

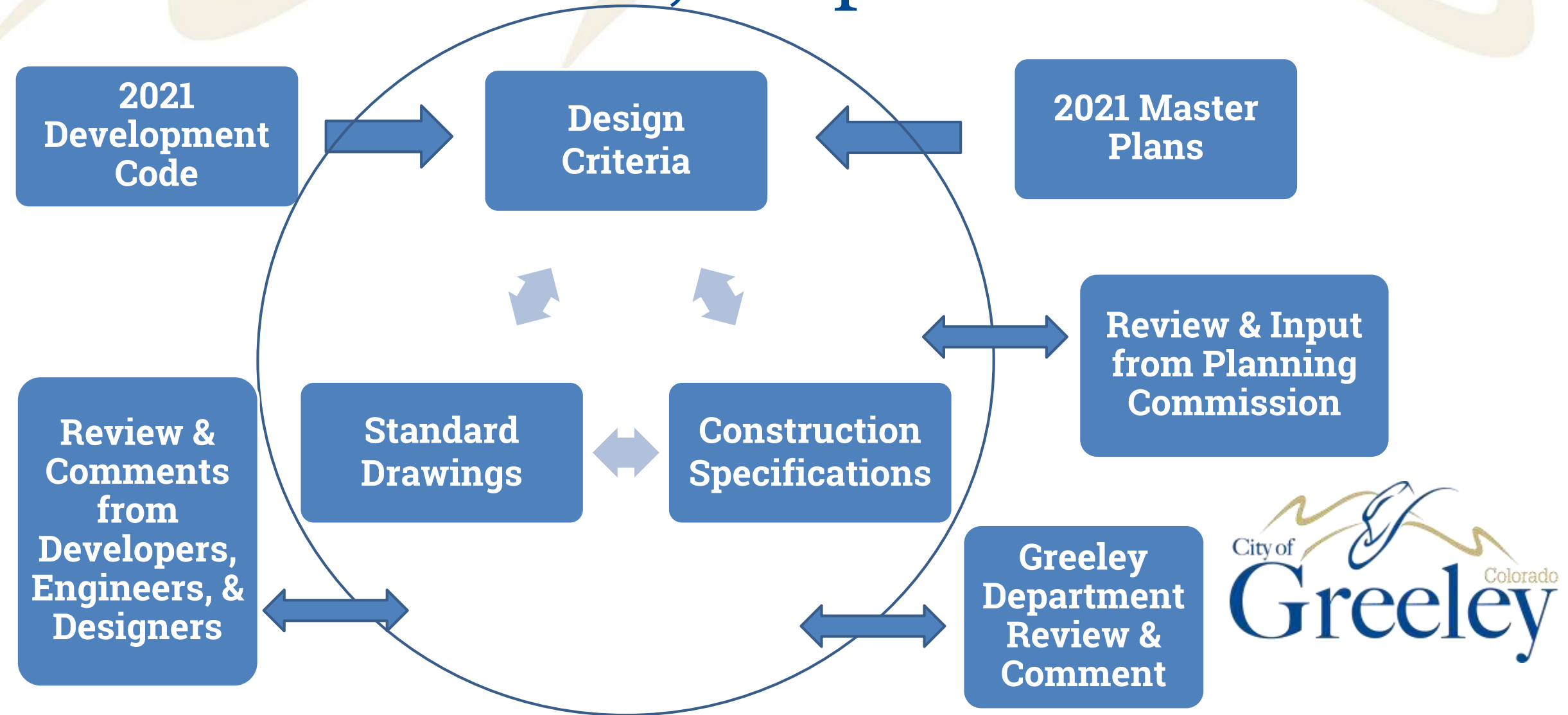
Update Water & Sewer Design Criteria, Standards Details, & Construction Specifications

**Presented to
Water & Sewer Board**

July 20th, 2022



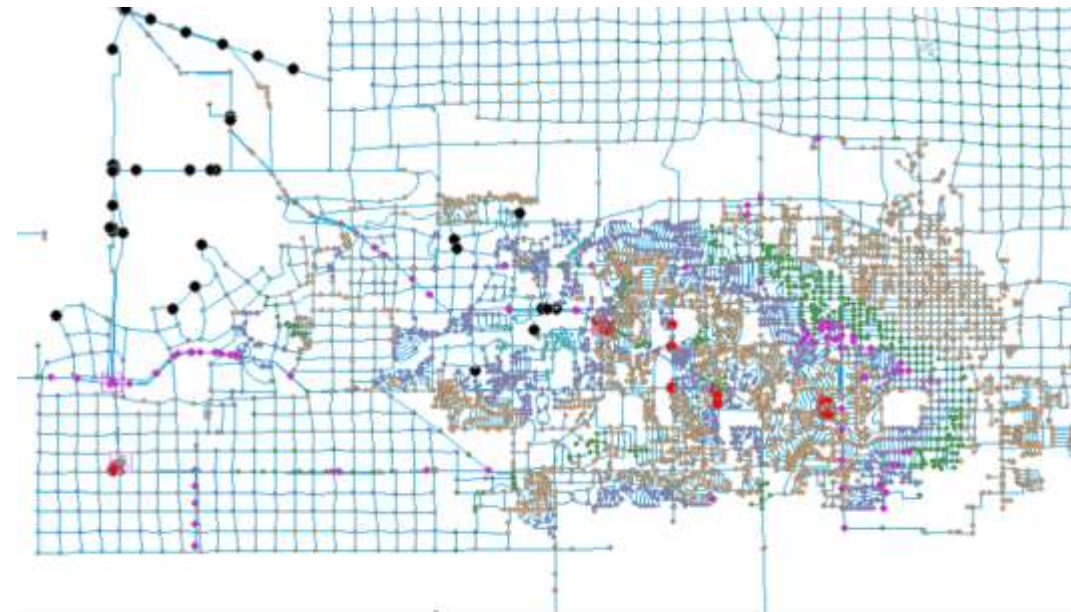
Process for Updating Design Criteria, Standards Details, & Specifications



Design Criteria

Goals

- **Alignment with W&S master plans published 2021.**
- **Align criteria with current W&S standards**
(Updated technology and equipment)
- **Consistency across standards**
- **Coordination with other departments**
- **Potential for cost savings and reduced frequency**
of project RFI's
- **Conformance to the new statewide Subsurface**
Utility Engineering (SUE) Laws



Design Criteria: Section 1

General Requirements of Development

- **There were no substantive changes to this section**
- **Alignment with Engineering Development Review**



Design Criteria: Section 2

Submittal Requirements

- **Hydraulic models in a format that can be integrated with the City's overall models – InfoWater & InfoSWMM**
- **Implementing stricter measurement tolerances for survey verifications and as-built drawings**
- **Provided more detail for reimbursement of oversized public infrastructure, particularly sanitary sewer lift stations and non-potable ponds and pump stations.**



Design Criteria: Section 3

Potable Water

- Provides guidance for development when assumptions are made on future customers
- Updated future flows more accurately using zoning, acreages, and building footprints
- Provides new criteria to model water flows for:
 - Commercial parcels based on zoning and acreage
 - Industrial parcels based on zoning and acreage
 - Commercial buildings based on use and area.
- Aligns with wastewater for consistency

Residential			
Zoning based on <i>City of Greeley Charter and Code, Chapter 24.401, Zoning District Development Standards.</i>			
Use	Units Per Acre*	Occupancy	Peak Hour Demand
R-E	3	3.1 persons	1.9 gpm/unit
R-L	5	3.1 persons	1.9 gpm/unit
R-M	10	2.7 persons	1.7 gpm/unit
R-H	20	1.7 persons	1.1 gpm/unit
R-MH	15	1.7 persons	1.1 gpm/unit
*Use these unit per acre values unless specific unit counts are known			
Commercial			
Where uses are known, use the specific demand values. Commercial demands based on 1000 ft ² of building area unless noted otherwise. Otherwise use the appropriate zoning demand values.			
Use	Average Day Demand without Irrigation		
C-L	1500 gpd per acre		
C-H	3000 gpd per acre		
I-L & I-M	1500 gpd per acre		
I-H	3000 gpd per acre		
Use	Average Day Demand		
Restaurant	500 gpd		
Retail/Offices	200 gpd		
Grocery Store	430 gpd		
Laundry, Dry Cleaning	1000 gpd		
Auto Dealer, Repair/Service	115 gpd		
Car Wash with Water Reuse	1500 gpd		
Hospital	380 gpd		
Hotel/Motel	350 gpd		
Retirement & Nursing Home	350 gpd		
School	12 gpd/student without showers 36 gpd/student with showers		
Religious Building	300 gpd		
Warehouse (Non-industrial)	25 gpd		
Irrigation	25 gpm per acre		

Design Criteria: Section 4

Sanitary Sewer

- **Defines wastewater flows for:**
 - **Commercial & Industrial customers based on zoning**
- **Provides guidance for development when assumptions are made on future customers**
- **Calculates future wastewater flows more accurately using zoning, acreages and building footprints**
- **Removes underdrains below sanitary sewer lines**
- **Detailed Lift station criteria**
- **Aligns with potable water for consistency**

Residential			
Zoning based on City of Greeley Charter and Code, Chapter 24.401, Zoning District Development Standards			
Use	Units Per Acre	Occupancy	Average Day Wastewater Flows*
R-E	3	3.1 persons	0.22 gpm/unit
R-L	5	3.1 persons	0.22 gpm/unit
R-M	10	2.7 persons	0.19 gpm/unit
R-H	20	1.7 persons	0.12 gpm/unit
Commercial			
Use		Average Day Wastewater Flows*	
C-L (not specified)		1,500 gpd/acre (minimum)	
C-H (not specified)		3,000 gpd/acre (minimum)	
Retail/Offices		200 gpd/1,000 SF	
Hotels/Motels		350 gpd/1,000 SF	
Restaurants		500 gpd/1,000 SF	
Bars and Lounges		300 gpd/1,000 SF	
Neighborhood Stores		200 gpd/1,000 SF	
Department Stores		200 gpd/1,000 SF	
Laundry and Dry Cleaning		1,000 gpd/1,000 SF	
Banks		300 gpd/1,000 SF	
Nursing Homes		350 gpd/1,000 SF	
Warehouses		25 gpd/1,000 SF	
Car Washes		1,500 gpd/1,000 SF	
Auto Dealer/Repair/Service		115 gpd/1,000 SF	
Grocery Store		430 gpd/1,000 SF	
Religious Buildings		300 gpd/1,000 SF	
Factories		800 gpd/1,000 SF	
Hospitals		380 gpd/1,000 SF	
Schools (without showers)		12 gpd/student	
Schools (with showers)		36 gpd/student	
Industrial			
Use		Average Day Wastewater Flows*	
I-L (not specified)		1,500 gpd/acre	
I-M (not specified)		1,500 gpd/acre	
I-H (not specified)		3,000 gpd/acre	

*1cfs = 448.33 gpm

Average day wastewater flow per capita = 60 gpcd

Non-Potable Water Design Criteria

- **Comprehensive**
 - **Covers every aspect of non-pot system design.**
 - **Updated Standards and References.**
- **Easy to Follow**
 - **Simplified & logical progression.**
- **Aligns with NP Master Plan**
- **Regional Systems/Oversizing**
- **Predesign Meetings w/Stakeholders**



Design Criteria: Section 6 Landscape and Irrigation

New Criteria:

- **Promotes water conservation**
- **Support attractive and sustainable landscapes**

Applicable to:

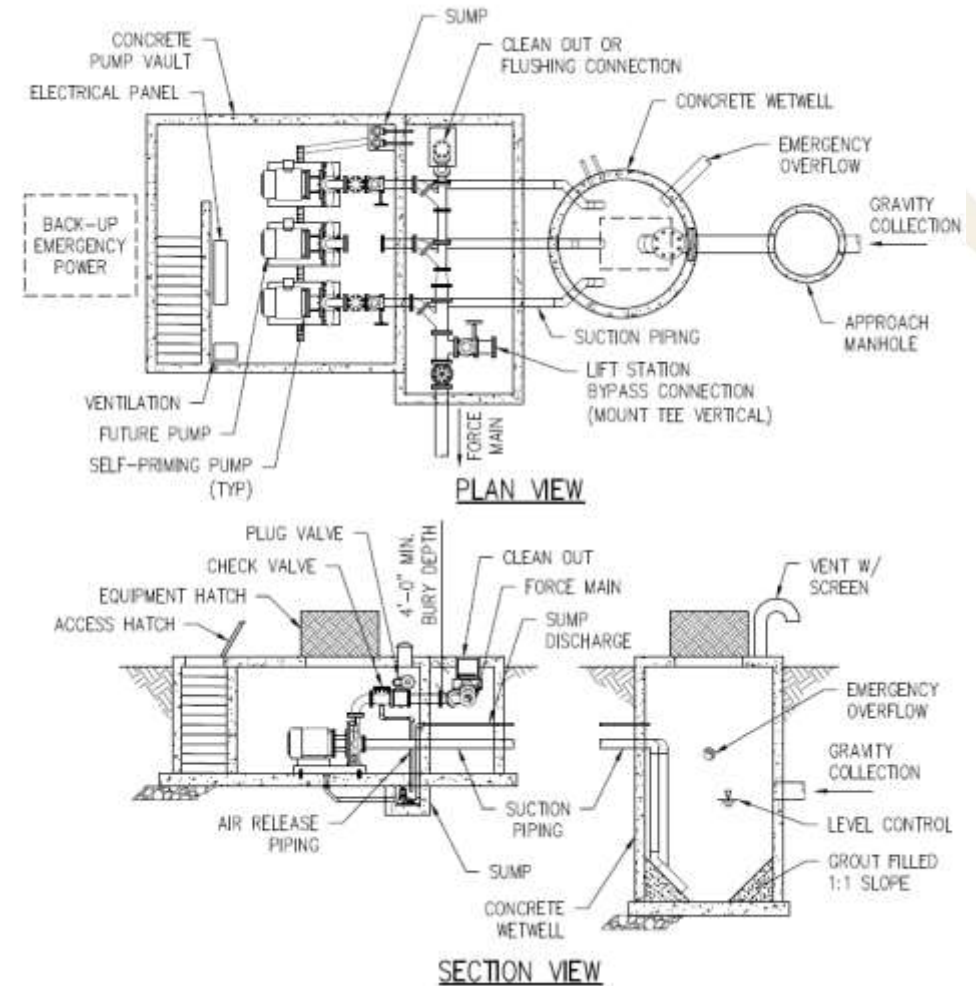
- **Common areas**
- **Right-of-ways**
- **Municipal buildings**
- **Non-residential (commercial/industrial)**
- **Multi-family residential**



Standard Drawings

Key Updates

- Updated City Logo
- Condensed meter vault notes across non-potable and potable water meters & added new non-potable meter size drawing
- Added standard lift station drawings to the sanitary sewer drawings
- Added utility locating details in accordance with the new SUE law in Colorado (SB 18-167)



Engagement & Review

- **Introduced to Builders, Realtors, Developers - July 19, 2021**
- **Reviewed and Coordinated with other City Departments throughout process**
- **Reviewed by Engineering Development Review & Civil Inspections Staff**
- **Presented to Planning Commission to get Input and Feedback - March 8th, 2022**
- **Meetings & Review Comments from Engineers, Developers, Landscape designers, & Community members - March to June, 2022**
 - **120 comments and questions tracked and addressed**



Staff Recommendation

- **Approve and Recommend to City Council the Adoption of the June 2022 Water & Sewer Design Criteria, Standard Details, and Construction sections.**



Questions?

