



# Drinking Water Project Needs Assessment (PNA) Form

Water Quality Control Division

**General Information**

Facility Name:	AURORA, CITY OF		Original ID:	_____
Mailing Address 1:	15151 E Alameda Parkway Suite 3600	Mailing Address 2:	County:	_____
City:	Aurora	State:	CO	Zip Code: 80012
Property Address 1:	15151 E Alameda Pkwy	Property Address 2:	County:	_____
City:	Aurora	State:	CO	Zip Code: 80012
Latitude :	39.7517291	Longitude :	-104.992107	
Name of Project:	Aurora Water Lead Replacement Program			
Type of Project (Check all that apply)				
<input type="checkbox"/> Treatment	<input checked="" type="checkbox"/> Distribution / Transmission	<input type="checkbox"/> Water Supply	<input type="checkbox"/> Water Storage	

Please enter the following information for your organization if you have it.

**1. Applicant Information:**

First Name:	Sherry	Middle Name:	_____	Last Name:	Scaggiari
Phone Number:	303-739-7390				
Mailing Address1:	26791 E Quincy Ave	Mailing Address2:	_____		
City:	Aurora	State:	CO	Zip Code:	80016
E-mail:	sscaggia@auroragov.org				

**Consulting Engineer Information:**

First Name:	Brian	Middle Name:	_____	Last Name:	Hall
Phone Number:	303-383-2425				
Mailing Address1:	555 17th St.	Mailing Address2:	Suite 500		
City:	Denver	State:	CO	Zip Code:	80202
E-mail:	hallbr@cdsmith.com				

**Self-Certification:**

Yes    No   Does the system intend to self-certify all or a portion of the project?

If yes, please identify the portions of the project that the system will self-certify.

- Distribution system piping
- Pump station (without integral treatment)
- Valves, hydrants, and/or meters

Provide additional explanation, if necessary:

Aurora Water plans to self-certify all lead service line (LSL) replacements and replacement of downstream galvanized lines requiring replacements (GRR).

## 2. Executive Summary

Aurora Water provides drinking water to 386,000 people through 91,531 connections. Based on the assumption that buildings constructed prior to 1960 are at highest risk of having lead service lines (LSL), an estimated 9,251 service lines must be investigated for the presence of lead and/or galvanized requiring replacement (GRR). Aurora Water estimates approximately 30% of pre-1960 built structures will require lead or GRR line replacement. Aurora is committed to the full replacement of lead and GRR service lines in the most efficient and responsible manner; however, its existing program funding is insufficient to ensure all potential lead/GRR lines are replaced and Aurora Water is in full compliance with Lead and Copper Rule Revision (LCRR) and Lead and Copper Rule Improvements (LCRI) requirements.

Aurora Water proposes to replace federally funded LSLs in two phases. Phase 1 (Ward 1 and 3 Replacements) will begin in Fall 2024 and will replace LSLs in Ward 1 and Ward 3 using DWRP funds. Phase 2 (Service Area Remainder) will include LSL replacements in the remainder of the service area outside of Wards 1 and 3. Phase 2 will also be DWRP funded and is estimated to begin in Fall 2025 and continue until all LSLs and GRR is replaced, anticipated in 2028. The Colorado Department of Public Health and Environment (CDPHE) has issued guidance that service lines can be considered non-lead if installed after January 1, 1960 and there is no evidence indicating the presence of LSLs. Phase 1 is expected to have the highest density of LSLs due to the total number of pre-1960 structures. These areas also have the greatest number of disadvantaged census block groups, as defined by CDPHE's "Defining disadvantaged communities" methodology. Aurora Water will replace LSLs on both the city and customer side at no cost to its customers from the existing water main to the home.

## 3. System Structure and Operation

### 3.1 Legal Ownership of System (TMF: Managerial-1)

First Name: City of Aurora

Mailing Address1: 26791 E Quincy Ave Mailing Address2: \_\_\_\_\_

City: Aurora State: CO Zip Code: 80016

Phone Number: 303-739-7390 Fax: \_\_\_\_\_

### 3.2 Organizational Chart

Include an Organizational Chart as Attachment 2.

### 3.3 Plans (TMF: Managerial-2)

Monitoring Plan - Include a copy of the Monitoring Plan as Attachment 3.

Cross Connection Control Plan - Include a copy of the Cross Connection Control Plan as Attachment 4.

Water Conservation Plan (if system sells over 2,000 acre feet of water annually) - Include a copy of the Water Conservation Plan as Attachment 5.

Not Applicable

### 3.4 Current Operator in Responsible (ORC) Charge (TMF: Technical-14)

First Name: Bryan Middle Name: \_\_\_\_\_ Last Name: Van Winkle

Certification Number: CWP-D4-00175-0500 Certification Expiration Date: 05/01/2026

Operator Certification Level (check one)  Staff Operator  Contract Operator

- Treatment  Class D  Class C  Class B  Class A
- Distribution  Class 4  Class 3  Class 2  Class 1
- Combined Treatment/Distribution  Class S  Class T

**3.5 Operator Certification (TMF: Technical-15)**

- Yes  No Do the system operators have adequate operator certification levels for the proposed project as defined by Regulation 100 Water and Wastewater Facility Operators Certification Requirements?

Explain the impact of the proposed project on the required operator in responsible charge (ORC) certification level and other predicted staffing changes.

Because this project will only involve replacement of existing infrastructure, no changes to ORC certification level or staffing are expected as a result of this project. The system operators will continue to have adequate operator certifications as defined by Regulation 100.

**3.6 Record Keeping (TMF: Managerial-3)**

Describe the system’s record retention policy that meets the requirements of the Colorado Primary Drinking Water Regulations (Regulation 11) including: record type, retention period, and record location.

Aurora Water retains records in compliance with Regulation 11. All records are available to the public upon request either online or at City Hall. Records of actions taken to correct violations are retained for at least 3 years from the date of the last corrective action. Records of microbiological samples are retained for at least 5 years. Records related to lead and copper are retained for 12 years. All other chemical sample results are retained for at least 10 years.

**3.7 Annual Budget (TMF: Financial-1)**

- Yes  No Does the system prepare an annual budget?
- Yes  No Does the system prepare and maintain a Capital Improvement Plan?

Please provide a narrative of the process for annual budgeting and financial planning.

The City prepares a budget annually that includes planned operating and capital expenditures as well as a capital improvement program. Each department prepares a budget which is consolidated by the Office of Budget and Financial Planning into the City Manager’s Proposed Budget. The proposed budget is then presented to the City Council for consideration and approval. The budget is adopted each year by December. See Attachment 7 for more information.

**3.8 Financial Status (TMF: Financial-2)**

Describe the current financial status and multi-year financial planning for the system including O&M costs, existing debt, required reserve accounts, rate structure, other capital improvement programs, and the system’s reserve policies.

According to the 2022 audited financial statement (Attachment 9) for the City, total sources for the Water Fund were \$212,739,960 and total uses were \$233,740,645, leaving \$62,662,820 in funds available by December 31. The Water Fund had a maximum annual debt service of \$28,866,494 and maintained 1,232 days of cash on hand. It is the City’s policy to hold a minimum of 10% of the General Fund’s adjusted budgetary operating expenditures for the year in General Fund committed reserves. Aurora Water uses a tiered structure for water rates. Effective January 1, 2024, monthly residential rates for water are: Tier 1 (0-5,000 gallons) - \$5.63, Tier 2 (5,001-10,000 gallons) - \$6.85, Tier 3 (10,001-20,000 gallons) - \$8.50, and Tier 4 (20,001 gallons and above) - \$13.90. Customers are also charged a monthly base charge of \$14.19. The City prepares a Capital Improvement Program (CIP) which identifies capital needs of the city and allocates existing funds and projected revenues for projects of \$25,000 or more. The CIP is updated annually as part of the budget process.

20-year cash flow projection

Include a copy of the 20-year cash flow projection as Attachment 8.

**3.9 Audits (TMF: Financial-5)**

Has the system submitted audits to the Department of Local Affairs or has the received State exemption of the statutory audit requirement?

- Yes - Provide a copy of the most recent audited financial statement or exemption from State as Attachment 9.  No

**3.10 Insurance (TMF: Financial-6)**

Does the system maintain general liability insurance?

- Yes - Provide a copy of the most recent audited financial statement or exemption from State as Attachment 9.  No

**4. Project Purpose and Need**

Discuss the issue or concern that the proposed project will address. Specific issues are outlined below. All issues must be discussed in each sub section below even if they are not the project driver.

**4.1 Health and Compliance**

Summarize the system's compliance status that necessitates the proposed project.

EPA's LCRR is intended to address issues pertaining to lead in drinking water to protect the public from the adverse health effects associated with lead exposure. The proposed LCRI expands on protections against lead in drinking water, especially for communities that have been disproportionately affected. Even low levels of exposure to lead can result in adverse health effects for both children and adults. The LCRI requires most water systems to achieve 100% lead pipe replacement within 10 years of the draft LCRI compliance date. The anticipated LCRI compliance date is October 2027, meaning replacements would need to be completed by October 2037. Although Aurora Water is committed to fully replacing lead and GRR service lines, the existing program funding is insufficient to ensure all potential LSLs and GRRs are identified and replaced, and that public health impacts are mitigated in compliance with LCRR/LCRI requirements. Aurora Water is committed to removing all lead from the distribution system on an expedited schedule that meets and exceeds LCRI requirements and ensures all customers continue to have access to safe, high quality drinking water free from contamination from lead service lines. The proposed project will replace lead and GRR service lines in the service area, allowing Aurora Water to remain in compliance with the LCRR and LCRI. Replacing LSLs will help to maintain or improve drinking water quality by reducing the risk of lead contamination in the distribution system. Aurora Water conducts approximately 87,000 water quality tests annually to ensure its drinking water exceeds all state and federal regulatory standards. In 2022, all contaminants detected were well below allowable levels. Aurora Water has not received any drinking water quality violations or formal enforcement actions in the past 12 months.

**4.2 Existing facility limitations**

Summarize existing water system facility(ies) limitations that necessitate the proposed project.

Aurora Water's existing distribution system is made up of 1,500 miles of pipeline and over 91,000 service connections. It is estimated that approximately 11% of those service connections were built prior to 1960 and have the potential to contain LSLs or GRR. Most of these properties are located in Ward 1 between 6th Avenue and 25th Avenue and east to west from Yosemite Street to Peoria Street. To comply with LCRR/LCRI requirements, Aurora Water must investigate and replace all verified LSLs and GRRs throughout the system within 10 years.

**4.3 Operations and Maintenance Issues**

Summarize operational and maintenance (O&M) issues with the existing water facilities.



Aurora Water currently treats its water at the Griswold, Wemlinger, and Binney water purification facilities in compliance with the current Lead and Copper Rule (LCR). Corrosion control treatment is used to create a coating on the walls of pipelines, including service lines leading to private properties, to minimize the potential of lead leaching into drinking water from lead piping or plumbing fixtures. However, this standard operating and treatment procedure is no longer an acceptable method of mitigating potential exposure to lead contamination by itself and would not be in compliance with the LCRR/LCRI. Aurora Water must fully identify and replace all LSLs and GRR from the service area in order to comply with proposed and upcoming rule changes. Corrosion control treatment will continue as Aurora Water identifies and replaces all LSLs/GRRs within its service area.

## 5. Existing Facilities Analysis

### 5.1 Existing Source Water– Section required for treatment and supply projects

- Not applicable (for distribution and storage projects, only)

#### 5.1.2 Water Rights (TMF: Technical-3)

Placeholder box for 5.1.2 Water Rights content.

### 5.2 Existing treatment– Required for treatment and supply projects only

- Not applicable (for distribution and finished water storage projects, only)

### 5.3 Distribution - Required for distribution and storage projects only

- Not applicable (for supply and treatment projects, only)

#### 5.3.1 Overall Distribution System Description (TMF: Technical-11 and -12)

Discuss the existing finished water distribution system including: gravity vs. pumped pressurization, facility age, material type, condition of materials, amount of AC pipe, number of pressure zones, pump stations, and storage tanks.

Aurora Water's finished water distribution system consists of a network of approximately 1,500 miles of pipelines, eight pump stations, and nine treated water storage tanks (Attachment 24 - 2017 Aurora Water Master Plan). The service area contains eight pressure zones, the majority of which are gravity fed (Attachment 5 - 2015 Aurora Water Conservation Plan). The distribution system is composed primarily of ductile iron pipe (557 miles), polyvinyl chloride pipe (363 miles) and cast iron pipe (176 miles). The distribution system has an estimated 26.3 miles of AC pipe.

Discuss the estimated distribution system losses (i.e., the percent of water lost in the distribution system and not delivered/billed to customers).

Aurora Water has conducted annual water loss audits using American Water Works Association M36 methodology since 2012. In 2013, an estimated 36 MG of apparent losses and an estimated 222 MG of real losses occurred (Attachment 5 - 2015 Municipal Water Efficiency Plan). Aurora Water maintains a robust Water Loss program including a Leak Loss and Detection program, an active meter maintenance program, a strong asset management assessment and planning group, and an M36 auditing program.

#### 5.3.2 Pressure (TMF: Technical-13)

Discuss if the existing distribution system is designed to maintain a minimum pressure of 20 psi at all ground level points in the distribution system under all conditions of flow as required in the CDPHE Design Criteria for Potable Water Systems (Design Criteria). The Design Criteria also recommends a normal working pressure in the distribution system of approximately 60 psi, and not less than 35 psi. Discuss how the distribution system meets the required and recommended distribution system pressures.

Water pressures throughout the distribution system are maintained between 40 and 135 psi (Attachment 5 - 2015 Municipal Water Efficiency Plan).

Include a map illustrating any locations where a minimum pressure of 20 psi cannot be provided under all conditions of flow as Attachment 15.

- Not Applicable

5.3.3 Meters (TMF: Financial-4)

Discuss if the existing distribution system includes water meters.

Aurora is in the process of upgrading its water meter system with Advanced Metering Infrastructure to replace water meters approaching the end of their useful life. Starting in 2019, Aurora Water planned to replace 90,000 water meters over a 4-year period.

**6.Facility Planning Analysis**

**6.1 Planning Area Description**

6.1.1 Project Area Map

Provide a map showing a minimum of a 3-mile radius around the project area that includes environmental features (lakes, streams, wetlands, floodplains). Map must include current and proposed service area, existing drinking water facilities (plants, major distribution lines, water sources, storage facilities), existing wastewater outfalls/permitted discharge points, and any new or affected sources with regard to the pertinent watershed. Include the map as Attachment 16.

6.1.2 Urban Growth Boundary

Yes  No Is the project within or near an urban growth boundary?

The proposed project will only replace existing infrastructure and will not result in or incentivize growth or development. The project is in conformance with the urban growth boundary because it will not result in any development outside of the defined area.

6.1.3 Local and Regional Issues

Yes  No Were local and regional planning efforts considered?

Please describe.

In conducting LSL replacements, Aurora Water will incorporate other near term waterline replacements to improve efficiency and reduce construction-related disruptions to residents. The proposed project does not present any conflicts with other local or regional planning efforts.

Yes  No Were local and regional water quality and/or quantity efforts considered?

Please describe.

Replacing LSLs will reduce public health risks associated with potential exposure to lead in drinking water as outlined in Section 4.1 of the PNA. Aurora Water continues to adhere to the most recent LCRR-related guidance issued by CDPHE on September 9, 2023. This project is not anticipated to impact any local or regional surface or ground water quality and/or quantity as it will only be replacing existing infrastructure.

Yes  No Was consolidation with another water system / treatment facility considered?

If yes, describe the consolidation considerations. If no, please indicate why consolidation was not considered.

**6.2 Population and Water Demand Projections (TMF: Technical-2)**

For a 20 year planning period, forecast the population growth, projected increase in Equivalent Residential Taps (ERT), and projected drinking water demands.

Current ERT - As Calculated in the Prequalification Form: 187454

Population and Demand Projections - The department generally accepts two methodologies for projecting water flows over the 20 year planning period. Other methodologies are acceptable with a clear explanation and all assumptions and parameters listed:

- Method 1: Population based projections. Recommended for primarily residential systems and/or for systems without water meter data
- Method 2: Equivalent Residential Taps (ERT) Analysis. Recommended for systems with a high multifamily, commercial, industrial, irrigation demands.

Method 1 and 2 templates can be found at the end of this form.  
Attach the population projection as Attachment 17.

Discuss supporting data and reasons for projected future growth during the 20 year planning period.

Note: Projects designed solely to serve future development or population growth are not eligible for State Revolving Fund financing.

Aurora Water's 2017 Integrated Water Master Plan ([IWMP] Attachment 24) developed four planning scenarios and calculated the associated system-wide raw water demands. The planning scenarios cover a range of population growth, economic growth, future climate, and future conservation program assumption. At a 90 percent confidence interval, Aurora Water estimates total annual demand will be 63,300 acre-feet per year in 2025, 76,000 acre-feet per year in 2035, 96,600 acre-feet per year in 2050, and 132,400 acre-feet per year in 2070. Refer to Section 3 (page 3-1) of the 2017 IWMP for more details.

### **6.3 Source Water Planning**

#### **6.3.1 Overall Water Resource Management Description (TMF: Technical-2)**

For a 20 year planning period, describe the system's water resource management plan.

Aurora Water's 2017 Integrated Water Master Plan (PNA Attachment 24) describes the system's strategies to meet customer water needs in a growing region with an uncertain future climate, aging infrastructure, and increasing competition for scarce water supplies. Aurora Water sources its water from three major river basins: the Colorado, the Arkansas, and the South Platte. Aurora Water is in the process of finalizing its Watershed Management and Source Water Protection Plan and has engaged in a variety of actions to protect their water supplies including identifying and prioritizing areas of concern and identifying remaining post-fire priorities and projects. The primary strategies for addressing risks and vulnerabilities are diversification and redundancy. Aurora Water will continue to maintain a diversified water portfolio, although this effort will be complicated by constraints on additional Arkansas River Basin water development and challenges to Colorado River Basin water development in general. Aurora is developing an Asset Management Plan to identify strategies for asset management and maintenance. Aurora Water also plans to conduct follow-up studies to identify future water supply options. Potential topics for further study include Denver Basin groundwater assessment, enhanced conservation program options, and drought storage level analysis.

#### **6.3.2 Water Rights (TMF: Technical-3)**

For the 20 year planning period, discuss how the system will be able to meet the projected population and increased industrial/commercial water demands.

A water needs assessment was conducted to determine the risks that are critical to Aurora Water's system and the years in which new improvements will be necessary. Aurora Water developed a list of projects that could be used to construct water resources portfolios (i.e., collections of individual projects). Nineteen potential water resources supply projects (e.g., reservoir storage, gravel lakes, water rights acquisitions, and agricultural water leases) and seven delivery system improvement projects were selected for consideration in building water resources portfolios. Projects in the selected water resources portfolio informed the CIP development phase of Aurora Water's 2017 Integrated Water Master Plan (IWMP) (PNA Attachment 24).

Provide documentation supporting the system's water rights, if not provided in section 5.1.2 above, as Attachment 18.

#### **6.3.3 Source Water Supply Capacity (TMF: Technical-4)**

For the 20 year planning period, discuss if the source water supply infrastructure is capable of delivering adequate source water to meet projected needs.

Aurora Water has adopted strategies to implement the water resources recommendations in the IWMP. These strategies are based on the need to position the organization to meet its customer water needs in a growing region with an uncertain future climate, aging infrastructure, and increasing competition for scarce water supplies. Aurora Water management determined the IWMP should focus on growth-related capital project needs, which is the focus of the CIP. Aurora Water is well positioned to deal with many risks to its raw water infrastructure system because of its proactive approach in the past to developing a diversified water portfolio. This strategy of diversification will be continued in the future.

## **7. Assessment of Alternatives**

### **7.1 Alternatives**

For each alternative, please provide:

1. A description of the alternative addressing the issues identified in Section 4: Project Purpose and Need. (TMF: Technical-7)
2. Capital cost estimates and annual operation and maintenance costs.
3. Advantages and Disadvantages of each alternative.

Alternative 1 Title : No Action Alternative

Alternative 1 Description (2000 character limit):

Under the No Action alternative, Aurora Water would not implement corrosion control treatment or conduct any LSL replacements.

Alternative 1 Capital and Operation and Maintenance Costs (2000 character limit):

Aurora Water would incur costs related to regulatory violations and fines for non-compliance with EPA's LCRR/LCRI, as enforced by CDPHE under Regulation 11.

Alternative 1 Advantages and Disadvantages (2000 character limit):

Although this is the most low-cost option, the No Action alternative would not facilitate compliance with EPA's LCRR/LCRI and would result in regulatory violations. The No Action alternative would result in unacceptable public health risks and increased likelihood of lead contamination in drinking water.

Alternative 2 Title : Corrosion Control

Alternative 2 Description (2000 character limit):

Prior to the promulgation of the LCRR, EPA's Lead and Copper Rule (LCR) required the implementation of corrosion control measures to reduce exposure to lead in drinking water. In compliance with the LCR, Aurora Water has been using corrosion control to address potential lead contamination in their drinking water and would continue to do so into the future.

Alternative 2 Capital and Operation and Maintenance Costs (2000 character limit):

Aurora Water would continue to incur costs associated with corrosion control to address potential lead contamination. From 2016 to 2023, Aurora Water spent an estimated \$616,202 annually on corrosion control measures.

Alternative 2 Advantages and Disadvantages (2000 character limit):

In the long-term, continued corrosion control without replacing LSLs/GRRs would result in regulatory violations as per LCRR/LCRI requirements and is therefore not a viable alternative for Aurora Water. Corrosion control reduces the risk of lead exposure but is not as comprehensive a solution as full LSL replacement.

Alternative 3 Title : Aurora Water Lead Replacement Program

Alternative 3 Description (2000 character limit):

The selected alternative would replace LSLs throughout Aurora Water's service area in compliance with LCRR and proposed LCRI requirements. LSL replacements in Aurora would occur in two phases: Phase 1 would replace LSLs in Ward 1 and Ward 3 using federal funds as available, and Phase 2 would replace LSLs in the remainder of the service area using federal funds as available. Corrosion control treatment would also continue to be used in addition to LSL/GRR replacements.

Alternative 3 Capital and Operation and Maintenance Costs (2000 character limit):

Aurora estimates the cost of LSL replacement to be \$11,550 per service line. There are 9,251 structures built before 1960 within Aurora Water's service area and Aurora Water anticipates replacing 30% or 2,775 of those service lines for a total project cost of \$32,054,715.

Alternative 3 Advantages and Disadvantages (2000 character limit):

Although this is the costliest option, full replacement of LSL/GRR lines throughout the system would facilitate full compliance with the LCRR/LCRI and ensure Aurora's drinking water remains free of potential lead contamination. Replacements conducted with continued corrosion control treatment is the most comprehensive approach to reducing potential public health risks associated with exposure to lead in drinking water.

Provide discussions of additional alternatives as Attachment 19.

## **8. Selected Alternative**

### **8.1 Justification of Selected Alternative (TMF: Technical-6)**

Please demonstrate why the selected alternative best meets system needs based on both monetary and non-monetary considerations. For treatment facility projects, if the EPA-BAT technology is not selected then the report must include a treatment rational.

To comply with the recent LCRR/LCRI requirements, Aurora Water must identify and replace LSLs throughout the distribution system. Aurora Water is proposing a project to complete LSL replacements in phases. Phase 1 replacements would be federally funded replacements that are planned to take place beginning fall 2024 in Ward 1 and Ward 3, contingent on funding availability. Phase 1 replacements would include the replacement of LSLs and GRRs throughout Ward 1 and Ward 3 of Aurora Water's service area using Colorado Drinking Water Revolving Fund (DWRF) financing. Remaining replacements outside of Ward 1 and Ward 3 (Phase 2) would also use DWRF funding as available and are planned to take place as the planning and inventory component of the project progresses, likely beginning in fall 2025. Ward 1 and Ward 3 have the highest concentration of structures built prior to 1960 in the service area, and approximately 59% and 45% of the population are considered disadvantaged, respectively. Although the total investment is considerably higher for the selected alternative, it is the only option that allows Aurora Water to maintain regulatory compliance and comprehensively address potential public health concerns related to lead exposure from drinking water.

### **8.2 Technical Description and Design Parameters (TMF: Technical-5)**

For the selected alternative, please describe all proposed project components and assumed design parameters.

Aurora Water will select a qualified contractor to complete service line replacements. Aurora Water estimates that 30% of the service lines at the 9,251 structures constructed prior to 1960 will need to be replaced. The contractor will replace the sections of the pipe that are LSL and GRR from the main to the home. If both places require replacement, the contractor would dig a hole at the curb stop and in the street, disconnect the LSL from the water main and the existing meter, and install the new service line and meter pits, leaving the abandoned and disconnected LSL in the ground. The typical disturbance area is two 3-foot by 4-foot areas: one where the LSL connects to the water main on the customer side and one at the curb stop, either in the sidewalk or grass. Line flushing will also take place after replacement efforts are complete and ground surface is restored to pre-existing conditions.

### **8.3 Proposed Process Flow Diagram**

Include a proposed treatment facility process flow diagram or map of the distribution system, as applicable as Attachment 20.

### **8.4 Appropriateness of Treatment Technologies (TMF: Technical-6)**



Discuss appropriateness of the proposed treatment process(es) to meet Regulation 11 considering anticipated source water quality and potential sources of contamination.

Regulation 11 ensures the safety of public drinking water supplies in the state of Colorado and enables enforcement of the Safe Drinking Water Act. Section 11.17 of Regulation 11 outlines the LCRR requirements for LSL replacement including developing a replacement plan, determining the number of goal-based and mandatory replacements, and requirements for conducting full service line replacement. Aurora Water will implement the proposed project in accordance with the requirements of Regulation 11 and the LCRR, ensuring continued compliance with federal and state drinking water regulations.

### **8.5 Environmental Impacts**

Describe direct and indirect impacts on floodplains, wetlands, wildlife habitat, historical and archaeological properties, etc., including any projected permits and certifications.

Portions of the project are within the 100-year floodplain and Aurora Water will ensure the proposed project is completed in accordance with any floodplain regulations. The project is not expected to result in any permanent direct or indirect impacts to the floodplain. Wetland areas are present within the project area; however, they do not appear to intersect any areas where LSL replacements would occur. The project area contains properties listed on the National Register of Historic Places and properties designated as historic landmarks by the City. Aurora Water has initiated a Class I Cultural Resources Inventory for Phase 2 replacements to further evaluate historic properties within that area. The Environmental Checklist (PNA Attachment 22) includes a more detailed analysis of the impacts of the proposed project on environmental resources. Three local permits will be obtained for each LSL replacement: Water Repair, Building, and Public Improvements which also includes traffic control requirements to mitigate any impacts to traffic from the project.

### **8.6 Land Requirements**

Identify all necessary sites and easements, permits and certifications, and specify if the properties are currently owned, to be acquired, or leased by the applicant.

No additional sites, easements, permits or certifications would be required for this project. This project would not require the lease or acquisition of any properties. As part of the Aurora Water Lead Replacement Program, Aurora Water is replacing lead/GRR private-side service lines at no cost to its customers. Since Aurora Water does not own the service line between the water meter and a customer's home, customers must complete a consent form providing Aurora Water or its contractor with access to the property to verify, and replace, if necessary, any lead or galvanized service line.

### **8.7 Construction Requirements**

Discuss construction concerns such as subsurface rock, high water table, limited access, or other conditions that may affect cost of construction or operation of a facility.

No construction concerns are anticipated because the proposed LSL replacement work would only impact previously disturbed ground. No new pipeline routes would be installed and no work would occur on previously undisturbed areas. Prior to conducting any work on private property, customer consent must be obtained and the customer must be notified via door hanger at least 72 hours in advance of any excavation on private property.

### **8.8 Operational Aspects**

Discuss the operator staffing requirements, operator certification level requirements (including distribution), the expected basic operating configuration and process control complexities, and the operational controls and equipment that allows operational personnel to respond to routine and unanticipated treatment challenges, such as flow rate, chemical feed dosing, and process monitoring.

Aurora Water maintains 24/7 staffing with two operators at every plant at all times. On-call operators and crews are ready to respond to any issues within the distribution system. Operators have a tiered level of access to the system for protection, allowing some operators with more supervisory rolls to access the system remotely. Aurora Water conducts post-mortems after any issue to discuss opportunities for improvement and maintains emergency response plans and action plans for the water treatment plants. Refer to PNA Attachment 6 for delegation of duties.

### **8.9 Costs (TMF: Financial-2 and -3)**

Summarize the capital costs associated with the selected alternative. The 20 year cash flow projection included in Attachment 7 must reflect the capital and operation and maintenance costs associated with the selected alternative. (No more than 2,000 Characters)



8.11.2 Public Meeting

Provide documentation of a public meeting held or describe when and where the meeting will be held. The meeting must be noticed for 30 days. Provide the public notice, proof of publication, sign in sheet, and agenda as Attachment 23 or provide to your project manager in the Grants and Loans Unit after the meeting has taken place.

Include the public meeting documentation as Attachment 23.

Or, will be provided to the Grants and Loans Unit project manager after the meeting takes place.

**9. Projecting Water Flows Method 1: Population based projections**

Assumptions/Data

Current System Population	_____	People
Current Service Area Population (If providing water to neighboring community)	_____	People
Population Growth Rates	_____	% increase/year
Average Daily per Capita Flow Rate	_____	Gallons per capita day
Maximum Daily per Capita Flow Rate	_____	Gallons per capita day
Peak Hour Factor	_____	Gallons per capita day

Information Source

- See Attachment 24 - 2017 Aurora IWMP, Section 3 Demand Planning

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- See Attachment 24 - 2017 Aurora IWMP, Section 3 Demand Planning

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- See Attachment 24 - 2017 Aurora IWMP, Section 3 Demand Planning

Year	System Population	Service Area Population (if different)	Average Daily Flow	Maximum Daily Flow	Peak Hour Flow
+0	0	0			
+5					
+10					
+15					
+20					

**10. Projecting Water Flow Method 2: Equivalent Residential Taps (ERT)**

Current Equivalent Residential Taps (ERT)		
A	Number of active residential taps:	0
B	Total annual consumption (gallons per year) - Residential	0
C	Estimated equivalent residential tap water usage Annual flow per ERT = B / A	0
D	Total annual consumption (gallons per year) - Commercial / Industrial / Irrigation	0
E	Estimated Commercial / Industrial / Irrigation flow in ERT # of commercial / industrial / irrigation ERT = D / C	0

F	Total ERTs = A + E	0
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Population and Flow Assumptions / Data

Information Source

Current System Population	_____	People	_____
Current Service Area Population (If providing water to neighboring community)	_____	People	_____
Population Growth Rates	_____	% increase/year	_____
Average daily flow per ERT	_____	Gallons per capita day	_____
Maximum daily flow per ERT	_____	Gallons per capita day	_____
Peak Hour Factor	_____	Gallons per capita day	_____

Year	System Population	Service Area Population (if different)	Residential Taps (ERTs)	Multifamily Residential Taps (ERTs)	Commercial/ Industrial Taps (ERTs)	Irrigation Taps (ERTs)	Total Taps (ERTs)	Average Daily Flow	Maximum Daily Flow	Peak Hour Flow
+0										
+5										
+10										
+15										
+20										

# PNA Attachment 1

Engineer's Seal





Environmental Services  
26791 E. Quincy Ave.  
Aurora, Colorado 80016  
phone 303.739.7390  
cell 303.619.1558  
email sscaggia@auroragov.org

AuroraGov.org

### **Aurora Water Drinking Water Revolving Fund (DWRF) Project Needs Assessment (PNA) Engineer's Seal**

As a condition for receiving assistance through the Colorado Drinking Water Revolving Fund (DWRF), I certify that the information provided within this Project Needs Assessment (PNA) for Aurora Water's proposed Aurora Water Lead Replacement Program is accurate as of the date of PNA completion.

Brian Richard Hall

Name of Licensed Professional Engineer (Printed)

02/13/2024

Date

Senior Engineer / Senior Project Manager

Title of Licensed Professional Engineer (Printed)

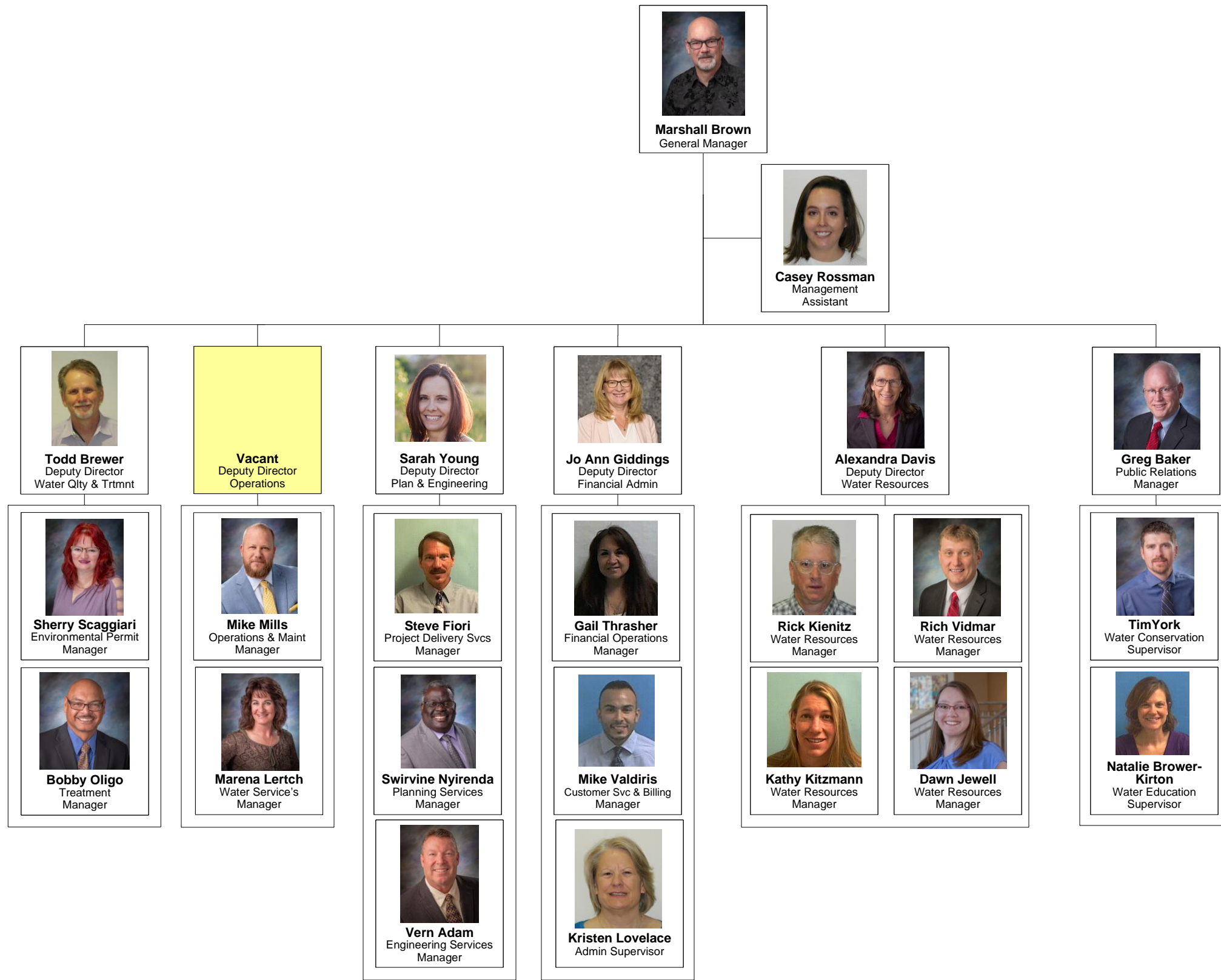
Signature and Stamp of Licensed Professional Engineer



# PNA Attachment 2

## Organizational Chart

# Aurora Water Management



# PNA Attachment 3

## Monitoring Plan

# Public Water System Monitoring Plan

System Name	AURORA CITY OF
PWSID (Assigned by Department)	CO0103005
County	ARAPAHOE
School or Daycare	No
Describe Changes	<ul style="list-style-type: none"> <li>• Updated Contacts</li> <li>• Updated Records Locations</li> </ul>

## Submittal to the Department

Submit Online (Preferred): [wqcdcompliance.com/login](http://wqcdcompliance.com/login)

Fax: 303-758-1398

WQCD - B2 - Drinking Water CAS

4300 Cherry Creek Drive South

Denver, CO 80246-1530

## Revisions

Water systems are required to submit any changes to the Department within thirty (30) calendar days following the effective date of the change. **If submitting revisions, please only submit the individual section(s) that changed.**

## Monitoring Schedules

All routine monitoring information, facilities and sample points (with state assigned IDs), system classification, and system source classification is available at [wqcdcompliance.com/schedules](http://wqcdcompliance.com/schedules). Schedules are updated on a weekly basis and should be checked regularly for any changes.

Immediately call **303-692-3308** (or **1-877-518-5608** if after-hours) for:

1. Positive coliform or Positive *E. coli*.
2. Nitrate greater than or equal to 10.0 mg/L.
3. Nitrite greater than or equal to 1.0 mg/L.
4. Surface water high turbidity or inadequate disinfection.
5. Chlorine dioxide greater than or equal to 0.8 mg/L.
6. Chlorite greater than or equal to 1.0 mg/L.



11/09/2023

CO0103005 - AURORA CITY OF

## Contact Information

Completed by: **Susan Oster**

Signature: \_\_\_\_\_

Certification of Accuracy: I hereby certify that the information is true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

### System Physical Address (Not Mailing)

Address: **18301 E. QUINCY AVE.**

City: **AURORA** State: **CO** Zip: **80015**

**System** Phone: **303-739-6750** **System** Email: **BOLIGO@AURORAGOV.ORG**

### Administrative Contact (AC) Name: **ORTILANO "BOBBY" OLIGO**

(The primary contact person for all Department mail or other communications regarding drinking water compliance)

Mailing Address: **18301 E QUINCY AVE**

City: **AURORA** State: **CO** Zip: **80015**

Phone: **303-739-6740** E-mail: **BOLIGO@AURORAGOV.ORG**

### Legally Responsible Water System Owner Name: **MARSHALL BROWN**

(An individual, corporation, partnership, association, state or political subdivision thereof, municipality, or other legal entity)

Mailing Address: **15151 E. ALAMEDA PKWY**

City: **AURORA** State: **CO** Zip: **80012**

Phone: **303-739-7378** Email: **MBROWN@AURORAGOV.ORG**

### Emergency Contact Name: **SHERRY SCAGGIARI, MANAGER OF ENVIRONMENTAL PERMITTING**

(Someone the Department can contact in an emergency if the administrative contact is unavailable)

Phone: **303-739-6767** Email: **SSCAGGIA@AURORAGOV.ORG, WaterRegulatory@AURORAGOV.ORG**

### Distribution System (DS) Operator Name: **GARY EDWARDS**

(A certified operator designated by the owner to have ultimate responsibility for decisions regarding operational activities)

#### Operator in Responsible Charge - T&D Superintendent

Operator ID#: **1761** (not the certificate number)

Phone: **303-326-8101** Email: **GEDWARDS@AURORAGOV.ORG**

### Distribution System (DS) Operator Name: **BRENDAN CALTON**

#### Operator in Responsible Charge - Water Construction and Repair Superintendent

Operator ID#: **8664** (not the certificate number)

Phone: **303-326-8067** Email: **BCARLTON@AURORAGOV.ORG**

### Distribution System (DS) Operator Name: **DAN MARICK**

#### Operator in Responsible Charge - Flow Control Supervisor

Operator ID#: **9719** (not the certificate number)

Phone: **720-859-4713** Email: **DMARICK@AURORAGOV.ORG**

11/09/2023 CO0103005 - AURORA CITY OF  
Distribution System (DS) Operator Name: BRYAN VAN WINKLE

Operator in Responsible Charge - T&D Superintendent  
Operator ID#: 6592 (not the certificate number)  
Phone: 303-326-8148 Email: BVANWINK@AURORAGOV.ORG

Distribution System (DS) Operator Name: KEVIN AMANN  
Operator in Responsible Charge - Pumping Superintendent  
Operator ID#: 128 (not the certificate number)  
Phone: 303-326-8375 Email: KAMANN@AURORAGOV.ORG

Treatment Operator Name: RALPH HAIGHT Same as DS? NO  
(A certified operator designated by the owner to have ultimate responsibility for decisions regarding operational activities)  
Operator ID#: 2511 (not the certificate number)  
Phone: 303-739-6763 Email: RCHAIGHT@AURORAGOV.ORG

Treatment Operator Name: KEVIN LINDER Same as DS? NO  
(A certified operator designated by the owner to have ultimate responsibility for decisions regarding operational activities)  
Operator ID#: 1897 (not the certificate number)  
Phone: 720-859-4701 Email: KLINDER@AURORAGOV.ORG

GRISWOLD WTP  
Operator in Responsible Charge: DAVID MIKE MCKEE Same as DS? NO  
Operator ID#: 4218 (not the certificate number)  
Address: 14201 E. HAMPDEN AVE.  
City: AURORA State: CO Zip: 80014  
Phone: 303-739-7981 Email: DMCKEE@AURORAGOV.ORG

WEMLINGER WTP  
Operator in Responsible Charge: NICHOLAS BRUSHABER Same as DS? NO  
Operator ID#: 100427 (not the certificate number)  
Address: 18301 E. QUINCY AVE.  
City: AURORA State: CO Zip: 80015  
Phone: 303-739-6750 Email: NBRUSHAB@AURORAGOV.ORG

BINNEY WPF  
Operator in Responsible Charge: CHRIS CONTE Same as DS? NO  
Operator ID#: 10326 (not the certificate number)  
Address: 5070 S. ROBERTSDALE WAY.  
City: AURORA State: CO Zip: 80016  
Phone: 720-859-4714 Email: CCONTE@AURORAGOV.ORG

# Population Types and Seasons

Completed by: **Susan Oster**

Signature: \_\_\_\_\_

Certification of Accuracy: I hereby certify that the information is true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

**Service Connections** provide water through a pipe or constructed conveyance for human consumption which includes drinking, showering, hand-washing, or cooking. Examples of service connections: single family homes, a metered multi-family dwelling unit, a business building, a mobile home trailer, or camp spigot.

**Total Number of Service Connections (Residential and Commercial): 91,912**

**Resident Population** is the number of people who live there.

**Resident Population: 396,018**

**Non-Transient Population** is the number of same people who have regular opportunity to consume the water for six months or more per calendar year, but do not reside there. These are usually students or employees. Regular opportunity is defined as four or more hours per day, for four or more days per week, for six months or more per year.

**Non-Transient Population: 85,601** Season **Jan** (month) to **Dec** (month)

**Transient Population** is the daily average number of people who have an opportunity to consume the water, but are not residents or non-transients. These are customers, visitors, or seasonal employees

If your transient population varies by season you may specify multiple seasonal populations, otherwise enter January and December for the months.

**Average Transients** per day in the busiest month is **5,746** - Busy season **Jan** (month) to **Dec** (month)

If you need assistance, please call (303) 692-3556 or visit [colorado.gov/cdphe/dwcontact](https://colorado.gov/cdphe/dwcontact).

Definitions of the terms used in this form may be found in 5 CCR 1002-11 (Regulation 11) available at [colorado.gov/cdphe/water-quality-control-commission-regulations](https://colorado.gov/cdphe/water-quality-control-commission-regulations).

Water haulers please follow the instructions in the operational handbook available at [colorado.gov/cdphe/hauler](https://colorado.gov/cdphe/hauler).

# Water Sources Definitions

## Water Types

Groundwater (GW) - Any water under the surface of the ground being neither “surface water” nor “groundwater under the direct influence of surface water.”

Surface water (SW) - Any water source that is open to the atmosphere and subject to surface runoff.

Groundwater under the direct influence of surface water (GWUDI or GU) - Any water beneath the surface of the ground with significant occurrence of insects or other macro-organisms, algae or large-diameter pathogens such as *Giardia lamblia* or *Cryptosporidium*; or significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity or pH that closely correlate to climatological or surface water conditions.

Purchased water (GWP, SWP or GUP) - Water that you receive (whether or not you purchase it) from another water system or water hauler.

Integration agreement - An agreement between two or more public water systems, one of which is a wholesale/supply system, whose distribution systems are physically connected. The systems agree to operate using a common set of standards that the wholesale system establishes for the purpose of maintaining and protecting drinking water quality. Integrated systems must submit their agreement to the Department for approval.

## Availability

Permanent (P) - A primary water facility.

Emergency (E) - A water facility that is used only as the result of extreme circumstances, and is otherwise kept offline. This type of facility is most likely never used. Nitrate and total coliform samples would need to be obtained within 2 days after start-up and the **Department must be notified of start-up within 24-hours.**

Interim (I) - A water facility that is either used as a result of high water demand or out of necessity to maintain water rights. The facility may be used once every few weeks or months or once every few years. Routine Sampling will be required at the Entry Point to the Distribution System.

Seasonal (S) - A water facility that is typically used every year to aid a system in meeting high water demands. While a water system may not know when it will need a seasonal source, it is most often used every year. These also may be referred to as peaking facilities. Routine sampling will be required at the Entry Point to the Distribution System.

CO0103005 - AURORA CITY OF  
**Water Source Details**

Completed by: **Susan Oster**

Signature: \_\_\_\_\_

Groundwater Sources							
Facility ID (Assigned by Department)	Name	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in operation	DNR Permit # - Aquifer Name	Well Depth at Completion	Latitude	Longitude
010	DA1 WELL	I		- Arapahoe	1590	39.59	-104.81
011	DA2 WELL	I		- Arapahoe	1587	39.59	-104.81
012	DA3 WELL	I		- Arapahoe	1536	39.60	-104.81
052	LFH1	I		- Laramie-Fox Hills	2213	39.60	-104.81

Ground Water Under the Direct Influence of Surface Water Sources (GWUDI)							
Facility ID (Assigned by Department)	Name	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in operation	DNR Permit # - Aquifer Name	Well Depth at Completion	Latitude	Longitude
030	NC VW10A	P		- South Platte Alluvium	46	40° 2' 7.9"	-104° 49' 41"
031	NC VW10	P		-South Platte Alluvium	46	40° 2' 7.5"	-104° 49' 34"
032	NC VW11	P		- South Platte Alluvium	42	40° 2' 14"	-104° 49' 32"
033	NC VW12	P		- South Platte Alluvium	43	40° 2' 19"	-104° 49' 32"
034	NC VW13	P		- South Platte Alluvium	42	40° 2' 24"	-104° 49' 34"
035	NC VW14	P		- South Platte Alluvium	42	40° 2' 35"	-104° 49' 36"
036	NC VW15	P		- South Platte Alluvium	44	40° 2' 40"	-104° 49' 34"
037	NC VW 16	P		- South Platte Alluvium	44	40° 2' 46"	-104° 49' 33"
038	NC VW18	P		- South Platte Alluvium	38	40° 2' 54"	-104° 49' 36"
039	NC VW19	P		- South Platte Alluvium	40	40° 2' 59"	-104° 49' 35"
040	NC VW20	P		- South Platte Alluvium	37	40° 3' 25"	-104° 49' 39"
041	NC VW21	P		- South Platte	38	40° 3' 3.5"	-104° 49' 34"



				Alluvium			
042	NC VW22	P		- South Platte Alluvium	42	40° 3' 8.7"	-104° 49' 33"
043	NC VW23	P		- South Platte Alluvium	35	40° 3' 14"	-104° 49' 31"
044	NC VW24	P		- South Platte Alluvium	38.5	40° 3' 19"	-104° 49' 32"
045	NC VW25	P		- South Platte Alluvium	34	40° 3' 23"	-104° 49' 33"
046	NC VW 26	P		- South Platte Alluvium	39	40° 3' 30"	-104° 49' 42"
047	CC 1R	I		- Cherry Creek Alluvial	114	39° 35' 34"	-104° 48' 38"
048	CC 2R	I		- Cherry Creek Alluvial	98	39° 35' 43"	-104° 48' 47"
049	CC 4R	I		- Cherry Creek Alluvial	93	39° 35' 33"	-104° 48' 42"
050	CC 5R	I		- Cherry Creek Alluvial	87	39° 35' 29"	-104° 48' 42"
051	CC SA6R	I		- Cherry Creek Alluvial	108	39° 35' 16"	-104° 48' 40"
059	CC 3R	I		- Cherry Creek Alluvial	92	39° 35' 38"	-104° 48' 45"
060	NC VW 10B	P		- South Platte Alluvium	42	40° 2' 6.7"	-104° 49' 38"
061	NC VW 11A	P		- South Platte Alluvium	42	40° 2' 11"	-104° 49' 32"
062	NC VW 12A	P		- South Platte Alluvium	40	40° 2' 17"	-104° 49' 32"
063	NC VW 16A	P		- South Platte Alluvium	42	40° 2' 43"	-104° 49' 31"
064	NC VW 18A	P		- South Platte Alluvium	38	40° 2' 52"	-104° 49' 35"
065	NC VW 19A	P		- South Platte Alluvium	39	40° 2' 56"	-104° 49' 35"

Surface Water Sources			
Facility ID (Assigned by Dept)	Name	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in operation
013	RAMPART SOUTH PLATTE RESERVOIR	P	
014	QUINCY RESERVOIR	P	
015	AURORA RESERVOIR	P	

Purchased Water Sources							
Facility ID (Assigned by Dept)	PWSID - Name of Supplying Water System	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in use	Type (GW, SW or GWUDI)	Connection Location cross-streets	Do you receive treated or raw water	Approved Integration Agreement? Yes / No

Combined Raw Source Sampling Locations					
Used when raw sources blend and there is a sample tap that represents multiple blended sources					
Facility ID (Assigned by Dept)	Name	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in use	Combining Sources Facility IDs and Names	Treatment Plant it Flows to
SS001	COMBINED RAW SOURCE FOR 001	P		013, 014, 015, 010, 011, 012, 052, 047, 048, 049, 050, 051, 052, 59	001
SS002	COMBINED RAW SOURCE FOR 002	P		013, 014, 015	002
SS016	COMBINED RAW SOURCE FOR 016	P		015	016
SS055	COMBINED RAW SOURCE FOR 055	P		030, 031, 032, 033, 034, 035, 036, 037, 038, 039, 040, 041, 042, 043, 044, 045, 046, 060, 061, 062, 063, 064, 065	055

## Water Treatment Codes

The codes below are generated by the USEPA for the purpose of standardizing the treatment processes as they are cataloged and tracked within the federal and state database programs. Water systems should have individual process flow diagrams for treatment; from these diagrams, each process should have an associated name. If you struggle to understand the different treatment codes below, please contact the Division's Engineering Section for assistance.

### DISINFECTION

GASEOUS CHLORINATION (401)  
HYPOCHLORINATION BLEACH (421)  
CHLORAMINES (200)  
CHLORINE DIOXIDE (220)  
ULTRAVIOLET RADIATION (720)  
OZONATION (541)  
CONTACT TIME PROVIDED (825)

### FILTRATION

ANION EXCHANGE (836)  
CATION EXCHANGE (835)  
FILTRATION, BAG (801)  
FILTRATION, BAG - ROUGHING (810)  
FILTRATION, CARTRIDGE (341)  
FILTRATION, CARTRIDGE - ROUGHING (865)  
FILTRATION, MICROFILTRATION (895)  
FILTRATION, PRESSURE SAND (344)  
FILTRATION, RAPID SAND (345)  
FILTRATION, ULTRAFILTRATION (347)  
FILTRATION, GREENSAND (343)  
NANOFILTRATION (890)  
NATURAL OR RIVERBANK FILTRATION (GWUDI) (826)  
REVERSE OSMOSIS (640)

### PRETREATMENT, COAGULATION AND SEDIMENTATION

AERATION (820)  
ACTIVATED CARBON, GRANULATED (121)  
ACTIVATED CARBON, POWDERED (125)  
COAGULATION (240)  
DISSOLVED AIR FLOTATION (880)  
FLOCCULATION (360)  
HYDRAULIC JET MIXING (831)  
IN LINE STATIC MIXING (830)  
MICROSCREENING (520)  
PERMANGANATE (560)  
PRESEDIMENTATION (840)  
RAPID MIX (600)  
SEDIMENTATION (660)  
UPFLOW CLARIFIER (845)

### OTHER FORMS OF TREATMENT

ACTIVATED ALUMINS (100)  
ALGAE CONTROL (160)  
BLENDING (896)  
FLUORIDATION (380)  
INHIBITOR, SILICATE (449)  
INHIBITOR/SEQUESTERING AGENT, PHOSPHATE BASED (815)  
PEROXIDE (580)  
PH ADJUSTMENT - SUPPRESSION (847)  
PH ADJUSTMENT - ELEVATION (848)  
REDUCING AGENT (620)

# Water Treatment Plant Details

Completed by: **Susan Oster**

Signature: \_\_\_\_\_

Treatment Plants				
Facility ID (Assigned by Department)	Plant Name	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in operation	Contributing Sources Facility IDs and Names
001	THOMAS J GRISWOLD WTP	P		AURORA RESERVOIR (015) QUINCY RESERVOIR (014) RAMPART SOUTH PLATTE RESERVOIR (013) CC 1R (047); CC 2R (048); CC 4R (049); CC 5R (050); CC SA6R (051); CC 3R (059); DA1 WELL (010); DA2 WELL (011); DA3 WELL (012); LFH1 (052);
Treatment Codes (see previous page for codes)				
GASEOUS CHLORINATION, PRE (403) CHLORINE DIOXIDE (220) ACTIVATED ALUMINS (100) RAPID MIX (600) FLOCCULATION (360) GASEOUS CHLORINATION (401) COAGULATION (240) FILTRATION, RAPID SAND (345) PH ADJUSTMENT - ELEVATION (848) CHLORAMINES (200) GASEOUS CHLORINATION (401)				
Provide a Detailed Description of the Water Treatment System (including descriptions of tanks used for disinfection contact time)				
The Griswold Water Purification Facility (WPF) is an 80 MGD direct filtration facility. This plant uses Alum as the primary coagulant with Cationic Polymer used as a coagulant aid and as an available filter aid. Chlorine Dioxide is used as the primary disinfectant with the addition of Chlorine and Ammonia (chloramines) for final distribution system disinfection. Sodium Hydroxide is used to adjust pH. This provides for corrosion control in the distribution system. Soda Ash is also available for pH/Alkalinity adjustments if needed. The Griswold Water Purification Facility is equipped with two multi-stage flocculation/contact basins and 14 dual media filters. The contact / flocculation basins are 900,000 gallons each and provide needed disinfection contact time and adjustable mixing for flocculation during both high and low production rates. Ten of the filters are rated at 7.73 gpm/ft2 and four of the filters are rated at 7.34 gpm/ft2.				

Facility ID (Assigned by Department)	Plant Name	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in operation	Contributing Sources Facility IDs and Names
002	WEMLINGER WTP	P		AURORA RESERVOIR (015) RAMPART SOUTH PLATTE RESERVOIR (013)

**Treatment Codes (see previous page for codes)**

PH ADJUSTMENT - ELEVATION (848)  
 GASEOUS CHLORINATION, PRE (403)  
 CHLORINE DIOXIDE (220)  
 RAPID MIX (600)  
 PH ADJUSTMENT - ELEVATION (848)  
 FLOCCULATION (360)  
 COAGULATION (240)  
 FILTRATION, RAPID SAND (345)  
 GASEOUS CHLORINATION (401)  
 PH ADJUSTMENT - ELEVATION (848)  
 CONTACT TIME PROVIDED (825)  
 CHLORAMINES (200)  
 PH ADJUSTMENT - ELEVATION (848)

**Provide a Detailed Description of the Water Treatment System  
 (including descriptions of tanks used for disinfection contact time)**

The Wemlinger WTF is an 80 MGD, direct filtration facility. Wemlinger utilizes aluminum sulfate as the primary coagulant and a cationic polymer for a coagulant aid. All coagulant chemicals are fed prior to the rapid mix location. Free chlorine is the primary disinfectant and is co-fed with chlorine dioxide, which is used as a pre-oxidant and secondary disinfectant. Both chlorine and chlorine dioxide are also fed prior to the rapid mix location. A non-ionic polymer is fed as a filter aid after the water exits the flocculation basins, just upstream of the filters. Sodium hydroxide can be fed at the rapid mix or post filtration for pH adjustment. Soda ash and/or carbon dioxide can be used if needed, depending on source water alkalinity. Wemlinger has twelve flocculation basins as part of the two stage, tapered flocculation process. The flocculation process is followed by the filtration process which consists of fifteen (15) dual media, deep bed filters. Each filter contains 66” of 1.25 mm effective size anthracite over 12” of 0.60 mm effective size sand. The filters are rated at 8.8 gpm/ft<sup>2</sup>. Downstream of filtration, chlorine is fed to boost chlorine residual to the free chlorine contact basin. The chlorine contact basin is sized to provide all disinfection credit necessary for the facility. Ammonia is fed at the outlet of the chlorine contact basin to form chloramines prior to distribution.

Facility ID (Assigned by Department)	Plant Name	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in operation	Contributing Sources Facility IDs and Names
016	BWPP AURORA RESERVOIR TRAIN	P		AURORA RESERVOIR (015);
<b>Treatment Codes (see previous page for codes)</b>				
<p>                     PERMANGANATE (560)                      GASEOUS CHLORINATION, PRE-FILTRATION (403)                      RAPID MIX (600)                      COAGULATION (240)                      FLOCCULATION (360)                      SEDIMENTATION (660)                      FILTRATION, RAPID SAND (345)                      BLENDING (898)                      GASEOUS CHLORINATION (401)                      CONTACT TIME PROVIDED (825)                      CHLORAMINES (200)                      PH ADJUSTMENT - ELEVATION (848)                 </p>				
<b>Provide a Detailed Description of the Water Treatment System</b> (including descriptions of tanks used for disinfection contact time)				
<p>At the Binney Water Purification Plant, the Aurora Reservoir water source (015) is purified with the following processes:</p> <ul style="list-style-type: none"> <li>• Coagulation/Flocculation/sedimentation</li> <li>• Biologically active carbon (BAC) filtration</li> <li>• Chlorine disinfection</li> </ul> <p>The Aurora Reservoir treatment train has a design capacity of 33.3 MGD. Aurora Reservoir (015) and South Platte (SS055) water sources remain separate throughout filtration and adsorption processes and are blended in the weir box upstream of the chlorine contact basin.</p>				



Facility ID (Assigned by Department)	Plant Name	Availability (P, E, I, or S)	If seasonal, include months anticipated to be in operation	Contributing Sources Facility IDs and Names
055	BWPP SOUTH PLATTE ALLUVIAL TRAIN	P		NC VW10A (030); NC VW10 (031); NC VW11 (032); NC VW12 (033); NC VW13 (034); NC VW14 (035); NC VW15 (036); NC VW 16 (037); NC VW18 (038); NC VW19 (039); NC VW20 (040); NC VW21 (041); NC VW22 (042); NC VW23 (043); NC VW24 (044); NC VW25 (045); NC VW 26 (046); NC VW 10B (060); NC VW 11A (061); NC VW 12A (062); NC VW 16A (063); NC VW 18A (064); NC VW 19A (065);
<b>Treatment Codes (see previous page for codes)</b>				
<p>AERATION (820)                      GASEOUS CHLORINATION, PRE-FILTRATION (403)                      RAPID MIX (600)                      COAGULATION (240)                      PH ADJUSTMENT - ELEVATION (848)                      UPFLOW CLARIFIER (845)                      SEDIMENTATION (660)                      PH ADJUSTMENT - SUPPRESSION (847)                      PEROXIDE (580)                      ULTRAVIOLET RADIATION (720)                      FILTRATION, RAPID SAND (345)                      ACTIVATED CARBON, GRANULAR (121)                      BLENDING (898)                      GASEOUS CHLORINATION (401)                      CONTACT TIME PROVIDED (825)                      CHLORAMINES (200)                      PH ADJUSTMENT - ELEVATION (848)</p>				
<b>Provide a Detailed Description of the Water Treatment System (including descriptions of tanks used for disinfection contact time)</b>				
<p>At the Binney Water Purification Plant, the South Platte water supply is purified with the following processes;</p> <ul style="list-style-type: none"> <li>• Precipitative softening</li> <li>• UV-advanced oxidation (UV-AOP)</li> <li>• Biologically active carbon (BAC) filtration</li> <li>• Granular activated carbon (GAC) adsorption</li> <li>• Chlorine disinfection</li> </ul> <p>The South Platte treatment train has a capacity of 16.7 MGD. Aurora Reservoir (015) and South Platte (SS055) water sources remain separate throughout filtration and adsorption processes, and are blended in the weir box upstream of the chlorine contact basin.</p>				

## Distribution System Definitions

Entry point -A location before or at the first customer which is representative of treated (finished) water. The entry point may represent treated water from multiple treatment plants and/or multiple sources. Sometimes the water treatment plant is the first tap.

Distribution system storage facility - Any treated (finished) water storage tank at the treatment plant or in the distribution system that is not considered part of disinfection contact time (i.e. after the entry point).

Booster treatment facilities - Any chemical booster stations after the first customer (such as disinfection or corrosion control chemical booster stations in the distribution system).

Consecutive connection - A master meter connection from your water system to another water system for purposes of supplying drinking water to the other system.

Integration agreement - An agreement between two or more public water systems, one of which is a wholesale/supply system, whose distribution systems are physically connected. The systems agree to operate using a common set of standards that the wholesale system establishes for the purpose of maintaining and protecting drinking water quality. **Integrated systems must submit their agreement to the Department for approval.**

Pump station - A facility used to pump water or increase water pressure. Pump stations are not used for chemical additions or other treatment and do not need to be reported on this form.

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**Distribution System Details**

Completed by: **Susan Oster**

Signature: \_\_\_\_\_

**Number of Distribution Systems**

How many distribution systems does the system have? **1** If more than one, how are the distribution systems operated? (i.e. are they completely independent of each other or does water flow from one to another through operator-controlled valves, etc.): **{Distribution System Details}**

<b>Entry Points to Distribution System</b>	
<i>Residual Disinfectant, Nitrate, Nitrite, Inorganics, Volatile Organics, Synthetic Organics, Radionuclides, Chlorite, Chlorine Dioxide, and Bromate Must be Collected at All Entry Points</i>	
Facility ID (Assigned by Department)	Facility Name
001	THOMAS J GRISWOLD WTP
002	WEMLINGER WTP
056	BWPP CLEARWELL FOR 016 AND 055

<b>Storage &amp; Other Facilities</b>				
Facility ID (assigned by Department)	Facility Name	After Entry Point (In Distribution)	Contributing Treatment Plants (or Sources)	Tank Volume (gallons)
017	SMOKEY HILL EAST TANK	Yes		4.5 MGL
018	SMOKEY HILL WEST TANK	Yes		4.5 MGL
019	SMOKEY HILL SOUTH TANK	Yes		5.1 MGL
020	BLACKSTONE TANK	Yes		5 MGL
021	POWHATAN TANK	Yes		3.7 MGL
022	WEMLINGER WTP ONSITE STORAGE TANK	Yes		10 MGL
023	GRISWOLD WTP ONSITE STORAGE TANK	Yes		15 MGL
056	BWPP CLEARWELL FOR 016 AND 055	ENTRY POINT	BWPP AURORA RESERVOIR TRAIN (016); BWPP SOUTH PLATTE ALLUVIAL TRAIN (055);	1.8 MGL
057	MARINA TANK	Yes		6.5 MGL
058	ROBERTSDALE TANK	Yes		10 MGL

Booster Treatment Facilities (Post Entry-Point Treatment)		
Facility ID (Assigned by Department)	Facility Name	Treatment Description (use treatment codes)

Consecutive Connections Serving Another Water System			
Receiving System PWS ID and Name	Availability (P, E, I, or S)	Do you supply treated or raw water?	Integrated Agreement? Yes / No
CO0101085 HILLCREST VILLAGE MHP	I	TREATED	
CO0103035 EAST CHERRY CREEK VALLEY WSD	E	TREATED	
CO0103843 WISE PROJECT	P	TREATED	
CO0118055 ROXBOROUGH PARK WSD	I	RAW	

## Schematics and Maps

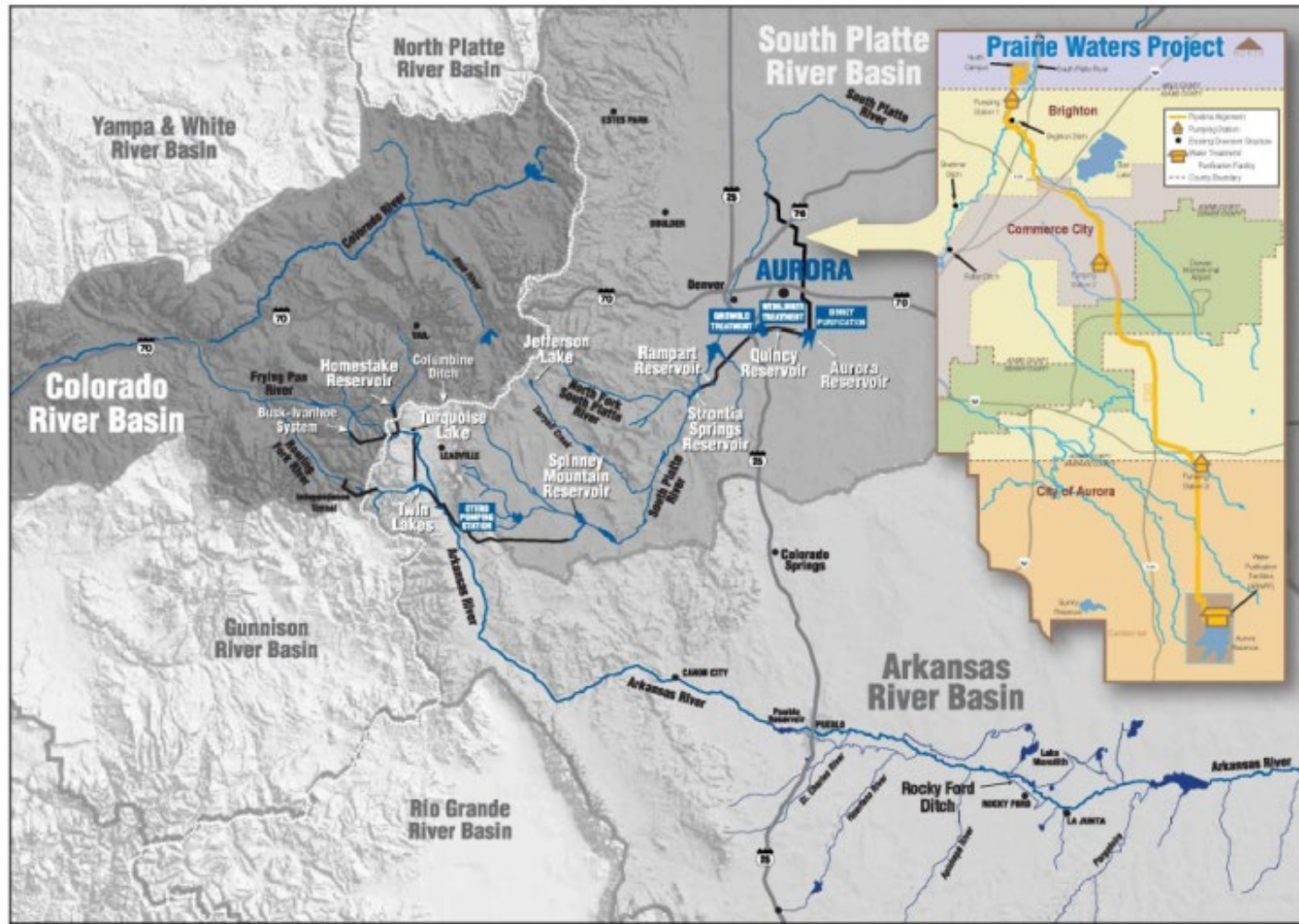
### Sketch of Facility Flows


Include a schematic, diagram or sketch depicting how the flow from each source facility is connected to the combined raw source, treatment plant, storage tank, and the distribution system. Indicate all applicable entry point and raw water sample sites.

### Process Schematic of Water Treatment Plants

Provide a process flow diagram for each treatment plant. Include locations (in the process) of all chemical additions, chemical storage, monitors/meters, piping and physical components of the treatment plant. Designate water flow direction throughout the schematic. All components must be clearly labeled. Indicate all applicable sample sites, and include parameters measured at each site.

# Water Sources

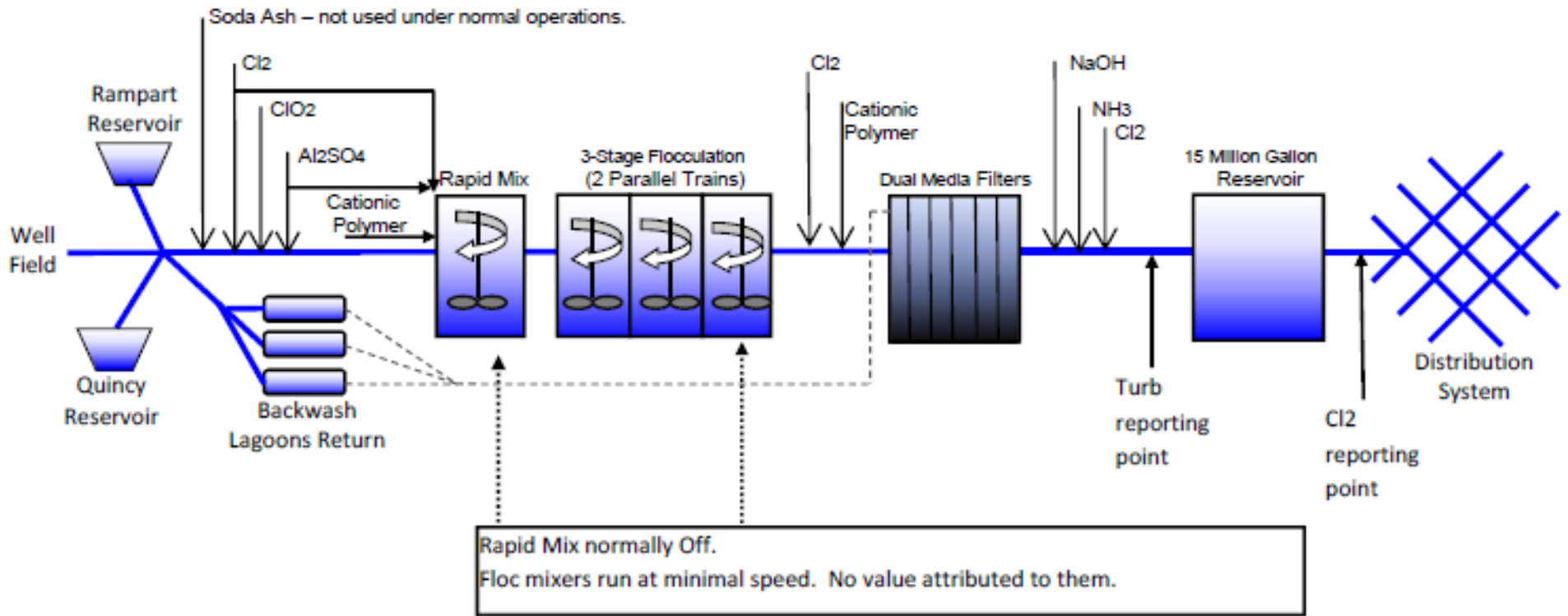


 **AURORA WATER** ♦ **Water Supply**

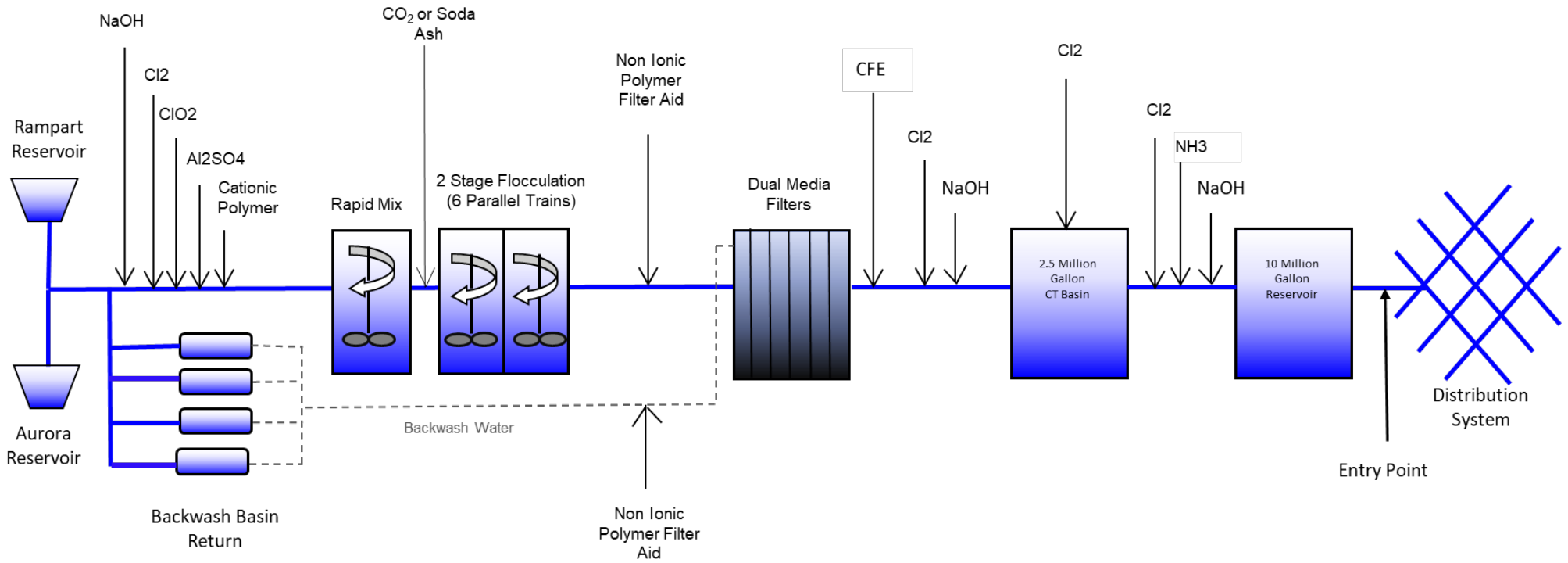
— Aqueeducts, diversion tunnels, pipelines — Streams, canals, reservoirs  
— Major roads, highways — Continental Divide

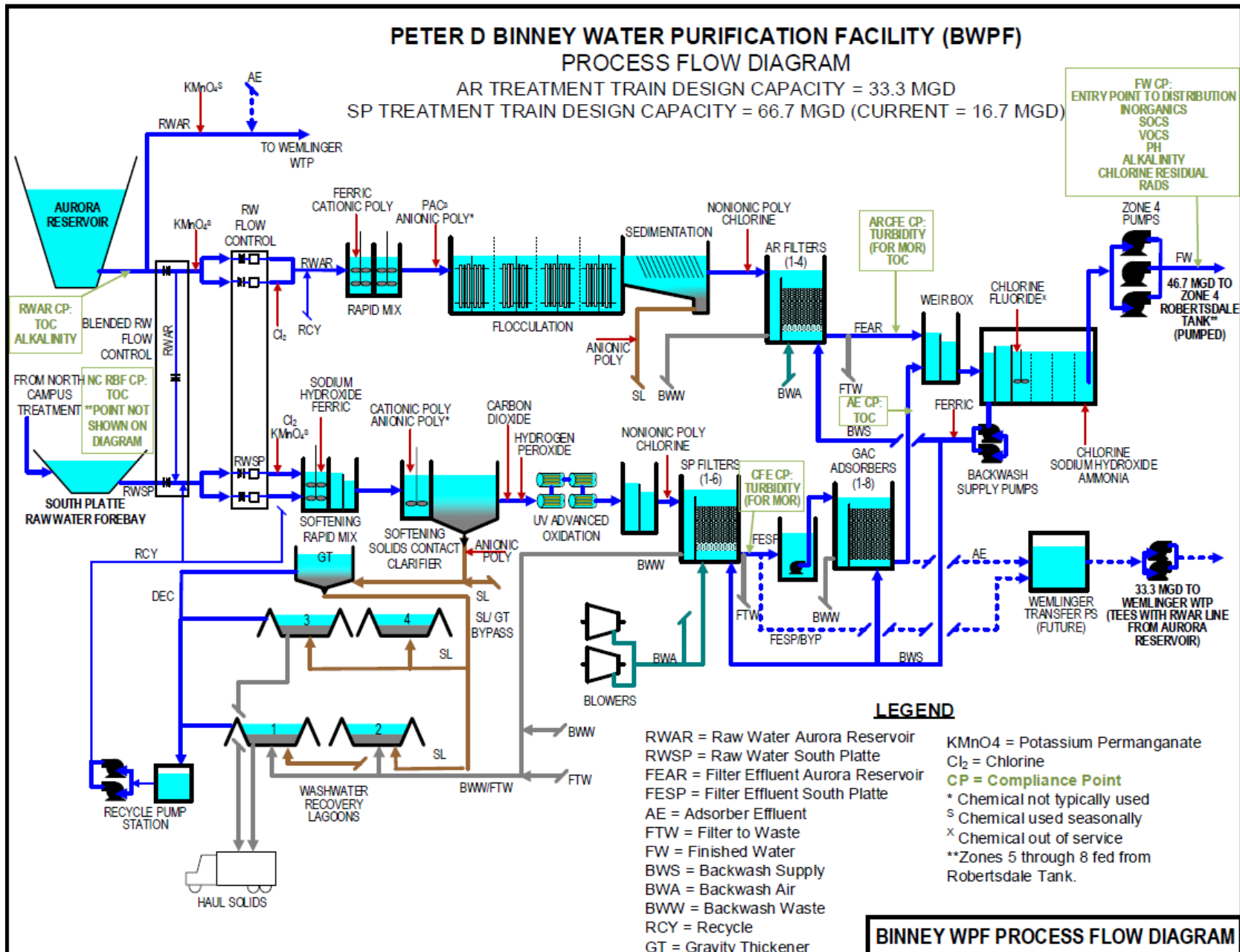


### Griswold Water Treatment Facility Process Schematic



# Wemlinger Water Treatment Facility Process and Schematic





**Map of Distribution System**

Provide a map of the distribution system showing locations of all storage facilities, booster treatment facilities, consecutive connections and entry points as well as all applicable sample sites described below. You may provide this detail all in one map or in several different maps. Clearly indicate if there are multiple distribution systems and if those distribution systems are connected to each other. If applicable, include an evaluation and description of the extent to which zones of influence from each source overlap.

**Total Coliform Sample Sites**

Attach a map of the distribution system showing locations of all total coliform sample sites. Hand drawn schematics or aerial maps (Google Maps) are acceptable.

**Lead and Copper Sample Sites**

Attach a map of the distribution system showing locations of all lead and copper sample sites. Hand drawn schematics or aerial maps (Google Maps) are acceptable.

**Disinfection Byproducts (TTHM/HAA5 and Chlorite) Sample Sites**

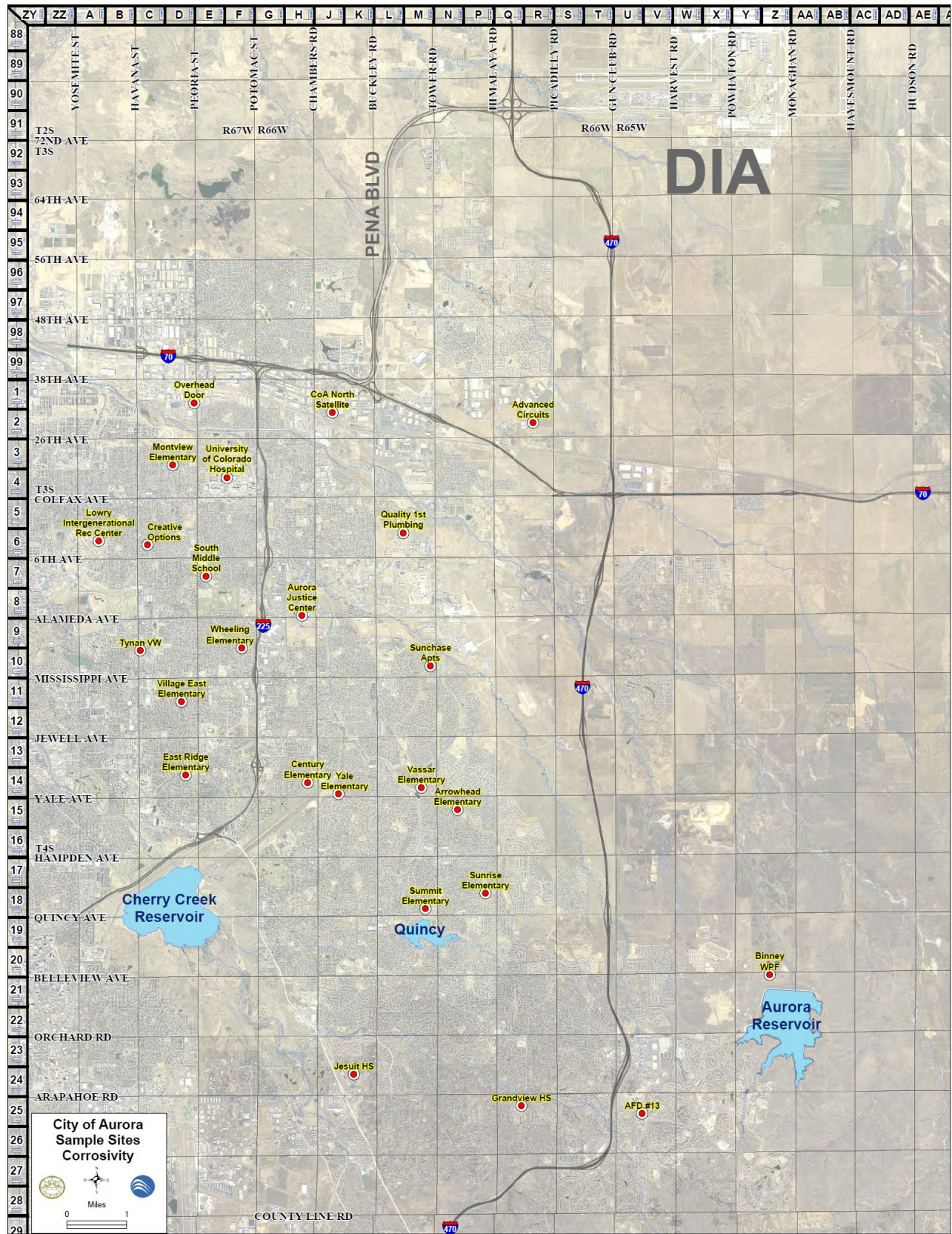
Attach a map of the distribution system showing locations of all disinfection byproduct sample sites as well as treatment plants and distribution storage tanks. Hand drawn schematics or aerial maps (Google Maps) are acceptable.

Note: The supplier may use one schematic if it includes all of the required elements.

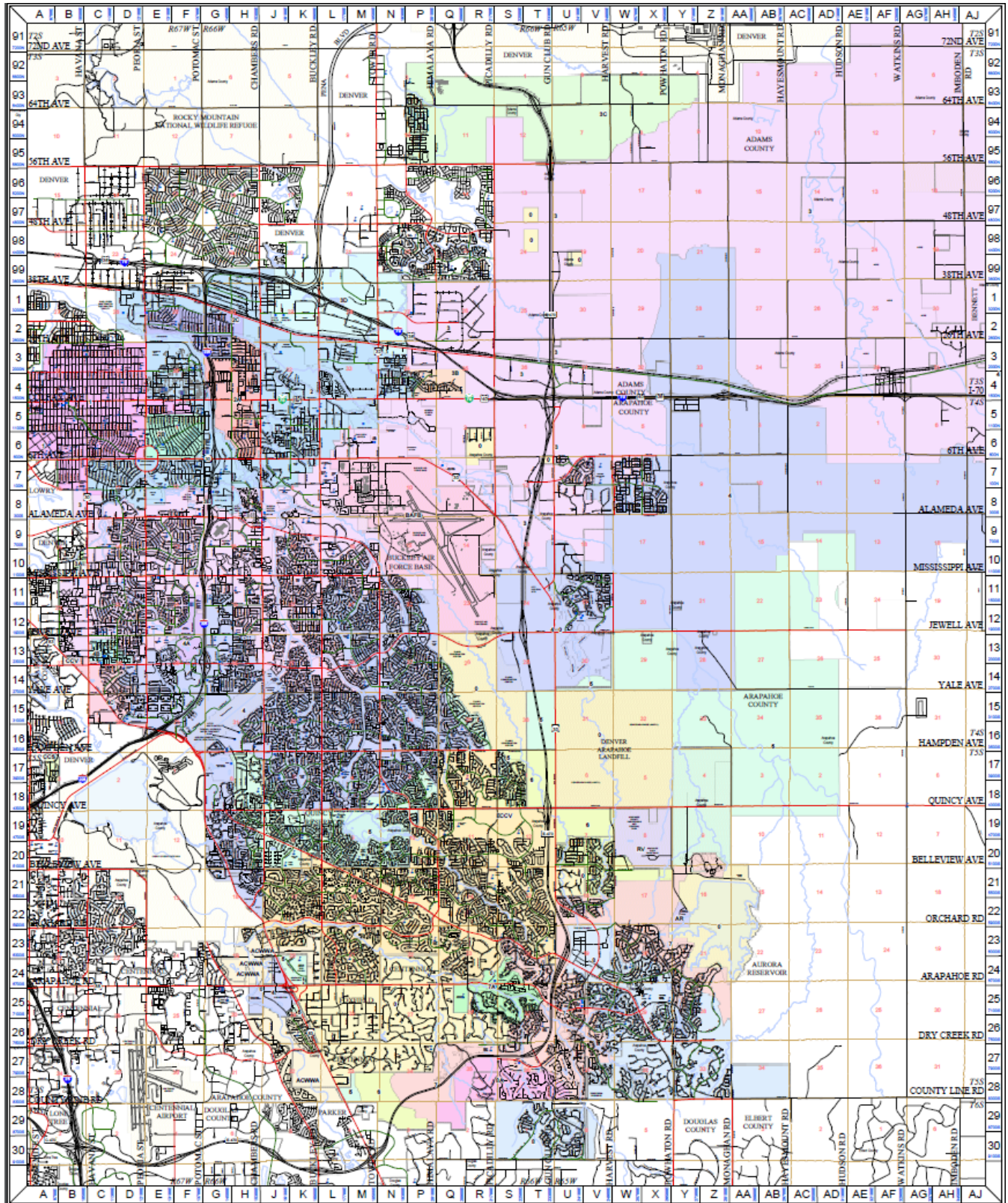
**Sample sites for TCR, Disinfection Byproducts, and customer Lead and Copper are maintained in the Drinking Water Portal.**

**Maps indicating Lead and Copper Corrosivity sample sites and water pressure zones are attached.**









**Public Works Department**  
 15151 E. Alameda Pkwy  
 Aurora CO 80012 USA  
[www.auroragov.org](http://www.auroragov.org)  
 303-739-7000  
[GIS@auroragov.org](mailto:GIS@auroragov.org)



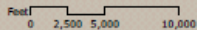
### City of Aurora, Colorado

#### 2017 Street Map with Water Zones

December 5, 2017  
 3000 Scale



*Aurora is Worth Discovering!*



Legend			
	School		Arapahoe County Fairgrounds
	City Building		Parks and Open Space
	Water Storage Tank		Reservoir
	Hospital		Government Land
			Denver Arapahoe Disposal Site
			Jurisdictional Boundary



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# Records Locations

Completed by: **Susan Oster**

Signature: \_\_\_\_\_

These records must be made available for inspection for Department staff during site visits.

Type of Record	Location Address	Retain no less than...
Total Coliform (TCR) and Fecal Coliform/ <i>E. coli</i> results AND distribution system residual disinfection monitoring results	26791 E. Quincy Ave; Aurora, CO 80016	5 years
Revised TCR (RTCR) assessment forms or corrective actions as a result on an assessment, or other available summary documentation of the sanitary defects and corrective actions	26791 E. Quincy Ave; Aurora, CO 80016	5 years after completion of the assessment or corrective action
Chemical analyses results	26791 E. Quincy Ave; Aurora, CO 80016	10 years
All lead and copper rule documents and results	26791 E. Quincy Ave; Aurora, CO 80016	12 years
Violations of Regulation 11, including corrective action	26791 E. Quincy Ave; Aurora, CO 80016	3 years after corrective action is completed
Sanitary surveys, including any written reports, summaries or correspondences	26791 E. Quincy Ave; Aurora, CO 80016 Intelix Database	10 years
Variances or exemptions granted by the Department	26791 E. Quincy Ave; Aurora, CO 80016	5 years after expiration
Public notices and consumer confidence reports, including certification	26791 E. Quincy Ave; Aurora, CO 80016	3 years
Individual rule sampling plans	26791 E. Quincy Ave; Aurora, CO 80016	10 years
Turbidity monitoring results	26791 E. Quincy Ave; Aurora, CO 80016	5 years
Recycle flows information <ul style="list-style-type: none"> <li>• Copy of original recycle notification and information submitted to Department</li> <li>• List of all recycle flows and frequency with which they are returned</li> <li>• Average and maximum backwash flow rate</li> <li>• Average and maximum backwash duration</li> <li>• Typical filter run length and how it is determined</li> <li>• Treatment provided for the recycle flow (including chemicals and doses)</li> <li>• Physical dimensions of the equalization/treatment units</li> <li>• Typical and maximum hydraulic loading rates</li> <li>• Frequency of solids removal</li> </ul>	At Individual Plants	Indefinitely
Individual filter turbidity monitoring results AND entry point residual disinfection monitoring results	26791 E. Quincy Ave; Aurora, CO 80016 And At Individual Plants	3 years
Disinfection profiling results, including raw data and analysis	At Individual Plants	Indefinitely
Disinfection benchmark, including raw data and analysis	At Individual Plants	Indefinitely
Source water monitoring for Long Term 2 Surface Water Treatment Rule	26791 E. Quincy Ave; Aurora, CO 80016	3 years after bin classification
Notification to the Department that system	26791 E. Quincy Ave; Aurora, CO 80016	3 years

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meets criteria to avoid source water monitoring for Long Term 2 Surface Water Treatment Rule		
Treatment monitoring associated with microbial toolbox options for Long Term 2 Surface Water Treatment Rule	26791 E. Quincy Ave; Aurora, CO 80016	3 years
Initial distribution system evaluation (IDSE) report submitted for the Stage 2 Disinfectants and Disinfection Byproducts Rule	26791 E. Quincy Ave; Aurora, CO 80016	10 years after report submitted
Corrective actions taken for the Groundwater Rule	NA	10 years
Invalidation of fecal indicator-positive groundwater source samples for the Groundwater Rule	NA	5 years
For consecutive systems, documentation of notification to the wholesale system(s) of total coliform-positive samples	26791 E. Quincy Ave; Aurora, CO 80016	5 years
For systems conducting compliance monitoring for the Groundwater Rule <ul style="list-style-type: none"> <li>Department-specified minimum disinfectant residual</li> </ul>	NA	10 years
For systems conducting compliance monitoring for the Groundwater Rule <ul style="list-style-type: none"> <li>Lowest daily disinfectant residual, date and any failure to maintain the Department-specified minimum disinfectant residual for a period of more than 4 hours</li> <li>Department-specified compliance requirements for membrane filtration, date and duration of any failure to meet those requirements for more than 4 hours</li> </ul>	NA	5 years
Storage Tank Rule - for each completed tank inspection, the inspection summary	<ul style="list-style-type: none"> <li>At pumping facilities located with each individual tank</li> <li>At Griswold WTP: 14201 E. Hampden Ave.; Aurora CO, 80014</li> <li>Intelex Database</li> </ul>	10 years
Backflow Prevention and Cross-Connection Control Rule - for Community Water Systems <ul style="list-style-type: none"> <li>Testing, inspection and maintenance records for backflow prevention assemblies and methods.</li> <li>Each annual BPFCC program report</li> </ul>	Aurora Central Facilities: 13646 E Ellsworth Ave, Aurora, CO 80012	3 years
Backflow Prevention and Cross-Connection Control Rule - for Non-Community Water Systems <ul style="list-style-type: none"> <li>Testing, inspection and maintenance records for backflow prevention assemblies and methods.</li> <li>Each annual BPFCC program report</li> </ul>	NA	5 years
Water Hauler Rule <ul style="list-style-type: none"> <li>Water Hauler Operational Guide and associated required records</li> </ul>	NA	Indefinitely

# Revised Total Coliform and Groundwater Rule - Portal

Completed by: **Susan Oster**

Signature: \_\_\_\_\_

Certification of Accuracy: I hereby certify statements below are true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

- The drinking water portal ([wqcdcompliance.com/login](http://wqcdcompliance.com/login)) is being used to maintain the sites.
- The sample sites, status, and any additional information is kept up-to-date.
- When site information changes the drinking water portal is updated immediately.

## Total Coliform Site Information

Identify how the supplier will sample for total coliforms in the distribution system. The routine samples must represent the entire distribution system and should be rotated to different locations within the system if possible. This method allows for coverage of the distribution system without increasing the need for additional samples. Describe how the supplier will meet this requirement:

**The city of Aurora has selected 151 unique sites that represent the entire system at various types of locations. 59 of these sites are sampled two to four times every month to reach a minimum of 210 samples per month.**

**In the event of a total coliform positive result, upstream and downstream sample sites will be identified. The upstream and downstream sample sites will be within 5 service connections from the site that tested positive. The process for identifying upstream and downstream sample sites is included in the SOP "QA-105 TCR Result Evaluation, Reporting, and Repeat Sampling"**

Identify how the supplier will sample for total coliforms in the distribution throughout the sampling period (if applicable). A supplier must collect samples at regular time intervals throughout the month, unless otherwise allowed by the regulations. Describe how the supplier will meet this requirement: **The City of Aurora has three designated staff members who collect TCR samples. These three staff members collect samples Monday through Thursday. If more than one sample is collected at a single site in a month, they must be sampled in different calendar weeks.**

## Distribution System Residual Disinfectant Monitoring

The residual disinfectant must be measured at the same time and the same location as each total coliform bacteria sample. Measurements must be conducted in the field by a certified operator or under the direction of the certified operator and must be written on each total coliform chain of custody when it is submitted to the laboratory.

Disinfectant used in the distribution system:	<b>Chloramine Measured as Total Chlorine</b>
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Residual disinfectant quality assurance/quality control (QA/QC) - explain the exact procedures to be followed to ensure that the field test measurement will be accurate. This may be found in the manufacturer's literature: **At least once a month, the field meters are checked against three known standards (Hach Product Number 2635300). If the readings do not fall within the acceptable limits on the Certificate of Analysis, the meter is removed from service until repaired or replaced.**

Each lot of DPD Total Chlorine reagent is tested before use by comparing results with a proven lot. Results from the new lot must be within 10% of the proven lot.  
 Before testing samples, the meter is "blanked" with the sample, then DPD Total Chlorine reagent is added to the same sample aliquot, mixed, and allowed to react. The sample is then measured.

<b>SEASONAL SYSTEMS ONLY - STARTUP PROCEDURES AND PRE-OPENING SAMPLES</b>	
Seasonal suppliers are required to use Department approved start-up procedures before serving water to the public and collect a pre-opening total coliform sample.	
<b>Using Department-approved start-up procedures?</b>	<b>Identify where and when the pre-opening sample will be collected</b>

<b>FOR SYSTEMS WITH GROUNDWATER SOURCES</b>		
Suppliers that use a groundwater source and have a TC+ in the distribution system must collect a raw water sample from each groundwater source that was in use at the time of the TC+ sample.		
<b>Identify where the raw water sample(s) will be collected</b>	<b>Does the raw water sampling site(s) represent more than one source? If so, describe the raw sources that combine</b>	<b>If the supplier is a consecutive system, describe how the supplier will notify its wholesaler within 24 hours of being notified of a TC+ sample:</b>

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## TTHM/HAA5 Stage 2 Disinfection Byproduct Sample Sites - Portal

Completed by: **Susan Oster**

Signature: \_\_\_\_\_

Certification of Accuracy: I hereby certify statements below are true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

- The drinking water portal ([wqcdcompliance.com/login](http://wqcdcompliance.com/login)) is being used to maintain the sites.
- The sites, status, and any additional information is kept up-to-date.
- When site information changes the drinking water portal is updated immediately.

# Chlorine Dioxide and Chlorite Sample Sites

Completed by: **Susan Oster**

Signature: \_\_\_\_\_

Chlorine Dioxide and Chlorite Site Information			
Site	SDWIS Sample Point ID (Assigned by Department)	System Sample Point ID or Name	Address, City, Zip Code
Near the First Customer	CLO2-FIRST	Griswold WTP First Customer	Griswold WTP, Kitchen Sink, 14201 E. Hampden Ave, Aurora, CO 80014
Average Residence Time	CLO2-AVG	Griswold WTP Average Residence Time	Legend Oaks Apartments, 1250 S. Dayton Ct., Aurora, CO 80247
Maximum Residence Time	CLO2-MAX	Griswold WTP Maximum Residence Time	Lowry Intergen, RC., 1016 Boston St., Aurora, CO 80010
Near the First Customer	002-CLO2-1ST	Wemlinger WTP First Customer	King Soopers, 1700 E. Iliff Ave., Aurora, CO 80013
Average Residence Time	002-CLO2-AVG	Wemlinger WTP Average Residence Time	1741 S. Granby St.
Maximum Residence Time	002-CLO2-MAX	Wemlinger WTP Maximum Residence Time	Aurora Central Library, 14949 E. Alameda Pkwy, Aurora, CO 80012

Chlorite and Chlorine Dioxide quality assurance/quality control (QA/QC) - explain the exact procedures to be followed to ensure daily entry point test results will be accurate:

Chlorine dioxide is analyzed and recorded continually by an in-line meter and an alarm will sound if levels approach the 0.8 mg/L limit. Once per shift (AM and PM), operators analyze chlorine dioxide and chlorite by amperometric titration. The amperometric titration results for chlorine dioxide are compared to the in-line meter readings. In addition, Quality Control Laboratory staff analyzes chlorine dioxide and chlorite Monday through Friday by amperometric titration. QC Lab staff readings are checked against operator's readings.



# Surface Water Treatment Rule

Completed by: **Susan Oster**

Signature: \_\_\_\_\_

**Turbidity Monitoring**  
Describe how and where the supplier will sample turbidity

Turbidity quality assurance/quality control (QA/QC) - explain the exact procedures to be followed to ensure that the test result will be accurate:

1. Operators and QC staff follow written SOP's.
2. IFE turbidity is verified every other week against a dry verification standard.
  - A. If verification fails on an individual filter it is taken out of service, and maintenance/recalibration is performed on the turbidimeter.
  - B. If the verification fails again the filter is kept out of service until the turbidimeter is repaired or replaced.
3. Quarterly, every in-line turbidimeter is calibrated using Hach primary formazin standards.
4. CFE turbidity is verified AM and PM against bench instrument measurements, and weekly with a dry verification standard.
  - A. Operators check the bench instrument AM and PM with formazin and secondary standards
5. Quality Control Lab maintains the bench turbidimeters.
  - A. QC staff calibrates the bench instrument monthly with primary formazin standards.

Describe the system's plan for turbidity monitoring that deviates from this plan due to operational issues (such as filter backwash cycles, start-ups/shut-downs, or filter to waste): Individual in-line filter turbidity is verified whenever a filter is put back into service after a shut-down or backwash by collecting a grab sample from the filter effluent and measuring turbidity on the bench for comparison to the in-line reading.

Treatment Plant Facility ID (Assigned by Department)	Treatment Plant Facility Name	Filter Type	Grab or Continuous Sampling	Describe Location for Combined Filter Effluent (CFE) Monitoring	Describe Location for Individual Filter Effluent (IFE) Monitoring
001	THOMAS J GRISWOLD WTP	DF	Continuous	After filters and all chemical feeds, immediately before reservoir	Immediately after individual filters.
002	WEMLINGER WTP	DF	Continuous	After filters before ammonia, chlorine, and sodium hydroxide feeds	Immediately after individual filters.
016	BWPP AURORA RESERVOIR TRAIN	CF	Continuous	After filters, before weir box.	Immediately after individual filters.

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055	BWPP SOUTH PLATTE ALLUVIAL TRAIN	CF	Continuous	After filters, before GAC Adsorbers	Immediately after individual filters.
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**Microbial Inactivation (3-log for Giardia lamblia and 4-log for viruses)  
Residual Disinfectant Monitoring**

**Describe how and where the supplier will sample residual disinfectant**

Residual disinfectant quality assurance/quality control (QA/QC) - explain the exact procedures to be followed to ensure that the field test measurement will be accurate. This may be found in the manufacturer's literature:

1. Operators and QC staff follow written SOP's.
2. The in-line chlorine meter on the finished water is checked daily.
3. The meter is cleaned, and the reaction chemicals replaced once a month.
4. The in-line meter reading is checked every 4 hours by analyzing a grab sample on the Hach DR6000.
5. Operators use the Hach DR6000 daily and verify calibration against 3 factory gel standards.
6. The in-line meter reading is checked every 4 hours by analyzing a grab sample on the DR6000.
7. QC uses the amperometric titrator daily, maintains and cleans it.

Describe any additional treatment (i.e. Ultraviolet, Ozone, or Chlorine Dioxide) used to assist in microbial inactivation:

- 001 Griswold WTP uses chlorine dioxide.
- 002 Wemlinger WTP uses chlorine dioxide
- 055 BWPP South Plate Alluvial Train uses ultraviolet

Facility ID (Assigned by Department)	Facility Name	Grab or Continuous Sampling	Describe Location for Microbial Inactivation Monitoring
001	THOMAS J GRISWOLD WTP	Continuous	Entry Point to the Distribution System
002	WEMLINGER WTP	Continuous	Entry Point to the Distribution System
056	BWPP CLEARWELL FOR 016 AND 055	Continuous	Entry Point to the Distribution System

<b>Long Term 2 (LT2) Raw Water Source Monitoring</b> <b>Must conduct two separate rounds of sampling at each source</b>		
<b>Identify where the raw water sample(s) will be collected</b>		<b>Does the raw water sampling site(s) represent more than one source? If so, describe the raw sources that combine</b>
COMBINED RAW SOURCE FOR 001 (SS001);  COMBINED RAW SOURCE FOR 016 (SS016)  COMBINED RAW SOURCE FOR 055 (SS055)  RAMPART SOUTH PLATTE RESERVOIR (013);  QUINCY RESERVOIR (014);		SS001: [CC 1R (047); CC 2R (048); CC 4R (049); CC 5R (050); CC SA6R (051); CC 3R (059)]  SS016: [AURORA RESERVOIR (015)]  SS055: [NC VW10A (030); NC VW10 (031); NC VW11 (032); NC VW12 (033); NC VW13 (034); NC VW14 (035); NC VW15 (036); NC VW 16 (037); NC VW18 (038); NC VW19 (039); NC VW20 (040); NC VW21 (041); NC VW22 (042); NC VW23 (043); NC VW24 (044); NC VW25 (045); NC VW 26 (046);; NC VW 10B (060); NC VW 11A (061); NC VW 12A (062); NC VW 16A (063); NC VW 18A (064); NC VW 19A (065)]
<b>Treatment Plant Facility ID (Assigned by Department)</b>	<b>Treatment Plant Facility Name</b>	<b>LT2 Bin Classification</b>
001	THOMAS J GRISWOLD WTP	1
002	WEMLINGER WTP	1
016	BWPP AURORA RESERVOIR TRAIN	1
055	BWPP SOUTH PLATTE ALLUVIAL TRAIN	1

<b>Disinfection Byproduct Precursors (Total Organic Carbon (TOC) and Alkalinity)</b> Only required for suppliers using conventional filtration		
Identify where the <u>raw water</u> TOC and alkalinity sample(s) will be collected		Does the raw water sampling site(s) represent more than one source? If so, describe the raw sources that combine
SS016: COMBINED RAW SOURCE FOR 016 BWPP AURORA RESERVOIR TRAIN  SS055: COMBINED RAW SOURCE FOR 055 BWPP SOUTH PLATTE ALLUVIAL TRAIN		SS016: AURORA RESERVOIR (015)  SS055: NC VW10A (030); NC VW10 (031); NC VW11 (032); NC VW12 (033); NC VW13 (034); NC VW14 (035); NC VW15 (036); NC VW 16 (037); NC VW18 (038); NC VW19 (039); NC VW20 (040); NC VW21 (041); NC VW22 (042); NC VW23 (043); NC VW24 (044); NC VW25 (045); NC VW 10B (060); NC VW 11A (061); NC VW 12A (062); NC VW 16A (063); NC VW 18A (064); NC VW 19A (065); NC VW 26 (046);
Treatment Plant Facility ID (Assigned by Department)	Treatment Plant Facility Name	Describe Location for Treated Water TOC Monitoring
016	BWPP AURORA RESERVOIR TRAIN	Filter Effluent for Aurora Reservoir Treatment Train
055	BWPP SOUTH PLATTE ALLUVIAL TRAIN	Adsorber Effluent for South Platte Alluvial Treatment Train

11/09/2023

CO0103005 - AURORA CITY OF

# Community Lead and Copper Materials Evaluation Summary

Completed by: Susan Oster

Signature: \_\_\_\_\_

<b>Materials Evaluation Summary by Tier Level</b>	
<b>Note:</b> This is <u>not</u> a summary of the lead and copper sample pool. This is a summary of <u>all sites in the distribution system</u> that the supplier believes meets each of the criteria below.	
<b>Tier 1 Sites</b> - Single family structures, currently being used as either a residence or place of business	<b>Number of Site Locations</b>
Containing copper pipe with lead solder installed after 1982 and before 1988	10008
Are served by a lead service line (no year restriction)	9966
Containing lead pipes, goosenecks, or pigtails (no year restriction)	unknown
<b>Tier 2 Sites</b> - Multiple-family residences and buildings	<b>Number of Site Locations</b>
Containing copper pipe with lead solder installed after 1982 and before 1988	389
Are served by a lead service line (no year restriction)	344
Containing lead pipes, goosenecks, or pigtails (no year restriction)	unknown
<b>Tier 3 Sites</b> - Single-family structures	<b>Number of Site Locations</b>
Containing copper pipes with lead solder installed before 1983	unknown
<b>Representative Sample Sites</b> - Structures	<b>Number of Site Locations</b>
With plumbing material typically found throughout the distribution system	>10000
Describe the representative plumbing material: <b>Build dates from 1983 to 1987 were used for the CPLS count ; this has not been verified. Build dates up to 1961 were used to estimate the lead service line count of 10 ;000. This number is expected to be a very high estimate and could be as low as 2 ;000.</b>	
<b>Additional Information</b>	
Please describe the verification process, if any, that was used to provide the information above: {Verification}	
<b>Additional Information - Tier 1</b>	
If no Tier 1 sites were indicated above, please provide an explanation: {Tier 1 Info}	

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## Lead and Copper Sample Sites - Portal

Completed by: **Susan Oster**

Signature: \_\_\_\_\_

Certification of Accuracy: I hereby certify statements below are true, accurate, and complete to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

- The drinking water portal ([wqcdcompliance.com/login](http://wqcdcompliance.com/login)) is being used to maintain the sites.
- The sites, status, and any additional information is kept up-to-date.
- When site information changes the drinking water portal is updated immediately.



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## Water quality parameters monitoring

Routine water quality parameters monitoring only applies to systems serving greater than 50,000 people. Water quality parameters are pH, alkalinity and calcium. Systems that use phosphate or silica treatment are also required to monitor orthophosphate and silica. Routine monitoring for water quality parameters must be conducted system **every six months** at entry points and at sites in the distribution.

Number of distribution system sites required: 25 (describe in table below)

List entry point IDs (assigned by Department) to be sampled

Water Quality Parameters Sampling Sites In Distribution System	
Site ID (if used on map)	Sample Site Description/Address
	AFD #13 23911 E Arapahoe Rd
	Aurora Justice Cntr 14999 E Alameda Pkwy
	Binney WPP 5070 S Robertsdale Way
	Century Elementary 2500 S Granby Way
	CoA North Satellite 15740 E 32nd Ave
	Creative Options 852 Jamaica St
	East Ridge Elem. 11777 E Wesley Ave
	Grandview HS 20500 E Arapahoe Rd
	Regis Jesuit HS 6400 S Lewiston Way
	Lowry Intergen. RC 1016 Boston St
	Montview Elementary 2055 Moline St
	Overhead Door 3291 Peoria St
	Quality 1st Plumb. 929 Telluride St
	South Middle School 12310 E Parkview Dr
	Summit Elementary 18201 E Quincy Ave
	Sunchase Apts 1055 S Zeno Way
	Sunrise Elementary 4050 S Genoa Way
	Tynan VW 700 S Havana St
	Vassar Elementary 18101 E Vassar Place
	Village East Elem. 1433 S Oakland St
	Wheeling Elementary 472 S Wheeling St
	Yale Elementary 16001 E Yale Ave
	Advanced Circuits 21101 E 32nd Pkwy
	University of CO Hospital 13001 E 17th Pl
	Arrowhead Elem. 19100 E Bates Ave

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# Inorganics, Organics and Radionuclide Rules

The Chemical Contaminants [Inorganic Chemicals (IOCs), Volatile Organic Chemicals (VOCs) and Synthetic Organic Chemicals (SOCs)] Rules and the Radionuclide Rule may be found in 5 CCR 1003-1 Article 6.

I, Sherry Scaggiari have reviewed this Inorganic Chemicals, Organic Chemicals and Radionuclides Rules sampling plan, and that the provided information is true and correct to the best of my knowledge.

Signature \_\_\_\_\_ Date \_\_\_\_\_ Revision?



## Laboratory Information

Inorganic chemicals lab: Lab Services Division, CDPH&E

Address: 8100 E. Lowry Blvd., Denver CO 80230

Phone: (303) 692-3090

Organic chemicals lab: Eurofins Eaton Analytical

Address: 750 Royal Oaks Drive, Suite 100, Monrovia CA 91016

Phone: (626) 386-1100

Radionuclide lab: ACZ Laboratories, Inc.

Address: 2773 Downhill Drive, Steamboat Springs CO 80487

Phone: (800) 334-5493

**Initial, Routine and Reduced Monitoring Requirements**

**List of inorganic chemicals (IOC) Group:**

Antimony  
Arsenic  
Asbestos  
Barium  
Beryllium

Cadmium  
Chromium  
Cyanide (as free cyanide)  
Fluoride  
Mercury

Nitrate  
Nitrite  
Selenium  
Thallium

Entry Point ID (IDs assigned by Department)	IOC Sampling Frequency	Fluoride Sampling Frequency	Nitrate Sampling Frequency	Nitrite Sampling Frequency	Monitoring Waivers
___001___	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input checked="" type="checkbox"/> Every 9 Years  This frequency is:  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input checked="" type="checkbox"/> Every 9 Years  This frequency is:  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Monthly <input checked="" type="checkbox"/> Yearly  This frequency is:  <input type="checkbox"/> Increased/Initial <input type="checkbox"/> Reduced <input checked="" type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input checked="" type="checkbox"/> Every 9 Years  This frequency is:  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine	Asbestos Cyanide
___002___	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input checked="" type="checkbox"/> Every 9 Years  This frequency is:  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input checked="" type="checkbox"/> Every 9 Years  This frequency is:  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Monthly <input checked="" type="checkbox"/> Yearly  This frequency is:  <input type="checkbox"/> Increased/Initial <input type="checkbox"/> Reduced <input checked="" type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input checked="" type="checkbox"/> Every 9 Years  This frequency is:  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine	Asbestos Cyanide
___056___	<input type="checkbox"/> Quarterly <input checked="" type="checkbox"/> Yearly  This frequency is:  <input type="checkbox"/> Increased/Initial <input type="checkbox"/> Reduced <input checked="" type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input checked="" type="checkbox"/> Yearly  This frequency is:  <input type="checkbox"/> Increased/Initial <input type="checkbox"/> Reduced <input checked="" type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Monthly <input checked="" type="checkbox"/> Yearly  This frequency is:  <input type="checkbox"/> Increased/Initial <input type="checkbox"/> Reduced <input checked="" type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input checked="" type="checkbox"/> Every 9 Years  This frequency is:  <input type="checkbox"/> Increased/Initial <input type="checkbox"/> Reduced <input checked="" type="checkbox"/> Routine	Asbestos Cyanide

The Department may reduce the total number of samples that must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points may be allowed. Compositing of all samples must be done in the laboratory. Prior to using compositing, systems should consult with the Department regarding sample dates, locations and the lab to be used.

List any samples that are compositing:\_\_\_\_\_

List entry points to be included in the composite sample:\_\_\_\_\_

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List of organic chemicals:

- Volatile Organic Chemicals (VOC) Group:

1,1- dichloroethylene	o-dichlorobenzene	Monochlorobenzene
1,1,1- trichloroethane	para-dichlorobenzene	Styrene
1,1,2- trichloroethane	trans-1,2 dichloroethylene	Tetrachloroethylene
1,2-dichloroethane	Benzene	Trichloroethylene
1,2-dichloropropane	Dichloromethane	Toluene
1,2,4-trichlorobenzene	Carbon tetrachloride	Xylenes (total)
cis-1,2-dichloroethylene	Ethylbenzene	

- Synthetic Organic Chemicals (SOC) Group:

Alachlor		2,4,5-TO (Silvex)
Aldicarb		Benzo[a]pyrene
Aldicarb sulfoxide		Dalapon
Aldicarb sulfone		di(2-ethylhexyl)adipate
Atrazine		di(2-ethylhexyl)phthalate
Carbofuran		Dinoseb
Chlordane		Diquat
Dibromochloropropane		Endothall
2,4-D		Endrin
Ethylene dibromide		Glyphosate
Heptachlor		Hexachlorobenzene
Heptachlor epoxide		Hexachlorocyclopentadiene
Lindane		Oxamyl (Vyndate)
Methoxchlor		Picloram
Polychlorinated	Byphenyls	Simazine
Pentachlorophenol		2,3,7,8-TCCD (Dioxin)
Toxaphene		

Entry Point ID (IDs assigned by Department)	VOC Sampling Frequency	SOC Sampling Frequency	Monitoring Waivers
<p>___001___</p>	<p><input type="checkbox"/> Quarterly  <input checked="" type="checkbox"/> Yearly</p> <p>This frequency is  <input type="checkbox"/> Increased/Initial  <input type="checkbox"/> Reduced  <input checked="" type="checkbox"/> Routine</p>	<p><input type="checkbox"/> Quarterly (List chemicals)_____</p> <hr/> <p><input type="checkbox"/> 1 Every 3 Years  <input checked="" type="checkbox"/> 2 Quarterly per 3 Years (&gt;3,300 population)</p> <p>This frequency is</p> <p><input type="checkbox"/> Increased/Initial  <input checked="" type="checkbox"/> Reduced  <input type="checkbox"/> Routine</p>	<p>Dioxin  Aldicarbs  (under Department administrative stay)</p>
<p>___002___</p>	<p><input type="checkbox"/> Quarterly  <input checked="" type="checkbox"/> Yearly</p> <p>This frequency is  <input type="checkbox"/> Increased/Initial  <input type="checkbox"/> Reduced  <input checked="" type="checkbox"/> Routine</p>	<p><input type="checkbox"/> Quarterly (List chemicals)_____</p> <hr/> <p><input type="checkbox"/> 1 Every 3 Years  <input checked="" type="checkbox"/> 2 Quarterly per 3 Years (&gt;3,300 population)</p> <p>This frequency is</p> <p><input type="checkbox"/> Increased/Initial  <input checked="" type="checkbox"/> Reduced  <input type="checkbox"/> Routine</p>	<p>Dioxin  Aldicarbs  (under Department administrative stay)</p>
<p>___056___</p>	<p><input type="checkbox"/> Quarterly  <input checked="" type="checkbox"/> Yearly</p> <p>This frequency is  <input type="checkbox"/> Increased/Initial  <input type="checkbox"/> Reduced  <input checked="" type="checkbox"/> Routine</p>	<p><input type="checkbox"/> Quarterly (List chemicals)_____</p> <hr/> <p><input type="checkbox"/> 1 Every 3 Years  <input checked="" type="checkbox"/> 2 Quarterly per 3 Years (&gt;3,300 population)</p> <p>This frequency is</p> <p><input type="checkbox"/> Increased/Initial  <input checked="" type="checkbox"/> Reduced  <input type="checkbox"/> Routine</p>	<p>Dioxin  Aldicarbs  (under Department administrative stay)</p>

The Department may reduce the total number of samples that must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points may be allowed. Compositing of all samples must be done in the laboratory. Prior to using compositing, systems should consult with the Department regarding sample dates, locations and the lab to be used.

List any samples that are composited

---

List entry points to be included in the composite sample

---

List of Radionuclide Contaminants  
 Combined Radium 226 and Radium 228  
 Gross Alpha Particle Activity  
 Uranium

Entry Point ID (IDs assigned by Department)	Combined radium-226 and radium-228	Gross alpha particle activity	Uranium
_001_	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input type="checkbox"/> Every 3 Years <input checked="" type="checkbox"/> Every 6 Years <input type="checkbox"/> Every 9 Years  This frequency is  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input type="checkbox"/> Every 3 Years <input checked="" type="checkbox"/> Every 6 Years <input type="checkbox"/> Every 9 Years  This frequency is  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input type="checkbox"/> Every 3 Years <input checked="" type="checkbox"/> Every 6 Years <input type="checkbox"/> Every 9 Years  This frequency is  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine
_002_	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input type="checkbox"/> Every 3 Years <input checked="" type="checkbox"/> Every 6 Years <input type="checkbox"/> Every 9 Years  This frequency is  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input type="checkbox"/> Every 3 Years <input checked="" type="checkbox"/> Every 6 Years <input type="checkbox"/> Every 9 Years  This frequency is  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input type="checkbox"/> Every 3 Years <input checked="" type="checkbox"/> Every 6 Years <input type="checkbox"/> Every 9 Years  This frequency is  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine
_056_	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input type="checkbox"/> Every 3 Years <input checked="" type="checkbox"/> Every 6 Years <input type="checkbox"/> Every 9 Years  This frequency is  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input type="checkbox"/> Every 3 Years <input checked="" type="checkbox"/> Every 6 Years <input type="checkbox"/> Every 9 Years  This frequency is  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine	<input type="checkbox"/> Quarterly <input type="checkbox"/> Yearly <input type="checkbox"/> Every 3 Years <input checked="" type="checkbox"/> Every 6 Years <input type="checkbox"/> Every 9 Years  This frequency is  <input type="checkbox"/> Increased/Initial <input checked="" type="checkbox"/> Reduced <input type="checkbox"/> Routine

*Expand table or add pages as needed for additional entry points*

The Department may reduce the total number of samples that must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points may be allowed. Compositing of all samples must be done in the laboratory. Prior to using compositing, systems should consult with the Department regarding sample dates, locations and the lab to be used.

List any samples that are composited

---

List monitoring periods to be included in the composite sample

---

**Increased Monitoring Requirement**



**Inorganic chemicals**

For new sources, the Department requires four (4) consecutive quarters of IOC sampling. Sampling must be done at the entry point associated with the new source.

If any chemical in the IOC group is above the MCL, a confirmation sample is required within two (2) weeks. If the average of the two samples is still above the MCL, the system will begin quarterly monitoring for that chemical beginning the next calendar quarter. Quarterly sampling is required at the entry point where the sample result was above the MCL.

If a nitrate or nitrite sample is above half the MCL the system will begin quarterly monitoring for that chemical beginning the next calendar quarter. Quarterly sampling is required at the entry point where the sample result was above half the MCL.

**Special 24-hour confirmation sampling for nitrate and nitrite**

If a sample is greater than the MCL a confirmation sample is required at that entry point within 24 hours of receiving notification of the result. Systems unable to collect the confirmation sample within 24 hours must issue a public notice within 24 hours and collect the confirmation sample within two (2) weeks. The system must immediately consult with the Department regarding the public notice.

**Organic chemicals**

For new sources, the Department requires four (4) consecutive quarters of organics sampling. Sampling must be done at the entry point associated with the new source.

If any chemical in the SOC group is above the regulatory detection limit, the system will begin quarterly monitoring for that chemical beginning the next calendar quarter. Quarterly sampling is required at the entry point where the sample result was above the detection limit.

If any chemical in the VOC group is above the regulatory detection limit, the system will begin quarterly monitoring for all VOCs beginning the next calendar quarter. Quarterly sampling is required at the entry point where the sample result was above the detection limit.

**Radionuclides**

For new sources, the Department requires four (4) consecutive quarters of radionuclide sampling. Sampling must be done at the entry point associated with the new source.

If any radionuclide is above the MCL, the system will begin quarterly monitoring for that radionuclide beginning the next calendar quarter. Quarterly sampling is required at the entry point where the sample result was above the MCL.

Note: Gross alpha particle activity results are reported along with uranium concentrations. Therefore, the gross alpha particle activity result should be calculated by subtracting the uranium concentration from the total result.

**MCL Compliance Determination****Inorganic chemicals, organic chemicals and radionuclides**

Compliance is determined at each entry point for each individual chemical/radionuclide based on a

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running annual average. Each entry point is evaluated independently for each chemical/radionuclide.

Note: Gross alpha particle activity results are reported along with uranium concentrations. Therefore, gross alpha particle activity should be calculated by subtracting the uranium concentration from the total result.

#### **Nitrate and nitrite**

Compliance is based on an average of the original sample and the confirmation sample unless a confirmation sample is not taken within the required timeframe, then it is based on the original sample. All nitrite and nitrite violations require immediate consultation with the Division.

**For Nitrate or Nitrite MCL Violations  
Contact the Colorado Department of Public Health and Environment  
Phone Number 303-692-3541  
Or After-Hours Incident Reporting: 1-877-518-5608**

# PNA Attachment 4

## Cross Connection Control Plan

**Aurora Water Cross-Connection Control Program  
Management Plan**

**Revised December 2022**

## **Aurora Water Cross-Connection Control Program**

### **Guidelines-Reference**

I.	Introduction.....	3
II.	Definitions.....	4
III.	Backflow Prevention and Cross-Connection Control Program.....	5-6
	Requirements	

## **I. Introduction**

The Colorado Department of Public Health and Environment through the Water Quality Control Commission amended Regulation No. 11 The Colorado Primary Drinking Water Regulations (5CCR 1002-11). The amendment to the Backflow Prevention and Cross-Connection Control Rule require the supplier to develop a written backflow prevention and cross-connection control program.

The purpose of this plan is to protect the potable water supply from the possibility of contaminants or pollution through the isolation of contaminants and pollutants that could backflow into the potable water system: and to promote the elimination or control of existing cross connections, actual or potential, between the potable water system and non-potable water system as outlined in the Regulation No. 11-Section 11.39 requirements. Section 11.39 requires water suppliers to develop a written backflow prevention and cross-connection control program by January 1, 2016.



## II. Definitions

**Backflow** means the reverse flow of water, fluid, or gas caused by backpressure or back siphonage.

**Backflow Prevention Assembly** means any mechanical assembly installed at a service line or at a plumbing fixture to prevent a backflow contamination event, provided that the mechanical assembly is appropriate for the identified contaminant at the cross connection and is an in-line field-tested assembly.

**Backflow Prevention Method** means any method and/or non-testable device installed at a water service line or at a plumbing fixture to prevent a backflow contamination event, provided that the method or non-testable device is appropriate for the identified contaminant at the cross connection.

**Certified Cross-Connection Control Technician** means a person who possess a valid Backflow Prevention assembly Tester certification from one of the following approved organizations: American Society of Sanitary Engineering (ASSE) of the American Backflow Prevention Association (ABPA). If a certification has expired, the certification is invalid.

**Controlled** means having a properly installed, maintained, and tested or inspected backflow prevention assembly or backflow prevention method that prevents backflow through a cross connection.

**Uncontrolled** means not having a properly installed and maintained and tested or inspected backflow prevention assembly or backflow prevention method, or the backflow prevention assembly or backflow prevention method does not prevent backflow through a cross connection.

### **III. Backflow Prevention and Cross-Connection Control Program Requirements**

**A. The supplier must develop a written backflow prevention and cross-connection control program. The written backflow prevention and cross-connection control program must include all of the following:**

**i. The suppliers process for conducting surveys.**

a) To ensure that all new and existing commercial structures comply with the installation and testing under Regulation 11 SOP #: WS-CC-02 Site Survey is followed. The authority to conduct the surveys is outlined in City Ordinance 138-170.

**ii. The suppliers legal authority to perform a survey of a customer's property to determine whether a cross-connection is present unless the supplier controls all non-single-family-residential connections to the public water system with the most protective backflow prevention assembly or backflow prevention method.**

a) Ordinance 138-170 for an ordinance amending chapter 138 of the city code of the city of Aurora, Colorado, establishing a cross-connection program

**iii. The process the supplier will use to select a backflow prevention assembly or backflow prevention method to control a cross-connection.**

a) The selection of backflow prevention assembly or backflow prevention methods to control a cross – connection is identified in Aurora Waters Standards and Specifications regarding Water, Sanitary Sewer and Storm Drainage Infrastructure Section 19 (January, 2022).

- iv. The suppliers legal authority to install, maintain, test, and inspect backflow prevention assemblies and/or backflow prevention methods and/or require customers to install, maintain, test, and inspect backflow prevention assemblies and/or backflow methods.**
  - a) Aurora Waters' authority is outlined in Ordinance 138-170 and SOP WS-CC-01 Annual Backflow Testing Violations and Fining Procedure.
  
- v. The process the supplier will use to track the installation, maintenance, testing, and inspection of all backflow prevention assemblies and backflow prevention methods used to control cross-connections.**
  - a) The process for backflow assembly testing, tracking, installation, maintenance, and inspections is outlined in SOP WS-CC-04 Backflow Assembly Test Report Entry. Reports are maintained in the City's backflow tracking database.
  
- vi. The process the supplier will use to ensure backflow prevention assemblies are tested by a Certified Cross-Connection Control technician.**
  - a) Procedures for verifying tests are completed by a Certified Cross-Connection Technician are outlined in SOP WS-CC-04 Backflow Assembly Test Report Entry.

# PNA Attachment 5

## Water Conservation Plan

Aurora Water's 2015 Municipal Water Efficiency Plan is  
available online at:

[https://www.auroragov.org/residents/water/water\\_conservation](https://www.auroragov.org/residents/water/water_conservation)

# PNA Attachment 6

## Delegation of Duties

1/17/2024

# Aurora Water Delegation of Operations Plan



AURORA  
WATER



# Aurora Water Purification Facility Delegation Plan

## Table of Contents

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Treatment Group .....	31
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## Water System Information

System Name	City of Aurora
PWSID	CO0103005
Effective Dates	1/17/2024 - 1/17/2025

## Facility Contact Information

### GRISWOLD WPF & WEMLINGER WPF

Operator in Responsible Charge: [RALPH HAIGHT](#)

Operator ID#: [2511](#)

Address: [14201 E. HAMPDEN AVE.](#)

City: [AURORA](#) State: [CO](#) Zip: [80014](#)

Phone: [303-739-6763](#) Email: [RCHAIGHT@AURORAGOV.ORG](mailto:RCHAIGHT@AURORAGOV.ORG)

### GRISWOLD WPF

Operator in Responsible Charge: [DAVID "MIKE" MCKEE](#)

Operator ID#: [4218](#)

Address: [14201 E. HAMPDEN AVE.](#)

City: [AURORA](#) State: [CO](#) Zip: [80014cc](#)

Phone: [303-739-7981](#) Email: [DMCKEE@AURORAGOV.ORG](mailto:DMCKEE@AURORAGOV.ORG)

### WEMLINGER WPF

Operator in Responsible Charge: [NICHOLAS BRUSHABER](#)

Operator ID#: [100427](#)

Address: [18301 E. QUINCY AVE.](#)

City: [AURORA](#) State: [CO](#) Zip: [80015](#)

Phone: [303-739-6750](#) Email: [NBRUSHAB@AURORAGOV.ORG](mailto:NBRUSHAB@AURORAGOV.ORG)

### BINNEY WPF

Operator in Responsible Charge: [KEVIN LINDER](#)

Operator ID#: [1897](#)

Address: [5070 S. ROBERTSDALE WAY.](#)

City: [AURORA](#) State: [CO](#) Zip: [80016](#)

Phone: [720-859-4701](#) Email: [KLINDER@AURORAGOV.ORG](mailto:KLINDER@AURORAGOV.ORG)

Operator in Responsible Charge: [CHRIS CONTE](#)

Operator ID#: [10326](#)

Address: [5070 S. ROBERTSDALE WAY.](#)

City: [AURORA](#) State: [CO](#) Zip: [80016](#)

Phone: [720-859-4714](#) Email: [CCONTE@AURORAGOV.ORG](mailto:CCONTE@AURORAGOV.ORG)

Operator in Responsible Charge: [RICHARD RODRIGUEZ](#)

Operator ID#: [1595](#)

Address: **5070 S. ROBERTSDALE WAY.**  
City: **AURORA** State: **CO** Zip: **80016**  
Phone: **720-859-4778** Email: **RRODRIGU@AURORAGOV.ORG**

**WATER TRANSMISSION AND DISTRIBUTION**

**Operator in Responsible Charge: BRYAN VAN WINKLE**  
Operator ID#: **6592**  
Address: **26791 E QUINCY AVE**  
City: **AURORA** State: **CO** Zip: **80016**  
Phone: **303-326-8148** Email: **BVANWINK@AURORAGOV.ORG**

**WATER CONSTRUCTION AND REPAIR**

**Operator in Responsible Charge: BRENDAN CARLTON**  
Operator ID#: **8664**  
Address: **26791 E QUINCY AVE**  
City: **AURORA** State: **CO** Zip: **80016**  
Phone: **303-326-8067** Email: **BCARLTON@AURORAGOV.ORG**

**PUMPING GROUP**

**Operator in Responsible Charge: KEVIN AMMAN**  
Operator ID#: **128**  
Address: **26791 E QUINCY AVE**  
City: **AURORA** State: **CO** Zip: **80016**  
Phone: **303-326-8059** Email: **KAMMAN@AURORAGOV.ORG**

**FLOW CONTROL**

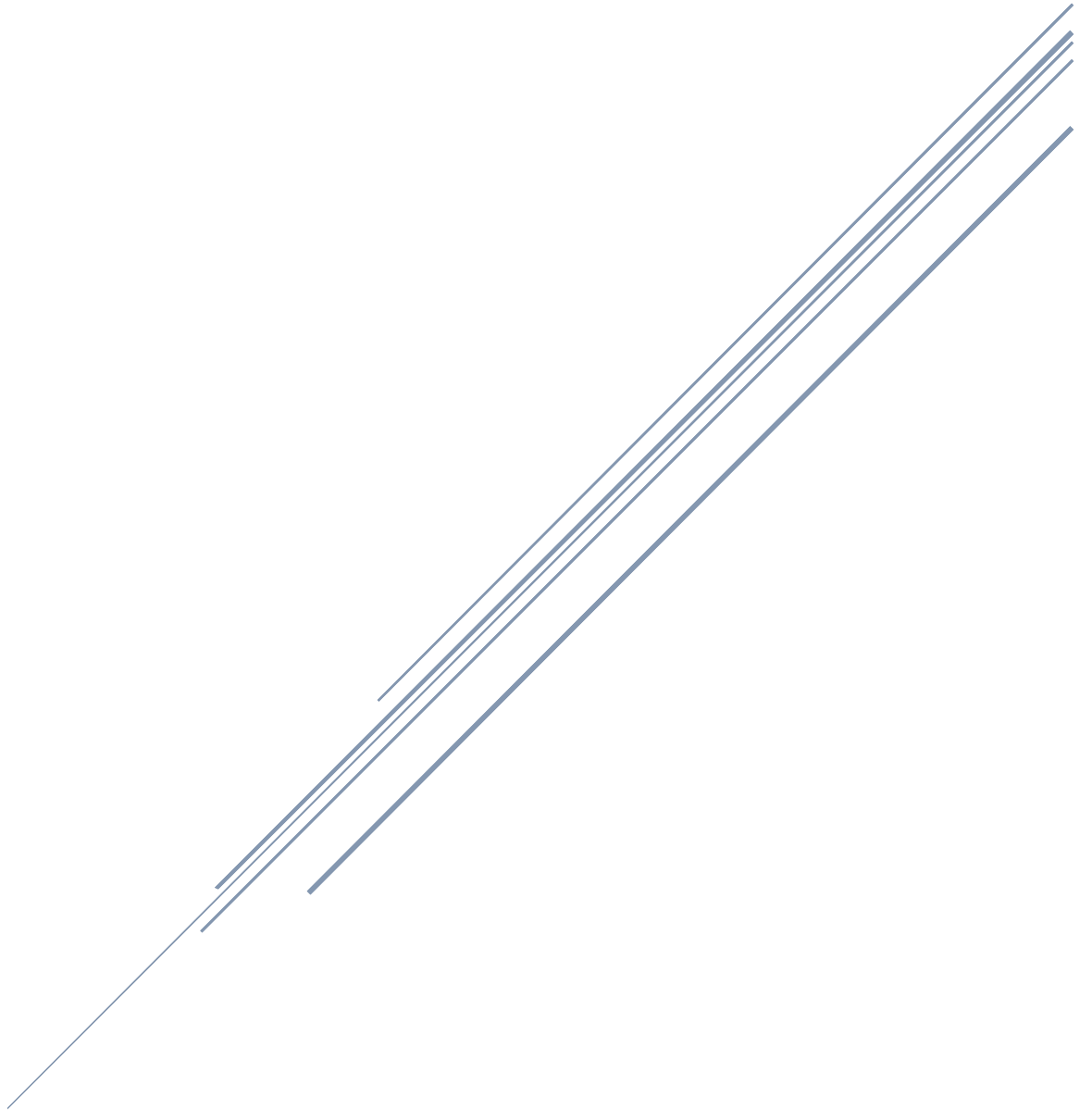
**Operator in Responsible Charge: DAN MARICK**  
Operator ID#: **9719**  
Address: **26791 E QUINCY AVE**  
City: **AURORA** State: **CO** Zip: **80016**  
Phone: **720-859-4713** Email: **DMARICK@AURORAGOV.ORG**

## **Document Purpose**

The population served by Aurora Water and the size of the treatment plants and distribution system necessitates numerous processes and procedures for operation and maintenance. The administrative framework of Aurora Water is such that areas have operational functionality, or specific duties, which inherently delegates tasks and responsibilities across the organization. This results in maintaining compliance, which is essential in a large drinking water system. This document will outline each of those areas to formally document the delegation which has been in effect for many years.

The purpose of this document is to act as an outline and directory which can be used to better understand the delegation of tasks and find relevant documentation more quickly.

# QUALITY CONTROL LAB



## **Operational Functionality Overview**

### **Quality Control Laboratory**

The Water, Wastewater and Distribution system ORCs have delegated to the QC Laboratory. The operational functionality of the QC Lab is to schedule, collect and report regulatory parameters for the distribution system, entry point and TOC sampling points for all Regulation 11 Rules. The lab produces final forms for reporting of the parameters which are reviewed by Treatment Superintendents, Treatment Manager, and the Environmental Services Manager prior to submittal. The QC Lab is also responsible for maintaining the monitoring plan for the City of Aurora PWSID. The lab is a certified lab (CO000222) and is therefore audited by CDPHE on a regular basis.

Job descriptions set expectations of the regulatory environment required for the job. Laboratory personnel utilize SOPs to perform their duties. Every SOP has regulatory considerations and limits built into it. Analysts are trained on the SOP utilizing training checklists and must pass performance test samples on a yearly basis.

# TRANSMISSION AND DISTRIBUTION GROUP



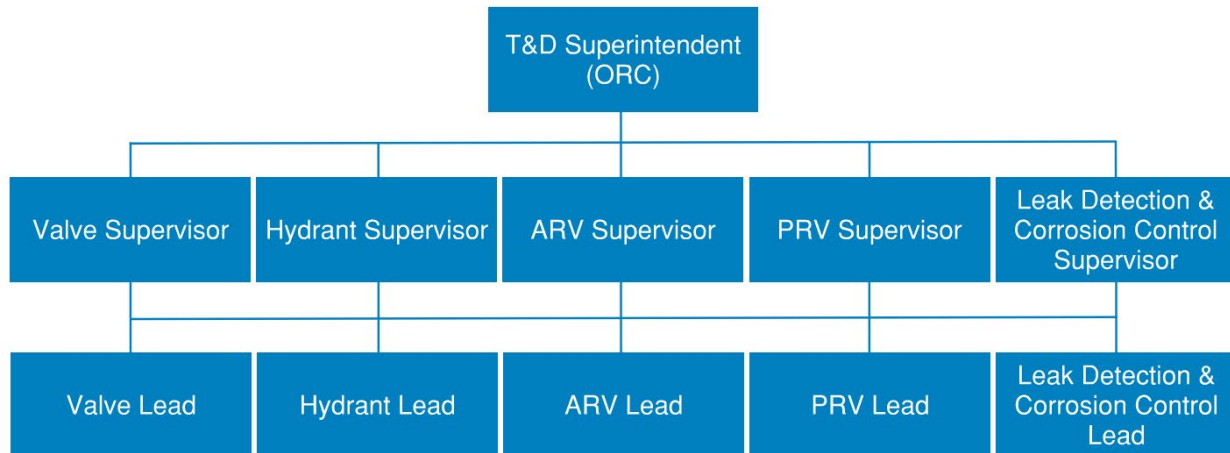
AURORA  
WATER





## Transmission and Distribution Group

The Transmission & Distribution (T&D) group reporting structure is depicted below:



All team Supervisors hold a minimum Class 3 Water Distribution System Operator certification and Class 1 Wastewater Collection System Operator certification. All team Leads hold a minimum Class 2 Water Distribution System Operator and Commercial Driver License Class B with tanker endorsement. Position descriptions along with robust onboarding and training plans for new operators and SOP's ensure all tasks are delegated and completed properly. The ORC has delegated operation of the distribution system to team Supervisors and team Leads. These operators are responsible for the operation of the system, including any operation changes.

Operators who are not a supervisor work under the direct supervision of supervisors at all times. Duties and roles for all staff are defined below:

**Valve Supervisor** – Oversees the operation, maintenance and repair of isolation valves in the distribution system. Coordinate and monitor system control and isolation operations using valves. Ensure compliance with Regulation No. 100 – Water and Wastewater Facility Operators Certification, Federal and State Regulations as well as Partnership for Safe Water and Aurora Water goals. Coordinate and control the operation of all distribution system assets. Maintain logs and records, report all instances of non-compliance with internal goals and/or water quality regulations to the ORC. Delegate and oversee any team Lead as needed to perform operations.

**Hydrant Supervisor** – Oversees the daily operation, maintenance and repair of hydrants in the distribution system. Coordinate and monitor response to water quality deficiencies requiring flushing operations including isolation operations. Verify and update information on the Out-of-Service (OOS) map to communicate accurately to Fire the status of hydrants. Ensure compliance with Regulation No. 100 – Water and Wastewater Facility Operators Certification, Federal and State Regulations as well as Partnership for Safe Water and Aurora Water goals. Coordinate and control the operation of all distribution system assets. Maintain logs and records, report all instances of non-compliance with internal goals and/or water quality regulations to the ORC. Delegate and oversee any team Lead as needed to perform operations.

**ARV Supervisor** – Oversees the daily operation, maintenance and repair of air release and air vacuum valves in the distribution system. Coordinates emergency response to distribution system ARV failures. Monitors ARVs function during transmission line dewatering / filling. Ensure compliance with Regulation No. 100 – Water and Wastewater Facility Operators Certification, Federal and State Regulations as well as Partnership for Safe Water and Aurora Water goals. Coordinate and control the operation of all distribution system assets. Maintain logs and records, report all instances of non-compliance with internal goals and/or water quality regulations to the ORC. Delegate and oversee T&D team leads when necessary to facilitate continuity of operations.

**PRV Supervisor** – Oversees the daily operation, maintenance and repair of pressure control valves in the distribution system. Monitor and coordinate response to pressure irregularities and emergencies. Monitor and review information from SCADA and system recorders. Ensure compliance with Regulation No. 100 – Water and Wastewater Facility Operators Certification, Federal and State Regulations as well as Partnership for Safe Water and Aurora Water goals. Coordinate and control the operation of all distribution system assets. Maintain logs and records, report all instances of non-compliance with internal goals and/or water quality regulations to the ORC. Delegate and oversee any team Lead as needed to perform operations.

**Leak Detection & Corrosion Control Supervisor** - Oversees the operation, maintenance, and repair of cathodic protection systems. Oversees leak detection activities on the distribution system and typically the first to respond to water breaks. Review collected system data and report to the ORC. Ensure compliance with Regulation No. 100 – Water and Wastewater Facility Operators Certification, Federal and State Regulations as well as Partnership for Safe Water and Aurora Water goals. Coordinate and control the operation of all distribution system assets. Maintain logs and records, report all instances of non-compliance with internal goals and/or water quality regulations to the ORC. Delegate and oversee any team Lead as needed to perform operations.

**Valve Lead** - Responsible for the operation of the distribution system. They can perform all operations in the system to meet water quality internal goals and Drinking Water Regulations. They will also implement changes as directed by the ORC and/or a supervisor. The following is a list of activities performed by the PRV Leads, including but not limited to:

- Control the operation of valves, hydrants, ARV's, PRV's and all other system assets.
- Perform all water control operations in the system related to development, emergency response and capital projects.
- Perform isolation operations ensuring system integrity and compliance.
- Perform all field activities as directed by the ORC and/or a supervisor including directing other team members to complete those activities.
- Control and monitor any system discharges.
- Observe and take any necessary actions in response to variations in system operations to maintain internal goals and/or water quality regulations.
- Collect and analyze data to ensure system compliance and operation as designed.
- Maintain all logs and records.
- Report all instances of non-compliance with internal goals and/or water quality regulations to the ORC and supervisor.

**Hydrant Lead** - Responsible for the operation of the distribution system. They can perform all operations in the system to meet water quality internal goals and Drinking Water Regulations. They will also implement changes as directed by the ORC and/or a supervisor. The following is a list of activities that PRV Leads perform including but not limited to:

- Control the operation of valves, hydrants, ARV's, PRV's and all other system assets.
- Verify hydrants are operating as designed and ready for life safety operations.
- Perform all field activities as directed by the ORC and/or a supervisor including directing other team members to complete those activities.
- Control and monitor any system discharges.
- Observe and take any necessary actions in response to variations in system operations to maintain internal goals and/or water quality regulations.
- Collect and analyze data to ensure system compliance and operation as designed.
- Maintain all logs and records.
- Report all instances of non-compliance with internal goals and/or water quality regulations to the ORC and supervisor.

**ARV Lead** – Responsible for the operation of the distribution system. They can perform all operations in the system to meet water quality internal goals and Drinking Water Regulations. They will also implement changes as directed by the ORC and/or a supervisor. The following is a list of activities that PRV Leads perform including but not limited to:

- Control the operation of valves, hydrants, ARV's, PRV's and all other system assets.
- Perform field/ maintenance activities as directed by the ORC and/or a supervisor including directing other team members to complete those activities.
- Control and monitor any system discharges.
- Observe and take any necessary actions in response to variations in system operations to maintain internal goals and/or water quality regulations.
- Collect and analyze data to ensure system compliance and operation as designed.
- Maintain all logs and records.
- Report all instances of non-compliance with internal goals and/or water quality regulations to the ORC and supervisor.

**PRV Lead** – Responsible for the operation of the distribution system. They can perform all operations in the system to meet water quality internal goals and Drinking Water Regulations. They will also implement changes as directed by the ORC and/or a supervisor. The following is a list of activities that PRV Leads perform including but not limited to:

- Control the operation of valves, hydrants, ARV's, PRV's and all other system assets.
- Verify pressure control valves are operating as designed and maintaining adequate pressure levels.
- Perform all field activities as directed by the ORC and/or a supervisor including directing other team members to complete those activities.
- Control and monitor any system discharges.
- Observe and take any necessary actions in response to variations in system operations to maintain internal goals and/or water quality regulations.
- Collect and analyze data to ensure system compliance and operation as designed.

- Maintain all logs and records.
- Report all instances of non-compliance with internal goals and/or water quality regulations to the ORC and supervisor.

**Leak Detection Lead** – Responsible for the operation of the distribution system. They can perform all operations in the system to meet water quality internal goals and Drinking Water Regulations. They will also implement changes as directed by the ORC and/or a supervisor. The following is a list of activities that PRV Leads perform including but not limited to:

- Control the operation of valves, hydrants, ARV's, PRV's and all other system assets.
- Perform system survey operations identifying potential leaks and reporting them for repair.
- First responder to water breaks coordinating response and mitigating any risks to the system and customers.
- Perform all field activities as directed by the ORC and/or a supervisor including directing other team members to complete those activities.
- Perform disinfection operations to ensure water quality.
- Control and monitor any system discharges.
- Observe and take any necessary actions in response to variations in system operations to maintain internal goals and/or water quality regulations.
- Collect and analyze data to ensure system compliance and operation as designed.
- Maintain all logs and records.
- Report all instances of non-compliance with internal goals and/or water quality regulations to the ORC and supervisor.

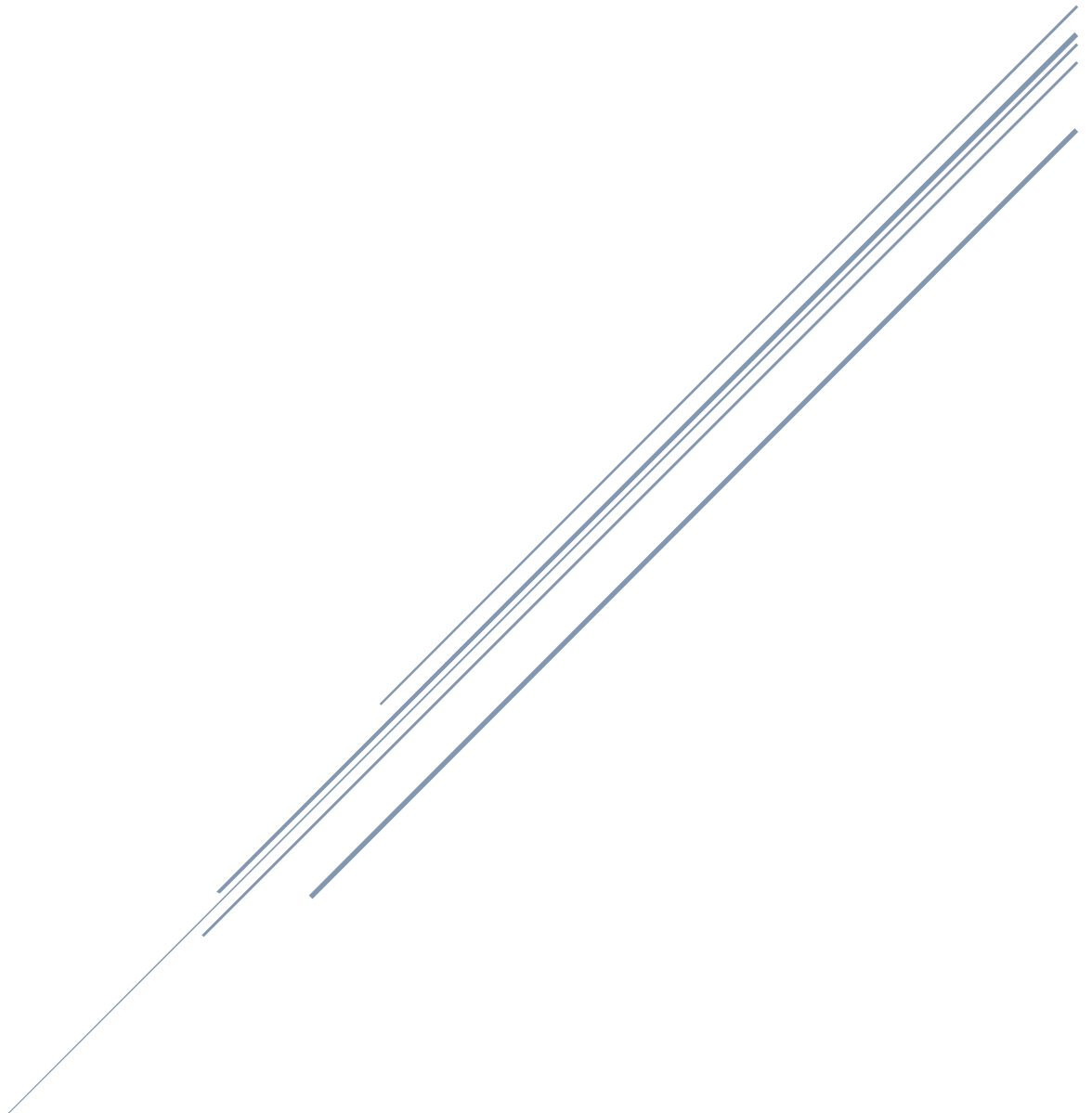
**Corrosion Control Lead** - Responsible for the operation of cathodic protection systems in the distribution system. They can perform all operations related to corrosion control in the system to meet water quality internal goals and Drinking Water Regulations. They will also implement any changes as directed by the ORC and/or a supervisor. The following is a list of activities that Corrosion Leads perform including but not limited to:

- Control the operation of cathodic protection systems in the distribution system.
- Verify cathodic protection systems are operating as designed and maintaining adequate protection of metallic pipe.
- Perform installations and repairs related to corrosion control.
- Perform all field activities as directed by the ORC and/or a supervisor including directing other team members to complete those activities.
- Observe and take any necessary actions in response to variations in cathodic system operations to maintain internal goals and/or water quality regulations.
- Perform inspection of installations and repairs related to metallic pipe including cathodic protection systems to ensure they are in compliance.
- Collect and analyze data to ensure system compliance and operation as designed.
- Identify and assist in mitigating any interferences of cathodic protection systems.
- Coordinate with external entities in maintaining pipe protection and reducing the impact of their cathodic protection systems to our system.
- Maintain all logs and records.
- Report all instances of non-compliance with internal goals and/or water quality regulations to the ORC and supervisor.

**Corrosion Control Technician** - Assists Supervisors and Leads with maintenance and repair of cathodic protection systems in the distribution system. Collects corrosion data and creates all logs and records of observations. Works under the direction of a supervisor and/or Lead performing approved operations as needed.

**Water Utility Worker** - Assists Supervisors and Leads with operation, maintenance, and repair of all assets in the distribution system. Works under the direction of a supervisor and/or Lead performing approved operations as needed.

# TECHNICAL OPERATION GROUP



## **Technical Operation Group**

There are three teams within the SCADA section, the Instrumentation & Controls (I&C) team, which is responsible for the hardware or field device part of the system, the Human Machine Interface (HMI) team, which is responsible for the control & monitoring software part of the system and the Electrical team responsible for Water Department electrical maintenance.

- The HMI team is responsible for developing computer screens that provide both information and control for the treatment plants and their operators. These screens are utilized on a daily basis to make decisions regarding the treatment of raw water, storage of potable water, and consumption of potable water. The HMI team is committed to maintaining the SCADA Process Control network – Ethernet, Fiber, Radio, and Wi-Fi – security, integrity, and availability. In addition, the HMI team maintains all computer hardware and software on the SCADA network, including servers, nodes, workstations, laptops, radios, firewalls, switches, and routers.
- The I&C team is responsible for the installation, replacement, calibration, maintenance, troubleshooting, and repair of the electronic/electro-mechanical equipment used to provide critical data and control of Aurora Water facilities to ensure proper operation. They also maintain and troubleshoot computerized process control equipment such as Programmable Logic Controllers (PLC), Remote Terminal Units (RTU), and related SCADA system devices, troubleshooting control system and electrical power system failures in plants, lift and pump stations. It is also their responsibility to maintain awareness of new technology and coordinate efforts with the HMI team to ensure seamless operation of the SCADA system.
- The Electrical team is responsible for maintenance, inspection, troubleshooting, and repair of a wide variety of electrical equipment associated with City of Aurora Water.

These groups work with A operators to ensure their work will not interfere with any process controls as a result of, or during, their work. This is accomplished through a TAF or Task Authorization Form which is linked below.

## **Risk Management**

The Water Emergency Response Water Superintendent is responsible for maintenance, revision, and distribution of the emergency operations plan for Aurora Water. These response plans must be current and exercised on an annual basis through virtual, table-top or functional exercises to ensure understanding of the National Incident Management System (NIMS), Incident Command System (ICS) and related roles and responsibilities. In addition, the Water Emergency Response Water Superintendent reviews threats and hazards and depending on the nature and extent of the emergency, then determines if it is necessary to activate the emergency operations center and operations plan to support the incident.



# BACK FLOW PREVENTION/CROSS- CONNECTION CONTROL GROUP



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**Back Flow Prevention/Cross-Connection Control Group** – This group is responsible for implementation and maintenance of the Backflow Protection and Cross-connection Control Rule (Regulation 11.39). The ORC responsible for delegation in this group is the Distribution Group ORC. The Back Flow Prevention/Cross-Connection Control Group roles and delegation structure is described below.

#### **Water Service Supervisor**

- Oversees the daily operation, processing of appeals dropping letters into InfoSend and scheduling of assigned staff.
- The supervisor is responsible for tracking back flow connection customers and their testing.
- The supervisor reports to the Distribution Group ORC.

#### **Cross Connection Control Technician III**

- Administration of Spry Backflow online testing portal and compliance in accordance with Colorado Primary Drinking Water Regulation 11.39.
- Assist in backflow identification, backflow testing, meter turn-on/turn-off, lock out procedure, and site surveys.
- These positions also assist in repairing failed backflows that are currently owned and operated by Aurora Water facilities.
- Water Distribution 1 required.
- American Backflow Prevention Association Tester certification required.
- American Backflow Prevention Association Cross- Connection Control Specialist certification required.
- The Cross Connection Control Technician III reports to the supervisor.

#### **Cross Connection Control Technician II**

- Administration of Spry Backflow online testing portal and compliance in accordance with Colorado Primary Drinking Water Regulation 11.39.
- Assist in backflow identification, backflow testing, meter turn-on/turn-off, lock out procedure.
- Water Distribution 1 required.
- American Backflow Prevention Association Tester certification required.
- The Cross Connection Control Technician II reports to the supervisor and the Cross Connection Control Technician III.

#### **Cross Connection Control Technician I**

- Administration of Spry Backflow online testing portal and compliance in accordance with Colorado Primary Drinking Water Regulation 11.39.
- Water Distribution 1 required.
- The Cross Connection Control Technician I reports to the supervisor and the Cross Connection Control Technician II.

Operations activities for the Back Flow Prevention/Cross-Connection Control Group are classified as either core or intermediate (described below):

## **Core**

Core operations activities are generally defined as those activities that typically occur during the day. The following is a list of activities that Cross-Connection Control Technician I, II, and III perform including but not limited to:

- Approval of backflow test reports.
- Approval of certificates for certified backflow testers.
- Approval of Test Guage calibrations.
- Generation of backflow compliance letters.
  - Assembly Test Due Notice.
  - Notice of Reminder.
  - Notice of Violation.
  - Second Notice of Violation.
  - Notice of Disconnection.
  - Notice of Failed Backflow Assembly.
  - Notice of Failed Backflow Assembly Disconnection.
- Make and receive phone calls.
  - Compliance calls.
  - Failed Notice calls.
  - Answer incoming calls from tenants, property managers, and testers/admins.

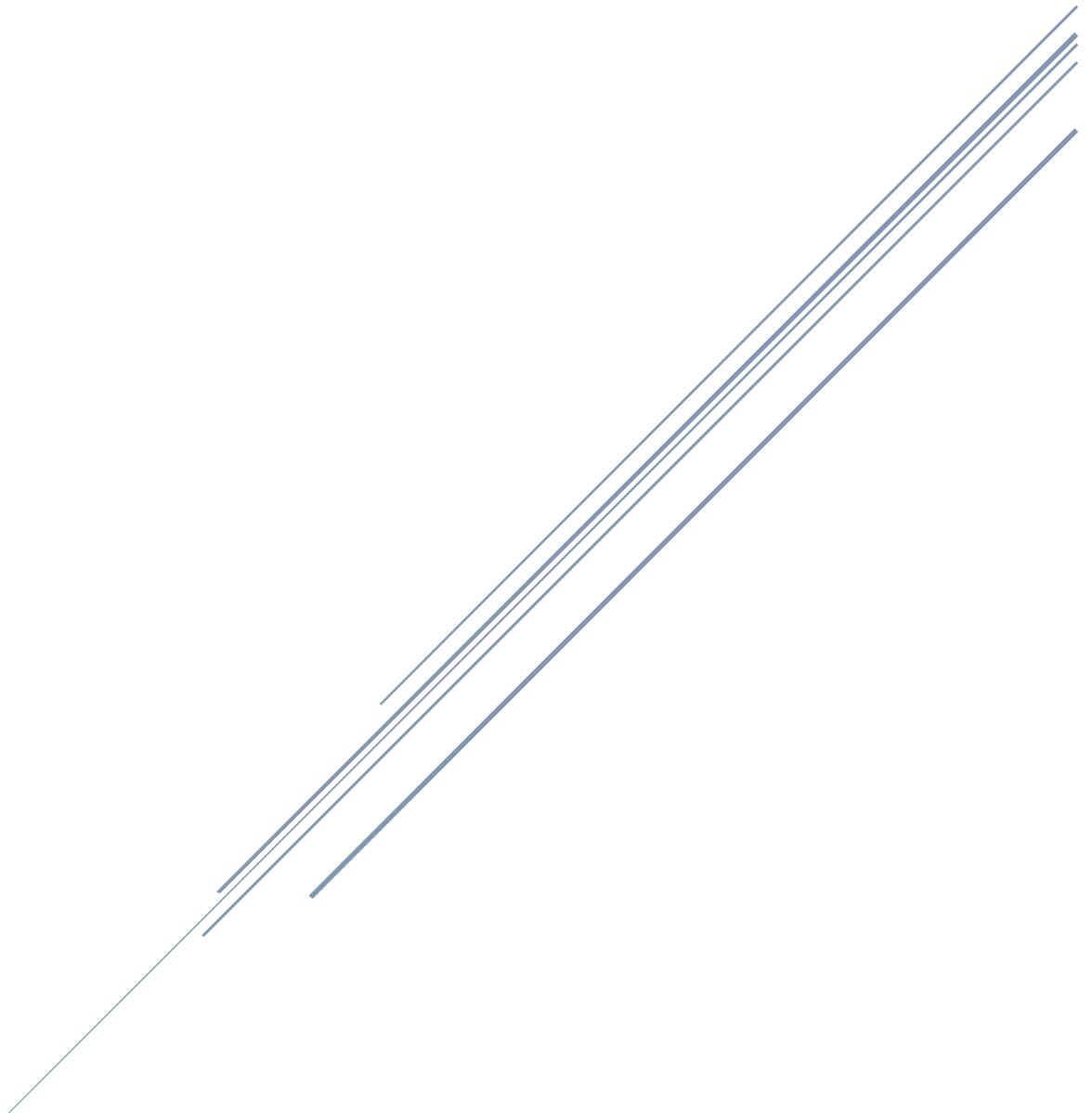
## **Intermediate.**

Cross Connection Control Technician II and III

- Survey Properties.
  - Sign off on CO's/TCO's.
- Backflow testing for Aurora Water owned assemblies.
- Lock-out/turn-on small meter pits for non-compliance.
- Meet meter reps on site for large meter pit lock-out/turn-on.
- Meets valve crews for Fireline valve operation.
- Meets certified testers and witness tests for turn-on.

Cross connection control group also assists other sections with operations, maintenance and repair tasks as needed towards operational goal sustentation. In addition to the training process, standard operating procedures (SOP's) have been developed, maintained and are readily available.

# FIELD SERVICES GROUP



## **Field Services Group**

The Field Representatives respond to customer service issues such as service breaks, water quality concerns, low pressure, leak checks, and noisy pipes. They also monitor hydrant use, install small water meters ( $\frac{5}{8}$ " to 1"), disconnect water services for non-payment and reinstate water services that were terminated. The ORC responsible for delegation in this group is the Distribution Group ORC.

The Field Services Group roles and delegation are described below.

**Water Utility Supervisor** – Oversees the daily operations and scheduling of assigned staff. The supervisor reports to the Distribution Group ORC.

**Water Utility Technician III (WUTIII)** – Assists the Water Utility Supervisor, as needed, in facilitating the daily operations and task completion of the assigned staff. Performs assigned daily tasks, as well as works in a Trainer capacity role for WUTII & I's. Reports to the supervisor.

**Water Utility Technician II (WUTII)** – Performs assigned daily tasks. Trainers for entry level employees. Reports to the supervisor.

**Water Utility Technician I (WUTI)** – Performs assigned daily tasks. Reports to the supervisor.

Operations activities are classified as either core, intermediate or critical (described below).

### **Core**

Core operations activities are generally defined as those activities that typically occur during the course of the day. The following is a list of activities that WUTIII, II & I perform including but not limited to:

- Delinquents: SO, & TO's
- VSO's
- Finals & Connect-On's
- Meter set inspections
- QC's
- Rechecks
- Meter reading (read verifications & communication concerns)
- AMI (endpoint activates, investigates, tamper alerts)
- Appointments:
  - Leak checks
  - Noisy pipes
  - Pressure concerns
  - Service interruptions
  - Frozen pipes
  - SOFR & TOAR

### **Intermediate**

Intermediate operations activities are generally defined as those activities that require anticipated or unanticipated intervention with a customer or system whereby the WUT must either partially or fully control a process or processes, or perform a task with significant immediate implications for successful compliance with organizational & public health goals and standards. Intermediate operations are considered to represent a higher level of operator tasks that require a more

experienced WUT's skills and a greater knowledge of system and goals. Intermediate tasks are also generally tasks that follow procedures and may have a significant impact on maintaining continuous organizational compliance and that occur on a repeating or intermittent basis but are not always predictable. A Water Distribution System Operator 1 certification is required for Intermediate operations. There are 2 Phases, described below, for Intermediate operations.

- WUTI's who are not experienced/certified at the level of the WUTII & III's may perform intermediate tasks if they have been trained on the task, and the supervisor or a WUTII or WUTIII is available (in-person or via phone) for consultation regarding the task.
- WUTII & III's can respond/perform without consultation independently. Examples of these operational tasks include:
  - Responding to Water Quality concerns.
  - Public investigations
  - Performing flushing of lead service lines in accordance with established protocol.
  - Installation/removal of alternate service lines.

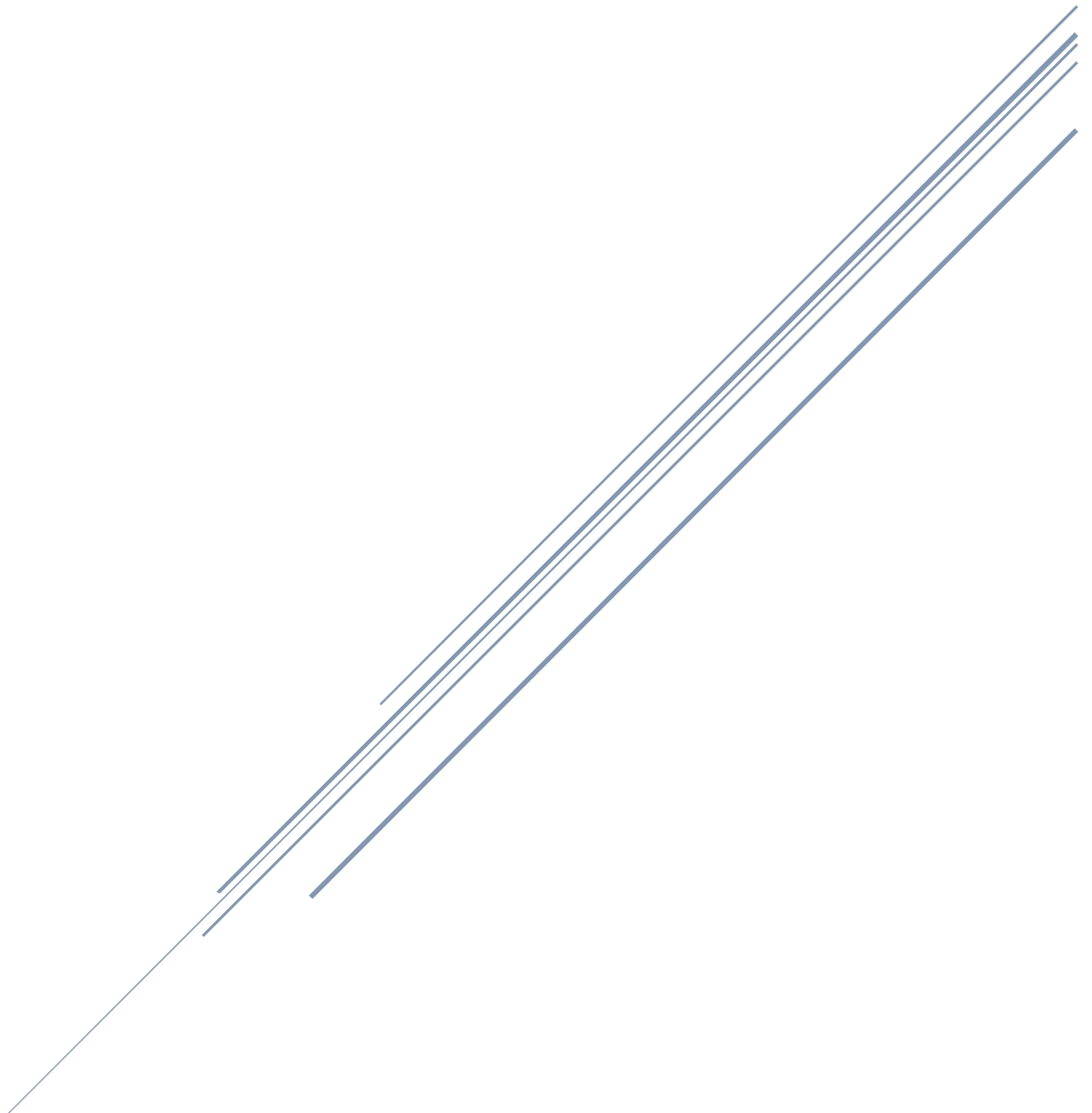
### **Critical**

Critical operations activities are generally defined as activities that require immediate response to mitigate potential damage and/or liability.

- May respond first to main and service line breaks. Evoke appropriate necessary actions in response to various situations. Responsible for notification of applicable staff towards operating conditions.
- Solutions to maintain organizational goals and/or water quality regulations.

Field Services also assists other sections with operations, maintenance and repair tasks as needed towards operational goal sustentation. In addition to the training process, standard operating procedures (SOPs) have been developed and maintained and are readily available for all staff.

# PUMPING GROUP

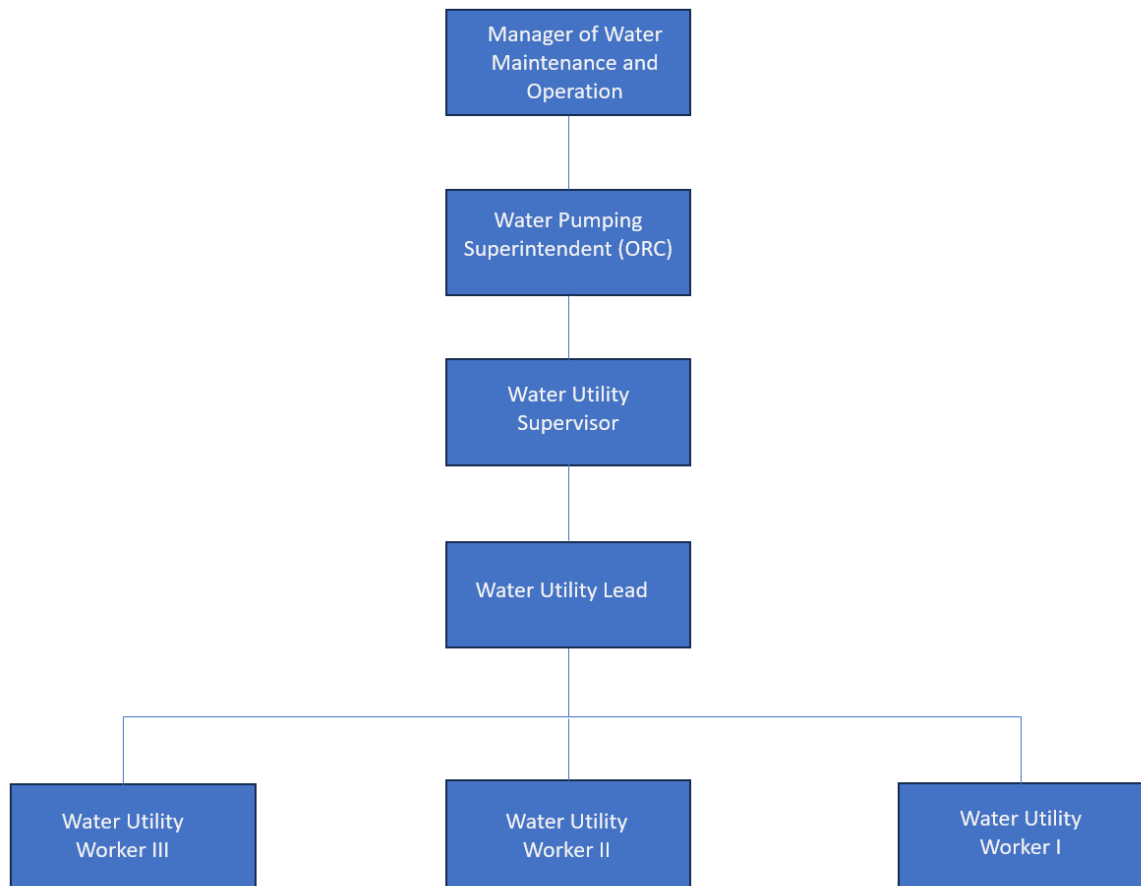




## Pumping Group

The operational functionality for the Storage Tank Rule (11.28) has been assigned to the Pumping Group as part of their roles and responsibilities. This group manages all pumps connected to the distribution system. They are responsible for the storage tanks in the distribution system. The storage reservoir attached to the Griswold WPF, the Wemlinger WPF, and the Binney WPF are under the care of Treatment. The Pumping Superintendent (ORC of Pumping) has a Level 4 Distribution certification. This group manages the Finished Water Storage Tank Inspection Plan for the distribution system tanks including quarterly periodic and comprehensive inspections as well as overseeing the daily operations and maintenance of the distribution system pumping stations.

The Pumping group reporting structure is depicted below:



**Water Pumping Superintendent** – The Water Pumping Superintendent, operating as the ORC, delegates tasks to the Pumping Water Utility Supervisor. The Water Pumping Superintendent has a level 4 Operator License.

**Pumping Water Utility Supervisor** – Plans, supervises, monitors, and coordinates work of skilled, semi-skilled, and unskilled workers engaged in the operation, maintenance and repair of equipment and infrastructure related to pump stations and water storage tanks associated with

the distribution system. Oversees the daily operations and maintenance of water pumping and storage facilities. (Distribution 2, 3 and 4 Operator License)

**Water Utility Lead Worker I-III** – Assists the Pumping Water Utility Supervisor with operations and maintenance and repair tasks. Works under direction of a Distribution 2,3 operator and the Pumping Superintendent. They do not make station operation changes without the approval of a Pumping Supervisor or Superintendent. They will implement the changes as directed by a Pumping Supervisor or Superintendent. They perform skilled, semi-skilled and manual labor duties, in addition to leading subordinate employees in the operation, maintenance and repair of pump stations, storage tanks and forebays. They perform scheduled and unscheduled maintenance and repairs on pump stations and related pumps, motors, and other appurtenances. Has an advanced understanding and working knowledge of pump stations and the distribution system. (Distribution 2 and 3 Operator License)

**Water Utility Worker I-III** - Performs manual labor, semi-skilled and skilled duties in the operation, maintenance and repair of pump stations and storage tanks in the raw and potable water distribution systems. Assists with scheduled and unscheduled maintenance and repair activities at pump stations, including pump rebuilds, motor removal/installation, check valve rebuilds and related infrastructure including tanks and forebays. (No certification, Distribution 1 and 2 Operator License)

## **Core**

Core operations generally encompass procedure-driven beginner and more experienced level tasks that occur on a repeating and predictable basis and ensure proper automated operation. A Water Distribution System Operator level 1 certification is preferred but not necessary to perform Core operations. Examples of Core operational tasks are listed below:

- Flow control communications
- Touch screen operations
- Log station data (Pressure, Flow, Reservoir Level, Chlorine Residual)
- Lead/Lag pump rotation
- Pump/Motor inspection
- Pump packing/Seal inspection and adjustment
- Valve operation
- Cl-17 Analyzer maintenance/chemical change/calibration
- Storage tanks/Zones served/How tank is filled
- Station alarm inspection/reset
- Lock out/Tag out procedures
- 24 hour on-call response

## **Intermediate**

Intermediate operations activities are generally defined as those activities that require anticipated or unanticipated intervention with a facility or system whereby the operator must either partially or fully control a process or processes or perform a task with significant

immediate implications for successful compliance with public health goals and standards. Intermediate operations are considered to represent a higher level of operator tasks that require a more experienced operator's skills and a greater knowledge of system and goals. Intermediate tasks are also generally tasks that follow procedures and may have a significant impact on maintaining continuous regulatory compliance and that occur on a repeating or intermittent basis but are not always predictable. A Water Distribution System Operator 1 certification is preferred but not required for Intermediate operations. Operators who are not certified at this level may perform intermediate tasks if there is an SOP for the task, the operator in question has been trained on the task, and the Lead/Supervisor or designee is available (in-person or phone) to support if needed. Examples of intermediate operations are listed below:

- Pump station CI-17 monthly calibration and chemical change with proper documentation
- Storage tank cleaning (Finished)
- Air-vac inspection/rebuild.

### **Advanced**

Advanced operations are generally defined as operations other than the normal operation of a fully automated process or facility and are limited to Supervisors and operators who are certified at level 4 required by CDPHE for Aurora's distribution system and who are working under the guidance of the ORC and the system's Operations Plan. A Water Distribution System Operator 2 certification is preferred but not required for Advanced operations. Operators who are not certified at this level may perform advanced tasks if there is an SOP for the task, the operator in question has been trained on the task, and the Lead/Supervisor or designee is available (in-person or phone) to support if needed. Examples of advanced operational tasks are listed below:

- Quarterly finished water storage tank inspections
- Quarterly raw water storage tank inspections

### **Critical**

Critical operations activities are generally defined as activities that are the foundation for maintaining regulatory compliance and public health such as those described in Regulation 100.12 Certified Operator in Responsible Charge Duties. They include all primary planning of operations as well as the reporting and inspection of new facilities. Critical tasks are those tasks that are reserved for the ORC. Critical tasks also include tasks and duties that Aurora Water believes require direct ORC or designee oversight or involvement. A Water Distribution System Operator 4 certification is required for Critical operations.

- Site design review
- Loss of SCADA/manual operations
- Pump stations in/out of service
- Emergency Response



## Core Tasks Delegation Checklist

**Core Tasks:** These are the minimum tasks required for an operator. They should be the initial focus of an operators training. They are generally defined as those activities that occur when facilities and systems are operating in a normal, fully automated mode and are demonstrating continuous compliance with all applicable regulations. They also include the initial tasks to be completed before help arrives in the case of an emergency.

**NOTE:** Any operational activity beyond the limits defined in the Aurora Water's Operating Plan requires the immediate and direct consultation with and participation of the Pumping Supervisor.

**Operator Name:**

	<i>Task</i>	<i>Task Description</i>	<i>Approval Initial</i>	<i>Operator Initial</i>	<i>Date</i>	<i>Comments</i>
<input type="checkbox"/>	Flow Control Comms	Communications with FCC via phone or radio				
<input type="checkbox"/>	Pump Station Locations	Know all Pump Station locations (North, Central, South)				
<input type="checkbox"/>	Touch Screen Operations	Ability to navigate and operate OIT at Pump Stations.				
<input type="checkbox"/>	Log Station Data	Maintain log of Station data (Pressure, Flow, Tank level, Chlorine residual)				
<input type="checkbox"/>	Lead/Lag pump rotation	Able to adjust Lead/Lag Pump operation				
<input type="checkbox"/>	Pump/Motor inspection	Able to inspect motor and pump for normal operation				
<input type="checkbox"/>	Pump packing Seal inspect/ adjustment	Able to adjust pump packing and inspect mechanical seal				
<input type="checkbox"/>	Valve operation	Operate isolation valves as necessary				
<input type="checkbox"/>	CI-17 Ops	Able to operate and maintain CI-17				
<input type="checkbox"/>	Storage Tank operation	Know how tank is filled, what zone it serves, and how to isolate				

<input type="checkbox"/>	Pump station alarm inspection reset	Able to clear alarms after proper inspection				
<input type="checkbox"/>	Lock out Tag out	Able to LOTO equipment and take out of service on OIT				
<input type="checkbox"/>	24 Hour Call	Participate in 24 hour call rotation				
<input type="checkbox"/>						
<input type="checkbox"/>						



## Intermediate Tasks Delegation Checklist

Intermediate Tasks: Intermediate operations activities are generally defined as those activities that require anticipated or unanticipated intervention with a facility or system whereby the operator must either partially or fully control a process or processes or perform a task with significant immediate implications for successful compliance with public health goals and standards.

**NOTE:** Any operational activity beyond the limits defined in the Aurora Water's Operating Plan requires immediate and direct consultation with and participation of the Pumping Supervisor.

**Operator  
Name:**

	<i>Task</i>	<i>Task Description</i>	<i>Approval Initial</i>	<i>Operat or Initial</i>	<i>Date</i>	<i>Comments</i>
<b>Phase I</b>						
<input type="checkbox"/>	CL-17 Calibration	Monthly CL-17 calibration and chemical change using secondary standards				
<input type="checkbox"/>	Storage Tank cleaning disinfecting	Clean / Inspect / Disinfect Storage Tank and place back in service				
<input type="checkbox"/>	Air-Vac Inspection rebuild	Inspect / Clean / Maintain Air-Vacs in Pump Stations				
<input type="checkbox"/>						



## Advanced Tasks Delegation Checklist

**Advanced Tasks:** Advanced operations are generally defined as operations other than the normal operation of a fully automated process or facility and are limited to the Pumping Supervisors and operators who hold a Class 2 Water Distribution System certification.

**NOTE:** Any operational activity beyond the limits defined in the Aurora Water's Operating Plan requires immediate and direct consultation with and participation of the Pumping Supervisor.

**Operator  
Name:**

	<i>Task</i>	<i>Task Description</i>	<i>Approval Initial</i>	<i>Operat or Initial</i>	<i>Date</i>	<i>Comments</i>
<input type="checkbox"/>	Quarterly Inspection of Storage Tanks	Quarterly inspection of finished water storage tanks				
<input type="checkbox"/>	Quarterly Inspection of Raw water Tank	Quarterly inspection of Raw water storage tanks				
<input type="checkbox"/>						
<input type="checkbox"/>						



## Critical Tasks Delegation Checklist

**Critical Tasks:** Critical operations activities are generally defined as activities that are the foundation for maintaining regulatory compliance and public health. Critical tasks are those tasks that are reserved to the Pumping Supervisor, but they also may include tasks and duties that Aurora Water believes require direct ORC oversight or involvement.

**NOTE:** Any operational activity beyond the limits defined in the Aurora Water's Operating Plan requires the immediate and direct consultation with and participation of the Flow Control Center Supervisor or designee.

**Operator Name:**

	<i>Task</i>	<i>Task Description</i>	<i>Approval Initial</i>	<i>Operat or Initial</i>	<i>Date</i>	<i>Comments</i>
<input type="checkbox"/>	Site design review	Participate in reviewing Pump Station design				
<input type="checkbox"/>	Loss of SCADA Operation	Operate Pump Stations in manual mode during SCADA outage				
<input type="checkbox"/>	Pump Station In / Out of Service	Take Pump Station out of service or place Pump Station into service				
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						



# CONSTRUCTION AND REPAIR GROUP



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## **Construction and Repair Group**

The Construction and Repair Group is responsible for the daily repair and maintenance activities of the distribution system.

**Construction & Repair Superintendent** – Oversees the daily repair and maintenance activities of the distribution system and is an ORC for the Construction and Repair group. (Distribution 4 Operator).

**Construction & Repair Water Utility Supervisor** – Plans, supervises, monitors, and coordinates work of skilled, semi-skilled, and unskilled workers engaged in the operation, maintenance and repair of appurtenances, piping and infrastructure related to the distribution system. (Distribution 3 Operator).

**Water Utility Lead Worker I-III** - Assists the Construction and Repair Water Utility Supervisor with daily activities of the individual Construction and Repair crew. Is responsible for carrying out duties assigned by the supervisor related to operation, maintenance, and repair of the distribution system. Performs skilled, semi-skilled and manual labor duties, in addition to leading subordinate employees in these duties. Lead workers are tasked with carrying out excavations using heavy machinery. They also act as first responders to after-hour distribution system leaks. Most importantly, they are tasked with overseeing worker safety in and around excavations, traffic, and heavy equipment. Lead workers have an advanced understanding and working knowledge of the distribution system. (Distribution 2-3 Operator).

**Water Utility Worker I-III** - Performs manual labor, semi-skilled and skilled duties in the operation, maintenance, and repair of the distribution system. Assists with the scheduled and unscheduled repair and replacement activities related to the water distribution system. (Distribution 0-2 Operator).

## **Core**

Core operations activities are generally defined as those activities that occur when facilities and systems are operating in a normal, fully automated mode and are demonstrating continuous compliance with all applicable regulations. Full automation refers to the continuous electronic control of facilities and systems programmed under the direction of an ORC (Operator in Responsible Charge).

Fully automated facilities require minimal or no direct interface by operators with equipment and controls to maintain distribution system outcomes and compliance with internal and external standards. Core activities also include responses to common problems that are encountered during normal operation and remedied using procedures that are achievable with lower levels of operator experience. This may include problems such as minor power outages, failures of noncritical equipment, minor computer, or application program issues, and so forth.

Core operations generally encompass procedure-driven beginner and more experienced level tasks that occur on a repeating and predictable basis and ensure proper automated operation. A Water Distribution System Operator level 1 certification is required to perform Core operations.

- Exercise valves
- Flush fire hydrants for water quality
- Make minor repairs to distribution infrastructure without the need to interrupt service to

customers.

## **Intermediate**

Intermediate operations activities are generally defined as those activities that require anticipated or unanticipated intervention with a facility or system whereby the operator must either partially or fully control a process or processes or perform a task with significant immediate implications for successful compliance with public health goals and standards.

Intermediate operations are considered to represent a higher level of operator tasks that require a more experienced operator's skills and a greater knowledge of system and goals. Intermediate tasks are also generally tasks that follow procedures and may have a significant impact on maintaining continuous regulatory compliance and that occur on a repeating or intermittent basis but are not always predictable. A Water Distribution System Operator 2 certification is required for Intermediate operations. There are 2 Phases, described below, for Intermediate operations.

Operators who are not certified at the level of the City's facilities may perform intermediate tasks as long as there is a detailed SOP for the task, the operator in question has been trained on the task, and the supervisor or designee is available (in-person or phone) to support the task if/as needed.

- Repair, replace and install distribution pipe, appurtenances, fire hydrants, water service lines, manholes, fittings and anything else pertaining to the distribution system.
- Operate valves, hydrants and wash outs in order to isolate, fill, drain or flush water mains and service lines.
- Communicate with FCC about systems outages and durations of them.
- Maintains industry approved disinfection practices for water main repair and replacement.
- Maintaining separation between potable distribution infrastructure and wastewater and re-use water collection systems during repair and replacement activities.

### **Phase I**

Phase I is the minimum level of system knowledge to monitor and operate the distribution system at the basic level.

- Operating or coordination of operation of distribution valves to isolate water mains for repair, maintenance, or replacement activities.

### **Phase II**

Phase II is a more advanced system operation which includes Phase I with the addition of:

- Ability to understand the effect of isolating certain areas of the distribution on the larger area or zone of the system.
- Shutting off and restoring service to customers without damage to existing infrastructure.

## **Advanced**

Advanced operations are generally defined as operations other than the normal operation of a fully automated process or facility and are limited to the FCC Supervisor and operators who are

certified at the level required by CDPHE for Aurora’s distribution system and who are working under the guidance of the ORC and the system’s Operations Plan. A Water Distribution System Operator 3 certification is required for Advanced operations.

- Makes recommendations to engineering concerning pipeline replacements and rehabilitations,
- Makes recommendations to engineering about distribution system improvements,
- Makes recommendations to engineering about system design flaws discovered on the distribution system during repairs, maintenance, and construction.

### **Critical**

Critical operations activities are generally defined as activities that are the foundation for maintaining regulatory compliance and public health such as those described in Regulation 100.12 Certified Operator in Responsible Charge Duties. They include all primary planning of operations, reporting and inspection of new facilities. Critical tasks are those tasks that are reserved by regulation to the ORC, but they also include tasks and duties that Aurora Water also believes require direct ORC or designee oversight or involvement. A Water Distribution System Operator 4 certification is required for Critical operations.

- Oversee all construction and repair activities involving Aurora Waters distribution system. Ensure all state regulations are adhered to when performing these activities. Also ensures that staff are following standard operating procedures of Auroa Waters when operating, maintaining, and repairing the distribution system. Review the department’s SOPs for accuracy on a yearly basis.



## Core Tasks Delegation Checklist

**Core Tasks:** These are the minimum tasks required for an operator to work a solo shift. They should be the initial focus of an operators training. They are generally defined as those activities that occur when facilities and systems are operating in a normal, fully automated mode and are demonstrating continuous compliance with all applicable regulations. They also include the initial tasks to be completed before help arrives in the case of an emergency.

**NOTE:** Any operational activity beyond the limits defined in the Aurora Water's Operating Plan requires the immediate and direct consultation with and participation of the Construction and Repair Supervisor.

**Operator Name:**

	<i>Task</i>	<i>Task Description</i>	<i>Approval Initial</i>	<i>Operator Initial</i>	<i>Date</i>	<i>Comments</i>
<input type="checkbox"/>	Exercise Valves	Operate valves up and down to check for functionality and packing leaks				
<input type="checkbox"/>	Flush Fire Hydrants for water quality	Flush dead ends to maintain system residual				
<input type="checkbox"/>	Minor repairs to distribution system infrastructure	Make repairs that do not cause an outage to the customer (valve box repair, packing leak repair, fire hydrant repair)				



## Intermediate Tasks Delegation Checklist

Intermediate Tasks: Intermediate operations activities are generally defined as those activities that require anticipated or unanticipated intervention with a facility or system whereby the operator must either partially or fully control a process or processes or perform a task with significant immediate implications for successful compliance with public health goals and standards.

**NOTE:** Any operational activity beyond the limits defined in the Aurora Water's Operating Plan requires immediate and direct consultation with and participation of the Construction and Repair Supervisor.

**Operator Name:**

	<i>Task</i>	<i>Task Description</i>	<i>Approval Initial</i>	<i>Operat or Initial</i>	<i>Date</i>	<i>Comments</i>
<b>Phase I</b>						
<input type="checkbox"/>	Repair water mains, service lines, valves, fire hydrants, washouts etc.	Make repairs to distribution system infrastructure. This often requires outage to customers.				
<input type="checkbox"/>	Operate valves, hydrants, washouts to drain and fill water mains	Operate valves to isolate sections of the system to make repairs or replacements. Operate valves, wash outs and hydrants to fill and flush lines after repairs and replacements.				
<input type="checkbox"/>	Communicate with FCC about system outages and durations	FCC communicates with the State and the rest of the department.				
<input type="checkbox"/>	Disinfect water mains, fittings and appurtenances during repair or replacement	Follow industry standards for disinfection procedures during construction, maintenance, and repair activities on the distribution system.				
<input type="checkbox"/>	Maintain separation of potable distribution system and wastewater/re-use systems during repair and replacement	Make sure to prevent any cross contamination. Maintain positive pressure, over excavating, testing and disinfecting when/if cross contamination is suspected.				
<input type="checkbox"/>						
<input type="checkbox"/>						



## Advanced Tasks Delegation Checklist

Advanced Tasks: Advanced operations are generally defined as operations other than the normal operation of a fully automated process or facility and are limited to the Supervisor and operators who hold a Class IV Water Distribution System certification.

**NOTE:** Any operational activity beyond the limits defined in the Aurora Water's Operating Plan requires immediate and direct consultation with and participation of the Construction and Repair Supervisor.

**Operator Name:**

	<i>Task</i>	<i>Task Description</i>	<i>Approval Initial</i>	<i>Operat or Initial</i>	<i>Date</i>	<i>Comments</i>
<input type="checkbox"/>	Engineering Recommendations	Makes recommendations to engineering concerning pipeline replacements and rehabilitations				
<input type="checkbox"/>	Engineering Recommendations	Makes recommendations to engineering about distribution system improvements				
<input type="checkbox"/>	Engineering Recommendations	Makes recommendations to engineering about system design flaws discovered on the distribution system during repairs, maintenance, and construction activities.				
<input type="checkbox"/>						



## Critical Tasks Delegation Checklist

**Critical Tasks:** Critical operations activities are generally defined as activities that are the foundation for maintaining regulatory compliance and public health. Critical tasks are those tasks that are reserved to the Supervisor, but they also may include tasks and duties that Aurora Water believes require direct ORC oversight or involvement.

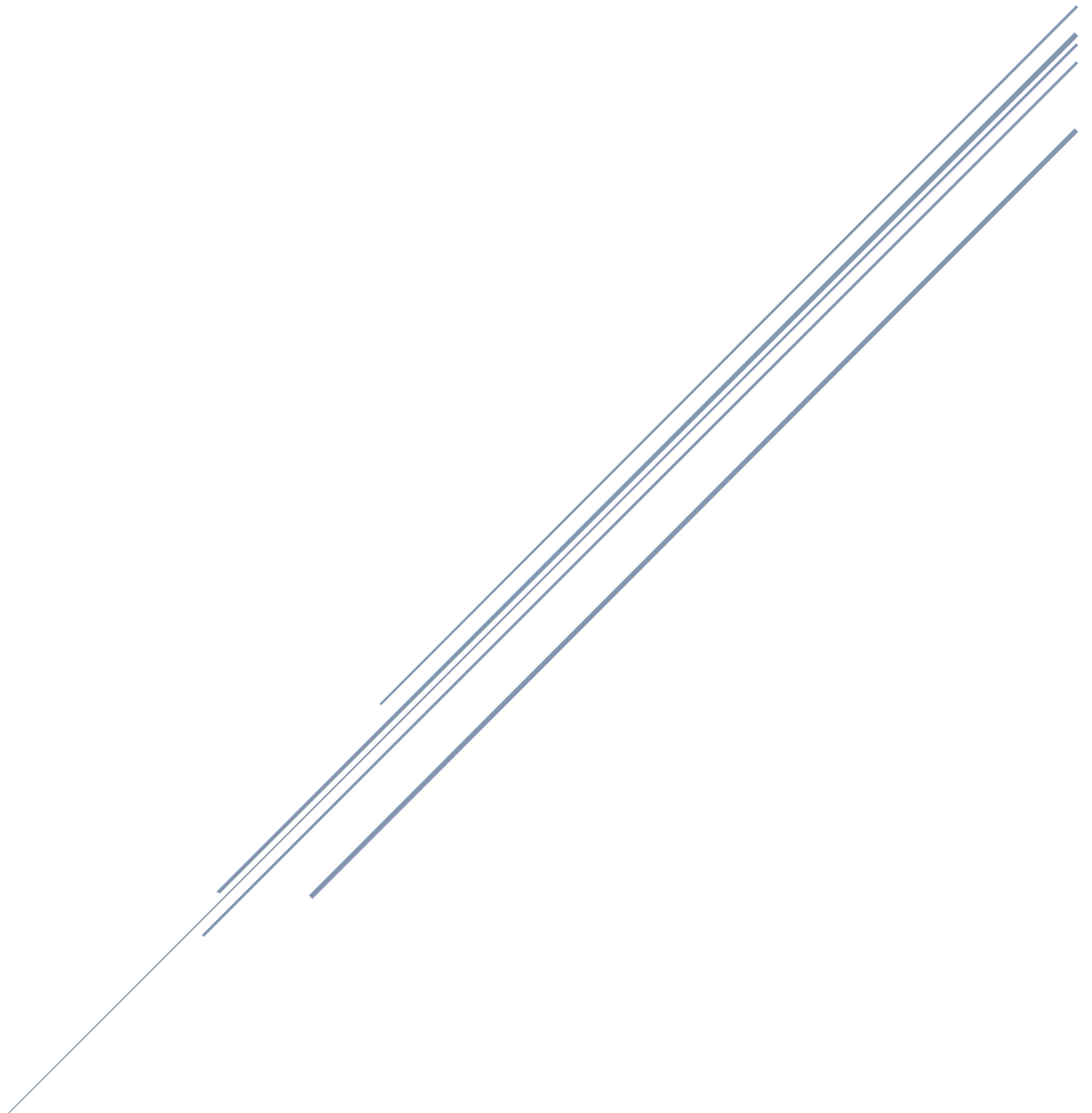
**NOTE:** Any operational activity beyond the limits defined in the Aurora Water's Operating Plan requires the immediate and direct consultation with and participation of the Construction and Repair Supervisor or designee.

**Operator Name:**

	<i>Task</i>	<i>Task Description</i>	<i>Approval Initial</i>	<i>Operat or Initial</i>	<i>Date</i>	<i>Comments</i>
<input type="checkbox"/>	Oversee activities of Construction & Repair staff	Oversee all construction and repair activities involving Auora Waters distribution system. Ensure all state regulations are adhered to when performing these activities. Also ensures that staff are following standard operating procedures when operating, maintaining, and repairing the distribution system. Reviews the department's SOPs for accuracy on a yearly basis.				
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						

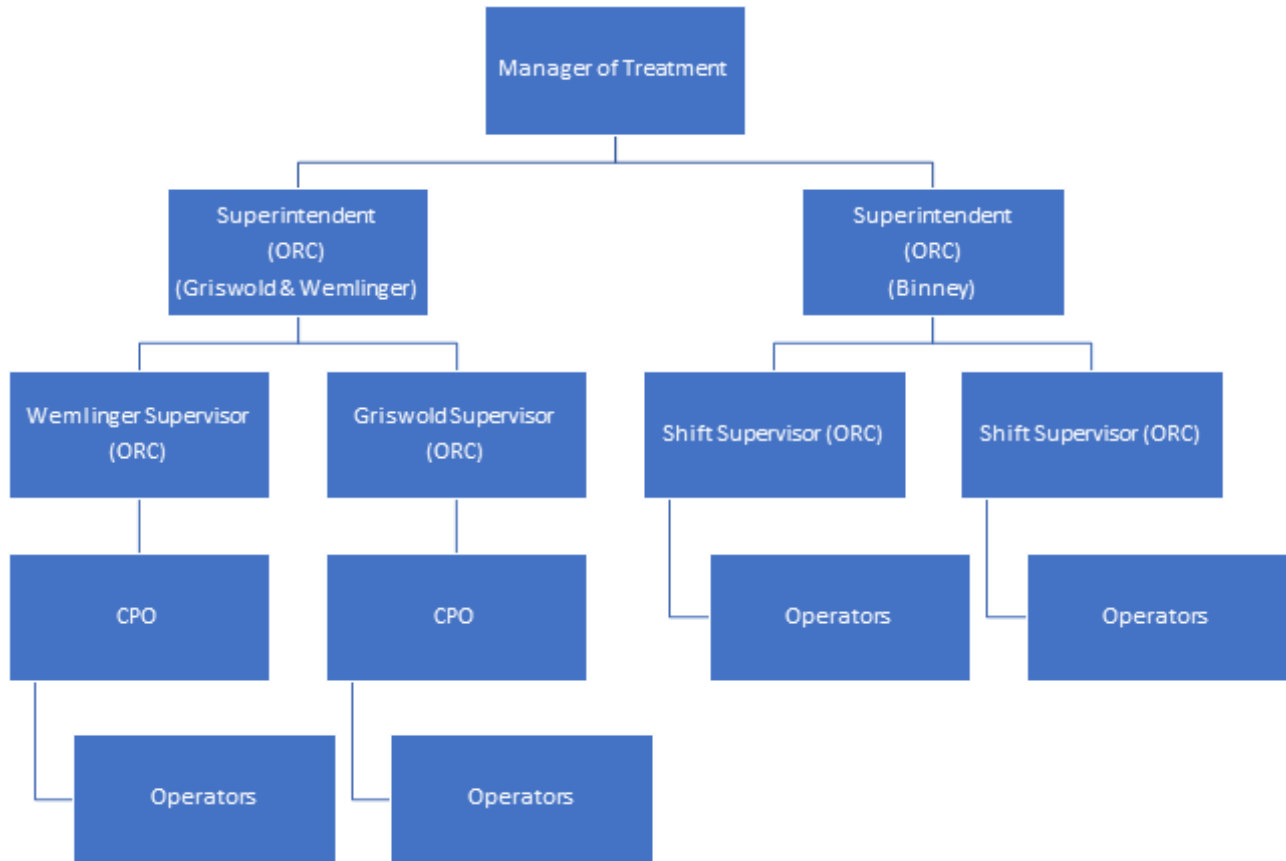


# TREATMENT GROUP



## Treatment Group

The treatment plant reporting structures are as depicted in the flow chart below:



All positions through CPO and most operators hold a Water Treatment Level A Certification (Level A). All shifts require a minimum of one Level A. Position descriptions, in conjunction with a robust onboarding and training plan for new operators and SOPs ensure all tasks are delegated and completed properly. In accordance with this operational approach, all Operators in Responsible Charge have delegated operation of the water treatment facility to the Level A Operators on duty. These operators are responsible for the operation of the facility including any required process changes.

Operators who are not Level A work under the direct supervision of Level A operators at all times. Duties and roles for all staff are defined below:

**Water Treatment Plant Supervisor**– Oversees the daily operations and maintenance of the facility and is an ORC for the Treatment Division.

**Chief Plant Operator** – Assists the Plant Supervisor in the supervision of the daily operations and maintenance of the facility. The Chief Plant Operator has the same roles and duties as

Water Treatment Operator "A".

**Water Treatment Shift Supervisor** - Oversees the daily operations and maintenance of the facility and is an ORC for the Binney WPF.

**Water Treatment Operator "A"**– Responsible for the operation of the water treatment facility. They can make all process changes at the facility to meet water quality internal goals and Drinking Water Regulations. They will also implement changes as directed by the Plant Supervisor and Chief Plant Operator. The following is a list of activities that "A" Operators perform including but not limited to:

- Control raw water flow from the available sources to the facility.
- Control all treatment process.
- Control all chemical additions and flows.
- Observe and take any necessary actions in response to variations in operating conditions to maintain internal goals and/or water quality regulations.
- Interpret all metering and adjust facility processes based on those interpretations.
- Control the operation of valves.
- Control the operation of pumps.
- Maintain logs and records.
- Collect and analyze process control and specific regulatory samples.
- Report all instances of non-compliance or if any internal goal is or will be exceeded to the Plant Supervisor.

### **Water Treatment Technician I**

#### **Water Treatment Plant Operator B, C, & D**

Assists the Water Treatment Operator A and/or the Maintenance Specialist with operations and maintenance and repair tasks. Works under the direction of an "A" Operator and the Plant Supervisor for the operation of the water treatment facility. They do not make process changes to the facility without approval of the Water Treatment Operator "A" on shift or the Plant Supervisor. They will implement the changes as directed by a Water Treatment Operator "A" or the Supervisor. In addition to the training process, standard operating procedures (SOPs) have been developed and maintained and are readily available for all staff.

### **Sr. Water Treatment Maintenance Supervisor**

#### **Water Treatment Maintenance Supervisor Senior**

#### **Water Treatment Maintenance Specialist Water**

#### **Treatment Maintenance Specialist**

Responsible for carrying out the plant maintenance program. These positions are also responsible for the repairs and maintenance of all the plant equipment.

### **Task Authorization Forms (TAF)**

For operations and procedures that may occur outside of normal system function, Aurora Water utilizes Task Authorization forms. The function of these forms is to designate a

responsible individual and include detailed instructions for performing the task or response. Each treatment plant has developed facility specific plans based on need and probability of occurrence. See Appendix I for Task Authorization Form example.

Examples of such tasks include but are not limited to repairs, replacements, and instrument testing.

**Delegation Limits**

The following parameters regarding effluent turbidities, chlorine dioxide, total chlorine, and free ammonia residuals have been established to ensure compliance with all Federal and State regulations as well as Partnership for Safe Water and Aurora Water goals.

NOTE: If the parameters listed below are not within the prescribed limits, notify a Treatment Plant Supervisor immediately. The Plant Supervisor will inform Water Treatment Superintendent. If unable to contact a Plant Supervisor, contact the Water Treatment Superintendent immediately.

TURBIDITY: The current State and Federal standard for effluent turbidity is 0.30 NTU in 95% of samples taken. Aurora Water has adopted a maximum individual filter turbidity and combined filter effluent turbidity level of samples taken at the IFE and CFE points:

CFE (Combined Filter Effluent) turbidities less than 0.10 NTU 100% of the time. IFE (Individual Filter Effluent) turbidities less than 0.10 NTU 100% of the time.

Residual levels and locations	Chlorine Dioxide	Chlorite
Wemlinger Reservoir	Not to exceed 0.30 mg/l	Not to exceed 0.70 mg/l
Griswold Gate #2	Not to exceed 0.30 mg/l	Not to exceed 0.70 mg/l

## Chlorine:

**Free Chlorine:** Residuals shall be maintained at a level sufficient to provide .5 log inactivation credit for Giardia removal and 3 log inactivation credit for Virus removal at Binney's CCB.

## CT Removal

CT Log Removal Requirements	Giardia	Virus
Binney WPF	.5	3
Griswold WPF	1	3
Wemlinger WPF	1	3

## Total Residual Chlorine, Free Ammonia and pH

Residual levels and locations	Total Residual Chlorine	Free Ammonia*	pH
Binney Finished Water	2.00-2.25 mg/l	0.05-0.10 mg/l	8.0-8.2
Wemlinger Reservoir	2.00-2.25 mg/l	0.05-0.10 mg/l	8.0-8.2
Griswold Gate #2	2.00-2.25 mg/l	0.05-0.10 mg/l	8.0-8.2

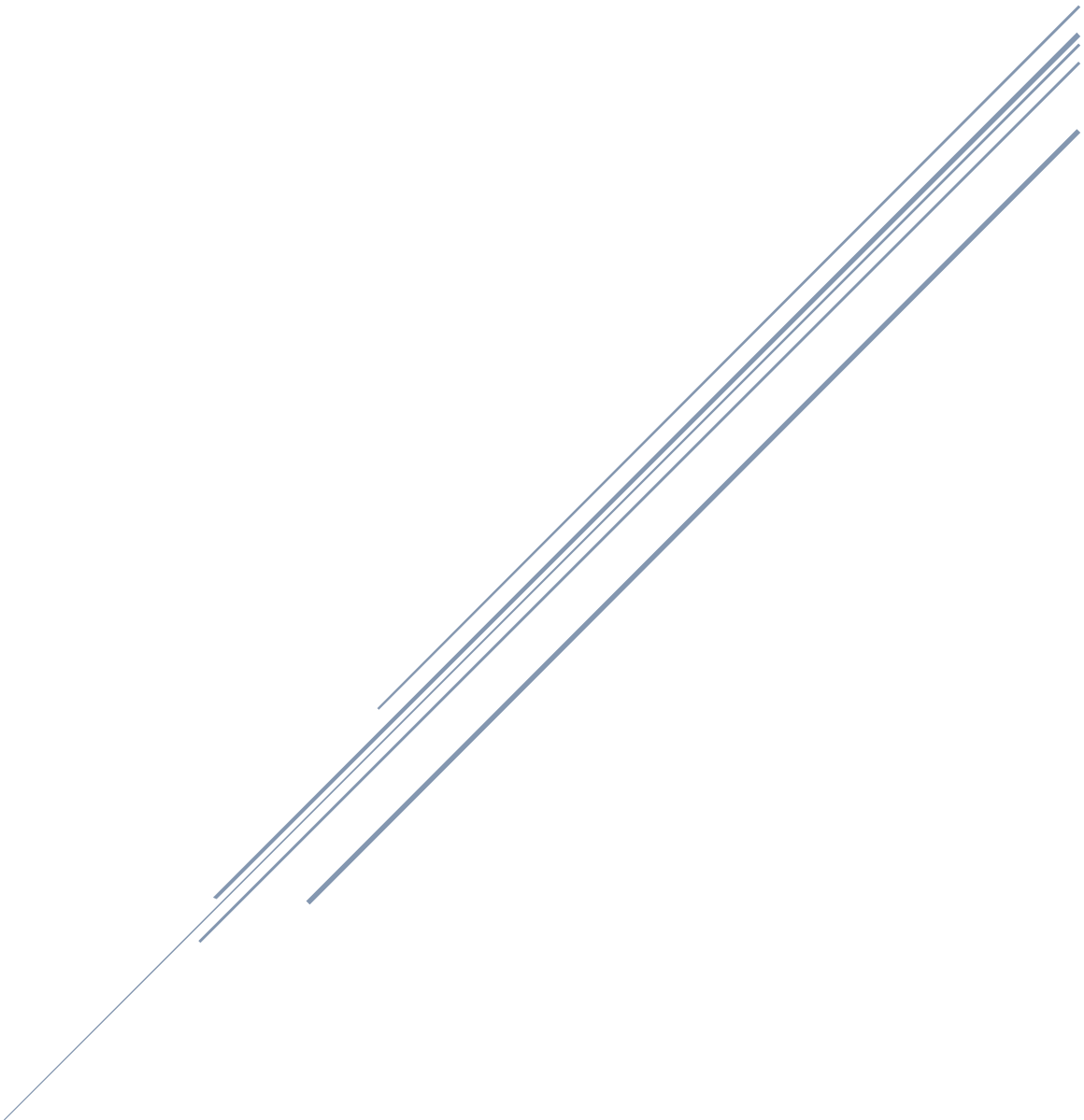
\*Cl<sub>2</sub> ratio never to exceed 5:1

Other Water Quality goals: Ranges listed on the laboratory sheets in red for the other water quality parameters must be within the outlined parameters.

## Operator Training

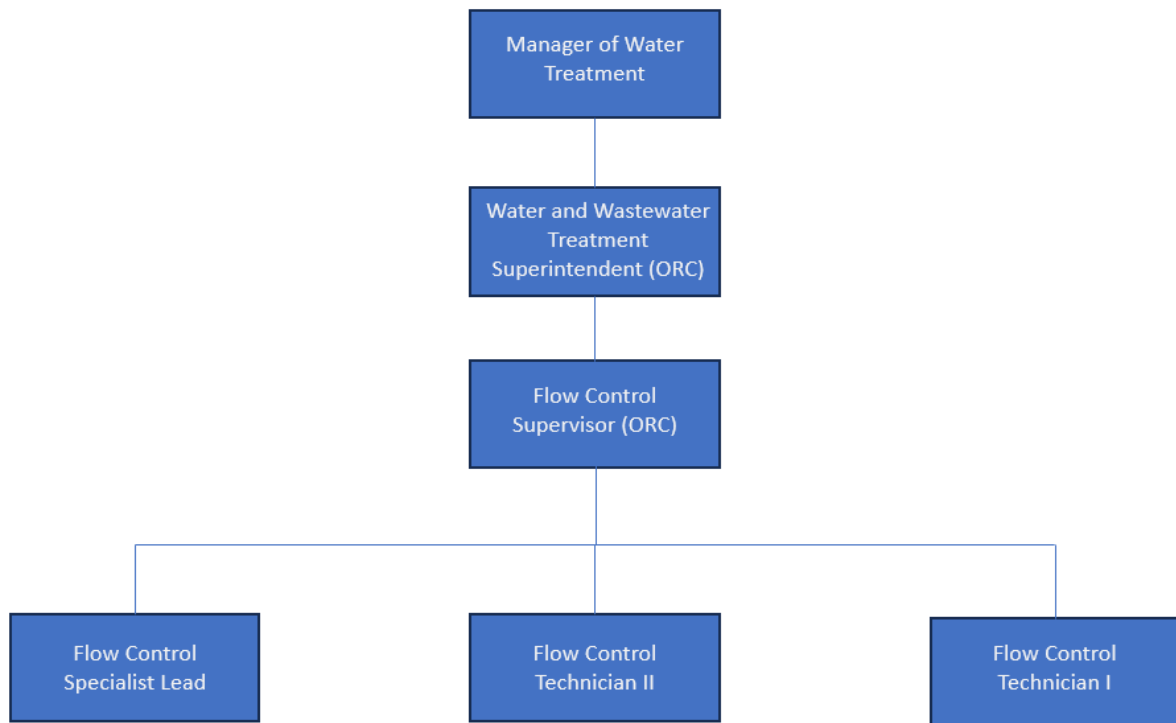
Comprehensive training plans are used to onboard new staff. Specific plans exist for each of the positions described in the Operator Duties and Roles narrative page above. Training plans include a comprehensive verification and sign off at the conclusion of training. Completed and in-progress training plans for current and former staff are maintained as physical copies on site at the plant.

# FLOW CONTROL CENTER



## Flow Control Center

The flow control center reporting structures are as depicted in the flow chart below:



The Flow Control Center (FCC) Operating Plan provides an overview and general approach to the operation of Aurora Water’s water distribution system by Aurora’s FCC in accordance with Regulation No 100 – Water and Wastewater Facility Operators Certification.

The plan identifies tasks that have been delegated to the Aurora Water Flow Control Center by Aurora Water’s Water Distribution System Operator in Responsible Charge (ORC).

Operations activities are classified as either core, intermediate, advanced, or critical operations (described below).

### Core

Core operations activities are generally defined as those activities that occur when facilities and systems are operating in a normal, fully automated mode and are demonstrating continuous compliance with all applicable regulations. Full automation refers to the continuous electronic control of facilities and systems programmed under the direction of an ORC (Operator in Responsible Charge).

Fully automated facilities require minimal or no direct interface by operators with equipment and controls to maintain distribution system outcomes and compliance with internal and external standards. Core activities also include responses to common problems that are encountered during normal operation and remedied using procedures that are achievable with

lower levels of operator experience. This may include problems such as minor power outages, failures of noncritical equipment, minor computer, or application program issues, and so forth. Core operations generally encompass procedure-driven beginner and more experienced level tasks that occur on a repeating and predictable basis and ensure proper automated operation. A Water Distribution System Operator level 1 certification is required to perform Core operations.

- Overall Water System Monitoring
  - Ensuring that all sites are operating in auto/normal operations.
- Alarm monitoring and response
- Valves/hydrants in Service/Out of Service
- Main Line Break – CDPHE Notification
- Raw water system operation
- Power outage response

## **Intermediate**

Intermediate operations activities are generally defined as those activities that require anticipated or unanticipated intervention with a facility or system whereby the operator must either partially or fully control a process or processes or perform a task with significant immediate implications for successful compliance with public health goals and standards.

Intermediate operations are considered to represent a higher level of operator tasks that require a more experienced operator's skills and a greater knowledge of system and goals. Intermediate tasks are also generally tasks that follow procedures and may have a significant impact on maintaining continuous regulatory compliance and that occur on a repeating or intermittent basis but are not always predictable. A Water Distribution System Operator 2 certification is required for Intermediate operations. There are 2 Phases, described below, for Intermediate operations.

Operators who are not certified at the level of the City's facilities may perform intermediate tasks if there is a detailed SOP for the task, the operator in question has been trained on the task, and the supervisor or designee is available (in-person or phone) to support the task if/as needed.

### **Phase I**

Phase I is the minimum level of system knowledge to monitor and operate the distribution system at the basic level.

- Operating or coordination of operation of distribution zone pumps to maintain distribution tank levels.

### **Phase II**

Phase II is a more advanced system operation which includes Phase I with the addition of:

- The operation of distribution PRV's and system pressure setpoints.
- Forecasting of treatment facility production rates to be coordinated with the Water Purification Facilities.



## **Advanced**

Advanced operations are generally defined as operations other than the normal operation of a fully automated process or facility and are limited to the FCC Supervisor and operators who are certified at the level required by CDPHE for Aurora's distribution system and who are working under the guidance of the ORC and the system's Operations Plan. A Water Distribution System Operator 3 certification is required for Advanced operations.

- Testing at pump stations and distribution sites (PRVs)
  - Programming or PLC changes
  - Mechanical/Hydraulic Changes
  - Site Acceptance Testing (SAT)
- Seasonal tank level adjustments

## **Critical**

Critical operations activities are generally defined as activities that are the foundation for maintaining regulatory compliance and public health such as those described in Regulation 100.12 Certified Operator in Responsible Charge Duties. They include all primary planning of operations, reporting and inspection of new facilities. Critical tasks are those tasks that are reserved by regulation to the ORC, but they also include tasks and duties that Aurora Water also believes require direct ORC or designee oversight or involvement. A Water Distribution System Operator 4 certification is required for Critical operations.

- Coordinating and Scheduling
- Water Purification Facilities in and out of service
- Pump stations in/out of service
- PRV's in/out of service
- Large Pipelines (24" or greater) in/out of service
- Loss of SCADA/ manual operations
- Emergency response
- Site design review



# Aurora Water Flow Control Center Operator Information Sheet

## Employee Information

Name: \_\_\_\_\_ Start Date \_\_\_\_\_

Position: \_\_\_\_\_

## FCC Core Status

Core Completed: \_\_\_\_\_

ORC Approval Signature: \_\_\_\_\_

Date / /

## Flow Control Operator Certification Tracking

Level \_\_\_\_\_  
/ /  
Expiration

Level \_\_\_\_\_  
/ /  
Expiration

Level \_\_\_\_\_  
/ /  
Expiration

Level \_\_\_\_\_  
/ /  
Expiration

Level \_\_\_\_\_  
/ /  
Expiration

## Annual Binder Review Dates

Date Reviewed: / / Supervisor Initial: \_\_\_\_\_

Date Reviewed: / / Supervisor Initial: \_\_\_\_\_

Date Reviewed: / / Supervisor Initial: \_\_\_\_\_

Date Reviewed: / / Supervisor Initial: \_\_\_\_\_

Date Reviewed: / / Supervisor Initial: \_\_\_\_\_

Date Reviewed: / / Supervisor Initial: \_\_\_\_\_

Date Reviewed: / / Supervisor Initial: \_\_\_\_\_

Date Reviewed: / / Supervisor Initial: \_\_\_\_\_



## Core Tasks Delegation Checklist

**Core Tasks:** These are the minimum tasks required for an operator to work a solo shift. They should be the initial focus of an operators training. They are generally defined as those activities that occur when facilities and systems are operating in a normal, fully automated mode and are demonstrating continuous compliance with all applicable regulations. They also include the initial tasks to be completed before help arrives in the case of an emergency.

**NOTE:** Any operational activity beyond the limits defined in the Aurora Water's Operating Plan requires the immediate and direct consultation with and participation of the Flow Control Center Supervisor.

**Operator Name:**

	<i>Task</i>	<i>Task Description</i>	<i>Approval Initial</i>	<i>Operator Initial</i>	<i>Date</i>	<i>Comments</i>
	Overall System Monitoring	Ability to monitor the raw water, treatment, and distribution system to maintain identified parameters				
<input type="checkbox"/>	Virtual Walkthrough of SCADA	Can visually identify potential problematic issues using SCADA				
<input type="checkbox"/>	Alarm Monitoring and Response	The ability to monitor, acknowledge, and respond to SCADA alarms				
<input type="checkbox"/>	Hydrants/Valves In/Out of Service	The ability to communicate with all involved parties to coordinate and document valves and hydrants in service/out of service				
<input type="checkbox"/>	Daily Production & Consumption Reports	Can complete the Flow Control Center's reports				
<input type="checkbox"/>	Main Break Notifications (CDPHE)	The basic understanding of water breaks and the ability to appropriately log and report that information to all involved parties				
<input type="checkbox"/>	Power Outage Response	The ability to communicate with AW staff and Power Utility companies				
<input type="checkbox"/>	Spill Response	The ability to respond the spills				
<input type="checkbox"/>	FCC Logs and Records	Can maintain logs and records.				
<input type="checkbox"/>	Raw Water System Operations	Has a general understanding of the raw water system and its basic operations				

<input type="checkbox"/>	Distribution System Operations	Has a general understanding of the Distribution system and its basic operations				
<input type="checkbox"/>	SCADA Controls & Review	Has the familiarity with the SCADA system to review the data and trends necessary to ensure all of the water systems are running properly.				
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						



## Intermediate Tasks Delegation Checklist

Intermediate Tasks: Intermediate operations activities are generally defined as those activities that require anticipated or unanticipated intervention with a facility or system whereby the operator must either partially or fully control a process or processes or perform a task with significant immediate implications for successful compliance with public health goals and standards.

**NOTE:** Any operational activity beyond the limits defined in the Aurora Water's Operating Plan requires immediate and direct consultation with and participation of the Flow Control Center Supervisor.

**Operator Name:**

	Task	Task Description	Approval Initial	Operat or Initial	Date	Comments
<b>Phase I</b>						
<input type="checkbox"/>	Maintaining Smoky Hill Tank	The ability to keep the Smoky Hill Tanks within parameters				
<input type="checkbox"/>	Maintaining Robertsdale Tank	The ability to keep the Robertsdale Tank within parameters				
<input type="checkbox"/>	Maintaining Marina Tank	The ability to keep the Marina Tank within parameters				
<input type="checkbox"/>	Maintaining Powhatan Tank	The ability to keep the Powhatan Tank within parameters				
<input type="checkbox"/>	Maintaining Blackstone Tank	The ability to keep the Blackstone Tank within parameters				
<input type="checkbox"/>	Maintain Griswold Reservoir	Ability to monitor and maintain operating levels in the Griswold Reservoir				
<input type="checkbox"/>	Operating the Wemlinger Zone 4/5 Pumpstation	The ability to operate Zone 4 and Zone 5 pumps to maintain adequate tank levels				
<input type="checkbox"/>	Operating the Griswold Zone 4 Pumpstation	The ability to operate Zone 4 pumps to maintain adequate tank levels				
<input type="checkbox"/>						
<b>Phase II</b>						

<input type="checkbox"/>	Operating the Wemlinger 5/4 PRV	The ability to correctly operate the PRV and demonstrate an understanding of the ramifications of its operation				
<input type="checkbox"/>	Operating the Gun/Expo PRV	The ability to correctly operate the PRV and demonstrate an understanding of the ramifications of its operation				
<input type="checkbox"/>	Operating the Jewell/Peoria PRV	The ability to correctly operate the PRV and demonstrate an understanding of the ramifications of its operation				
<input type="checkbox"/>	Operating the Wemlinger Z3 Valve	The ability to communicate flow adjustments to Zone 3 from the Wemlinger WPF.				
<input type="checkbox"/>	Adjusting pressure within the Distribution System	The ability to correctly manipulate the system pressure and demonstrate an understanding of the ramifications of that operation				
<input type="checkbox"/>	Set WPF Production Rates	The ability to predict and communicate with the Water Purification Facilities the required production to meet distribution system demands.				
<input type="checkbox"/>						
<input type="checkbox"/>						



## Advanced Tasks Delegation Checklist

**Advanced Tasks:** Advanced operations are generally defined as operations other than the normal operation of a fully automated process or facility and are limited to the FCC Supervisor and operators who hold a Class IV Water Distribution System certification.

**NOTE:** Any operational activity beyond the limits defined in the Aurora Water's Operating Plan requires immediate and direct consultation with and participation of the Flow Control Center Supervisor.

**Operator Name:**

	<i>Task</i>	<i>Task Description</i>	<i>Approval Initial</i>	<i>Operat or Initial</i>	<i>Date</i>	<i>Comments</i>
<input type="checkbox"/>	Pumpstation and PRV Testing	Coordination for mechanical and controls testing of pumpstations and PRV testing including SAT's, programming changes, and mechanical/hydraulic changes				
<input type="checkbox"/>	Seasonal tank operating range adjustments	Adjust tank level parameters as needed for optimal distribution system operation				
<input type="checkbox"/>						
<input type="checkbox"/>						



## Critical Tasks Delegation Checklist

**Critical Tasks:** Critical operations activities are generally defined as activities that are the foundation for maintaining regulatory compliance and public health. Critical tasks are those tasks that are reserved to the FCC Supervisor, but they also may include tasks and duties that Aurora Water believes require direct ORC oversight or involvement.

**NOTE:** Any operational activity beyond the limits defined in the Aurora Water's Operating Plan requires the immediate and direct consultation with and participation of the Flow Control Center Supervisor or designee.

**Operator Name:**

	<i>Task</i>	<i>Task Description</i>	<i>Approval Initial</i>	<i>Operat or Initial</i>	<i>Date</i>	<i>Comments</i>
<input type="checkbox"/>	Coordination/ Scheduling of Stations, PRV's, and/or equipment in/out of service.					
<input type="checkbox"/>	Loss of SCADA/ Manual Operations					
<input type="checkbox"/>	Emergency Response	Ability to respond to WPF upsets our outages, station or site failures				
<input type="checkbox"/>	Site/ Station design review and feedback					
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						





## Aurora Water Flow Control Center Reference Document List

This document is intended to provide a quick reference to the PGDs, SOPs and checklists applicable to each task

<b>Core</b>	
<b>Task</b>	<b>Applicable Reference Documents</b>
Overall System Monitoring	
Virtual Walkthrough of SCADA	
Alarm Monitoring and Response	
Hydrants/Valves In/Out of Service	
Daily Reports	
Main Break Notifications (CDPHE)	
Power Outage Response	
Spill Response	
FCC Logs and Records	
Raw Water System Operations	
Distribution System Operations	
SCADA Controls & Review	
<b>Intermediate</b>	
Maintaining Smoky Hill Tank	
Maintaining Robertsdale Tank	

Maintaining Marina Tank	
Maintaining Powhatan Tank	
Maintaining Blackstone Tank	
Maintain Griswold Reservoir	
Operating the Wemlinger Zone 4/5 Pumpstation	
Operating the Griswold Zone 4 Pumpstation	
Operating the Wemlinger 5/4 PRV	
Operating the Gun/Expo PRV	
Operating the Jewell/Peoria PRV	
Operating the Wemlinger Z3 Valve	
Adjusting pressure within the Distribution System	
Set WPF Production Rates	
<b>Advanced</b>	
Pumpstation and PRV Testing	
Seasonal tank operating range adjustments	
<b>Critical</b>	
Coordination/ Scheduling of Stations and/or equipment in/out of service.	
Loss of SCADA/ Manual Operations	
Emergency Response	
Site/ Station design/ feedback	

## Signatures

Print Name	Position Title	Signature



**City of Aurora - Water Treatment Division**  
**Task Authorization and Release Form**



**Task:**

**Date:**

**Employee(s) Authorizing Task (can be multiple persons) and Initials:**

**Employee(s) initiating/performing Task:**

**Task Lead Person:**

**Water Quality, Compliance/Regulatory Risk/Security:**

- **Potential Impact:**
  -
- **Required actions to mitigate risk:**
  -
- **Is there an SOP for this procedure?**

**Safety Risk:**

- **Potential Impact:**
- **Required actions to mitigate risk:**

**Steps taken to Mitigate Risk:**

- 
- 

**Task Description:**

- 
- 
- 

**Steps taken to Release Task:**

- 
- 
- 
- 

**Employee(s) Inspecting Work and/ or Authorizing Release of Task:**

Name \_\_\_\_\_

Date \_\_\_\_\_

Name \_\_\_\_\_

Date \_\_\_\_\_

# PNA Attachment 7

## Annual Budget

The City of Aurora's annual budget is available online at:

[https://www.auroragov.org/city\\_hall/city\\_finances\\_budget/city\\_budget](https://www.auroragov.org/city_hall/city_finances_budget/city_budget)

# PNA Attachment 8

## 20-Year Financial Plan

Aurora Water - Draft Financial Plan (CIP Cash Flow)

**Table 2**  
 Aurora Water  
 Financial Plan - Water Fund: Combined  
 Cash Fund Activity and Balance - All Funds

Description	Budget 2023	Projected 2024	Projected 2025	Projected 2026	Projected 2027	Projected 2028	Projected 2029	Projected 2030	Projected 2031	Projected 2032	Projected 2033
<b>Beginning Cash &amp; Investment Balance</b>	<b>\$266,627,666</b>	<b>\$156,078,874</b>	<b>\$243,885,731</b>	<b>\$86,263,907</b>	<b>\$278,798,819</b>	<b>\$98,316,657</b>	<b>\$201,861,249</b>	<b>\$100,932,428</b>	<b>\$218,286,611</b>	<b>\$114,154,206</b>	<b>\$261,554,540</b>
<b>Sources of Funds</b>											
Operating Revenues	\$135,620,859	\$147,227,377	\$155,945,012	\$165,452,380	\$175,713,831	\$186,629,974	\$198,233,481	\$210,557,152	\$223,670,067	\$237,635,888	\$252,497,790
Development Revenues	34,256,218	44,017,980	55,863,646	72,368,351	68,616,807	85,537,387	89,784,323	93,808,816	100,912,890	106,450,364	111,937,785
Other Revenues	7,084,968	8,210,021	11,587,787	17,145,542	17,977,654	18,598,095	19,259,123	19,917,493	20,409,833	20,475,367	20,544,192
Debt proceeds	0	325,372,379	0	374,321,319	0	230,349,182	0	257,133,970	0	269,406,984	0
Interest Earnings	3,692,794	1,993,230	1,637,732	1,811,429	1,871,393	1,488,619	1,501,633	1,575,446	1,649,131	1,864,394	2,046,866
<b>Total Sources of Funds</b>	<b>\$180,654,839</b>	<b>\$526,820,988</b>	<b>\$225,034,176</b>	<b>\$631,099,022</b>	<b>\$264,179,685</b>	<b>\$522,603,256</b>	<b>\$308,778,559</b>	<b>\$582,992,877</b>	<b>\$346,641,921</b>	<b>\$635,832,997</b>	<b>\$387,026,633</b>
<b>Uses of Funds</b>											
Operating and Maintenance Expenses	\$93,559,432	\$94,189,009	\$97,069,918	\$100,010,455	\$103,062,313	\$106,209,263	\$109,453,537	\$112,798,463	\$116,247,194	\$119,803,454	\$123,470,385
Debt Service Payments - Outstanding Bonds	28,867,205	28,868,674	28,867,131	28,866,975	28,306,628	28,304,983	28,301,310	28,299,615	28,300,309	27,849,754	27,854,798
Debt Service Payments - Projected Issues	0	19,975,112	19,975,112	42,955,276	42,955,276	57,096,767	57,096,767	72,882,619	72,882,619	89,147,025	89,147,025
Capital Project Costs	168,974,393	292,944,421	236,743,840	263,237,617	270,337,630	225,297,651	214,855,766	249,257,998	233,344,204	249,117,880	257,277,989
Costs of Bond Issuance	0	3,036,914	0	3,493,786	0	2,150,000	0	2,400,000	0	2,514,552	0
<b>Total Uses of Funds</b>	<b>\$291,401,029</b>	<b>\$439,014,130</b>	<b>\$382,656,001</b>	<b>\$438,564,109</b>	<b>\$444,661,847</b>	<b>\$419,058,665</b>	<b>\$409,707,380</b>	<b>\$465,638,694</b>	<b>\$450,774,326</b>	<b>\$488,432,664</b>	<b>\$497,750,196</b>
<b>Ending Cash &amp; Investment Balance</b>	<b>\$156,078,874</b>	<b>\$243,885,731</b>	<b>\$86,263,907</b>	<b>\$278,798,819</b>	<b>\$98,316,657</b>	<b>\$201,861,249</b>	<b>\$100,932,428</b>	<b>\$218,286,611</b>	<b>\$114,154,206</b>	<b>\$261,554,540</b>	<b>\$150,830,976</b>



Aurora Water - Draft Financial Plan (CIP Cash Flow)

**Table 2**  
 Aurora Water  
 Financial Plan - Water Fund: Combined  
 Cash Fund Activity and Balance - All Funds

Description	Projected 2034	Projected 2035	Projected 2036	Projected 2037	Projected 2038	Projected 2039	Projected 2040
<b>Beginning Cash &amp; Investment Balance</b>	<b>\$150,830,976</b>	<b>\$206,933,214</b>	<b>\$183,851,181</b>	<b>\$183,694,578</b>	<b>\$239,169,181</b>	<b>\$303,900,381</b>	<b>\$376,107,353</b>
<b>Sources of Funds</b>							
Operating Revenues	\$264,520,520	\$277,118,423	\$290,330,536	\$304,183,971	\$308,038,968	\$311,941,861	\$315,896,618
Development Revenues	117,278,949	122,864,523	130,576,635	136,844,471	143,274,666	151,407,289	159,570,886
Other Revenues	20,594,556	20,646,686	20,700,645	20,756,496	20,755,622	20,754,722	20,753,794
Debt proceeds	86,072,078	0	0	0	0	0	0
Interest Earnings	1,775,118	1,939,397	1,823,782	2,098,996	2,697,035	3,378,320	4,152,693
<b>Total Sources of Funds</b>	<b>\$490,241,220</b>	<b>\$422,569,029</b>	<b>\$443,431,599</b>	<b>\$463,883,934</b>	<b>\$474,766,291</b>	<b>\$487,482,191</b>	<b>\$500,373,992</b>
<b>Uses of Funds</b>							
Operating and Maintenance Expenses	\$127,251,587	\$131,150,406	\$135,170,664	\$139,316,309	\$143,591,291	\$147,999,685	\$152,545,697
Debt Service Payments - Outstanding Bonds	27,853,864	27,851,958	27,852,799	27,855,174	27,853,106	27,850,754	27,852,685
Debt Service Payments - Projected Issues	94,431,122	94,431,122	94,431,122	94,431,122	94,431,122	94,431,122	94,431,122
Capital Project Costs	183,799,042	192,217,576	186,133,617	146,806,726	144,159,573	144,993,658	142,102,327
Costs of Bond Issuance	803,367	0	0	0	0	0	0
<b>Total Uses of Funds</b>	<b>\$434,138,983</b>	<b>\$445,651,062</b>	<b>\$443,588,202</b>	<b>\$408,409,331</b>	<b>\$410,035,092</b>	<b>\$415,275,218</b>	<b>\$416,931,832</b>
<b>Ending Cash &amp; Investment Balance</b>	<b>\$206,933,214</b>	<b>\$183,851,181</b>	<b>\$183,694,578</b>	<b>\$239,169,181</b>	<b>\$303,900,381</b>	<b>\$376,107,353</b>	<b>\$459,549,514</b>

Aurora Water  
 Financial Plan - Wastewater Fund (Combined):  
 Cash Fund Activity and Balance - All Funds

Description	Budget 2023	Projected 2024	Projected 2025	Projected 2026	Projected 2027	Projected 2028	Projected 2029	Projected 2030	Projected 2031	Projected 2032	Projected 2033	Projected 2034
<b>Beginning Cash &amp; Investment Balance</b>	<b>\$112,781,145</b>	<b>\$105,507,036</b>	<b>\$83,328,286</b>	<b>\$41,759,900</b>	<b>\$63,555,960</b>	<b>\$59,532,929</b>	<b>\$53,914,885</b>	<b>\$72,122,064</b>	<b>\$67,702,745</b>	<b>\$67,770,756</b>	<b>\$69,624,537</b>	<b>\$89,082,602</b>
<b>Sources of Funds</b>												
Operating Revenues	\$82,489,761	\$86,747,604	\$92,032,859	\$97,259,265	\$102,888,250	\$108,849,588	\$115,163,316	\$120,846,131	\$128,068,092	\$134,494,308	\$141,308,840	\$148,536,212
Development Revenues	6,876,169	9,381,240	12,422,990	15,306,267	16,329,703	17,106,198	17,782,083	18,871,141	19,869,644	20,930,811	19,893,406	20,851,589
Other Revenues	2,047,920	1,479,180	1,486,180	1,535,680	991,000	991,000	991,000	991,000	991,000	991,000	991,000	991,000
Debt proceeds	45,469,805	71,050,000	0	40,600,000	0	0	30,450,000	0	0	0	0	0
Interest Earnings	2,429,232	871,710	605,272	498,993	572,661	506,113	549,605	598,487	556,533	545,179	629,666	850,974
<b>Total Sources of Funds</b>	<b>\$139,312,887</b>	<b>\$169,529,733</b>	<b>\$106,547,302</b>	<b>\$155,200,206</b>	<b>\$120,781,614</b>	<b>\$127,452,899</b>	<b>\$164,936,004</b>	<b>\$141,306,759</b>	<b>\$149,485,269</b>	<b>\$156,961,298</b>	<b>\$162,822,912</b>	<b>\$171,229,774</b>
<b>Uses of Funds</b>												
Operating and Maintenance Expenses	\$67,504,166	\$69,988,017	\$73,063,815	\$76,394,896	\$79,934,353	\$83,659,098	\$87,579,632	\$91,706,979	\$96,059,553	\$100,652,319	\$105,492,356	\$110,593,868
Debt Service Payments - Outstanding Bonds	9,361,554	10,408,468	10,428,833	10,409,497	7,276,381	7,276,392	7,276,402	7,276,413	6,288,250	6,287,500	6,290,750	6,287,500
Debt Service Payments - Projected Issues	0	2,842,000	4,361,869	5,985,869	6,854,366	6,854,366	8,072,366	8,723,738	8,723,738	8,723,738	8,723,738	8,723,738
Capital Project Costs	69,850,154	107,419,999	60,261,170	40,013,883	30,739,545	35,281,088	43,350,424	38,018,948	38,345,717	39,443,960	22,858,004	16,139,874
Costs of Bond Issuance	0	1,050,000	0	600,000	0	0	450,000	0	0	0	0	0
<b>Total Uses of Funds</b>	<b>\$146,715,874</b>	<b>\$191,708,483</b>	<b>\$148,115,688</b>	<b>\$133,404,146</b>	<b>\$124,804,645</b>	<b>\$133,070,943</b>	<b>\$146,728,825</b>	<b>\$145,726,078</b>	<b>\$149,417,259</b>	<b>\$155,107,517</b>	<b>\$143,364,848</b>	<b>\$141,744,980</b>
<b>Ending Cash &amp; Investment Balance</b>	<b>\$105,507,036</b>	<b>\$83,328,286</b>	<b>\$41,759,900</b>	<b>\$63,555,960</b>	<b>\$59,532,929</b>	<b>\$53,914,885</b>	<b>\$72,122,064</b>	<b>\$67,702,745</b>	<b>\$67,770,756</b>	<b>\$69,624,537</b>	<b>\$89,082,602</b>	<b>\$118,567,396</b>

Aurora Water  
 Financial Plan - Wastewater Fund (Combined):  
 Cash Fund Activity and Balance - All Funds

Description	Projected 2035	Projected 2036	Projected 2037	Projected 2038	Projected 2039	Projected 2040	Projected 2041	Projected 2042
<b>Beginning Cash &amp; Investment Balance</b>	<b>\$118,567,396</b>	<b>\$147,232,852</b>	<b>\$181,920,596</b>	<b>\$222,994,523</b>	<b>\$274,521,677</b>	<b>\$336,284,830</b>	<b>\$402,972,348</b>	<b>\$475,389,088</b>
<b>Sources of Funds</b>								
Operating Revenues	\$156,205,946	\$164,344,036	\$172,983,576	\$182,155,807	\$191,895,230	\$202,234,562	\$213,216,115	\$224,885,630
Development Revenues	21,704,508	22,660,929	23,581,583	24,597,874	25,630,524	26,636,544	27,898,952	29,013,409
Other Revenues	991,000	991,000	991,000	991,000	991,000	991,000	991,000	991,000
Debt proceeds	0	0	0	0	0	0	0	0
Interest Earnings	1,117,424	1,409,075	1,761,752	2,197,480	2,735,391	3,347,955	4,012,726	4,733,635
<b>Total Sources of Funds</b>	<b>\$180,018,878</b>	<b>\$189,405,040</b>	<b>\$199,317,912</b>	<b>\$209,942,161</b>	<b>\$221,252,145</b>	<b>\$233,210,061</b>	<b>\$246,118,794</b>	<b>\$259,623,674</b>
<b>Uses of Funds</b>								
Operating and Maintenance Expenses	\$115,973,951	\$121,647,497	\$127,633,569	\$133,950,308	\$140,617,304	\$147,653,104	\$155,081,516	\$162,928,573
Debt Service Payments - Outstanding Bonds	6,290,000	6,286,950	6,288,350	6,288,750	6,287,950	6,285,700	6,286,800	6,285,800
Debt Service Payments - Projected Issues	8,723,738	8,723,738	8,723,738	8,723,738	8,723,738	8,723,738	8,723,738	8,723,738
Capital Project Costs	20,365,733	18,059,111	15,598,328	9,452,211	3,860,000	3,860,000	3,610,000	3,550,000
Costs of Bond Issuance	0	0	0	0	0	0	0	0
<b>Total Uses of Funds</b>	<b>\$151,353,422</b>	<b>\$154,717,296</b>	<b>\$158,243,984</b>	<b>\$158,415,007</b>	<b>\$159,488,992</b>	<b>\$166,522,542</b>	<b>\$173,702,054</b>	<b>\$181,488,111</b>
<b>Ending Cash &amp; Investment Balance</b>	<b>\$147,232,852</b>	<b>\$181,920,596</b>	<b>\$222,994,523</b>	<b>\$274,521,677</b>	<b>\$336,284,830</b>	<b>\$402,972,348</b>	<b>\$475,389,088</b>	<b>\$553,524,652</b>

# PNA Attachment 9

2022 Audited Financial Statement

The City of Aurora's annual comprehensive financial report is  
available online at:

[https://www.auroragov.org/city\\_hall/city\\_finances\\_budget/financial\\_management](https://www.auroragov.org/city_hall/city_finances_budget/financial_management)

# PNA Attachment 10

## General Liability Insurance



Human Resources Department  
Risk Management Division  
15151 E. Alameda Parkway, Suite 3500  
Aurora, CO 80012

*Worth Discovering • auroragov.org*

December 6, 2022

Re: City of Aurora Proof of Self-Insurance

To Whom It May Concern:

Please accept this letter as proof that the City of Aurora is self-insured for all lines of “insurance” in accordance with Colorado law. The City of Aurora self-insures its general liability, automobile liability and workers’ compensation insurance coverages and is protected by the limits of the Colorado Governmental Immunity Act (\$424,000 per claimant/\$ 1,195,000 for all claims, all claimants). This insurance covers all acts of employees and officials acting within the course and scope of their employment. The City of Aurora meets all the requirements for self-insurance pursuant to the State of Colorado Insurance Commissioner’s mandate.

I trust that this information will be sufficient to prove that the City self-insures its risk exposures. Please contact me directly at (303) 739-7003 if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Renee Pettinato Mosley".

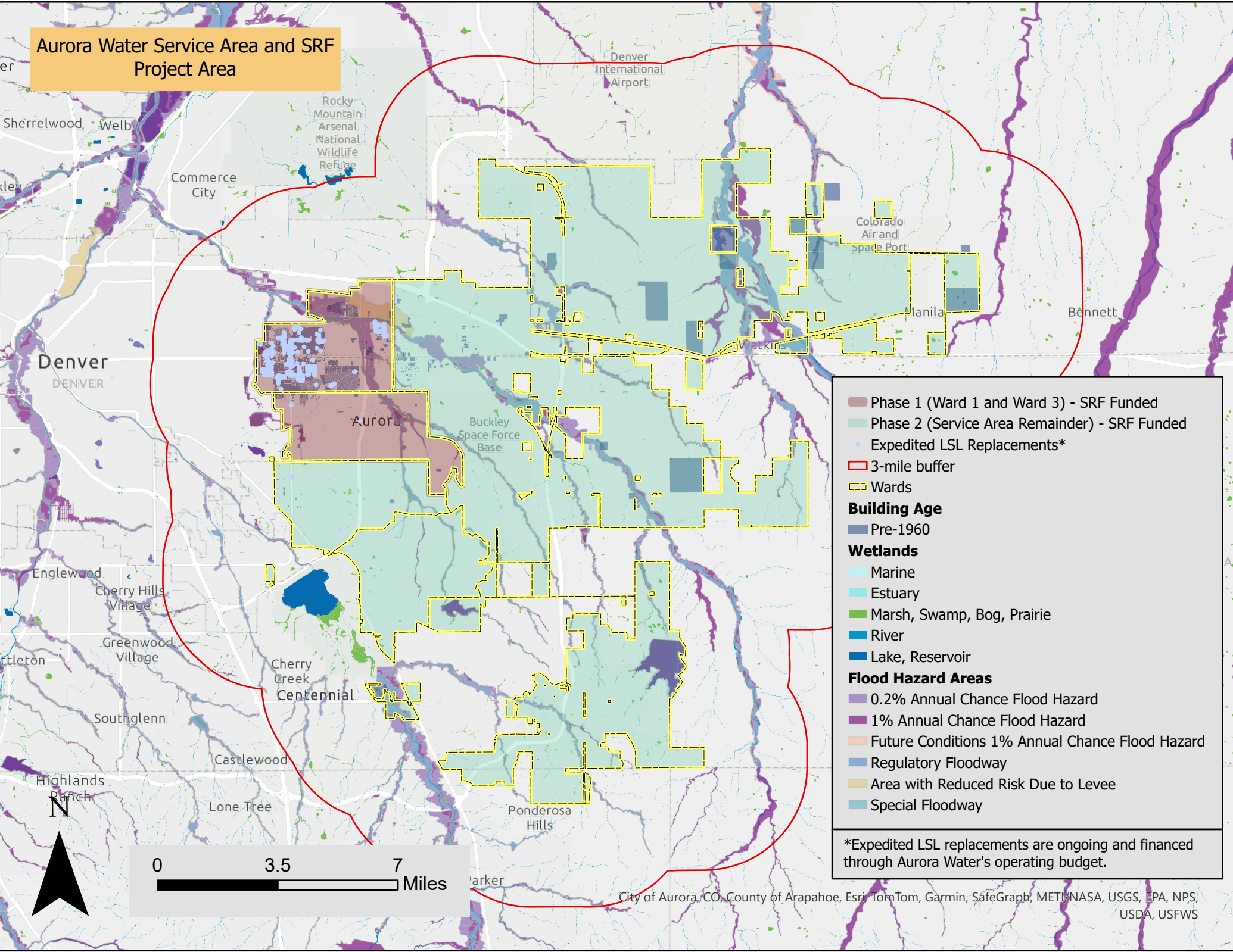
Renee Pettinato Mosley, J.D., CPCU, ARM  
Senior Risk Manager

# PNA Attachment 16

## Project Area Maps

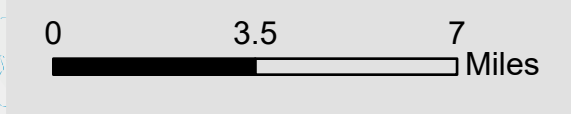


# Aurora Water Service Area and SRF Project Area



- Phase 1 (Ward 1 and Ward 3) - SRF Funded
- Phase 2 (Service Area Remainder) - SRF Funded
- Expedited LSL Replacements\*
- 3-mile buffer
- Wards
- Building Age**
- Pre-1960
- Wetlands**
- Marine
- Estuary
- Marsh, Swamp, Bog, Prairie
- River
- Lake, Reservoir
- Flood Hazard Areas**
- 0.2% Annual Chance Flood Hazard
- 1% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Area with Reduced Risk Due to Levee
- Special Floodway

\*Expedited LSL replacements are ongoing and financed through Aurora Water's operating budget.



Phase 1 Project Area  
Ward 1 and Ward 3

- Phase 1 (Ward 1 and Ward 3) - SRF Funded
- Phase 2 (Service Area Remainder) - SRF Funded
- Expedited LSL Replacements\*
- Water Pipeline
- Wards
- Building Age**
- Pre-1960
- NRHP Sites
- Wetlands**
- Marine
- Estuary
- Marsh, Swamp, Bog, Prairie
- River
- Lake, Reservoir
- Flood Hazard Areas**
- 0.2% Annual Chance Flood Hazard
- 1% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Area with Reduced Risk Due to Levee
- Special Floodway

\*Expedited LSL replacements are ongoing and financed through Aurora Water's operating budget.

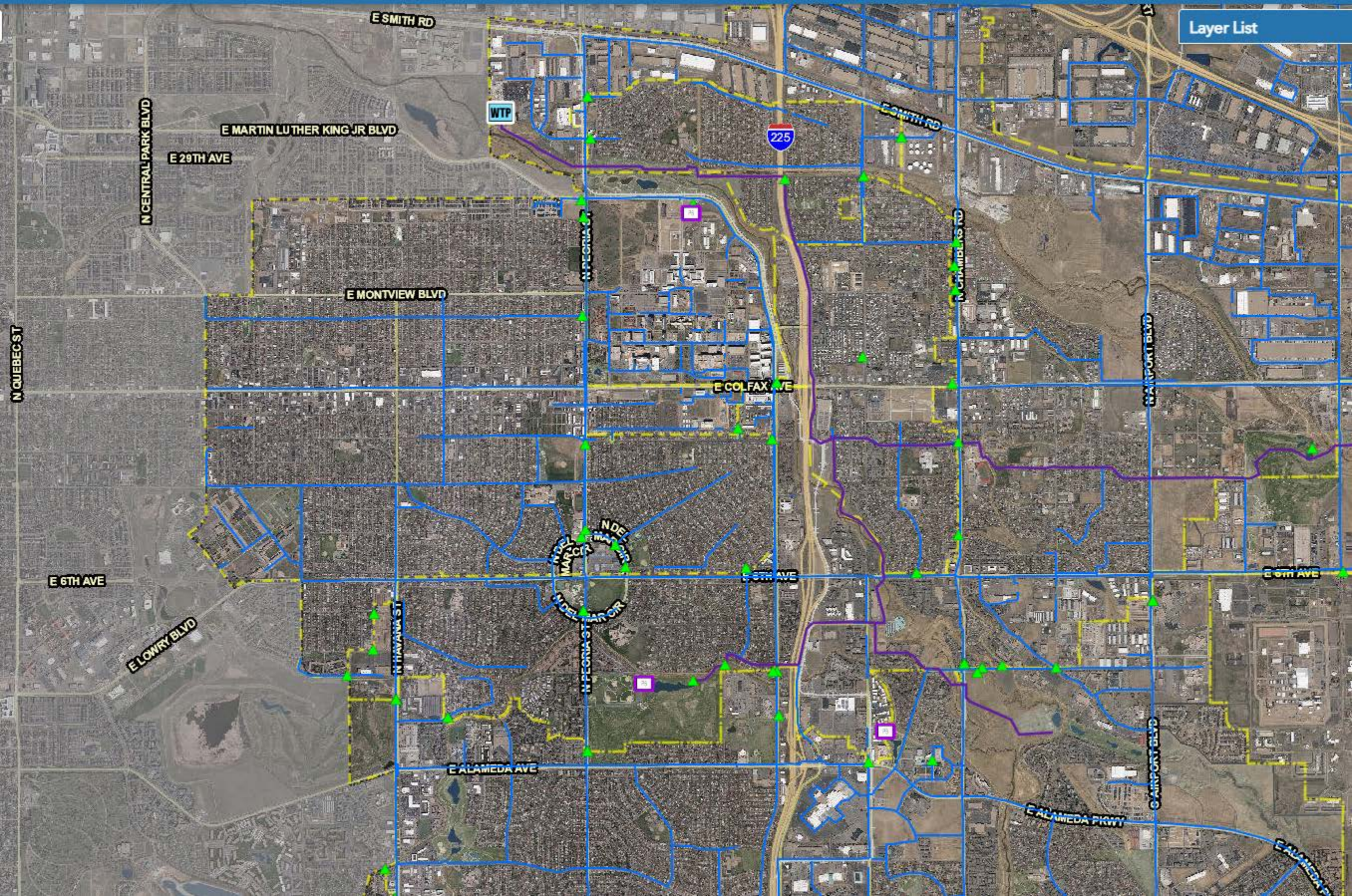


# PNA Attachment 20

## Distribution System Map



Layer List





# PNA Attachment 22

## Environmental Checklist for Selected Alternative

## ENVIRONMENTAL CHECKLIST

Use the Discussion and References space at the end of each section to document your responses. For example, explain how you determined the level of impact and document the reasoning if checking PA (possible adverse) for any resource. Attach additional pages if necessary.

1. Brief project description, including identification of selected alternative:
2. Describe if the project will improve or maintain water quality, and if the project addresses a TMDL, and/or Watershed Management Plan.
3. Provide latitude and longitude of the proposed project (if a transmission / distribution / collection line identify the center point not the whole line):
4. Provide discharge (WW) or source (DW) information: N/A
5. Provide NPDES/PWSID number:
6. Provide primary waterbody name and waterbody ID, secondary name (if available), and State designated surface water use:

7. Did your analysis consider how this project impacts community planning efforts in other areas (i.e. transportation, housing, etc.)?

Y = Yes            N = No            PA = Possible Adverse

**1. Physical Aspects - Topography, Geology and Soils**

- Y \_\_\_ N \_\_\_ PA \_\_\_ a.     Are there physical conditions (e.g., steep slopes, shrink-swells soils, etc.) that might be adversely affected by or might affect construction of the facilities?
- Y \_\_\_ N \_\_\_ PA \_\_\_ b.     Are there similar limiting physical conditions in the planning area that might make development unsuitable?
- Y \_\_\_ N \_\_\_ PA \_\_\_ c.     Are there any unusual or unique geological features that might be affected?
- Y \_\_\_ N \_\_\_ PA \_\_\_ d.     Are there any hazardous areas (slides, faults, etc.) that might affect construction or development?

Discussion and References:

**2. Climate**

- Y \_\_\_ N \_\_\_ PA \_\_\_ a.     Are there any unusual or special meteorological constraints in the planning area that might result in an air quality problem?
- Y \_\_\_ N \_\_\_ PA \_\_\_ b.     Are there any unusual or special meteorological constraints in the planning area that might affect the feasibility of the proposed alternative?

Discussion and References:

**3. Population**

- Y \_\_\_ N \_\_\_ PA \_\_\_ a.     Are the proposed growth rates excessive (exceeding State projections, greater than 6% per annum for the 20 year planning period)?
- Y \_\_\_ N \_\_\_ PA \_\_\_ b.     Will additional growth be induced or growth in new areas encouraged as a result of facilities construction?
- Y \_\_\_ N \_\_\_ PA \_\_\_ c.     Will the facilities serve areas which are largely undeveloped areas at present?

Discussion and References:

**4. Housing, Industrial and Commercial Development and Utilities**

- Y \_\_\_ N \_\_\_ PA \_\_\_ a.     Will existing homes or business be displaced as a result of construction of this property?
- Y \_\_\_ N \_\_\_ PA \_\_\_ b.     Will new housing serviced by this facility affect existing facilities, transportation patterns, environmentally sensitive areas, or be in special hazard or danger zones?
- Y \_\_\_ N \_\_\_ PA \_\_\_ c.     Will new housing create strains on other utilities and services - policies, power, water supply, schools, hospital care, etc.?

Discussion and References:

**5. Economics and Social Profile**

Y \_\_\_ N \_\_\_ PA \_\_\_ a. Will certain landowners benefit substantially from the development of land due to location and size of the facilities?

Y \_\_\_ N \_\_\_ PA \_\_\_ b. Will the facilities adversely affect land values?

Y \_\_\_ N \_\_\_ PA \_\_\_ c. Are any poor or disadvantaged groups especially affected by this project?

Discussion and References:

**6. Land Use**

Y \_\_\_ N \_\_\_ PA \_\_\_ a. Will projected growth defeat the purpose of local land use controls (if any)?

Y \_\_\_ N \_\_\_ PA \_\_\_ b. Is the location of the facilities incompatible with local land use plans?

Y \_\_\_ N \_\_\_ PA \_\_\_ c. Will inhabited areas be adversely impacted by the project site?

Y \_\_\_ N \_\_\_ PA \_\_\_ d. Will new development have adverse effects on older existing land uses (agriculture, forest land, etc.)?

Y \_\_\_ N \_\_\_ PA \_\_\_ e. Will this project contribute to changes in land use in association with recreation (skiing, parks, etc.), mining or other large industrial or energy developments?

Discussion and References:

**7. Floodplain Development**

Y \_\_\_ N \_\_\_ PA \_\_\_ a. Does the planning area contain 100 year floodplains?  
If yes -

Y \_\_\_ N \_\_\_ PA \_\_\_ b. Will the project be constructed in a 100 year floodplain?

Y \_\_\_ N \_\_\_ PA \_\_\_ c. Will the project serve direct or indirect development in a 100 year floodplain anywhere in the planning area?

Discussion and References:

**8. Wetlands**

Y \_\_\_ N \_\_\_ PA \_\_\_ a. Does the planning area contain wetlands as defined by the U.S. Fish and Wildlife Service?  
If yes -

Y \_\_\_ N \_\_\_ PA \_\_\_ b. Will any structure of the facility be located in wetlands?

Y \_\_\_ N \_\_\_ PA \_\_\_ c. Will the project serve growth and development which will directly or indirectly affect wetlands?

Discussion and References:

**9. Wild and Scenic Rivers**

Y \_\_\_ N \_\_\_ PA \_\_\_ a. Does the planning area contain a designated or proposed wild and scenic river?  
If yes -

Y \_\_\_ N \_\_\_ PA \_\_\_ b. Will the project be constructed near the river?



- Y \_\_\_ N \_\_\_ PA \_\_\_ c. Will projected growth and development take place contiguous to or upstream from the river segment?
- Y \_\_\_ N \_\_\_ PA \_\_\_ d. Will the river segment be used for disposal of effluent?
- Discussion and References:

#### 10. Cultural Resources (Archeological/Historical)

- Y \_\_\_ N \_\_\_ PA \_\_\_ a. Are there any properties (historic, architectural, and archeological) in the planning area which are listed on or eligible for listing on the National Register of Historic Places?
- If yes -
- Y \_\_\_ N \_\_\_ PA \_\_\_ b. Will the project have direct or indirect adverse impacts on any listed or eligible property?

Discussion and References:

#### 11. Flora and Fauna (including endangered species)

- Y \_\_\_ N \_\_\_ PA \_\_\_ a. Are there any designated threatened or endangered species or their habitat in the planning area?
- Y \_\_\_ N \_\_\_ PA \_\_\_ b. Will the project have direct or indirect adverse impacts on any such designated species?
- Y \_\_\_ N \_\_\_ PA \_\_\_ c. Will the project have direct or indirect adverse impacts on fish, wildlife or their habitat including migratory routes, wintering or calving areas?
- Y \_\_\_ N \_\_\_ PA \_\_\_ d. Does the planning area include a sensitive habitat area designed by a local, State or Federal wildlife agency?

Discussion and References:

#### 12. Recreation and Open Space

- Y \_\_\_ N \_\_\_ PA \_\_\_ a. Will the project eliminate or modify recreational open space, parks or areas of recognized scenic or recreational value?
- Y \_\_\_ N \_\_\_ PA \_\_\_ b. Is it feasible to combine the project with parks, bicycle paths, hiking trails, waterway access and other recreational uses?

Discussion and References:

#### 13. Agricultural Lands

- Y \_\_\_ N \_\_\_ PA \_\_\_ a. Does the planning area contain any environmentally significant agricultural lands (prime, unique, statewide importance, local importance, etc.) as defined in the EPA Policy to Protect Environmentally Significant Agricultural Lands dated September 8, 1978?
- Y \_\_\_ N \_\_\_ PA \_\_\_ b. Will the project directly or indirectly encourage the irreversible conversion of Environmentally Significant Agricultural Lands to uses which result in the loss of these lands as an environmental or essential food production resource?

Discussion and References:

#### 14. Air Quality

- Y \_\_\_ N \_\_\_ PA \_\_\_ a. Are there any direct air emissions from the project (e.g., odor controls, sludge incinerator) which do not meet Federal and State emission standards contained in the State Air Quality Implementation Plan (SIP)?
- Y \_\_\_ N \_\_\_ PA \_\_\_ b. Is the project service area located in an area without an approved or conditionally approved SIP?
- Y \_\_\_ N \_\_\_ PA \_\_\_ c. Is the increased capacity of the project greater than 1 mgd?
- Y \_\_\_ N \_\_\_ PA \_\_\_ d. Do the population projections used in the facilities plan exceed the State or area wide projections in the SIP by more than 5%?
- Y \_\_\_ N \_\_\_ PA \_\_\_ e. Does the project conform to the requirements of the SIP? (See EPA regulations under Section 316 of the Clean Air Act.)
- Y \_\_\_ N \_\_\_ PA \_\_\_ f. Is the project inconsistent with the SIP of an adjoining State that may be impacted by the Project?
- Y \_\_\_ N \_\_\_ PA \_\_\_ g. Does the project violate national ambient Air Quality Standards in an attainment or unclassified area?
- Y \_\_\_ N \_\_\_ PA \_\_\_ h. Will the facilities create an odor nuisance problem?

Discussion and References:

#### 15. Water Quality and Quantity (Surface/Groundwater)

- Y \_\_\_ N \_\_\_ PA \_\_\_ a. Are present stream classifications in the receiving stream being challenged as too low to protect present or recent uses?
- Y \_\_\_ N \_\_\_ PA \_\_\_ b. Is there a substantial risk that the proposed discharge will not meet existing stream standards or will not be of sufficient quality to protect present or recent stream uses?
- Y \_\_\_ N \_\_\_ PA \_\_\_ c. Will construction of the project and development to be served by the project result in non-point water quality problems (sedimentation, urban stormwater, etc.)?
- Y \_\_\_ N \_\_\_ PA \_\_\_ d. Will water rights be adversely affected by the project?
- Y \_\_\_ N \_\_\_ PA \_\_\_ e. Will the project cause a significant amount of water to be transferred from one sub-basin to another (relative to the 7-day, 10 year flow of the diverted basin)?
- Y \_\_\_ N \_\_\_ PA \_\_\_ f. Will stream habitat be affected as a result of the change in flow or stream bank modification?
- Y \_\_\_ N \_\_\_ PA \_\_\_ g. Are stream conditions needed for deciding upon the required limitations inadequately specified in the 208 Plan? If so, have the wasteload allocations calculations been performed and approved by the State and EPA?
- Y \_\_\_ N \_\_\_ PA \_\_\_ h. Is an Antidegradation Review required?
- Y \_\_\_ N \_\_\_ PA \_\_\_ i. Will the project adversely affect the quantity or quality of a groundwater resource?
- Y \_\_\_ N \_\_\_ PA \_\_\_ j. Does the project adversely affect an aquifer used as a potable drinking water supply?
- Y \_\_\_ N \_\_\_ PA \_\_\_ k. Are there additional cost effective water conservation measures that could be adopted by community to reduce sewage generation?

Discussion and References:

#### 16. Public Health

- Y \_\_\_ N \_\_\_ PA \_\_\_ a. Will there be adverse direct or indirect noise impacts from the project?
- Y \_\_\_ N \_\_\_ PA \_\_\_ b. Will there be a vector problem (e.g., mosquito) from the project?

Y \_\_\_ N \_\_\_ PA \_\_\_ c. Will there be any unique public health problems as a result of the project (e.g., increased disease risks)?

Discussion and References:

### 17. Solid Waste (Sludge Management)

Y \_\_\_ N \_\_\_ PA \_\_\_ a. Will sludge disposal occur in an area with inadequate sanitary landfills or on land unsuitable for land application?

Y \_\_\_ N \_\_\_ PA \_\_\_ b. Are there special problems with the sludge that makes disposal difficult (hazardous, difficult to treat)?

Y \_\_\_ N \_\_\_ PA \_\_\_ c. Is the technology selected for sludge disposal controversial?

Discussion and References:

### 18. Energy

Y \_\_\_ N \_\_\_ PA \_\_\_ a. Are there additional cost effective measures to reduce energy consumption or increase energy recovery which could be included in this project?

Discussion and References:

### 19. Land Application

Y \_\_\_ N \_\_\_ PA \_\_\_ a. Has a new or unproven technique been selected?

Y \_\_\_ N \_\_\_ PA \_\_\_ b. Is there considerable public controversy about the project?

Y \_\_\_ N \_\_\_ PA \_\_\_ c. Will the project require additional water rights or impact existing water Rights?

Y \_\_\_ N \_\_\_ PA \_\_\_ d. Is the project multi-purpose?

Discussion and References:

### 20. Regionalization

Y \_\_\_ N \_\_\_ PA \_\_\_ a. Are there jurisdictional disputes or controversy over the project?

Y \_\_\_ N \_\_\_ PA \_\_\_ b. Is conformance with the 208 plan in question?

Y \_\_\_ N \_\_\_ PA \_\_\_ c. Is the proliferation of small treatment plants and septic systems creating a significant health problem?

Y \_\_\_ N \_\_\_ PA \_\_\_ d. Have inter-jurisdictional agreements been signed?

Discussion and References:

### 21. Public Participation

Y \_\_\_ N \_\_\_ PA \_\_\_ a. Is there a substantial level of public controversy?

Y \_\_\_ N \_\_\_ PA \_\_\_ b. Is there adequate evidence of public participation in the project?

Discussion and References:

22. Environmental Laws

Y \_\_\_ N \_\_\_ PA \_\_\_ a. Does the project threaten to violate any State, Federal or local law or requirement imposed to protect the environment?

Discussion and References:

Prepared By: \_\_\_\_\_  
Name, Title, and Affiliation

Date: \_\_\_\_\_



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