the project will be integrated (in 10 to 15 years) and current growing water demand needs. Many short-term solutions are required.

Regional Workshop No. 2 Greeley WTDMP Overview

During RW No. 2, the City shared with other regional stakeholders an overview of its WTDMP five year, 20-year, and buildout planning horizons to provide the foundation for discussion on follow-up steps. Specifically, for its five year MP, the City discussed how its population growth is projected to move west towards Windsor and north of 10th St. while current development areas within the City will be filled in. For its 20-year and buildout planning horizons, the City was more uncertain as to where population growth would occur although the City emphasized that it would continue to expand northward.

RW No. 2 began with recapping highlights from RW No. 1, to build upon former discussions. Specific points brought up included water sharing by different stakeholders provided by the City's Boyd Lake WTP, emergency connections, non-potable water use, water storage sharing, and water meters. From there, the stakeholders had time to discuss their needs and goals, as described below.

Regional Workshop No. 2 Individual Community System Needs and Goals

During RW No. 2, there the City set aside time to bring up individual stakeholder needs and updates, shown in detail in the following sub-sections.

Johnstown

Johnstown shared that it is expanding its WTP from 5 MGD to 10 MGD and has a 1.5 MG elevated storage tank in the southwest; however, within the next 20 years, it expects its population to double in size and is looking for ways to distribute water to new development towards the north.

Evans

Evans shared that it is projected to increase its water demands to 2.72 MGD and 3.66 MGD in the next five and 20-year planning horizons, respectively. Currently, it receives its main treated water source is from Boyd Lake WTP which can give 2.45 MGD at most while Evans will receive 1.07 MGD of raw water from NISP once completed in the next five years. In the short-term, Evans is looking to increase its raw water portfolio from suppliers and gain additional storage facilities to reduce peak demand charges from supplies. Long term, Evans is looking to ensure transmission lines from NISP and build the necessary piping distribution networks to serve new development growth areas. In response, the City shared that it will follow up with Evans to learn where increased water demands are likely so that the City can accommodate future demands within the next five to 20 years as well as consolidate master meters. Growth is like to occur west of 47th Ave. and beyond Two Rivers Parkway at 37th St.

Kersey

Kersey shared that its population is projected to grow towards the south and west. It has no plans of designing or building new infrastructure soon besides replacing existing service lines; however, finding emergency connection source within the next five to ten years is important. Potential options include Central Weld or building a connection west towards Evans and the City. There are other water sources to the east and a good-sized water storage facility, but Kersey will have a better idea of its future water demand needs once it completes its comprehensive water plan in the near future.

Eaton

Eaton shared that it will have 25% population growth in five years and 100% population growth in the next 20 years. All its new developments will require non-potable water systems for irrigation. Future needs include another emergency connection although Eaton has difficulty finding one as there is not much development around it, future water storage, such as with North Weld, and re-evaluation of its master meter connections (currently one with North Weld). In response, the City shared how there may be the opportunity for potential shared storage towards the north of the City (North of the River area) which could benefit North Weld, Eaton, and the City.

Windsor

Windsor shared that it currently has rapid population growth towards the south and north parts of town, expecting to double in population by the next 10 years. Windsor is looking to increase its water supply acquisitions from Loveland and the City with 25% additional requirements needed

form Boyd Lake WTP. As a solution there was consideration for connection a master meter by Highway 35.

Regional Solutions

During RW No. 2, the City and stakeholders discussed several regional solutions pertaining to water storage opportunities, emergency connections, and non-potable use. Specifically, the City has 20 MG of water storage at Gold Hill and will increase the water storage within a 10-year planning horizon. The City commented that it could increase Gold Hill's water storage sooner if it had capital investment partners. For example, if Evans or Milliken were interested, each stakeholder could provide capital to help drive capital improvement plan prioritization towards building increased storage capacity for shared partnership. Otherwise, the City could build on its own needs and provide IGAs for later stakeholder collaboration. With regards to Eaton and Johnstown shared that they have one and three emergency connections, respectively. If needed, Johnstown could help provide an interconnection to help offset transmission needs in two to five years. Likewise, the 3 MGD emergency supply connection from Boyd Lake WTP may need to be expanded because of the fires near Loveland, CO. The WTP is working to avoid the need for major changes as it continues winterizing and improving taste and odor control. With regards to non-potable use, the City shared interest in collaboration with non-potable along its southern boundary if Evans saw the arrangement as agreeable and cost effective. Likewise, the City is interested in non-potable water north of the Cache de La Poudre River.

Several stakeholders emphasized their interest in obtaining water from the City's Boyd Lake WTP to help account for water demand growth as their respective populations increased. Additionally, the City shared how it has recently constructed emergency connections of 16 MGD between itself, North Weld, and Elco providing water flow between itself and the two other stakeholders. In response, Kersey brought up how it would like to continue conversations with the City and other stakeholders for potential emergency connections as its only current connection is with Central Weld. Challenges to emergency connections with other stakeholders pertain to the physical barriers of the South Platte and Cache de La Poudre Rivers.

Regarding non-potable water use, Windsor clarified that it is not considering changing its non-potable water systems from private to public but instead keeping them monitored by HOAs and the metro district. Likewise, Evans commented that it will require non-potable irrigation for new residential development managed by both the public and private – two thirds by public management and one third by private management.

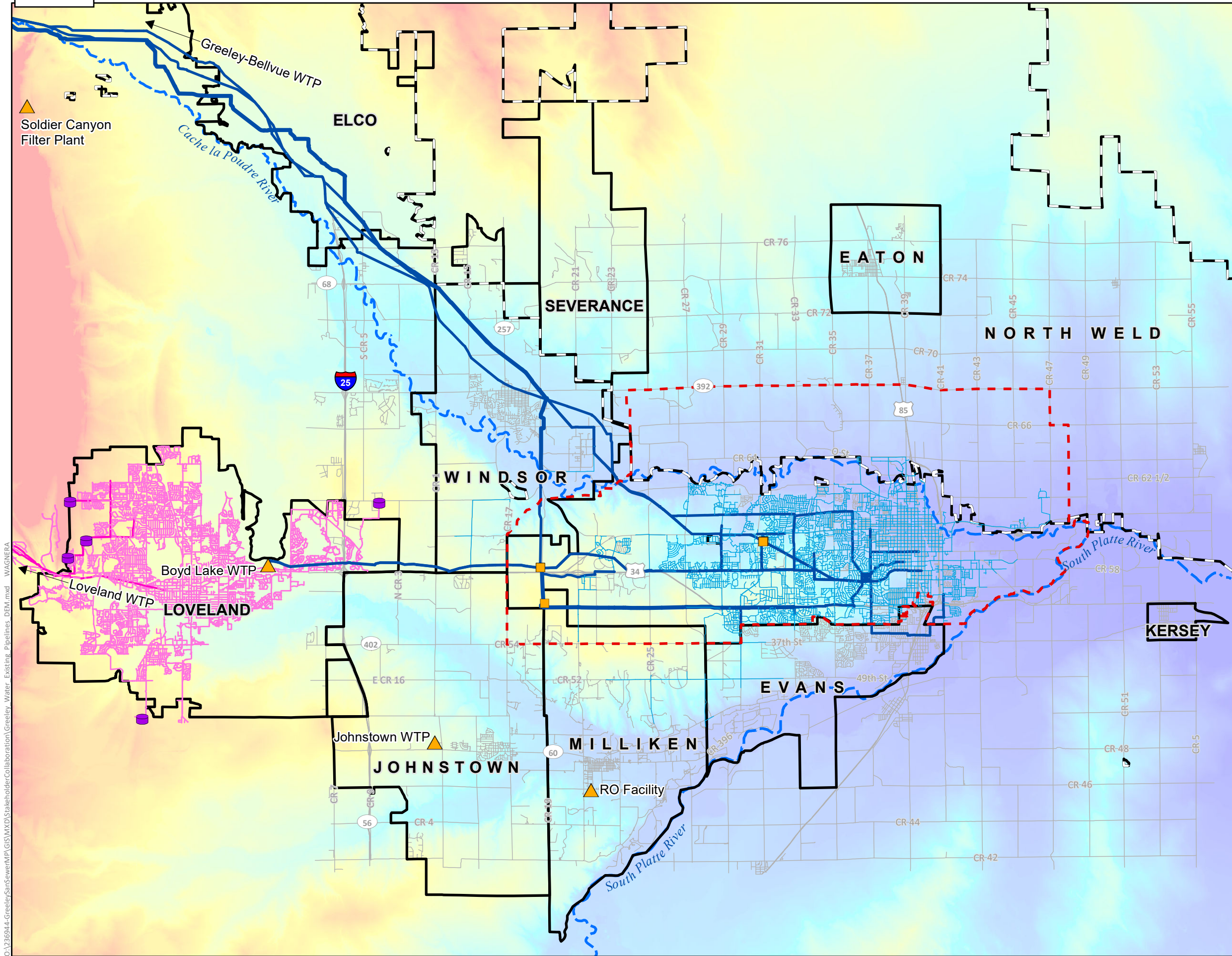
After reviewing the regional stakeholder map provided in RW No. 1, several stakeholders brought up discussion regarding transmission lines, master meters, and water storage. Specifically, Evans shared that it has a transmission line connection to the City through Gold Hill and 14 master meter connections total but is looking for water storage. In response, the City shared that it would be evaluating future water demands and locations to help optimize its water allocation with other

stakeholders. Both Milliken and Windsor shared interest in connecting to Gold Hill. Likewise, Johnstown mentioned that it has a master meter connection off Boyd Line.

Regional Solutions Summary

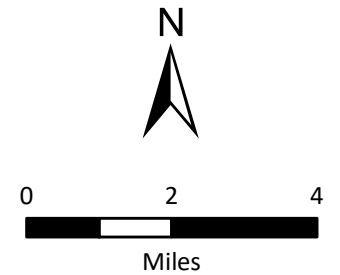
During the RWs, a map of the region and locations of WTPs, service lines, and water storage developments was provided, shown in **Figure 2**, to help stakeholders and the City to identify and develop potential regional solutions. Potential ideas/solutions pertaining to addressing growing water demands discussed at the RWs (and in summarized in prior sections) are all captured in **Figure 3**.

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City of Greeley Regional Stakeholders - Water

Greeley Water System Master Plan



Legend

- Water Treatment Plant
- Pump Station
- Stakeholder Water Tank

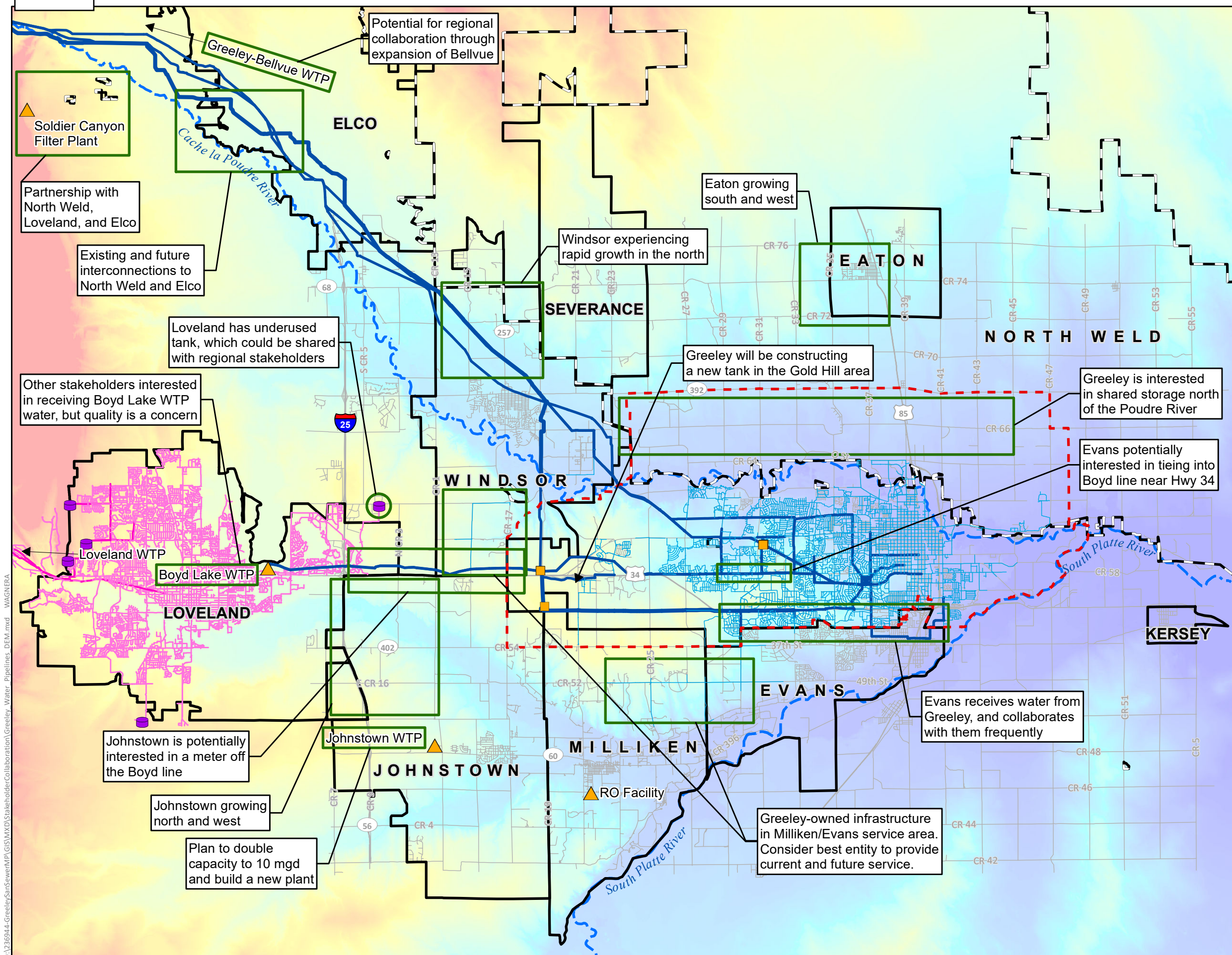
Water Mains

- < 20 in. diameter
- 20 - 40 in. diameter
- > 40 in. diameter
- Stakeholder Water Mains
- Greeley LREGA
- Stakeholders Boundary
- North Weld
- River

Elevation

- High : 6100 ft
- Low : 4566 ft

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City of Greeley Regional Stakeholders - Water

Greeley Water System Master Plan

N

0 2 4
Miles

Legend

- Water Treatment Plant
- Pump Station
- Stakeholder Water Tank

Water Mains

- < 20 in. diameter
- 20 - 40 in. diameter
- > 40 in. diameter
- Stakeholder Water Mains
- Greeley LREGA
- Stakeholders Boundary
- North Weld
- Notes/Potential Regional Collaboration
- River

Elevation

High : 6118 ft
Low : 4566 ft

City of Greeley
Great. From the Ground Up.

CDM Smith
January

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Integration of Regional Stakeholder Needs into Master Plan

Stakeholder information was integrated into the WTDMP in two ways: coordination of master meters, and considerations for shared storage in the North of the River area.

Based on conversations with regional stakeholders that already have master meters from the City, it was noted that many of them are experiencing rapid growth (at or above the City's growth rate). Although most of these stakeholders do not have set demand projections through the City's buildout planning horizon, an estimate of expected growth from current demands through the master meters was calculated based on City knowledge of regional growth. **Table 2** summarizes these demands.

Table 2 - Stakeholder Demand Projections

Stakeholder	Existing Demands (gpm)	2025 Demands (gpm)	2040 Demands (gpm)	Buildout Demands (gpm)
Evans	1,700	2,000	2,300	4,600
Milliken	7	8	10	20
Windsor	1,700	2,100	2,500	5,300

Additionally, future collaboration with North Weld was considered for the buildout scenario. The current IGA was reviewed in greater detail to determine the expected peak month flowrate that the City is expected to take from North Weld. Although the exact location, timing, and demand of future master meters requires continued collaboration between the two parties, this appears to be a promising solution that would alleviate low pressures in the North of the River area. On top of master meters, there is a potential to collaborate with North Weld in constructing a new reservoir in the North of the River area (Zone 2 North). Buy-in from regional stakeholders makes this project more feasible.

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Appendix D

Non-Potable System Demands

The following technical memorandum explains the methodology for producing non-potable system demands for the hydraulic model, as discussed in **Section 2**.



Memorandum

To: Terry Farrill, P.E., City of Greeley

From: Shilpa Shivakumar, P.E.

Carl Lundin, P.E.

Erin Walsh, EIT

Date: November 12, 2020

*Subject: City of Greeley Non-Potable Water Master Plan
Technical Memorandum 2 – Demands and Economics (DRAFT)*

The City of Greeley (“the City”) has contracted CDM Smith to update their water, sewer, and non-potable water master plans. The non-potable water master plan (NPWMP) will help the City provide untreated irrigation water to large turf areas, which will preserve potable water for other uses, reduce treatment costs for the Water Department, and lower the irrigation cost for customers. In order to plan for the future non-potable needs of the City, existing and future demands were established, and analysis was completed related to economic feasibility of future expansion. The demands established will be used in the water transmission and distribution master plan (WTDMP) to show how potable water demand can be lowered by meeting demands that do not require potable water quality with non-potable water (e.g., irrigation or construction).

The purpose of Technical Memorandum 2 (TM 2) is to:

- Examine existing non-potable demands to establish patterns of use and sources of variability
- Establish methods for estimating economic feasibility for expansion of the system to assist the City in determining the most effective way to sustainably promote non-potable usage
- Calculate and allocate future demands within the Long Range Expected Growth Area (LREGA) based on expected adoption rates, projected potable water demands, and expected conversion areas

This TM is divided into the following sections:

- Existing System Demands
- Future Usage and Demand Projections
- Demand Estimates by Planning Horizon

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■ Economic Feasibility for Future Projects

Existing System Demands

The first step in allocating demands in the non-potable water model is to examine how the City currently uses non-potable water. Non-potable water is currently used mostly for irrigation, although it may be possible to expand the system so that it can meet some other demands that do not require potable service, such as construction. Information on non-potable demands was primarily found in the billing data and GIS data, as discussed in TM 1.

Review of Billing Data and GIS Data

In TM 1, existing irrigated areas were examined in GIS and existing billing data was geolocated and categorized by customer type. Through this process, 99.3% of the total non-potable demands from the 2019 billing data were allocated to a geolocated meter. Additionally, the City requested that one “customer” be removed from the total, as it is a shoulder tap that feeds other billed customers.

Table 1 summarizes the billing customers and their associated demands by the category assigned by the City. Categories were subsequently adjusted to match water and sewer customer categories.

Table 1 - Categorized Billing Customers

Customer Category	Number of Customers	Total Annual Consumption ¹ (1,000 gal)	Percentage of Total Consumption
Church/Commercial	1	3,578	0.7%
Commercial	37	39,354	7.6%
Golf Course	5	187,859	36.5%
HOA	14	31,292	6.1%
Non-Potable	1	442	0.1%
Parks	20	146,157	28.4%
Residential	3	25,675	5.0%
Residential or HOA	1	841	0.2%
School	13	79,306	15.4%
Total	96	514,503	

¹ Average of 2018 and 2019 billing data

Pumping data was used to supplement billing data in irrigated areas that did not have an associated meter. **Table 2** contains the pumping data for these areas.

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Table 2 - Pumping Data

Pump Name	Pumped Peak Month Demand ¹ (1,000 gal)
Greeley West Park	744.6
Cottonwood Park	719.2
Bittersweet Park	4,585.2
Sanborn Park	2,783.0
Josephine Jones Park	1,101.6
Delta Park	712.3
Glenmere Park	1,400.7
Linn Grove	8,327.9
Balsam Sports	2,170.7
Saddle Club	68.8
Island Grove	3,459.2
Island Grove Ball Field	3,300.3

¹ Average of 2018 and 2019 recorded pumping data

Variability in Demand

Non-potable demands are much more irregular than potable water and wastewater demands. In particular, they are largely influenced by seasonal weather patterns, as most non-potable water is used for irrigation. In general, non-potable demand is highest in the summer and lowest in the winter. Both potable and non-potable demands were allocated based on summer usage.

However, these seasonal variations do not account for year-to-year variability. This variability is shown in **Figure 1**, where consumption based on billing data can almost double in certain years.

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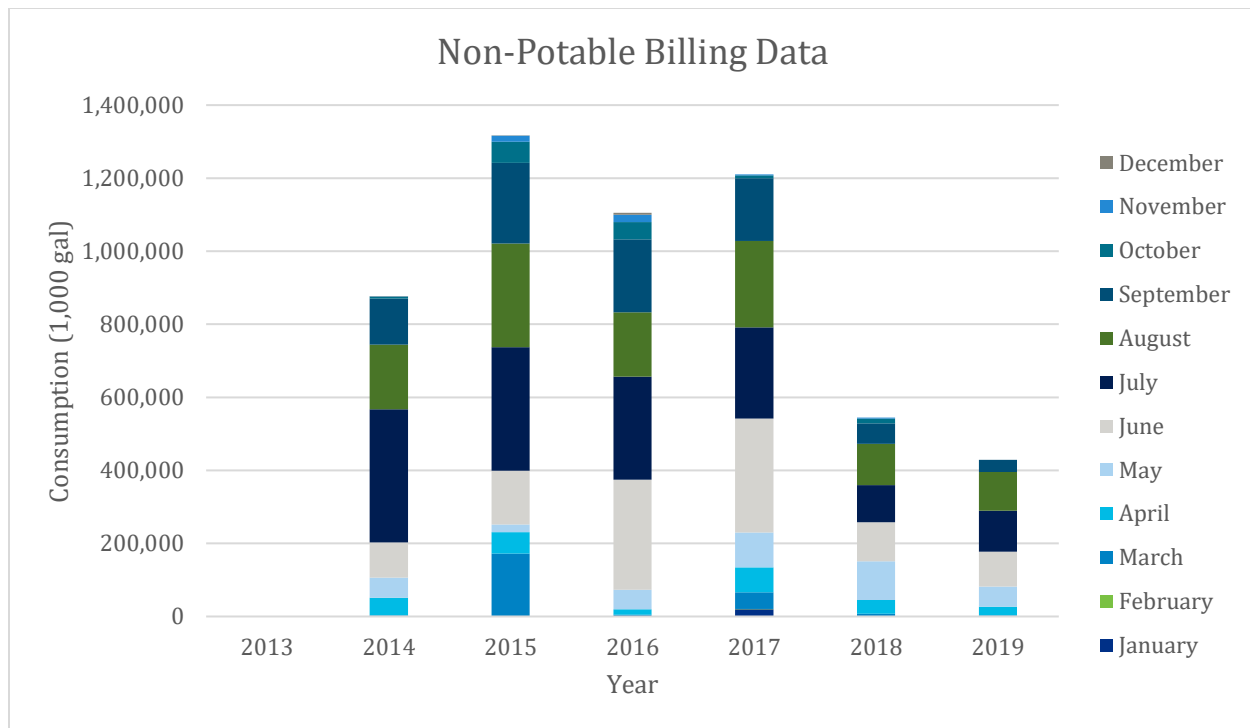


Figure 1 - Variability in Annual Non-Potable Demand

Based on discussions with the City, it was determined that the annual variability was due to increased conservation efforts, especially the installation of water-efficient irrigation systems throughout the parks. To account for these changes, only billing data from 2018 and 2019 will be used in this master plan.

Flow Factor Development

The historic billing data and current non-potable irrigated areas shapefile were coordinated to produce flow factors by customer category. These flow factors can then be used to estimate future non-potable demand scenarios through 2075 based on land use projections established during the WTDMP.

Flow factors were calculated based on conversations with the City's non-potable (NP) operator to examine which areas were irrigated by which meters. The meters (and their associated area) had been previously categorized by the City, which was the basis for the flow factor categories. The total billed consumption by category was divided by the total irrigated acreage by category. This supplied the Irrigated Land peak month flow factor, as shown in **Table 3**. These values represent the amount of consumption for a site where the exact acreage being irrigated is known.

However, in undeveloped areas, the exact irrigated acreage is not known. To account for this, the percent of land that is irrigated out of a total parcel was established by category. The total irrigated

land by category was divided by the total (bulk) parcel by category. These resulted in a Bulk Land peak month flow factor, also shown in **Table 3**. This process is illustrated in **Figure 2**.

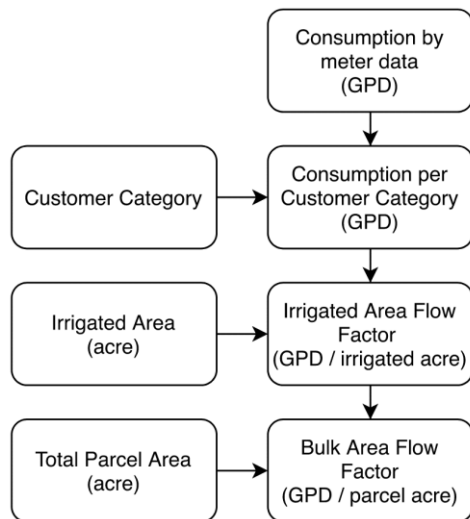


Figure 2 - Flow Factor Calculation

These customer categories were coordinated with the WTDMP land use projections to examine areas throughout the LREGA. Generally, the HOA category was associated with R-H land use category, the Residential customer category was associated with R-M, R-L, and R-E land use categories, and the Commercial customer category was associated with C-H and C-L land use categories. However, because the existing NP system serves a limited number of areas, this process did not fully account for all types of land use within the City. The following changes were included in the final flow factors:

- Some land use types in the City do not currently have any examples of NP irrigation. This includes I-L, I-M, and R-E areas. For these areas, a flow factor was based on the difference between the summer and winter flow factors (developed in the WTDMP and SSMP, respectively).
- Because schools are zoned as R-L, the R-L flow factor was based on a combination of the “Residential” and “School” flow factors.
- Because churches are considered commercial, the “Commercial” flow factor also includes churches. The “Church” category is used for conversion areas only. There are not many churches currently served by NP irrigation, so the “Church” flow factor also looks at existing churches that are only served by potable and compares summer vs. winter demand to determine an estimated flow factor.

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Losses due to evaporation/seepage were not included in these calculations, as they primarily occur in the ponds and ditches rather than in the distribution system. These losses are estimated at 30%, based on operator knowledge, and are necessary for determining non-potable supply.

Table 3 - Flow Factors

Category	Description	Peak Month Flow Factor for Irrigated Land (gpd/ac)	Percent Irrigated	Peak Month Flow Factor for Bulk Land (gpd/ac)	Peak Month Flow Factor for Irrigated Land (in/week)	Annual Flow Factor for Irrigated Land (in/yr)	Adoption Rate ²
Parks	Parks (NP category only)	3,500	47%	1,600	0.9	19.1	90%
Golf Course ¹	Golf course (NP category only)	5,000	87%	4,400	1.3	27.3	N/A
Commercial	C-H and C-L; includes churches	3,200	42%	1,300	0.8	17.5	20%
I-L	Industrial Low; Summer vs. winter flow factor	N/A	N/A	500	N/A	N/A	20%
I-M	Industrial Medium; Summer vs. winter flow factor	N/A	N/A	125	N/A	N/A	20%
Multifamily HOA	R-H	4,400	34%	1,500	1.1	24.0	15%
School	For conversion areas only	4,300	48%	2,100	1.1	23.5	75%
Church	For conversion areas only	2,000	63%	1,300	0.5	10.9	75%
Residential	Single family residential; also used for R-M	5,200	17%	900	1.3	28.4	20%
R-L	Residential Low; Residential and School average flow factor	4,700	26%	1,200	1.2	25.7	20%
R-E	Residential Estate; Summer vs. winter flow factor	N/A	N/A	80	N/A	N/A	15%

¹ No additional golf courses are expected in Greeley through Buildout

² Adoption rates based on Milton-Siemen report; see "Adoption Rates" section of this TM

Future Usage and Demand Projections

Using a combination of the City's planning data, land use projections from the WTDMP, and flow factors developed during the existing demands allocations, future non-potable demands through the buildout scenario were projected and allocated. This section captures the assumptions and calculations used to arrive at this value.

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Adoption Rates

CDM Smith proposed three different adoption rates (high, medium, and low), as summarized in **Table 4**. The “medium” adoption rate was selected as the most likely scenario and was used when evaluating future development and conversion areas (infill). In all scenarios, it is assumed that all future and existing parks will use NP irrigation by 2075.

Table 4 – General Adoption Rates

Adoption Rate	Infill	New Developments
High	Strong encouragement for conversion; 50% of irrigation converted by 2075	Mandated adoption of NP for all irrigation uses
Medium	Passive encouragement for conversion; 20% of irrigation converted by 2075	Mandated adoption of NP, unless economic infeasibility is proven
Low	Passive encouragement for conversion where existing lines are located	Allowable; assume 50% of economic feasibility

The BBC-RAS report summary (2019) projects water demands for an assumed buildout year of 2065 under three scenarios: middle, high, and low. It was decided based on conversations with the City that the middle projection represents the most likely demand scenario, as recommended in the report. Notably, the medium scenario for total water consumption produces the highest non-potable consumption. This document included total projected demand at five-year increments and likely adoption rates per customer type, as shown in **Table 3**. These values will be applied to the future demands to get a more realistic picture of how much of the City will use NP irrigation.

Infill and Conversion Areas

As the NP system expands, it may become feasible and beneficial for some areas that are already developed to convert from potable to NP irrigation. These areas, referred to as conversion areas, were identified by the City based on knowledge of the individual customers and their current usage. The City identified over 400 individual areas that could be eligible for NP conversion. These areas were then categorized to identify which flow factors best fit them. The total acreage expected to convert to NP by category is summarized in **Figure 3** and shown in **Figure 4**. Areas that were identified as undeveloped land, roads, or non-irrigated areas were not included in the categorization, as undeveloped land is captured in the demand projections for undeveloped land, and roads (medians) are too small to be accurately categorized.

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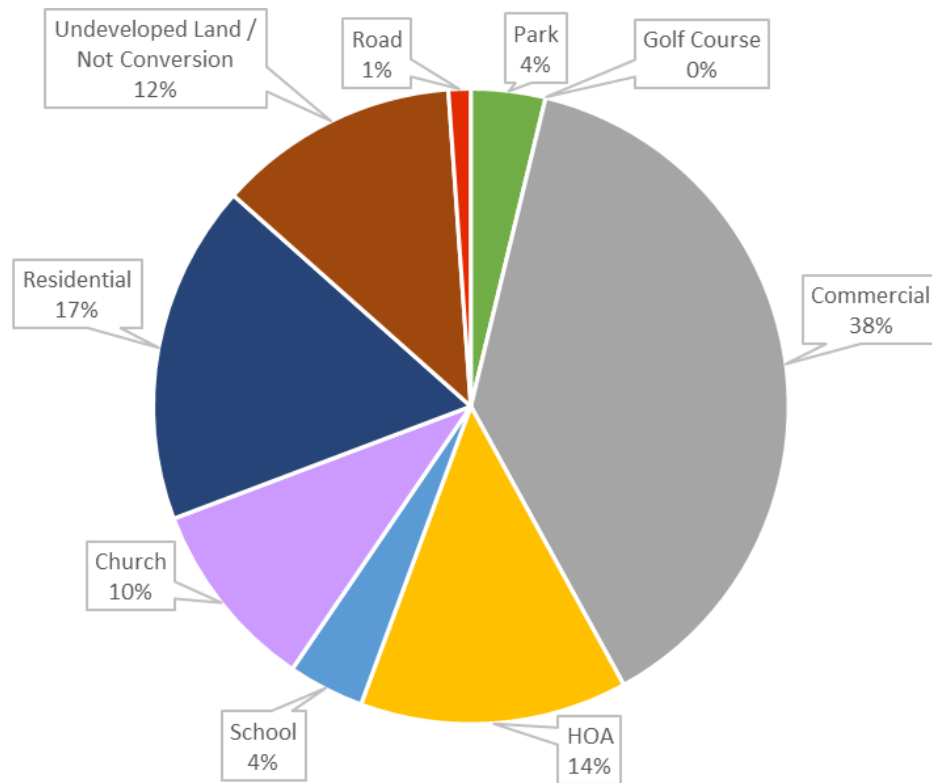
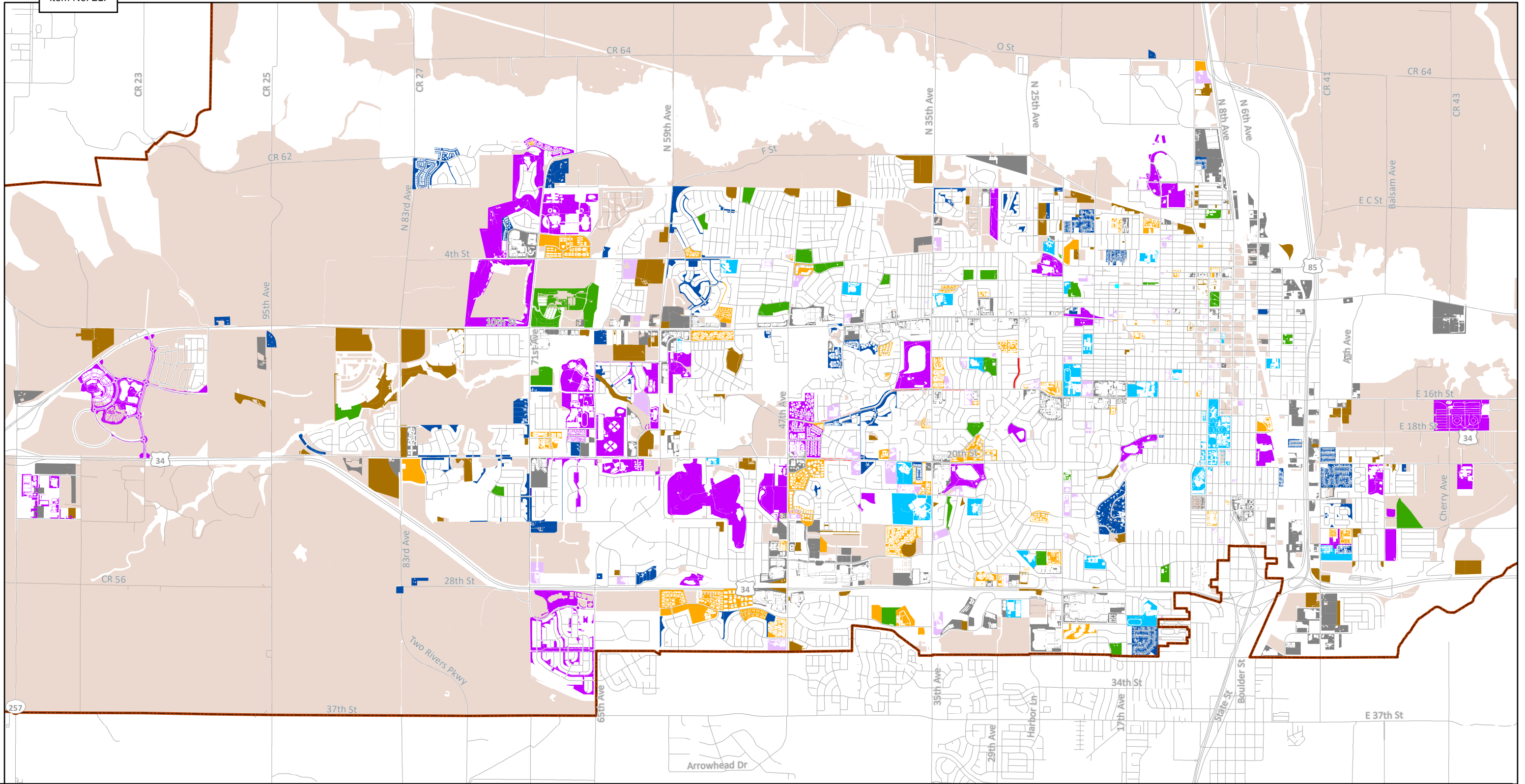


Figure 3 - Conversion Area Categorization by Acreage

The conversion areas represent irrigable land. Therefore, the irrigable land flow factor was applied to each area for its category. Based on conversations with the City, it is not expected that all of these areas will convert to NP. Inclusion on this list means potential conversion, not a requirement. To account for this, the adoption rates were also applied to these areas.

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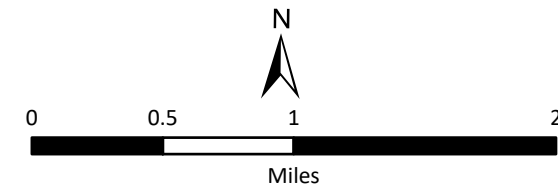


Legend

-  LREGA
-  Existing NP Areas
-  Future Development

Conversion Areas

- | | |
|--|--|
|  Church |  Residential |
|  Commercial |  Road |
|  HOA |  School |
|  Park |  Undeveloped Land |



City of Greeley
Categorized Conversion Areas
Figure 4
Greeley Non-Potable Water
System Master Plan

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Parks and Schools

Two land use types required special attention due to their high NP consumption: parks and schools.

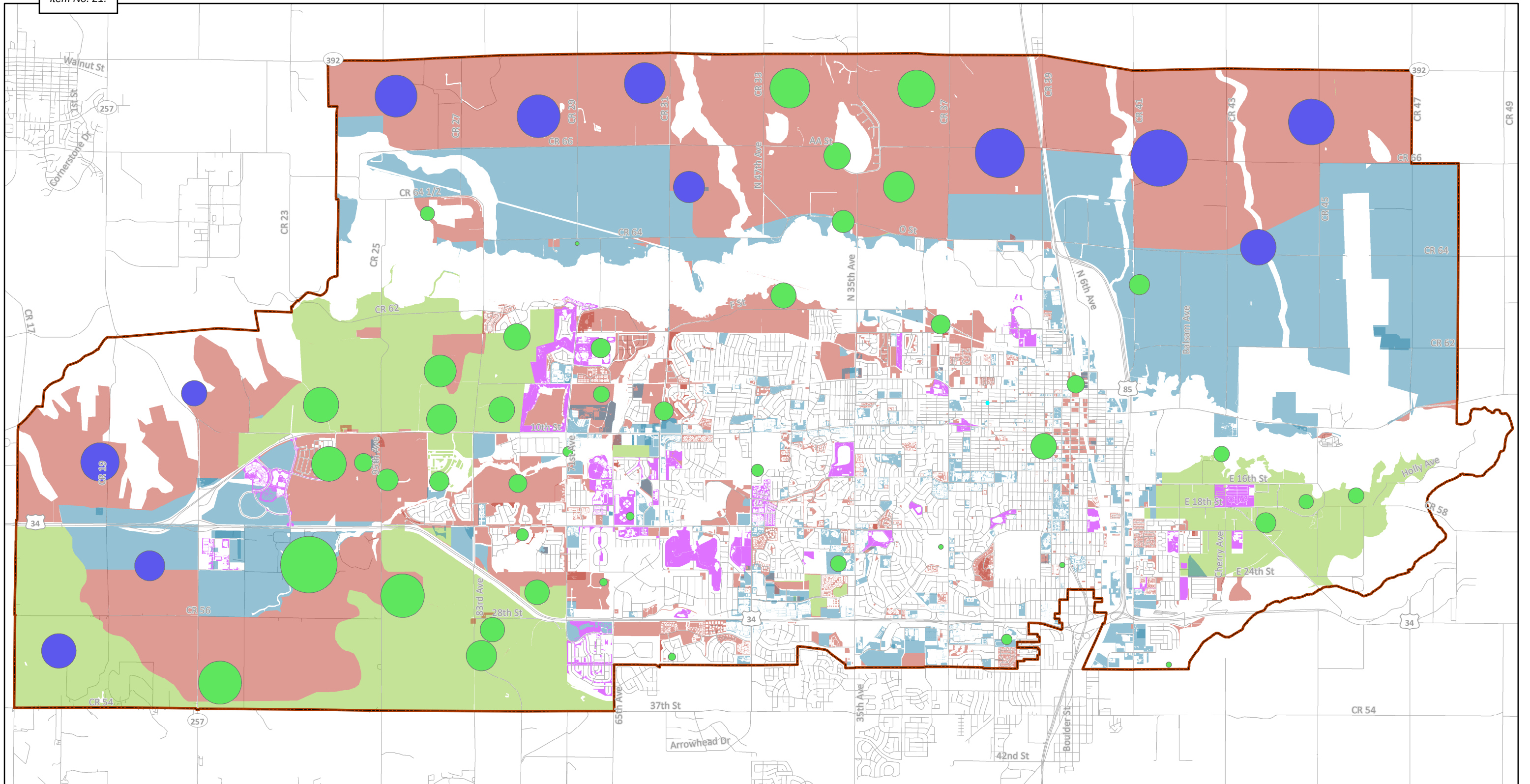
Parks locations and sizes were primarily based on the City's Parks, Trails, and Open Lands Master Plan (2016). This document identified potential parks locations for the next 20 years. These locations were supplemented by parks locations identified by CDM Smith and approved by the City to extend parks service through the LREGA (note that the location and size of these parks is subject to change in future parks MPs). The size of the parks was based on population projections from the water and sewer MPs, and the parks service goal of 8.25 acres/1,000 people (total) from the 2016 Parks MP. This methodology was approved by the Parks Department. **Figure 5** shows all future parks locations. Parks will serve as the hubs of the future NP system, as ponds serve both a storage and recreational purpose.

Because schools represent a large irrigable area, the City was interested in incorporating the location of future schools into the future demand projections. However, limited information is available as to the locations, numbers, and size of future schools. Because no locations of the schools are known, it was initially assumed that all schools will be located next to a park (typical for Greeley). To determine the size of schools, CDM Smith reviewed locations in the City where schools are next to parks, and determined that on average, each park is 2.3x the size of the accompanying school. (In general, Planning research showed that schools are typically 15 – 30 acres, which was intended to be used as a check of reasonability.) Using typical school populations provided by the Planning department (after discussion with the school districts), it was determined that there will be somewhere between 97 and 113 future schools. This is not in line with Planning estimates that one of the two school districts will have 4-10 additional schools. Because of this discrepancy, it was considered impossible to select a defensible number, and it was decided to not include schools as a separate source of future demand projections. Instead, school demands are captured in the WTDMP calculations.

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Legend

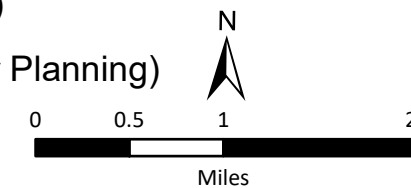
-  LREGA
-  Existing NP Irrigated Areas

Future Non-Potable Demand

-  Commercial/Industrial
-  Residential
-  Mixed Use

Park Areas

-  Potential Park Location (2016 Parks MP)
-  Potential Park Location (Approximate for Planning)



City of Greeley
Future Parks Locations
Figure 5
Greeley Non-Potable Water
System Master Plan

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Other Land Uses through the LREGA

Outside of conversion areas and parks, NP demand projections for undeveloped land throughout the LREGA were coordinated with the water demand projections. The water and sewer MPs used a complex land use schema to identify around 60 different land uses within the City, which were used to categorize all currently undeveloped areas or areas of redevelopment. Based on discussions with the City and review of the available information, three tiers of information were used for the potable water demands, as described below:

1. ***Tier 1: Planned developments (PUDs).*** This data was taken from development reports and planning documents for twelve known developments, which are in various stages of design. These areas represent the most detailed planning information available.
2. ***Tier 2: City of Greeley Land Use (Sub-Areas) and Zoning Markup Map (Greeley Markup).*** After review of this data, the City marked up 11 areas of growth to apply a specific growth distribution to each area, based on trends developed after the creation of the document. The City's Planning Department assigned percentages of land use type to each growth area. These areas were then split into sub-areas based on direction from the City to better align with the density distribution of the original *Imagine Greeley Comprehensive Plan*.
3. ***Tier 3: Zoning and Comprehensive Plan Information.*** For all remaining areas, including infill areas, zoning and land use information is used to distribution future populations and water demands. This data was taken from the following sources:
 - a. Zoning from the *Annual Growth & Development Projections Report* (City of Greeley, 2019)
 - b. Land use guidance from the *Imagine Greeley Comprehensive Plan* (City of Greeley Community Development Department, 2018)

Using this data, each parcel in the City was assigned with a residential and non-residential (commercial/industrial) future water demand based on its land use category. For detailed information on the potable demands calculations, please see WTDMP TM 1.

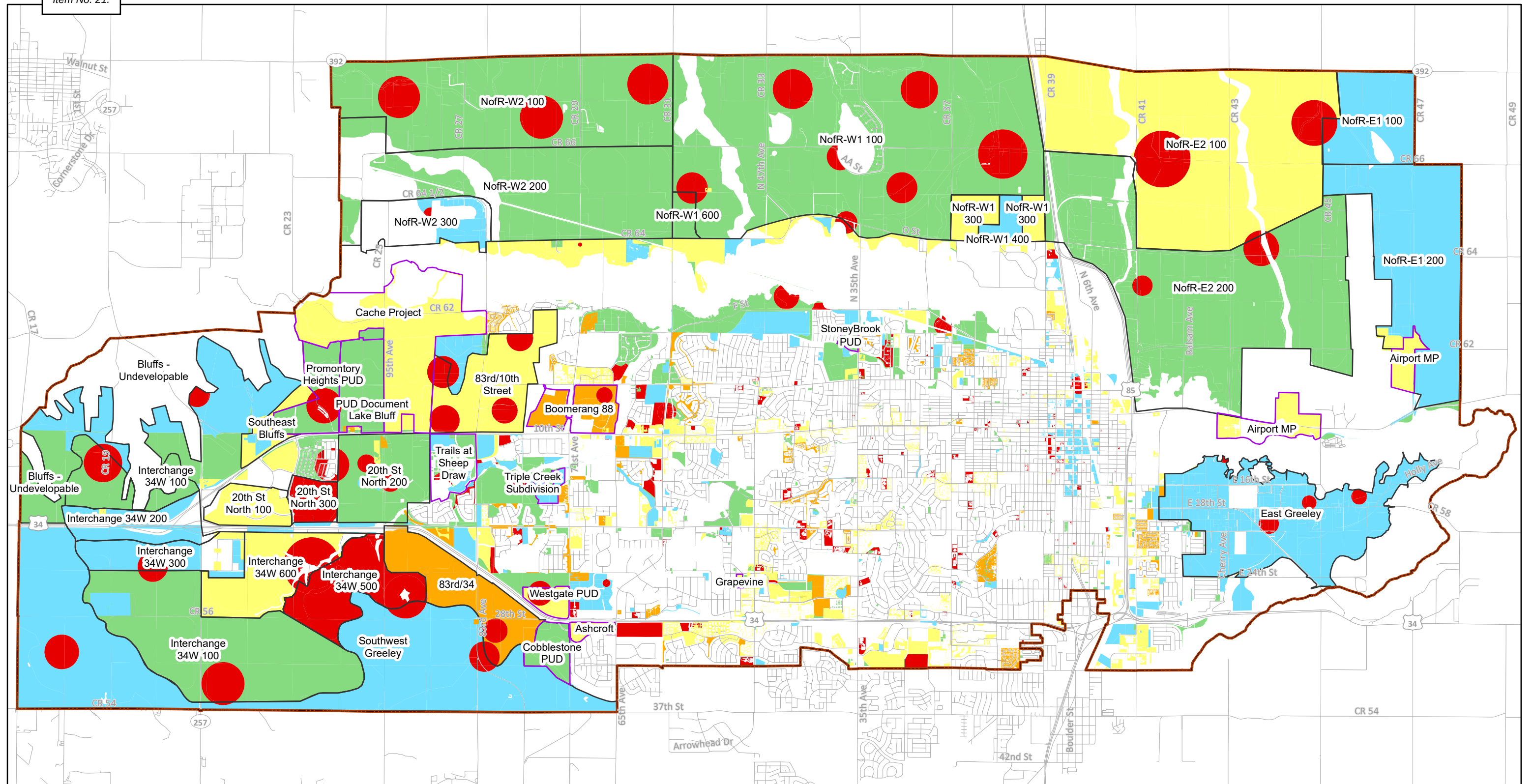
The water and sewer land use types were then coordinated with the NP flow factor categorizations, discussed previously, to develop separate NP and potable water flow factors for each land use type. These flow factors were applied throughout the LREGA to determine total NP demand.

Buildout Projections Summary

The conversion areas, parks, and undeveloped land was combined to produce a total NP demands set for peak month at buildout. This will be incorporated into the future water model to aid in appropriately sizing infrastructure. The peak month buildout demands projections for potable vs. NP are summarized in , and the NP demand density is shown in **Figure 6**. The NP demands comprise of 20.1% of all future water demands through buildout. NP demands may decrease if planning shows that it is not hydraulically or economically feasible to serve certain areas.

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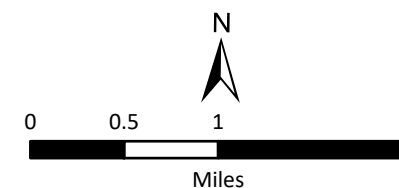


Legend

- LREGA
- Tier 1 (PUDs)
- Tier 2 (Comprehensive Plan)

NP Water Parcels

- Density (gpd/ac)
- <250 gpd/ac
 - 250 - 500 gpd/ac
 - 500 - 750 gpd/ac
 - 750 - 1,000 gpd/ac
 - >1,000 gpd/ac



City of Greeley
Demand Density (Peak Month, Buildout)
Figure 6
Greeley Non-Potable Water
System Master Plan

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Table 5 - Peak Month Buildout Demands Summary

Development Type	Total Future (additional) Water Demand (MGD)	Future Potable Water Demand (MGD)	Future Non-Potable Water Demand (MGD)
Future Development	56.72	47.46	9.26
Conversion Areas	2.29	0	2.29
Total	59.01	47.46	11.55

Demand Estimates by Planning Horizon

To distribute the future demand parameters in the model at each planning horizon, the percent to which each future development tier is built out at the end of each planning horizon was estimated. The basis for these estimates is the *City of Greeley Population and Water Demand Projections* (BBC Research & Consulting, 2018) report, and conversations with the City. At the 2025 and 2040 planning horizons, the calculated population is matched to the BBC Report. The overall buildout population is assumed to exceed the 2075 BBC projected population. The total buildout population is projected to be 425,271. For more information on the percentages used, please see WTDMP TM 1. The total phased potable and NP demands are shown in **Table 6**.

It is assumed that the Tier 1 projects will be completed first. For this reason, the majority of the Tier 1 projects are assumed to be 100% complete at the 5-year planning horizon, and all of them complete at the 20-year planning horizon.

Due to the large areas within the Tier 2 projections category, the Tier 2 percent complete values for the 5-year and 20-year planning horizons have been developed through close discussion with the City. The Tier 2 areas the City and CDM Smith have identified for growth at the 5-year and 20-year planning horizons are the areas which the City of Greeley Planning Department have identified as the most likely growth areas.

The Tier 3 growth identified below for the 5-year planning horizon was chosen through discussions with the City. Tier 3 growth included at the 20-year planning horizon is assumed to include all of the infill around the Tier 1 and Tier 2 projected growth areas.

The rate at which existing developments will convert to NP irrigation will vary location-by-location based on economic feasibility, proximity to NP infrastructure, and willingness of the owner to participate in conservation efforts. In order to estimate the rate of conversion areas, it was assumed that demand from conversion areas will increase at a similar rate to the total additional water projections. The percentage of water demands increase (compared to the buildout projections) at each planning horizon was calculated, and this same percentage was applied uniformly to the conversion areas.

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Table 6 - Demands by Planning Horizon

Planning Horizon	Total Future (additional) Water Demand (MGD)	Future Potable Water Demand (MGD)	Future Non-Potable Water Demand (MGD)
2025	4.50	3.37	1.13
2040	13.69	10.87	2.82
Buildout	59.01	47.46	11.54

Economic Feasibility for Future Projects

In most developments, the decision on whether or not to use NP irrigation is based on economic feasibility, meaning whether the cost savings from using NP over potable outweighs the initial cost of infrastructure construction. For master planning purposes, a typical value of savings resulting from switching to NP irrigation was established at approximately \$125 per 1,000 gallons of annual demand. This value was based on the differences in water rates and the costs of different water rights, using data from 2019 and 2020. This value was shown to be independent of development size and will be used during the Capital Improvement Plan as a way to examine whether future projects are feasible.

Table 7 – Economic Feasibility

Item	Potable	Non-potable	Units	Notes
Cost of Water and Rights				
Water Rate	\$5.02	\$3.51	/kgal	
Discount		\$1.51	/kgal	
Present Value of Discount		\$22.41	/kgal	20yrs @ 3%
Cost of Water Right	\$42,857.14	\$9,000.00	/ac-ft-yr	Potable based on WSSC, NP based on GIC
	\$131.52	\$27.62	/kgal-yr	
Water Rights				
Non-potable Fraction	0	0.26		Irrigation fraction of annual demand
Potable Water Right	\$131.52	\$97.33		Potable demand at water right rate above
NP Water Right		\$7.18		NP demand at water right rate above
Total	\$131.52	\$104.51		
		\$103.90	/kgal	Savings per kgal of annual NP demand
Total Feasible Cost of Infrastructure				
Rate Discount		\$22.41	/kgal	Savings per kgal of annual NP demand
Water Right Discount		\$103.90	/kgal	Savings per kgal of annual NP demand
Feasible Cost of Infrastructure		\$126.31	/kgal	Savings per kgal of annual NP demand

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The \$125 per 1,000 gallons savings is only intended for use in master planning. Developers must conduct their own cost analyses to determine whether it is economically feasible to include NP irrigation.

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Appendix E

North Weld Intergovernmental Agreement

The following documentation summarizes the intergovernmental agreement between North Weld and the City used for aiding in the development of future water demands by the City.

WATER SERVICE AGREEMENT

THIS AGREEMENT is made and entered into as of the 5th day of February 2013, by and between the North Weld County Water District, acting by and through the North Weld County Water District Enterprise (hereinafter "District"), and the City of Greeley, a home rule municipality, acting by and through its Water Enterprise (hereinafter "Greeley")(collectively "Parties").

RECITALS

WHEREAS, the District is a statutory special district formed under the laws of the State of Colorado and is a quasi municipal corporation; and,

WHEREAS, Greeley is a home-rule municipal corporation; and,

WHEREAS, the North Weld County Water District Enterprise and the Greeley Water Enterprise are established and administered in compliance with the provisions of Section 20, Article X of the Colorado Constitution and Article 45.1 of Title 37 of the Colorado Revised Statutes, and the Greeley City Charter and Municipal Code, as applicable; and,

WHEREAS, the District (on its own or in cooperation with others) owns, maintains and operates a system for the storage and distribution of potable water within Weld County and Larimer County; and,

WHEREAS, Greeley owns, maintains and operates a separate and independent system for the storage and distribution of potable water to its residents and to other customers in Weld County and Larimer County; and,

WHEREAS, the District, as a non-profit quasi municipal statutory special district, must establish and provide water rates to cover the maintenance and operation, depreciation, replacement, and appropriate funding of capital costs of the District; and,

WHEREAS, Greeley's policy is to provide water service to all Greeley citizens; and,

WHEREAS, the District's policy is to provide water service within the boundaries of the District; and,

WHEREAS, the District has a master plan to serve a portion of its service area, lying north of the Poudre River, at densities between one and two dwelling units per five acres; and,

WHEREAS, portions of the District's service area overlap Greeley's Long-Range Expected Growth Boundary, which is outlined in Greeley's 2060 Comprehensive Plan; and,

WHEREAS, Greeley and the District have determined that it is in the best interest of the residents of Greeley and the District for the Parties to cooperate with each other in providing water services; and,

WHEREAS, by enacting Titles 31 and 32 and specifically § 31-35-402(1)(b) and § 32-1-502(2)(c) of the Colorado Revised Statutes and pursuant to Article XIV, Section 18 of the Colorado Constitution, the Legislature of the State of Colorado has: (a) determined that the State of Colorado has a valid interest in providing water for its citizens; (b) clearly articulated and affirmatively expressed the State of Colorado's policy to allow municipalities and special service districts to provide water by utilizing cooperative agreements and to eliminate competition in areas where each Party is capable of providing service; and (c) developed a structure to actively supervise municipalities and special service districts, if the Parties choose to utilize such agreements; and,

WHEREAS, taking into consideration the foregoing factors and the natural drainage basins and topography that affect the quality and cost of utility service in the overlapping service area, Greeley and the District desire to enter into a long-term contract for the treatment and delivery of potable water, to eliminate overlapping facilities, and to coordinate long-range planning prior to initiating costly capital expansion programs; and,

WHEREAS, Greeley and the District desire to craft this Agreement with the following guiding principles: to keep North Weld financially whole; to allow Greeley to maintain land use control of much denser, urban development in the overlapping service area; and to provide for flexible water sharing between the Parties; and,

WHEREAS, Greeley and the District enter into this Agreement pursuant to the provisions of § 29-1-203, C.R.S; and,

WHEREAS, the District and Greeley shall and will continue to own their own water rights individually and separately, with Greeley relying upon the yield of its own water rights to provide the raw water necessary for treatment proposed under this Agreement; and,

NOW, THEREFORE, in consideration of the premises and the covenants and agreements hereinafter set forth, it is agreed by and between the District and Greeley as follows:

ARTICLE 1 DEFINITIONS

1.1 "Delivery Point(s)" shall mean the point(s) at which the Furnishing Party delivers water to the Receiving Party's water system.

1.2 "Furnish" shall mean to treat, to the standards set forth in Section 3.4, and deliver water, which includes all of the intermediate steps necessary to provide water at the Delivery Point(s).

1.3 "Furnishing Party" shall mean the Party who treats, delivers, and performs all of the intermediate steps necessary to provide water at the Delivery Point(s).

1.4 "Master Meter" shall mean a meter at which the Furnishing Party will furnish water to the Receiving Party to enable the Receiving Party to provide water service to its customers.

1.5 "North Greeley Service Area" shall be that area identified within the Long-Range Expected Growth Boundary outlined in Greeley's 2060 Comprehensive Plan.

1.6 "Notice" shall mean the notice described in Section 10.12

1.7 "Raw Water Requirement" shall mean untreated water in an amount equal to 110% of Greeley's net potable water usage at the Master Meter(s) for the previous year plus any anticipated increases or decreases in net usage.

1.8 "Receiving Party" shall mean the Party who takes delivery of water from the Furnishing Party at a Master Meter.

1.9 "Uncontrollable Forces" shall mean any cause beyond the control of the obligated Party, including, but not limited to, failure of facilities, flood, earthquake, storm, lightning, fire, epidemic, riot, civil disturbance, labor disturbance, sabotage, breach of construction contract by a third party or restraint by court or public authority, which through due diligence and foresight, such Party could not have reasonably been expected to avoid.

1.10 Unless described as "raw water", "water" shall mean water treated to the standards set forth in Section 3.4, and shall have the same meaning as "potable" or "treated" water.

1.11 "Water Service" shall mean providing water directly to individual customers.

1.12 "Water Supply" shall include, but is not limited to, existing water supplies, future water supply projects, and development of existing and after-acquired water rights.

1.13 "Water System" shall mean the distribution system whereby a Party provides water service.

ARTICLE 2 GENERAL PROVISIONS

2.1 This Agreement defines the method by which the Parties shall furnish and provide water service to individual customers located within the North Greeley Service Area. It shall also determine the method of transferring the District's customers to Greeley; the transfer of infrastructure upon the exclusion of territory from the District's service area; the provisions for furnishing water to the Parties' respective water systems; and the method by which this Agreement may be amended to account for future growth, expansion, and development within the North Greeley Service Area.

2.2 To account for the transfer of customers to Greeley within the North Greeley Service Area and to track portions of the District's service area that are excluded there from, this Agreement may be amended, from time to time, through the use of exhibits. The exhibits shall contain the information required by Articles 3, 5, and 8 of this Agreement and shall be identified and generally contain the following:

2.2.1 Exhibit A of this Agreement shall contain the name of each Master Meter and its corresponding location; the annual minimum amount of water that Greeley must purchase through Master Meter(s); and the maximum gallons per minute of water that shall be delivered through a Master Meter based on Plant Investment Fees paid and credited. If any of the foregoing information is inapplicable to a Receiving Party, that portion of Exhibit A shall so reflect.

2.2.2 Exhibit B shall contain a complete list of all customers transferred from the District to Greeley.

2.2.3 Exhibit C shall be a map depicting the North Greeley Service Area and any property excluded from the District's service area.

2.3 The exhibits identified in paragraph 2.2 shall be amended prior to any relocation of a Master Meter, increase in peak demand, transfer of customer, or exclusion of territory from the District's service area. The exhibits shall be redefined as agreed to in writing by the Parties, or their respective designee, and made effective in accordance with the Parties' respective rules and procedures. Each amendment shall fully replace the prior exhibit and shall be effective upon the date specified therein.

2.4 The terms of this Agreement shall only apply to the North Greeley Service Area and shall not be extend to, or binding on, the Parties in any other geographical location.

2.5 This Agreement is not intended to provide for emergency water connections and supplies. If, at any time after the effective date of this Agreement, the Parties determine that an emergency interconnection is needed, then the Parties shall negotiate a separate agreement to determine the locations and facilities that will provide for emergency interconnections and the terms and conditions thereof.

ARTICLE 3 WATER SUPPLY

3.1 The District shall furnish potable water via Master Meter(s) for use in Greeley's water system at the locations and in the maximum and minimum annual amounts, peak demands in gallons per minute, and minimum and maximum pressures that shall be specified in Exhibit A.

3.2 Upon the District's written request, Greeley may furnish potable water via Master Meter(s) for use in the District's water system, subject to the terms of this Agreement, at the location(s) that shall be specified in Exhibit A.

3.3 The minimum and maximum pressures shown in Exhibit A shall be met by the Furnishing Party at the Master Meter(s) only. The Receiving Party is responsible for all pressures within its system following delivery from the Furnishing Party at the Master Meter(s). No promise or guarantee of pressure is made by the Furnishing Party or is to be implied from anything contained herein except as established in Exhibit A.

3.4 The furnished water shall be potable water, the quality of which shall be in accordance with the Federal Safe Drinking Water Act and all other applicable drinking water regulations and potable water law. The Parties shall conduct all testing necessary to assure that the water furnished under this Agreement complies with all Federal and State drinking water standards. The Furnishing Party agrees to provide the Receiving Party with the results of its annual testing, on or before April 1 of each year, as required by Colorado Primary Drinking Water Regulations, 5 CCR 1003.

3.5 Neither Party shall, by reason of this Agreement or by use of any water hereunder, acquire vested or adverse right or future right, in law or equity, in the water rights or water system owned by the other Party.

ARTICLE 4 RAW WATER

4.1 On an annual basis, Greeley shall provide raw water to the District, for treatment and delivery by the District through one or more Master Meters, in the amount of one hundred and ten percent (110%) of Greeley's estimated net demand ("Raw Water Requirement"). The Raw Water Requirement shall be calculated based on Greeley's net potable water usage at the Master Meter(s) for the previous year, plus any anticipated increases or decreases in Greeley's net usage. Not later than September 1 of each year, Greeley will supply the District with estimates of its projected Raw Water Requirement for the following year. The Raw Water Requirement made available to the District shall be provided on an actual gallon basis as measured at the intake station at the Soldier Canyon Filter Plant. The stated "one hundred and ten percent (110%)" shall mean one hundred percent (100%) plus an allowance of ten percent (10%) to cover the estimated shrinkage from the Soldier Canyon Filter Plant to the Master Meter(s).

4.2 Greeley's Raw Water Requirement shall be met from the following sources: Colorado-Big Thompson Project ("CBT"), the Windy Gap Project, the Water Supply and Storage Company, the North Poudre Irrigation Company, or from any other source capable of being delivered to and treated by the District's then existing water treatment system to the standards set forth in Section 3.4, and otherwise usable in the District's water system.

4.3 The District shall not be required to acquire, rent or own any additional raw water necessary to meet the Raw Water Requirement. Greeley is solely liable to make arrangements for the raw water necessary to make available the Raw Water Requirement.

4.4 In the event that Greeley does not make sufficient raw water available to the District, based on Greeley's net usage, the District shall notify Greeley as soon as possible but no later than thirty days prior to the time when such additional raw water will be necessary. If, after such notice, Greeley fails or refuses to provide sufficient raw water, the District may, in its sole and reasonable discretion, provide such raw water, at an additional fee to Greeley ("Water Surcharge"). The Water Surcharge shall be determined solely by the District dependant on the availability of raw water and shall be applied per one thousand gallons of water delivered to Greeley of District supplied raw water. The District shall maintain dominion and control over all raw water provided to Greeley under this Paragraph 4.4, and Greeley releases any right to the return flows that result from such water supplied by District, including any reuse rights associated with such water.

4.5 Greeley shall maintain dominion and control over any and all raw water provided to the District for treatment under this Agreement, and the District releases any right to the return flows that result from such water supplied by Greeley, including any reuse rights associated with such water.

ARTICLE 5 FACILITIES

5.1 The Furnishing Party shall take such actions and make such connections between the Receiving Party's system and the Furnishing Party's system necessary to furnish water to the Receiving Party as required by this Agreement at the Furnishing Party's sole cost.

5.2 The Furnishing Party shall install, replace, relocate, or add any necessary metering equipment and Master Meter vault(s) as required by this Agreement. The Furnishing Party shall design the Master Meter vault(s) and flow control device(s) in accordance with the specification of the Furnishing Party. Design shall consider system growth. The Furnishing Party shall submit all designs to the Receiving Party for review and approval prior to construction or installation. Following the Receiving Party's review and approval of such design plans, the Receiving Party shall reimburse the Furnishing Party for all reasonable and customary costs and expenses including design,

construction and installation of all necessary metering equipment and Master Meter vault(s) replaced, relocated, or added after the date of this Agreement.

5.3 The Furnishing Party shall install, own and operate a flow-restricting device(s) at the Master Meter vault(s). Said device(s) shall be capable of controlling the flow rate, if applicable, to the Receiving Party within the rates set forth in Exhibit A. The Receiving Party shall not be responsible for charges based on deliveries at flow rates greater than the flow rates directed by Receiving Party in writing or as stated in this Agreement.

5.4 The Furnishing Party shall own and maintain the Furnishing Party's water system, including but not limited to any interconnection facilities, water lines, pump station and treatment plant facilities necessary to serve the Receiving Party as required by this Agreement up to the Master Meter(s). The Furnishing Party shall own the Master Meter(s), Master Meter Vault(s), Backflow Prevention Assembly, and flow and pressure control facilities, which shall be managed, administered, operated and maintained exclusively by the Furnishing Party. For the purpose of determining operation and maintenance responsibility, the Furnishing Party shall be responsible up to and including the outlet valve(s) on the Receiving Party's side of the Master Meter(s).

5.5 The Receiving Party shall maintain complete and unilateral control over the Receiving Party's system operations. The Receiving Party agrees that it will, at all times, to the extent practicable in the Receiving Party's reasonable discretion operate its water distribution system on the Receiving Party's side of the Master Meter(s) so as not to unreasonably interfere with service to others dependent upon the Furnishing Party for a supply of water. The Receiving Party agrees that it will, to the extent practicable in the Receiving Party's reasonable discretion, operate its facilities, especially any pumping or storage facilities, in correlation with operation of the Furnishing Party's facilities and will install and use such devices, including telemetry, as are necessary to effectuate correlation; provided, however, that Greeley shall not be obligated to pay for the installation of any physical changes to its water distribution system that will benefit only District customers within the District's service area.

5.6 The Parties agrees to maintain all facilities within their respective water systems in good repair and to make such replacements as may be necessary to keep the facilities in proper operating condition at all times.

5.7 The Parties shall cooperate with each other in acquiring any easements and other permits or approvals necessary to accomplish and place into effect this Agreement and for the construction of any necessary facilities.

5.8 Nothing in this Agreement shall be interpreted as creating an "Integrated System" within the meaning of the Colorado Primary Drinking Water Regulations, 5 CCR 1003. Each Party owns its own water system and each is a separate and independent system from the other.

ARTICLE 6 MASTER METERS

6.1 The Furnishing Party shall read the Master Meter(s) at monthly intervals under its own meter reading schedule. If requested by the Receiving Party, the Furnishing Party shall give the Receiving Party notice of any Master Meter reading and allow a Receiving Party representative to be present and observe. For all Master Meter reads performed by Greeley, as the Furnishing Party, it shall deliver the Master Meter reads to the District, on or before a date mutually agreed to by the Parties, in order for the District to calculate the net monthly flow amount as provided in Section 7.1.

6.2 At least once every five years, the Furnishing Party shall test and calibrate the Master Meter(s) at the Furnishing Party's cost. At anytime, upon the Receiving Party's written request, the Furnishing Party shall make or cause to be made a special meter test at the Receiving Party's cost. The Furnishing Party shall notify the Receiving Party in advance of any Master Meter test and allow a Receiving Party representative to be present and observe.

6.3 The readings of any Master Meter, which has been disclosed by tests conducted pursuant to American Water Works Association standards to be inaccurate, shall be corrected from the beginning of the monthly billing period immediately preceding the billing period during which the tests are made in accordance with the percentage of inaccuracy found by such tests.

6.4 If any Master Meter shall fail to register for any period, the Receiving Party and the Furnishing Party shall agree as to the amount of water furnished during such period and the Furnishing Party shall render a bill therefore. If no agreement can be reached, the billing shall be based upon historical usage data.

6.5 If at any time the Receiving Party desires to change the location of any Master Meter vault(s), the Furnishing Party will attempt to accommodate such request if, in the reasonable opinion of the Furnishing Party, such relocation will not detrimentally affect the Furnishing Party's water system in any manner and only upon the condition that Receiving Party shall be responsible for any and all costs and expenses thereof.

ARTICLE 7 RATES AND CHARGES

7.1 The District shall bill Greeley, in monthly intervals, based on Greeley's net monthly water usage. The net monthly usage shall be determined by the difference between Greeley's total monthly water usage and the District's total monthly water usage. If Greeley's total monthly usage is less than the District's, Greeley shall be given a credit that shall be applied to the next monthly billing cycle. In the event that Greeley has a monthly credit on December 31st of any year this Agreement is in effect,

the same amount shall be paid in full by the District to Greeley by January 31st of the following calendar year.

7.2 The District will adopt water service rates sufficient to totally and fully reimburse the District for all costs of furnishing water under this Agreement. Any portion of the rate that is identified as a recovered return on investment shall be limited to 4.5%. The District may adjust the charges to be made for the use of water hereunder. The rates charged to Greeley shall be directly related and limited to the cost incurred by the District in furnishing water to Greeley as fairly determined by the District. The charges provided for in this paragraph shall remain in effect until the District deems it necessary to raise or lower the charges for the water, in accordance with section 7.3. In addition to any other rate or charge herein provided, Greeley shall pay all applicable fees, and such other rates, tolls, charges or combination thereof as the District may, from time to time, in the exercise of its lawful authority impose consistent with this Article and Article 1, Title 32 of the Colorado Revised Statutes.

7.3 The District will, not less than once, but not more than two times in each calendar year, review the Plant Investment Fee and the rates for potable water furnished hereunder. If necessary and consistent with Sections 7.1 and 7.2 hereof, the District shall adjust such rates based upon actual usage and audit figures to produce sufficient revenues to maintain and operate the system necessary to serve Greeley and to establish and maintain reasonable reserves for operation and maintenance.

7.4 The District shall provide Greeley written notice of any expected rate change or any projected operation, maintenance or capital improvement cost that will affect the rates to be paid by Greeley as follows:

7.4.1 The District shall notify Greeley of a proposal for an increase in the rate charged to Greeley at least thirty days prior to the Board Meeting at which formal action on such proposal is scheduled;

7.4.2 The District shall notify Greeley of any new rate within ten days after the District has adopted it; and

7.4.3 The new rate to be charged to Greeley shall not become effective sooner than thirty days after it has been adopted and shall not apply to water delivered by the District on or before the effective date.

7.5 Billing for each month shall be made on or about the last day of the month and payment is due on the tenth day of the following month. Any bill not paid within sixty days of the payment due date shall be delinquent, and Greeley shall pay an additional delinquent fee of one and one-half percent of the unpaid monthly billing per month. If Greeley refuses or fails to pay any bill within sixty days of the payment due date, the District may discontinue delivery of potable water hereunder upon ninety days written notice to Greeley.

7.6 If Greeley's annual water usage does not equal or exceed the total minimum annual amount of water, as stated in Exhibit A, for all Master Meters furnishing water to Greeley, the District shall bill Greeley for the balance due in January of the following year.

7.7 For water service customers within the North Greeley Service Area, Greeley and the District shall establish their own separate rates, fees, and raw water requirements in accordance with the legal procedures and policies applicable to each entity.

ARTICLE 8
INCREASES IN PEAK DEMAND; TRANSFER OF CUSTOMERS; AND EXCLUSION
OF TERRITORY FROM THE DISTRICT'S SERVICE AREA

8.1 The Parties have consulted with each other concerning the North Greeley Service Area using the following criteria: natural drainage patterns, topography, existing installations of capital facilities, the probable future needs of customers, the most cost-efficient means for delivering water service, and considerations which reduce the cost of service or result in higher quality of service to the customer. Based on the foregoing, the Parties agree that Greeley shall be responsible for providing water service to new customers within the North Greeley Service Area and, except as provided in this Agreement, the District shall not provide water service to new customers in the North Greeley Service Area.

8.2 The District presently provides water service to a number of customers within the North Greeley Service Area. Existing customers will continue to be served by the Party presently providing water service, except as provided for herein or as otherwise mutually agreed upon in writing by the Parties.

8.3 The District shall refer to Greeley any request it receives for water service within the North Greeley Service Area. Upon receipt of the referral, Greeley will determine whether it intends, or has the infrastructure in place, to provide water service to the applicant. Greeley shall provide written notice of its determination to the applicant and to the District as soon as possible but no later than ninety days after receipt of the application. If Greeley declines to provide water service to the applicant, then the District may provide water service.

8.4 As Greeley extends water service to new development, but prior to annexation by Greeley, Greeley and District may transfer existing District customers to Greeley's water system within the North Greeley Service Area, if Greeley determines that it intends, or shall have infrastructure in place, to provide water service to the existing customer.

8.5 When existing District customers are transferred to Greeley, the District shall permanently transfer to Greeley one unit of CBT per equivalent three-quarter inch tap transferred. In addition, the District shall credit Greeley with one gallon per minute

Plant Investment Fee per equivalent three-quarter inch tap transferred. Greeley shall, in turn, purchase from the District the annual usage of that tap at a Master Meter. The annual usage shall be set at 120,000 gallons per equivalent three-quarter inch tap. Both the annual use and the Plant Investment Fee credit shall be reflected in Exhibit A.

8.6 If Greeley expects additional demand above the peak demand of the transferred customer(s) as established in section 8.5, Greeley shall make written request to the District for the furnishing of additional water to meet such additional expected demand. Upon receipt of such written request, the District shall have thirty days to notify Greeley in writing of its decision and terms to supply such additional water. If the District decides to furnish such additional water, Greeley shall provide the Raw Water Requirements and pay the then existing Plant Investment Fee adopted by the District for each additional one gallon per minute beyond the peak demand amount specified in Exhibit A.

8.7 If the District expects additional master meters, water usage, or demand above the peak demand identified in Exhibit A upon the effective date of this Agreement, the District shall make written request to Greeley for the furnishing of additional water to meet such additional demand. Upon receipt of such written request, Greeley shall have thirty days to notify the District in writing of its decision and terms to supply such additional water. If Greeley decides to furnish such additional water, the District shall provide Greeley a Plant Investment Fee credit for each additional one gallon per minute peak demand requested by the District. Greeley may, in turn, assign or apply such credit at any Master Meter, identified in Exhibit A, that is furnishing water to Greeley as Receiving Party.

8.8 Following annexation of property located within the North Greeley Service Area and upon receipt of notice of intent to exclude territory, the District shall transfer to Greeley, within one year from the date of notice, all of the District's customers and infrastructure within the annexed area. Such transfer shall include all facilities, which are owned or maintained by the District, necessary to provide such service from the Master Meter(s) to the point of connection at the customer's facilities, including but not limited to mains, local distribution lines, meters, meter pits, booster pumps, easements, permits, or rights of way and valves. Such transfer shall not include any transmission lines or associated facilities, distribution lines or associated facilities, easements, permits, or rights of way the District determines are necessary to serve other existing or potential customers of the District. As consideration for such transfer, the following provisions shall apply:

8.8.1 In accordance with the District's Master Plan, the District anticipates serving an average of two three-quarter inch equivalent taps per every five acres of its service area that is located within the North Greeley Service Area. The Parties agree that the District's anticipated annual usage shall equal an annual use of 240,000 gallons of water per five acres. Therefore, as Greeley excludes portions of the District's territory from the North Weld Service Area, Greeley shall compensate the District by purchasing a minimum annual amount of water from

the District at Master Meters. The minimum annual amount of water shall be calculated based on the greater of either (1) the product of 240,000 gallons of water per five acres of all territory excluded in accordance with this section 8.8 or (2) the total annual usage of each equivalent three-quarter inch tap transferred to Greeley in accordance with section 8.5. The minimum annual amount shall be reflected in Exhibit A.

8.8.2 Greeley shall provide the District fair compensation for all facilities transferred from the District to Greeley, taking into account depreciation. The value determination provisions set forth in C.R.S. § 32-1-502, as the same may be amended from time to time, shall govern such compensation.

8.8.3 Greeley shall be responsible for all reasonable costs, excluding attorney fees, associated with the transfer of customers from the District to Greeley within the North Greeley Service Area. However, in the event litigation is pursued against Greeley and/or the District by a transferred customer, the parties shall be responsible for their own costs, expenses, attorney fees and awards, if any.

8.8.4 Exclusion of land from North Weld's territory shall occur before any further subdivision of the property.

8.9. At the time of transfer of customers and facilities to Greeley, North Weld shall provide the best available and known information regarding locations of water lines, meters, appurtenances, and other associated facilities to the best knowledge of the District. Greeley and the District agree to cooperate in preparation and transfer of such information as the Parties deem necessary. North Weld maintains responsibility for locating any of their active or abandoned lines including all asbestos-cement pipe. Any North Weld line transferred to Greeley becomes Greeley's responsibility for One-Call locating. North Weld will for two years assist Greeley in location of any transferred lines, including potholing and establishing position with GPS.

ARTICLE 9 TAXES AND EXCLUSION

9.1 Portions of the North Greeley Service Area are within the District's service area. Pursuant to Colorado Law, the District has authority to assess property taxes by imposition of a mill levy upon property within the District; however, at the time of this Agreement, no such assessment or levy is in place.

9.2 The District agrees that there shall be no property tax assessment or mill levy on any properties within the boundaries of the District that may be located in the North Greeley Service Area and annexed by Greeley. If it is determined to be necessary and/or required by law, the District agrees to exclude from its service area all such property located in the North Greeley Service Area and annexed by Greeley.

ARTICLE 10 GENERAL TERMS AND REMEDIES

10.1 This Agreement shall be effective on the date first above written and remain in effect on a perpetual basis unless terminated as provided in this Article.

10.2 The Parties agree to act in good faith and to the best of their ability in taking all steps necessary to fully implement the terms and conditions of this Agreement, including the execution and delivery of such other documents, certificates, agreements and other writings and the taking of such other actions as may be necessary or desirable to consummate or implement this Agreement. The Parties agree that this Agreement shall be construed and enforced as the fully integrated expression of their contract with respect to the matters addressed herein. No express or implied covenants not specifically set forth shall be deemed to be a part of this Agreement. The Parties expressly aver that no representations other than those specifically set forth in this Agreement have been relied upon by either Party to induce it to enter into this Agreement.

10.3 The Parties shall use reasonable diligence to provide a constant and uninterrupted supply of water, except for interruption or reductions due to: (1) Uncontrollable Forces; (2) operations or devices installed for water system protection; and (3) maintenance, repair, replacement, installation of equipment, or investigation and inspection of the water system, which interruption or reductions are temporary, and in the opinion of the Furnishing Party, necessary. Excepting cases of emergency, the Receiving Party will be given reasonable advance notice of such interruptions. Neither Party shall be considered in default under this Agreement if prevented from fulfilling any obligations by reason of Uncontrollable Forces. A Party rendered unable to fulfill its obligation by reason of Uncontrollable Forces shall exercise due diligence to remove such inability with all reasonable dispatch.

10.4 The Parties have implemented their own respective water conservation plans and shall not be required to adopt the other Party's conservation plan in whole or in part.

10.5 The invalidity or un-enforceability of any provision of this Agreement shall not affect or impair any other provision unless material to the performance of either Party.

10.6 Neither Party may assign or transfer all or any part of this Agreement without the prior written consent of the non-assigning Party which consent will not be unreasonably withheld.

10.7 In the event of a material breach of any provision of this Agreement by any Party, which is not corrected within one year from the date of notice of the breach, the non-defaulting party may either terminate or pursue litigation for specific performance of this Agreement. However, if this Agreement is terminated by the District due to an uncorrected material breach of any provision of this Agreement by Greeley, the District

will not cease water service to Greeley until after two years from the written date of notice of the breach. In the event of an uncorrected material breach of any provision of this agreement by the District, Greeley may terminate this Agreement due to said material breach in which case termination shall be effective two years from the written date of the notice of the breach.

10.8 The Parties agree that, in addition to any other remedies allowed by law consistent with this Agreement, the provisions of this Agreement may be specifically enforced in a Court of competent jurisdiction and, in any judicial action, the unsuccessful party agrees to pay all reasonable costs of such action as actually incurred by the successful party, including attorney fees. Venue for any action shall be the District Court in and for Weld County, Colorado.

10.9 None of the remedies provided for under this Agreement need to be exhausted or exercised as a prerequisite to either party's pursuit of further relief to which it may be entitled. No Party shall waive its rights hereunder by failing to exercise its rights; any such failure shall not affect the right of such Party to exercise at some future time the rights not previously exercised.

10.10 In the event Greeley desires to terminate this Agreement, Greeley shall give written notice to the District of such intent in accordance with the notice provisions of this Agreement. Twenty years after the giving of such notice, District shall no longer furnish water to the North Greeley Service Area through the Master Meters. However, during this twenty year period Greeley shall be obligated to take and pay for, or in the alternative pay for, the minimum annual volume of water defined by Exhibit A. All other provisions and terms of this Agreement, including but not limited to the establishment and descriptions of the North Greeley Service Area, shall remain in effect.

10.11 It is expressly understood and agreed that the terms and the enforcement of the terms and conditions of this Agreement, and all rights of action relating to such enforcement, are strictly reserved to the undersigned Parties and nothing in this Agreement shall give or allow any claim or right or cause of action whatsoever by any other person not included in this Agreement. It is the express intention of the undersigned Parties that no person and/or entity, other than the undersigned Parties, receiving services or benefits under this Agreement shall be deemed any more than an incidental beneficiary only.

10.12 Any notice, demand or request delivered by mail, in accordance with this Agreement shall be deemed given seventy-two hours after the same is deposited certified mail, in any post office or postal box regularly maintained by the United States Postal Service addressed to the District at P.O. Box 56, Lucerne, CO, 80646 and to Greeley, attention to the Director of the Water and Sewer Department, at 1100 10th Street, 3rd Floor, Greeley, CO, 80631. The addresses may be changed at any time by similar notice.

10.13 Nothing herein shall constitute a multiple fiscal year obligation pursuant to

Colorado Constitution Article X, Section 20. Notwithstanding any other provision of this Agreement, Greeley's obligations under this Agreement are subject to annual appropriation by the City Council of the City of Greeley. Any failure by the Greeley City Council to annually appropriate adequate monies to finance Greeley's obligations under this Agreement shall terminate this Agreement in accordance with paragraph 10.10 at such time as such then-existing appropriations are to be depleted. Notice shall be given promptly to the District of any failure to appropriate such adequate monies.

10.14 To the extent legally possible, each Party shall indemnify and hold the other Party harmless from and against any and all liability, loss, damages, costs and expenses, including reasonable attorney fees, arising from the identifying Party's negligence, including but not limited to, negligent delivery of water at rates or pressures which exceed the maximum pressure or do not meet the minimum pressure established on Exhibit A. By such agreement to indemnify and hold each other harmless, neither Party waives any defenses and immunities to third Parties, which it would otherwise be entitled under the Colorado Governmental Immunity Act.

10.15 This Agreement, along with all exhibits and addendums and amendments hereto, encompasses the entire agreement of the parties, and supersedes all previous understandings and agreements between the parties, whether oral or written. The terms of the Water Supply Agreement dated August 26th, 2011 ("August 26th, 2011, Agreement"), shall remain in effect, except that all exhibits attached to the August 26th, 2011, Agreement shall be incorporated and reflected in the corresponding exhibit that are attached hereto and thus superseded hereby. The parties hereby acknowledge and represent, by affixing their hands and seals hereto, that said parties have not relied on any representation, assertion, guarantee, warranty, collateral contract or other assurance, except those set out in this Agreement, made by or on behalf of any other party or any other person or entity whatsoever, prior to the execution of this Agreement. The parties hereby waive all rights and remedies, at law or in equity, arising or which may arise as the result of a party's reliance on such representation, assertion, guarantee, warranty, collateral contract or other assurance, provided that nothing herein contained shall be construed as a restriction or limitation of said party's right to remedies associated with the gross negligence, willful misconduct or fraud of any person or party taking place prior to, or contemporaneously with, the execution of this Agreement.

IN WITNESS WHEREOF, the Parties have executed this Agreement the day and year first above written.

ATTEST:

NORTH WELD COUNTY WATER DISTRICT

By: Robert Ambrecht
Secretary

By: Charles Achziger
President



City Clerk

APPROVED AS
TO SUBSTANCE:

By:

City Manager

APPROVED AS TO LEGAL FORM:
Lind & Ottenhoff LLP

By:

Kenneth F. Lind

CITY OF GREELEY, COLORADO

By:

Mayor

APPROVED:
Greeley Water & Sewer Board

By:

Chairperson

APPROVED AS TO LEGAL FORM:

By:

City Attorney

APPROVED AS TO AVAILABILITY OF FUNDS:

By:

Director of Finance

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Appendix F

Comprehensive Plan for Demand Projections

The following table and figures provides residential and nonresidential projected water demands used as an aid for the development of future water demands.

Appendix F - Comprehensive Plan for Demand Projections

Table F-1 - City of Greeley Markup Map Summary (Tier 2)

Markup Areas	Area	Percent of Total Area per Nonresidential Land Use Category				Percent of Total Area per Residential DU/Acre Category				Projected Population	Projected Residential Demand	Projected Nonresidential Demand
	(acres)	C-L	C-H	I-L	I-M	1.0	2.5	4.0	20	(people) ¹	(gpd)	(gpd)
83rd Avenue/Highway 34	589		65%						35%	7,003	791,339	1,147,601
83rd Avenue/10 th Street	649		15%					45%	40%	12,456	1,407,528	292,247
20 th Street North	895		25%					50%	25%	13,162	1,487,306	671,516
Southeast Bluffs	130		15%					45%	40%	2,499	282,387	58,626
North of the River – East 1	2,006		10%		80%	10%				622	70,286	1,805,587
North of the River – East 2	5,734		20%		30%			35%	15%	54,128	6,116,464	4,730,450
North of the River – West 1	4,417		15%		10%	10%		50%	15%	51,285	5,795,205	2,319,069
North of the River – West 2	3,793		10%		20%	30%		30%	10%	30,531	3,450,003	1,706,727
East Greeley	1,358				30%	40%		30%		6,736	761,168	305,549
Southwest Greeley	2,906						100%			22,520	2,544,760	0
Interchange 34 West	3,676		20%		10%			50%	20%	47,786	5,399,818	2,481,177
Total										248,728	28,106,264	15,518,549

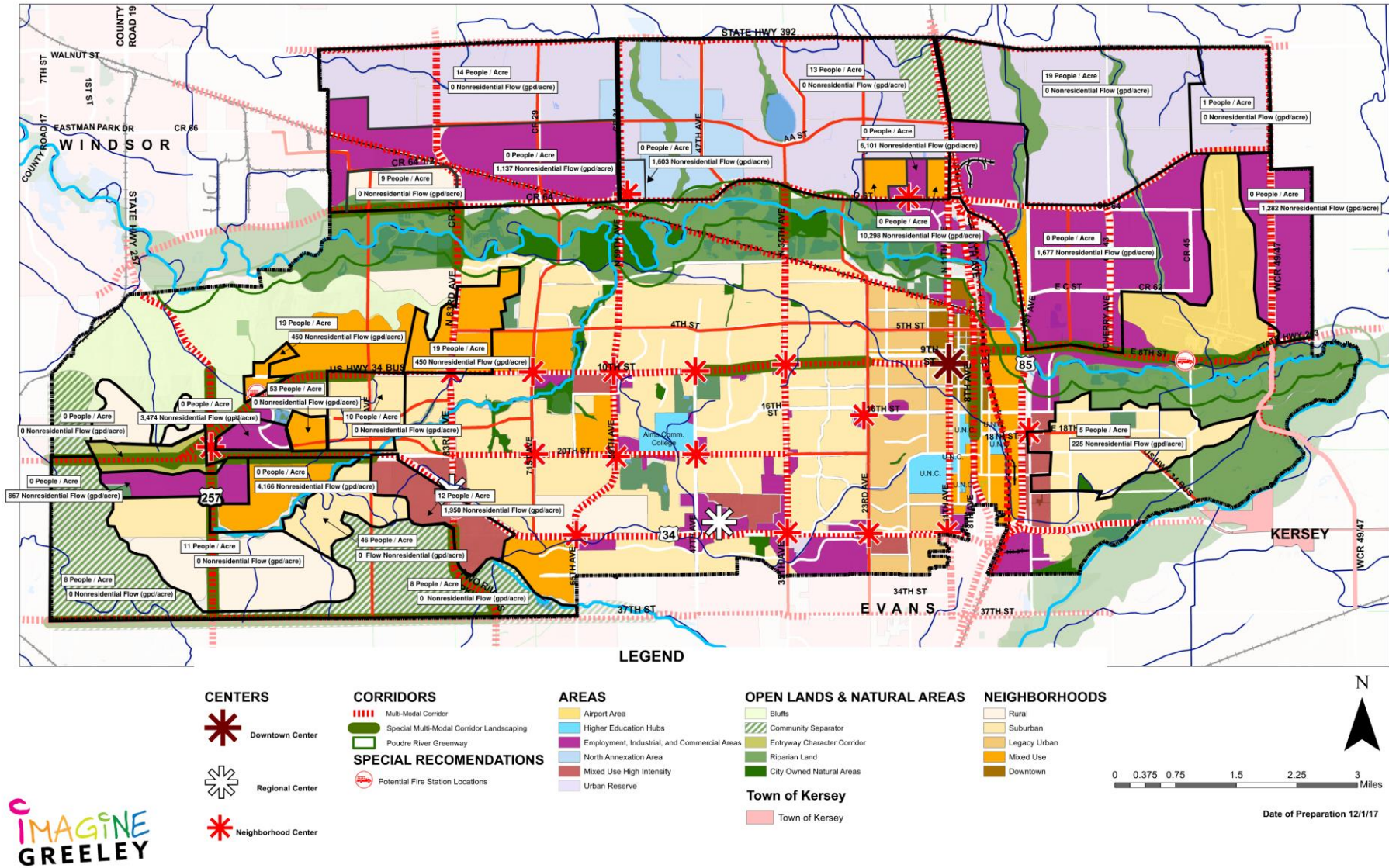
¹ For 20 DU/acre, 1.7 people per DU was assumed. For 1-4 DU/acre, 3.1 people per DU was assumed.

Note:

- The following map shows the areas from Table F-1. Each area has been subdivided to vary the density similarly to the original comprehensive plan. The City directed CDM Smith to distribute the residential/non-residential demand to each of the sub-divided areas.
- Each subdivided area is shown in black outline with labels for the resulting projected growth.
- To enable comparison to future development, the resulting people/acre and non-residential flow/acre has been shown.

Appendix F - Comprehensive Plan for Demand Projections

LAND USE GUIDANCE MAP



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Appendix G

Comprehensive Plan Action Item List

The City adopted the *Imagine Greeley Comprehensive Plan* in 2018, which is a policy guide that provides framework for public and private growth and development decisions made by the City over the next ten to twenty years. As a part of the Comprehensive Plan, a list of recommended actions was identified in Section 5 to assist in implementation of this plan. A summary of action items addressed with the development of this WTDMP to ensure implementation of the Comprehensive Plan is summarized in the following table.

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INFRASTRUCTURE (IN)

IMPLEMENTATION ACTION	WATER MASTER PLAN ACTION ITEM RESPONSE
Goal IN-1: Ensure developed areas in Greeley are served by adequate public facilities and services.	
IMP IN-1.1 Annually review and update the City's Adequate Public Facilities Area (APFA) concurrent with annual growth and development projections to assist in the planning and funding of municipal infrastructure to accommodate growth. Prepare maps depicting the boundaries of existing and budgeted service areas for infrastructure included in the APFA requirements.	While the WTDMP does not review or update the APFA, this master plan identifies the critical infrastructure needed to serve all major developable areas within the LREGA (Section 4) and the anticipated CIP cost (Section 5). This master plan will assist in planning and funding of municipal infrastructure and determine the anticipated infrastructure to meet the APFA requirements.
IMP IN-1.2 Continue to support timely and effective development in the Long Range Expected Growth Area as it relates to 208 Wastewater planning and treatment. Where possible and practical, look for opportunities to share and/or coordinate such capital improvements with other jurisdictions to efficiently use public resources.	This master plan identified infrastructure upgrades and future infrastructure needs to serve the Greeley up to the LREGA. The City held regional stakeholder meetings with adjacent municipalities to evaluate opportunities to coordinate and plan for future growth. A summary can be found in Appendix C. The major highlights of the stakeholder meetings; • Evaluate ways to increase service to the existing municipal customers including Windsor, Milliken, and Evans as their demands increase in the future. • Coordinate activities under the existing intergovernmental agreement with North Weld Water District to serve areas north of the Poudre River as Greeley's growth boundaries extend into North Weld's existing service area • Consider adding emergency connections to other municipalities to improve reliability. • Review opportunities to share major capital projects that may benefit the future needs for infrastructure improvements of neighboring water purveyors.
IMP IN-1.3 Through the annual Population Growth and Projections and Capital Improvements Plan, identify the location for new fire stations, parks and other public facilities commensurate with the City's expected growth.	Not Applicable

IMPLEMENTATION ACTION	WATER MASTER PLAN ACTION ITEM RESPONSE
IMP IN-1.4 Complete and implement a basin-wide study that addresses drainage improvements through larger, shared, facilities which could also achieve an attractive, functional community or regional park use.	Not Applicable
IMP IN-1.5 Evaluate existing capacity within established areas of the city to understand where investments in expanding infrastructure will be needed in order to support the type and/or intensity of development envisioned in the Land Use Guidance Map	This master plan has evaluated existing infrastructure to confirm sufficient capacity with the existing conditions, with future development of infill and densification of parcels, and full buildout as envisioned by the Land Use Guidance Map.
IMP IN-1.6 Update existing functional master plans for infrastructure and services as needed to account for changes in land uses and intensities that result from the adoption of this Comprehensive Plan and completion of implementation actions.	This masterplan incorporates improvements made to the water distribution system from the most recent water masterplan completed in 2003 and the most recent updates to the hydraulic model completed in 2018. This masterplan has incorporated recent land use applications, utilized the Comprehensive Plan to update land uses and anticipated densities, and addressed areas outside of the 20-year plan through guidance and coordination with the planning department.
IMP IN-1.7 Develop functional master plans detailing the maintenance, operation, and expansion of infrastructure and public facilities where such documents do not currently exist.	Not Applicable
IMP IN-1.8 Consider the extension of water lines to serve larger groups of users and along primary roadways to provide non-potable water to landscaped medians and parkways.	Not Applicable

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Item No. 21.



**CDM
Smith**[®]
cdmsmith.com



Item No. 21.

(IN)



INFRASTRUCTURE (IN)

IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
Goal IN-1: Ensure developed areas in Greeley are served by adequate public facilities and services.			
IMP IN-1.1 Annually review and update the City's Adequate Public Facilities Area (APFA) concurrent with annual growth and development projections to assist in the planning and funding of municipal infrastructure to accommodate growth. Prepare maps depicting the boundaries of existing and budgeted service areas for infrastructure included in the APFA requirements.	Lead Community Development Partners Planning Commission Public Works Police Fire Water and Sewer Culture, Parks, and Recreation	Policies and Programs	Ongoing
IMP IN-1.2 Continue to support timely and effective development in the Long Range Expected Growth Area as it relates to 208 Wastewater planning and treatment. Where possible and practical, look for opportunities to share and/or coordinate such capital improvements with other jurisdictions to efficiently use public resources.	Lead Water and Sewer Partners Community Development	Policies and Programs	Ongoing
IMP IN-1.3 Through the annual Population Growth and Projections and Capital Improvements Plan, identify the location for new fire stations, parks and other public facilities commensurate with the City's expected growth.	Lead Community Development Partners Culture, Parks, and Recreation Police Department Fire Department	Policies and Programs	Ongoing
IMP IN-1.4 Complete and implement a basin-wide study that addresses drainage improvements through larger, shared, facilities which could also achieve an attractive, functional community or regional park use.	Lead Public Works Partners Culture, Parks, and Recreation	Plans	Near-Term



IMPLEMENTATION ACTION	RESPONSIBILITY	TYPE	TIMEFRAME
IMP IN-1.5 Evaluate existing capacity within established areas of the city to understand where investments in expanding infrastructure will be needed in order to support the type and/or intensity of development envisioned in the Land Use Guidance Map	Lead Water and Sewer Partners Public Works Culture, Parks, and Recreation Community Development	Policies and Programs	Near-Term
IMP IN-1.6 Update existing functional master plans for infrastructure and services as needed to account for changes in land uses and intensities that result from the adoption of this Comprehensive Plan and completion of implementation actions.	Lead All City Departments	Policies and Programs	Near-Term
IMP IN-1.7 Develop functional master plans detailing the maintenance, operation, and expansion of infrastructure and public facilities where such documents do not currently exist.	Lead All City Departments	Plans	Near-Term
IMP IN-1.8 Consider the extension of water lines to serve larger groups of users and along primary roadways to provide non-potable water to landscaped medians and parkways.	Lead Water and Sewer Partners Culture, Parks, and Recreation Community Development	Public Investments	Long-Term
Goal IN-2: Ensure the design, construction, and appearance of City infrastructure and facilities contributes to the character of the community.			
IMP IN-2.1 Evaluate current best practices in designing, developing, and constructing green infrastructure and incorporate appropriate practices into the City's approach to stormwater management.	Lead Public Works Partners Culture, Parks, and Recreation Community Development	Policies and Programs	Near-Term
IMP IN-2.2 Evaluate, and update as needed, existing design guidelines for infrastructure and public facilities to ensure aesthetics and considerations for the visual or quality of life impacts on surrounding neighborhoods are considered.	Lead Public Works Partners Water and Sewer Culture, Parks and Recreation Community Development	Regulatory Revisions	Long-Term

CITY OF GREELEY, COLORADO
ORDINANCE _____, 2021

AN ORDINANCE ADOPTING THE 2021 SANITARY SEWER MASTER PLAN AND THE 2021 WATER TRANSMISSION AND DISTRIBUTION MASTER PLAN AND AMENDING THE 2018 COMPREHENSIVE PLAN TO INCLUDE THE SAME BY REFERENCE

WHEREAS, the City of Greeley, Colorado ("City") is a home rule municipality empowered pursuant to Sections 1 and 6 of Article XX of the Colorado Constitution to, *inter alia*, construct, purchase, acquire, lease, add to, maintain, conduct, and operate water works and everything required therefor, within or without its territorial limits, for the use of the City; and

WHEREAS, Section 19-1 of the Greeley City Charter obligates City Council to adopt a comprehensive plan as a guide to land use and development; and

WHEREAS, on February 6, 2018, City Council adopted "Imagine Greeley: The City of Greeley Comprehensive Plan (2018)" (the "2018 Comprehensive Plan"); and

WHEREAS, from 2018 - 2021, the City, through it's the Water and Sewer Department and consultants, prepared a master plan for the City's sanitary sewer system; and

WHEREAS, from 2017 - 2021, the City, through it's the Water and Sewer Department and consultants, prepared a master plan for the City's water transmission and distribution system; and

WHEREAS, The 2021 Sanitary Sewer Master Plan and the 2021 Water Transmission and Distribution Master Plan (the "Plans") provide the backbone infrastructure required for long term growth of the City's sanitary sewer system and water transmission and distributions system. The planning documents are essential to ensure future development in the City has adequate public facilities and services; and

WHEREAS, the Plans address the 2018 Comprehensive Plan action plan items: IMP IN-1.2, IMP IN-1.5, IMP IN-1.6, IMP IN-1.7, and IMP-IN-1.8; and

WHEREAS, Section 17-7 of the Greeley City Charter requires that the Water and Sewer Board ("Board") recommend long rang plans to City Council for water and sanitary sewer improvements; and

WHEREAS, on July 21, 2021, City staff presented the Plans to the Board. By motion, the Board recommended that City Council adopt the Plans and incorporate the same by reference as an amendment to the 2018 Comprehensive Plan; and

WHEREAS, Section 19-1 of the Greeley City Charter describes the Planning Commission's role in providing advice on land use matters to City Council, and the 2018 Comprehensive Plan requires that the Planning Commission conduct a public hearing on any proposed amendment to the 2018 Comprehensive Plan, which includes a modification to policies contained within

master plans adopted by reference, and provide a recommendation on the same to City Council; and

WHEREAS, on July 27, 2021, the Planning Commission held a public hearing on the Plans with an opportunity for public comment. By motion, the Planning Commission recommended that City Council adopt the Plans and incorporate the same by reference as an amendment to the 2018 Comprehensive Plan.

NOW THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF GREELEY, COLORADO:

Section 1. That the 2021 Sanitary Sewer Master Plan is accepted and approved as presented.

Section 2. That the 2021 Water Transmission and Distribution Master Plan is accepted and approved as presented.

Section 3. That "Imagine Greeley: The City of Greeley Comprehensive Plan (2018)" is amended to include by reference the 2021 Sanitary Sewer Master Plan and the 2021 Water Transmission and Distribution Master Plan.

Section 4. This Ordinance shall take effect on the fifth day following its final publication, as provided by Section 3-16 of the Greeley City Charter.

PASSED AND ADOPTED, SIGNED AND APPROVED ON THIS ____ DAY OF _____, 2021.

ATTEST

CITY OF GREELEY, COLORADO

City Clerk

Mayor

Sanitary Sewer Collections and Water Transmission & Distribution Master Plans

City Council Overview Presentation



Presented September 7, 2021

Sean Chambers, Water & Sewer
Department Director

Adam Prior P.E., Water & Sewer
Chief Engineer

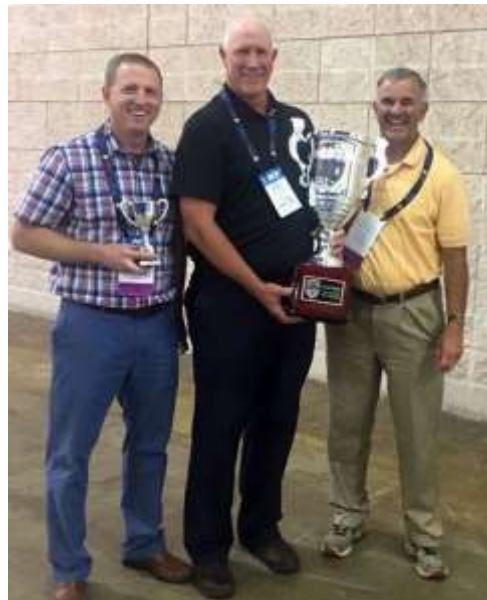
Purpose

Master plans develop infrastructure and capacity analysis, prioritize system rehabilitations and capacity expansion investments and guide current and future decision making.

- Formal adoption of the master plans leads to efficient and effective governance
 - Seeking adoption and incorporation into the 2018 Comprehensive Plan by reference
 - Seeking approval of the Planning Commission, Water Board and City Council
- Today we will present of critical findings of these two master plans
- Ask for Council approval by Ordinance, as required to adopt and incorporate amendments to the 2018 Comprehensive Plan.

Master Planning Mission Statement

Provide City of Greeley a **reliable, defensible, and accurate** Master Plan that will serve as a 20-year planning guide by analyzing the infrastructure needed to improve system operations, serve population growth areas, and to integrate water, sewer, and non-potable water systems to make it a **cohesive plan**.



Existing Wastewater Collections System

- 350 miles of sewer pipe (4" – 21" diameter)
- 17 miles of interceptor (24" – 48" diameter)
- 10 Lift Stations
- 1 Wastewater Treatment Plant



Diameter	Length (ft)
4	4,697
6	88,818
8	1,398,226
10	131,384
12	78,455
15	54,568
16	465
18	51,779
21	38,688
24	17,008
27	10,779
30	19,011
36	38,006
42	1,232
48	5,430

Wastewater Master Plan Area

Legend

■ Existing Lift Stations

▨ Private Septic System Parcels

2008 Boundaries

▭ GREELEY

▭ EVANS

▭ JOHNSTOWN

▭ MILLIKEN

▭ WINDSOR

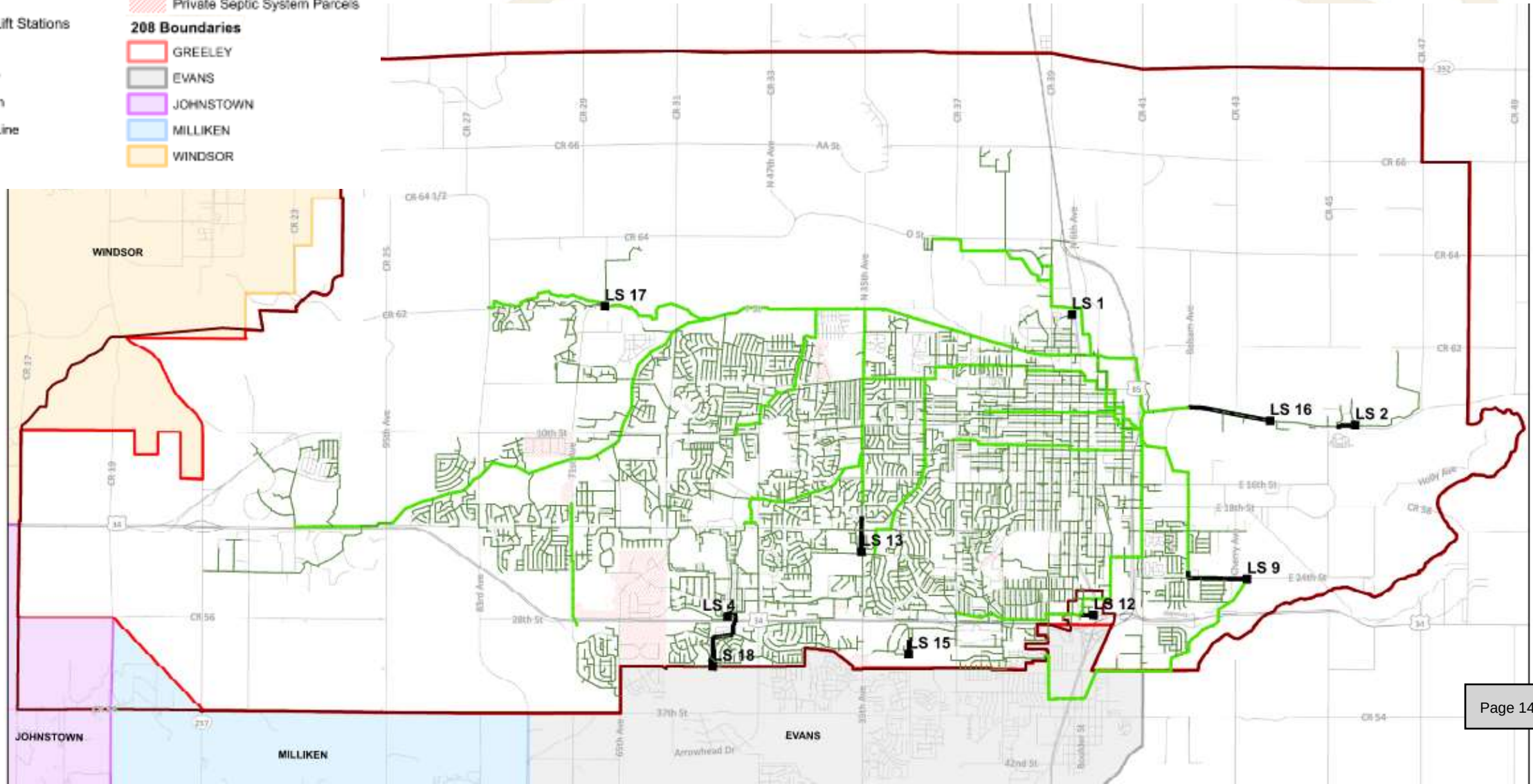
Sewer Mains

— Trunk Line

— Force Main

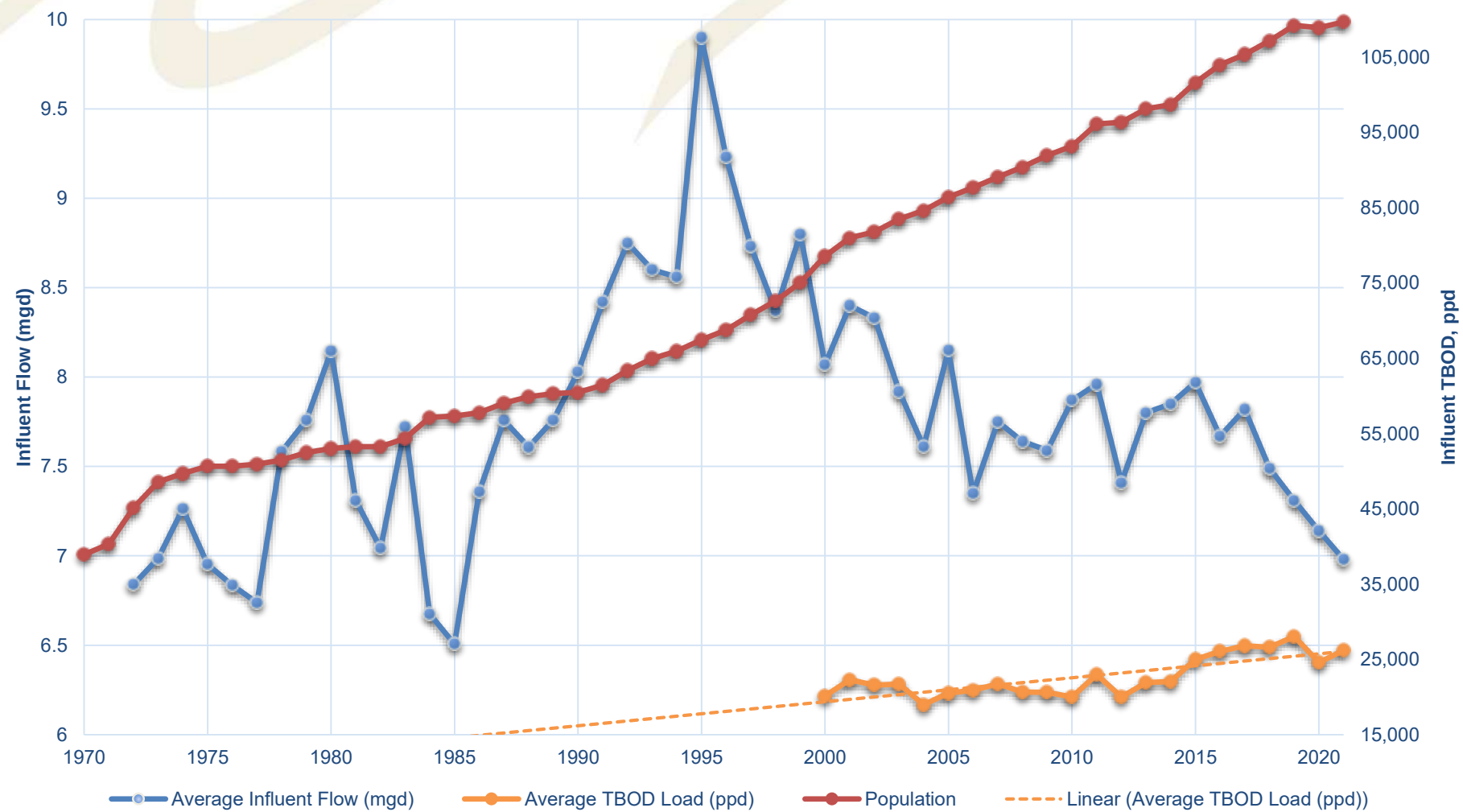
— Collector Line

▭ LREGA



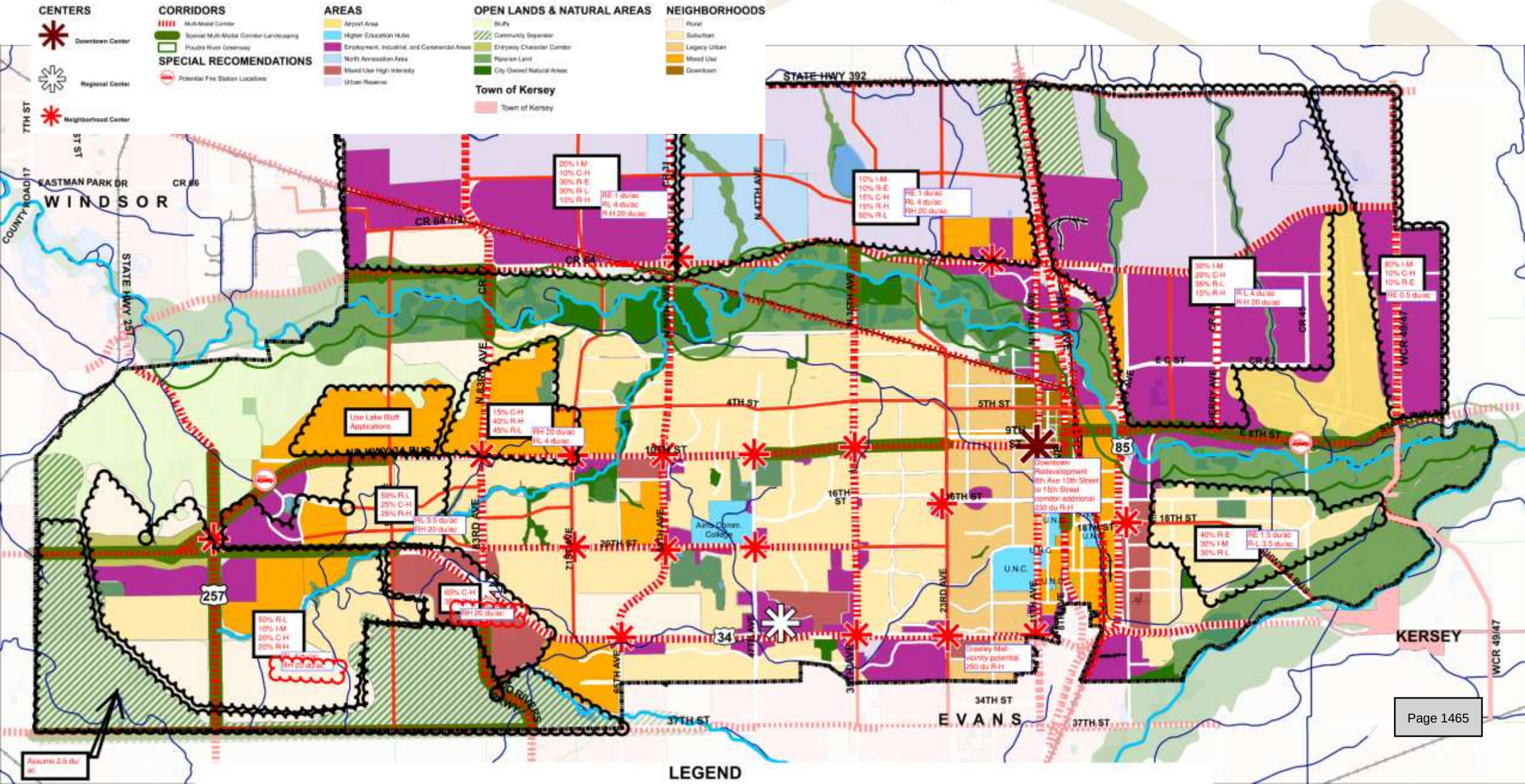
WTRF Influent Flow, Load, & Population

WTRF: Influent Flow, Load, & Population - Annual Average 1970-2021

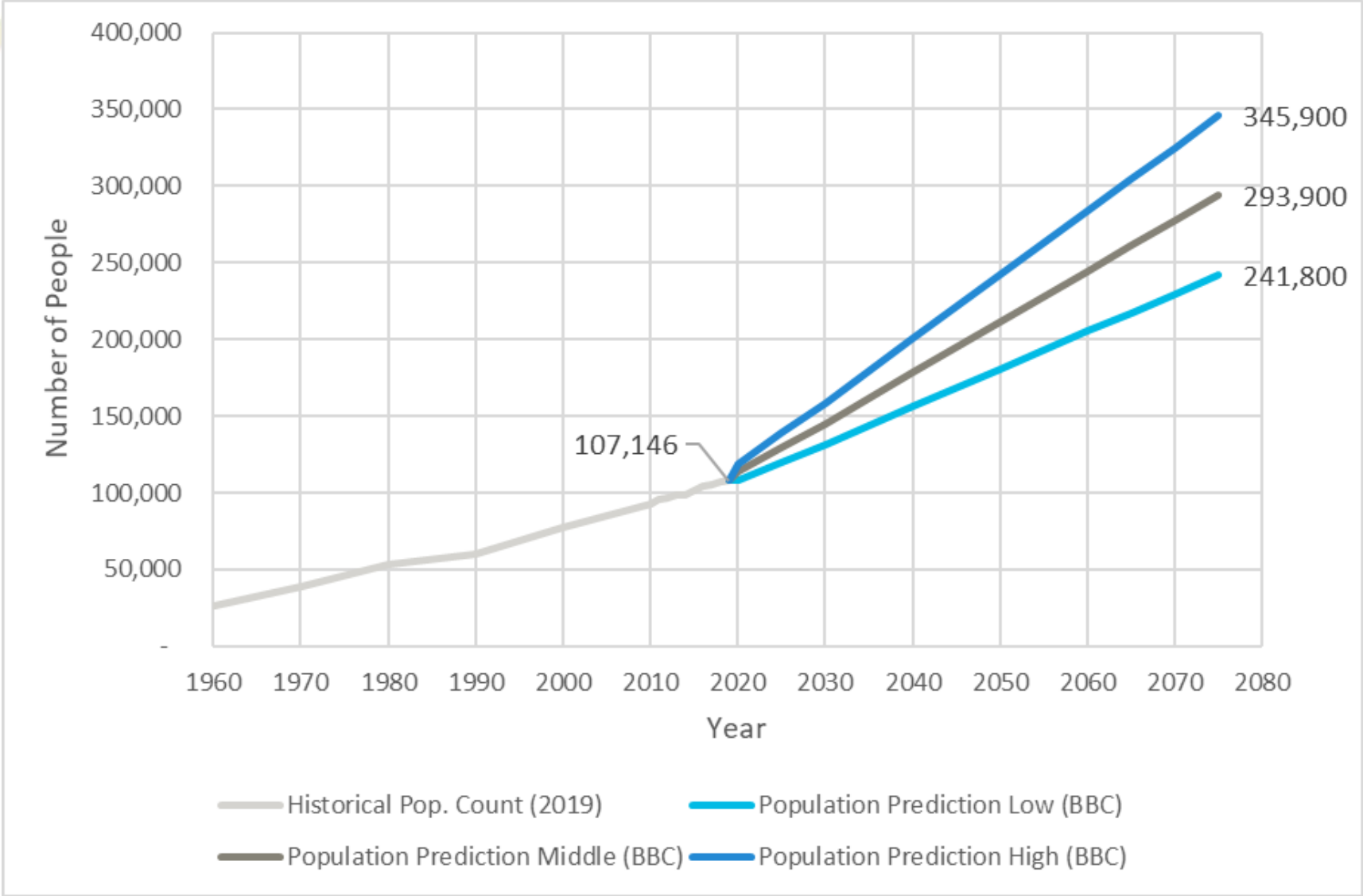


Planning Areas – Comprehensive Plan

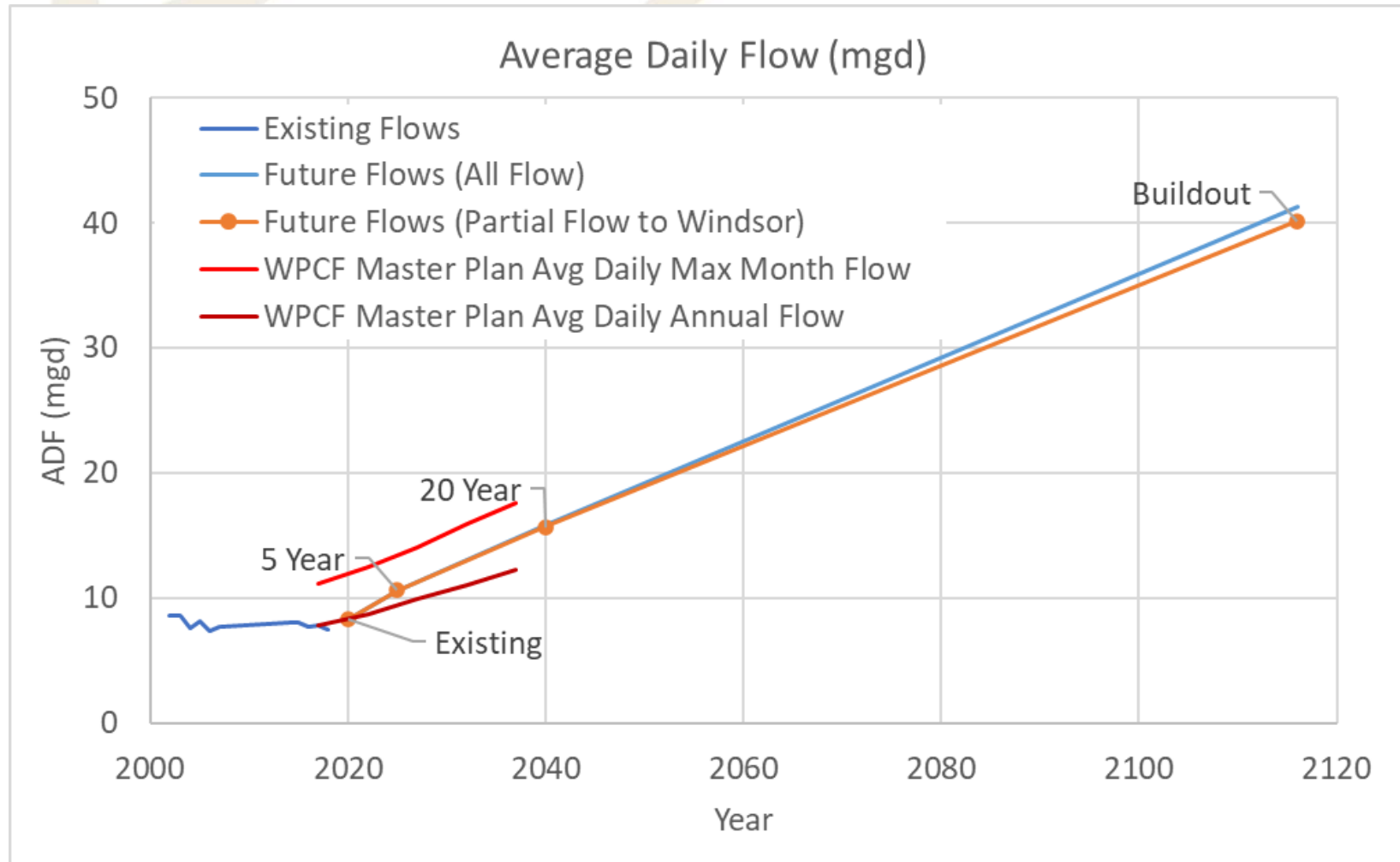
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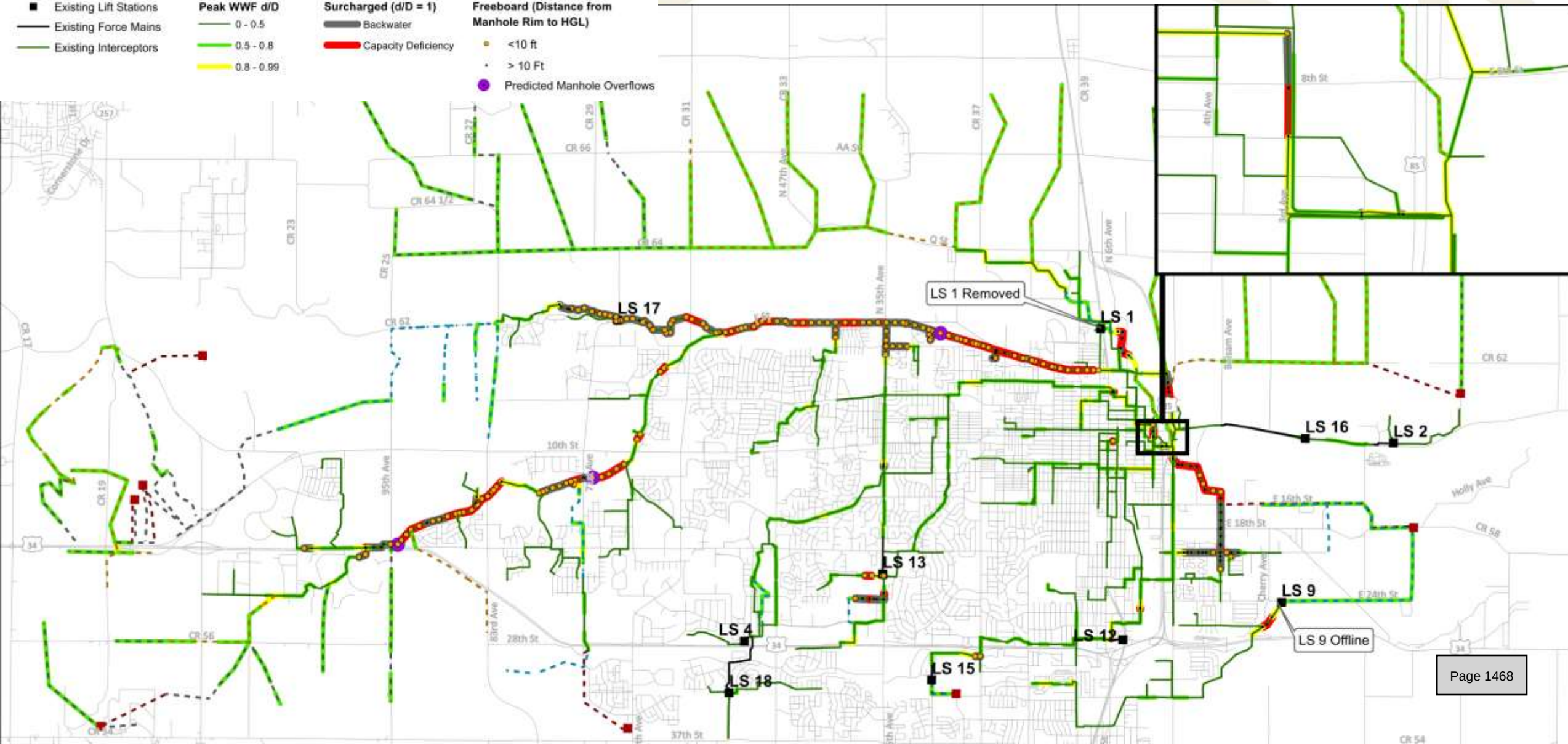
Population Projections



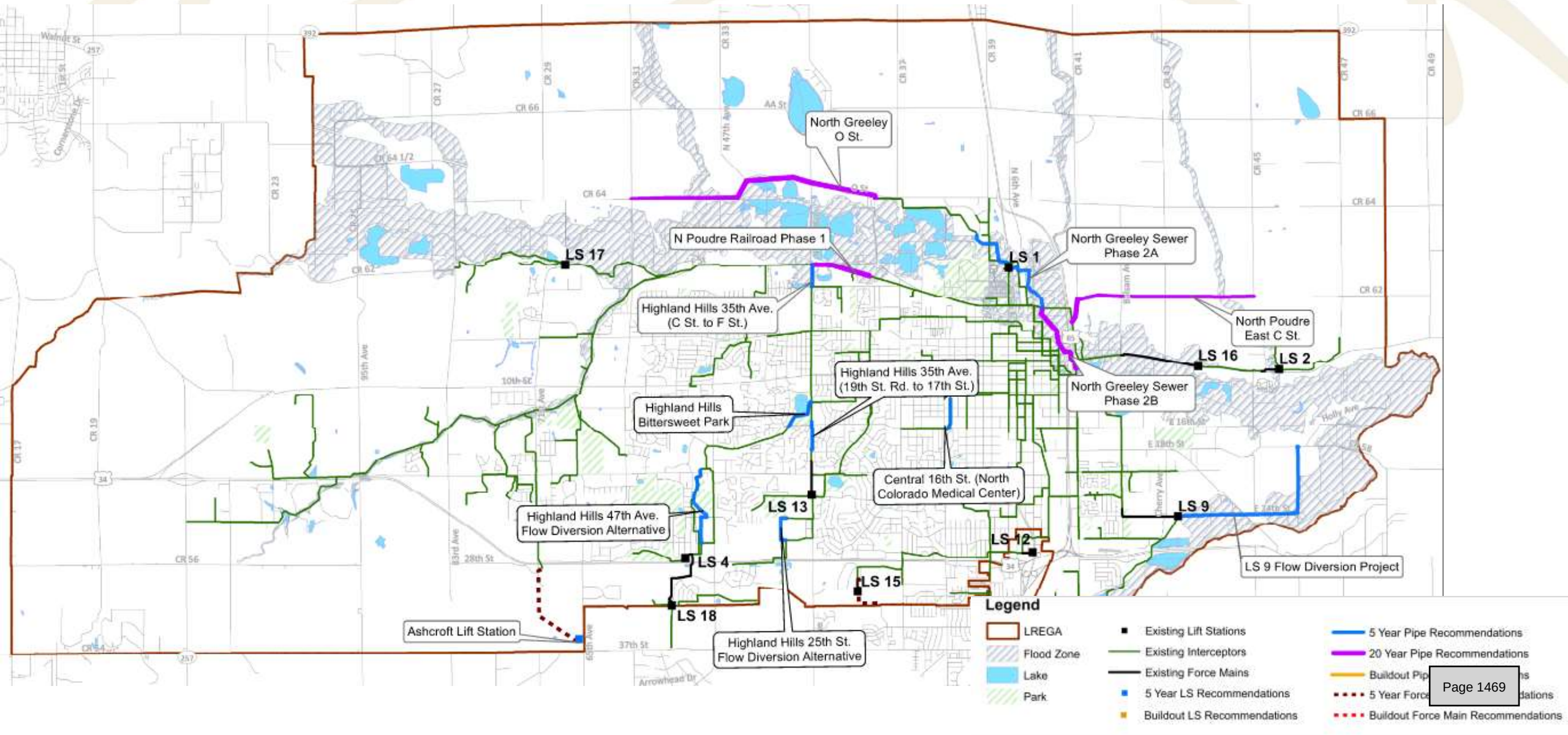
Wastewater Flow Projections



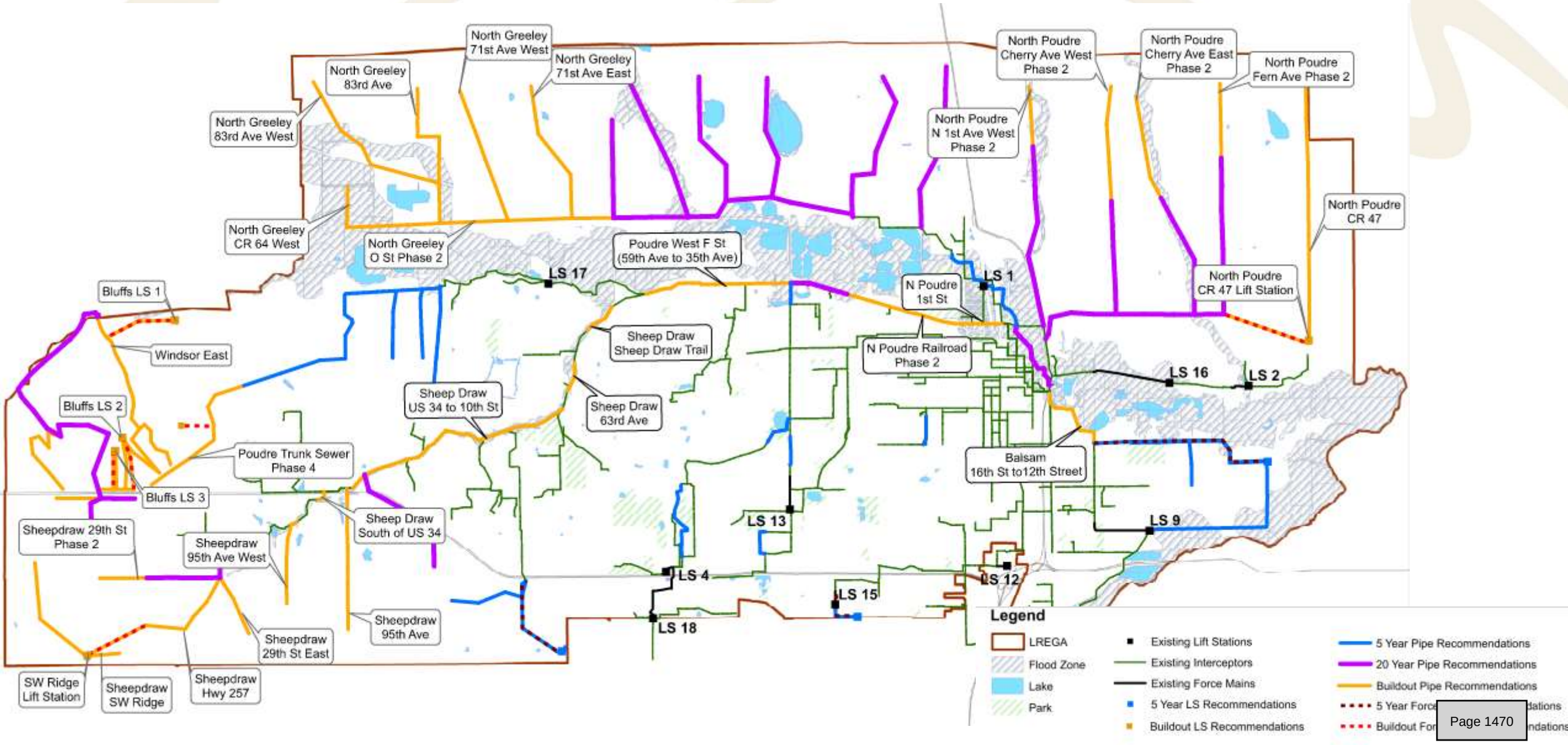
Buildout Sewer System Capacity



5-Year & 20-Year Planned City CIP



Recommended Capital Improvements



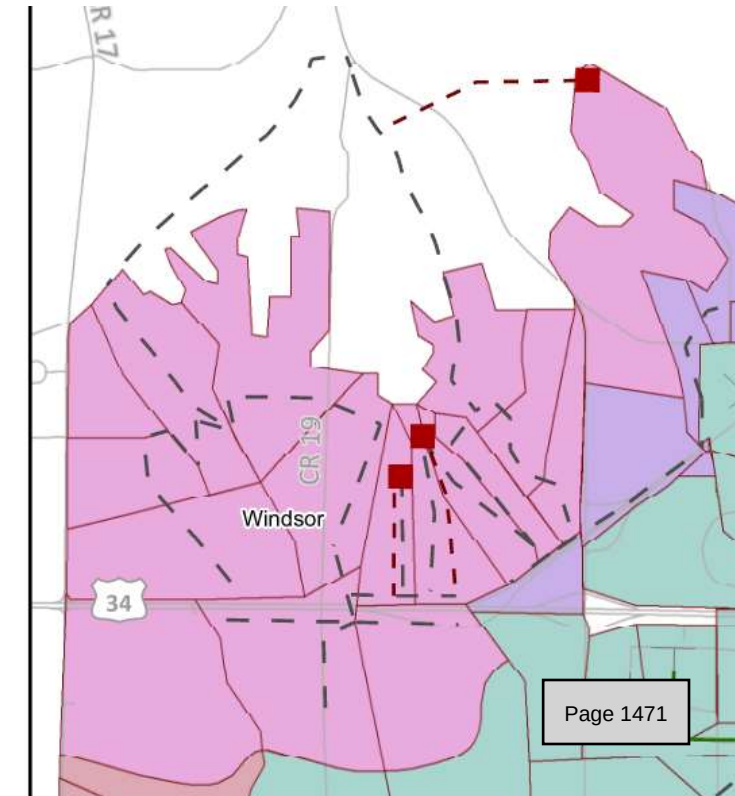
Windsor vs Poudre Options

- Area has been assumed to flow to Windsor at buildout
 - Windsor Master Plan (2015) covers part of the LREGA.
 - Buildout Peak WWF – 4 MGD
- Existing IGA – Windsor/Greeley

Poudre Option

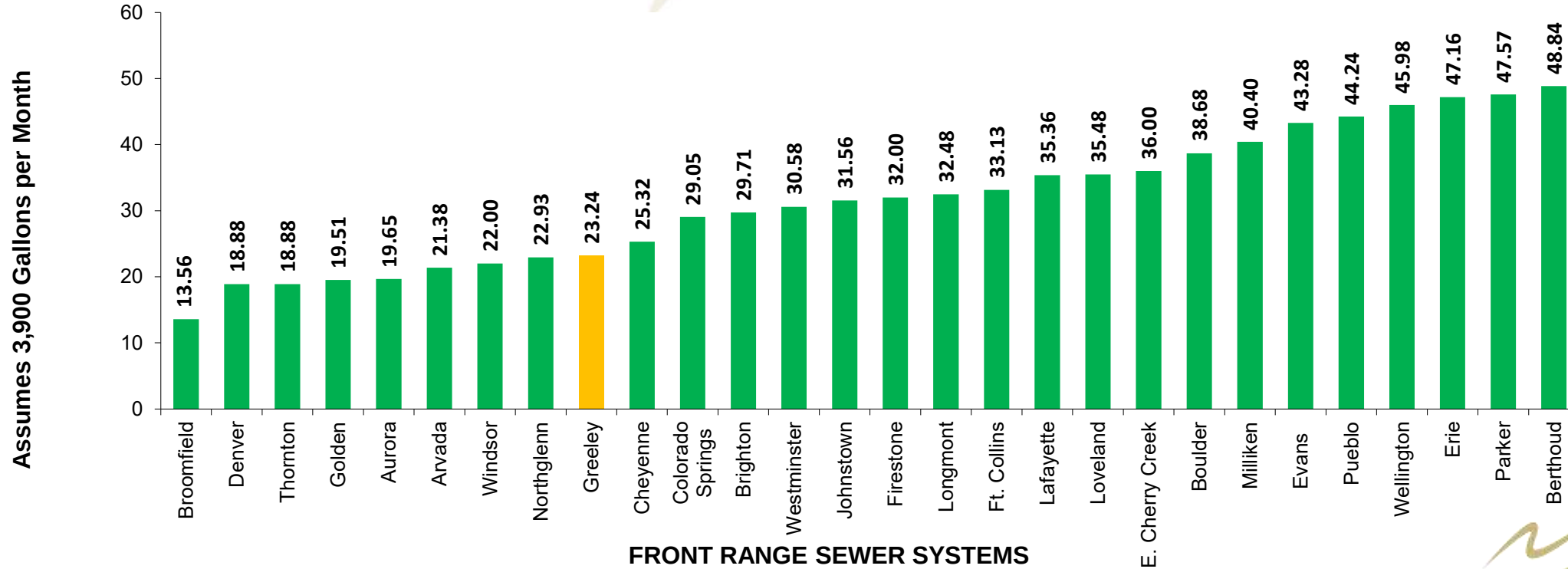


Windsor Option



2021 Monthly Sewer Bill Comparison

2021 Monthly Sewer Bill: Single Family Residential



Transmission & Distribution Master Plan

Potable Water System



Existing Water System

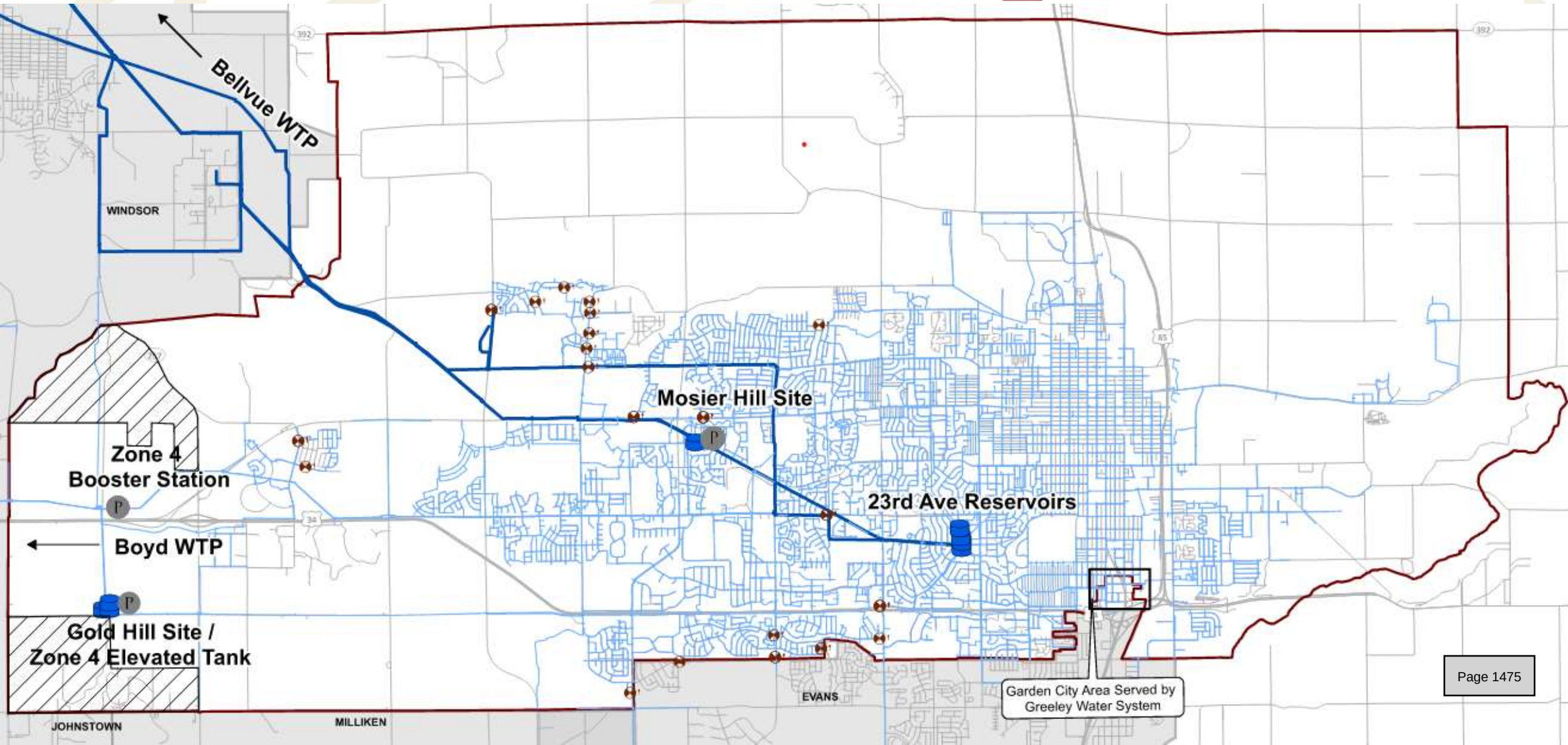
- 500 miles of distribution main
- 153 miles of transmission main
- 3 Pump Stations (Zone 4, Boyd Lake, Mosier Hill)
- Storage Tanks
 - 23rd Ave Reservoirs
 - Gold Hill Reservoir and Gold Hill Tank
 - Mosier Hill Tank
 - Zone 4 Water Tower
- Water Supply Sources
 - Bellvue (primary)
 - Boyd Lake (peaking)
- 4 Pressure Zones (based on elevations, controlled by reservoirs)
- Demands (2017-2018): Annual Average day = 25 MGD, Peak Day = 46 MGD



Pipe Dia (in)	Length (miles)
<8"	140
8"	230
10"	10
12"	50
16"	30
20"	50
24"	20
>24"	120
Total	650

Water Master Plan Area

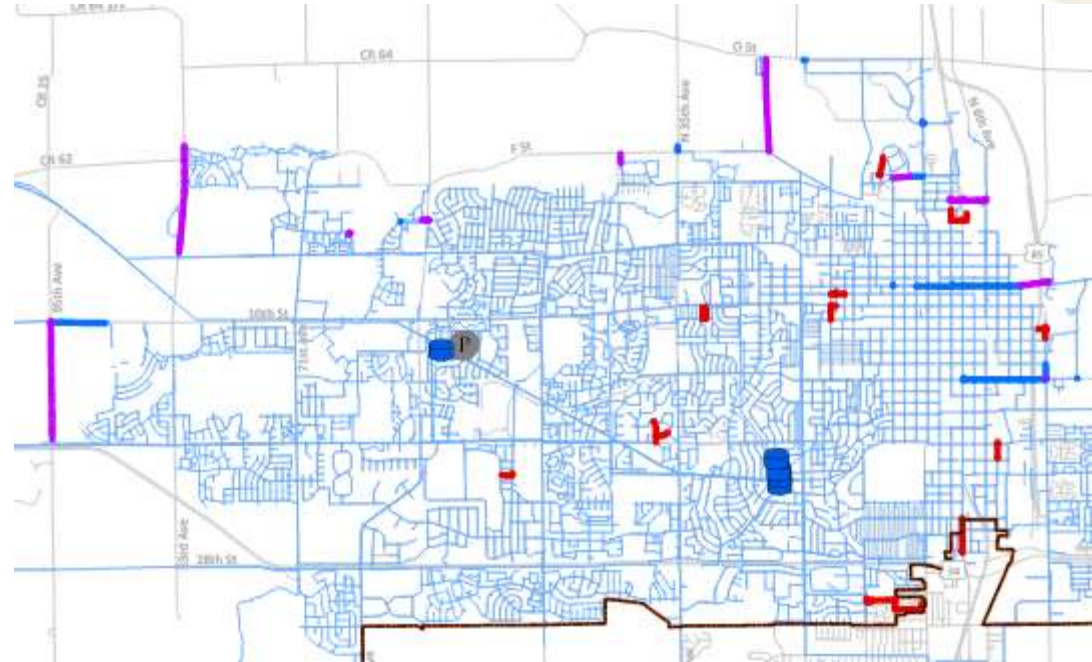
- Legend**
- Existing Pump Stations
 - Existing Storage
 - Neighboring Towns
 - LREGA
 - Distribution Mains
 - Transmission Mains
 - Overlapping Growth Area (to be negotiated in future IGAs)



Fire Flow Evaluation

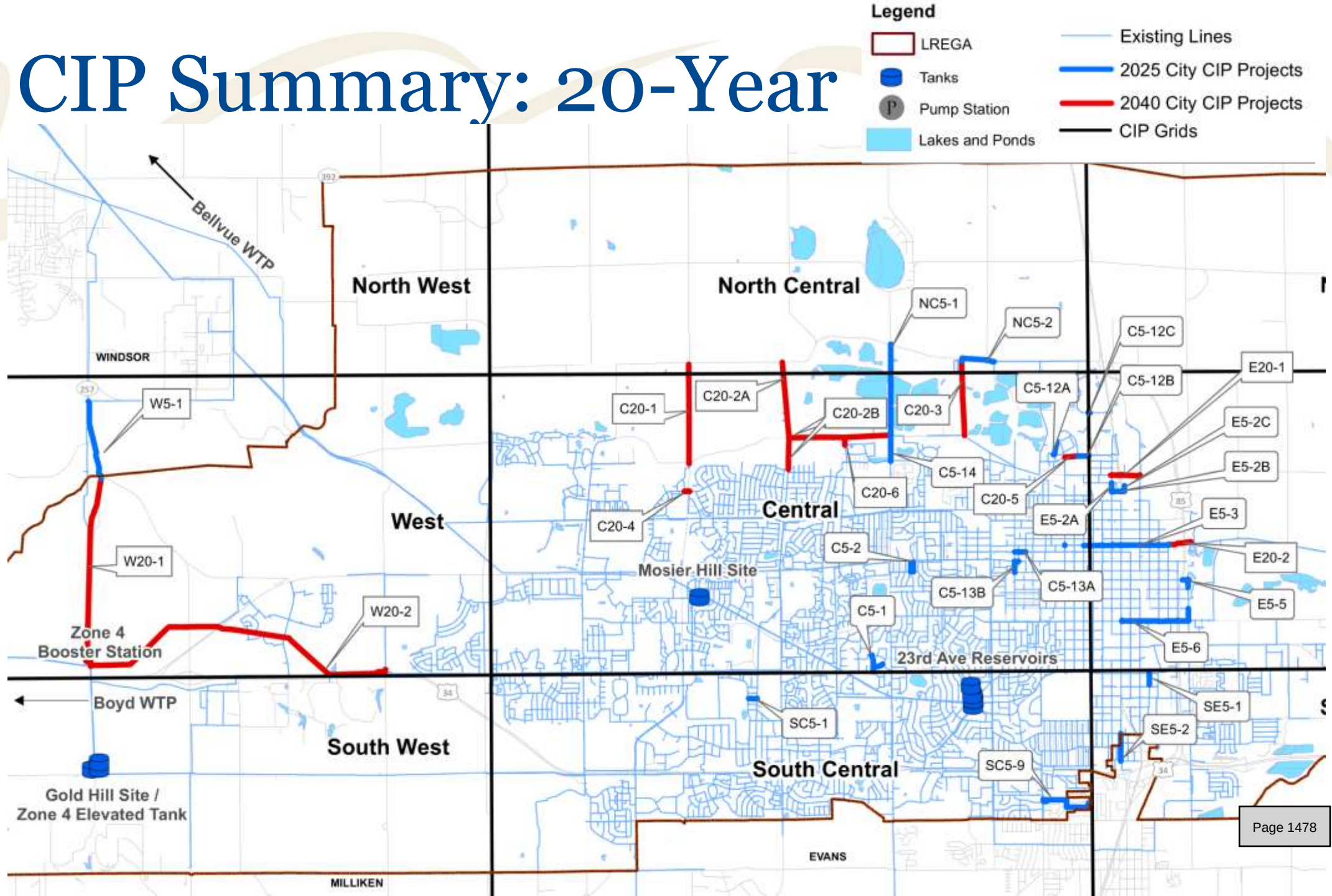
Adequate Fire Flow Capacity is Critical Public Water System Criteria

- For future areas, fire flow was used to ensure pipes were large enough
- Some existing fire flow improvements areas are identified
 - 11 small projects proposed to improve fire flow resiliency



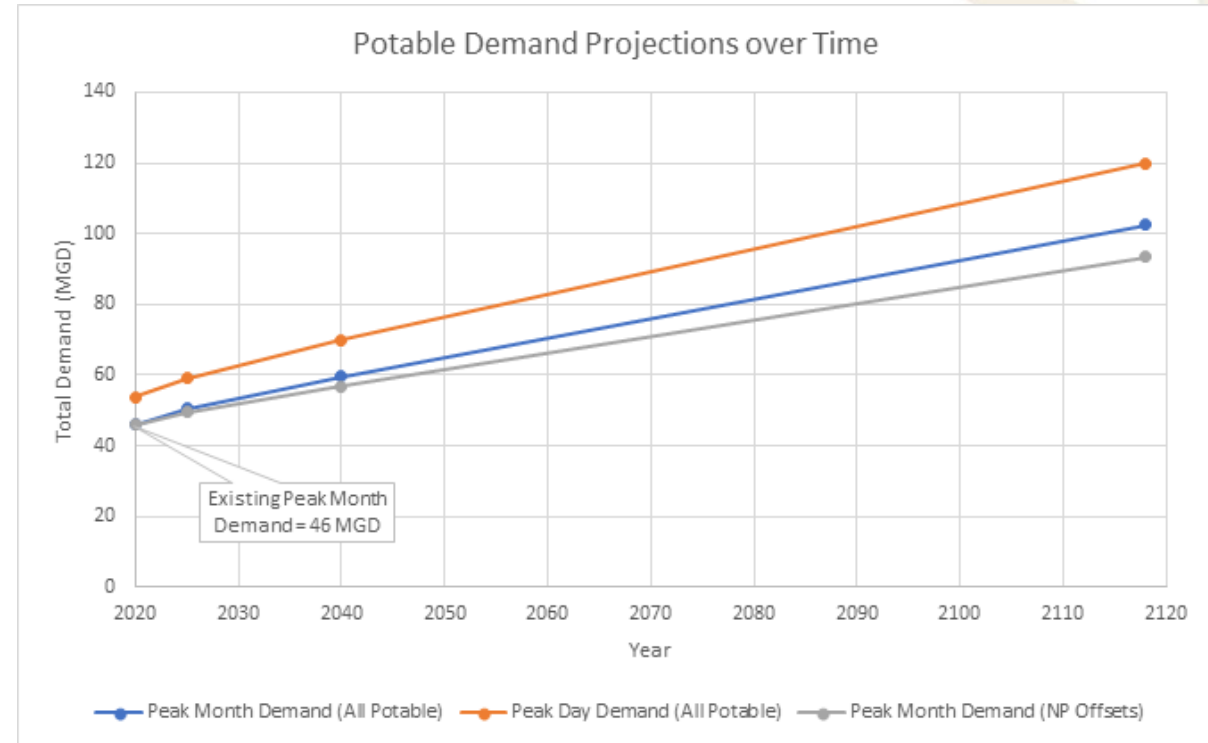


City CIP Summary: 20-Year

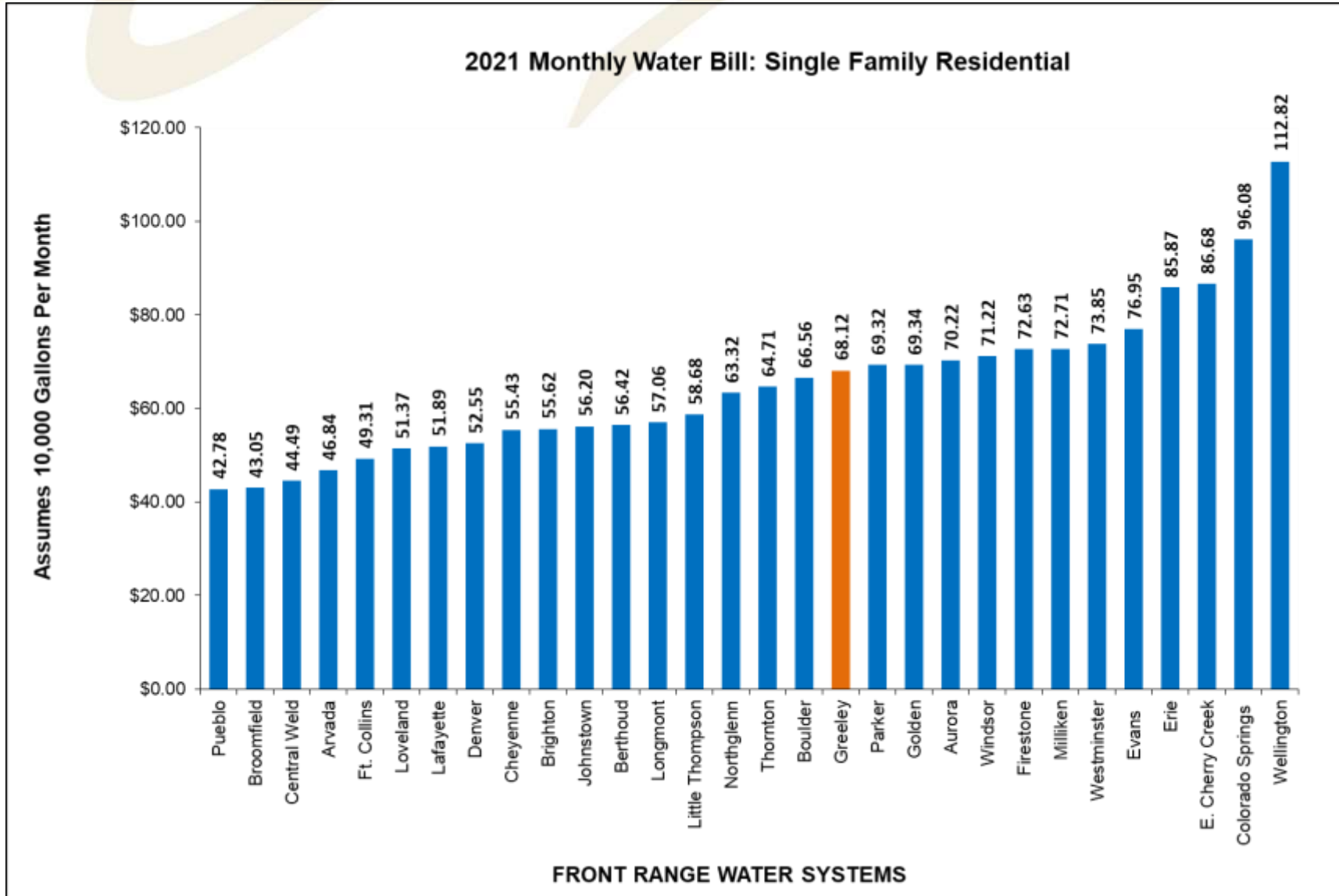


Water Demand Projections

- Planned potable infrastructure is sized for 102.4 MGD (buildout)
 - Existing = 46.0 MGD
 - 123% increase
 - Peak month demands
- Non-Pot offsets could reduced potable demand to 93.5 MGD or lower
 - Dependent on strong NP police and encouragement of NP conversions
 - NP MP assumes NP increases from 1.3 MGD to 9.3 MGD



2021 Monthly Water Bill Comparison



Stakeholder & Community Engagement



Stakeholder Engagement Approach



Interactive Workshop 1:

- Build collaborative environment
- Inform ALL stakeholder
- Share information between stakeholders
- Brainstorm additional areas of collaboration



Interactive Workshop 2:

- Stakeholder input on alternatives and challenges
- Discuss alternatives (map)
- Finalize regional solutions

Stakeholder	Wastewater	Water	Non-Pot
Evans*	✓	✓	✓
Kersey*	✓	✓	
Johnstown	✓	✓	
Eaton*	✓	✓	
Windsor*	✓	✓	✓
Milliken*	✓	✓	
Severance		✓	
Loveland		✓	
Elco		✓	
North Weld		✓	
Denver Water*			✓
Westminster*			✓

*One-on-one meeting held



One on Ones

- Collaborate on specific ideas between Greeley and stakeholders



Community Engagement

- Community engagement with engineers, planners, developers, and citizens
- Community engagement efforts included (spring of 2021):
 - Virtual meeting to introduce MP and development work completed
 - Participants reviewed draft MP and provided comments
 - Follow up virtual meeting was held to discuss comments and responses
- Water & Sewer Board public comment & recommended to City Council from on July 15th of 2021
- Builders, Realtors, and Developers Roundtable on July 19th, 2021
- Planning Commission public comment & recommended to City Council from on July 27th of 2021

Recommendation

- Staff Recommend an ordinance Adopting the 2021 Sanitary Sewer Master Plan and the 2021 Water Transmission and Distribution Master Plan and Amending the 2018 Comprehensive Plan to include the same by reference.

QUESTIONS?

Council Agenda Summary

September 7, 2021

Key Staff Contact: Andy McRoberts, Culture, Parks and Recreation Director, 970-350-9425

Title:

Public hearing and final reading of an ordinance repealing Sections 12-626 – 12-628 and amending portions of Chapter 10 of Title 12 and Chapter 5 of Title 18 of the City of Greeley Municipal Code, all regarding forestry requirements in the City of Greeley

Summary:

This item cleans up and updates sections of the Greeley Municipal Code pertaining to community forestry related items (Title 12 – Pest and Weed Control/Public Health and Environment Control and Title 18 - Trees in Rights-of-Way and Public Places/Public Health and Environmental Control). Staff have been working on updating the relevant code sections in order to eliminate or modify outdated language and to allow best management practices as related to trees and vegetation within the city's rights-of-way and other properties within the city.

Specifically, the modifications include:

Title 12

- 1) Eliminates a specific reference to Dutch Elm Disease which was prevalent in the 1970's. New language is broader in nature to encapsulate other infectious tree issues (in Section 12-564).
- 2) Eliminates certain references from "shall" to "may" to allow flexibility and common sense approach regarding enforcement activity and priority issues regarding vegetation management. This will free up time for staff to focus more on rights-of-way issues within the community, which is particularly necessary in older areas of the city that have aging trees and increasingly related substructure issues as well as pro-active management of an impending Emerald Ash Borer presence.

Title 18

- 1) Provides clear language as to the need for permits for any tree work within the city's rights-of-way.
- 2) Modifies clear height of overhang of branches on city streets from 13 feet to 14 feet to accommodate higher vehicles (primarily newer buses and refuse trucks).
- 3) Eliminates reference to trees near intersections as this is addressed elsewhere in the code (Development Code)
- 4) Clarifies language as to clearance of vegetation from rights-of-way.

Fiscal Impact:

Does this item create a fiscal impact on the City of Greeley?	No
If yes, what is the initial, or, onetime impact?	
What is the annual impact?	
What fund of the City will provide Funding?	
What is the source of revenue within the fund?	
Is there grant funding for this item?	No
If yes, does this grant require a match?	
Is this grant onetime or ongoing?	
Additional Comments:	

Legal Issues:

Consideration of this matter is a legislative process which includes the following public hearing steps:

- 1) City staff presentation (if requested)
- 2) Council questions of staff
- 3) Public input (hearing opened, testimony - up to three minutes per person, hearing closed)
- 4) Council discussion
- 5) Council decision

Other Issues and Considerations:**Strategic Work Program Item or Applicable Council Priority and Goal:**

Safety: Manage the health, safety and welfare in a way that promotes a sense of security and well-being for residents, businesses and visitors.

Decision Options:

- 1) Adopt the ordinance as presented; or
- 2) Amend the ordinance and adopt as amended; or
- 3) Deny the ordinance; or
- 4) Continue consideration of the ordinance to a date certain.

Council's Recommended Action:

A motion to adopt the ordinance and publish with reference to title only.

Attachments:

Presentation material
Ordinance

**CITY OF GREELEY, COLORADO
ORDINANCE NO. _____, 2021**

**AN ORDINANCE REPEALING SECTIONS 12-626 – 12-628 AND AMENDING PORTIONS OF
CHAPTER 10 OF TITLE 12 AND CHAPTER 5 OF TITLE 18 OF THE CITY OF GREELEY MUNICIPAL
CODE, ALL REGARDING FORESTRY REQUIREMENTS IN THE CITY OF GREELEY**

WHEREAS, the City of Greeley, Colorado, (the "City"), is a home rule municipality, organized and existing under Article XX, Section 6 of the Colorado Constitution; and

WHEREAS, pursuant to Article XX, Section 6 of the Colorado Constitution, the right to enact, administer and enforce ordinances relating to forestry is clearly within the constitutional grant to power to the City and is necessary to ensure the clear passage of vehicles through the right-of-way and otherwise mitigate dangerous or noxious conditions caused by trees or shrubbery; and

WHEREAS, it becomes necessary to update the Greeley Municipal Code (the "Code") from time to time to reflect modern practices and eliminate language and references rendered redundant or obsolete by the passage of time; and

WHEREAS, more specifically, the updates contained herein will eliminate obsolete cross-references and unduly specific code provisions, increase the required height of tree limbs overhanging street level to accommodate newer-model maintenance vehicles, update the minimum distance trees should be planted in relation to sidewalks and street corners in response to common practices used by developers in the City, and provide increased flexibility to City staff in its efforts to enforce the Code.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF GREELEY, COLORADO:

Section 1: Article V of Chapter 10, Pest and Weed Control, of Title 12, Public Health and Environmental Control is hereby repealed.

Section 2: Sections 12-564 and 12-565 of Chapter 10, Pest and Weed Control, of Title 12, Public Health and Environmental Control, shall be amended as shown in Appendix A.

Section 3: Sections 18-326, 18-328, 18-331, 18-332, 18-333 and 18-352 of Chapter 5, Trees in Rights-of-Way and Public Places, of Title 18, Public Health and Environmental Control shall be amended as shown in Appendix A.

Section 4: This ordinance shall become effective on the fifth day following its final publication as provided by Section 3-16 of the Greeley City Charter.

PASSED AND ADOPTED, SIGNED AND APPROVED ON THIS _____ DAY OF
_____, 2021.

ATTEST

THE CITY OF GREELEY, COLORADO

City Clerk

Mayor

APPENDIX A

Section 1: Article V of Chapter 10, Pest and Weed Control, of Title 12, Public Health and Environmental Control is hereby repealed.

ARTICLE V. — PESTS

~~Sec. 12-626. Elm bark beetles; responsibility of owner.~~

~~The entire city shall be considered as the specific area or zone within which elms are to be protected. Trees, or parts thereof, of elm in a dead or dying condition that are or may serve as breeding places for the European elm bark beetle are a public nuisance and shall be removed and destroyed or buried by the owner of the tree or trees.~~

~~Sec. 12-627. Elm bark beetles; tree inspection.~~

~~The city manager or designee shall examine and inspect all trees within the city on both public and private property for signs of breeding of elm bark beetles.~~

~~Sec. 12-628. Elm bark beetles; breeding places unlawful.~~

~~It is unlawful for any owner or occupant of any premises within his or her control to maintain trees or store wood furnishing breeding places for the elm bark beetles. Such trees or wood shall include the following:~~

- ~~(1) Dead or dying or obviously weakened elm trees, regardless of species or variety;~~
- ~~(2) Dead or dying or obviously weakened branches in otherwise healthy elms;~~
- ~~(3) Stumps of cut trees on which the bark remains; and~~
- ~~(4) Elm wood cut from trees, whether or not they were diseased, that is cut and piled for fireplace wood, whether stored indoors or out.~~

Secs. 12-626 - 12.640. Reserved.

Section 2: Sections 12-564 and 12-565 of Chapter 10, Pest and Weed Control, of Title 12, Public Health and Environmental Control, shall be amended to read as follows:

12-564. Diseased and dangerous tree, shrub and plant inspection.

~~It shall be the duty of the city manager or his designee to~~ The city manager or their designee may inspect all trees, shrubs, stumps, cut wood (firewood) and plants within the city to determine whether they are afflicted with insect pests, fungus or other disease detrimental to the growth, life and health of such trees, shrubs, stumps, cut wood (firewood) and plants; and to make such inspections for the additional purpose of discovering any trees, boughs or vegetation that may be dangerous to persons or property. It shall be the duty of all owners or persons in possession of property within the

city to eradicate, remove, destroy or otherwise correct the condition found in such inspection.

12-565. Correction of dangerous or diseased condition.

~~It shall be the duty of the city manager or his designee to~~ The city manager or their designee may perform or cause to be performed any spraying, removal or other work as is necessary to correct any condition described at section 12-564 above if the owner or other person in possession fails to do so within the time set forth in the notice.

Section 3: Sections 18-326, 18-328, 18-331, 18-332, 18-333 and 18-352 of Chapter 5, Trees in Rights-of-Way and Public Places, of Title 18, Public Health and Environmental Control, shall be amended to read as follows:

18-326. Permit required for trimming or removal in parkway or public right-of-way.

It shall be the duty of all owners or persons in possession of property within the city to refrain from removing or trimming trees in parkways unless such removal or trimming is to be done by a licensed tree trimmer who has obtained a permit for such removal or trimming from the city manager or their designee, and paying the fees required. ~~No tree trimmer shall remove or trim any tree in a parkway or in a public right-of-way without first obtaining a permit from the city manager or his designee, and paying the fees required.~~

(1) The city manager or their designee shall not issue a permit unless the tree to be removed or trimmed is dead or interferes with the proper use of parkways for sidewalk purposes or creates traffic hazards.

(2) No tree shall be removed until the tree has been posted for at least seven days with a sign notifying the public of the contemplated removal unless otherwise deemed an emergency by the city manager or his designee.

(3) All tree stumps shall be properly removed or ground to a minimum of six inches below normal ground level. Any remaining cavity resulting from such excavation shall be properly filled and compacted with quality soil to normal ground level.

...

18-328. Traffic hazard or sidewalk-interfering vegetation; removal.

It shall be the duty of all owners or persons in possession of property within the city to remove from the parkways, or cause to be removed from parkways, any and all trees, boughs and vegetation which, in the opinion of the city manager or his designee, interfere with the proper use of the parkways, overhang any sidewalks lower than eight feet or overhang any streets lower than ~~13~~ 14 feet from the surfaces thereof, or create a traffic hazard.

...

18-331. ~~Parkway tree removal or trimming; licensed trimmer and permit required.~~
Reserved.

~~It shall be the duty of all owners or persons in possession of property within the city to refrain from removing or trimming trees in parkways unless such removal or trimming is to be done by a licensed tree trimmer who has obtained a permit from the city for such removal or trimming.~~

18-332. ~~Trees planted near intersections.~~ Reserved.

~~It shall be the duty of all owners or persons in possession of property within the city to refrain from planting trees within 25 feet of the corner of any street intersection as defined in the description of clear vision zone of a corner lot in section 24-579.~~

18-333. Clearance from curb or right-of-way of trees or woody plants.

It shall be the duty of all owners or persons in possession of property within the city to refrain from planting trees or woody plants ~~within five feet of the back of the curb or, in the absence of a curb, to refrain from planting on any portion of the right-of-way, until such time as curbing is installed~~ near public sidewalks or curbing in such a manner as to cause physical damage to sidewalks, curbs, gutters, pedestrian ways, bike paths and other public improvements.

...

18-352. Notice and correction.

~~It shall be the duty of the city manager or his or her designee to~~ The city manager or their designee may notify the owner or other persons in possession of the premises where such conditions exist as are described in this chapter, and to direct the owner or other person in possession to eradicate, remove, destroy and otherwise correct the condition described in the notice, within the time set forth in the notice.

Amendments to Title 12 & Title 18 of the Greeley Municipal Code: Community Forestry Requirements

Purpose

- **Eliminate or modify outdated language to allow best management practices as related to trees and vegetation (ROW's and other properties).**
- **Maintenance of our green infrastructure is most critical along ROW's. Preventative maintenance to trees or vegetation that affect ROW is being done infrequently and requires necessary attention.**
- **Code changes will allow the allocation of existing (and future) staff resources to more efficiently manage vegetation issues – both with mature/aging trees and the expansion of the community/street trees in newer developments.**

Pest and Weed Control - Title 12

- **Sections 12-626 to 16-628 – repealed. Specific references to Dutch Elm Disease. Is addressed elsewhere in Section 12-564.**
- **Section 12-564 - eliminates reference of “shall” to “may” to allow flexibility and common sense approach to forestry management. Allows staff to focus on rights-of-ways and looming Emerald Ash Borer presence. Also adds “stumps, cut wood (firewood)” as a right to inspect.**
- **Section 12-565 - eliminates reference of “shall” to “may” to allow flexibility and common sense approach to forestry management.**

Trees in Rights-of-Way and Public Places - Title 18

- **Section 18-326 – provides clear language as to the need for permits for any tree work within the city's rights-of-way.**
- **Section 18-328 – amends clearance height of overhanging branches from 13 feet to 14 feet.**
- **Section 18-331 – section repealed. Addressed in 18-326.**
- **Section 18-332 – section repealed. Outdated requirement. Addressed elsewhere within the Development Code.**
- **Section 18-333 – new language allows flexibility and is addressed in the Development Code.**
- **Section 18-352 – new language allows flexibility.**

Amendments to Title 12 & Title 18

- **Recommended by Parks and Recreation Advisory Board July 2, 2021**
- **Ordinance Intro/1st Reading – August 17, 2021**

QUESTIONS?

Council Agenda Summary

September 7, 2021

Key Staff Contact: Andy McRoberts, Culture, Parks and Recreation Director, 970-350-9425

Title:

Public hearing and final reading of an ordinance amending portions of Chapter 1 of Title 16 of the city of Greeley Municipal Code, all regarding the traffic code in the city of Greeley

Summary:

This is an Ordinance to amend language to the Greeley Municipal Code pertaining to the traffic code and related to a golf cars (carts) on City streets.

The current code currently prohibits golf cars on all public ways designed for motor vehicle traffic which would preclude public use at city owned golf courses and during parades, special events and other miscellaneous uses. The modifications will provide clarity for allowed use.

There are road crossings at Boomerang Golf Course that have been in existence and this added language clarifies that City owned golf cars (carts) used by the public (primarily golfers) may cross public streets. The course includes a crossing on Melbourne Street between holes #5 and #6 as well as, currently, temporary crossings on 4th Street during construction on the site south of 4th Street.

Specifically, the modifications:

- 1) Delineates a common term of Golf "cars" as opposed to "carts"
- 2) Adds a definition of "golf car crossing"
- 3) Adds to Section 16-10 (c) Low-speed electric vehicles - paragraphs "1" and "2" defining that city owned golf carts may be used on "public way" and that permits may also be issued for the use of golf cars during special events.
- 4) Adds to Section 16-576. Authority of city manager – defines to permit use of golf cars on public ways for special events such as parades (i.e. Stampede) and other events (i.e. – Friday Fest and other downtown events, Arts Picnic, etc).

Fiscal Impact:

Does this item create a fiscal impact on the City of Greeley?	No
If yes, what is the initial, or, onetime impact?	
What is the annual impact?	
What fund of the City will provide Funding?	
What is the source of revenue within the fund?	
Is there grant funding for this item?	No

If yes, does this grant require a match?	
Is this grant onetime or ongoing?	
Additional Comments:	

Legal Issues:

Consideration of this matter is a legislative process which includes the following public hearing steps:

- 1) City staff presentation (if requested)
- 2) Council questions of staff
- 3) Public input (hearing opened, testimony - up to three minutes per person, hearing closed)
- 4) Council discussion
- 5) Council decision

Other Issues and Considerations:

None

Strategic Work Program Item or Applicable Council Priority and Goal:

Image: Reinforce Greeley's vision as an attractive and vibrant community in which to live, learn, work and play.

Decision Options:

- 1) Adopt the ordinance as presented; or
- 2) Amend the ordinance and adopt as amended; or
- 3) Deny the ordinance; or
- 4) Continue consideration of the ordinance to a date certain.

Council's Recommended Action:

A motion to adopt the ordinance and publish with reference to title only.

Attachments:

Presentation material
Ordinance

**CITY OF GREELEY, COLORADO
ORDINANCE NO. _____, 2021**

**AN ORDINANCE AMENDING PORTIONS OF CHAPTER 1 OF TITLE 16 OF THE CITY OF
GREELEY MUNICIPAL CODE, ALL REGARDING THE TRAFFIC CODE IN THE CITY OF GREELEY**

WHEREAS, the City of Greeley, Colorado, (the "City"), pursuant to Article XX, Section 6 of the Colorado Constitution, has the right to enact, administer and enforce ordinances relating to traffic is clearly within the constitutional grant to power to the City and is necessary to protect health, safety and welfare of the City; and

WHEREAS, more specifically, the updates contained herein will authorize the operation of golf cars owned by the city in designated golf car crossings on public ways, correct definitions in the traffic code, and allow the city manager or their designee to authorize golf cars on public ways at permitted events.

WHEREAS, it is in the best interest of the citizens of the City that this ordinance be adopted.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF GREELEY, COLORADO:

Section 1: Sections 16-2, 16-10 and 16-576 of Chapter 1, Traffic Code, of Title 16, Vehicles and Traffic, shall be amended as shown in Appendix A.

Section 2: This ordinance shall become effective on the fifth day following its final publication as provided by Section 3-16 of the Greeley City Charter.

PASSED AND ADOPTED, SIGNED AND APPROVED ON THIS _____ DAY OF _____, 2021.

ATTEST

THE CITY OF GREELEY, COLORADO

City Clerk

Mayor

APPENDIX A

Section 1: Sections 16-2, 16-10 and 16-576 of Chapter 1, Traffic Code, of Title 16, Vehicles and Traffic, shall be amended to read as follows:

16-2. Definitions.

The following words, terms and phrases, when used in this title, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Acceleration lane means a speed-change lane, including tapered areas, for the purpose of enabling a vehicle entering a roadway to increase its speed to a rate at which it can more safely merge with through traffic.

Alley means a street or highway intended to provide access to the rear or side of lots or buildings in urban areas and not intended for the purpose of through vehicular traffic.

Authorized emergency vehicle means such vehicles of the fire department, police vehicles, ambulances, and other special-purpose vehicles as are publicly owned and operated by or for a governmental agency to protect and preserve life and property in accordance with state laws regulating emergency vehicles; the term "authorized emergency vehicle" also means such privately owned vehicles as are designated by the state motor vehicle licensing agency, necessary to the preservation of life and property, to be equipped and to operate as emergency vehicles in the manner prescribed by state law.

Authorized service vehicle means such highway or traffic maintenance vehicles as are publicly owned and operated on a highway by or for a governmental agency the function of which requires the use of service vehicle warning lights as prescribed by state law and such other vehicles having a public service function, including, but not limited to, public utility vehicles and tow trucks, as determined by the department of transportation under C.R.S. title 42, as amended from time to time. Some vehicles may be designated as both an authorized emergency vehicle and an authorized service vehicle.

Automobile means any motor vehicle.

Bicycle means every vehicle propelled solely by human power applied to pedals upon which any person may ride having two tandem wheels or two parallel wheels and one forward wheel, all of which are more than 14 inches in diameter.

Business district means the territory contiguous to and including a highway when within any 600 feet along such highway there are buildings in use for business or industrial purposes, including, but not limited to, motels, banks, office buildings, railroad stations and public buildings which occupy at least 300 feet of frontage on one side or 300 feet collectively on both sides of the highway.

Calendar year means the 12 calendar months beginning January 1 and ending December 31 of any year.

Camper coach means an item of mounted equipment, weighing more than 500 pounds, which when temporarily or permanently mounted on a motor vehicle adapts such vehicle for use as temporary living or sleeping accommodations.

Camper trailer means a wheeled vehicle having an overall length of less than 26 feet, without motive power, which is designed to be drawn by a motor vehicle over the public highways and which is generally and commonly used for temporary living or sleeping accommodations.

Chauffeur means every person who is employed for the principal purpose of operating a motor vehicle and every person who drives a motor vehicle while in use as a public or common carrier of persons or property.

Commercial carrier means any owner of a motor vehicle, truck, truck tractor, trailer or semitrailer used in the business of transporting persons or property over the public highways for profit, hire or otherwise in any business or commercial enterprise.

Controlled-access highway means every highway, street or roadway in respect to which owners or occupants of abutting lands and other persons have no legal right of access to or from the same except at such points only and in such manner as may be determined by the public authority having jurisdiction over such highway, street or roadway.

Convicted and *conviction* include conviction in any court of record or any municipal court or acceptance of a penalty assessment notice and payment of the prescribed penalty in accordance with the provisions of article XVII of this chapter.

Court means any municipal court, county court, district court or any court having jurisdiction over offenses against traffic regulations and laws.

Crosswalk means that portion of a roadway ordinarily included within the prolongation or connection of the lateral lines of sidewalks at intersections or any portion of a roadway distinctly indicated for pedestrian crossing by lines or other marking on the surface.

Deceleration lane means a speed-change lane, including tapered areas, for the purpose of enabling a vehicle that is to make an exit turn from a roadway to slow to the safe speed on the ramp ahead after it has left the mainstream of faster moving traffic.

Divided highway means a highway with separated roadways usually for traffic moving in opposite directions, such separation being indicated by depressed dividing strips, raised curbing, traffic islands or other physical barriers so constructed as to impede vehicular traffic or otherwise indicated by standard pavement markings or other official traffic control devices as prescribed in the state traffic control manual.

Drive-away transporter or *tow-away transporter* means every person engaged in the transporting of vehicles which are sold or to be sold and not owned by such transporter, by the drive-away or tow-away methods,

where such vehicles are driven, towed or transported singly, or by saddlemount, towbar or fullmount methods, or by any lawful combination thereof.

Driver means every person, including a minor driver under the age of 18 years and a provisional driver under the age of 21 years, who drives or is in actual physical control of a vehicle.

Electric personal assistive mobility device means a three- or four-wheeled device with an electric propulsion system that limits the maximum speed of the device to 15 miles per hour or less and that is designed to transport physically disabled persons for mobility and any persons necessary to assist and accommodate said physically disabled persons.

Empty weight means the weight of any motor vehicle or trailer or any combination thereof, including the operating body and accessories, as determined by weighing on a scale approved by the state department of transportation.

Explosives and hazardous materials means any substance so defined by 49 CFR ch. 1, as amended from time to time.

Farm tractor means every motor vehicle designed and used primarily as a farm implement for drawing plows and mowing machines and other implements of husbandry.

Flammable liquid means any liquid which has a flash point of 70 degrees Fahrenheit or less, as determined by a Tagliabue or equivalent closed-cup test device.

Foreign vehicle means every motor vehicle, trailer or semitrailer which is brought into the state otherwise than in the ordinary course of business by or through a manufacturer or dealer and which has not been registered in the state.

Fullmount means a vehicle which is mounted completely on the frame of the first vehicle or last vehicle in a saddlemount combination.

Garage means any public building or place of business for the storage or repair of automobiles.

Golf ~~cart~~ car means a self-propelled vehicle not designed primarily for operation on roadways and that has:

- (1) A design speed of less than 20 miles per hour;
- (2) At least three wheels in contact with the ground;
- (3) An empty weight of not more than 1,300 pounds; and
- (4) A carrying capacity of not more than four persons.

Golf car crossing means a portion of a roadway distinctly indicated for golf car crossing by traffic control devices, lines or other markings on the surface, which is approved by the city manager or their designee in conjunction with use on a golf course.

High occupancy vehicle lane means a lane designated pursuant to the provisions of C.R.S. title 42, as amended from time to time, or this chapter.

Highway means the entire width between the boundary lines of every way publicly maintained when any part thereof is open to the use of the public for the purposes of vehicular travel or the entire width of every way declared to be a public highway by any law of the state.

Horn means a signaling device that produces a loud resonant sound capable of emitting sound audible under normal conditions from a distance of not less than 200 feet.

Implement of husbandry means every vehicle which is designed for agricultural purposes. The term "implement of husbandry" also includes equipment used solely for the application of liquid, gaseous and dry fertilizers. Transportation of fertilizer, in or on the equipment used for its application, shall be deemed a part of application if it is incidental to such application. It also includes hay balers, hay stacking equipment, combines, tillage and harvesting equipment, and other heavy movable farm equipment primarily used on farms and not on the highways. Trailers specially designed to move such equipment on highways shall be considered as component parts of such implements of husbandry.

Inattentive manner means the unreasonable failure to maintain a careful lookout in the direction of travel as required to safely operate the vehicle under the prevailing conditions, including, but not limited to, the nature and condition of the roadway, presence of other traffic, presence of pedestrians and weather conditions.

Intersection means the area embraced within the prolongation of the lateral curblines or, if none, then the lateral boundary lines of the roadways of two highways which join one another at, or approximately at, right angles, or the area within which vehicles traveling upon different highways joining at any other angle may come in conflict. Where a highway includes two roadways 30 feet or more apart, every crossing of each roadway of such divided highway by an intersecting highway shall be regarded as a separate intersection. In the event such intersecting highway also includes two roadways 30 feet or more apart, every crossing of two roadways of such highways shall be regarded as a separate intersection. The junction of an alley with a street or highway does not constitute an intersection.

Lane means the portion of a roadway for the movement of a single line of vehicles.

Laned highway means a highway the roadway of which is divided into two or more clearly marked lanes for vehicular traffic.

Local authorities means every county, municipal and other local board or body having authority to adopt local police regulations under the constitution and laws of the state.

Low-power scooter means a self-propelled vehicle with not more than three wheels in contact with the ground, no manual clutch and either of the following:

- (1) Cylinder capacity not exceeding 50 cubic centimeters if powered by internal combustion; or
- (2) Wattage not exceeding 4,476 if powered by electricity. The term "low-power scooter" shall not include a toy vehicle, wheelchair or personal mobility device.

Low-speed electric vehicle means a vehicle that:

- (1) Is self-propelled utilizing electricity as its primary propulsion method;
- (2) Has at least three wheels in contact with the ground;
- (3) Does not use handlebars to steer; and
- (4) Exhibits the manufacturer's compliance with 49 CFR 565 or displays a 17-character vehicle identification number as provided in 49 CFR 565.

Manufactured home means any preconstructed building unit or combination of preconstructed building units, without motive power, where such units are manufactured in a factory or at a location other than the residential site of the completed home, which is designed and commonly used for occupancy by persons for residential purposes, in either temporary or permanent locations, and which unit or units are not licensed as a vehicle.

Markings means all lines, patterns, words, colors or other devices, except signs, set into the surface of, applied upon or attached to the pavement or curbing or to objects within or adjacent to the roadway, conforming to the state traffic control manual and officially placed for the purpose of regulating, warning or guiding traffic.

Median means any area of a street, roadway, or public driveway defined by painted, raised, or depressed channelization barriers or markers, usually in the middle of the roadway, at driveways, or at intersections, which control turning movements or separate traffic lanes.

Metal tires means all tires the surface of which in contact with the highway is wholly or partly of metal or other hard, nonresilient material.

Mobile machinery or self-propelled construction equipment means those vehicles, self-propelled or otherwise, which are not designed primarily for the transportation of persons or cargo over the public highways, and those motor vehicles which may have originally been designed for the transportation of persons or cargo over the public highways, and those motor vehicles which may have originally been designed for the transportation of persons or cargo but which have been redesigned or modified by the mounting thereon of special equipment or machinery, and which may be only incidentally-operated or moved over the public highways. The term "mobile machinery" or "self-propelled construction equipment" includes, but is not limited to, wheeled vehicles commonly used in the construction, maintenance and repair of roadways, the drilling of wells and the digging of ditches.

Motor home means a vehicle designed to provide temporary living quarters and which is built into, as an integral part of or a permanent attachment to, a motor vehicle chassis or van.

Motor vehicle means any self-propelled vehicle that is designed primarily for travel on the public highways and that is generally and commonly used to transport persons and property over the public highways or a low-

speed electric vehicle, including golf carts ~~cars~~ owned by a governmental entity when in use in conjunction with authorized governmental activities, except that the term "motor vehicle" does not include low-power scooters, wheelchairs, or vehicles moved solely by human power. For the purposes of the offenses described in C.R.S. title 42, as amended from time to time, for farm tractors operated on streets and highways, the term "motor vehicle" includes a farm tractor that is not otherwise classified as a motor vehicle.

Motorcycle means every motor vehicle that uses handlebars to steer and is designed to travel on not more than three wheels in contact with the ground, except that the term does not include a farm tractor or low-power scooter.

Motorized play vehicle means a coaster, scooter, any other alternatively fueled device or other motorized vehicle that is self-propelled by a motor engine, gas or electric, and is not otherwise defined in this Code as a low-powered scooter, motor vehicle, motorcycle, motorized bicycle, motorscooter, motorbicycle, motorized skateboard, electric personal assistive mobility device or motorized wheelchair.

Motorized skateboard means a self-propelled device, including Segways, that has a motor, gas or electric, a deck upon which a person may ride, not equipped with a seat, and at least two tandem wheels in contact with the ground and which is not otherwise defined in this Code as a motor vehicle, motorcycle, motor-driven cycle, motorized bicycle, motorized play vehicle, motorscooter, electric personal assistive mobility device or motorized wheelchair.

Motorized wheelchair means a self-propelled wheelchair that is used by a physically disabled person for mobility.

Motorscooter and motorbicycle means every motor vehicle designed to travel on not more than three wheels in contact with the ground, except any such vehicle as may be included within the term farm tractor, as defined in this section, and any motorized bicycle, which motor vehicle is powered by an engine of not to exceed six-brake horsepower.

Mounted equipment means any item of tangible personal property weighing more than 500 pounds which is rigidly mounted on or attached to a vehicle subsequent to its manufacture and which, when so mounted on or attached to a vehicle, becomes an integral part thereof essential to the operation of such vehicle in carrying out and accomplishing the purpose for which such vehicle is being used.

Noncommercial or recreational vehicle means a truck operated singly or in combination with a trailer or utility trailer when the truck does not exceed 6,500 pounds or a motor home, which truck or motor home is used exclusively for pleasure, enjoyment, other recreational purposes or family transportation of the owner, lessee or occupant and is not used to transport cargo or passengers for profit, hire or otherwise in any business or commercial enterprise.

Nonresident means every person who is not a resident of the state.

Off-highway vehicle shall have the same meaning as set forth in C.R.S. title 33, as amended from time to time.

Official traffic control devices means all signs, signals, markings and devices, not inconsistent with this chapter, placed or displayed by authority of a public body or official having jurisdiction, for the purpose of regulating, warning or guiding traffic.

Official traffic control signal means any device, whether manually, electrically or mechanically-operated, by which traffic is alternately directed to stop and to proceed.

Owner means a person who holds the legal title of a vehicle; or, if a vehicle is the subject of an agreement for the conditional sale or lease thereof with the right of purchase upon performance of the conditions stated in the agreement and with an immediate right of possession vested in the conditional vendee or lessee or if a mortgagor of a vehicle is entitled to possession, then such conditional vendee or lessee or mortgagor shall be deemed the owner for the purpose of C.R.S. title 42, arts. 1 to 4 or this chapter. The term "owner" also includes parties otherwise having lawful use or control or the right to use or control a vehicle for a period of 30 days or more.

Park or parking means the standing of a vehicle, whether occupied or not, other than very briefly for the purpose of and while actually engaged in loading or unloading property or passengers.

Parkway means the area between the street or curb and sidewalk or any pedestrian or recreation pathway. This includes landscaped or paved areas.

Pedestrian means any person afoot.

Person means every natural person, firm, copartnership, association or corporation.

Pneumatic tires means all tires inflated with compressed air.

Pole, pipe trailer or dolly means every vehicle of the trailer type having one or more axles not more than 48 inches apart and two or more wheels used in connection with a motor vehicle solely for the purpose of transporting poles or pipes and connected with the towing vehicle both by chain, rope or cable and by the load without any part of the weight of said dolly resting upon the towing vehicle. All the registration provisions of C.R.S. title 42, arts. 1 to 4, shall apply to every pole, pipe trailer or dolly.

Police officer means every officer authorized to direct or regulate traffic or to make arrests for violations of traffic regulations.

Private road or driveway means every road or driveway not open to the use of the public for the purposes of vehicular travel.

Railroad sign or signal means any sign, signal or device erected by authority of a public body or official or by a railroad and intended to give notice of the presence of railroad tracks or the approach of a railroad train.

Reasonable and prudent control means operating a motor vehicle in a well-controlled manner.

Reconstructed vehicle means any vehicle which has been assembled or constructed largely by means of essential parts, new or used, derived from other vehicles or makes of vehicles of various names, models and types or which, if originally otherwise constructed, has been materially altered by the removal of essential parts or by the addition or substitution of essential parts, new or used, derived from other vehicles or makes of vehicles.

Resident means any person who owns or operates any business in the state or any person who has resided within the state continuously for a period of 90 days or has obtained gainful employment within the state, whichever shall occur first.

Residential district means the territory contiguous to and including a highway not comprising a business district when the frontage on such highway for a distance of 300 feet or more is mainly occupied by dwellings or by dwellings and buildings in use for business.

Right-of-way means the right of one vehicle operator or pedestrian to proceed in a lawful manner in preference to another vehicle operator or pedestrian approaching under such circumstances of direction, speed and proximity as to give rise to danger of collision unless one grants precedence to the other.

Road means any highway.

Road tractor means every motor vehicle designed and used for drawing other vehicles and not so constructed as to carry any load thereon independently or any part of the weight of a vehicle or load so drawn.

Roadway means that portion of a highway improved, designed or ordinarily used for vehicular travel, exclusive of the sidewalk, berm or shoulder even though such sidewalk, berm or shoulder is used by persons riding bicycles or other human-powered vehicles and exclusive of that portion of a highway designated for exclusive use as a bicycle path or reserved for the exclusive use of bicycles, human-powered vehicles or pedestrians. In the event that a highway includes two or more separate roadways, the term "roadway" refers to any such roadway separately but not to all such roadways collectively.

Safety zone means the area or space officially set aside within a highway for the exclusive use of pedestrians and which is so plainly marked or indicated by proper signs as to be plainly visible at all times while set apart as a safety zone.

School bus means every motor vehicle which is owned by a public or governmental agency and operated for the transportation of children to or from school or which is privately-owned and operated for compensation, but it does not include informal or intermittent arrangements, such as sharing of actual gasoline expense or participation in a carpool, for the transportation of children to or from school.

Semitrailer means any wheeled vehicle, without motive power, which is designed to be used in conjunction with a truck tractor so that some part of its own weight and that of its cargo load rests upon or is carried by such truck tractor and which is generally and commonly used to carry and transport property over the public highways.

Sidewalk means that portion of a street between the curblines or the lateral lines of a roadway and the adjacent property lines intended for the use of pedestrians.

Snow emergency means the period of time established by the director of public works or his designee when it is necessary to restrict parking on snow emergency routes to allow for the plowing and/or removal of snow.

Snowplow means any vehicle originally designed for highway snow and ice removal or control or subsequently adapted for such purposes which is operated by or for the state or any political subdivision thereof.

Solid rubber tires means every tire made of rubber other than a pneumatic tire.

Specially constructed vehicle means any vehicle which has not been originally constructed under a distinctive name, make, model or type by a generally recognized manufacturer of vehicles.

Stand or standing means the halting of a vehicle, whether occupied or not, other than momentarily for the purpose of and while actually engaged in receiving or discharging passengers.

State means a state, territory, organized or unorganized, or district of the United States.

State motor vehicle licensing agency means the motor vehicle division of the department of revenue.

State traffic control manual means the most recent edition of the Manual on Uniform Traffic Control Devices for Streets and Highways, including any supplement thereto, as adopted by the transportation commission.

Steam and electric trains includes:

- (1) The term "railroad," which means a carrier of persons or property upon cars, other than street cars, operated upon stationary rails;
- (2) The term "railroad train," which means a steam engine, electric or other motor, with or without cars coupled thereto, operated upon rails, except streetcars;
- (3) The term "streetcar," which means a car other than a railroad train for transporting persons or property upon rails principally within a municipality.

Stinger-steered means a semitrailer combination configuration wherein the fifth wheel is located on a drop frame located behind and below the rearmost axle of the power unit.

Stop or stopping means, when prohibited, any halting, even momentarily, of a vehicle, whether occupied or not, except when necessary to avoid conflict with other traffic or in compliance with the directions of a police officer or official traffic control device.

Stop line or limit line means a line which indicates where drivers shall stop when directed by an official traffic control device or a police officer.

Through highway means every highway or portion thereof on which vehicular traffic is given preferential right-of-way and at the entrances to which other vehicular traffic from intersecting highways is required by law to yield the right-of-way to vehicles on such through highway in obedience to a stop sign, yield sign or other official traffic control device when such signs or devices are erected as provided by law.

Traffic means pedestrians, ridden or herded animals, and vehicles, streetcars and other conveyances either singly or together while using any highway for the purposes of travel.

Trailer means any wheeled vehicle, without motive power and having an empty weight of more than 2,000 pounds, which is designed to be drawn by a motor vehicle and to carry its cargo load wholly upon its own structure and which is generally and commonly used to carry and transport property over the public highways.

Trailer coach means any wheeled vehicle having an overall width not exceeding eight feet and an overall length, excluding towing gear and bumpers, of not less than 26 feet and not more than 40 feet, without motive power, which is designed and generally and commonly used for occupancy by persons for residential purposes, in temporary locations and which may occasionally be drawn over the public highways by a motor vehicle and is licensed as a vehicle.

Transporter means every person engaged in the business of delivering vehicles of a type required to be registered under C.R.S. title 42, arts. 1 to 4, from a manufacturing, assembling or distributing plant to dealers or sales agents of a manufacturer.

Truck means any motor vehicle equipped with a body designed to carry property and which is generally and commonly used to carry and transport property over the public highways.

Truck tractor means any motor vehicle which is generally and commonly designed and used to draw a semitrailer and its cargo load over the public highways.

Utility trailer means any wheeled vehicle weighing 2,000 pounds or less, without motive power, which is designed to be drawn by a motor vehicle and which is generally and commonly used to carry and transport personal effects, articles of household furniture, loads of trash and rubbish, or not to exceed two horses over the public highways.

Vehicle means any device that is capable of moving itself or of being moved from place to place upon wheels or endless tracks. The term "vehicle" includes any bicycle, but does not include any wheelchair or any off-highway vehicle, snowmobile or farm tractor, or any highway vehicle, snowmobile, farm tractor or any implement of husbandry designed primarily or exclusively for use and used in agricultural operations or any device moved exclusively over stationary rails or tracks or designed to move primarily through the air.

Warning device shall have the same meaning as the term "horn" as set forth in this section.

Wheelchair means a motorized or nonmotorized wheeled device designed for use by a person with a physical disability.

16-10. Low-speed electric vehicles.

(a) A low-speed electric vehicle may be operated only on a roadway that has a speed limit equal to or less than 35 miles per hour; except that it may be operated to directly cross a roadway that has a speed limit greater than 35 miles per hour at an at-grade crossing to continue traveling along a roadway with a speed limit equal to or less than 35 miles per hour.

(b) No person shall operate a low-speed electric vehicle on a limited access highway.

(c) Golf cars shall not be operated on any public way designed primarily for motor vehicle traffic, except as follows:

(1) Golf cars owned by the city may be operated on a public way in a designated golf car crossing, as long as the operator of the golf car obeys all traffic laws otherwise applicable to motor vehicles.

(2) The city manager or designee may authorize the operation of golf cars on public ways during permitted events.

16-576. Authority of city manager.

(a) The city manager or their designee is authorized to waive the requirements of this traffic code requiring parking permits in certain areas and limiting parking time in certain areas **and allowing the operation of golf cars on public ways** during events such as parades, concerts, races, rodeos, and other celebrations.

(b) The city manager or their designee shall inform the chief of police in writing of the code sections waived, the time period of the waiver and the area in which code sections are waived prior to the beginning of the waiver.

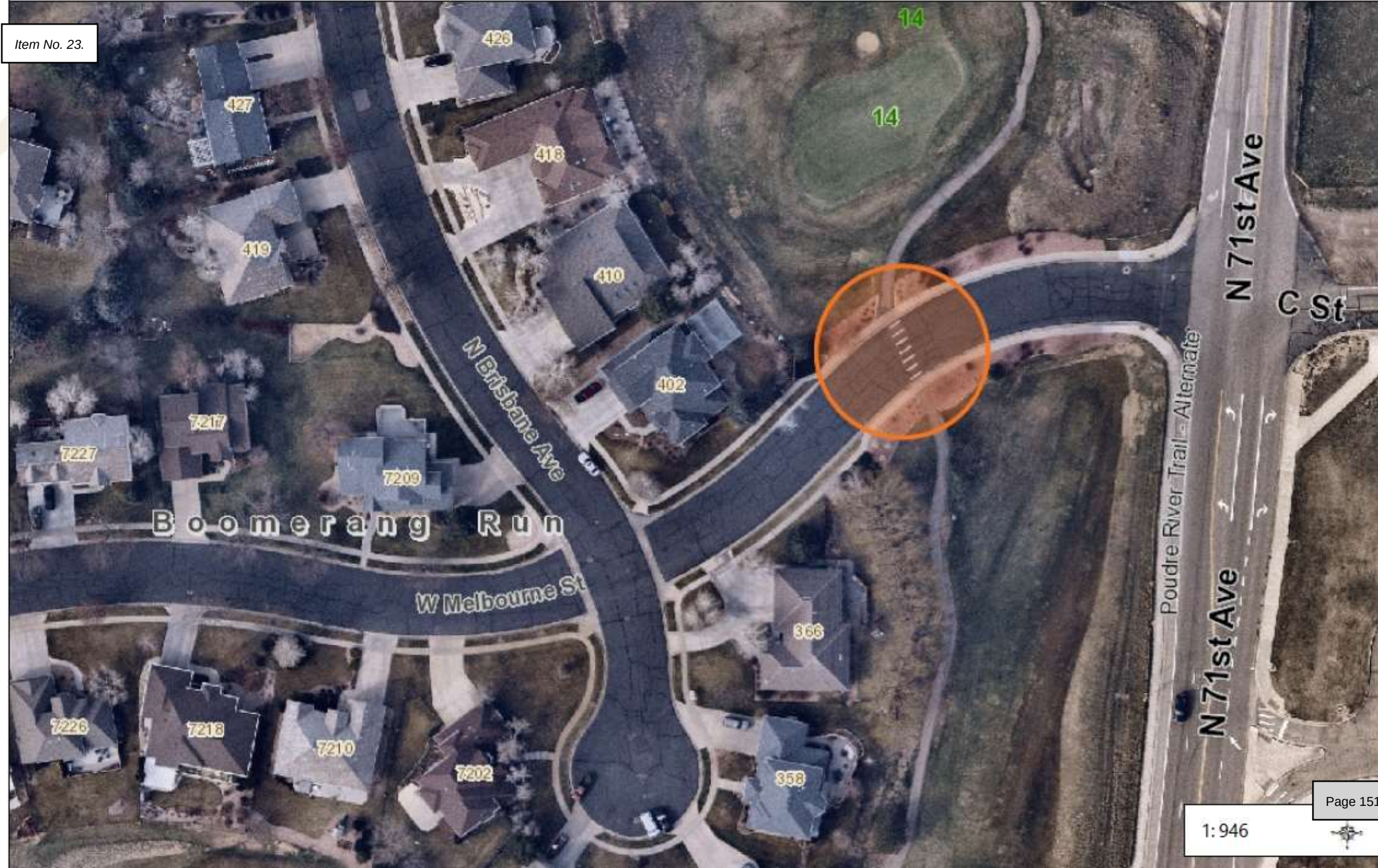
Amendments to Title 16 of the Greeley Municipal Code: Traffic Code – Golf Cars (Carts)

Purpose

- **Current Municipal Code (Traffic) prohibits public use of all Golf Cars (Carts) on “public ways” which restricts flexibility and current practices**
- **Amendments needed to Chapter 1 of Title 16 to maintain current (and past) practices**

Traffic Code – Golf Cars (Carts)

- **Impacts Boomerang Links Golf Course operations**
- **Impacts golf cars used in parades (Stampede, Lights the Nights Parade)**
- **Impacts special events in the downtown area and other locations**



Traffic Code – Golf Cars (Carts)

- **Addresses common terminology of Golf “Cars”**
- **Adds definition of “Golf Car Crossing”**
- **Adds to Section 16-10 (c) Low-speed electric vehicles - paragraphs “1” and “2” defining that city owned golf cars may be used on “public way” and that permits may also be issued for the use of golf cars during special events.**
- **Adds to Section 16-576. Authority of city manager – defines to permit use of golf cars on public ways for special events such as parades (i.e. Stampede) and other events (i.e. – Friday Fest and other downtown events, Arts Picnic, etc).**

QUESTIONS?

Council Agenda Summary

Title

Scheduling of Meetings, Other Events

Summary

During this portion of the meeting the City Manager or City Council may review the attached Council Calendar or Worksession Schedule regarding any upcoming meetings or events.

Attachments

Council Meetings and Other Events Calendar
Council Meeting and Work Session Schedule

September 6, 2021 - September 12, 2021

September 2021						
Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

October 2021						
Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Monday, September 6

Tuesday, September 7

6:00pm - City Council Meeting - Council Master Calendar

Wednesday, September 8

Thursday, September 9

7:30am - Poudre River Trail (Hall)

Friday, September 10

Save-the-Date - All Day Water & Sewer Board Tour (TBD.) - Council Master Calendar

Saturday, September 11

8:00am - 11:00am Northern Colorado Leadership Prayer Breakfast (DoubleTree by Hilton Greeley, 919 7th Street) - Council Master Calendar

Sunday, September 12

September 13, 2021 - September 19, 2021

September 2021						
Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

October 2021						
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Monday, September 13

Tuesday, September 14

6:00pm - City Council Worksession Meeting - Council Master Calendar 

Wednesday, September 15

2:00pm - 5:00pm Water & Sewer Board (Gates) 
4:00pm - 7:30pm CML District 2 Meeting (Kersey Community Center, 215 2nd Street) - Council Master Calendar

Thursday, September 16

7:30am - 8:30am DDA (Zasada/Butler) 
3:30pm - 4:30pm Airport Authority (Clark/Payton) 

Friday, September 17

Saturday, September 18

Sunday, September 19

September 20, 2021 - September 26, 2021

September 2021						
Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
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October 2021						
Su	Mo	Tu	We	Th	Fr	Sa
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24	25	26	27	28	29	30
31						

Monday, September 20

Tuesday, September 21

11:30am - 1:00pm United Way Luncheon at Doubletree

6:00pm - City Council Meeting - Council Master Calendar

Wednesday, September 22

12:00am CML Special Conference (Westin, Westminster) - Jessica Diagana

Thursday, September 23

← CML Special Conference (Westin, Westminster) - Jessica Diagana →

7:30am - Poudre River Trail (Hall)

Friday, September 24

← 12:00am CML Special Conference (Westin, Westminster) - Jessica Diagana

Saturday, September 25

Sunday, September 26

September 27, 2021 - October 3, 2021

September 2021						
Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

October 2021						
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
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17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Monday, September 27

11:30am - 12:30pm Greeley Chamber of Commerce (Hall)

6:00pm - 7:00pm Youth Commission (Butler)

Tuesday, September 28

6:00pm - City Council Worksession Meeting - Council Master Calendar

Wednesday, September 29

7:00am - 8:00am Upstate Colorado Economic Development (Gates/Hall) (Upstate Colorado Conference Room) - Council Master Calendar

Thursday, September 30

12:00am CML Virtual Special Conference (Virtual (more details to come)) - Jessica Diagana

Friday, October 1

12:00am CML Virtual Special Conference (Virtual (more details to come)) - Jessica Diagana

Saturday, October 2

Sunday, October 3

City Council Meeting Scheduling

Current as of 09/01/2021

This schedule is subject to change

Date	Description	Sponsor	Placement/Time
September 14, 2021 Worksession Meeting	2022 Budget Revenue Forecast/Estimates Highlights	John Karner	1.00
September 21, 2021 Council Meeting	Resolution - Approval of IGA with Windsor Regarding Open Space	Andy McRoberts	Consent
	Ordinances - Second w/o public hearing - Development Code - Final adoption of all Title 24	Becky Safarik	Regular
	Appointment to the Housing Authority	Anissa Hollingshead	Regular
	Boards & Commissions Appointments	Anissa Hollingshead	Regular
September 28, 2021 Worksession Meeting	COVID-19 Update	Raymond Lee	0.25
	Non-potable Water Master Plan Overview & Non-potable Development Policy Update	Sean Chambers	1.00
	Budget continuation (if needed)	John Karner	
October 5, 2021 Council Meeting	Ordinance - Intro - 2022 Budget Adoption	John Karner	Consent
	Ordinance - Intro - Non-Potable Water Irrigation Master Plan	Sean Chambers	Consent
October 12, 2021 Worksession Meeting	Recycling Program Feasibility	Paul Trombino	0.50
	2022 CDBG Program Applications Summary	Ben Snow	0.25

Council Agenda Summary

Title

Consideration of a motion authorizing the City Attorney to prepare any required resolutions, agreements, and ordinances to reflect action taken by the City Council at this meeting and at any previous meetings, and authorizing the Mayor and City Clerk to sign all such resolutions, agreements and ordinances

Council's Recommended Action

A motion to approve the above authorizations.