CITY OF JULIAETTA, IDAHO

Water Distribution Facility Plan

October 2019

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STATE OF IDAHO
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1 EXECUTIVE SUMMARY

1.1 Introduction and Background

This Water Facility Planning Study (DEQ evaluates the existing City of Juliaetta water distribution system, water supply, storage and surface water treatment plant to determine the current deficiencies and future needs to meet the estimated population growth in water demand. This report reviews the existing physical conditions of the City and surrounding area and the current potable water system.

The City of Juliaetta (City) is striving to provide citizens with better municipal services by analyzing their water distribution system. The project alternatives are meant to provide system wide distribution improvements, evaluating the existing water storage facility, and providing adequate fire protection.

It is the intent of this report to provide the city with the information needed to properly inform its citizens of their water system needs and the costs associated with each option. Many hours have been spent in preparing and exploring various project options and their costs. The Table of Contents provides a detailed list of the information provided in the report. Copies of the reference materials are included in the report appendices.

1.2 Existing Water System

The City owns and operates a surface water treatment plant (SWTP) supplied by the Potlatch River along Highway 3 in Latah County, Idaho. The surface water source is supported by two additional ground water wells (5 & 9) and one spring source (Cox Springs). The public water system supplies drinking water to approximately 595 residents. The City also has three storage tanks throughout the system to maintain system pressure and meet water system demand needs. See Appendix A for a map of the existing water distribution system.

On February 4, 2018, Juliaetta's water system lost pressure and an estimated 300,000 gallons of water, due to a water main break within the Potlatch River. The break was caused by flood-stage flows that crested at 8,490 cfs the day of the break. The broken main line connected Well No. 5 and five homes on the west side of the Potlatch River to the City of Juliaetta proper on the east side.

The City received an Emergency Community Water Assistance Grant (ECWAG) to repair and upgrade the SWTP and infiltration gallery. The City also received a grant from the United States Army Corps of Engineers (USACE) to replace the broken line in the Potlatch River.

1.3 Proposed Improvements

The City of Juliaetta has 3 main problems with their system that they intend to correct with the proposed improvements.

1. The areas with old 2”-4” and dead-end pipelines which restrict the overall flow capabilities. In the fire flow model runs, those areas were often where the minimum system pressure of 20 psi for the system were located. The proposed projects will address this issue. Therefore, the existing 2” to 4” mainlines will be increased to 6” and dead-end lines looped, making a larger volume of water available in areas they serve.
2. Water transmission lines that service fire hydrant systems are currently required to be at least 6-inches in diameter. There may be some lines within the system that fit this category. Any fire hydrant laterals that are 5 inches or smaller will be replaced with a 6-inch lateral and a new fire hydrant.
3. Reconnection of the mainline across the potlatch River to Well #5. This project is planned to be constructed in Spring of 2020.

1.4 Project Funding

The city intends to partner with Idaho Department of Environmental Quality (IDEQ), USDA Rural Development and Community Development Block Grant programs to take advantage of the available loan and grant options and to make any proposed project affordable to the citizens of Juliaetta. If a large-scale project is necessary, the City Council will present the options to the Citizens in the form of a water bond election. Item #3 in section 1.3 is being financed with a Grant from the US Army Corps of Engineers (75%) with City funds paying the remaining portion (25% match).

2 Existing System

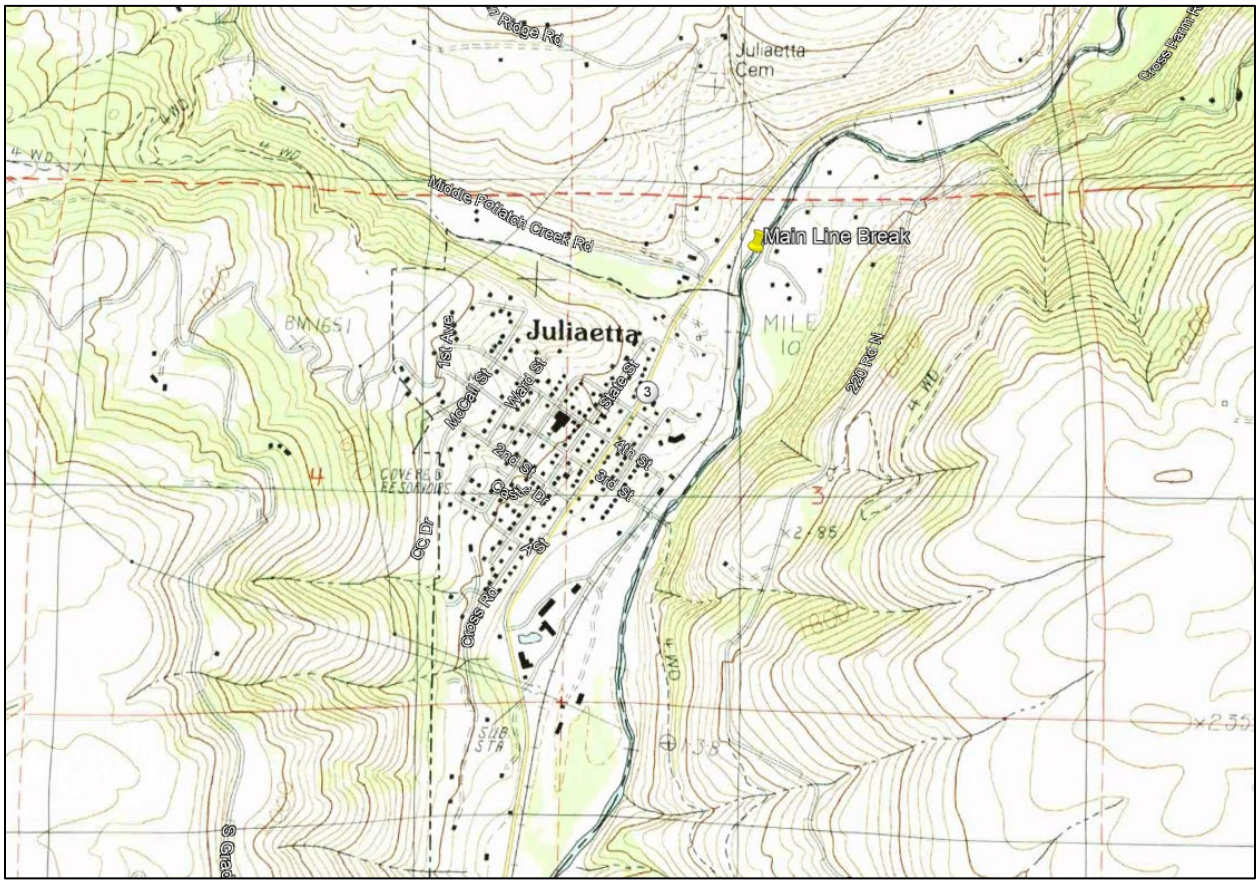
2.1 Site Environmental Features

The City of Juliaetta is located approximately 23 miles northeast of Lewiston, Idaho along State Highway 3.

- Section 3 of Township 37 North, Range 3 West
- Latitude: 46°35'2.86"N, Longitude: 116°42'3.60"W

The project location and area topography are depicted in Figure 2-1 on the most recent USGS topographic map (USGS, 1990).

Figure 2-1: USGS Topographic Map



The area of potential effect (APE) includes approximately 200 acres in Latah County, see Appendix B. The APE encompasses public (City owned lots, rights-of-way, etc.) and private property.

2.2 Existing Environmental Conditions

2.2.1 Physiography, Topography, Geology & Soils

Juliaetta is located on the eastern edge of the Palouse region. The City is in a narrow valley, carved in to the Columbia River Basalt complex by the Potlatch River. Granitic rock is found in varying depths beneath the basalt and has historically inhibited development of groundwater wells. Within the APE, the NRCS Web Soil Survey reports that the soils are typical of floodplain material.

2.2.2 Surface and Groundwater

In addition to the Potlatch River, multiple springs daylight along the western valley slope due to being directly down gradient of the Palouse farming region. Most of the springs go dry during the hot summer months while a few remain perineal. Groundwater within the area is located within granite sources and historically wells decline in supply over time due to this factor. The region has seen a trend of increasing nitrates, likely due to upgradient farming activities. The City's disconnected Well No. 5 has recently tested above the maximum contaminant limit (MCL) for Nitrate although it is managed operationally by continually wasting a small amount of water. No other groundwater contaminants of concern have been detected.

2.2.3 Fauna, Flora and Natural Communities

The US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) was utilized to identify threatened, endangered, proposed and candidate species as well proposed or final designated critical habitats. The only identified species was the threatened Spalding's Catchfly, a flowering plant most often found in open, moist grasslands. The proposed project location does not consist of moist grasslands or any other likely habitat for the species. No other species or critical habitats were identified by the IPaC report.

2.2.4 Housing, Industrial and Commercial Development

The City is a small rural community with a winery, library, post office, elementary school, and gas station. The only industry is the Stella Jones Pole Yard at the south entrance of the community. The majority of the system's EDUs are residential, located on the western side of the Potlatch River. The proposed water improvements project <u>does not</u> directly benefit any proposed development. Any proposed project will, however, allow for infill development and platted lots within the existing city limits. When new residential or commercial development occurs in the city, a new and separate water system, including new wells, will be built to support that development

2.2.5 Cultural Resources

The APE includes two properties listed on the National Register of Historic Places: Abram A. Adams Home/The Castle Museum (191 State Street) and Bank of Juliaetta (301 Main Street). Water line work will take place within existing rights-of-way, so these establishments will not be permanently impacted by the proposed work. The APE is not within the boundary of the nearby Nez Perce Indian Reservation.

2.2.6 Utility Use

The City owns and operates the public water and wastewater systems that serve all residents and businesses. Avista Power company provides electrical service to the City.

2.2.7 Floodplains

Majority of the APE is defined as Zone C, which is an area of minimal flooding. Portions of the APE along the Potlatch River are defined as Zones B, A4, and A5. Zone B is an area between limits of the 100 and 500-year floods. Zones A4 and A5 are areas of 100-year floodplain with a base flood elevation to be determined. Since there will be no structures involved with this project, flood elevations will be of no concern.

The referenced Flood Insurance Rate Map (FIRM) issued by FEMA in 1980 is included as Appendix B.

2.2.8 Wetlands

Since the project is upland, no wetlands along the Potlatch River will be impacted. Best management practices will be used during project construction to minimize/eliminate erosion and runoff from construction sites into the Potlatch River. See Appendix C for the US Fish and Wildlife Service National Wetlands Inventory map for the area.

2.2.9 Wild and Scenic Rivers

No Wild or Scenic Rivers are located within or near the APE.

2.2.10 Public Health and Water Quality Considerations

The proposed project is intended to improve the City's water distribution system. The city does have concerns of substandard water pressure (under 20 psi) during the summer months or during fire events that may create backflow and cross contamination issues for the city. Many old water lines will be replaced with new and larger pipes. Updating pipe materials will have a positive impact on public health and water quality.

During peak demands of the summer months, domestic usage consumes a significant amount of the system's available water. The city must continue to operate a storage facility capable of providing, at minimum, a short-term basic firefighting supply. Installing larger pipes within the distribution system will improve fire flow conditions to the City's fire hydrants.

2.2.11 Prime Agricultural Farmlands Protection

There are some portions of the APE considered to be farmland of statewide importance, but since the project will consist of linear construction in or along existing rights-of-ways or roadways, no land feasible for farming will be affected. A map produced by the NRCS Web Soil Survey is provided in Appendix D.

2.2.12 Proximity to a Sole Source Aquifer

The APE is not within a sole source aquifer boundary. The Lewiston Basin Aquifer Area is approximately three miles southwest of the APE.

The following excerpt from the Sanitary Survey report dated February 15, 2018

> *Well #5 (Tag #E0005256) is located across the river and inside of the pump house. The well house is accessed through a private driveway, and the well lot is located within 50 feet of the nearest property line (deficiency #2). Well #5 was constructed in 1974, which is before wells were required to be on a separate well lot. Well #5 has triggered quarterly nitrate monitoring because its most recent result was above half of the maximum contaminant limit of 10 milligrams per liter. Additionally, Well #5 is on annual picloram monitoring. Picloram is a synthetic organic compound commonly found in herbicides. DEQ recommends assessing the homeowner's land management practices to determine the source of contamination (see recommendation #1).*
>
> *The well casing extends at least 12 inches above ground level. The well was originally drilled to a depth of 758 below ground surface. The sanitary well cap is vented and in good repair. The well is cased from one foot above the ground surface to 223 feet below the ground surface. The well discharge pipe passes through the well cap, a flow control valve serving as a check valve, a flow meter, a pressure gauge, smooth nosed sample tap, and isolation valves.*
>
> *Well #9 (Tag #E0005258) is located on the southeast side of McCall Street, between 2nd Street and 3rd Street, and inside of the pump house. The pump house is next to a street and within 50 feet of the nearest property line. Well #9 was constructed in 1987 (deficiency #1). The well was originally drilled to a depth of 330 below ground surface. The well casing extends at least 12 inches above ground level. The sanitary well cap is vented and in good repair. The well is cased from one foot above the ground surface to an unknown depth with telescoping 6-inch and 10-inch casing.*
>
> *Inactive wells were not inspected during the survey. Descriptive information about Well #1, #2, #3, #4, #6, #7 and #8 can be found in the 2015 sanitary survey (2015ACA2398). According to the 2015 survey, Wells #2, #4 and #7 are disconnected from the distribution system. Well #3 is disconnected and it is designated as an emergency source. Additionally, Wells #6 and #8 not operational, disconnected and need to be properly abandoned according to the Idaho Department of Water Resources requirements (see deficiency #3).*

2.2.13 Land Use and Development

The APE encompasses the greater Juliaetta area, which is comprised primarily of single-family residences with commercial uses located primarily along Highway 3 through the community. Development and growth potential within the planning area is expected to be infill growth within the current City limits.

2.2.14 Precipitation, Temperature, and Prevailing Winds

Rainfall averages 27 inches per year, while snowfall is minimal and typically melts quickly. The average high temperature is 72°F in July, while average low temperature is 32.5°F in December. Most precipitation falls during the colder months of the year, as summers are hot and dry.

2.2.15 Air Quality and Noise

The project planning area is not within an IDEQ-defined area of concern for air quality. Due the proximity of forested land, smoke from regional forest fires can degrade air quality during the summer months. The rural location of the project planning area lends itself to relatively low noise levels. Most noise is generated by automobile and truck traffic on Highway 3.

2.2.16 Energy Production and Consumption

The proposed improvements will reduce head loss from the wells and SWTP to the reservoirs, which will reduce pump energy consumption. No energy is produced by the City.

2.2.17 Socioeconomic Profile and Population

The area is considered a bedroom community to nearby Lewiston and Moscow where many people commute for work. Employment sources for Juliaetta residents are highly variable with no single economic driver within the community. The 2012-2015 American Community Survey (ACS) estimates the median household income of Juliaetta as $35,313. The most recent survey estimates that approximately 16.9 percent of families had income below the poverty level. The racial and ethnic characteristics of Juliaetta are primarily Caucasian with approximately 2.5% minority population reported.

All the citizens of Juliaetta will be affected by the proposed project due to increased utility fees to pay for the needed improvements. No individual group of people disadvantaged or otherwise will be affected more than any other group.

2.3 Existing Water System

2.3.1 Source(s)

The primary potable water source comes from surface water collected from the Potlatch River. The initial water system was constructed in the 1930's.

The majority of the groundwater wells are no longer in service due to depleting aquifer levels. Well #5, and #9 are the only active wells connected to the system at this time. These wells draw from a lower confined aquifer below the clay. Normally the clay offers protection to the lower aquifer from surficial activities however contaminants (nitrates) related to such activities have been detected in the well #5 at an increasing rate over the last 3 years

The City of Juliaetta has nine active water rights, however the City is only utilizing 4 sources currently. Table 2-1 summarizes each of the City water rights.

Table 2-1- Water Rights Information

WATER RIGHTS						
Sequence Number	**Source.**	**Use**	**Basis**	**Date**	**Rate (CFS)**	**Rate (GPM)**
86-4088	Ground Water	Municipal	Decreed	1960	0.13	48.6
86-7043	Ground Water	Municipal	Decreed	1974	0.18	67.3
86-7096	Ground Water		Decreed	1979	0.13	48.6
86-7100	Ground Water	Municipal	Decreed	1979	.27	100.9
86-7227	Ground Water	Municipal	Decreed	1987	.22	82.2
86-7291	Potlatch River	Municipal	License	1991	1.0	373.7
86-7319	Ground Water	Irrigation	License	1992	.11	41.1
86-10244	Spring	Municipal	Decreed	1930	.02	7.5
86-10245	Spring	Municipal	Decreed	1930	.03	11.2
					2.09	781.1

(1) Water Rights information taken from Idaho Department of Water Resources Website on October 7,2019

The current water system is served by four active sources of water. Table 2-2 summarizes each of the sources and their capacities

Table 2-2: Water Supply Information

Water Supply Information	
Source	**Capacity (avg gpm)**
Surface Water Treatment Plant	175 (max 350 gpm)
Cox Spring	15
Well #5	12-16 (varies)
Well #9	5-10 (varies)

3 summarizes the monthly flows from each of the four water sources for the period of May 2017 through April 2018.

Table 2-3: Total Source Monthly Water Flows

Source Monthly Water Flows (Gallons)					
Month	**Well #5**	**Well #9**	**SWTP**	**Cox Spring**	**Total Monthly Flow**
May (2017)	250,620	320,120	592,400	930,680	2,093,820
June (2017	201,200	232,380	2,790,000	800,000	4,023,580

July (2017)	176,510	265,730	319,300	664,880	1,426,420
August (2017)	225,910	326,930	459,400	789,210	1,801,450
September (2017)	193,910	224,395	1,621,000	610,745	2,650,050
October (2017)	193,910	224,395	1,621,000	610,745	2,650,050
November (2017)	172,940	174,190	409,000	431,330	1,187,460
December (2017)	171,860	147,770	638,000	582,150	1,539,780
January (2018)	81,690	154,580	693,000	494,150	1,423,420
February (2018)	25,380(1)	90,210	74,484	746,910	936,984
March (2018)	33,840	90,200	96,329	739,360	959,729
April (2018)	29,280	151,080	102,488	739,360	1,022,208
Total	**1,757,050**	**2,401,980**	**9,416,401**	**8,139,520**	**21,714,951**

(2) Well No. 5 was taken offline and the pump was replaced in early February. During that same period the water main in the river was damaged and Well No. 5 was isolated from the system and is still only serving five homes.

The total yearly flow from the four sources results in an average day demand of 59,500 gpd which equates to a flow rate of 42 gpm. The average maximum day peaking coefficient (maximum day/average day) is 2.2. Using this peaking factor, the maximum day demand is estimated to be 130,900 gpd or 92 gpm. A peaking factor of 2.0 times the maximum daily demand is typically used to calculate the peak hourly demand. Using this peaking factor, the current peak hourly demand in Juliaetta was calculated to be 184 gpm. Table 2-4 compares supply capacity to current water demands.

Table 2-4: Total Water Source Capacity vs Demands

Water Source Capacity vs Demands						
Average Day Demand (gpm)	**Maximum Day Demand (gpm)**	**Well #5 (gpm)**	**Well #9 (gpm)**	**Cox Spring Capacity (gpm)**	**SWTP Capacity (gpm)**	**Total Supply Capacity (gpm)**
42	92	12	5	15	175	207

With all sources available, the system demands can easily be met. However, as discussed above, the SWTP is frequently offline in the spring. Table 2-5 compares supply capacity to current water demands with the SWTP offline.

Table 2-5: Water Source Capacity vs Demands with SWTP Offline

Water Source Capacity vs Demands w/ SWTP Offline					
Average Day Demand (gpm)	**Maximum Day Demand (gpm)**	**Well #5 (gpm)**	**Well #9 (gpm)**	**Cox Spring Capacity (gpm)**	**Total Supply Capacity (gpm)**
42	92	12	5	15	32

As can be seen, the source capacity is approximately 75% of the average day demand, assuming Well No. 5 is connected to the system. Without this well, the source capacity would be 20 gpm or less during certain periods in the spring, and unable to meet the basic needs of the water users in Juliaetta.

Current improvements to the SWTP are being made that will allow the plant to stay online year-round to meet system demands.

2.3.2 Treatment System

The City's surface water treatment plant (SWTP) is the primary water supply for the system and is a reliable source of water during most of the year. The plant is often shut down during runoff periods when the turbidity in the river increases. In the peak summer months, the low river flow over the intake requires supplementary operational measures to acquire sufficient surface water. In an effort to determine if the reliability of the treatment plant could be improved, an Engineer from Great West with experience in surface water treatment visited the plant on June 20, 2018 and completed a thorough evaluation.

The source of the water is the Potlatch River and the SWTP is located adjacent to the river. There are two methods for water to flow from the river into the wet well. The first, via the infiltration gallery which is installed along the bank of the river and is approximately 200 ft long according to the 1995 record drawings. The infiltration gallery consists of 16-inch diameter perforated HDPE pipe installed in an aggregate bed, covered by backfill and a geotextile fabric to prevent it from clogging with fines. The second method of water flow is via the intake which is located about 10 to 15 feet away from the bank of the river.

The infiltration gallery was installed at the same time as the SWTP, in 1993, and appears to be functioning well, as long as the river level is high enough. As the water level in the river drops in late summer/early fall, insufficient water enters the infiltration gallery. At that point, it is necessary to open the intake itself which is set down in the river. The intake provides sufficient water if the river channel is over the intake. Depending on the channel location, the operators have had to place a temporary pump in the active channel to pump water to the intake location if water is not flowing over the intake. The operator noted that the when the intake is in use the water has a "muddy" flavor. Considering the lack of any filtration prior to water entering the wet well when the intake is being used, this is an expected result.

The infiltration gallery is inevitably losing capacity due to its age; over time the geotextile and the aggregate accumulate fines and some capacity would be lost.

The infiltration gallery currently gravity flows into a wet well adjacent to the treatment plant. The water is then pumped from the wet well into one of the two treatment units. Alum and a polymer are injected into the raw water entering the building, to facilitate the treatment processes. Currently, operators are limited to utilize only one of the treatment units at a time. Also, the plant is only run when an operator is on duty; although there are controls in place, they prefer to check on the plant on a regular basis. The controls are outdated, and

insufficient alarms and auto shutdowns exist. On more than one occasion, this has led to portions of the plant continuing to run when in fact the entire plant should be shut down. In one instance, the raw water pumps had shut down, but the chemical pumps had not. This led to the water in the filter turning a blue color. All of the water in the filter then needed to be wasted and the filter cleaned out.

The treatment units are packaged filtration units from Roberts Filter Manufacturing Company, specifically the PACER II Dual Treatment System. The two units are identical, and each is designed to treat 175 gpm. Idaho Department of Environmental Quality requires that a turbidimeter be present on each filter. The City installed a second turbidimeter in June of 2019, which will allow both sides of the SWTP to treat water simultaneously.

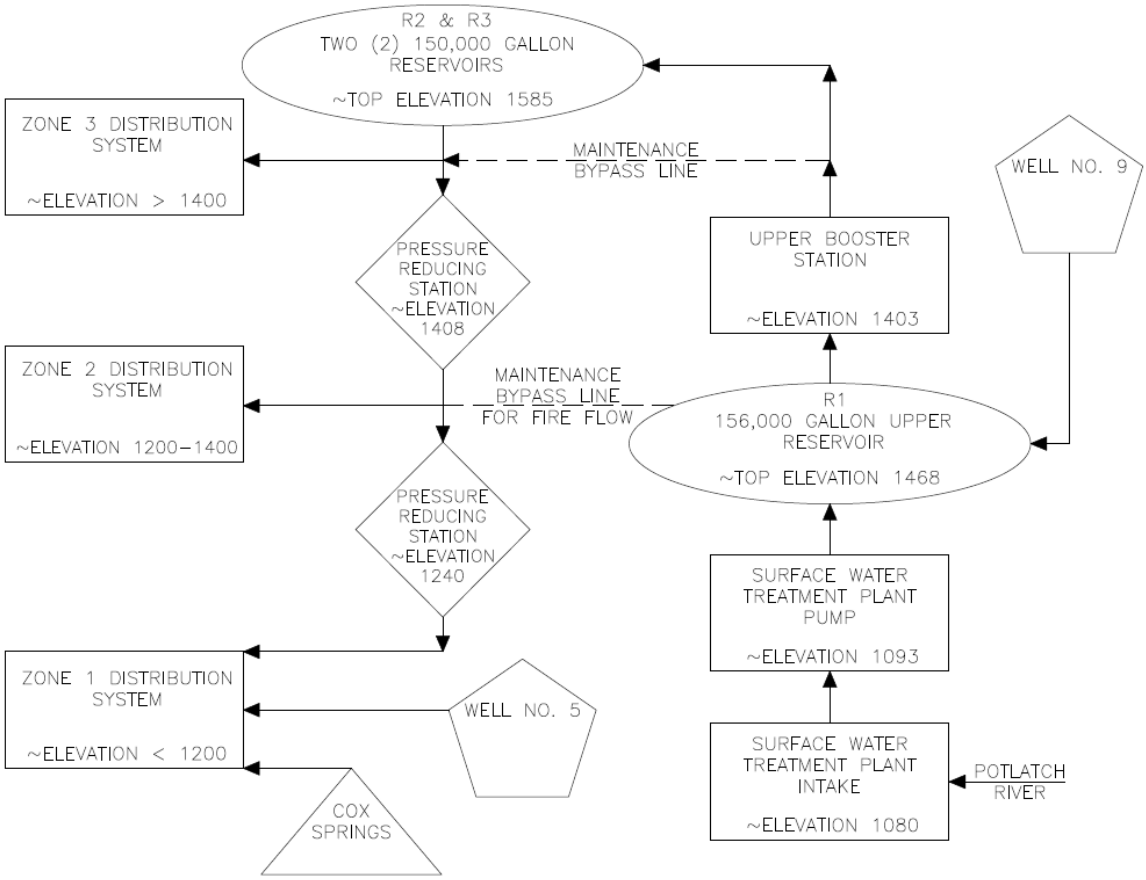
The flow of water is first through an up-flow contact clarifier, followed by downflow through a polishing filter. The contact clarifier is designed for 10 gpm/ft^2 through a media which is described as non-buoyant pellets, while the polishing filter is only designed for 5 gpm/ft^2. The filter bed consists of gravel, garnet, silica sand, and coal and was designed to be a minimum of 50 inches deep.

A redundant infiltration gallery will be installed during the winter of 2019 and early spring 2020. The new infiltration gallery will be deeper than the existing infiltration gallery. The primary purpose of the new infiltration gallery will be to eliminate the need to use a manual pump to provide water through the intake location. The filter media within the PACER II Dual Treatment System will also be replaced as part of the same project.

2.3.3 Source Storage and Booster Pumping Stations

Water is supplied to three main pressure zones; upper (Pressure Zone III or PZ3), middle (Pressure Zone II or PZ2), and lower (Pressure Zone I or PZ1), all respective to the system elevation. Two 150,000-gallon reservoirs (will be referred to as R2 and R3) located above PZ3 and a 156,000-gallon reservoir (R1) located above PZ2 gravity feed all three pressure zones. The SWTP and Well No. 9 pump directly to R2, which pumps to R2/R3 via a booster station. There's a 6" main leading from the SWTP to R2, then from R2 to R3. Well No. 5 (via pump) and Cox Springs (via gravity) feed directly to the distribution system at the lower pressure zone. Both Well No. 5 and 9 operate automatically based on the level of the reservoirs. See Figure 2-2 for a schematic of Juliaetta's water system.

Figure 2-2: Juliaetta Water System Schematic



2.3.4 Distribution system

2.3.4.1 Water Mains

The City of Juliaetta drinking water system's distribution system pipes consists of 6-inch to 10-inch PVC and asbestos cement pipe. The system operators reported one dead-end main water line, which is equipped with a means to flush. The city's fire department flushes the water mains throughout the year as part of their training. There are 37 fire hydrants in the system and 279 out of 279 connections are metered. All construction materials used are approved for use in drinking water systems and the system has no known problems with freezing weather.
The system has two pressure tanks. One 500-gallon detention tank is located in the Cox Springs Treatment Building. A second pressure tank is located in the Well #5 Pump House and it provides water to a few residences at a higher elevation that are on the same side of the river as pump house.

A 10" transmission main connects the two 150,000-gallon reservoirs that runs down to PZ1, bisecting the distribution system along 3rd Street. This transmission main serves all three pressure zones with two pressure reducing stations for PZ2 and PZ1.

The 10” transmission line supplies water to water lines ranging from ¾” to 8”. See Appendix A for a map of Juliaetta’s distribution system.

2.3.4.2 Storage Reservoir

Reservoir #1 (ID# 12723) is a below ground concrete reservoir with wooden sides, constructed in 1958. The reservoir has a metal roof, which had several gunshot holes, all of which have been repaired. The access door at the gable opens outward. It is kept locked and forms a tight seal against the structure. The ground is sloped to prevent surface water entry. The reservoir has vents under the eaves that run on booth lengths of the reservoir.

The upper reservoirs are designated as Reservoir #2a-North (ID# 12725) & Reservoir #2b-South (ID# 13128). Each has the same design and capacity of 150,000 gallons and they are located on the same lot. The upper reservoirs were constructed in 2004. Access to the roof of the reservoirs is restricted through locked caged ladders. The roofs are sloped to shed water. The reservoirs have a mushroom vent on the roof.

The 156,000-gallon reservoir is fed from Well No. 9 and the SWTP. It is a 12’ high by 40’ wide by 50’ long concrete wall structure. It communicates with the SWTP with telemetry radio. The two 150,000-gallon reservoirs are fed from the 156,000-gallon reservoir. These reservoirs are 30’ diameter by 28’ high circular concrete structures.

2.3.4.3 Pumping Stations

The City of Juliaetta has raw water pumps in the wet well, finished water pumps in the water treatment plant, a booster station with two booster pumps, and submersible pumps in the wells. The pumps were observed to be equipped with an accessible check valve, flow meter, and a pressure relief valves. The booster pumps have an automatic cut-off that activates when the intake pressure of the booster of the booster falls below 5 psi.

Well #5 pumps water directly into the distribution system. Well #5 is the sole source of water for service connections on the same side of the Potlatch River. Once the ruptured pipe under the river is repaired or replaced, Well #5 water can feed the rest of the distribution system on the west side of the river. Cox Springs provides water to two residences and directly feeds water into Reservoir #1 (Lower) by gravity. Well #9 pumps water into a 6-inch main that connects the upper reservoirs (2A-North and 2A-South) to the lower reservoir (#1). At the booster station, two booster pumps direct treated surface water to the upper reservoirs (#2a and #2b), which provides gravity-feed to the distribution system.

All of the pump houses (Cox Springs, Well #9, and Well #5) are secure from unauthorized entry and are kept clean and in good repair. The pump houses are adequately heated. The floor drains discharge to daylight. The system does not have

auxiliary power onsite. In the event of a power loss, the distribution system does not immediately depressurize because it is gravity fed.

2.3.4.4 Pressure Zones

See Section 2.3.3 and Figure 2-2 to see how the three pressure zones currently operate.

2.3.4.5 Water Quality

The City of Juliaetta's Consumer Confidence Report for 2018 indicated that they had violations for Nitrates and Total Organic Carbon. All other water quality parameters were within allowable levels. A complete copy of the consumer confidence report can be seen in Appendix E.

2.3.5 Operation and Maintenance

The current potable water distribution infrastructure in Juliaetta consists mainly of 4-inch main lines with a 10-inch line feeding the system from the storage tanks. The system is comprised of PVC and asbestos cement pipe which allows for a greater risk of mainline breakage and subsequent system contamination.

The system is able to meet demands in the summer peak usage periods. The City has been able to deliver the required flow and provide the required residual pressures primarily due to the storage tanks. The city has an Operations and Maintenance manual for the water treatment plant, however there is not a system wide operation and maintenance manual.

2.3.6 Current Demands

For the hydraulic modeling we used industry standards for water consumption rather than actual meter flow data. The industry standard numbers are slightly higher than the limited data that was obtained from the system providing a more conservative water model.

2.3.6.1 Average Day

Using an industry standard per capita demand of 120 gpcd and the City's population of 595 residents, the current average day demand is 71,400 gpd or 50 gpm.

2.3.6.2 Peak Hour

A peaking factor of 3.0 times the average daily demand is typically used to calculate the peak hourly demand. Using this peaking factor, the current peak hourly demand in Juliaetta was calculated to be 149 gpm.

2.3.6.3 Maximum Day

The 2001 Water System Plan calculated the average maximum day peaking coefficient (maximum day/average day) to be 2.2. Using this peaking factor, the maximum day demand is estimated to be 157,080 gpd or 109 gpm.

2.3.6.4 Fire Flow

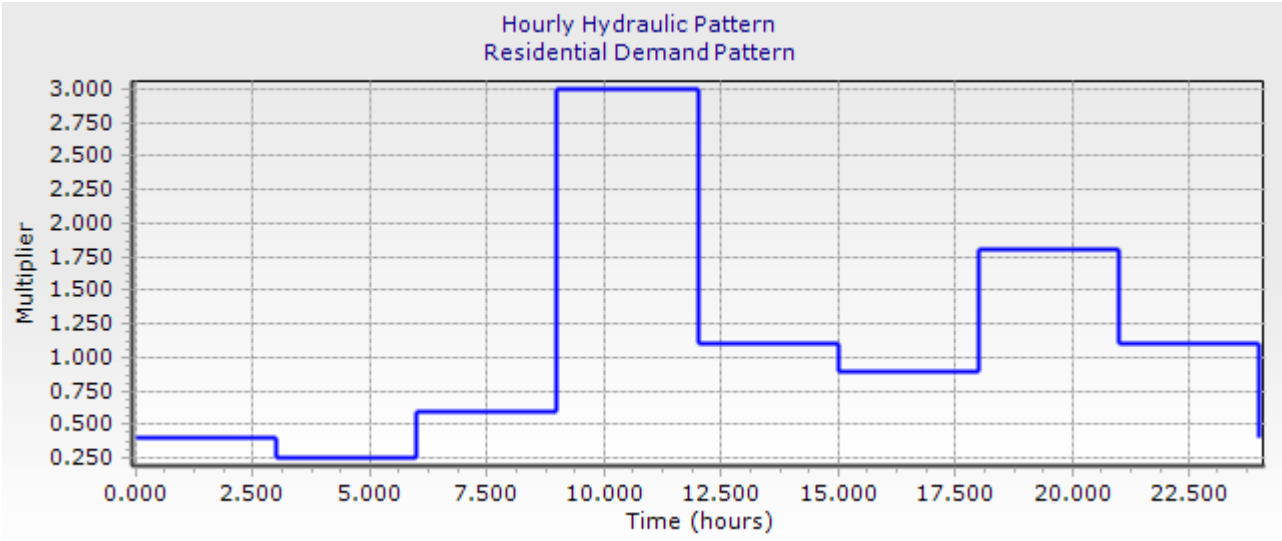
Fire Flow requirements are assumed to be the same as the 2001 Water System Plan. The Idaho Deputy Fire Marshal requested that the City provide 2000 gpm for 2-hours (240,000 gallons) at the grade school. The fire hydrant closest to the grade school is designated "FH-27 (SCHOOL)". This demand must be fulfilled while maintaining 20 psi and having the largest water supply being shut off.

As for the other fire hydrants in the system, they are required to provide 1,500 gpm for 2-hours while maintaining 20 psi and having the system's largest water supply shut off.

2.3.7 Use Patterns

A daily demand pattern for the type of water user is a useful tool for developing patterns of water consumption that can correlate to quantity of use. Demand patterns are utilized during Extended Period Simulations (EPS) that define the water demand over a 24-hour period. A daily demand pattern predicts throughout the day what user habits and water needs will be. This is accomplished by assigning a value between 0.0 and 3.0 to intervals throughout the day based on the expected demand created by the user type. The user types defined for Juliaetta are mostly residential, which the water system was modelled using. The residential demand pattern is shown below in Figure 2-3.

Figure 2-3: Extended Period Simulation Residential Water Use Pattern



2.3.8 Computerized Hydraulic Analysis

A complete copy of the Water Hydraulic Analysis can be seen in Appendix F.

2.3.8.1 Current State Hydraulic Modeling

Per DEQ protocol, a digital hydraulic model was developed to assess the existing water system. The model was analyzed using peak hour demands as well as maximum day demands as defined in Section 2.2.7 with results shown in Appendix F. Assumptions incorporated into the model are as follows:

- The SWTP has 3 pumps (1 of the pumps serving the lag role) with a total maximum flow rate of 175 gpm at 400 ft of head.
- The booster station has 3 pumps (1 of the pumps serving the lag role) with a total maximum flow rate of 125 gpm.
- Well #9 has a pump with a maximum flow rate of 5 gpm at 220 ft of head.
- Well #5 has a pump with a maximum flow rate of 3 gpm at 360 ft of head.
- Cox Spring gravity flows into Pressure Zone 1 at a maximum flow rate of 16 gpm.
- Aside from system facilities with given elevations (from as-builts, 2001 Water System Plan, etc.), node elevations are derived from contours of a 2017 USGS Juliaetta Quadrangle map. These contours were used to create a surface in AutoCAD Civil 3D, which was then exported as an XML file and imported into Bentley Water CAD.
- All valves in the system are open.
- All pipeline locations and sizes are correct based on a City provided fire hydrant map.
- Aside from the 6” asbestos cement line leading from the SWTP to Reservoir R1, all pipes are assumed to be PVC.
- Water demands are distributed evenly among 74 nodes throughout the City.
- To simplify the water model, the two upper reservoirs R2 and R3 were modeled as one larger reservoir.

With each model simulation, the following will be included in the appropriate appendix which quantify modeling results:

- Junction Table: a list of all the junctions or nodes within the system and the demand placed on the nodes as well as the hydraulic grade and pressure at the node.
- Pipe Tables: a list of all the pipes in the system and the pipe physical attributes as well as hydraulic conditions within the parameters of the current scenario.
- Fire Hydrant reports were added to those model runs that required a simulated fire to show the fire flow draw or demand at a specific fire hydrant.

1. The first simulation was an EPS, current condition, average day demand flow condition simulating a 71,400 gpd demand evenly distributed to the 74 nodes around the City's network. The water use pattern shown in Figure 2-3 was applied over a 24-hour period to simulate how the City's network behaves on a normal day. The junction and pipe tables in Appendix F reflect the condition of the system, flows, velocities, pressures, etc. during the peak demand of the day (9:00 am to 12:00 pm) to reveal any possible losses of pressure or flows.
    - As can be seen in the junction tables, the pressures, in general, are rather high in Pressure Zones 1 and 2 (junction labels in the 100s and 200s). This is due to the SWTP 6" supply line to Reservoir 1 being connected to the lower distribution system (and assuming there's no pressure reducing station between the 6" supply line and PZ1). It is assumed that pressures are not an issue in the distribution system considering, in general, it has a lot of provided head with the elevation of the three reservoirs and the City's extreme slope towards the Potlatch River. These high pressures will be seen in all scenarios.
    - Junction SWTP Junction 1 has pressures lower than 40 psi due to being just upstream of the surface water treatment plant pumps.
    - This scenario's pipe tables show flow velocities well within acceptable ranges (typically below 5 fps). There are quite a few 2-4" diameter water mains scattered throughout the distribution system, which will be discussed in further detail later in this report.
2. The second simulation was an EPS maximum day demand condition simulating 157,080 gpd demand evenly distributed to the 74 nodes around the City's network. The water use pattern shown in Figure 2-3 was applied over the 24-hour period to simulate how the City's network behaves on a maximum day. The junction and pipe tables in Appendix F reflect the condition of the system, flows, velocities, pressures, etc. during the peak demand of the day (9:00 am to 12:00 pm) to reveal any possible losses of pressure or flows. During the peak demand of this simulation, the system's overall demand is higher than the peak hour demand discussed in Section 2.2.6.2.
    - Similar to the average day demand scenario discussed above, the junctions have ample pressures throughout the system.
    - Also similar to the average demand scenario discussed above, this scenario's pipe tables show flow velocities well within acceptable ranges.
3. The third simulation was a steady state simulation of fire flows during the peak hour demand (149 gpm distributed to the 74 nodes around the City's network) with the largest water source (SWTP) taken offline, and the results can be seen in the fire flow report in Appendix F.
    - As can be seen in the fire flow report for this simulation, there are 13 fire hydrants that do not meet fire flow requirements (1,500 gpm for 2 hours during peak hour demands). See Appendix G for a system map showing the proposed improvements of the distribution network.

2.3.9 Cross-Connection Control Program

As of the Feb 2018 sanitary survey, Juliaetta does not have a cross-connection control program. It is recommended that the City create and adopt a cross connection control plan. The 2018 Sanitary Survey can be seen in Appendix H.

2.3.10 Violations to the Safe Drinking Water and the Rules for Public Drinking Water Systems

The water system has experienced eight violations in the past year. Three violations were a result of inadequate disinfection by-products precursor removal. Two violations were associated with Nitrate exceedances in Well #5. Of the remaining three violations, two were for inadequate chlorine residuals and one was an E-coli violation. All violations have been resolved. A summary list of the violations can be found in Appendix I.

2.3.11 User Charge and O&M Budget

The City currently bills for 263 EDU's. The current rate for water users is $45.00 for the first 6,000 gallons, plus $1.50 Per thousand gallons of water used (from 6,001 to 12,000), $2.50 (from 12,001 to 300,000) and $4.00 (from 300,000 and above). The City of Juliaetta's 2019/2020 Water System Operations Budget is shown in Table 2-6, and the City's full budget can be seen in Appendix J.

Table 2-6 Fiscal Year 2020 Water System Operation Budget

Account Number	Title	FY 2020 Budget	FY 2020 Revenue
20-37-100	Water Sales		183,500.00
20-85-100	Salaries	38,000.00	
20-85-105	Salary Adjustment	2,500.00	
20-85-130	Payroll expense - FICA	3,200.00	
20-85-135	Payroll expense - PERSI	4,200.00	
20-85-140	Payroll expense-Workman's Comp	2,000.00	
20-85-145	Payroll expense - Other	1,000.00	
20-85-150	Medical Insurance	5,000.00	
20-85-200	Legal fees	500.00	
20-85-205	Accounting fees	5,500.00	
20-85-210	Other Professional fees	500.00	
20-85-215	Legal Publications	500.00	
20-85-220	Printing and binding	500.00	
20-85-225	Phone	850.00	
20-85-230	Meeting and Travel	2,000.00	
20-85-235	Dues	1,000.00	
20-85-240	Insurance	3,300.00	
20-85-245	Avista	22,000.00	
20-85-255	Miscellaneous	500.00	
20-85-260	Supplies	1,500.00	
20-85-265	Equipment Repairs	3,000.00	
20-85-270	Auto Fuel	1,500.00	
20-85-272	System Repairs	12,000.00	
20-85-275	Water Line System Repairs	73,150.00	
20-85-280	Vehicle Repairs	500.00	

20-85-282	Equipment Rental	200.00
20-85-285	Office Expense	500.00
20-85-287	Treatment supplies	6,000.00
20-85-302	Bank Charges	100.00
20-85-600	Depreciation expense	76,946.00
20-85-605	Amortization	65,840.00
20-85-620	Testing	7,000.00
20-85-625	New Hook-up expense	1,000.00
20-85-630	Restock	2,000.00
20-85-635	DEQ	1,144.00
20-85-705	Equipment Fuel	100.00
20-85-710	Meters	1,000.00
20-85-715	Well Repair	1,000.00
20-85-720	Reservoir Cleaning	4,000.00
20-85-800	Capital Outlay	5,500.00

2.3.12 Pressure Zone problems, population that is affected

There are three pressure zone in the City of Juliaetta. As the topography of the city varies greatly, pressures tend to fluctuate and can be problematic at times. The pressure fluctuates depending on the location and the amount of water usage. The static pressure of the system varies between 50 and 210 psi. Dynamic pressures during peak demand periods does not fall below 20 psi at the tap when the system is operating as designed. However, there are multiple fire Hydrants within the system that cannot meet the 1,500 gpm requirement while maintaining a system pressure about 20 psi.

2.3.13 Defects or Deficiencies

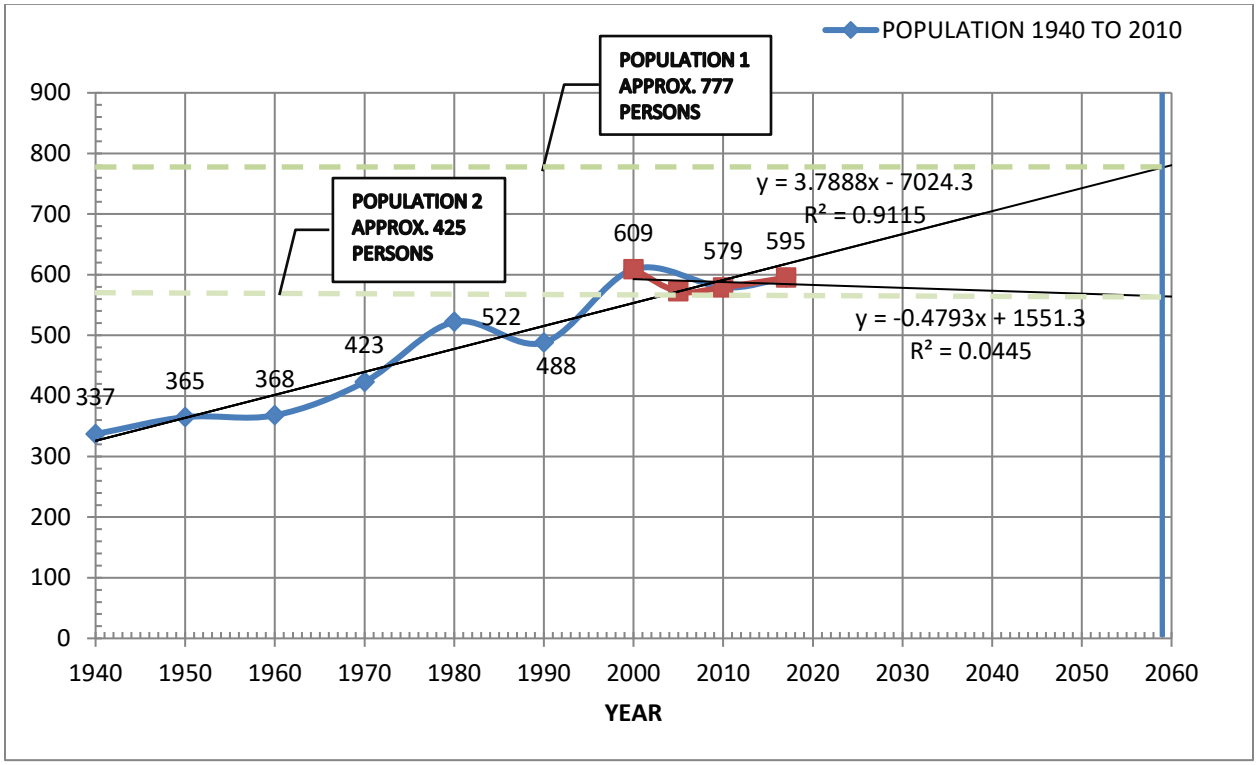
In the February 2018 Sanitary Survey completed by IDEQ, the City of Juliaetta had five significant deficiencies, four deficiencies, and four recommendations. Refer to Appendix H to see the most up-to-date Drinking Water System Sanitary Survey Report.

3 Future Conditions

3.1 Future Growth

The facility plan analyzes impacts for a 40-year population for the distribution. To estimate a 40-year population at year 2059, published data from the Idaho Department of Commerce was used. The data includes the years 1940 through 2017, including the 2010 U.S. Census. Based on this data a graph showing the growth trend for the community can be seen in Figure 3-1. Additional demographic information can be seen in Appendix K.

Figure 3-1: Juliaetta Population Trends



Using curve fitting and trendlines in Microsoft Excel, 20 and 40-year populations were then extrapolated. The extrapolations are used throughout this facility plan and are:

- 20-Year Population, Year 2039: 701 persons (trends from 1940 to 2010)
- 40-Year Population, Year 2059: 777 persons (trends from 1940 to 2010)
- The 40-year population projection will be used in the analysis of storage and conveyance capacity, as well as necessary water rights.

3.2 Forecast of Demand (40-Year Period)

3.2.1 Type of Demand

The majority of the system's EDUs are residential, located on the western side of the Potlatch River.

3.2.2 Projected Demands

The City's 2017-2018 water consumption was 21.7 MG. The City currently bills for 263 EDUs. The forecasted water demand will use a per capita use of 120 gpcd and an average population per service of 2.3. The peak and average flows for the estimated 2059 population of 777 people would be as follows:

Average flow: 40 Yr. - 777 people x 120 gpd/person = 93,240 gpd or 65 gpm

Peak Hourly flow: 65 gpm x 3.0 = 194 gpm

Maximum Day Demand: 93,240 gpd x 2.2 = 205,128 gpd or 143 gpm

Fire Flow requirement is expected to be the same as they currently are at 1500 gpm in residential areas and 2500 gpm in the commercial.

The population increase of 182 people in 40 years represents an estimated additional 79 residential hookups.

3.2.3 Expected Flow Reduction After Metering

The City is currently metered and on average use approximately 100 gpcd. This is lower than the industry standard of 120 gpcd. The City is not anticipating future flow reduction with any of the proposed improvements.

3.3 Drinking Water Treatment Facilities Needed for 20-Year Period, 40 years for distribution

The Juliaetta water supply treatment facilities have adequate capacity for current demands and for the estimated future growth in use. The existing springs, wells, and surface water plant have capacities which exceed the estimated future peak flow requirement of 143 gpm. However, if the Surface Water Treatment Plant (175 gpm per treatment train, 350 gpm total) were off line for any reason, the other sources could not supply the required peak flow. A backup well or spring collection with a capacity similar to the Surface Water Treatment Plant may need to be developed.

The distribution system pipeline capacity is adequate for the estimated growth for 40 years. The 2" and 4" pipes and dead-end lines need to be replaced to maintain the integrity of the system and provide looping to enhance the fire flows. To address the quantity and quality

issues at Well No. 5, as well as the viability of the system as a whole, the City intends to connect the well to the rest of the collection system and provide a means for supplying water to the residents on the East Side of the Potlatch River from the surface water plant if necessary..

3.4 Future Conditions without the Proposed Project(s)

The water model was developed and ran adding the projected demands discussed in Section 3.2.2 without upgrading the distribution system. The extended period model run using the maximum day demands indicated that the distribution system delivered the water demands without a significant reduction in system pressures. The distribution system cannot supply ample fire flows to 13 fire hydrants just as the system could not in the previously discussed current system hydraulic modeling.

3.5 Land Use Plans

The city's policy is to not provide water service to anyone outside city limits. All work proposed in this report will be in existing city rights-of-way or on land currently owned by the city. The acquisition of additional land is not expected at this time.

Infill development of mostly residential units is the most likely to occur within city limits. Development of additional residential subdivision(s) outside the current City limits will not be necessary to reach the projected population increase of 182 by 2059. If a subdivision(s) should be built, city development policy should require developer(s) to build new wells with extra capacity for the city and to connect to the city's water system. Connection to the 10-inch main that passes through town would be vital to meet pressure and peak flow demands of the potential subdivision(s).

3.6 Computerized Hydraulic Analysis

3.6.1 Proposed Improvements

The initial improvement that should be considered is the replacement of the 2" to 4" water mains with at least 6" pipe and the elimination of dead-end lines. These water main improvements are scattered throughout the City and will enhance the capacity and reliability of the distribution system, especially during fire flow events where the system is most deficient. See Appendix G for a map of these proposed improvements.

The other water system improvement option is to replace the 6" asbestos cement pipe leading from the SWTP to Reservoir R1.

Water storage is not an issue for the City, even with the projected 40-year growth and fire flows, the current reservoirs are assumed to be sufficient. As the storage tanks age, they should be analyzed for repair or replacement alternatives at that time.

3.6.2 Future State Hydraulic Modeling

The hydraulic water model of the existing system was upgraded with the improvements listed above in Section 3.7.1. The future state model was analyzed using average day demands, maximum day demands, and peak hour demands with fire flows as defined in Section 3.2.2, with results shown in Appendix F. Assumptions incorporated into the model are as follows:

- The SWTP has 3 pumps (1 of the pumps serving the lag role) with a total maximum flow rate of 175 gpm at 400 ft of head.
- The booster station has 3 pumps (1 of the pumps serving the lag role) with a total maximum flow rate of 125 gpm.
- Well #9 has a pump with a maximum flow rate of 5 gpm at 220 ft of head.
- Well #5 has a pump with a maximum flow rate of 3 gpm at 360 ft of head.
- Cox Spring gravity flows into Pressure Zone 1 at a maximum flow rate of 16 gpm.
- Aside from system facilities with given elevations (from as-builts, 2001 Water System Plan, etc.), node elevations are derived from contours of a 2017 USGS Juliaetta Quadrangle map. These contours were used to create a surface in AutoCAD Civil 3D, which was then exported as an XML file and imported into Bentley Water CAD.
- All valves in the system are open.
- All pipeline locations and sizes are correct based on a City provided fire hydrant map.
- Aside from the 6" asbestos cement line leading from the SWTP to Reservoir R1, all pipes are assumed to be PVC.
- Water demands are distributed evenly among 74 nodes throughout the City.
- To simplify the water model, the two upper reservoirs R2 and R3 were modeled as one larger reservoir.

1. The first simulation was an EPS, projected average day demand flow condition simulating a 93,240 gpd demand evenly distributed to the 74 nodes around the City's network. The water use pattern shown in Figure 2-3 was applied over a 24-hour period to simulate how the City's network will behave on a normal day. The junction and pipe tables in Appendix F reflect the future condition of the system, flows, velocities, pressures, etc. during the peak demand of the day (9:00 am to 12:00 pm) to reveal any possible losses of pressure or flows.
   - Similar to the previous simulations discussed in Section 2.2.8.1, the junctions have ample pressures and flows throughout the system.
   - Similar to the previous simulations discussed in Section 2.2.8.1, this scenario's pipe tables show flow velocities are well within acceptable ranges.
2. The second simulation was an EPS, projected maximum day demand flow condition simulating a 205,128 gpd demand evenly distributed to the 74 nodes around the City's network. The water use pattern shown in Figure 2-3 was applied over a 24-hour period to simulate how the City's network will behave on a normal day. The junction and pipe

tables in Appendix F reflect the future condition of the system, flows, velocities, pressures, etc. during the peak demand of the day (9:00 am to 12:00 pm) to reveal any possible losses of pressure or flows.

- Similar to the previous simulations discussed in Section 2.2.8.1, the junctions have ample pressures and flows throughout the system.
- Similar to the previous simulations discussed in Section 2.2.8.1, this scenario's pipe tables show flow velocities well within acceptable ranges.

3. The third simulation was a steady state simulation of fire flows during the peak hour demand (194 gpm distributed to the 74 nodes around the City's network) with the largest water source (SWTP) taken offline, and the results can be seen in the fire flow report in Appendix F.
    - As can be seen in the fire flow report for this simulation, the 13 deficient fire hydrants are now in compliance with the required fire flow requirements.

4 Development and Initial Screening of Alternatives

4.1 Description of Problems/Deficiencies to be Corrected by the Project

The City of Juliaetta has 3 main problems with their system.

4. The areas with old 2”-4” and dead-end pipelines restrict the overall flow capabilities. In the fire flow model runs, those areas were often where the minimum system pressure of 20 psi for the system were located. Future projects must address this issue. Therefore, the existing 2” to 4” mainlines will be increased to 6” and dead-end lines looped, making a larger volume of water available in areas they serve.
5. Water transmission lines that service fire hydrant systems are currently required to be at least 6-inches in diameter. There may be some lines within the system that fit this category. Any fire hydrant laterals that are 5 inches or smaller will be replaced with a 6-inch lateral and a new fire hydrant.
6. Reconnection of the mainline across the potlatch River to Well #5. This project is planned to be constructed in Spring of 2020.

Each of the proposed alternatives were suggested by Great West Engineering as alternatives that would solve most, a portion, or all the above listed deficiencies in the existing system. Through city council meetings and public involvement meetings the City is proposing to self-fund smaller projects over the course of multiple years, until such time that a large-scale project is necessary.

4.2 Development of Alternatives

The cost of the repairs should be noted as a major factor in selecting the options to be implemented. The city is not in need of replacing the entire water system infrastructure due to recent projects, so the options were critiqued by the city council and the citizens for the options with the most benefit at the lowest cost to the users. The City intends to self-fund smaller projects each year until such time that it is necessary to do a large-scale project.

Performing the recommendations listed above will help the City address its fire flow issues discussed in the hydraulic modeling results. The project(s) will consist of replacing existing 2” to 4” water lines with 6” pipe and looping dead end lines and replacing assumed fire hydrant laterals less than 6” diameter. These pipe sections are scattered throughout the City. These improvements are the most cost-effective actions to solve the City’s fire flow issues, so there are no additional alternatives being presented in this report. Table 4-1 provides an estimate of the cost to complete all the sections under one project.

Table 4-1: Project Cost Estimate

Item	Units	Estimated Cost	Total	
			Quantity	Cost
Mobilization	ls		7%	$52,500
Bore under Potlatch River	ls	$150,000	1	$150,000
6" Water Main	lf	$56	9115	$510,400
6" Gate Valve	ea	$1,000	23	$23,000
6 x 6 Tee	ea	$550	20	$11,000
8 x 8 x 6 Tee	ea	$600	2	$1,200
6" 45° Elbow	ea	$225	9	$2,000
6" 22.5° Elbow	ea	$225	7	$1,600
6" 11.25° Elbow	ea	$225	8	$1,800
8" Water Main	lf	$60	442	$26,500
8" Gate Valve	ea	$1,150	2	$2,300
8" 45° Elbow	ea	$300	2	$600
8" 22.5° Elbow	ea	$300	2	$600
10 x 10 x 8 Tee	ea	$950	1	$1,000
10 x 10 x 6 Tee	ea	$950	1	$1,000
8 x 6 Reducer	ea	$225	2	$500
Connect to Exist. Main	ea	$1,000	24	$24,000
Water Service Conn.	ea	$2,000	20	$40,000
Reconnect Water Service	ea	$1,500	50	$75,000
Fire Hydrant Assembly	ea	$4,000	7	$28,000
SUB-TOTAL				$963,500
Contingency	15%			$144,500
Engineering and Constr.	20%			$192,700
Admin, Legal, Bonding	10%			$96,400
Construction Interest	5%	For 2 Years		$48,200
TOTAL				$1,445,000

The distribution system improvements will be designed to achieve the following performance criteria:

1. System pressure – The minimum water pressure under non-fire events shall be 40 psi and under fire events a system wide pressure of 20-psi must be maintained.
2. Pipelines – Replacing the system's older cast iron, transite and galvanized steel pipelines to a larger diameter pipe will help meet fire flow demands. The new pipelines will also eliminate flow restrictions in the current system. The use of HDPE and PVC pipe will increase the life expectancy of the current water system for many years and eliminate potential iron bacteria buildup on the newly installed lines.

3. Isolation Valves –Isolation valves will be strategically located in both the old and new sections of the distribution system. Additional isolation valves throughout the system will improve serviceability and allow smaller sections of town to be isolated for mainline repairs, shutdowns and flushing.
4. Fire Hydrants – Fire hydrants with supply lines assumed to be less than 6 inches will be replaced with new fire hydrant assemblies, as well as have new 6-inch supply lines installed. Fire hydrants will also be used for flushing the water system, which also helps decrease biofilm in the system. If biofilm is dislodged and removed from the system during flushing events, it is not available to foul or clog meters. Frequent flushing of the system after the hydrants are installed is recommended to remove as much of the biofilm as possible during the early stages of use.
5. Service Lines – During installation the City should notify homeowners who have a galvanized service line between their water meter and their home. The lines should also be inspected for the presence and extent of iron bacteria build up in the lines.

The current financial policy of the City is to use the difference between revenues and expenditures as capital improvement monies. The City should, in future budget years, establish an annual budgeting policy which sets aside funds for capital improvements, funds for long-term bond payments and short-term system improvements, as well as replacements of capital items, Each year the City should update a five year capital improvements plan in which they routinely, at least annually, identify items and equipment that must be replaced or upgraded within 5-year planning window. Therefore, in conjunction with the distribution system improvements, the City will develop an asset management program using the free EPA's Check Up Program for Small Systems (CUPSS) software. With CUPSS the City will be able to:

- Create an asset inventory list
- Create an asset schematic (or picture of where their assets are located)
- Be aware of capital improvement projects
- Track tasks and work orders
- Track annual revenues and expenditures

4.2.1 Project Considerations

The City intends to use HDPE pipe (DR-17, PE 4710) for trenchless construction applications and C900 PVC DR-18(235-psi) for open excavation. The design of the system will incorporate ductile iron fittings and gate valves, which is common for both options. Furthermore, the HDPE will be specified with fused on tapping saddles, and the C900 option will be specified with stainless steel mechanical service saddles. Connections to the customer service will be with standard ground-key corporation stops and then PE tubing to the meter-setter.

4.2.2 "No Action" Alternative

The "no action" alternative is the consideration of not providing any updated or improved water facilities or distribution systems. This alternative would continue to risk having inadequate fire flow pressures and volumes in the areas shown to be deficient.

4.2.3 Optimum Operation of Existing Facilities

The City of Juliaetta strives to operate the potable water supply, storage and distribution system to provide consistent pressure and volume as economically as possible. The primary water supply is the SWTP which feeds directly into the distribution system and ultimately to Reservoir R1. From Reservoir R1, water is pumped up to Reservoirs R2 and R3, which control the system pressure (with two pressure reducing stations). Water level in Reservoir R1 control the SWTP, Well #5, and Well #9 pumps. Water levels in Reservoirs R2 and R3 control the booster station pumps. The current operation scenario of the system utilizes the existing facilities to provide consistent pressure and flow while minimizing the pumping cost with water storage in Reservoirs R2 and R3.

4.2.4 Regionalization

The location of Juliaetta and its proximity to the Potlatch River makes regionalization an unviable option.

4.2.5 Environmental Impacts

No foreseeable environmental impacts are expected from the proposed projects other than those from open trenching for pipelines. Open trenching will create concern for air-born dust and mud tracking. The City of Juliaetta has paved and gravel streets; which will be relatively easy to replace/repair and keep clean during construction. A storm water pollution prevention plan (SWPPP) will be required for the project. Any roadside disturbance will be returned to its current vegetative state after the completion of the construction phase.

4.3 Isolated Areas

Any areas in the City that do not currently have service will be dealt with on an as needed basis. Any population growth or developments are expected to be infill developments where accessible water mains already exist. When development of isolated areas does occur, it will be at the developers' expense to install the necessary water wells and water distribution lines to connect to the existing water system. At the time of design or construction, issues may arise requiring extension of service (mainlines) or allowing the City to leverage private funds to better serve the community and accommodate some opportunities for growth.

4.4 New Source Development

As discussed in the Emergency Water Project Facility Plan submitted in December 2018, new source development is an issue for the City. There is a spring source 4 miles south of Juliaetta that produces approximately 30 gpm, but since it's highly likely it would be directly influenced by the Potlatch River, it would require treatment of the water. The transmission distance and treatment requirements would make this source an expensive option.

The SWTP is receiving upgrades in the fall of 2019 that will allow the treatment system to have both of its 175 gpm filtration units to be online simultaneously, almost doubling the

system's source capacity. The SWTP is having several other upgrades performed to improve its treatment, year-round reliability, and capacity.

4.5 Treatment Requirement for Upgraded Facilities

The City of Juliaetta's potable water supply treatment requirements will not change as part of the proposed project. Upgrades to the City's infiltration gallery in the Potlatch River and replacement of the PACER II treatment plant filter media will be completed by spring of 2020. Currently Magnafloc/Superfloc C-573 and Aluminum Sulfate are added to the water collected from the Potlatch River by an in-line static mixer. After the addition of flocculants and coagulant, water flows into the Roberts Pacer II filters. Water then flows through the up-flow clarifier and over the weirs through the tri-media polishing filter. The media includes anthracite, sand, and garnet.

The city currently uses a chlorination system that mitigates bacteria growth and biofilm. All water is treated with chlorine whether it is in the surface water treatment plant, wells, or cox springs. If a new well facility is constructed in the future, it will require the addition of chlorination equipment to treat the water from that source. Arsenic, radium, and other nuclides were not present in previous water quality tests.

The biofilm, ph., alkalinity, iron and organic availability are all factors associated with chlorine demand. In order to determine the chlorine demand in the system and for future operation of the treatment facilities, Great West recommends the following process.

Initially we recommend that the city "shock" the system and perform a system flush to rid the system of any contaminated water and biofilm that may have dislodged during a construction project. Then the city can test for actual chlorine residual at multiple locations throughout the distribution system in order to reestablish a baseline for reduced concentrations of chlorine in the system. With the base line information, the operator will then be able to define the chlorine demand for the system.

After the chlorine demand has leveled off the operator should test for and identify any Disinfection-By-Products (DBPs) as a result of the added chlorine to the system. Chlorine is the industry standard for achieving long term control of many contaminants. The system however should be analyzed for effectiveness periodically and modifications made as needed. Controlling a pathogen on a permanent basis is difficult to propose with a single treatment method. Rather the city should understand that treatment of water depends on many factors that have the potential to change over time. The specific treatment means and methods are expected to be developed as time passes. We do not anticipate any treatment methods other than chlorination and periodic replacement of filter media within the Pacer II system will be needed for the design life of this system.

4.6 Storage Requirements

The required capacity of the finished water storage is defined in IDAPA 58.01.08.03. The total storage is composed of Dead storage and Effective Storage. Dead Storage is storage

that is either not available for use in the system or can provide only substandard flows and pressures. Effective storage is all storage other than dead storage and is made up of the following components:

1. Operational Storage – storage that supplies water when under normal conditions when the sources are off that is the larger of;
    a. Volume required to prevent excess pump cycling and ensure that the following volume components are full and ready for use when needed.
    b. Volume needed to compensate for the sensitivity of the water level sensor.
2. Equalization Storage – volume in sufficient capacity to compensate for the difference between a water system's maximum pumping capacity and peak hour demand.
3. Fire Suppression Storage – volume needed to support fire flow.
4. Standby Storage – volume to provide a measure of reliability or safety factor should sources fail or when unusual conditions impose higher than anticipated demands. Normally used for emergency operation, if standby power is not provided, to provide water for eight hours of operation at average day demand.

For the City of Juliaetta:

1. Operational storage – use 2 hours of average day demand = 2 *3,885 = 7,770 gallons
2. Equalization storage – peak hour demand = 194 *3 = 582 gpm; least cox spring capacity = 15 gpm. Therefore, equalization storage for 2 hours is = 68,040 gallons.
3. Fire Suppression storage – 2 hours at 2500 gpm = 300,000 gallons
4. Standby Storage – have backup power, therefore =0, without backup power = 8 hours average day demand = 31,080 gallons.

Total required storage = 7,770 + 68,040 + 300,000 +31,080 = 406,890 gallons.

Existing storage = 479,000 gallons, therefore no additional storage is required.

4.7 Discussion of Pumping Requirements

The requirements for pumping facilities are outlined in IDAPA 58.01.08.541. The above ground storage tank is at a sufficient elevation to provide pressure to the distribution system by gravity. The wells are equipped with submersible pumps that discharge directly in to the distribution system and they are controlled by the tank elevation. The system does require booster pumps at the surface water treatment plant and in the distribution system to pump water to the upper reservoirs.

4.8 Pressure Maintenance

With the current storage tank and wells, the system-wide static target pressure is a minimum of 40 psi. During peak hour and fire flow conditions a minimum of 30-psi static

and 20-psi dynamic pressure at the tap is required. With the recommended improvements Juliaetta will be able to consistently maintain these pressures.

4.9 Separate Irrigation Facilities

There are no separate irrigation facilities within the City other than an irrigation water right for the park. The city's potable water supply is used for irrigation. Future development should be encouraged to use possible low-quality ground and surface water for irrigation purposes.

4.10 Pressure Zones

The City of Juliaetta has three pressure zones. As the topography of the city varies greatly the pressure fluctuates depending on the location and the amount of water usage. The static pressure of the system varies from 40 psi to 200 psi. Dynamic pressures during peak demand periods should not fall below 30 psi at the tap.

4.11 Public Input

This facility planning study was discussed at multiple city council meetings and allowed the public to comment and ask questions. No formal public meeting was held for the facility planning study, since a single large-scale project is not anticipated at this time. System maps were presented to those in attendance which outlined some of the system deficiencies and recommended improvements.

4.12 System Classification and Licenses

The City of Juliaetta's water distribution system requires those operator certifications listed in Table 4.5.

Table 4-5 Water Distribution Operator's Certification Requirements

System Operations or Component	DEQ Designated System Certification	Current Personnel Certificate	Backup Operator
Water Distribution	DWD-1	DWD1	No
Water Treatment	DWT-3	DWT-2	No

The City of Juliaetta needs one Grade 1 water distribution and one Grade 3 treatment operator with an equally certified backup operator. Currently the City has a contract operator, Frank Groseclose, with DWT-2 and DWD-1 licenses. The City has two operators that are licensed as "operator in training" while they work on meeting the classification requirements for the water system. The classification and licensing requirements will not change with any of the alternatives mentioned in this report

5 Final Screening of Principal Alternatives and Plan Adoption

5.1 Evaluation of Costs

5.1.1 Present Worth Analysis

The total cost to purchase, install, and operate system upgrades includes the initial capital outlay (for purchase and installation, excluding design fees) and operation and maintenance costs to operate the infrastructure. The newly purchased and installed items from the installation period to the end of the design life will require maintenance monies to keep them functional and in good repair. The intent of this section is to analyze the cost over time of system improvements as they relate to the initial cost to purchase and install the new items plus maintenance and repairs within the 20-year design window.

Reasonable maintenance and repair items are estimated in this section and forecasted using an inflation rate of 2.5%. After the future costs are estimated they are converted into a present worth cost using an interest rate of 4.375%. The total cost to purchase and install the project alternatives and the projected operations and maintenance costs are then added together and the cost for the different alternatives are then compared. It should be recognized that these calculations are based on linear curves and the actual cost of the items analyzed may vary due to fluctuating interest and inflation rates during the life of the system component.

5.1.2 Capital Cost and Financing

A combination of financing sources including the US Department of Labor Block Grant, USDA Rural Development grant and loan, U.S. Army Corp of Engineers grant, and DEQ revolving loan fund will be the funding option sought after for any large-scale projects. Smaller projects, less than $50,000 are intended to be funded through City of Juliaetta Capital Improvements Funds. The city wishes to hold the monthly cost of providing water and sewer services to its residential customers to a minimum. As of 2019 the average rate for water service was approximately $50.00. The largest individual cost within the project is the proposed upgrade and looping of the existing water mains. This project is not required immediately since the existing lines are providing sufficient pressure and flow to the services that are connected to them. Therefore, this project can be divided into numerous projects that can be completed annually with a capital improvement expense in the budget. Great West Engineering feels that this will be the most efficient use of the public funds obtained for the system improvements.

5.1.3 Operation and Maintenance Costs

The Operation and Maintenance budget for the 2019-2020 fiscal year includes total operation expenses of $266,380 and capital improvements expenses of $85,150 for a total water budget of $351,530. The estimated operation and maintenance costs will increase slightly with the proposed pipeline project options, due to the additional of piping and valves throughout the distribution system.

The operation cost will vary slightly since the water mains that are being replaced and looped have few services and low demand. The overall water demand will not increase and the quantity of flow through each of the mainline sections will not change. If a future well or water source is added to the system operation and maintenance cost will escalate accordingly.

5.1.4 Cost Escalation Factors for Energy Use

None of the recommended improvements will replace any of the existing well, booster, or chlorination pumps within the system. Therefore, there are no cost escalation factors that will affect the current equipment.

The city will not see a noticeable change in power consumption with any of the proposed projects. The additional infiltration gallery and associated 5 hp pumps will be slightly increase energy consumption, especially during the months of the year when the surface water treatment plant is providing the majority of the water to the system.

5.1.5 Comparison of Costs of Alternatives

There is not a comparison of cost alternatives for the proposed improvements since the projects are intended to be small and spread out over time. The City should consider making the improvements as funds allow or as pipes show continue sign of deterioration.

5.2 Environmental Impacts (in Accordance with NEPA and IDAPA 58.01.20)

An environmental study will not be completed as part of this document. The document will be submitted separate from this facility planning study when required as part of a larger project. The proposed project will improve system pressure and reduce possible leaks, there are likely to be some unavoidable short-term environmental impacts associated with construction of the project such as the burning of fossil fuels and construction noise. Dust suppression and stormwater best management practices would be employed during construction to minimize environmental impacts during construction. The short-term environmental impacts are likely a good tradeoff for the long-term environmental benefits of the project.

5.3 Impacts on Water Supply Systems

As with any water system improvements there will be an impact on the water system, the goal of the suggested alternative is to provide the citizens of Juliaetta with many positive impacts and very few if any negative impacts after construction is completed. The proposed projects have no anticipated adverse impacts on the system. The anticipated positive impacts however include the following:

- System wide sustainable increased pressure
- 1,500 gpm fire flow available anywhere in the system, and 2,500 gpm fire flow in commercial areas

- Upgraded treatment media to allow surface water plant year-round operation
- Replacement of existing water service meters will save water and energy. The new meters will be more accurate and able to detect smaller flows. The City will be able to bill more of the water that is delivered. The updated data collection technology of touch or radio read meters will save energy and time for meter reading. The relative ease of reading the meters may allow leaks to be detected quicker so repairs can be made, and water losses reduced.

5.4 Consideration of EPA Reliability Criteria

Ground water levels tend to be declining, however the surface water source water for the City of Juliaetta has been stable for more than 30 years. Recorded hydrographs indicate the ground water source should not be relied upon as a long-term solution for the City.

The water distribution system pressure is maintained by multiple water storage tanks. The storage tanks can maintain pressure at an average daily water use for over 24 hours. There is no backup power available, with the tank sizes and locations backup power is not necessary.

5.5 Comparison of Environmental Impacts of Project Options and Cost Mitigation

Table 5-1 provides a preliminary evaluation of the environmental impacts of the project options and the estimated magnitude of the potential mitigation costs. In Table 5-2 the impacts are classified as NI- No Impact, Pos – Positive Impact and Neg – Negative Impact and the estimated mitigation cost range as 1K - $1,000 to $10,000, 10K - $10,000 to $100,000 a 100K - $100,000 to $1,000,000, 1M - $1,000,000 and higher.

Table 5-1 Environmental Impacts of Project Options

Environmental Feature	No Action	Pipeline Replacement	Bore under Potlatch River	Cumulative
Topography	NI	NI	NI	NI
Geology	NI	NI	NI	NI
Soils	NI	NI	NI	NI
Climate	NI	NI	NI	NI
Population	NI	NI	NI	NI
Economic /Social Profile	NI	Neg-100K	Neg–100K	Neg–1M
Land Use	NI	Pos	NI	Pos
Floodplain	NI	NI	NI	NI
Wetlands	NI	NI	NI	NI
Wild and Scenic Rivers	NI	NI	NI	NI
Cultural Resources	NI	NI	NI	NI
Flora and Fauna	NI	NI	NI	NI
Recreation and Open Space	NI	NI	NI	NI
Agricultural Lands	NI	NI	NI	NI
Air Quality	NI	NI	NI	NI
Energy	NI	Pos	NI	Pos
Water Quality	NI	NI	Pos	Pos

5.6 Evaluation of Final Public Input

The Juliaetta Water System Facility Plan was developed in coordination with the Juliaetta Mayor and City Council with additional input from the Public Works Department. The project alternatives will not be presented to the public in formal public meeting since the discussions were held during regularly scheduled and advertised monthly City Council Meetings.

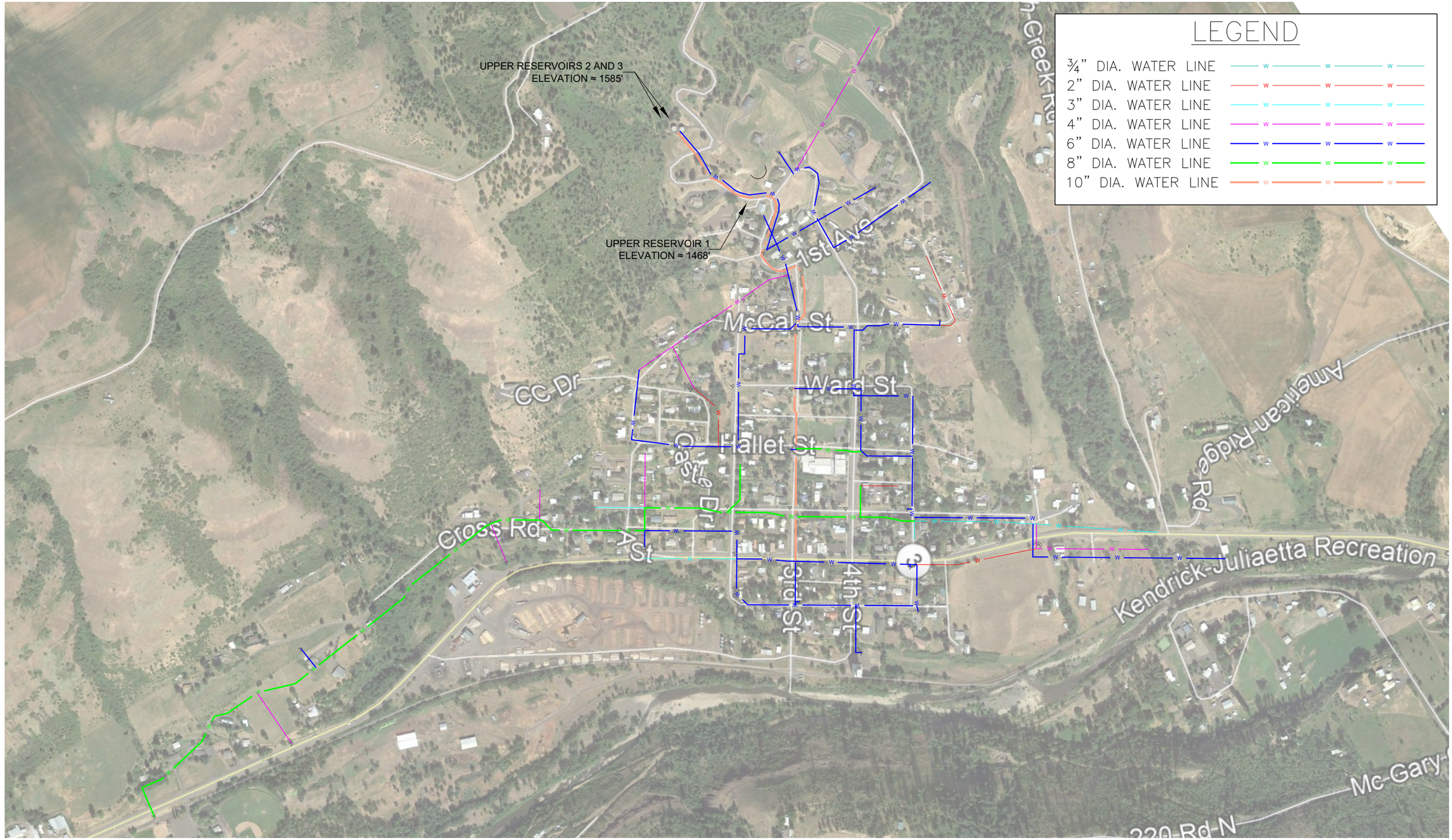
5.7 Cost Effectiveness Analysis

After many city council discussions and the public's and Great West's input, replacing undersized pipes and looping dead ends lines emerged as the option that best addresses the need for consistent delivery throughout the system, adding to the needed fire protection and other system improvements for the lowest cost. The immediate replacement of the Water line under the Potlatch River to Well #5 is the highest priority project that the City will complete in 2020. Replacing the line under the Potlatch River will also allow the City to take Well #5 offline is there continues to be violations to the water quality testing of the well.

Appendix A

Existing System Map

Area of Potential Effect/ Project Planning Area Map



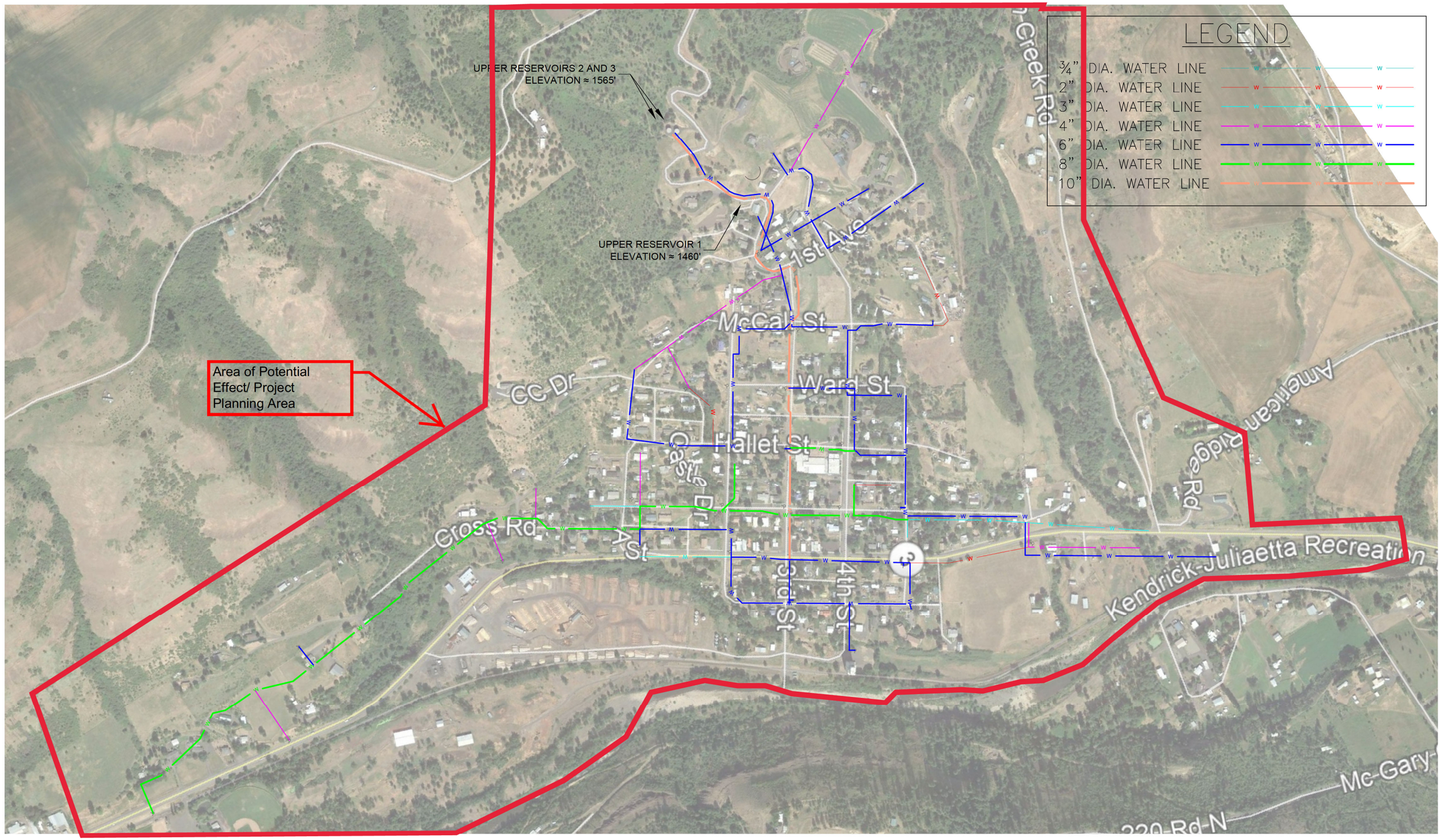
M:\4--18164--Juliaetta Water Line Reconnection\CADD 4--18164\Exhibits\4--18164 Water System Map Exhibit.dwg

GreatWest engineering®

NORTH

APPENDIX A
EXISTING WATER SYSTEM MAP
NOT TO SCALE

CITY OF JULIAETTA
WATER LINE RECONNECTION PROJECT



GreatWest engineering®

NORTH

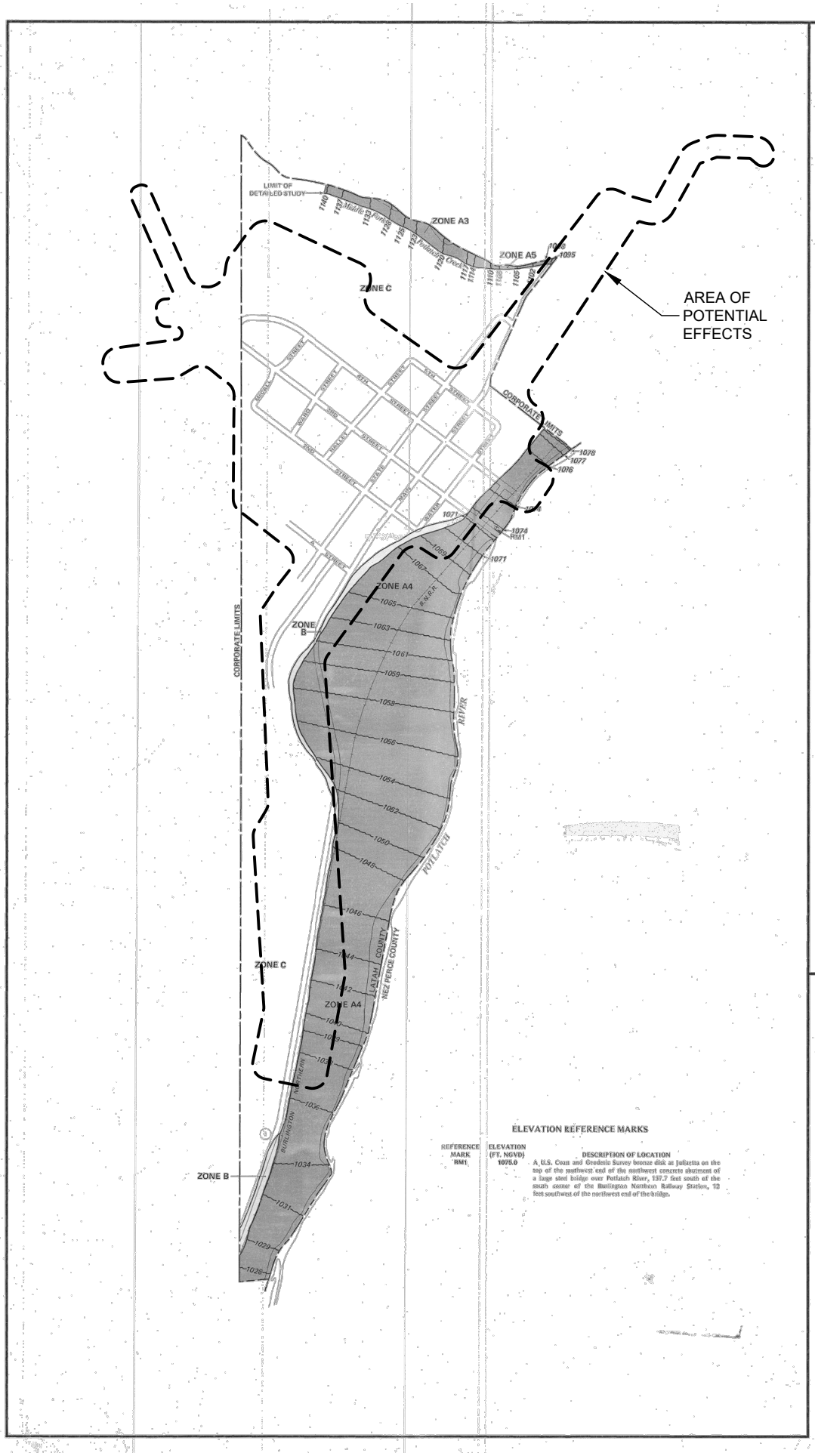
APPENDIX A
APE/PPA MAP
NOT TO SCALE

CITY OF JULIAETTA
WATER LINE RECONNECTION PROJECT

M:\4-18164-Juliaetta Water Line Reconnection\CADD 4-18164\Exhibits\4-18164 Water System Map Exhibit.dwg

Appendix B

1980 Flood Insurance Rate Map (FIRM)



ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM1	1075.0	A U.S. Coast and Geodetic Survey bronze disk at Juliaetta on the top of the southwest end of the northwest concrete abutment of a large steel bridge over Potlatch River, 137.7 feet south of the south corner of the Burlington Northern Railway Station, 12 feet southwest of the northwest end of the bridge.

KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations* With Date of Identification e.g., 12/2/74
100-Year Flood Boundary
500-Year Flood Boundary

ZONE B
ZONE A1 DATE
ZONE A5 DATE
ZONE B

Base Flood Elevation Line With Elevation In Feet** — 513

Base Flood Elevation in Feet Where Uniform Within Zone** — (EL 987)

Elevation Reference Mark — RM7 ×

River Mile — • M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

INITIAL IDENTIFICATION: DECEMBER 13, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS: DECEMBER 20, 1974

FLOOD INSURANCE RATE MAP EFFECTIVE: MARCH 4, 1980

FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620, or (800) 424-8872.

APPROXIMATE SCALE
500 0 500 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
JULIAETTA, IDAHO
LATAH COUNTY

ONLY PANEL PRINTED

COMMUNITY-PANEL NUMBER
160088 0001 B

EFFECTIVE DATE:
MARCH 4, 1980

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

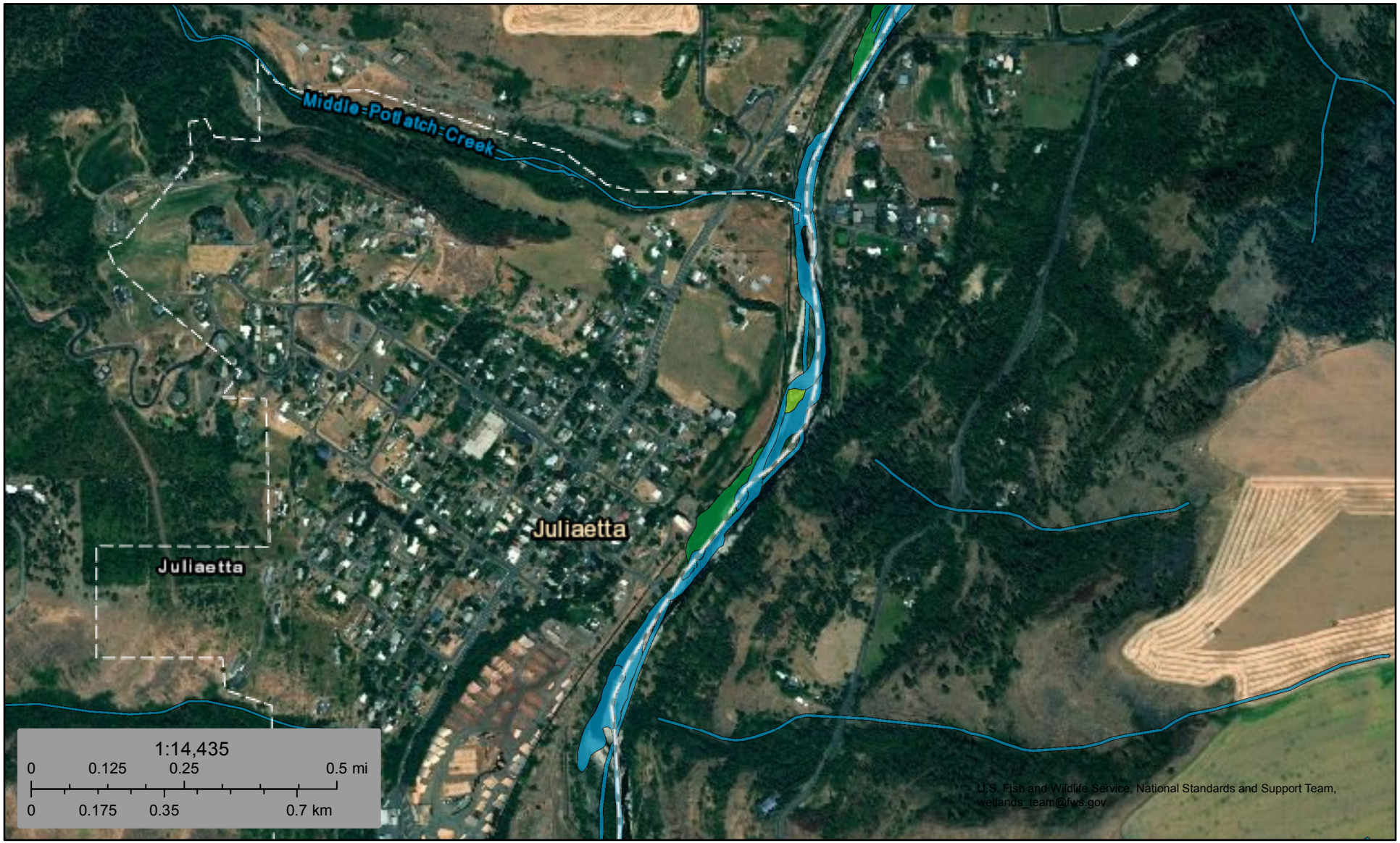
Appendix C

USFWS Wetlands Map

U.S. Fish and Wildlife Service

National Wetlands Inventory

Juliaetta Water Distribution Project



June 3, 2019

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

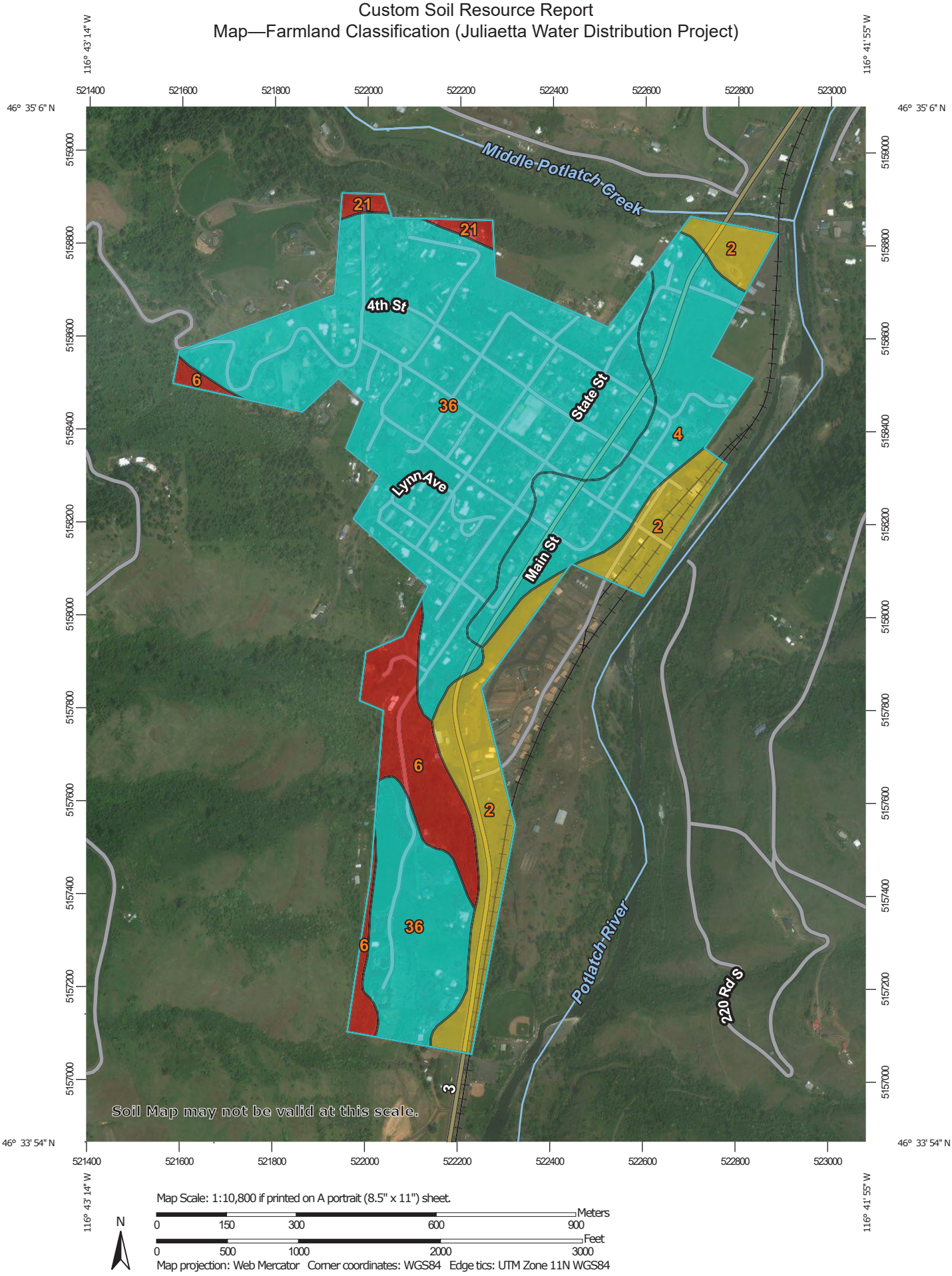
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Appendix D

NRCS Farmland of Statewide Importance Map

Custom Soil Resource Report
Map—Farmland Classification (Juliaetta Water Distribution Project)



Map Scale: 1:10,800 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
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- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Latah County, Idaho
Survey Area Data: Version 8, Sep 13, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 11, 2009—Aug 23, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Farmland Classification (Juliaetta Water Distribution Project)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2	Aquic Xerofluvents, 0 to 3 percent slopes	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	31.4	14.3%
4	Athena-Palouse complex, 7 to 25 percent slopes	Farmland of statewide importance	35.0	15.9%
6	Bluesprin-Keuterville complex, 35 to 65 percent slopes	Not prime farmland	17.9	8.1%
21	Klickson cobbly ashy loam, 35 to 65 percent slopes	Not prime farmland	2.3	1.0%
36	Palouse silt loam, 7 to 25 percent slopes	Farmland of statewide importance	133.8	60.7%
Totals for Area of Interest			**220.4**	**100.0%**

Rating Options—Farmland Classification (Juliaetta Water Distribution Project)

Aggregation Method: No Aggregation Necessary

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The majority of soil attributes are associated with a component of a map unit, and such an attribute has to be aggregated to the map unit level before a thematic map can be rendered. Map units, however, also have their own attributes. An attribute of a map unit does not have to be aggregated in order to render a corresponding

Appendix E

Consumer Confidence Report (2018)

Consumer Confidence Report for 2018

Is my water safe?

We are pleased to present this year's Annual Water Quality Report (Consumer Confidence Report) as required by the Safe Drinking Water Act (SDWA). This report is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. This report is a snapshot of last year's water quality. We are committed to providing you with information because informed customers are our best allies. Last year, we conducted tests for over 80 contaminants. As we informed you at the time, our water temporarily exceeded drinking water standards. (For more information see the section labeled Violations at the end of the report.)

Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

Where does my water come from?

The City of Juliaetta utilizes water from 3 types of sources. Two underground Wells, Cox Spring, and Surface Water from Potlatch Creek which is filtered at the Water Treatment Plant.

Source water assessment and its availability

A source water assessment is available at city hall for review. These source water assessments are performed every couple of years as required by the Idaho Department of Environmental Quality. The source water assessment is focused on upstream activities and areas that could cause contamination to our drinking water. The water Treatment plant, the wells, Cox Spring and the distribution system also had a sanitary survey performed (inspection) within the last two years and a copy is available at city hall as well.

Why are there contaminants in my drinking water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791). The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity:
microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

How can I get involved?

The public is welcome to attend the regulary scheduled city council meetings to be involved and informed about our water system.

Water Conservation Tips

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference - try one today and soon it will become second nature.

- Take short showers - a 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill!
- Visit www.epa.gov/watersense for more information.

Cross Connection Control Survey

The purpose of this survey is to determine whether a cross-connection may exist at your home or business. A cross connection is an unprotected or improper connection to a public water distribution system that may cause contamination or pollution to enter the system. We are responsible for enforcing cross-connection control regulations and insuring that no contaminants can, under any flow conditions, enter the distribution system. If you have any of the devices listed below please contact us so that we can discuss the issue, and if needed, survey your connection and assist you in isolating it if that is necessary.

- Boiler/ Radiant heater (water heaters not included)
- Underground lawn sprinkler system
- Pool or hot tub (whirlpool tubs not included)
- Additional source(s) of water on the property
- Decorative pond
- Watering trough

Source Water Protection Tips

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides - they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's Adopt Your Watershed to locate groups in your community, or visit the Watershed Information Network's How to Start a Watershed Team.
- Organize a storm drain stenciling project with your local government or water supplier. Stencil a message next to the street drain reminding people "Dump No Waste - Drains to River" or "Protect Your Water." Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

Other Information

Additional Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. City of Juliaetta is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential

for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Total Organic Carbon (TOC) Explanation

The Total Organic Carbon removal ratio fell below the average allowable limit for several months. This violation has been reported on the back of the city water bill since the violation has occurred as required by the Idaho Department of Environmental Quality. The city is in the process of having the filter media replaced at the Water Treatment Plant and this should correct the removal ratio and put us back into compliance. The carbon is not a health concern, as it is a natural substance found in surface water.

Water Quality Data Table

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. The table below lists all of the drinking water contaminants that we detected during the calendar year of this report. Although many more contaminants were tested, only those substances listed below were found in your water. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old. In this table you will find terms and abbreviations that might not be familiar to you. To help you better understand these terms, we have provided the definitions below the table.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Detect In Your Water	Range		Sample Date	Violation	Typical Source
				Low	High			
Disinfectants & Disinfection By-Products								
(There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)								

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Detect In Your Water	Range		Sample Date	Violation	Typical Source
				Low	High			
Chlorine (as Cl2) (ppm)	4	4	1.28	.15	1.28	2018	No	Water additive used to control microbes
Haloacetic Acids (HAA5) (ppb)	NA	60	NA	NA	NA	2018	No	By-product of drinking water chlorination
TTHMs [Total Trihalomethanes] (ppb)	NA	80	NA	NA	NA	2018	No	By-product of drinking water disinfection
Total Organic Carbon (% Removal)	NA	TT	NA	NA	NA	2018	Yes	Naturally present in the environment
Inorganic Contaminants								
Nitrate [measured as Nitrogen] (ppm)	10	10	12.4	9.11	12.4	2018	Yes	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits, Well #5
Microbiological Contaminants								
E. coli (RTCR) - in the distribution system	0	Routine and repeat samples are total coliform positive and either is E. coli - positive or system fails to take repeat samples following E. coli positive routine sample or system fails to analyze total coliform positive repeat sample for E. coli.	19	NA	NA	2018	No	Naturally present in the environment
Although we have detected E. coli, we are not in violation of the E. coli MCL.								
Turbidity (NTU)	NA	0.3	100	NA	NA	2018	No	Soil runoff
100% of the samples were below the TT value of .3. A value less than 95% constitutes a TT violation. The highest single measurement was .296. Any measurement in excess of 1 is a violation unless otherwise approved by the state.								
Synthetic organic contaminants including pesticides and herbicides								
Picloram (ppb)	500	500	14.4	NA	NA	2018	No	Herbicide runoff, Well #5

Violations and Exceedances
Nitrate [measured as Nitrogen] Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome. The high Nitrate level began occurring in April of 2018 at Well #5 and lasted through July of 2018. The Well is located across the Potlatch River and all 5 users were notified of the high Nitrate levels. Well #5 is not connected to the main City water supply at this time. The city purchased bottled water for the users until the Nitrate level was decreased by wasting water away from the well house.

Undetected Contaminants

The following contaminants were monitored for, but not detected, in your water.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Violation	Typical Source
2,4-D (ppb)	70	70	ND	No	Runoff from herbicide used on row crops, Well #5
Atrazine (ppb)	3	3	ND	No	Runoff from herbicide used on row crops, Well #5
Benzo(a)pyrene (ppt)	0	200	ND	No	Leaching from linings of water storage tanks and distribution lines, Well #5
Carbofuran (ppb)	40	40	ND	No	Leaching of soil fumigant used on rice and alfalfa, Well #5
Chlordane (ppb)	0	2	ND	No	Residue of banned termiticide, Well #5
Dalapon (ppb)	200	200	ND	No	Runoff from herbicide used on rights of way, Well #5
Di (2-ethylhexyl) adipate (ppb)	400	400	ND	No	Discharge from chemical factories, Well #5
Di (2-ethylhexyl) phthalate (ppb)	0	6	ND	No	Discharge from rubber and chemical factories, Well #5
Dinoseb (ppb)	7	7	ND	No	Runoff from herbicide used on soybeans and vegetables, Well #5
Diquat (ppb)	20	20	ND	No	Runoff from herbicide use, Well #5
Endothall (ppb)	100	100	ND	No	Runoff from herbicide use, Well #5
Endrin (ppb)	2	2	ND	No	Residue of banned insecticide, Well #5
Ethylene dibromide (ppt)	0	50	ND	No	Discharge from petroleum refineries, Well #5
Glyphosate (ppb)	700	700	ND	No	Runoff from herbicide use, Well #5
Heptachlor (ppt)	0	400	ND	No	Residue of banned pesticide, Well #5
Heptachlor epoxide (ppt)	0	200	ND	No	Breakdown of heptachlor, Well #5

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Violation	Typical Source
Hexachlorobenzene (ppb)	0	1	ND	No	Discharge from metal refineries and agricultural chemical factories, Well #5
Hexachlorocyclopentadiene (ppb)	50	50	ND	No	Discharge from chemical factories, Well #5
Methoxychlor (ppb)	40	40	ND	No	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock, Well #5
Oxamyl [Vydate] (ppb)	200	200	ND	No	Runoff/leaching from insecticide used on apples, potatoes and tomatoes, Well #5
Pentachlorophenol (ppb)	0	1	ND	No	Discharge from wood preserving factories, Well #5
Simazine (ppb)	4	4	ND	No	Herbicide runoff, Well #5
Toxaphene (ppb)	0	3	ND	No	Runoff/leaching from insecticide used on cotton and cattle, Well #5

Unit Descriptions	
Term	**Definition**
ppm	ppm: parts per million, or milligrams per liter (mg/L)
ppb	ppb: parts per billion, or micrograms per liter (µg/L)
ppt	ppt: parts per trillion, or nanograms per liter
NTU	NTU: Nephelometric Turbidity Units. Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.
NA	NA: not applicable
ND	ND: Not detected
NR	NR: Monitoring not required, but recommended.
positive samples	positive samples/yr: The number of positive samples taken that year

Important Drinking Water Definitions	
Term	**Definition**
MCLG	MCLG: Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
MCL	MCL: Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
TT	TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
AL	AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Variances and Exemptions	Variances and Exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

Important Drinking Water Definitions	
MRDLG	MRDLG: Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
MRDL	MRDL: Maximum residual disinfectant level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
MNR	MNR: Monitored Not Regulated
MPL	MPL: State Assigned Maximum Permissible Level

For more information please contact:

Contact Name: Josh Luscombe
Address: PO Box 229
Juliaetta, ID 83535
Phone: 208-276-7791

Appendix F

Hydraulic Model Results

Current Conditions

- Average Day Demand
- Max Day Demand
- Fire Flow Report

Projected 40 Year Conditions with no Improvements

- Average Day Demand
- Max Day Demand
- Fire Flow Report

Projected 40 Year Conditions with Proposed Improvements

- Average Day Demand
- Max Day Demand
- Fire Flow Report

Current Conditions - Average Day Demand

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
Cox Spring	1,250.88	-16.00	1,593.66	148.31
J-001	1,129.47	1.76	1,591.90	200.07
J-001.5 (no demand)	1,176.99	0.00	1,590.99	179.12
J-002	1,180.28	1.76	1,590.97	177.68
J-003	1,259.85	1.76	1,590.76	143.17
J-003.5 (no demand)	1,302.70	0.00	1,590.68	124.59
J-004	1,303.28	1.76	1,590.68	124.34
J-005	1,338.42	1.76	1,590.62	109.12
J-006	1,337.62	1.76	1,590.62	109.46
J-007 (Well 9 & SWTP Junction)	1,345.40	0.00	1,590.61	106.09
J-007.5	1,400.16	1.76	1,590.58	82.39
J-008 (Pre BP Junction)	1,401.39	0.00	1,590.58	81.85
J-009 (Post BP Junction)	1,402.84	0.00	1,584.38	78.54
J-101	1,130.07	1.76	1,591.09	199.46
J-102	1,132.50	1.76	1,591.09	198.41
J-103	1,143.13	1.76	1,590.95	193.75
J-104	1,150.26	1.76	1,590.93	190.66
J-105	1,121.36	1.76	1,590.93	203.16
J-106	1,105.96	1.76	1,590.93	209.82
J-107	1,101.35	1.76	1,590.93	211.82
J-108	1,103.95	1.76	1,590.93	210.69
J-109	1,148.52	1.76	1,590.93	191.41
J-110	1,147.34	1.76	1,590.93	191.92
J-111	1,138.40	1.76	1,590.93	195.79
J-111.5 (no demand)	1,119.34	0.00	1,590.93	204.03
J-112	1,118.08	1.76	1,590.93	204.58
J-113	1,095.53	1.76	1,590.92	214.33
J-114	1,141.53	1.76	1,591.09	194.51
J-115	1,159.56	1.76	1,591.03	186.68
J-116	1,174.43	1.76	1,590.98	180.22
J-117	1,165.38	1.76	1,590.98	184.14
J-118	1,186.94	1.76	1,590.95	174.80
J-119	1,204.34	1.76	1,590.95	167.27
J-120	1,197.39	1.76	1,590.93	170.27
J-121	1,210.57	1.76	1,590.95	164.57
J-122	1,185.24	1.76	1,590.95	175.53
J-123	1,176.04	1.76	1,590.93	179.51
J-124	1,225.01	1.76	1,590.93	158.32
J-125	1,159.03	1.76	1,590.93	186.86
J-125.5	1,174.29	1.76	1,590.93	180.26
J-126	1,163.84	1.76	1,590.93	184.78
J-127	1,199.84	1.76	1,590.93	169.21
J-128	1,132.39	1.76	1,590.92	198.38
J-129	1,135.84	1.76	1,590.92	196.89
J-130	1,192.39	1.76	1,590.92	172.42
J-131	1,136.15	1.76	1,590.92	196.76
J-132	1,111.15	1.76	1,590.92	207.57

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-133	1,121.48	1.76	1,590.93	203.11
J-134	1,110.83	1.76	1,590.92	207.71
J-135	1,126.51	1.76	1,590.92	200.93
J-136	1,154.36	1.76	1,590.92	188.88
J-137	1,184.34	1.76	1,590.92	175.91
J-138	1,147.13	1.76	1,590.92	192.01
J-139	1,080.70	1.76	1,590.92	220.75
J-140	1,078.99	1.76	1,590.92	221.49
J-140.5 (no demand)	1,078.68	0.00	1,590.92	221.62
J-201	1,200.84	1.76	1,590.58	168.62
J-202	1,228.22	1.76	1,590.58	156.78
J-203	1,230.20	1.76	1,590.58	155.92
J-204	1,241.03	1.76	1,590.58	151.23
J-205	1,214.57	1.76	1,590.57	162.68
J-206	1,200.11	1.76	1,590.57	168.93
J-207	1,214.38	1.76	1,590.57	162.76
J-208	1,259.52	1.76	1,590.58	143.23
J-209	1,289.17	1.76	1,590.58	130.41
J-210	1,283.40	1.76	1,590.58	132.90
J-211	1,257.79	1.76	1,590.57	143.98
J-212	1,253.35	1.76	1,590.57	145.90
J-213	1,294.28	1.76	1,590.57	128.19
J-214	1,306.29	1.76	1,590.57	123.00
J-215	1,341.76	1.76	1,590.58	107.65
J-216	1,353.90	1.76	1,590.58	102.40
J-217	1,361.72	1.76	1,590.62	99.04
J-218	1,321.52	1.76	1,590.68	116.45
J-219	1,346.24	1.76	1,590.58	105.71
J-219.5 (no demand)	1,384.12	0.00	1,590.58	89.33
J-220	1,392.24	1.76	1,590.58	85.81
J-301	1,408.06	1.76	1,584.38	76.28
J-302	1,370.76	1.76	1,584.38	92.42
J-303	1,410.82	1.76	1,584.38	75.09
J-304	1,411.36	1.76	1,584.38	74.85
J-305	1,409.85	1.76	1,584.38	75.51
J-306	1,448.96	1.76	1,584.38	58.59
SWTP Junction 1	1,091.94	0.00	1,096.17	1.83
SWTP Junction 2	1,093.01	0.00	1,593.04	216.34
SWTP Junction 3	1,093.08	0.00	1,593.03	216.30
SWTP Junction 4	1,093.51	0.00	1,593.00	216.11
SWTP Junction 5	1,093.35	0.00	1,593.00	216.18

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-1	J-116	J-115	3.0	PVC	150.0	-5.75	0.26	426
P-2	J-116	J-001.5 (no demand)	6.0	PVC	150.0	-56.07	0.64	23
P-3	J-111	J-108	6.0	PVC	150.0	8.37	0.09	255
P-4	J-107	J-106	6.0	PVC	150.0	1.58	0.02	382
P-5	J-303	FH-34	6.0	PVC	150.0	0.00	0.00	375
P-6	J-303	J-306	6.0	PVC	150.0	1.76	0.02	285
P-7	J-303	J-302	6.0	PVC	150.0	3.51	0.04	242
P-8	J-206	J-205	6.0	PVC	150.0	-5.60	0.06	122
P-9	J-206	J-207	6.0	PVC	150.0	2.74	0.03	580
P-10	J-214	J-213	4.0	PVC	150.0	0.77	0.02	231
P-11	J-214	J-212	4.0	PVC	150.0	0.66	0.02	253
P-12	J-214	J-216	4.0	PVC	150.0	-3.19	0.08	592
P-13	J-304	J-303	6.0	PVC	150.0	7.03	0.08	394
P-14	J-304	J-305	10.0	PVC	150.0	1.76	0.01	11
P-15	J-306	FH-7	6.0	PVC	150.0	0.00	0.00	27
P-16	J-306	FH-8	6.0	PVC	150.0	0.00	0.00	409
P-17	J-302	J-301	6.0	PVC	150.0	1.76	0.02	690
P-18	J-302	FH-9	6.0	PVC	150.0	0.00	0.00	13
P-19	SWTP Junction 4	J-001	6.0	Asbestos Cement	140.0	103.54	1.17	1,140
P-20	SWTP Junction 4	SWTP Junction 5	6.0	Asbestos Cement	140.0	0.00	0.00	10
P-21	SWTP Junction 4	SWTP Junction 3	6.0	Cast iron	130.0	-103.54	1.17	29
P-22	J-005	J-006	6.0	Asbestos Cement	140.0	1.76	0.02	11
P-23	J-209	J-215	10.0	PVC	150.0	-12.31	0.05	401
P-24	J-209	J-208	6.0	PVC	150.0	2.45	0.03	444
P-25	J-209	J-210	10.0	PVC	150.0	8.10	0.03	33
P-26	J-204	J-203	8.0	PVC	150.0	4.58	0.03	382
P-27	J-204	J-210	10.0	PVC	150.0	-6.34	0.03	263
P-28	J-204	PRV-4	10.0	PVC	150.0	0.00	0.00	14
P-29	J-202	J-201	6.0	PVC	150.0	1.76	0.02	339
P-30	J-211	J-215	6.0	PVC	150.0	-9.11	0.10	739
P-31	J-205	J-211	6.0	PVC	150.0	-7.36	0.08	355
P-32	J-205	FH-37	6.0	PVC	150.0	0.00	0.00	16
P-33	J-207	J-213	6.0	PVC	150.0	0.98	0.01	362
P-34	J-203	J-202	8.0	PVC	150.0	2.82	0.02	75
P-35	J-208	J-202	6.0	PVC	150.0	0.69	0.01	352
P-36	J-127	J-126	6.0	PVC	150.0	-1.76	0.02	335
P-37	J-126	J-125	6.0	PVC	150.0	-3.52	0.04	40
P-38	J-125	J-128	8.0	PVC	150.0	14.81	0.09	624
P-39	J-125	J-125.5	8.0	PVC	150.0	-20.08	0.13	430
P-40	J-123	J-124	10.0	PVC	150.0	1.76	0.01	377
P-41	J-123	J-125.5	10.0	PVC	150.0	-3.52	0.01	57
P-42	J-128	J-131	3.0	PVC	150.0	1.76	0.08	222
P-43	J-128	J-132	8.0	PVC	150.0	11.30	0.07	144

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-44	J-132	J-134	8.0	PVC	150.0	15.83	0.10	14
P-45	J-134	J-129	4.0	PVC	150.0	3.52	0.09	167
P-46	J-134	J-135	8.0	PVC	150.0	10.55	0.07	692
P-47	J-129	J-130	4.0	PVC	150.0	1.76	0.04	319
P-48	J-129	FH-30	4.0	PVC	150.0	0.00	0.00	11
P-49	J-135	J-136	8.0	PVC	150.0	8.79	0.06	435
P-50	J-136	J-137	8.0	PVC	150.0	7.03	0.04	865
P-51	J-137	J-138	8.0	PVC	150.0	5.28	0.03	425
P-52	J-138	J-139	8.0	PVC	150.0	3.52	0.02	819
P-53	J-139	J-140	8.0	PVC	150.0	1.76	0.01	1,113
P-54	J-112	J-107	6.0	PVC	150.0	-3.28	0.04	671
P-55	J-113	J-112	3.0	PVC	150.0	-1.76	0.08	472
P-56	J-109	J-110	6.0	PVC	150.0	-4.00	0.05	398
P-57	J-108	J-107	6.0	PVC	150.0	6.61	0.08	20
P-58	J-106	J-105	6.0	PVC	150.0	-0.18	0.00	373
P-59	J-133	J-132	6.0	PVC	150.0	6.29	0.07	786
P-60	J-110	J-111	6.0	PVC	150.0	-5.76	0.07	323
P-61	J-002	J-003	6.0	Asbestos Cement	140.0	43.95	0.50	1,070
P-62	J-117	J-116	3.0	PVC	150.0	-1.76	0.08	112
P-63	J-105	J-104	6.0	PVC	150.0	-1.94	0.02	268
P-64	J-212	J-206	4.0	PVC	150.0	-1.10	0.03	457
P-65	J-216	J-220	4.0	PVC	150.0	-4.95	0.13	314
P-66	J-004	J-005	6.0	Asbestos Cement	140.0	36.92	0.42	355
P-67	J-004	J-003.5 (no demand)	6.0	Asbestos Cement	140.0	-38.68	0.44	6
P-68	J-218	J-217	2.0	PVC	150.0	1.76	0.18	557
P-69	J-101	J-102	4.0	PVC	150.0	-1.76	0.04	39
P-70	J-122	J-118	8.0	PVC	150.0	-51.28	0.33	68
P-71	J-121	J-119	6.0	PVC	150.0	-1.76	0.02	53
P-72	J-118	J-116	8.0	PVC	150.0	-58.31	0.37	364
P-73	J-120	J-119	2.0	PVC	150.0	-1.76	0.18	260
P-74	J-119	J-118	6.0	PVC	150.0	-5.27	0.06	224
P-75	SWTP Reservoir	SWTP Junction 1	6.0	PVC	150.0	103.54	1.17	202
P-76	200 gpm SWTP Pump 1	SWTP Junction 3	6.0	PVC	150.0	61.18	0.69	10
P-77	J-001	J-001.5 (no demand)	6.0	Asbestos Cement	140.0	101.78	1.15	969
P-78	J-114	J-102	4.0	PVC	150.0	6.73	0.17	140
P-79	J-102	J-103	2.0	PVC	150.0	3.21	0.33	475
P-80	J-104	J-109	6.0	PVC	150.0	-2.24	0.03	42
P-81	J-104	J-103	2.0	PVC	150.0	-1.46	0.15	308
P-82	J-305	PRV-3	10.0	PVC	150.0	0.00	0.00	14
P-83	J-115	J-114	3.0	PVC	150.0	-7.51	0.34	324
P-84	J-115	FH-33	3.0	PVC	150.0	0.00	0.00	14

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-85	J-220	J-219.5 (no demand)	10.0	PVC	150.0	-6.71	0.03	69
P-86	Booster Pump (Lag)	J-009 (Post BP Junction)	6.0	PVC	150.0	0.00	0.00	18
P-87	J-008 (Pre BP Junction)	Booster Pump (Lag)	4.0	PVC	150.0	0.00	0.00	67
P-88	J-008 (Pre BP Junction)	Booster Pump (Lead)	4.0	PVC	150.0	0.00	0.00	68
P-89	J-008 (Pre BP Junction)	J-007.5	6.0	Asbestos Cement	140.0	0.00	0.00	20
P-90	J-009 (Post BP Junction)	Reservoir R2	6.0	PVC	150.0	0.00	0.00	1,289
P-91	PRV-3	J-220	10.0	PVC	150.0	0.00	0.00	119
P-92	PRV-4	J-124	10.0	PVC	150.0	0.00	0.00	86
P-93	J-007 (Well 9 & SWTP Junction)	J-005	6.0	Asbestos Cement	140.0	-33.40	0.38	90
P-94	SWTP Junction 5	Well No. 5 Pump	6.0	Asbestos Cement	140.0	0.00	0.00	1,600
P-95	SWTP Junction 3	SWTP Junction 2	6.0	PVC	150.0	-42.36	0.48	11
P-96	SWTP Junction 2	200 gpm SWTP Pump 2	6.0	Cast iron	130.0	(N/A)	(N/A)	10
P-97	SWTP Junction 2	100 gpm SWTP Pump	6.0	Cast iron	130.0	-42.36	0.48	23
P-98	SWTP Junction 1	100 gpm SWTP Pump	6.0	PVC	150.0	42.36	0.48	34
P-99	SWTP Junction 1	200 gpm SWTP Pump 2	6.0	PVC	150.0	(N/A)	(N/A)	19
P-100	SWTP Junction 1	200 gpm SWTP Pump 1	6.0	PVC	150.0	61.18	0.69	29
P-101	Booster Pump (Lead)	J-009 (Post BP Junction)	6.0	PVC	150.0	0.00	0.00	18
P-102	J-219	J-215	10.0	PVC	150.0	23.18	0.09	200
P-103	FCV-8	J-114	3.0	PVC	150.0	16.00	0.73	3,239
P-104	Well No. 9 Pump	J-007 (Well 9 & SWTP Junction)	4.0	PVC	150.0	0.00	0.00	539
P-105	Well No. 9 Pump	R-10	6.0	PVC	150.0	0.00	0.00	22
P-106	Well No. 5 Reservoir	Well No. 5 Pump	6.0	Asbestos Cement	140.0	0.00	0.00	21
P-107(1)	J-140	J-140.5 (no demand)	8.0	PVC	150.0	0.00	0.00	202
P-107(2)	J-140.5 (no demand)	FH-21	6.0	PVC	150.0	0.00	0.00	9
P-108	J-007.5	Reservoir R1	6.0	Asbestos Cement	140.0	0.00	0.00	321
P-109	J-007.5	J-219.5 (no demand)	6.0	Asbestos Cement	140.0	-1.76	0.02	104

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-110	J-003.5 (no demand)	J-003	6.0	Asbestos Cement	140.0	-42.19	0.48	449
P-111	J-003.5 (no demand)	J-218	6.0	PVC	150.0	3.52	0.04	530
P-112	Reservoir R2	J-304	10.0	PVC	150.0	10.55	0.04	1,151
P-113	Cox Spring	FCV-8	3.0	PVC	150.0	16.00	0.73	24
P-114	FH-10	J-101	4.0	PVC	150.0	0.00	0.00	13
P-115	FH-11	J-109	6.0	PVC	150.0	0.00	0.00	16
P-116	FH-12	J-105	6.0	PVC	150.0	0.00	0.00	16
P-117	FH-13	J-106	6.0	PVC	150.0	0.00	0.00	333
P-118	FH-36	J-108	6.0	PVC	150.0	0.00	0.00	24
P-119	FH-15	J-133	4.0	PVC	150.0	0.00	0.00	19
P-120	FH-24	J-126	6.0	PVC	150.0	0.00	0.00	6
P-121	FH-23	J-212	4.0	PVC	150.0	0.00	0.00	29
P-122	FH-22	J-207	6.0	PVC	150.0	0.00	0.00	23
P-123	FH-16	J-132	6.0	PVC	150.0	0.00	0.00	101
P-124	FH-25	J-123	4.0	PVC	150.0	0.00	0.00	41
P-125	FH-14	J-124	6.0	PVC	150.0	0.00	0.00	19
P-126	FH-28	J-210	6.0	PVC	150.0	0.00	0.00	20
P-127	FH-5	J-006	6.0	PVC	150.0	0.00	0.00	37
P-128	FH-3	J-004	6.0	PVC	150.0	0.00	0.00	35
P-129	FH-6	J-305	6.0	PVC	150.0	0.00	0.00	17
P-130	FH-4	J-218	6.0	PVC	150.0	0.00	0.00	29
P-131	FH-17	J-135	6.0	PVC	150.0	0.00	0.00	24
P-132	FH-18	J-136	4.0	PVC	150.0	0.00	0.00	297
P-133	FH-32	J-137	6.0	PVC	150.0	0.00	0.00	16
P-134	FH-19	J-138	6.0	PVC	150.0	0.00	0.00	147
P-135	FH-20	J-139	4.0	PVC	150.0	0.00	0.00	414
P-136	FH-1	J-002	6.0	PVC	150.0	0.00	0.00	30
P-137	FH-2	J-003	6.0	PVC	150.0	0.00	0.00	22
P-138	FH-27 (SCHOOL)	J-203	6.0	PVC	150.0	0.00	0.00	18
P-139	FH-26	J-122	6.0	PVC	150.0	0.00	0.00	55
P-140	FH-29	J-216	4.0	PVC	150.0	0.00	0.00	16
P-141	FH-31	J-110	6.0	PVC	150.0	0.00	0.00	40
P-142	FH-35	J-211	6.0	PVC	150.0	0.00	0.00	8
P-143	J-125.5	J-122	8.0	PVC	150.0	-49.53	0.32	309
P-144	J-125.5	J-111	10.0	PVC	150.0	24.17	0.10	281
P-145	J-001.5 (no demand)	J-002	6.0	Asbestos Cement	140.0	45.71	0.52	67
P-146	J-219.5 (no demand)	J-219	10.0	PVC	150.0	24.94	0.10	321
P-147	J-219.5 (no demand)	J-007 (Well 9 & SWTP Junction)	6.0	Asbestos Cement	140.0	-33.40	0.38	266
P-148	J-111	J-111.5 (no demand)	6.0	PVC	150.0	8.28	0.09	394
P-149	J-111.5 (no demand)	J-112	6.0	PVC	150.0	0.24	0.00	26

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-150	J-133	J-111.5 (no demand)	6.0	PVC	150.0	-8.05	0.09	26

Current Conditions -
Max Day Demand

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
Cox Spring	1,250.88	-16.00	1,491.49	104.10
J-001	1,129.47	3.87	1,491.99	156.84
J-001.5 (no demand)	1,176.99	0.00	1,488.98	134.98
J-002	1,180.28	3.87	1,488.96	133.55
J-003	1,259.85	3.87	1,488.71	99.02
J-003.5 (no demand)	1,302.70	0.00	1,488.62	80.44
J-004	1,303.28	3.87	1,488.62	80.19
J-005	1,338.42	3.87	1,488.58	64.97
J-006	1,337.62	3.87	1,488.58	65.31
J-007 (Well 9 & SWTP Junction)	1,345.40	0.00	1,488.58	61.95
J-007.5	1,400.16	3.87	1,487.90	37.96
J-008 (Pre BP Junction)	1,401.39	0.00	1,487.78	37.37
J-009 (Post BP Junction)	1,402.84	0.00	1,589.53	80.77
J-101	1,130.07	3.87	1,488.91	155.25
J-102	1,132.50	3.87	1,488.91	154.20
J-103	1,143.13	3.87	1,488.71	149.52
J-104	1,150.26	3.87	1,488.71	146.43
J-105	1,121.36	3.87	1,488.71	158.93
J-106	1,105.96	3.87	1,488.71	165.60
J-107	1,101.35	3.87	1,488.71	167.59
J-108	1,103.95	3.87	1,488.71	166.47
J-109	1,148.52	3.87	1,488.71	147.19
J-110	1,147.34	3.87	1,488.72	147.70
J-111	1,138.40	3.87	1,488.72	151.57
J-111.5 (no demand)	1,119.34	0.00	1,488.71	159.81
J-112	1,118.08	3.87	1,488.71	160.35
J-113	1,095.53	3.87	1,488.68	170.10
J-114	1,141.53	3.87	1,488.92	150.30
J-115	1,159.56	3.87	1,488.92	142.50
J-116	1,174.43	3.87	1,488.94	136.08
J-117	1,165.38	3.87	1,488.94	139.99
J-118	1,186.94	3.87	1,488.82	130.61
J-119	1,204.34	3.87	1,488.82	123.08
J-120	1,197.39	3.87	1,488.71	126.04
J-121	1,210.57	3.87	1,488.82	120.38
J-122	1,185.24	3.87	1,488.80	131.34
J-123	1,176.04	3.87	1,488.73	135.29
J-124	1,225.01	3.87	1,488.73	114.10
J-125	1,159.03	3.87	1,488.71	142.64
J-125.5	1,174.29	3.87	1,488.73	136.05
J-126	1,163.84	3.87	1,488.71	140.56
J-127	1,199.84	3.87	1,488.71	124.98
J-128	1,132.39	3.87	1,488.69	154.15
J-129	1,135.84	3.87	1,488.68	152.66
J-130	1,192.39	3.87	1,488.68	128.19
J-131	1,136.15	3.87	1,488.68	152.53
J-132	1,111.15	3.87	1,488.69	163.34

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-133	1,121.48	3.87	1,488.71	158.88
J-134	1,110.83	3.87	1,488.69	163.48
J-135	1,126.51	3.87	1,488.68	156.70
J-136	1,154.36	3.87	1,488.68	144.65
J-137	1,184.34	3.87	1,488.67	131.67
J-138	1,147.13	3.87	1,488.67	147.77
J-139	1,080.70	3.87	1,488.67	176.51
J-140	1,078.99	3.87	1,488.67	177.25
J-140.5 (no demand)	1,078.68	0.00	1,488.67	177.38
J-201	1,200.84	3.87	1,488.54	124.48
J-202	1,228.22	3.87	1,488.55	112.63
J-203	1,230.20	3.87	1,488.55	111.77
J-204	1,241.03	3.87	1,488.55	107.09
J-205	1,214.57	3.87	1,488.52	118.53
J-206	1,200.11	3.87	1,488.52	124.78
J-207	1,214.38	3.87	1,488.51	118.61
J-208	1,259.52	3.87	1,488.55	99.09
J-209	1,289.17	3.87	1,488.55	86.26
J-210	1,283.40	3.87	1,488.55	88.76
J-211	1,257.79	3.87	1,488.52	99.83
J-212	1,253.35	3.87	1,488.51	101.74
J-213	1,294.28	3.87	1,488.51	84.04
J-214	1,306.29	3.87	1,488.52	78.84
J-215	1,341.76	3.87	1,488.55	63.51
J-216	1,353.90	3.87	1,488.56	58.26
J-217	1,361.72	3.87	1,488.39	54.80
J-218	1,321.52	3.87	1,488.62	72.30
J-219	1,346.24	3.87	1,488.55	61.57
J-219.5 (no demand)	1,384.12	0.00	1,488.56	45.19
J-220	1,392.24	3.87	1,488.60	41.69
J-301	1,408.06	3.87	1,581.73	75.14
J-302	1,370.76	3.87	1,581.73	91.28
J-303	1,410.82	3.87	1,581.73	73.94
J-304	1,411.36	3.87	1,581.74	73.71
J-305	1,409.85	3.87	1,581.73	74.37
J-306	1,448.96	3.87	1,581.73	57.44
SWTP Junction 1	1,091.94	0.00	1,095.77	1.66
SWTP Junction 2	1,093.01	0.00	1,495.77	174.25
SWTP Junction 3	1,093.08	0.00	1,495.76	174.22
SWTP Junction 4	1,093.51	0.00	1,495.66	173.99
SWTP Junction 5	1,093.35	0.00	1,495.66	174.06

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-1	J-116	J-115	3.0	PVC	150.0	3.36	0.15	426
P-2	J-116	J-001.5 (no demand)	6.0	PVC	150.0	-142.54	1.62	23
P-3	J-111	J-108	6.0	PVC	150.0	19.58	0.22	255
P-4	J-107	J-106	6.0	PVC	150.0	5.26	0.06	382
P-5	J-303	FH-34	6.0	PVC	150.0	0.00	0.00	375
P-6	J-303	J-306	6.0	PVC	150.0	3.87	0.04	285
P-7	J-303	J-302	6.0	PVC	150.0	7.73	0.09	242
P-8	J-206	J-205	6.0	PVC	150.0	-10.24	0.12	122
P-9	J-206	J-207	6.0	PVC	150.0	4.82	0.05	580
P-10	J-214	J-213	4.0	PVC	150.0	2.92	0.07	231
P-11	J-214	J-212	4.0	PVC	150.0	2.31	0.06	253
P-12	J-214	J-216	4.0	PVC	150.0	-9.09	0.23	592
P-13	J-304	J-303	6.0	PVC	150.0	15.47	0.18	394
P-14	J-304	J-305	10.0	PVC	150.0	334.08	1.36	11
P-15	J-306	FH-7	6.0	PVC	150.0	0.00	0.00	27
P-16	J-306	FH-8	6.0	PVC	150.0	0.00	0.00	409
P-17	J-302	J-301	6.0	PVC	150.0	3.87	0.04	690
P-18	J-302	FH-9	6.0	PVC	150.0	0.00	0.00	13
P-19	SWTP Junction 4	J-001	6.0	Asbestos Cement	140.0	197.98	2.25	1,140
P-20	SWTP Junction 4	SWTP Junction 5	6.0	Asbestos Cement	140.0	0.00	0.00	10
P-21	SWTP Junction 4	SWTP Junction 3	6.0	Cast iron	130.0	-197.98	2.25	29
P-22	J-005	J-006	6.0	Asbestos Cement	140.0	3.87	0.04	11
P-23	J-209	J-215	10.0	PVC	150.0	-27.07	0.11	401
P-24	J-209	J-208	6.0	PVC	150.0	5.39	0.06	444
P-25	J-209	J-210	10.0	PVC	150.0	17.82	0.07	33
P-26	J-204	J-203	8.0	PVC	150.0	10.08	0.06	382
P-27	J-204	J-210	10.0	PVC	150.0	-13.95	0.06	263
P-28	J-204	PRV-4	10.0	PVC	150.0	0.00	0.00	14
P-29	J-202	J-201	6.0	PVC	150.0	3.87	0.04	339
P-30	J-211	J-215	6.0	PVC	150.0	-17.98	0.20	739
P-31	J-205	J-211	6.0	PVC	150.0	-14.11	0.16	355
P-32	J-205	FH-37	6.0	PVC	150.0	0.00	0.00	16
P-33	J-207	J-213	6.0	PVC	150.0	0.95	0.01	362
P-34	J-203	J-202	8.0	PVC	150.0	6.21	0.04	75
P-35	J-208	J-202	6.0	PVC	150.0	1.52	0.02	352
P-36	J-127	J-126	6.0	PVC	150.0	-3.87	0.04	335
P-37	J-126	J-125	6.0	PVC	150.0	-7.73	0.09	40
P-38	J-125	J-128	8.0	PVC	150.0	32.85	0.21	624
P-39	J-125	J-125.5	8.0	PVC	150.0	-44.45	0.28	430
P-40	J-123	J-124	10.0	PVC	150.0	3.87	0.02	377
P-41	J-123	J-125.5	10.0	PVC	150.0	-7.73	0.03	57
P-42	J-128	J-131	3.0	PVC	150.0	3.87	0.18	222
P-43	J-128	J-132	8.0	PVC	150.0	25.11	0.16	144

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-44	J-132	J-134	8.0	PVC	150.0	34.81	0.22	14
P-45	J-134	J-129	4.0	PVC	150.0	7.73	0.20	167
P-46	J-134	J-135	8.0	PVC	150.0	23.21	0.15	692
P-47	J-129	J-130	4.0	PVC	150.0	3.87	0.10	319
P-48	J-129	FH-30	4.0	PVC	150.0	0.00	0.00	11
P-49	J-135	J-136	8.0	PVC	150.0	19.34	0.12	435
P-50	J-136	J-137	8.0	PVC	150.0	15.47	0.10	865
P-51	J-137	J-138	8.0	PVC	150.0	11.60	0.07	425
P-52	J-138	J-139	8.0	PVC	150.0	7.74	0.05	819
P-53	J-139	J-140	8.0	PVC	150.0	3.87	0.02	1,113
P-54	J-112	J-107	6.0	PVC	150.0	-6.58	0.07	671
P-55	J-113	J-112	3.0	PVC	150.0	-3.87	0.18	472
P-56	J-109	J-110	6.0	PVC	150.0	-10.18	0.12	398
P-57	J-108	J-107	6.0	PVC	150.0	15.71	0.18	20
P-58	J-106	J-105	6.0	PVC	150.0	1.39	0.02	373
P-59	J-133	J-132	6.0	PVC	150.0	13.56	0.15	786
P-60	J-110	J-111	6.0	PVC	150.0	-14.05	0.16	323
P-61	J-002	J-003	6.0	Asbestos Cement	140.0	47.70	0.54	1,070
P-62	J-117	J-116	3.0	PVC	150.0	-3.87	0.18	112
P-63	J-105	J-104	6.0	PVC	150.0	-2.48	0.03	268
P-64	J-212	J-206	4.0	PVC	150.0	-1.56	0.04	457
P-65	J-216	J-220	4.0	PVC	150.0	-12.96	0.33	314
P-66	J-004	J-005	6.0	Asbestos Cement	140.0	32.24	0.37	355
P-67	J-004	J-003.5 (no demand)	6.0	Asbestos Cement	140.0	-36.10	0.41	6
P-68	J-218	J-217	2.0	PVC	150.0	3.87	0.39	557
P-69	J-101	J-102	4.0	PVC	150.0	-3.87	0.10	39
P-70	J-122	J-118	8.0	PVC	150.0	-115.98	0.74	68
P-71	J-121	J-119	6.0	PVC	150.0	-3.87	0.04	53
P-72	J-118	J-116	8.0	PVC	150.0	-131.44	0.84	364
P-73	J-120	J-119	2.0	PVC	150.0	-3.87	0.39	260
P-74	J-119	J-118	6.0	PVC	150.0	-11.60	0.13	224
P-75	SWTP Reservoir	SWTP Junction 1	6.0	PVC	150.0	197.98	2.25	202
P-76	200 gpm SWTP Pump 1	SWTP Junction 3	6.0	PVC	150.0	116.99	1.33	10
P-77	J-001	J-001.5 (no demand)	6.0	Asbestos Cement	140.0	194.11	2.20	969
P-78	J-114	J-102	4.0	PVC	150.0	11.63	0.30	140
P-79	J-102	J-103	2.0	PVC	150.0	3.90	0.40	475
P-80	J-104	J-109	6.0	PVC	150.0	-6.31	0.07	42
P-81	J-104	J-103	2.0	PVC	150.0	-0.03	0.00	308
P-82	J-305	PRV-3	10.0	PVC	150.0	330.22	1.35	14
P-83	J-115	J-114	3.0	PVC	150.0	-0.50	0.02	324
P-84	J-115	FH-33	3.0	PVC	150.0	0.00	0.00	14

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-85	J-220	J-219.5 (no demand)	10.0	PVC	150.0	313.39	1.28	69
P-86	Booster Pump (Lag)	J-009 (Post BP Junction)	6.0	PVC	150.0	140.63	1.60	18
P-87	J-008 (Pre BP Junction)	Booster Pump (Lag)	4.0	PVC	150.0	140.63	3.59	67
P-88	J-008 (Pre BP Junction)	Booster Pump (Lead)	4.0	PVC	150.0	140.62	3.59	68
P-89	J-008 (Pre BP Junction)	J-007.5	6.0	Asbestos Cement	140.0	-281.25	3.19	20
P-90	J-009 (Post BP Junction)	Reservoir R2	6.0	PVC	150.0	281.25	3.19	1,289
P-91	PRV-3	J-220	10.0	PVC	150.0	330.22	1.35	119
P-92	PRV-4	J-124	10.0	PVC	150.0	0.00	0.00	86
P-93	J-007 (Well 9 & SWTP Junction)	J-005	6.0	Asbestos Cement	140.0	-24.50	0.28	90
P-94	SWTP Junction 5	Well No. 5 Pump	6.0	Asbestos Cement	140.0	0.00	0.00	1,600
P-95	SWTP Junction 3	SWTP Junction 2	6.0	PVC	150.0	-80.99	0.92	11
P-96	SWTP Junction 2	200 gpm SWTP Pump 2	6.0	Cast iron	130.0	(N/A)	(N/A)	10
P-97	SWTP Junction 2	100 gpm SWTP Pump	6.0	Cast iron	130.0	-80.99	0.92	23
P-98	SWTP Junction 1	100 gpm SWTP Pump	6.0	PVC	150.0	80.99	0.92	34
P-99	SWTP Junction 1	200 gpm SWTP Pump 2	6.0	PVC	150.0	(N/A)	(N/A)	19
P-100	SWTP Junction 1	200 gpm SWTP Pump 1	6.0	PVC	150.0	116.99	1.33	29
P-101	Booster Pump (Lead)	J-009 (Post BP Junction)	6.0	PVC	150.0	140.62	1.60	18
P-102	J-219	J-215	10.0	PVC	150.0	48.91	0.20	200
P-103	FCV-8	J-114	3.0	PVC	150.0	16.00	0.73	3,239
P-104	Well No. 9 Pump	J-007 (Well 9 & SWTP Junction)	4.0	PVC	150.0	0.00	0.00	539
P-105	Well No. 9 Pump	R-10	6.0	PVC	150.0	0.00	0.00	22
P-106	Well No. 5 Reservoir	Well No. 5 Pump	6.0	Asbestos Cement	140.0	0.00	0.00	21
P-107(1)	J-140	J-140.5 (no demand)	8.0	PVC	150.0	0.00	0.00	202
P-107(2)	J-140.5 (no demand)	FH-21	6.0	PVC	150.0	0.00	0.00	9
P-108	J-007.5	Reservoir R1	6.0	Asbestos Cement	140.0	0.00	0.00	321
P-109	J-007.5	J-219.5 (no demand)	6.0	Asbestos Cement	140.0	-285.11	3.24	104

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-110	J-003.5 (no demand)	J-003	6.0	Asbestos Cement	140.0	-43.84	0.50	449
P-111	J-003.5 (no demand)	J-218	6.0	PVC	150.0	7.73	0.09	530
P-112	Reservoir R2	J-304	10.0	PVC	150.0	353.42	1.44	1,151
P-113	Cox Spring	FCV-8	3.0	PVC	150.0	16.00	0.73	24
P-114	FH-10	J-101	4.0	PVC	150.0	0.00	0.00	13
P-115	FH-11	J-109	6.0	PVC	150.0	0.00	0.00	16
P-116	FH-12	J-105	6.0	PVC	150.0	0.00	0.00	16
P-117	FH-13	J-106	6.0	PVC	150.0	0.00	0.00	333
P-118	FH-36	J-108	6.0	PVC	150.0	0.00	0.00	24
P-119	FH-15	J-133	4.0	PVC	150.0	0.00	0.00	19
P-120	FH-24	J-126	6.0	PVC	150.0	0.00	0.00	6
P-121	FH-23	J-212	4.0	PVC	150.0	0.00	0.00	29
P-122	FH-22	J-207	6.0	PVC	150.0	0.00	0.00	23
P-123	FH-16	J-132	6.0	PVC	150.0	0.00	0.00	101
P-124	FH-25	J-123	4.0	PVC	150.0	0.00	0.00	41
P-125	FH-14	J-124	6.0	PVC	150.0	0.00	0.00	19
P-126	FH-28	J-210	6.0	PVC	150.0	0.00	0.00	20
P-127	FH-5	J-006	6.0	PVC	150.0	0.00	0.00	37
P-128	FH-3	J-004	6.0	PVC	150.0	0.00	0.00	35
P-129	FH-6	J-305	6.0	PVC	150.0	0.00	0.00	17
P-130	FH-4	J-218	6.0	PVC	150.0	0.00	0.00	29
P-131	FH-17	J-135	6.0	PVC	150.0	0.00	0.00	24
P-132	FH-18	J-136	4.0	PVC	150.0	0.00	0.00	297
P-133	FH-32	J-137	6.0	PVC	150.0	0.00	0.00	16
P-134	FH-19	J-138	6.0	PVC	150.0	0.00	0.00	147
P-135	FH-20	J-139	4.0	PVC	150.0	0.00	0.00	414
P-136	FH-1	J-002	6.0	PVC	150.0	0.00	0.00	30
P-137	FH-2	J-003	6.0	PVC	150.0	0.00	0.00	22
P-138	FH-27 (SCHOOL)	J-203	6.0	PVC	150.0	0.00	0.00	18
P-139	FH-26	J-122	6.0	PVC	150.0	0.00	0.00	55
P-140	FH-29	J-216	4.0	PVC	150.0	0.00	0.00	16
P-141	FH-31	J-110	6.0	PVC	150.0	0.00	0.00	40
P-142	FH-35	J-211	6.0	PVC	150.0	0.00	0.00	8
P-143	J-125.5	J-122	8.0	PVC	150.0	-112.11	0.72	309
P-144	J-125.5	J-111	10.0	PVC	150.0	56.07	0.23	281
P-145	J-001.5 (no demand)	J-002	6.0	Asbestos Cement	140.0	51.57	0.59	67
P-146	J-219.5 (no demand)	J-219	10.0	PVC	150.0	52.78	0.22	321
P-147	J-219.5 (no demand)	J-007 (Well 9 & SWTP Junction)	6.0	Asbestos Cement	140.0	-24.50	0.28	266
P-148	J-111	J-111.5 (no demand)	6.0	PVC	150.0	18.58	0.21	394
P-149	J-111.5 (no demand)	J-112	6.0	PVC	150.0	1.15	0.01	26

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-150	J-133	J-111.5 (no demand)	6.0	PVC	150.0	-17.43	0.20	26

Current Conditions - Fire Flow Report

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
Cox Spring	12	False	1,500.00	15.38	101.67	33.66	FH-8	-16.00
FH-1	3	True	1,500.00	2,500.00	41.79	13.16	FH-8	0.00
FH-2	7	True	1,500.00	1,899.38	20.00	5.67	J-217	0.00
FH-3	3	True	1,500.00	1,646.58	20.00	-1.80	J-217	0.00
FH-4	5	False	1,500.00	958.46	36.70	20.00	J-217	0.00
FH-5	3	True	1,500.00	2,020.05	20.01	12.76	J-217	0.00
FH-6	12	True	1,500.00	1,751.11	58.21	20.00	FH-8	0.00
FH-7	6	False	1,500.00	723.86	41.86	20.00	FH-8	0.00
FH-8	4	False	1,500.00	592.21	20.00	34.37	J-008 (Pre BP Junction)	0.00
FH-9	12	False	1,500.00	893.60	71.99	20.01	FH-8	0.00
FH-10	10	False	1,500.00	546.38	20.24	-22.77	Cox Spring	0.00
FH-11	3	True	1,500.00	2,500.00	35.73	13.15	FH-8	0.00
FH-12	3	True	1,500.00	2,500.00	44.78	13.15	FH-8	0.00
FH-13	3	True	1,500.00	2,500.00	25.61	13.15	FH-8	0.00
FH-14	3	True	1,500.00	2,500.00	37.85	13.15	FH-8	0.00
FH-15	3	True	1,500.00	2,500.00	50.38	13.15	FH-8	0.00
FH-16	3	True	1,500.00	2,500.00	62.05	13.15	FH-8	0.00
FH-17	21	True	1,500.00	2,316.08	39.64	15.21	FH-8	0.00
FH-18	18	False	1,500.00	1,163.31	20.05	26.26	FH-8	0.00
FH-19	3	False	1,500.00	1,477.31	20.00	23.58	FH-8	0.00
FH-20	5	False	1,500.00	935.99	20.00	28.03	FH-8	0.00
FH-21	31	True	1,500.00	1,609.44	27.63	20.03	J-137	0.00
FH-22	5	True	1,500.00	1,743.13	49.99	20.00	J-213	0.00
FH-23	18	False	1,500.00	1,467.97	20.04	23.55	FH-8	0.00
FH-24	3	True	1,500.00	2,500.00	49.54	13.15	FH-8	0.00
FH-25	3	True	1,500.00	2,500.00	21.45	13.15	FH-8	0.00
FH-26	3	True	1,500.00	2,500.00	42.56	13.16	FH-8	0.00
FH-27 (SCHOOL)	2	True	2,000.00	2,500.00	85.84	13.11	FH-8	0.00
FH-28	2	True	1,500.00	2,500.00	72.78	13.11	FH-8	0.00
FH-29	3	False	1,500.00	1,186.86	20.00	23.46	J-216	0.00
FH-30	21	False	1,500.00	1,025.03	42.57	20.00	J-130	0.00
FH-31	3	True	1,500.00	2,500.00	39.02	13.15	FH-8	0.00
FH-32	16	True	1,500.00	1,610.18	20.36	20.00	J-137	0.00
FH-33	11	False	1,500.00	623.29	20.27	-9.14	Cox Spring	0.00
FH-34	6	False	1,500.00	894.20	33.99	20.00	FH-8	0.00
FH-35	2	True	1,500.00	2,500.00	28.49	12.95	FH-8	0.00
FH-36	3	True	1,500.00	2,500.00	74.28	13.15	FH-8	0.00
FH-37	4	True	1,500.00	2,135.28	49.47	16.97	FH-8	0.00
J-001	12	True	1,500.00	1,547.57	20.06	22.96	FH-8	2.01
J-001.5 (no demand)	3	True	1,500.00	2,500.00	50.80	13.16	FH-8	0.00
J-002	3	True	1,500.00	2,500.00	46.70	13.16	FH-8	2.01
J-003	7	True	1,500.00	1,939.55	20.00	5.10	J-217	2.01

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
J-003.5 (no demand)	3	True	1,500.00	1,700.45	20.00	-5.56	J-217	0.00
J-004	5	True	1,500.00	1,682.95	21.31	-4.00	J-217	2.01
J-005	3	True	1,500.00	2,100.04	20.01	9.82	J-217	2.01
J-006	3	True	1,500.00	2,078.25	20.01	10.63	J-217	2.01
J-007 (Well 9 & SWTP Junction)	4	True	1,500.00	2,356.72	20.00	12.80	J-217	0.00
J-007.5	3	True	1,500.00	2,500.00	24.59	24.05	J-008 (Pre BP Junction)	2.01
J-008 (Pre BP Junction)	3	True	1,500.00	2,500.00	20.97	24.59	J-007.5	0.00
J-009 (Post BP Junction)	2	False	1,500.00	1,392.80	20.00	33.74	FH-8	0.00
J-101	20	False	1,500.00	548.06	20.54	-23.48	Cox Spring	2.01
J-102	4	False	1,500.00	552.04	20.00	-25.17	Cox Spring	2.01
J-103	7	False	1,500.00	405.44	20.00	31.59	FH-8	2.01
J-104	3	True	1,500.00	2,500.00	35.86	13.15	FH-8	2.01
J-105	3	True	1,500.00	2,500.00	46.84	13.15	FH-8	2.01
J-106	3	True	1,500.00	2,500.00	59.05	13.15	FH-8	2.01
J-107	3	True	1,500.00	2,500.00	78.73	13.15	FH-8	2.01
J-108	3	True	1,500.00	2,500.00	77.72	13.15	FH-8	2.01
J-109	3	True	1,500.00	2,500.00	37.01	13.15	FH-8	2.01
J-110	3	True	1,500.00	2,500.00	47.69	13.15	FH-8	2.01
J-111	3	True	1,500.00	2,500.00	73.48	13.15	FH-8	2.01
J-111.5 (no demand)	3	True	1,500.00	2,500.00	70.90	13.15	FH-8	0.00
J-112	3	True	1,500.00	2,500.00	70.29	13.15	FH-8	2.01
J-113	10	False	1,500.00	562.90	20.37	30.62	FH-8	2.01
J-114	4	False	1,500.00	551.25	20.00	-26.20	Cox Spring	2.01
J-115	11	False	1,500.00	634.32	20.29	-12.78	Cox Spring	2.01
J-116	3	True	1,500.00	2,500.00	52.78	13.16	FH-8	2.01
J-117	14	False	1,500.00	862.27	20.22	28.57	FH-8	2.01
J-118	3	True	1,500.00	2,500.00	50.75	13.16	FH-8	2.01
J-119	23	True	1,500.00	2,154.39	22.70	16.96	FH-8	2.01
J-120	3	False	1,500.00	239.36	20.19	32.53	FH-8	2.01
J-121	4	True	1,500.00	1,969.46	20.00	18.87	FH-8	2.01
J-122	3	True	1,500.00	2,500.00	52.19	13.16	FH-8	2.01
J-123	3	True	1,500.00	2,500.00	60.00	13.15	FH-8	2.01
J-124	3	True	1,500.00	2,500.00	40.54	13.15	FH-8	2.01
J-125	3	True	1,500.00	2,500.00	57.80	13.15	FH-8	2.01
J-125.5	3	True	1,500.00	2,500.00	60.50	13.15	FH-8	2.01
J-126	3	True	1,500.00	2,500.00	50.38	13.15	FH-8	2.01
J-127	4	True	1,500.00	1,755.98	20.00	20.99	FH-8	2.01
J-128	3	True	1,500.00	2,500.00	61.33	13.15	FH-8	2.01

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
J-129	21	False	1,500.00	1,025.03	44.47	20.00	J-130	2.01
J-130	15	False	1,500.00	774.93	20.02	29.19	FH-8	2.01
J-131	13	False	1,500.00	712.09	20.16	29.63	FH-8	2.01
J-132	3	True	1,500.00	2,500.00	69.20	13.15	FH-8	2.01
J-133	3	True	1,500.00	2,500.00	68.67	13.15	FH-8	2.01
J-134	3	True	1,500.00	2,500.00	68.89	13.15	FH-8	2.01
J-135	21	True	1,500.00	2,316.08	45.04	15.21	FH-8	2.01
J-136	7	True	1,500.00	1,993.89	32.97	18.62	FH-8	2.01
J-137	14	True	1,500.00	1,609.69	20.02	21.31	FH-32	2.01
J-138	34	True	1,500.00	1,610.19	29.83	20.00	J-137	2.01
J-139	23	True	1,500.00	1,610.18	46.51	20.00	J-137	2.01
J-140	34	True	1,500.00	1,610.18	30.91	20.00	J-137	2.01
J-140.5 (no demand)	14	True	1,500.00	1,699.32	20.06	15.91	J-137	0.00
J-201	2	True	1,500.00	2,500.00	55.34	13.11	FH-8	2.01
J-202	2	True	1,500.00	2,500.00	89.06	13.11	FH-8	2.01
J-203	2	True	1,500.00	2,500.00	89.15	13.11	FH-8	2.01
J-204	2	True	1,500.00	2,500.00	91.02	13.11	FH-8	2.01
J-205	4	True	1,500.00	2,135.28	50.47	16.97	FH-8	2.01
J-206	4	True	1,500.00	2,040.92	57.75	17.97	FH-8	2.01
J-207	5	True	1,500.00	1,743.13	51.34	20.00	J-213	2.01
J-208	2	True	1,500.00	2,500.00	68.25	13.11	FH-8	2.01
J-209	2	True	1,500.00	2,500.00	72.80	13.11	FH-8	2.01
J-210	2	True	1,500.00	2,500.00	74.95	13.11	FH-8	2.01
J-211	2	True	1,500.00	2,500.00	29.96	12.95	FH-8	2.01
J-212	3	True	1,500.00	1,579.21	20.00	20.16	FH-23	2.01
J-213	3	True	1,500.00	1,626.50	20.00	22.09	FH-8	2.01
J-214	3	True	1,500.00	1,580.90	20.00	22.50	FH-8	2.01
J-215	2	True	1,500.00	2,500.00	54.56	13.11	FH-8	2.01
J-216	3	False	1,500.00	1,250.50	20.00	20.54	FH-29	2.01
J-217	3	False	1,500.00	88.07	20.00	33.31	FH-8	2.01
J-218	5	False	1,500.00	958.46	37.43	20.00	J-217	2.01
J-219	2	True	1,500.00	2,500.00	54.58	13.12	FH-8	2.01
J-219.5 (no demand)	2	True	1,500.00	2,500.00	41.48	13.15	FH-8	0.00
J-220	2	True	1,500.00	2,500.00	39.23	12.42	FH-8	2.01
J-301	6	False	1,500.00	894.20	40.91	20.00	FH-8	2.01
J-302	12	False	1,500.00	893.62	70.93	20.01	FH-8	2.01
J-303	13	False	1,500.00	893.57	58.48	20.01	FH-8	2.01
J-304	12	True	1,500.00	1,751.12	58.23	20.00	FH-8	2.01
J-305	12	True	1,500.00	1,751.11	58.74	20.00	FH-8	2.01
J-306	6	False	1,500.00	723.86	41.96	20.00	FH-8	2.01
SWTP Junction 1	(N/A)	False	1,500.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
SWTP Junction 2	(N/A)	False	1,500.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
SWTP Junction 3	(N/A)	False	1,500.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
SWTP Junction 4	18	False	1,500.00	1,164.70	20.07	20.14	SWTP Junction 5	0.00
SWTP Junction 5	18	False	1,500.00	1,162.30	20.07	20.37	SWTP Junction 4	0.00

Projected Conditions - Average Day Demand

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
Cox Spring	1,250.88	-16.00	1,561.64	134.45
J-001	1,129.47	2.30	1,560.62	186.54
J-001.5 (no demand)	1,176.99	0.00	1,559.02	165.29
J-002	1,180.28	2.30	1,559.00	163.85
J-003	1,259.85	2.30	1,558.65	129.28
J-003.5 (no demand)	1,302.70	0.00	1,558.51	110.68
J-004	1,303.28	2.30	1,558.51	110.43
J-005	1,338.42	2.30	1,558.43	95.19
J-006	1,337.62	2.30	1,558.43	95.53
J-007 (Well 9 & SWTP Junction)	1,345.40	0.00	1,558.41	92.16
J-007.5	1,400.16	2.30	1,558.36	68.45
J-008 (Pre BP Junction)	1,401.39	0.00	1,558.36	67.91
J-009 (Post BP Junction)	1,402.84	0.00	1,584.44	78.57
J-101	1,130.07	2.30	1,559.06	185.61
J-102	1,132.50	2.30	1,559.06	184.55
J-103	1,143.13	2.30	1,558.93	179.90
J-104	1,150.26	2.30	1,558.92	176.81
J-105	1,121.36	2.30	1,558.92	189.31
J-106	1,105.96	2.30	1,558.92	195.97
J-107	1,101.35	2.30	1,558.92	197.97
J-108	1,103.95	2.30	1,558.92	196.84
J-109	1,148.52	2.30	1,558.92	177.56
J-110	1,147.34	2.30	1,558.92	178.07
J-111	1,138.40	2.30	1,558.93	181.94
J-111.5 (no demand)	1,119.34	0.00	1,558.92	190.18
J-112	1,118.08	2.30	1,558.92	190.73
J-113	1,095.53	2.30	1,558.91	200.49
J-114	1,141.53	2.30	1,559.07	180.65
J-115	1,159.56	2.30	1,559.03	172.83
J-116	1,174.43	2.30	1,559.01	166.39
J-117	1,165.38	2.30	1,559.01	170.30
J-118	1,186.94	2.30	1,558.96	160.96
J-119	1,204.34	2.30	1,558.96	153.43
J-120	1,197.39	2.30	1,558.92	156.42
J-121	1,210.57	2.30	1,558.96	150.73
J-122	1,185.24	2.30	1,558.96	161.69
J-123	1,176.04	2.30	1,558.93	165.66
J-124	1,225.01	2.30	1,558.93	144.47
J-125	1,159.03	2.30	1,558.92	173.01
J-125.5	1,174.29	2.30	1,558.93	166.42
J-126	1,163.84	2.30	1,558.92	170.93
J-127	1,199.84	2.30	1,558.92	155.36
J-128	1,132.39	2.30	1,558.92	184.54
J-129	1,135.84	2.30	1,558.91	183.04
J-130	1,192.39	2.30	1,558.91	158.57
J-131	1,136.15	2.30	1,558.91	182.91
J-132	1,111.15	2.30	1,558.92	193.72

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-133	1,121.48	2.30	1,558.92	189.26
J-134	1,110.83	2.30	1,558.92	193.86
J-135	1,126.51	2.30	1,558.91	187.08
J-136	1,154.36	2.30	1,558.91	175.03
J-137	1,184.34	2.30	1,558.91	162.06
J-138	1,147.13	2.30	1,558.91	178.16
J-139	1,080.70	2.30	1,558.91	206.90
J-140	1,078.99	2.30	1,558.91	207.64
J-140.5 (no demand)	1,078.68	0.00	1,558.91	207.77
J-201	1,200.84	2.30	1,558.35	154.68
J-202	1,228.22	2.30	1,558.35	142.84
J-203	1,230.20	2.30	1,558.35	141.97
J-204	1,241.03	2.30	1,558.35	137.29
J-205	1,214.57	2.30	1,558.34	148.73
J-206	1,200.11	2.30	1,558.34	154.99
J-207	1,214.38	2.30	1,558.34	148.82
J-208	1,259.52	2.30	1,558.35	129.29
J-209	1,289.17	2.30	1,558.35	116.46
J-210	1,283.40	2.30	1,558.35	118.96
J-211	1,257.79	2.30	1,558.34	130.03
J-212	1,253.35	2.30	1,558.34	131.95
J-213	1,294.28	2.30	1,558.34	114.25
J-214	1,306.29	2.30	1,558.34	109.05
J-215	1,341.76	2.30	1,558.35	93.71
J-216	1,353.90	2.30	1,558.35	88.45
J-217	1,361.72	2.30	1,558.43	85.10
J-218	1,321.52	2.30	1,558.51	102.54
J-219	1,346.24	2.30	1,558.36	91.77
J-219.5 (no demand)	1,384.12	0.00	1,558.36	75.39
J-220	1,392.24	2.30	1,558.36	71.87
J-301	1,408.06	2.30	1,584.44	76.31
J-302	1,370.76	2.30	1,584.44	92.45
J-303	1,410.82	2.30	1,584.44	75.12
J-304	1,411.36	2.30	1,584.44	74.88
J-305	1,409.85	2.30	1,584.44	75.54
J-306	1,448.96	2.30	1,584.44	58.62
SWTP Junction 1	1,091.94	0.00	1,096.05	1.78
SWTP Junction 2	1,093.01	0.00	1,562.61	203.17
SWTP Junction 3	1,093.08	0.00	1,562.61	203.14
SWTP Junction 4	1,093.51	0.00	1,562.55	202.93
SWTP Junction 5	1,093.35	0.00	1,562.55	203.00

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-1	J-116	J-115	3.0	PVC	150.0	-3.66	0.17	426
P-2	J-116	J-001.5 (no demand)	6.0	PVC	150.0	-78.12	0.89	23
P-3	J-111	J-108	6.0	PVC	150.0	11.32	0.13	255
P-4	J-107	J-106	6.0	PVC	150.0	2.65	0.03	382
P-5	J-303	FH-34	6.0	PVC	150.0	0.00	0.00	375
P-6	J-303	J-306	6.0	PVC	150.0	2.30	0.03	285
P-7	J-303	J-302	6.0	PVC	150.0	4.59	0.05	242
P-8	J-206	J-205	6.0	PVC	150.0	-7.31	0.08	122
P-9	J-206	J-207	6.0	PVC	150.0	3.58	0.04	580
P-10	J-214	J-213	4.0	PVC	150.0	1.01	0.03	231
P-11	J-214	J-212	4.0	PVC	150.0	0.86	0.02	253
P-12	J-214	J-216	4.0	PVC	150.0	-4.16	0.11	592
P-13	J-304	J-303	6.0	PVC	150.0	9.18	0.10	394
P-14	J-304	J-305	10.0	PVC	150.0	2.29	0.01	11
P-15	J-306	FH-7	6.0	PVC	150.0	0.00	0.00	27
P-16	J-306	FH-8	6.0	PVC	150.0	0.00	0.00	409
P-17	J-302	J-301	6.0	PVC	150.0	2.30	0.03	690
P-18	J-302	FH-9	6.0	PVC	150.0	0.00	0.00	13
P-19	SWTP Junction 4	J-001	6.0	Asbestos Cement	140.0	140.09	1.59	1,140
P-20	SWTP Junction 4	SWTP Junction 5	6.0	Asbestos Cement	140.0	0.00	0.00	10
P-21	SWTP Junction 4	SWTP Junction 3	6.0	Cast iron	130.0	-140.10	1.59	29
P-22	J-005	J-006	6.0	Asbestos Cement	140.0	2.30	0.03	11
P-23	J-209	J-215	10.0	PVC	150.0	-16.06	0.07	401
P-24	J-209	J-208	6.0	PVC	150.0	3.20	0.04	444
P-25	J-209	J-210	10.0	PVC	150.0	10.57	0.04	33
P-26	J-204	J-203	8.0	PVC	150.0	5.98	0.04	382
P-27	J-204	J-210	10.0	PVC	150.0	-8.28	0.03	263
P-28	J-204	PRV-4	10.0	PVC	150.0	0.00	0.00	14
P-29	J-202	J-201	6.0	PVC	150.0	2.30	0.03	339
P-30	J-211	J-215	6.0	PVC	150.0	-11.90	0.14	739
P-31	J-205	J-211	6.0	PVC	150.0	-9.61	0.11	355
P-32	J-205	FH-37	6.0	PVC	150.0	0.00	0.00	16
P-33	J-207	J-213	6.0	PVC	150.0	1.29	0.01	362
P-34	J-203	J-202	8.0	PVC	150.0	3.69	0.02	75
P-35	J-208	J-202	6.0	PVC	150.0	0.90	0.01	352
P-36	J-127	J-126	6.0	PVC	150.0	-2.30	0.03	335
P-37	J-126	J-125	6.0	PVC	150.0	-4.59	0.05	40
P-38	J-125	J-128	8.0	PVC	150.0	19.43	0.12	624
P-39	J-125	J-125.5	8.0	PVC	150.0	-26.31	0.17	430
P-40	J-123	J-124	10.0	PVC	150.0	2.30	0.01	377
P-41	J-123	J-125.5	10.0	PVC	150.0	-4.59	0.02	57
P-42	J-128	J-131	3.0	PVC	150.0	2.30	0.10	222
P-43	J-128	J-132	8.0	PVC	150.0	14.84	0.09	144

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-44	J-132	J-134	8.0	PVC	150.0	20.66	0.13	14
P-45	J-134	J-129	4.0	PVC	150.0	4.59	0.12	167
P-46	J-134	J-135	8.0	PVC	150.0	13.78	0.09	692
P-47	J-129	J-130	4.0	PVC	150.0	2.30	0.06	319
P-48	J-129	FH-30	4.0	PVC	150.0	0.00	0.00	11
P-49	J-135	J-136	8.0	PVC	150.0	11.48	0.07	435
P-50	J-136	J-137	8.0	PVC	150.0	9.18	0.06	865
P-51	J-137	J-138	8.0	PVC	150.0	6.89	0.04	425
P-52	J-138	J-139	8.0	PVC	150.0	4.59	0.03	819
P-53	J-139	J-140	8.0	PVC	150.0	2.30	0.01	1,113
P-54	J-112	J-107	6.0	PVC	150.0	-4.08	0.05	671
P-55	J-113	J-112	3.0	PVC	150.0	-2.30	0.10	472
P-56	J-109	J-110	6.0	PVC	150.0	-5.67	0.06	398
P-57	J-108	J-107	6.0	PVC	150.0	9.02	0.10	20
P-58	J-106	J-105	6.0	PVC	150.0	0.35	0.00	373
P-59	J-133	J-132	6.0	PVC	150.0	8.12	0.09	786
P-60	J-110	J-111	6.0	PVC	150.0	-7.97	0.09	323
P-61	J-002	J-003	6.0	Asbestos Cement	140.0	57.39	0.65	1,070
P-62	J-117	J-116	3.0	PVC	150.0	-2.30	0.10	112
P-63	J-105	J-104	6.0	PVC	150.0	-1.94	0.02	268
P-64	J-212	J-206	4.0	PVC	150.0	-1.43	0.04	457
P-65	J-216	J-220	4.0	PVC	150.0	-6.46	0.16	314
P-66	J-004	J-005	6.0	Asbestos Cement	140.0	48.20	0.55	355
P-67	J-004	J-003.5 (no demand)	6.0	Asbestos Cement	140.0	-50.50	0.57	6
P-68	J-218	J-217	2.0	PVC	150.0	2.30	0.23	557
P-69	J-101	J-102	4.0	PVC	150.0	-2.30	0.06	39
P-70	J-122	J-118	8.0	PVC	150.0	-68.01	0.43	68
P-71	J-121	J-119	6.0	PVC	150.0	-2.30	0.03	53
P-72	J-118	J-116	8.0	PVC	150.0	-77.19	0.49	364
P-73	J-120	J-119	2.0	PVC	150.0	-2.30	0.23	260
P-74	J-119	J-118	6.0	PVC	150.0	-6.89	0.08	224
P-75	SWTP Reservoir	SWTP Junction 1	6.0	PVC	150.0	140.10	1.59	202
P-76	200 gpm SWTP Pump 1	SWTP Junction 3	6.0	PVC	150.0	82.78	0.94	10
P-77	J-001	J-001.5 (no demand)	6.0	Asbestos Cement	140.0	137.80	1.56	969
P-78	J-114	J-102	4.0	PVC	150.0	7.75	0.20	140
P-79	J-102	J-103	2.0	PVC	150.0	3.16	0.32	475
P-80	J-104	J-109	6.0	PVC	150.0	-3.38	0.04	42
P-81	J-104	J-103	2.0	PVC	150.0	-0.86	0.09	308
P-82	J-305	PRV-3	10.0	PVC	150.0	0.00	0.00	14
P-83	J-115	J-114	3.0	PVC	150.0	-5.96	0.27	324
P-84	J-115	FH-33	3.0	PVC	150.0	0.00	0.00	14

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-85	J-220	J-219.5 (no demand)	10.0	PVC	150.0	-8.76	0.04	69
P-86	Booster Pump (Lag)	J-009 (Post BP Junction)	6.0	PVC	150.0	0.00	0.00	18
P-87	J-008 (Pre BP Junction)	Booster Pump (Lag)	4.0	PVC	150.0	0.00	0.00	67
P-88	J-008 (Pre BP Junction)	Booster Pump (Lead)	4.0	PVC	150.0	0.00	0.00	68
P-89	J-008 (Pre BP Junction)	J-007.5	6.0	Asbestos Cement	140.0	0.00	0.00	20
P-90	J-009 (Post BP Junction)	Reservoir R2	6.0	PVC	150.0	0.00	0.00	1,289
P-91	PRV-3	J-220	10.0	PVC	150.0	0.00	0.00	119
P-92	PRV-4	J-124	10.0	PVC	150.0	0.00	0.00	86
P-93	J-007 (Well 9 & SWTP Junction)	J-005	6.0	Asbestos Cement	140.0	-43.61	0.49	90
P-94	SWTP Junction 5	Well No. 5 Pump	6.0	Asbestos Cement	140.0	0.00	0.00	1,600
P-95	SWTP Junction 3	SWTP Junction 2	6.0	PVC	150.0	-57.31	0.65	11
P-96	SWTP Junction 2	200 gpm SWTP Pump 2	6.0	Cast iron	130.0	(N/A)	(N/A)	10
P-97	SWTP Junction 2	100 gpm SWTP Pump	6.0	Cast iron	130.0	-57.31	0.65	23
P-98	SWTP Junction 1	100 gpm SWTP Pump	6.0	PVC	150.0	57.31	0.65	34
P-99	SWTP Junction 1	200 gpm SWTP Pump 2	6.0	PVC	150.0	(N/A)	(N/A)	19
P-100	SWTP Junction 1	200 gpm SWTP Pump 1	6.0	PVC	150.0	82.78	0.94	29
P-101	Booster Pump (Lead)	J-009 (Post BP Junction)	6.0	PVC	150.0	0.00	0.00	18
P-102	J-219	J-215	10.0	PVC	150.0	30.26	0.12	200
P-103	FCV-8	J-114	3.0	PVC	150.0	16.00	0.73	3,239
P-104	Well No. 9 Pump	J-007 (Well 9 & SWTP Junction)	4.0	PVC	150.0	0.00	0.00	539
P-105	Well No. 9 Pump	R-10	6.0	PVC	150.0	0.00	0.00	22
P-106	Well No. 5 Reservoir	Well No. 5 Pump	6.0	Asbestos Cement	140.0	0.00	0.00	21
P-107(1)	J-140	J-140.5 (no demand)	8.0	PVC	150.0	0.00	0.00	202
P-107(2)	J-140.5 (no demand)	FH-21	6.0	PVC	150.0	0.00	0.00	9
P-108	J-007.5	Reservoir R1	6.0	Asbestos Cement	140.0	0.00	0.00	321
P-109	J-007.5	J-219.5 (no demand)	6.0	Asbestos Cement	140.0	-2.30	0.03	104

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-110	J-003.5 (no demand)	J-003	6.0	Asbestos Cement	140.0	-55.09	0.63	449
P-111	J-003.5 (no demand)	J-218	6.0	PVC	150.0	4.59	0.05	530
P-112	Reservoir R2	J-304	10.0	PVC	150.0	13.77	0.06	1,151
P-113	Cox Spring	FCV-8	3.0	PVC	150.0	16.00	0.73	24
P-114	FH-10	J-101	4.0	PVC	150.0	0.00	0.00	13
P-115	FH-11	J-109	6.0	PVC	150.0	0.00	0.00	16
P-116	FH-12	J-105	6.0	PVC	150.0	0.00	0.00	16
P-117	FH-13	J-106	6.0	PVC	150.0	0.00	0.00	333
P-118	FH-36	J-108	6.0	PVC	150.0	0.00	0.00	24
P-119	FH-15	J-133	4.0	PVC	150.0	0.00	0.00	19
P-120	FH-24	J-126	6.0	PVC	150.0	0.00	0.00	6
P-121	FH-23	J-212	4.0	PVC	150.0	0.00	0.00	29
P-122	FH-22	J-207	6.0	PVC	150.0	0.00	0.00	23
P-123	FH-16	J-132	6.0	PVC	150.0	0.00	0.00	101
P-124	FH-25	J-123	4.0	PVC	150.0	0.00	0.00	41
P-125	FH-14	J-124	6.0	PVC	150.0	0.00	0.00	19
P-126	FH-28	J-210	6.0	PVC	150.0	0.00	0.00	20
P-127	FH-5	J-006	6.0	PVC	150.0	0.00	0.00	37
P-128	FH-3	J-004	6.0	PVC	150.0	0.00	0.00	35
P-129	FH-6	J-305	6.0	PVC	150.0	0.00	0.00	17
P-130	FH-4	J-218	6.0	PVC	150.0	0.00	0.00	29
P-131	FH-17	J-135	6.0	PVC	150.0	0.00	0.00	24
P-132	FH-18	J-136	4.0	PVC	150.0	0.00	0.00	297
P-133	FH-32	J-137	6.0	PVC	150.0	0.00	0.00	16
P-134	FH-19	J-138	6.0	PVC	150.0	0.00	0.00	147
P-135	FH-20	J-139	4.0	PVC	150.0	0.00	0.00	414
P-136	FH-1	J-002	6.0	PVC	150.0	0.00	0.00	30
P-137	FH-2	J-003	6.0	PVC	150.0	0.00	0.00	22
P-138	FH-27 (SCHOOL)	J-203	6.0	PVC	150.0	0.00	0.00	18
P-139	FH-26	J-122	6.0	PVC	150.0	0.00	0.00	55
P-140	FH-29	J-216	4.0	PVC	150.0	0.00	0.00	16
P-141	FH-31	J-110	6.0	PVC	150.0	0.00	0.00	40
P-142	FH-35	J-211	6.0	PVC	150.0	0.00	0.00	8
P-143	J-125.5	J-122	8.0	PVC	150.0	-65.71	0.42	309
P-144	J-125.5	J-111	10.0	PVC	150.0	32.51	0.13	281
P-145	J-001.5 (no demand)	J-002	6.0	Asbestos Cement	140.0	59.68	0.68	67
P-146	J-219.5 (no demand)	J-219	10.0	PVC	150.0	32.56	0.13	321
P-147	J-219.5 (no demand)	J-007 (Well 9 & SWTP Junction)	6.0	Asbestos Cement	140.0	-43.61	0.49	266
P-148	J-111	J-111.5 (no demand)	6.0	PVC	150.0	10.93	0.12	394
P-149	J-111.5 (no demand)	J-112	6.0	PVC	150.0	0.51	0.01	26

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-150	J-133	J-111.5 (no demand)	6.0	PVC	150.0	-10.42	0.12	26

Projected Conditions -
Max Day Demand

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
Cox Spring	1,250.88	-16.00	1,490.82	103.81
J-001	1,129.47	5.05	1,491.42	156.60
J-001.5 (no demand)	1,176.99	0.00	1,488.44	134.75
J-002	1,180.28	5.05	1,488.44	133.32
J-003	1,259.85	5.05	1,488.44	98.90
J-003.5 (no demand)	1,302.70	0.00	1,488.44	80.36
J-004	1,303.28	5.05	1,488.44	80.11
J-005	1,338.42	5.05	1,488.46	64.91
J-006	1,337.62	5.05	1,488.46	65.26
J-007 (Well 9 & SWTP Junction)	1,345.40	0.00	1,488.47	61.90
J-007.5	1,400.16	5.05	1,487.83	37.93
J-008 (Pre BP Junction)	1,401.39	0.00	1,487.70	37.34
J-009 (Post BP Junction)	1,402.84	0.00	1,588.06	80.14
J-101	1,130.07	5.05	1,488.23	154.96
J-102	1,132.50	5.05	1,488.23	153.91
J-103	1,143.13	5.05	1,487.99	149.20
J-104	1,150.26	5.05	1,487.99	146.12
J-105	1,121.36	5.05	1,487.99	158.62
J-106	1,105.96	5.05	1,487.99	165.29
J-107	1,101.35	5.05	1,488.00	167.28
J-108	1,103.95	5.05	1,488.00	166.16
J-109	1,148.52	5.05	1,487.99	146.88
J-110	1,147.34	5.05	1,488.00	147.39
J-111	1,138.40	5.05	1,488.01	151.26
J-111.5 (no demand)	1,119.34	0.00	1,487.99	159.50
J-112	1,118.08	5.05	1,487.99	160.04
J-113	1,095.53	5.05	1,487.95	169.78
J-114	1,141.53	5.05	1,488.25	150.01
J-115	1,159.56	5.05	1,488.27	142.22
J-116	1,174.43	5.05	1,488.37	135.83
J-117	1,165.38	5.05	1,488.36	139.74
J-118	1,186.94	5.05	1,488.18	130.33
J-119	1,204.34	5.05	1,488.17	122.80
J-120	1,197.39	5.05	1,488.00	125.73
J-121	1,210.57	5.05	1,488.17	120.10
J-122	1,185.24	5.05	1,488.15	131.05
J-123	1,176.04	5.05	1,488.02	134.98
J-124	1,225.01	5.05	1,488.02	113.79
J-125	1,159.03	5.05	1,487.99	142.33
J-125.5	1,174.29	5.05	1,488.02	135.74
J-126	1,163.84	5.05	1,487.99	140.24
J-127	1,199.84	5.05	1,487.99	124.67
J-128	1,132.39	5.05	1,487.97	153.84
J-129	1,135.84	5.05	1,487.95	152.34
J-130	1,192.39	5.05	1,487.94	127.87
J-131	1,136.15	5.05	1,487.95	152.21
J-132	1,111.15	5.05	1,487.96	163.03

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-133	1,121.48	5.05	1,487.99	158.57
J-134	1,110.83	5.05	1,487.96	163.17
J-135	1,126.51	5.05	1,487.95	156.38
J-136	1,154.36	5.05	1,487.94	144.33
J-137	1,184.34	5.05	1,487.93	131.35
J-138	1,147.13	5.05	1,487.93	147.45
J-139	1,080.70	5.05	1,487.93	176.19
J-140	1,078.99	5.05	1,487.93	176.93
J-140.5 (no demand)	1,078.68	0.00	1,487.93	177.06
J-201	1,200.84	5.05	1,488.48	124.45
J-202	1,228.22	5.05	1,488.48	112.60
J-203	1,230.20	5.05	1,488.48	111.74
J-204	1,241.03	5.05	1,488.48	107.06
J-205	1,214.57	5.05	1,488.43	118.49
J-206	1,200.11	5.05	1,488.43	124.74
J-207	1,214.38	5.05	1,488.43	118.57
J-208	1,259.52	5.05	1,488.48	99.06
J-209	1,289.17	5.05	1,488.48	86.23
J-210	1,283.40	5.05	1,488.48	88.73
J-211	1,257.79	5.05	1,488.45	99.79
J-212	1,253.35	5.05	1,488.43	101.71
J-213	1,294.28	5.05	1,488.43	84.00
J-214	1,306.29	5.05	1,488.43	78.80
J-215	1,341.76	5.05	1,488.49	63.48
J-216	1,353.90	5.05	1,488.49	58.23
J-217	1,361.72	5.05	1,488.06	54.66
J-218	1,321.52	5.05	1,488.43	72.22
J-219	1,346.24	5.05	1,488.49	61.55
J-219.5 (no demand)	1,384.12	0.00	1,488.50	45.16
J-220	1,392.24	5.05	1,488.56	41.67
J-301	1,408.06	5.05	1,579.71	74.26
J-302	1,370.76	5.05	1,579.71	90.40
J-303	1,410.82	5.05	1,579.71	73.07
J-304	1,411.36	5.05	1,579.73	72.84
J-305	1,409.85	5.05	1,579.72	73.49
J-306	1,448.96	5.05	1,579.71	56.57
SWTP Junction 1	1,091.94	0.00	1,095.77	1.66
SWTP Junction 2	1,093.01	0.00	1,495.22	174.02
SWTP Junction 3	1,093.08	0.00	1,495.21	173.98
SWTP Junction 4	1,093.51	0.00	1,495.11	173.75
SWTP Junction 5	1,093.35	0.00	1,495.11	173.82

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-1	J-116	J-115	3.0	PVC	150.0	8.56	0.39	426
P-2	J-116	J-001.5 (no demand)	6.0	PVC	150.0	-191.03	2.17	23
P-3	J-111	J-108	6.0	PVC	150.0	25.82	0.29	255
P-4	J-107	J-106	6.0	PVC	150.0	7.27	0.08	382
P-5	J-303	FH-34	6.0	PVC	150.0	0.00	0.00	375
P-6	J-303	J-306	6.0	PVC	150.0	5.05	0.06	285
P-7	J-303	J-302	6.0	PVC	150.0	10.10	0.11	242
P-8	J-206	J-205	6.0	PVC	150.0	-13.58	0.15	122
P-9	J-206	J-207	6.0	PVC	150.0	6.41	0.07	580
P-10	J-214	J-213	4.0	PVC	150.0	3.69	0.09	231
P-11	J-214	J-212	4.0	PVC	150.0	2.92	0.07	253
P-12	J-214	J-216	4.0	PVC	150.0	-11.67	0.30	592
P-13	J-304	J-303	6.0	PVC	150.0	20.20	0.23	394
P-14	J-304	J-305	10.0	PVC	150.0	418.02	1.71	11
P-15	J-306	FH-7	6.0	PVC	150.0	0.00	0.00	27
P-16	J-306	FH-8	6.0	PVC	150.0	0.00	0.00	409
P-17	J-302	J-301	6.0	PVC	150.0	5.05	0.06	690
P-18	J-302	FH-9	6.0	PVC	150.0	0.00	0.00	13
P-19	SWTP Junction 4	J-001	6.0	Asbestos Cement	140.0	198.38	2.25	1,140
P-20	SWTP Junction 4	SWTP Junction 5	6.0	Asbestos Cement	140.0	0.00	0.00	10
P-21	SWTP Junction 4	SWTP Junction 3	6.0	Cast iron	130.0	-198.38	2.25	29
P-22	J-005	J-006	6.0	Asbestos Cement	140.0	5.05	0.06	11
P-23	J-209	J-215	10.0	PVC	150.0	-35.34	0.14	401
P-24	J-209	J-208	6.0	PVC	150.0	7.03	0.08	444
P-25	J-209	J-210	10.0	PVC	150.0	23.26	0.10	33
P-26	J-204	J-203	8.0	PVC	150.0	13.16	0.08	382
P-27	J-204	J-210	10.0	PVC	150.0	-18.21	0.07	263
P-28	J-204	PRV-4	10.0	PVC	150.0	0.00	0.00	14
P-29	J-202	J-201	6.0	PVC	150.0	5.05	0.06	339
P-30	J-211	J-215	6.0	PVC	150.0	-23.68	0.27	739
P-31	J-205	J-211	6.0	PVC	150.0	-18.63	0.21	355
P-32	J-205	FH-37	6.0	PVC	150.0	0.00	0.00	16
P-33	J-207	J-213	6.0	PVC	150.0	1.36	0.02	362
P-34	J-203	J-202	8.0	PVC	150.0	8.12	0.05	75
P-35	J-208	J-202	6.0	PVC	150.0	1.98	0.02	352
P-36	J-127	J-126	6.0	PVC	150.0	-5.05	0.06	335
P-37	J-126	J-125	6.0	PVC	150.0	-10.10	0.11	40
P-38	J-125	J-128	8.0	PVC	150.0	42.95	0.27	624
P-39	J-125	J-125.5	8.0	PVC	150.0	-58.10	0.37	430
P-40	J-123	J-124	10.0	PVC	150.0	5.05	0.02	377
P-41	J-123	J-125.5	10.0	PVC	150.0	-10.10	0.04	57
P-42	J-128	J-131	3.0	PVC	150.0	5.05	0.23	222
P-43	J-128	J-132	8.0	PVC	150.0	32.85	0.21	144

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-44	J-132	J-134	8.0	PVC	150.0	45.45	0.29	14
P-45	J-134	J-129	4.0	PVC	150.0	10.10	0.26	167
P-46	J-134	J-135	8.0	PVC	150.0	30.30	0.19	692
P-47	J-129	J-130	4.0	PVC	150.0	5.05	0.13	319
P-48	J-129	FH-30	4.0	PVC	150.0	0.00	0.00	11
P-49	J-135	J-136	8.0	PVC	150.0	25.25	0.16	435
P-50	J-136	J-137	8.0	PVC	150.0	20.20	0.13	865
P-51	J-137	J-138	8.0	PVC	150.0	15.15	0.10	425
P-52	J-138	J-139	8.0	PVC	150.0	10.10	0.06	819
P-53	J-139	J-140	8.0	PVC	150.0	5.05	0.03	1,113
P-54	J-112	J-107	6.0	PVC	150.0	-8.45	0.10	671
P-55	J-113	J-112	3.0	PVC	150.0	-5.05	0.23	472
P-56	J-109	J-110	6.0	PVC	150.0	-13.61	0.15	398
P-57	J-108	J-107	6.0	PVC	150.0	20.77	0.24	20
P-58	J-106	J-105	6.0	PVC	150.0	2.22	0.03	373
P-59	J-133	J-132	6.0	PVC	150.0	17.64	0.20	786
P-60	J-110	J-111	6.0	PVC	150.0	-18.66	0.21	323
P-61	J-002	J-003	6.0	Asbestos Cement	140.0	-2.75	0.03	1,070
P-62	J-117	J-116	3.0	PVC	150.0	-5.05	0.23	112
P-63	J-105	J-104	6.0	PVC	150.0	-2.83	0.03	268
P-64	J-212	J-206	4.0	PVC	150.0	-2.12	0.05	457
P-65	J-216	J-220	4.0	PVC	150.0	-16.72	0.43	314
P-66	J-004	J-005	6.0	Asbestos Cement	140.0	-22.94	0.26	355
P-67	J-004	J-003.5 (no demand)	6.0	Asbestos Cement	140.0	17.89	0.20	6
P-68	J-218	J-217	2.0	PVC	150.0	5.05	0.52	557
P-69	J-101	J-102	4.0	PVC	150.0	-5.05	0.13	39
P-70	J-122	J-118	8.0	PVC	150.0	-152.17	0.97	68
P-71	J-121	J-119	6.0	PVC	150.0	-5.05	0.06	53
P-72	J-118	J-116	8.0	PVC	150.0	-172.37	1.10	364
P-73	J-120	J-119	2.0	PVC	150.0	-5.05	0.52	260
P-74	J-119	J-118	6.0	PVC	150.0	-15.15	0.17	224
P-75	SWTP Reservoir	SWTP Junction 1	6.0	PVC	150.0	198.38	2.25	202
P-76	200 gpm SWTP Pump 1	SWTP Junction 3	6.0	PVC	150.0	117.23	1.33	10
P-77	J-001	J-001.5 (no demand)	6.0	Asbestos Cement	140.0	193.33	2.19	969
P-78	J-114	J-102	4.0	PVC	150.0	14.46	0.37	140
P-79	J-102	J-103	2.0	PVC	150.0	4.36	0.45	475
P-80	J-104	J-109	6.0	PVC	150.0	-8.56	0.10	42
P-81	J-104	J-103	2.0	PVC	150.0	0.69	0.07	308
P-82	J-305	PRV-3	10.0	PVC	150.0	412.97	1.69	14
P-83	J-115	J-114	3.0	PVC	150.0	3.51	0.16	324
P-84	J-115	FH-33	3.0	PVC	150.0	0.00	0.00	14

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-85	J-220	J-219.5 (no demand)	10.0	PVC	150.0	391.20	1.60	69
P-86	Booster Pump (Lag)	J-009 (Post BP Junction)	6.0	PVC	150.0	141.99	1.61	18
P-87	J-008 (Pre BP Junction)	Booster Pump (Lag)	4.0	PVC	150.0	141.99	3.63	67
P-88	J-008 (Pre BP Junction)	Booster Pump (Lead)	4.0	PVC	150.0	141.99	3.63	68
P-89	J-008 (Pre BP Junction)	J-007.5	6.0	Asbestos Cement	140.0	-283.98	3.22	20
P-90	J-009 (Post BP Junction)	Reservoir R2	6.0	PVC	150.0	283.98	3.22	1,289
P-91	PRV-3	J-220	10.0	PVC	150.0	412.96	1.69	119
P-92	PRV-4	J-124	10.0	PVC	150.0	0.00	0.00	86
P-93	J-007 (Well 9 & SWTP Junction)	J-005	6.0	Asbestos Cement	140.0	33.04	0.37	90
P-94	SWTP Junction 5	Well No. 5 Pump	6.0	Asbestos Cement	140.0	0.00	0.00	1,600
P-95	SWTP Junction 3	SWTP Junction 2	6.0	PVC	150.0	-81.16	0.92	11
P-96	SWTP Junction 2	200 gpm SWTP Pump 2	6.0	Cast iron	130.0	(N/A)	(N/A)	10
P-97	SWTP Junction 2	100 gpm SWTP Pump	6.0	Cast iron	130.0	-81.16	0.92	23
P-98	SWTP Junction 1	100 gpm SWTP Pump	6.0	PVC	150.0	81.16	0.92	34
P-99	SWTP Junction 1	200 gpm SWTP Pump 2	6.0	PVC	150.0	(N/A)	(N/A)	19
P-100	SWTP Junction 1	200 gpm SWTP Pump 1	6.0	PVC	150.0	117.23	1.33	29
P-101	Booster Pump (Lead)	J-009 (Post BP Junction)	6.0	PVC	150.0	141.99	1.61	18
P-102	J-219	J-215	10.0	PVC	150.0	64.07	0.26	200
P-103	FCV-8	J-114	3.0	PVC	150.0	16.00	0.73	3,239
P-104	Well No. 9 Pump	J-007 (Well 9 & SWTP Junction)	4.0	PVC	150.0	0.00	0.00	539
P-105	Well No. 9 Pump	R-10	6.0	PVC	150.0	0.00	0.00	22
P-106	Well No. 5 Reservoir	Well No. 5 Pump	6.0	Asbestos Cement	140.0	0.00	0.00	21
P-107(1)	J-140	J-140.5 (no demand)	8.0	PVC	150.0	0.00	0.00	202
P-107(2)	J-140.5 (no demand)	FH-21	6.0	PVC	150.0	0.00	0.00	9
P-108	J-007.5	Reservoir R1	6.0	Asbestos Cement	140.0	0.00	0.00	321
P-109	J-007.5	J-219.5 (no demand)	6.0	Asbestos Cement	140.0	-289.03	3.28	104

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-110	J-003.5 (no demand)	J-003	6.0	Asbestos Cement	140.0	7.80	0.09	449
P-111	J-003.5 (no demand)	J-218	6.0	PVC	150.0	10.10	0.11	530
P-112	Reservoir R2	J-304	10.0	PVC	150.0	443.27	1.81	1,151
P-113	Cox Spring	FCV-8	3.0	PVC	150.0	16.00	0.73	24
P-114	FH-10	J-101	4.0	PVC	150.0	0.00	0.00	13
P-115	FH-11	J-109	6.0	PVC	150.0	0.00	0.00	16
P-116	FH-12	J-105	6.0	PVC	150.0	0.00	0.00	16
P-117	FH-13	J-106	6.0	PVC	150.0	0.00	0.00	333
P-118	FH-36	J-108	6.0	PVC	150.0	0.00	0.00	24
P-119	FH-15	J-133	4.0	PVC	150.0	0.00	0.00	19
P-120	FH-24	J-126	6.0	PVC	150.0	0.00	0.00	6
P-121	FH-23	J-212	4.0	PVC	150.0	0.00	0.00	29
P-122	FH-22	J-207	6.0	PVC	150.0	0.00	0.00	23
P-123	FH-16	J-132	6.0	PVC	150.0	0.00	0.00	101
P-124	FH-25	J-123	4.0	PVC	150.0	0.00	0.00	41
P-125	FH-14	J-124	6.0	PVC	150.0	0.00	0.00	19
P-126	FH-28	J-210	6.0	PVC	150.0	0.00	0.00	20
P-127	FH-5	J-006	6.0	PVC	150.0	0.00	0.00	37
P-128	FH-3	J-004	6.0	PVC	150.0	0.00	0.00	35
P-129	FH-6	J-305	6.0	PVC	150.0	0.00	0.00	17
P-130	FH-4	J-218	6.0	PVC	150.0	0.00	0.00	29
P-131	FH-17	J-135	6.0	PVC	150.0	0.00	0.00	24
P-132	FH-18	J-136	4.0	PVC	150.0	0.00	0.00	297
P-133	FH-32	J-137	6.0	PVC	150.0	0.00	0.00	16
P-134	FH-19	J-138	6.0	PVC	150.0	0.00	0.00	147
P-135	FH-20	J-139	4.0	PVC	150.0	0.00	0.00	414
P-136	FH-1	J-002	6.0	PVC	150.0	0.00	0.00	30
P-137	FH-2	J-003	6.0	PVC	150.0	0.00	0.00	22
P-138	FH-27 (SCHOOL)	J-203	6.0	PVC	150.0	0.00	0.00	18
P-139	FH-26	J-122	6.0	PVC	150.0	0.00	0.00	55
P-140	FH-29	J-216	4.0	PVC	150.0	0.00	0.00	16
P-141	FH-31	J-110	6.0	PVC	150.0	0.00	0.00	40
P-142	FH-35	J-211	6.0	PVC	150.0	0.00	0.00	8
P-143	J-125.5	J-122	8.0	PVC	150.0	-147.12	0.94	309
P-144	J-125.5	J-111	10.0	PVC	150.0	73.87	0.30	281
P-145	J-001.5 (no demand)	J-002	6.0	Asbestos Cement	140.0	2.30	0.03	67
P-146	J-219.5 (no demand)	J-219	10.0	PVC	150.0	69.12	0.28	321
P-147	J-219.5 (no demand)	J-007 (Well 9 & SWTP Junction)	6.0	Asbestos Cement	140.0	33.04	0.37	266
P-148	J-111	J-111.5 (no demand)	6.0	PVC	150.0	24.34	0.28	394
P-149	J-111.5 (no demand)	J-112	6.0	PVC	150.0	1.65	0.02	26

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-150	J-133	J-111.5 (no demand)	6.0	PVC	150.0	-22.69	0.26	26

Projected Conditions - Fire Flow Report

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints ?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
Cox Spring	12	False	1,500.00	5.13	101.13	33.45	FH-8	-5.33
FH-1	3	True	1,500.00	2,500.00	41.53	12.52	FH-8	0.00
FH-2	7	True	1,500.00	1,893.84	20.00	5.56	J-217	0.00
FH-3	3	True	1,500.00	1,608.01	20.00	-1.92	J-217	0.00
FH-4	5	False	1,500.00	932.29	36.76	20.01	J-217	0.00
FH-5	3	True	1,500.00	1,983.13	20.01	12.50	J-217	0.00
FH-6	12	True	1,500.00	1,697.20	58.28	20.01	FH-8	0.00
FH-7	6	False	1,500.00	709.70	41.88	20.00	FH-8	0.00
FH-8	4	False	1,500.00	581.66	20.00	34.34	J-008 (Pre BP Junction)	0.00
FH-9	12	False	1,500.00	874.14	72.18	20.02	FH-8	0.00
FH-10	10	False	1,500.00	529.11	20.39	-24.07	Cox Spring	0.00
FH-11	3	True	1,500.00	2,500.00	35.51	12.51	FH-8	0.00
FH-12	3	True	1,500.00	2,500.00	44.57	12.51	FH-8	0.00
FH-13	3	True	1,500.00	2,500.00	25.42	12.51	FH-8	0.00
FH-14	3	True	1,500.00	2,500.00	37.83	12.51	FH-8	0.00
FH-15	3	True	1,500.00	2,500.00	50.22	12.51	FH-8	0.00
FH-16	3	True	1,500.00	2,500.00	61.83	12.51	FH-8	0.00
FH-17	21	True	1,500.00	2,307.80	39.66	14.68	FH-8	0.00
FH-18	18	False	1,500.00	1,162.30	20.05	25.81	FH-8	0.00
FH-19	3	False	1,500.00	1,473.43	20.00	23.11	FH-8	0.00
FH-20	18	False	1,500.00	923.98	20.02	27.70	FH-8	0.00
FH-21	31	True	1,500.00	1,604.24	27.81	20.03	J-137	0.00
FH-22	5	True	1,500.00	1,738.52	50.01	20.00	J-213	0.00
FH-23	18	False	1,500.00	1,465.32	20.04	23.07	FH-8	0.00
FH-24	3	True	1,500.00	2,500.00	49.37	12.51	FH-8	0.00
FH-25	3	True	1,500.00	2,500.00	21.35	12.51	FH-8	0.00
FH-26	3	True	1,500.00	2,500.00	42.38	12.52	FH-8	0.00
FH-27 (SCHOOL)	2	True	2,000.00	2,500.00	85.68	12.48	FH-8	0.00
FH-28	2	True	1,500.00	2,500.00	72.64	12.48	FH-8	0.00
FH-29	3	False	1,500.00	1,184.57	20.00	23.44	J-216	0.00
FH-30	21	False	1,500.00	1,022.91	42.58	20.00	J-130	0.00
FH-31	3	True	1,500.00	2,500.00	38.84	12.51	FH-8	0.00
FH-32	16	True	1,500.00	1,605.00	20.36	20.00	J-137	0.00
FH-33	12	False	1,500.00	604.90	20.18	-11.37	Cox Spring	0.00
FH-34	6	False	1,500.00	874.81	34.29	20.00	FH-8	0.00
FH-35	2	True	1,500.00	2,500.00	28.20	12.30	FH-8	0.00
FH-36	3	True	1,500.00	2,500.00	74.12	12.51	FH-8	0.00
FH-37	4	True	1,500.00	2,129.15	49.52	16.44	FH-8	0.00
J-001	12	True	1,500.00	1,545.55	20.06	22.46	FH-8	2.62
J-001.5 (no demand)	3	True	1,500.00	2,500.00	50.54	12.52	FH-8	0.00
J-002	3	True	1,500.00	2,500.00	46.44	12.52	FH-8	2.62

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints ?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
J-003	7	True	1,500.00	1,933.58	20.00	5.00	J-217	2.62
J-003.5 (no demand)	3	True	1,500.00	1,660.33	20.00	-5.58	J-217	0.00
J-004	5	True	1,500.00	1,642.82	21.31	-4.02	J-217	2.62
J-005	3	True	1,500.00	2,058.95	20.02	9.71	J-217	2.62
J-006	3	True	1,500.00	2,038.25	20.01	10.48	J-217	2.62
J-007 (Well 9 & SWTP Junction)	4	True	1,500.00	2,315.66	20.00	12.66	J-217	0.00
J-007.5	3	True	1,500.00	2,500.00	24.56	24.02	J-008 (Pre BP Junction)	2.62
J-008 (Pre BP Junction)	3	True	1,500.00	2,500.00	20.94	24.56	J-007.5	0.00
J-009 (Post BP Junction)	2	False	1,500.00	1,392.80	20.00	33.47	FH-8	0.00
J-101	10	False	1,500.00	531.39	20.37	-25.03	Cox Spring	2.62
J-102	10	False	1,500.00	533.84	20.38	-26.08	Cox Spring	2.62
J-103	9	False	1,500.00	397.93	20.29	31.30	FH-8	2.62
J-104	3	True	1,500.00	2,500.00	35.63	12.51	FH-8	2.62
J-105	3	True	1,500.00	2,500.00	46.62	12.51	FH-8	2.62
J-106	3	True	1,500.00	2,500.00	58.86	12.51	FH-8	2.62
J-107	3	True	1,500.00	2,500.00	78.57	12.51	FH-8	2.62
J-108	3	True	1,500.00	2,500.00	77.57	12.51	FH-8	2.62
J-109	3	True	1,500.00	2,500.00	36.78	12.51	FH-8	2.62
J-110	3	True	1,500.00	2,500.00	47.51	12.51	FH-8	2.62
J-111	3	True	1,500.00	2,500.00	73.35	12.51	FH-8	2.62
J-111.5 (no demand)	3	True	1,500.00	2,500.00	70.74	12.51	FH-8	0.00
J-112	3	True	1,500.00	2,500.00	70.13	12.51	FH-8	2.62
J-113	11	False	1,500.00	555.74	20.23	30.30	FH-8	2.62
J-114	11	False	1,500.00	532.92	20.20	-26.97	Cox Spring	2.62
J-115	12	False	1,500.00	615.29	20.19	-14.81	Cox Spring	2.62
J-116	3	True	1,500.00	2,500.00	52.52	12.52	FH-8	2.62
J-117	14	False	1,500.00	844.30	20.18	28.29	FH-8	2.62
J-118	3	True	1,500.00	2,500.00	50.55	12.51	FH-8	2.62
J-119	23	True	1,500.00	2,147.01	22.71	16.44	FH-8	2.62
J-120	3	False	1,500.00	236.36	20.28	32.24	FH-8	2.62
J-121	4	True	1,500.00	1,963.35	20.00	18.37	FH-8	2.62
J-122	3	True	1,500.00	2,500.00	52.01	12.52	FH-8	2.62
J-123	3	True	1,500.00	2,500.00	59.90	12.51	FH-8	2.62
J-124	3	True	1,500.00	2,500.00	40.52	12.51	FH-8	2.62
J-125	3	True	1,500.00	2,500.00	57.64	12.51	FH-8	2.62

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints ?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
J-125.5	3	True	1,500.00	2,500.00	60.40	12.51	FH-8	2.62
J-126	3	True	1,500.00	2,500.00	50.21	12.51	FH-8	2.62
J-127	4	True	1,500.00	1,752.41	20.00	20.48	FH-8	2.62
J-128	3	True	1,500.00	2,500.00	61.12	12.51	FH-8	2.62
J-129	21	False	1,500.00	1,022.91	44.47	20.00	J-130	2.62
J-130	15	False	1,500.00	756.82	20.15	28.93	FH-8	2.62
J-131	13	False	1,500.00	699.64	20.18	29.33	FH-8	2.62
J-132	3	True	1,500.00	2,500.00	68.98	12.51	FH-8	2.62
J-133	3	True	1,500.00	2,500.00	68.51	12.51	FH-8	2.62
J-134	3	True	1,500.00	2,500.00	68.67	12.51	FH-8	2.62
J-135	21	True	1,500.00	2,307.80	45.04	14.68	FH-8	2.62
J-136	7	True	1,500.00	1,987.04	32.97	18.12	FH-8	2.62
J-137	14	True	1,500.00	1,604.51	20.02	21.31	FH-32	2.62
J-138	34	True	1,500.00	1,604.99	29.85	20.00	J-137	2.62
J-139	23	True	1,500.00	1,604.99	46.59	20.00	J-137	2.62
J-140	34	True	1,500.00	1,604.99	31.08	20.00	J-137	2.62
J-140.5 (no demand)	14	True	1,500.00	1,696.17	20.06	15.81	J-137	0.00
J-201	2	True	1,500.00	2,500.00	55.16	12.48	FH-8	2.62
J-202	2	True	1,500.00	2,500.00	88.90	12.48	FH-8	2.62
J-203	2	True	1,500.00	2,500.00	88.99	12.48	FH-8	2.62
J-204	2	True	1,500.00	2,500.00	90.88	12.48	FH-8	2.62
J-205	4	True	1,500.00	2,129.14	50.51	16.44	FH-8	2.62
J-206	4	True	1,500.00	2,035.15	57.77	17.45	FH-8	2.62
J-207	5	True	1,500.00	1,738.52	51.36	20.00	J-213	2.62
J-208	2	True	1,500.00	2,500.00	68.09	12.48	FH-8	2.62
J-209	2	True	1,500.00	2,500.00	72.66	12.48	FH-8	2.62
J-210	2	True	1,500.00	2,500.00	74.80	12.48	FH-8	2.62
J-211	2	True	1,500.00	2,500.00	29.66	12.30	FH-8	2.62
J-212	3	True	1,500.00	1,576.11	20.00	20.16	FH-23	2.62
J-213	3	True	1,500.00	1,622.41	20.00	21.60	FH-8	2.62
J-214	3	True	1,500.00	1,576.87	20.00	22.02	FH-8	2.62
J-215	2	True	1,500.00	2,500.00	54.44	12.48	FH-8	2.62
J-216	3	False	1,500.00	1,247.96	20.00	20.54	FH-29	2.62
J-217	3	False	1,500.00	86.91	20.00	33.04	FH-8	2.62
J-218	5	False	1,500.00	932.29	37.45	20.01	J-217	2.62
J-219	2	True	1,500.00	2,500.00	54.46	12.49	FH-8	2.62
J-219.5 (no demand)	2	True	1,500.00	2,500.00	41.39	12.51	FH-8	0.00
J-220	2	True	1,500.00	2,500.00	39.17	11.75	FH-8	2.62
J-301	6	False	1,500.00	874.81	41.62	20.00	FH-8	2.62
J-302	12	False	1,500.00	874.16	71.11	20.02	FH-8	2.62
J-303	13	False	1,500.00	874.11	58.48	20.02	FH-8	2.62
J-304	12	True	1,500.00	1,697.20	58.24	20.01	FH-8	2.62
J-305	12	True	1,500.00	1,697.20	58.74	20.01	FH-8	2.62

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints ?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
J-306	6	False	1,500.00	709.70	41.96	20.00	FH-8	2.62
SWTP Junction 1	(N/A)	False	1,500.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
SWTP Junction 2	(N/A)	False	1,500.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
SWTP Junction 3	(N/A)	False	1,500.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
SWTP Junction 4	18	False	1,500.00	1,164.12	20.07	20.14	SWTP Junction 5	0.00
SWTP Junction 5	18	False	1,500.00	1,161.72	20.07	20.37	SWTP Junction 4	0.00

Projected Conditions with Improvements - Average Day Demand

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
Cox Spring	1,250.88	-16.00	1,562.31	134.74
J-001	1,129.47	2.30	1,559.75	186.16
J-001.5 (no demand)	1,176.19	0.00	1,559.75	165.95
J-002	1,180.28	2.30	1,559.76	164.18
J-002.5 (no demand)	1,193.96	0.00	1,559.78	158.27
J-002.75 (no demand)	1,201.16	0.00	1,559.86	155.19
J-003	1,259.85	2.30	1,560.85	130.23
J-003.5 (no demand)	1,302.59	0.00	1,561.49	112.01
J-003.75 (no demand)	1,303.19	0.00	1,561.59	111.80
J-004	1,303.28	2.30	1,561.47	111.71
J-005	1,338.42	2.30	1,560.59	96.12
J-006	1,337.62	2.30	1,560.59	96.47
J-007 (Well 9 & SWTP Junction)	1,345.40	0.00	1,560.38	93.01
J-007.5	1,401.16	2.30	1,559.50	68.50
J-008 (Pre BP Junction)	1,401.39	0.00	1,559.45	68.38
J-009 (Post BP Junction)	1,402.84	0.00	1,576.24	75.02
J-101	1,130.07	2.30	1,559.74	185.90
J-102	1,132.50	2.30	1,559.74	184.85
J-103	1,143.13	2.30	1,559.74	180.25
J-104	1,150.26	2.30	1,559.74	177.16
J-105	1,121.36	2.30	1,559.74	189.66
J-106	1,105.96	2.30	1,559.73	196.33
J-107	1,101.35	2.30	1,559.73	198.32
J-108	1,103.95	2.30	1,559.73	197.19
J-108.5 (no demand)	1,149.49	0.00	1,559.74	177.50
J-109	1,148.52	2.30	1,559.74	177.92
J-110	1,147.34	2.30	1,559.74	178.42
J-111	1,138.40	2.30	1,559.73	182.29
J-111.5 (no demand)	1,118.24	0.00	1,559.73	191.01
J-112	1,118.08	2.30	1,559.73	191.08
J-113	1,095.53	2.30	1,559.73	200.84
J-114	1,141.53	2.30	1,559.75	180.94
J-115	1,159.56	2.30	1,559.74	173.14
J-116	1,174.43	2.30	1,559.74	166.71
J-117	1,164.36	2.30	1,559.74	171.06
J-118	1,186.94	2.30	1,559.74	161.29
J-119	1,204.34	2.30	1,559.76	153.78
J-120	1,197.39	2.30	1,559.78	156.79
J-121	1,210.57	2.30	1,559.76	151.08
J-122	1,185.24	2.30	1,559.74	162.03
J-123	1,176.04	2.30	1,559.73	166.01
J-124	1,225.01	2.30	1,559.73	144.82
J-125	1,159.03	2.30	1,559.73	173.36
J-125.5	1,170.34	2.30	1,559.73	168.47
J-126	1,163.84	2.30	1,559.73	171.28
J-127	1,199.84	2.30	1,559.73	155.71
J-128	1,132.39	2.30	1,559.73	184.89

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-128.5 (no demand)	1,132.28	0.00	1,559.73	184.93
J-129	1,135.84	2.30	1,559.73	183.40
J-130	1,192.39	2.30	1,559.73	158.93
J-131	1,136.15	2.30	1,559.73	183.26
J-132	1,111.15	2.30	1,559.73	194.08
J-132.5 (no demand)	1,096.25	0.00	1,559.73	200.52
J-133	1,121.48	2.30	1,559.73	189.61
J-134	1,110.83	2.30	1,559.73	194.22
J-135	1,126.51	2.30	1,559.72	187.43
J-136	1,154.36	2.30	1,559.72	175.38
J-137	1,184.34	2.30	1,559.72	162.41
J-138	1,147.13	2.30	1,559.72	178.51
J-139	1,080.70	2.30	1,559.72	207.25
J-140	1,079.35	2.30	1,559.72	207.83
J-140.5 (no demand)	1,078.72	0.00	1,559.72	208.11
J-201	1,200.84	2.30	1,559.86	155.33
J-202	1,228.22	2.30	1,559.76	143.45
J-202.5 (no demand)	1,228.94	0.00	1,559.76	143.13
J-203	1,230.20	2.30	1,559.76	142.58
J-204	1,241.03	2.30	1,559.75	137.90
J-205	1,214.57	2.30	1,559.73	149.34
J-205.5 (no demand)	1,209.89	0.00	1,559.73	151.36
J-206	1,200.11	2.30	1,559.73	155.59
J-206.5 (no demand)	1,208.15	0.00	1,559.73	152.11
J-207	1,214.38	2.30	1,559.73	149.42
J-208	1,259.52	2.30	1,559.76	129.90
J-209	1,289.17	2.30	1,559.75	117.07
J-210	1,283.40	2.30	1,559.75	119.56
J-211	1,257.79	2.30	1,559.73	130.64
J-212	1,253.35	2.30	1,559.73	132.56
J-213	1,294.28	2.30	1,559.73	114.85
J-214	1,306.29	2.30	1,559.73	109.65
J-215	1,341.76	2.30	1,559.75	94.31
J-216	1,353.90	2.30	1,559.74	89.06
J-217	1,361.72	2.30	1,568.26	89.36
J-218	1,321.52	2.30	1,564.77	105.24
J-219	1,346.24	2.30	1,559.75	92.37
J-219.5 (no demand)	1,382.74	0.00	1,559.75	76.58
J-220	1,392.24	2.30	1,559.75	72.47
J-301	1,408.06	2.30	1,570.64	70.34
J-301.5 (no demand)	1,427.49	0.00	1,570.64	61.93
J-302	1,370.76	2.30	1,571.83	87.00
J-302.5 (no demand)	1,415.03	0.00	1,571.28	67.60
J-302.5 (no demand)	1,378.02	0.00	1,571.91	83.89
J-303	1,410.82	2.30	1,572.26	69.85
J-303.5 (no demand)	1,445.82	0.00	1,571.63	54.43
J-304	1,411.36	2.30	1,573.07	69.96

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-305	1,409.85	2.30	1,573.07	70.62
J-305.5 (no demand)	1,449.75	0.00	1,573.14	53.38
J-306	1,448.96	2.30	1,572.73	53.55
J-306.5 (no demand)	1,458.84	0.00	1,573.05	49.42
SWTP Junction 1	1,091.94	0.00	1,096.35	1.91
SWTP Junction 2	1,093.01	0.00	1,559.75	201.93
SWTP Junction 3	1,093.08	0.00	1,559.75	201.90
SWTP Junction 4	1,093.51	0.00	1,559.75	201.72
SWTP Junction 5	1,093.35	0.00	1,559.75	201.79

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-1	J-116	J-115	6.0	PVC	150.0	-0.96	0.01	426
P-2	J-116	J-001.5 (no demand)	6.0	PVC	150.0	-34.79	0.39	23
P-3	J-111	J-108	6.0	PVC	150.0	4.80	0.05	255
P-4	J-107	J-106	6.0	PVC	150.0	-5.99	0.07	382
P-5(1)	J-303	J-303.5 (no demand)	6.0	PVC	150.0	157.08	1.78	346
P-5(2)	J-303.5 (no demand)	FH-34	6.0	PVC	150.0	0.00	0.00	29
P-6	J-303	J-306	6.0	PVC	150.0	-146.61	1.66	285
P-7(1)	J-303	J-302.5 (no demand)	6.0	PVC	150.0	153.83	1.75	198
P-7(2)	J-302.5 (no demand)	J-302	6.0	PVC	150.0	153.83	1.75	44
P-8(1)	J-206	J-205.5 (no demand)	6.0	PVC	150.0	-5.94	0.07	88
P-8(2)	J-205.5 (no demand)	J-205	6.0	PVC	150.0	-7.92	0.09	33
P-9(1)	J-206	J-206.5 (no demand)	6.0	PVC	150.0	4.55	0.05	521
P-9(2)	J-206.5 (no demand)	J-207	6.0	PVC	150.0	-1.55	0.02	59
P-10	J-214	J-213	6.0	PVC	150.0	6.14	0.07	231
P-11	J-214	J-212	6.0	PVC	150.0	3.20	0.04	253
P-12	J-214	J-216	6.0	PVC	150.0	-11.63	0.13	592
P-13	J-304	J-303	6.0	PVC	150.0	166.59	1.89	394
P-14	J-304	J-305	10.0	PVC	150.0	2.30	0.01	11
P-15	J-306	FH-7	6.0	PVC	150.0	0.00	0.00	27
P-16(1)	J-306	J-306.5 (no demand)	6.0	PVC	150.0	-148.91	1.69	196
P-16(2)	J-306.5 (no demand)	FH-8	8.0	PVC	150.0	0.00	0.00	213
P-17(1)(1)	J-302	J-302.5 (no demand)	6.0	PVC	150.0	151.53	1.72	319
P-17(1)(2)	J-302.5 (no demand)	J-301.5 (no demand)	6.0	PVC	150.0	308.61	3.50	100
P-17(2)	J-301.5 (no demand)	J-301	6.0	PVC	150.0	2.30	0.03	271
P-18	J-302	FH-9	6.0	PVC	150.0	0.00	0.00	13
P-19	SWTP Junction 4	J-001	6.0	Asbestos Cement	140.0	-0.01	0.00	1,140
P-20	SWTP Junction 4	SWTP Junction 5	6.0	Asbestos Cement	140.0	0.00	0.00	10
P-21	SWTP Junction 4	SWTP Junction 3	6.0	Cast iron	130.0	0.01	0.00	29
P-22	J-005	J-006	6.0	Asbestos Cement	140.0	2.30	0.03	11
P-23	J-209	J-215	10.0	PVC	150.0	34.21	0.14	401
P-24	J-209	J-208	6.0	PVC	150.0	-10.74	0.12	444

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-25	J-209	J-210	10.0	PVC	150.0	-25.77	0.11	33
P-26	J-204	J-203	8.0	PVC	150.0	-30.36	0.19	382
P-27	J-204	J-210	10.0	PVC	150.0	28.06	0.11	263
P-28	J-204	PRV-4	10.0	PVC	150.0	0.00	0.00	14
P-29	J-202	J-201	6.0	PVC	150.0	-56.45	0.64	339
P-30	J-211	J-215	6.0	PVC	150.0	-12.51	0.14	739
P-31	J-205	J-211	6.0	PVC	150.0	-10.21	0.12	355
P-32	J-205	FH-37	6.0	PVC	150.0	0.00	0.00	16
P-33	J-207	J-213	6.0	PVC	150.0	-3.85	0.04	362
P-34(1)	J-203	J-202.5 (no demand)	8.0	PVC	150.0	-32.66	0.21	61
P-34(2)	J-202.5 (no demand)	J-202	8.0	PVC	150.0	-41.12	0.26	14
P-35	J-208	J-202	6.0	PVC	150.0	-13.03	0.15	352
P-36	J-127	J-126	6.0	PVC	150.0	-0.32	0.00	335
P-37	J-126	J-125	6.0	PVC	150.0	-2.62	0.03	40
P-38	J-125	J-128	8.0	PVC	150.0	12.85	0.08	624
P-39	J-125	J-125.5	8.0	PVC	150.0	-17.76	0.11	430
P-40	J-123	J-124	10.0	PVC	150.0	2.30	0.01	377
P-41	J-123	J-125.5	10.0	PVC	150.0	-4.59	0.02	57
P-42(1)	J-128	J-128.5 (no demand)	6.0	PVC	150.0	0.79	0.01	11
P-42(2)	J-128.5 (no demand)	J-131	6.0	PVC	150.0	2.30	0.03	210
P-43	J-128	J-132	8.0	PVC	150.0	9.77	0.06	144
P-44	J-132	J-134	8.0	PVC	150.0	16.07	0.10	14
P-46	J-134	J-135	8.0	PVC	150.0	13.77	0.09	692
P-47	J-129	J-130	6.0	PVC	150.0	-3.81	0.04	319
P-48	J-129	FH-30	6.0	PVC	150.0	0.00	0.00	11
P-49	J-135	J-136	8.0	PVC	150.0	11.48	0.07	435
P-50	J-136	J-137	8.0	PVC	150.0	9.18	0.06	865
P-51	J-137	J-138	8.0	PVC	150.0	6.89	0.04	425
P-52	J-138	J-139	8.0	PVC	150.0	4.59	0.03	819
P-53	J-139	J-140	8.0	PVC	150.0	2.30	0.01	1,113
P-54	J-112	J-107	6.0	PVC	150.0	-6.20	0.07	671
P-55	J-113	J-112	6.0	PVC	150.0	-5.97	0.07	472
P-56	J-109	J-110	6.0	PVC	150.0	10.21	0.12	398
P-57	J-108	J-107	6.0	PVC	150.0	2.50	0.03	20
P-58	J-106	J-105	6.0	PVC	150.0	-8.29	0.09	373
P-59	J-133	J-132	6.0	PVC	150.0	4.92	0.06	786
P-60	J-110	J-111	6.0	PVC	150.0	7.91	0.09	323
P-61(1)	J-002	J-002.5 (no demand)	6.0	Asbestos Cement	140.0	-39.39	0.45	158
P-61(2)(1)	J-002.5 (no demand)	J-002.75 (no demand)	6.0	Asbestos Cement	140.0	-66.18	0.75	192
P-61(2)(2)	J-002.75 (no demand)	J-003	6.0	Asbestos Cement	140.0	-124.92	1.42	719

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-63	J-105	J-104	6.0	PVC	150.0	-10.59	0.12	268
P-64	J-212	J-206	6.0	PVC	150.0	0.90	0.01	457
P-65	J-216	J-220	6.0	PVC	150.0	-13.93	0.16	314
P-66	J-004	J-005	6.0	Asbestos Cement	140.0	172.22	1.95	355
P-67	J-004	J-003.5 (no demand)	6.0	Asbestos Cement	140.0	-174.51	1.98	6
P-68	J-218	J-217	6.0	PVC	150.0	-304.02	3.45	557
P-69	J-101	J-102	6.0	PVC	150.0	-2.30	0.03	39
P-70	J-122	J-118	8.0	PVC	150.0	-35.41	0.23	68
P-71	J-121	J-119	6.0	PVC	150.0	6.17	0.07	53
P-72	J-118	J-116	8.0	PVC	150.0	-9.34	0.06	364
P-73	J-120	J-119	6.0	PVC	150.0	24.49	0.28	260
P-74	J-119	J-118	6.0	PVC	150.0	28.36	0.32	224
P-75	SWTP Reservoir	SWTP Junction 1	6.0	PVC	150.0	-0.01	0.00	202
P-76	200 gpm SWTP Pump 1	SWTP Junction 3	6.0	PVC	150.0	0.00	0.00	10
P-77	J-001	J-001.5 (no demand)	6.0	Asbestos Cement	140.0	-2.30	0.03	969
P-78	J-114	J-102	6.0	PVC	150.0	10.45	0.12	140
P-79	J-102	J-103	6.0	PVC	150.0	5.86	0.07	475
P-80(1)	J-104	J-108.5 (no demand)	6.0	PVC	150.0	-9.32	0.11	18
P-80(2)	J-108.5 (no demand)	J-109	6.0	PVC	150.0	12.50	0.14	23
P-81	J-104	J-103	6.0	PVC	150.0	-3.56	0.04	308
P-82	J-305	PRV-3	10.0	PVC	150.0	0.00	0.00	14
P-83	J-115	J-114	6.0	PVC	150.0	-3.26	0.04	324
P-84	J-115	FH-33	6.0	PVC	150.0	0.00	0.00	14
P-85	J-220	J-219.5 (no demand)	10.0	PVC	150.0	-16.23	0.07	69
P-86	Booster Pump (Lag)	J-009 (Post BP Junction)	6.0	PVC	150.0	(N/A)	(N/A)	18
P-87	J-008 (Pre BP Junction)	Booster Pump (Lag)	6.0	PVC	150.0	(N/A)	(N/A)	67
P-88	J-008 (Pre BP Junction)	Booster Pump (Lead)	6.0	PVC	150.0	166.22	1.89	68
P-89	J-008 (Pre BP Junction)	J-007.5	6.0	Asbestos Cement	140.0	-166.22	1.89	20
P-90	J-009 (Post BP Junction)	Reservoir R2	6.0	PVC	150.0	166.22	1.89	1,289
P-91	PRV-3	J-220	10.0	PVC	150.0	0.00	0.00	119
P-92	PRV-4	J-124	10.0	PVC	150.0	0.00	0.00	86
P-93	J-007 (Well 9 & SWTP Junction)	J-005	6.0	Asbestos Cement	140.0	-167.63	1.90	90

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-94	SWTP Junction 5	Well No. 5 Pump	6.0	Asbestos Cement	140.0	0.00	0.00	1,600
P-95	SWTP Junction 3	SWTP Junction 2	6.0	PVC	150.0	0.00	0.00	11
P-96	SWTP Junction 2	200 gpm SWTP Pump 2	6.0	Cast iron	130.0	0.00	0.00	10
P-97	SWTP Junction 2	100 gpm SWTP Pump	6.0	Cast iron	130.0	0.00	0.00	23
P-98	SWTP Junction 1	100 gpm SWTP Pump	6.0	PVC	150.0	0.00	0.00	34
P-99	SWTP Junction 1	200 gpm SWTP Pump 2	6.0	PVC	150.0	0.00	0.00	19
P-100	SWTP Junction 1	200 gpm SWTP Pump 1	6.0	PVC	150.0	0.00	0.00	29
P-101	Booster Pump (Lead)	J-009 (Post BP Junction)	6.0	PVC	150.0	166.22	1.89	18
P-102	J-219	J-215	10.0	PVC	150.0	-19.41	0.08	200
P-103	FCV-8	J-114	3.0	PVC	150.0	16.00	0.73	3,239
P-104	Well No. 9 Pump	J-007 (Well 9 & SWTP Junction)	6.0	PVC	150.0	0.00	0.00	539
P-105	Well No. 9 Pump	R-10	6.0	PVC	150.0	0.00	0.00	22
P-106	Well No. 5 Reservoir	Well No. 5 Pump	6.0	Asbestos Cement	140.0	0.00	0.00	21
P-107(1)	J-140	J-140.5 (no demand)	8.0	PVC	150.0	0.00	0.00	194
P-107(2)	J-140.5 (no demand)	FH-21	6.0	PVC	150.0	0.00	0.00	17
P-108	J-007.5	Reservoir R1	6.0	Asbestos Cement	140.0	0.00	0.00	321
P-109	J-007.5	J-219.5 (no demand)	6.0	Asbestos Cement	140.0	-168.51	1.91	104
P-110	J-003.5 (no demand)	J-003	6.0	Asbestos Cement	140.0	127.21	1.44	449
P-111(1)	J-003.5 (no demand)	J-003.75 (no demand)	6.0	PVC	150.0	-301.73	3.42	17
P-111(2)	J-003.75 (no demand)	J-218	6.0	PVC	150.0	-301.73	3.42	513
P-112(1)	Reservoir R2	J-305.5 (no demand)	10.0	PVC	150.0	320.09	1.31	803
P-112(2)	J-305.5 (no demand)	J-304	10.0	PVC	150.0	171.18	0.70	348
P-113	Cox Spring	FCV-8	3.0	PVC	150.0	16.00	0.73	24
P-114	FH-10	J-101	6.0	PVC	150.0	0.00	0.00	13
P-115	FH-11	J-109	6.0	PVC	150.0	0.00	0.00	16

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-116	FH-12	J-105	6.0	PVC	150.0	0.00	0.00	16
P-117	FH-13	J-106	6.0	PVC	150.0	0.00	0.00	333
P-118	FH-36	J-108	6.0	PVC	150.0	0.00	0.00	24
P-119	FH-15	J-133	6.0	PVC	150.0	0.00	0.00	19
P-120	FH-24	J-126	6.0	PVC	150.0	0.00	0.00	6
P-121	FH-23	J-212	6.0	PVC	150.0	0.00	0.00	29
P-122	FH-22	J-207	6.0	PVC	150.0	0.00	0.00	23
P-123	J-132.5 (no demand)	J-132	6.0	PVC	150.0	3.68	0.04	101
P-124	FH-25	J-123	6.0	PVC	150.0	0.00	0.00	41
P-125	FH-14	J-124	6.0	PVC	150.0	0.00	0.00	19
P-126	FH-28	J-210	6.0	PVC	150.0	0.00	0.00	20
P-127	FH-5	J-006	6.0	PVC	150.0	0.00	0.00	37
P-128	FH-3	J-004	6.0	PVC	150.0	0.00	0.00	35
P-129	FH-6	J-305	6.0	PVC	150.0	0.00	0.00	17
P-130	FH-4	J-218	6.0	PVC	150.0	0.00	0.00	29
P-131	FH-17	J-135	6.0	PVC	150.0	0.00	0.00	24
P-132	FH-18	J-136	6.0	PVC	150.0	0.00	0.00	297
P-133	FH-32	J-137	6.0	PVC	150.0	0.00	0.00	16
P-134	FH-19	J-138	6.0	PVC	150.0	0.00	0.00	147
P-135	FH-20	J-139	6.0	PVC	150.0	0.00	0.00	414
P-136	FH-1	J-002	6.0	PVC	150.0	0.00	0.00	30
P-137	FH-2	J-003	6.0	PVC	150.0	0.00	0.00	22
P-138	FH-27 (SCHOOL)	J-203	6.0	PVC	150.0	0.00	0.00	18
P-139	FH-26	J-122	6.0	PVC	150.0	0.00	0.00	55
P-140	FH-29	J-216	6.0	PVC	150.0	0.00	0.00	16
P-141	FH-31	J-110	6.0	PVC	150.0	0.00	0.00	40
P-142	FH-35	J-211	6.0	PVC	150.0	0.00	0.00	8
P-143	J-125.5	J-122	8.0	PVC	150.0	-33.11	0.21	309
P-144	J-125.5	J-111	10.0	PVC	150.0	8.46	0.03	281
P-145	J-001.5 (no demand)	J-002	6.0	Asbestos Cement	140.0	-37.09	0.42	67
P-146	J-219.5 (no demand)	J-219	10.0	PVC	150.0	-17.11	0.07	321
P-147	J-219.5 (no demand)	J-007 (Well 9 & SWTP Junction)	6.0	Asbestos Cement	140.0	-167.63	1.90	266
P-148	J-111	J-111.5 (no demand)	6.0	PVC	150.0	9.28	0.11	394
P-149	J-111.5 (no demand)	J-112	6.0	PVC	150.0	2.07	0.02	26
P-150	J-133	J-111.5 (no demand)	6.0	PVC	150.0	-7.21	0.08	26
P-311(1)	J-116	J-117	8.0	PVC	150.0	24.12	0.15	124
P-311(2)	J-117	J-108.5 (no demand)	8.0	PVC	150.0	21.82	0.14	149

FlexTable: Pipe Table

Current Time: 11.00 hours

Label	Start Node	Stop Node	Dia. (in)	Material	Hazen - Williams C	Flow (gpm)	Velocity (ft/s)	Length (ft)
P-312	J-120	J-002.5 (no demand)	6.0	PVC	150.0	-26.79	0.30	87
P-313	J-201	J-002.75 (no demand)	6.0	PVC	150.0	-58.74	0.67	23
P-314	J-127	J-205.5 (no demand)	6.0	PVC	150.0	-1.97	0.02	103
P-315	J-306.5 (no demand)	J-305.5 (no demand)	8.0	PVC	150.0	-148.91	0.95	203
P-316	J-121	J-202.5 (no demand)	6.0	PVC	150.0	-8.46	0.10	161
P-317	J-129	J-128.5 (no demand)	6.0	PVC	150.0	1.51	0.02	23
P-318	J-130	J-206.5 (no demand)	6.0	PVC	150.0	-6.10	0.07	92
P-321	J-113	J-132.5 (no demand)	6.0	PVC	150.0	3.68	0.04	168
P-322	J-217	J-301.5 (no demand)	6.0	PVC	150.0	-306.32	3.48	374
P-323	J-303.5 (no demand)	J-302.5 (no demand)	6.0	PVC	150.0	157.08	1.78	186
P-324	FH-16	J-132.5 (no demand)	6.0	PVC	150.0	0.00	0.00	12
P-325	J-003.75 (no demand)	J-302.5 (no demand)	6.0	PVC	150.0	(N/A)	(N/A)	567

Projected Conditions with Improvements - Max Day Demand

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
Cox Spring	1,250.88	-16.00	1,540.15	125.16
J-001	1,129.47	5.05	1,537.60	176.58
J-001.5 (no demand)	1,176.19	0.00	1,537.60	156.37
J-002	1,180.28	5.05	1,537.63	154.61
J-002.5 (no demand)	1,193.96	0.00	1,537.71	148.73
J-002.75 (no demand)	1,201.16	0.00	1,537.92	145.70
J-003	1,259.85	5.05	1,540.17	121.28
J-003.5 (no demand)	1,302.59	0.00	1,541.65	103.43
J-003.75 (no demand)	1,303.19	0.00	1,541.89	103.27
J-004	1,303.28	5.05	1,541.61	103.11
J-005	1,338.42	5.05	1,539.60	87.04
J-006	1,337.62	5.05	1,539.60	87.39
J-007 (Well 9 & SWTP Junction)	1,345.40	0.00	1,539.13	83.82
J-007.5	1,401.16	5.05	1,537.50	58.99
J-008 (Pre BP Junction)	1,401.39	0.00	1,537.46	58.87
J-009 (Post BP Junction)	1,402.84	0.00	1,572.21	73.28
J-101	1,130.07	5.05	1,537.58	176.31
J-102	1,132.50	5.05	1,537.58	175.26
J-103	1,143.13	5.05	1,537.58	170.66
J-104	1,150.26	5.05	1,537.58	167.58
J-105	1,121.36	5.05	1,537.57	180.07
J-106	1,105.96	5.05	1,537.56	186.73
J-107	1,101.35	5.05	1,537.56	188.73
J-108	1,103.95	5.05	1,537.56	187.60
J-108.5 (no demand)	1,149.49	0.00	1,537.58	167.91
J-109	1,148.52	5.05	1,537.58	168.33
J-110	1,147.34	5.05	1,537.57	168.83
J-111	1,138.40	5.05	1,537.56	172.70
J-111.5 (no demand)	1,118.24	0.00	1,537.55	181.42
J-112	1,118.08	5.05	1,537.55	181.49
J-113	1,095.53	5.05	1,537.55	191.24
J-114	1,141.53	5.05	1,537.59	171.36
J-115	1,159.56	5.05	1,537.59	163.55
J-116	1,174.43	5.05	1,537.59	157.12
J-117	1,164.36	5.05	1,537.59	161.48
J-118	1,186.94	5.05	1,537.59	151.71
J-119	1,204.34	5.05	1,537.68	144.22
J-120	1,197.39	5.05	1,537.70	147.24
J-121	1,210.57	5.05	1,537.69	141.53
J-122	1,185.24	5.05	1,537.59	152.44
J-123	1,176.04	5.05	1,537.56	156.42
J-124	1,225.01	5.05	1,537.56	135.23
J-125	1,159.03	5.05	1,537.56	163.77
J-125.5	1,170.34	5.05	1,537.56	158.88
J-126	1,163.84	5.05	1,537.56	161.69
J-127	1,199.84	5.05	1,537.57	146.12
J-128	1,132.39	5.05	1,537.55	175.29

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-128.5 (no demand)	1,132.28	0.00	1,537.55	175.34
J-129	1,135.84	5.05	1,537.55	173.80
J-130	1,192.39	5.05	1,537.56	149.34
J-131	1,136.15	5.05	1,537.55	173.67
J-132	1,111.15	5.05	1,537.55	184.48
J-132.5 (no demand)	1,096.25	0.00	1,537.55	190.93
J-133	1,121.48	5.05	1,537.55	180.02
J-134	1,110.83	5.05	1,537.55	184.62
J-135	1,126.51	5.05	1,537.53	177.83
J-136	1,154.36	5.05	1,537.52	165.78
J-137	1,184.34	5.05	1,537.52	152.80
J-138	1,147.13	5.05	1,537.51	168.90
J-139	1,080.70	5.05	1,537.51	197.64
J-140	1,079.35	5.05	1,537.51	198.22
J-140.5 (no demand)	1,078.72	0.00	1,537.51	198.50
J-201	1,200.84	5.05	1,537.91	145.83
J-202	1,228.22	5.05	1,537.72	133.91
J-202.5 (no demand)	1,228.94	0.00	1,537.72	133.60
J-203	1,230.20	5.05	1,537.72	133.05
J-204	1,241.03	5.05	1,537.72	128.36
J-205	1,214.57	5.05	1,537.58	139.75
J-205.5 (no demand)	1,209.89	0.00	1,537.57	141.77
J-206	1,200.11	5.05	1,537.57	146.01
J-206.5 (no demand)	1,208.15	0.00	1,537.56	142.52
J-207	1,214.38	5.05	1,537.56	139.83
J-208	1,259.52	5.05	1,537.72	120.36
J-209	1,289.17	5.05	1,537.72	107.54
J-210	1,283.40	5.05	1,537.72	110.03
J-211	1,257.79	5.05	1,537.62	121.07
J-212	1,253.35	5.05	1,537.58	122.97
J-213	1,294.28	5.05	1,537.57	105.26
J-214	1,306.29	5.05	1,537.58	100.07
J-215	1,341.76	5.05	1,537.72	84.78
J-216	1,353.90	5.05	1,537.67	79.51
J-217	1,361.72	5.05	1,557.31	84.62
J-218	1,321.52	5.05	1,549.21	98.51
J-219	1,346.24	5.05	1,537.72	82.85
J-219.5 (no demand)	1,382.74	0.00	1,537.73	67.05
J-220	1,392.24	5.05	1,537.73	62.94
J-301	1,408.06	5.05	1,562.85	66.97
J-301.5 (no demand)	1,427.49	0.00	1,562.85	58.56
J-302	1,370.76	5.05	1,565.65	84.32
J-302.5 (no demand)	1,415.03	0.00	1,564.36	64.61
J-302.5 (no demand)	1,378.02	0.00	1,565.83	81.26
J-303	1,410.82	5.05	1,566.67	67.43
J-303.5 (no demand)	1,445.82	0.00	1,565.17	51.63
J-304	1,411.36	5.05	1,568.59	68.02

FlexTable: Junction Table

Current Time: 11.00 hours

Label	Elevation (ft)	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-305	1,409.85	5.05	1,568.59	68.68
J-305.5 (no demand)	1,449.75	0.00	1,568.74	51.48
J-306	1,448.96	5.05	1,567.76	51.40
J-306.5 (no demand)	1,458.84	0.00	1,568.54	47.46
SWTP Junction 1	1,091.94	0.00	1,096.35	1.91
SWTP Junction 2	1,093.01	0.00	1,537.60	192.35
SWTP Junction 3	1,093.08	0.00	1,537.60	192.32
SWTP Junction 4	1,093.51	0.00	1,537.60	192.13
SWTP Junction 5	1,093.35	0.00	1,537.60	192.21

Projected Conditions with Improvements - Fire Flow Report

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints ?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
Cox Spring	12	False	1,500.00	15.38	102.95	34.11	FH-8	-16.00
FH-1	2	True	1,500.00	2,500.00	108.64	18.75	FH-8	0.00
FH-2	2	True	1,500.00	2,500.00	64.20	18.69	FH-8	0.00
FH-3	2	True	1,500.00	2,500.00	54.66	18.58	FH-8	0.00
FH-4	2	True	1,500.00	2,500.00	37.38	18.19	FH-8	0.00
FH-5	2	True	1,500.00	2,500.00	39.43	18.74	FH-8	0.00
FH-6	5	True	1,500.00	2,255.65	53.02	20.00	FH-8	0.00
FH-7	7	True	1,500.00	1,990.27	29.20	20.00	FH-8	0.00
FH-8	3	True	1,500.00	1,531.20	20.00	34.65	J-008 (Pre BP Junction)	0.00
FH-9	11	True	1,500.00	2,141.79	48.57	20.00	FH-8	0.00
FH-10	2	True	1,500.00	2,500.00	98.80	18.74	FH-8	0.00
FH-11	2	True	1,500.00	2,500.00	123.99	18.74	FH-8	0.00
FH-12	2	True	1,500.00	2,500.00	122.40	18.74	FH-8	0.00
FH-13	2	True	1,500.00	2,500.00	94.10	18.74	FH-8	0.00
FH-14	2	True	1,500.00	2,500.00	88.97	18.74	FH-8	0.00
FH-15	2	True	1,500.00	2,500.00	130.24	18.73	FH-8	0.00
FH-16	2	True	1,500.00	2,500.00	139.48	18.73	FH-8	0.00
FH-17	2	True	1,500.00	2,500.00	104.86	18.73	FH-8	0.00
FH-18	2	True	1,500.00	2,500.00	76.41	18.73	FH-8	0.00
FH-19	3	True	1,500.00	2,449.06	20.00	19.16	FH-8	0.00
FH-20	3	True	1,500.00	2,278.54	20.00	20.58	FH-8	0.00
FH-21	3	True	1,500.00	2,350.58	20.00	19.98	FH-8	0.00
FH-22	2	True	1,500.00	2,500.00	88.35	18.70	FH-8	0.00
FH-23	2	True	1,500.00	2,500.00	66.80	18.68	FH-8	0.00
FH-24	2	True	1,500.00	2,500.00	118.81	18.73	FH-8	0.00
FH-25	2	True	1,500.00	2,500.00	112.43	18.74	FH-8	0.00
FH-26	2	True	1,500.00	2,500.00	104.08	18.74	FH-8	0.00
FH-27 (SCHOOL)	2	True	2,000.00	2,500.00	97.03	18.78	FH-8	0.00
FH-28	2	True	1,500.00	2,500.00	77.93	18.80	FH-8	0.00
FH-29	2	True	1,500.00	2,500.00	35.41	18.57	FH-8	0.00
FH-30	2	True	1,500.00	2,500.00	128.81	18.72	FH-8	0.00
FH-31	2	True	1,500.00	2,500.00	108.26	18.74	FH-8	0.00
FH-32	2	True	1,500.00	2,500.00	41.46	18.73	FH-8	0.00
FH-33	2	True	1,500.00	2,500.00	97.98	18.74	FH-8	0.00
FH-34	4	True	1,500.00	1,686.20	20.00	23.73	J-303.5 (no demand)	0.00
FH-35	2	True	1,500.00	2,500.00	68.45	18.75	FH-8	0.00
FH-36	2	True	1,500.00	2,500.00	136.44	18.74	FH-8	0.00
FH-37	2	True	1,500.00	2,500.00	95.02	18.72	FH-8	0.00
J-001	3	True	1,500.00	2,238.42	20.00	20.93	FH-8	2.62
J-001.5 (no demand)	2	True	1,500.00	2,500.00	116.58	18.75	FH-8	0.00

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints ?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
J-002	2	True	1,500.00	2,500.00	113.55	18.75	FH-8	2.62
J-002.5 (no demand)	2	True	1,500.00	2,500.00	110.45	18.75	FH-8	0.00
J-002.75 (no demand)	2	True	1,500.00	2,500.00	107.69	18.76	FH-8	0.00
J-003	2	True	1,500.00	2,500.00	66.26	18.69	FH-8	2.62
J-003.5 (no demand)	2	True	1,500.00	2,500.00	61.18	18.58	FH-8	0.00
J-003.75 (no demand)	2	True	1,500.00	2,500.00	60.26	18.56	FH-8	0.00
J-004	2	True	1,500.00	2,500.00	60.73	18.58	FH-8	2.62
J-005	2	True	1,500.00	2,500.00	44.53	18.74	FH-8	2.62
J-006	2	True	1,500.00	2,500.00	43.25	18.74	FH-8	2.62
J-007 (Well 9 & SWTP Junction)	2	True	1,500.00	2,500.00	43.71	18.78	FH-8	0.00
J-007.5	3	True	1,500.00	2,500.00	24.47	24.37	J-008 (Pre BP Junction)	2.62
J-008 (Pre BP Junction)	3	True	1,500.00	2,500.00	21.29	24.47	J-007.5	0.00
J-009 (Post BP Junction)	2	False	1,500.00	1,392.80	20.00	34.16	FH-8	0.00
J-101	2	True	1,500.00	2,500.00	100.83	18.74	FH-8	2.62
J-102	2	True	1,500.00	2,500.00	104.97	18.74	FH-8	2.62
J-103	2	True	1,500.00	2,500.00	109.68	18.74	FH-8	2.62
J-104	2	True	1,500.00	2,500.00	125.14	18.74	FH-8	2.62
J-105	2	True	1,500.00	2,500.00	124.45	18.74	FH-8	2.62
J-106	2	True	1,500.00	2,500.00	127.54	18.74	FH-8	2.62
J-107	2	True	1,500.00	2,500.00	141.08	18.74	FH-8	2.62
J-108	2	True	1,500.00	2,500.00	139.88	18.74	FH-8	2.62
J-108.5 (no demand)	2	True	1,500.00	2,500.00	126.44	18.74	FH-8	0.00
J-109	2	True	1,500.00	2,500.00	125.27	18.74	FH-8	2.62
J-110	2	True	1,500.00	2,500.00	116.93	18.74	FH-8	2.62
J-111	2	True	1,500.00	2,500.00	133.24	18.74	FH-8	2.62
J-111.5 (no demand)	2	True	1,500.00	2,500.00	135.78	18.73	FH-8	0.00
J-112	2	True	1,500.00	2,500.00	135.61	18.73	FH-8	2.62
J-113	2	True	1,500.00	2,500.00	136.49	18.73	FH-8	2.62

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints ?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
J-114	2	True	1,500.00	2,500.00	101.40	18.74	FH-8	2.62
J-115	2	True	1,500.00	2,500.00	99.45	18.74	FH-8	2.62
J-116	2	True	1,500.00	2,500.00	118.04	18.74	FH-8	2.62
J-117	2	True	1,500.00	2,500.00	120.88	18.74	FH-8	2.62
J-118	2	True	1,500.00	2,500.00	113.50	18.74	FH-8	2.62
J-119	2	True	1,500.00	2,500.00	107.03	18.76	FH-8	2.62
J-120	2	True	1,500.00	2,500.00	106.21	18.75	FH-8	2.62
J-121	2	True	1,500.00	2,500.00	104.08	18.76	FH-8	2.62
J-122	2	True	1,500.00	2,500.00	113.71	18.74	FH-8	2.62
J-123	2	True	1,500.00	2,500.00	117.06	18.74	FH-8	2.62
J-124	2	True	1,500.00	2,500.00	91.65	18.74	FH-8	2.62
J-125	2	True	1,500.00	2,500.00	123.62	18.73	FH-8	2.62
J-125.5	2	True	1,500.00	2,500.00	120.17	18.74	FH-8	2.62
J-126	2	True	1,500.00	2,500.00	119.66	18.73	FH-8	2.62
J-127	2	True	1,500.00	2,500.00	101.13	18.72	FH-8	2.62
J-128	2	True	1,500.00	2,500.00	133.21	18.73	FH-8	2.62
J-128.5 (no demand)	2	True	1,500.00	2,500.00	132.72	18.73	FH-8	0.00
J-129	2	True	1,500.00	2,500.00	130.17	18.72	FH-8	2.62
J-130	2	True	1,500.00	2,500.00	101.36	18.71	FH-8	2.62
J-131	2	True	1,500.00	2,500.00	102.73	18.73	FH-8	2.62
J-132	2	True	1,500.00	2,500.00	140.92	18.73	FH-8	2.62
J-132.5 (no demand)	2	True	1,500.00	2,500.00	141.31	18.73	FH-8	0.00
J-133	2	True	1,500.00	2,500.00	132.72	18.73	FH-8	2.62
J-134	2	True	1,500.00	2,500.00	140.61	18.73	FH-8	2.62
J-135	2	True	1,500.00	2,500.00	110.68	18.73	FH-8	2.62
J-136	2	True	1,500.00	2,500.00	84.09	18.73	FH-8	2.62
J-137	2	True	1,500.00	2,500.00	42.27	18.73	FH-8	2.62
J-138	2	True	1,500.00	2,500.00	44.22	18.73	FH-8	2.62
J-139	2	True	1,500.00	2,500.00	45.74	18.73	FH-8	2.62
J-140	3	True	1,500.00	2,413.32	20.00	19.46	FH-8	2.62
J-140.5 (no demand)	3	True	1,500.00	2,366.91	20.00	19.85	FH-8	0.00
J-201	2	True	1,500.00	2,500.00	107.24	18.76	FH-8	2.62
J-202	2	True	1,500.00	2,500.00	101.21	18.78	FH-8	2.62
J-202.5 (no demand)	2	True	1,500.00	2,500.00	101.01	18.78	FH-8	0.00
J-203	2	True	1,500.00	2,500.00	100.34	18.78	FH-8	2.62
J-204	2	True	1,500.00	2,500.00	97.18	18.79	FH-8	2.62
J-205	2	True	1,500.00	2,500.00	96.57	18.72	FH-8	2.62
J-205.5 (no demand)	2	True	1,500.00	2,500.00	100.05	18.72	FH-8	0.00

Fire Flow Node FlexTable: Fire Flow Report

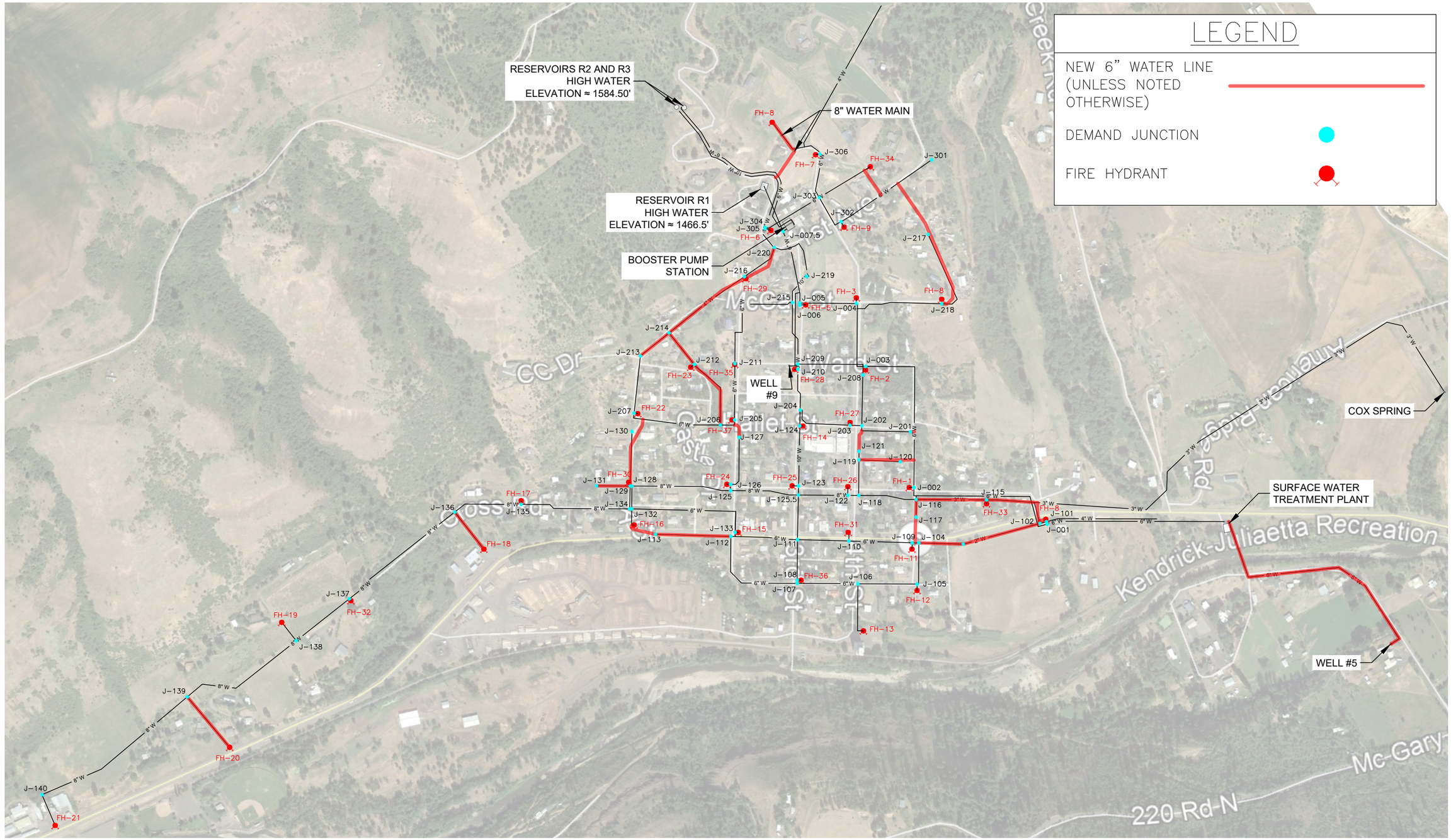
Label	Fire Flow Iterations	Satisfies Fire Flow Constraints ?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
J-206	2	True	1,500.00	2,500.00	103.22	18.71	FH-8	2.62
J-206.5 (no demand)	2	True	1,500.00	2,500.00	96.26	18.70	FH-8	0.00
J-207	2	True	1,500.00	2,500.00	91.22	18.70	FH-8	2.62
J-208	2	True	1,500.00	2,500.00	75.87	18.79	FH-8	2.62
J-209	2	True	1,500.00	2,500.00	77.79	18.80	FH-8	2.62
J-210	2	True	1,500.00	2,500.00	80.09	18.80	FH-8	2.62
J-211	2	True	1,500.00	2,500.00	69.92	18.75	FH-8	2.62
J-212	2	True	1,500.00	2,500.00	70.47	18.68	FH-8	2.62
J-213	2	True	1,500.00	2,500.00	53.14	18.68	FH-8	2.62
J-214	2	True	1,500.00	2,500.00	54.15	18.66	FH-8	2.62
J-215	2	True	1,500.00	2,500.00	57.33	18.81	FH-8	2.62
J-216	2	True	1,500.00	2,500.00	37.07	18.57	FH-8	2.62
J-217	3	True	1,500.00	2,500.00	28.53	17.76	FH-8	2.62
J-218	2	True	1,500.00	2,500.00	41.29	18.19	FH-8	2.62
J-219	2	True	1,500.00	2,500.00	56.58	18.83	FH-8	2.62
J-219.5 (no demand)	2	True	1,500.00	2,500.00	43.14	18.87	FH-8	0.00
J-220	2	True	1,500.00	2,500.00	39.90	18.50	FH-8	2.62
J-301	4	True	1,500.00	1,617.11	20.00	24.67	FH-8	2.62
J-301.5 (no demand)	6	True	1,500.00	2,217.88	20.00	19.90	FH-8	0.00
J-302	11	True	1,500.00	2,141.78	48.54	20.00	FH-8	2.62
J-302.5 (no demand)	21	True	1,500.00	2,302.19	28.26	18.19	FH-34	0.00
J-302.5 (no demand)	20	True	1,500.00	2,456.21	41.20	17.19	FH-8	0.00
J-303	5	True	1,500.00	2,111.51	41.71	20.00	FH-8	2.62
J-303.5 (no demand)	5	True	1,500.00	1,872.89	20.00	18.18	FH-34	0.00
J-304	5	True	1,500.00	2,255.65	53.76	20.00	FH-8	2.62
J-305	5	True	1,500.00	2,255.65	54.27	20.00	FH-8	2.62
J-305.5 (no demand)	2	True	1,500.00	2,500.00	39.89	18.11	FH-8	0.00
J-306	6	True	1,500.00	1,990.28	31.32	20.00	FH-8	2.62
J-306.5 (no demand)	2	True	1,500.00	2,500.00	29.79	12.10	FH-8	0.00
SWTP Junction 1	(N/A)	False	1,500.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
SWTP Junction 2	(N/A)	False	1,500.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints ?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Demand (gpm)
SWTP Junction 3	(N/A)	False	1,500.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
SWTP Junction 4	15	True	1,500.00	1,615.30	20.07	20.14	SWTP Junction 5	0.00
SWTP Junction 5	14	True	1,500.00	1,611.34	20.15	20.76	SWTP Junction 4	0.00

Appendix G

Proposed Improvements Map



GreatWest engineering®

NORTH

PROPOSED IMPROVEMENTS TO WATER DISTRIBUTION SYSTEM MAP

NOT TO SCALE

CITY OF JULIAETTA
WATER LINE RECONNECTION PROJECT

M:\4-18164-Juliaetta Water Line Reconnection\CADD 4-18164\Exhibits\4-18164 Water System Map Exhibit_2019.09.dwg

Appendix H

Water System Sanitary Survey

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1118 F Street Lewiston, Idaho 83501 (208) 799-4370
www.deq.idaho.gov

C.L. "Butch" Otter, Governor
John H. Tippets, Director

March 6, 2018

Wendy Sandino
P. O. Box 229
Juliaetta, ID 83535

Subject: Sanitary Survey – City of Juliaetta, PWS #: ID2290018

Dear Ms. Sandino:

On February 15, 2018 the Idaho Department of Environmental Quality (DEQ) conducted a sanitary survey of the City of Juliaetta public drinking water system. Enclosed is the report that summarizes the findings of the sanitary survey. The *significant deficiencies* identified in the sanitary survey report must be corrected[1].

Action Required:

1. Contact DEQ to discuss the proposed action plan prior to addressing the *significant deficiencies* noted in Table 1of the enclosed ESS Report **within 45 days** of receiving this written notification.

2. Submit the corrective action plan (CAP) on Table 1 **within 45 days** of receiving this written notification.

3. Correct *significant deficiencies* **within 120 days** of receiving this notification, unless an alternative timeline has been approved by DEQ. Notify DEQ by completing the CAP and include documentation (e.g. photos) when the *significant deficiencies* have been resolved.

Thank you for your time and assistance during the inspection. Please contact DEQ at (208) 799-4370 or by email at Elizabeth.Braker@deq.idaho.gov to discuss the deficiencies identified in the inspection report.

Sincerely,

Elizabeth Braker
Drinking Water Analyst

c: Michael Camin, DEQ
2009ABM4905

[1] Per Idaho Rules for Public Drinking Water Systems (IDAPA 58.01.08)

Drinking Water System Sanitary Survey Report

SYSTEM:	City of Juliaetta	**SURVEY DATE:**	February 15, 2018
PWS No.:	ID2290018	**INSPECTED BY:**	Elizabeth Braker
COUNTY:	Latah	**SOURCE(S):**	Potlatch River 1 Groundwater Spring 2 Groundwater Wells
SYSTEM TYPE:	Community	**POPULATION/ CONNECTIONS:**	609 people / 279 connections

This report summarizes the findings of the sanitary survey of the City of Juliaetta public drinking water system conducted on February 15, 2018 by the Idaho Department of Environmental Quality (DEQ). Following this summary are lists of significant deficiencies, deficiencies, and recommended improvements for the City of Juliaetta public drinking water system.

All *significant deficiencies* requiring corrective action are listed in Table 1 (page 11).

The following people were present during the sanitary survey in addition to the inspector:

- Josh Luscombe, Operator-in-Training (OIT)
- Justin Cope, Operator-in-Training (OIT)
- Michael Camin, DEQ

PREVIOUS SANITARY SURVEY NOTES

DEQ conducted a sanitary survey on May 20, 2015. The 2015 survey listed one significant deficiency, which was reported as corrected on August 10, 2015.

SURVEY SUMMARY

The City of Juliaetta is a community public drinking water system located 23 miles east of Lewiston along Highway 3. The system is served by a surface water treatment plant, a groundwater spring, and two groundwater wells. The system is required to chlorinate the spring. The well water is delivered without treatment.

The system has three pressure zones in the distribution system. The distribution system is pressurized by a combination of gravity-feed from the reservoirs, and from the groundwater sources. The distribution system has one dead-end main water line, which is equipped with a means to flush.

DEQ reclassified the system from a Drinking Water Treatment-2 to a Drinking Water Treatment-3 public water system in its October 3, 2016 letter to the system. In the letter, DEQ established a July 1, 2018 deadline for the City of Juliaetta to designate a properly licensed DWT-3 operator.

In late 2017, the Well #5 pump became inoperable and was replaced. The replacement pump for Well #5 increased the pump capacity from 5 GPM to 16 GPM, which constitutes a material

modification. In addition, a variable frequency drive and a pressure tank were installed. Unapproved material modifications are a violation of Idaho Code 39-118. The system is required to submit an abbreviated well completion report.

In February of 2018, the system depressurized because a buried pipe under the Potlatch River broke. The cause is unknown, but the operators believe it is likely due to river debris colliding with the exposed pipe. Following the depressurization, the system isolated the broken pipe. However, as of the date of the survey, it remains unrepaired. As a result, the connections on the east side of the river are only served by Well #5, and the connections on the west side of the river are served by the treatment plant, Cox Springs, and Well #9. As a means of planning for the pipe repair, the system intends to update its Facility Plan through a DEQ Planning Grant.

Source

The City of Juliaetta's water sources are the Potlatch River, two groundwater wells, and a groundwater spring. Raw water from Well #5 is pumped to the surface water treatment plant's finished water line, and then pumped into the distribution system. Water from Cox Springs and from Well #9 is pumped directly into the distribution system.

The system has two intakes that draw water in from the **Potlatch River (Tag #E0005255T)**. The submerged intake is located less than 20 feet from the shore. The intake is screened and inspected regularly. The system also draws water in from an infiltration gallery buried in the middle of the channel and located upstream from the submerged intake. When the river has high turbidity and low flow, water is drawn from the infiltration gallery. Water is drawn from the submerged intake when flow is high and turbidity is low. The river turbidities vary from less than 1.0 nephelometric units (NTU) to greater 80 NTUs during the spring runoff. The pH range is 6.5 to 7.5 typically. Two submersible pumps draw water into the wet well, where it is pumped to the water treatment plant for treatment.

Cox Springs (**Tag #E0006929**) is located in Cox Springs Canyon approximately 360 yards from the northern end of the Juliaetta Cemetery. The spring is located on private property that the city leases. According to the last survey, the spring has an overlapping hatch on a concrete structure, with a water tight seal. The 1988 Cox Spring Chlorination Facility Record Drawings indicate that the spring box is protected by a 4-wire barbed wire fence measuring 150 feet in width and 300 feet in depth. The operators report that the spring box area was last inspected in the fall of 2017 following as part a Revised Total Coliform Rule Level 1 Assessment, and that the fence and the spring box were in good repair. A 4-inch steel pipe delivers water from the spring box to the Cox Springs Treatment Plant at the southeast end of the cemetery. Lewiston Regional Office staff will coordinate a site visit in the fall to document the spring box location and condition.

Well #5 (**Tag #E0005256**) is located across the river and inside of the pump house. The well house is accessed through a private driveway, and the well lot is located within 50 feet of the nearest property line (deficiency #2). Well #5 was constructed in 1974, which is before wells were required to be on a separate well lot. Well #5 has triggered quarterly nitrate monitoring because its most recent result was above half of the maximum contaminant limit of 10 milligrams per liter. Additionally, Well #5 is on annual picloram monitoring. Picloram is a synthetic organic compound commonly found in herbicides. DEQ recommends assessing the

homeowner's land management practices to determine the source of contamination (see recommendation #1).

The well casing extends at least 12 inches above ground level. The well was originally drilled to a depth of 758 below ground surface. The sanitary well cap is vented and in good repair. The well is cased from one foot above the ground surface to 223 feet below the ground surface. The well discharge pipe passes through the well cap, a flow control valve serving as a check valve, a flow meter, a pressure gauge, smooth nosed sample tap, and isolation valves.

Well #9 (**Tag #E0005258**) is located on the southeast side of McCall Street, between 2nd Street and 3rd Street, and inside of the pump house. The pump house is next to a street and within 50 feet of the nearest property line. Well #9 was constructed in 1987 (deficiency #1). The well was originally drilled to a depth of 330 below ground surface. The well casing extends at least 12 inches above ground level. The sanitary well cap is vented and in good repair. The well is cased from one foot above the ground surface to an unknown depth with telescoping 6-inch and 10-inch casing.

Inactive wells were not inspected during the survey. Descriptive information about Well #1, #2, #3, #4, #6, #7 and #8 can be found in the 2015 sanitary survey (2015ACA2398). According to the 2015 survey, Wells #2, #4 and #7 are disconnected from the distribution system. Well #3 is disconnected and it is designated as an emergency source. Additionally, Wells #6 and #8 not operational, disconnected and need to be properly abandoned according to the Idaho Department of Water Resources requirements (see deficiency #3).

Treatment

The City of Juliaetta's public drinking water system processes water through a conventional filtration system, and is required to maintain a chlorine residual in the distribution system. Water flow through the filters is pressurized by the raw water pumps. Plant flow and chemical feed rates are controlled manually by the operator.

In the water treatment plant, smooth-nosed sample taps are not provided before and after each filter bed. Rather, there is one raw water sample tap. The filter-to-waste pipes can be used to collect post filtration turbidity samples. The day tanks for the chemicals were properly covered and labeled. During the survey, a day tank containing flocculants was mislabeled as permanganate. However, the operators fixed the label during the inspection. As a reminder, chemical day tanks are required to be properly labeled (see Recommendation #3). Magnafloc/Superfloc C-573 and Aluminum Sulfate are added to the water by an in-line static mixer. After the addition of flocculants and coagulant, water flows into the Roberts Pacer II filters. At the time of the survey, the operators reported that they use filter bed #1 more frequently than filter bed #2. Water flows through the upflow clarifier and over the weirs through the tri-media polishing filter. The media includes anthracite, sand, and garnet. The media depth has not been changed since the plant was constructed in 1993. DEQ recommends that the system operators contact with the filter manufacturer to assess the filter media and coordinate filter media maintenance. When the filtration system is operated in automatic mode, the backwash cycles are initiated every 24 hours. At the time of the survey, the operators reported that they run the plant manually, and initiate backwash more frequently during periods

of high turbidity. Backwash water is pumped to the holding basin near the intakes.

After filtration, water is delivered to the chlorine contact basin (located beneath the floor of the water treatment plant) where it is disinfected with gaseous chlorine. A finished water tap is located on the discharge pipe that delivers water to the upper reservoirs via the booster station. Chlorine contact time is dependent on the flow rate of water through the contact basin. The plant's flow rate is controlled by operating three finished water vertical turbine pumps that pump water to the upper reservoirs.

$$\text{Contact Time} = \frac{\text{Volume} * 0.5}{\text{Flow Rate}}$$

The chlorine room is adjacent to the filter bay. During the survey, an empty gas cylinder was overserved to be unrestrained, and the operators restrained the cylinder on the spot (see recommendation #4). The door to the chlorine room opens outward to the outside, but the door was not equipped with panic hardware (see deficiency #4). The operator reports that the cylinders are equipped with an automatic switchover from one cylinder to another, to allow for a continuous supply of chlorine.

The in-line turbidimeter and chlorine residual analyzer are calibrated on a monthly basis. The system contracts the equipment manufacturer to conduct an annual calibration for the handheld instruments, and the operators had calibration logs available for review. During the survey, inspectors observed expired pH buffer solutions in the plant's office, though the operators report that they were not used. The buffer solutions were disposed immediately following the discrepancy. As a reminder, only unexpired buffer solutions and reagents should be maintained in the lab, because calibration with expired materials can cause data integrity discrepancies when reporting disinfection and turbidity on the monthly operating reports. Additionally, monthly operating reports are to be submitted to DEQ no later than the 10th day of the following month. The system must contact DEQ within 24 hours if the plant fails to meet a CT ratio (column 8) greater than or equal to 1.0 during an operational day, or if more than 5% of the total readings exceed 0.3 NTU. For this reason, DEQ recommends calculating CT and recording the maximum daily turbidity on a daily basis.

Cox Springs Treatment Plant: The water from Cox Springs is located at the southeast corner of the Juliaetta Cemetery. Raw water from Cox Springs is treated with NSF approved 12.5% sodium hypochlorite. The water flows past a pre-treatment sample tap, an isolation valve, a flow meter, a chlorine injection point, a threaded sample tap with a backflow preventer, and into the pressure tank. The system measures and logs the chlorine residual on a daily basis, and maintains the records for one year. The water flows from the spring at a consistent rate 10 gallons per minutes. The chlorine metering pump is adjusted manually to ensure the addition of chemical is flow proportional. The chlorine day tank in the Cox Springs Treatment Plant is covered and vented to the outside.

Finished Water Storage

The City of Juliaetta public drinking water system has three storage tanks with a combined storage capacity of 479,000 gallons. The operator estimates that the total storage capacity is

enough to provide water for up to six days if the City issues a conservation order to its customers. The water levels in the reservoirs are measured with pressure transducers and telemetry that transmit back to the water treatment plant. The water from groundwater sources is pumped to the storage tanks after demand in the distribution system is met. Finished water from the plant is pumped into the distribution system, and then to Reservoir #1 and boosted to the upper reservoirs. The upper reservoirs (2a-North and 2b-South) were cleaned and inspected in December of 2017. The lower reservoir (#1) was last cleaned in 2014 and DEQ recommends inspections of reservoirs every three to five years and cleaning when necessary (see recommendation #2).

Reservoir #1 (ID# 12723) is a below ground concrete reservoir with wooden sides, constructed in 1958. The reservoir has a metal roof, which had several gunshot holes, most of which have been repaired. The unrepaired hole needs to be sealed in order to prevent contaminants from entering the stored water (see significant deficiency #1). The access door at the gable opens outward. It is kept locked and forms a tight seal against the structure. The ground is sloped to prevent surface water entry. The reservoir has vents under the eaves that run on booth lengths of the reservoir. The vents appeared to be in good repair. The overflow pipe discharges over a receiving pipe with an appropriate air gap. The overflow pipe is screened with 24-mesh. The mesh was clogged at the time of the survey, and the operators replaced the screen following the survey.

The upper reservoirs are designated as **Reservoir #2a-North (ID# 12725)** & **Reservoir #2b-South (ID# 13128).** Each has the same design and capacity of 150,000 gallons and they are located on the same lot. The upper reservoirs were constructed in 2004. Access to the roof of the reservoirs is restricted through locked caged ladders. The roofs are sloped to shed water. The reservoirs have a mushroom vent on the roof. The operators inspected the vents on both reservoirs to ensure that they were properly screened with 24-mesh screen that was in good repair. The access hatches at the tops of the reservoirs have 4-inch high square frames with 2-inch overlapping sealed lids. The operators inspected the hatches to ensure that the gaskets on the lids were in good repair and that they formed a watertight seal. Both overflow drain pipes on the upper reservoirs lead down the sides and the outfalls terminate approximately 18 inches above a drain plate. On Reservoir #2a-North, the overflow pipe was covered by 24-mesh screen, which had a small tear. The 24-mesh screen needs to be replaced to prevent further ripping and entry to contaminants (see significant deficiency #2). The by 24-mesh screen on the overflow pipe of Reservoir #2b-South also had perforations. The 24-mesh screen needs to be replaced to prevent further ripping and entry to contaminants (see significant deficiency #3).

Distribution

The City of Juliaetta drinking water system's distribution system pipes consists of 6-inch to 10-inch PVC and asbestos cement pipe. The system operators reported one dead-end main water line, which is equipped with a means to flush. The city's fire department flushes the water mains throughout the year as part of their training. There are 38 fire hydrants on the system and 279 out of 279 connections are metered. All construction materials used are approved for use in drinking water systems and the system has no known problems with freezing weather.

The system has two pressure tanks. One 500 gallon detention tank is located in the Cox Springs

Treatment Building. A second pressure tank is located in the Well #5 Pump House and it provides water to a few residences at a higher elevation that are on the same side of the river as pump house.

Pumping, Pumps, and Motors

The City of Juliaetta has raw water pumps in the wet well, finished water pumps in the water treatment plant, a booster station with two booster pumps, and submersible pumps in the wells. The pumps were observed to be equipped with an accessible check valve, flow meter, and a pressure relief valves. The booster pumps have an automatic cut-off that activates when the intake pressure of the booster of the booster falls below 5 psi.

Well #5 pumps water directly into the distribution system. At the time of the survey, Well #5 was the sole source of water for service connections on the same side of the Potlatch River. Once the ruptured pipe under the river is repaired or replaced, Well #5 water can feed the rest of the distribution system on the west side of the river. Cox Springs provides water to two residences and directly feeds water into Reservoir #1 (Lower) by gravity. Well #9 pumps water into a 6-inch main that connects the upper reservoirs (2A-North and 2A-South) to the lower reservoir (#1). At the booster station, two booster pumps direct treated surface water to the upper reservoirs (#2a and #2b), which provides gravity-feed to the distribution system.

All of the pump houses (Cox Springs, Well #9, and Well #5) are secure from unauthorized entry and are kept clean and in good repair. The pump houses are adequately heated. The floor drains discharge to daylight. The system does not have auxiliary power onsite. In the event of a power loss, the distribution system does not immediately depressurize because it is gravity fed.

Monitoring, Reporting and Data Verification

The City of Juliaetta public water system incurred two monitoring violations for failure to collect all required repeat total coliform samples in October of 2017. All records pertaining to the public water system are maintained in the water treatment plant's office. The system has an updated Total Coliform Sample Siting Plan.

System Management Operation and Operator

The City of Juliaetta public drinking water system is classified as a Drinking Water Treatment-3 (DWT-3), and as a Drinking Water Distribution-1 (DWD-1) system. Although Frank Groseclose recently retired, the city continues to contract with Mr. Groseclose to serve as the Responsible Charge Operator (DO). Mr. Groseclose is licensed as a DWT-2 and DWD-1 operator. In DEQ's October 3, 2016 letter to the City of Juliaetta, DEQ established July 1, 2018 deadline for designating a DWT-3 operator. Bill Fey is the licensed (DWT-2) Substitute Responsible Charge Operator. Neither Mr. Groseclose nor Mr. Fey meet the new minimum requirements for operator licensure. The City of Juliaetta will need to ensure properly licensed operators are under contract by July 1, 2018.

The City of Juliaetta City Council makes management decisions for capital improvements and financial decisions of the water system and meets monthly. The water system is current with the payment of drinking water fees and has an inclining block rate structure, with a base rate of

$41.00 per month for up to 6,000 gallons. User fees were adjusted as of October, 2017. The system maintains a cash budget within its annual budget for emergency maintenance.

The system has not adopted a Cross Connection Control Program into city code, and does not have an active program, as required (see significant deficiency #4). The water system maintains an Operations and Maintenance manual for the water treatment plant.

SIGNIFICANT DEFICIENCIES

Significant Deficiency. As identified during a sanitary survey, any defect in a system's design, operation, maintenance, or administration, as well as any failure or malfunction of any system component, that the Department or its agent determines to cause, or have potential to cause, risk to health or safety, or that could affect the reliable delivery of safe drinking water.

Storage:

1. Reservoir #1 had a hole in the metal roof, through which rain water could leak into the reservoir, and is a potential pathway for contamination, and therefore is not in accordance with IDAPA 58.01.08.544.09. [ST 13]

2. For the ground-level storage structure Reservoir 2A-North, the 24- mesh screen that covered the overflow pipe had perforations that may become a pathway for contamination, and is not in accordance with by IDAPA 58.01.08.544.06.b.i. [ST 20]

3. For the ground-level storage structure Reservoir 2B-South, the 24- mesh screen that covered the overflow pipe had perforations that may become a pathway for contamination, and is not in accordance with by IDAPA 58.01.08.544.06.b.i. [ST 20]

Distribution:

4. (Community PWSs Only) There is not a cross connection control program that complies with Rule, or the cross connection control program is not being implemented as required by IDAPA 58.01.08.552.06. [D 17]

Managerial:

5. Material Modifications: (Note: If modifications have been made since the last sanitary survey, check with a DEQ engineer to ensure compliance with engineering submittals and requirements.)
   - A Preliminary Engineering Report has not been submitted to DEQ in accordance with IDAPA 58.01.08.503.

   For all new water systems or material modifications to existing water systems, a preliminary engineering report shall be submitted to the Department for review and approval, or other reviewing authority in the case of water main extensions, prior to the submittal of plans and specifications as required in Subsection 504.03. Preliminary engineering reports are not required for minor or routine distribution system projects designed under a facility plan. [G.I. 5]

DEFICIENCIES

Deficiency. Any deviation from IDAPA 58.08.01 Idaho Rules for Public Drinking Water Systems that is not deemed a health threat or significant deficiency. Deficiencies are often, but not always, due to rule changes after construction of a public water system. **No corrective action is required at this time**. Future modifications to the water system may require correction of the following deficiencies:

Groundwater Source:

1. Well #9 (E0005258) does not meet the minimum setback distance of 50 ft. from the nearest property line, as required by IDAPA 58.01.08.512

2. Well #5 (E0005256) does not meet the minimum setback distance of 50 ft. from the nearest property line, as required by IDAPA 58.01.08.512

3. The Public Water System has water supply wells that are no longer being used that need to be abandoned, as required by IDAPA 58.01.08.510.09. Any water supply well that will no longer be used must be abandoned by sealing the borehole carefully to prevent pollution of the ground water, eliminate any physical hazard, conserve aquifer yield, maintain confined head conditions in artesian wells, and prevent mixing of waters from different aquifers. The objective of proper well abandonment procedures is to restore, as far as possible, the original hydrogeologic conditions. The services of a licensed well driller are required. Instructions for abandoning various types of wells may be obtained from the Idaho Department of Water Resources. Well abandonment must comply with Well Construction Standards Rules (http://adminrules.idaho.gov/rules/current/37/0309.pdf) and Section 42-238, Idaho Code. The Application to Abandon a Well form can be found at http://www.idwr.idaho.gov/RulesStatutesForms/WellConstruction/PDFs/Authorization%20to%20Abandon%20a%20Well%20238(4)-2%209_2006.pdf

Idaho Department of Water Resources
322 East Front Street
P.O. Box 83720
Boise, Idaho 83720-0098
Telephone (208) 287-4800.

Treatment Application:

4. The chlorine room is not provided with doors equipped with panic hardware, assuring ready means of exit and opening outward only to the building exterior, as required by IDAPA 58.01.08.531.04.a.i.

RECOMMENDATIONS

Recommendations. Practices that will help the system deliver safe public water. DEQ recommendations reinforce the multi-barrier approach to drinking water safety, which are minimum standards outlined by the regulations.

Groundwater Source:

1. DEQ recommends that the city conduct outreach to landowners in the vicinity of Well #5, to encourage land management practices to improve water quality, and to deter use of fertilizers, herbicides and pesticides. The upward trend in nitrate indicates that the source is impacted by runoff or nearby septic systems. The detection of a synthetic organic compound like picloram indicates the use of an herbicide in the past had not reached the aquifer.

Storage:

2. DEQ recommends that all storage tanks be cleaned by qualified personnel every three (3) to five (5) years. The cleaning of any storage tank should be coordinated with the DEQ regional office.

Treatment Application:

3. Where more than one (1) chemical is stored or handled, tanks and pipelines are not clearly labeled to identify the chemical they contain, as required by IDAPA 58.01.08.531.01.d.

4. Full and empty cylinders of chlorine gas are not restrained in position to prevent upset, as required by IDAPA 58.01.08.531.04.a.xiii.

Significant Deficiency Corrective Action Plan for City of Juliaetta and PWS #2290018

Table 1. Corrective Action Plan

Significant Deficiency	Corrective Action	Planned Completion Date	Actual Completion Date	Initials (when complete)
1. For Reservoir #1, seal the small hole in the metal roof.				
2. For Reservoir #2a-North, replace the 24-mesh screen that covers the overflow pipe.				
3. For Reservoir #2b-South, replace the 24-mesh screen that covers the overflow pipe.				
4. The City of Juliaetta must adopt a written Cross Connection Control Program that incorporates language into its city code that enables it as a water purveyor to discontinue service to premises which have known cross-connections (potential pathways for non-potable water to be introduced into the potable water distribution system).				
5. Contact DEQ to determine the scope of the well completion report for modifications to Well #5 (new pump, VFD, and pressure tank).				
6. Contact DEQ to coordinate a site visit to assess the Cox Springs Box location and condition				

I certify, to the best of my knowledge that all significant deficiencies have been corrected and meet the requirements pursuant to IDAPA 58.01.08. (*signature when <u>all</u> deficiencies have been corrected, initials after each date when corrected)**

Signature: _____ Date: _____

Photographic Documentation

Name of Facility: City of Juliaetta

Inspector(s): Elizabeth Braker

Inspection Date: Thursday, February 15, 2018

Purpose of Inspection: Enhanced Sanitary Survey

Publish Date: Friday 23 February 2018

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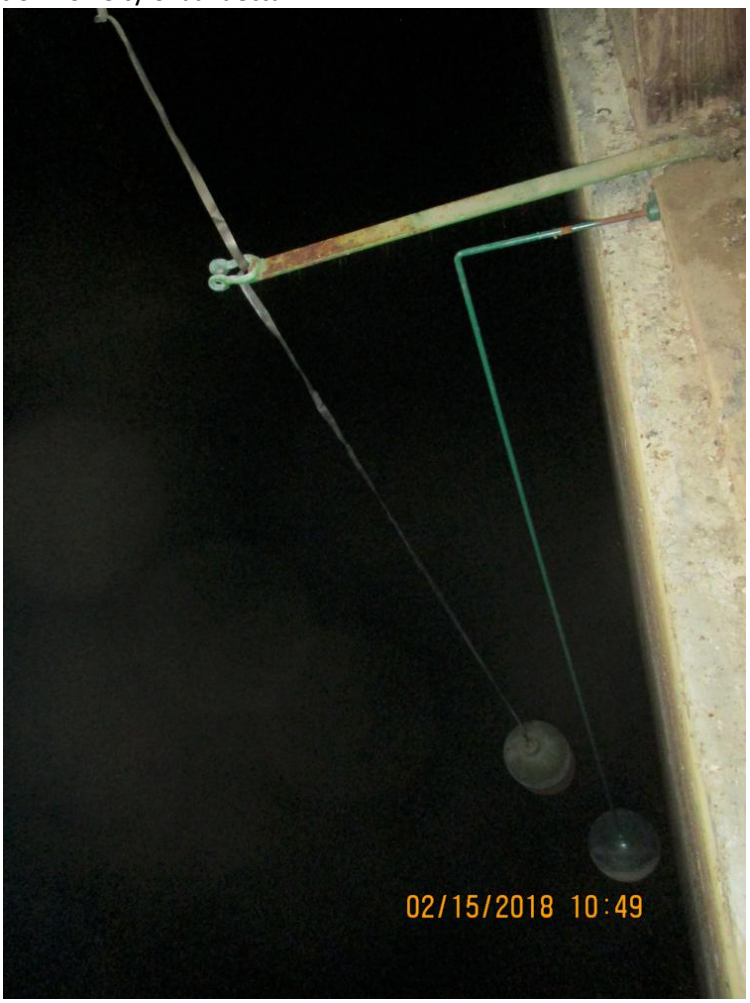

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Photograph 92: Measuring equipment & Calibration Logs

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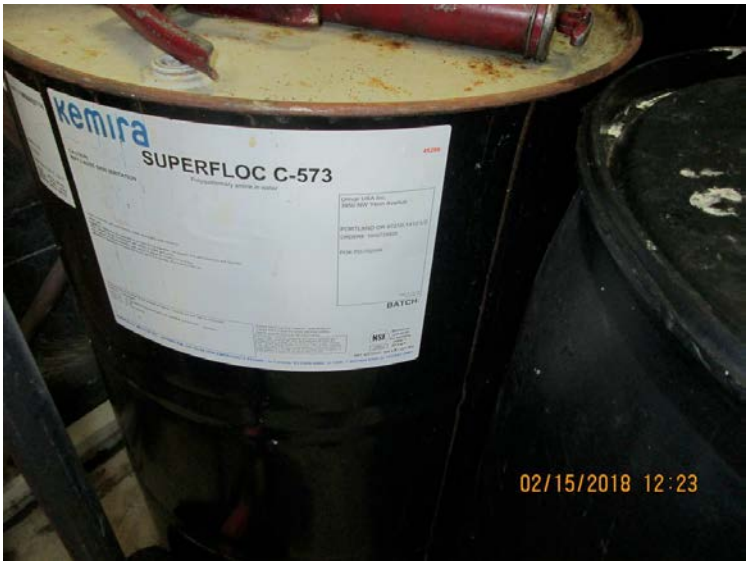

Photograph 94: Shipping Container-Magnafloc/Superfloc C-573

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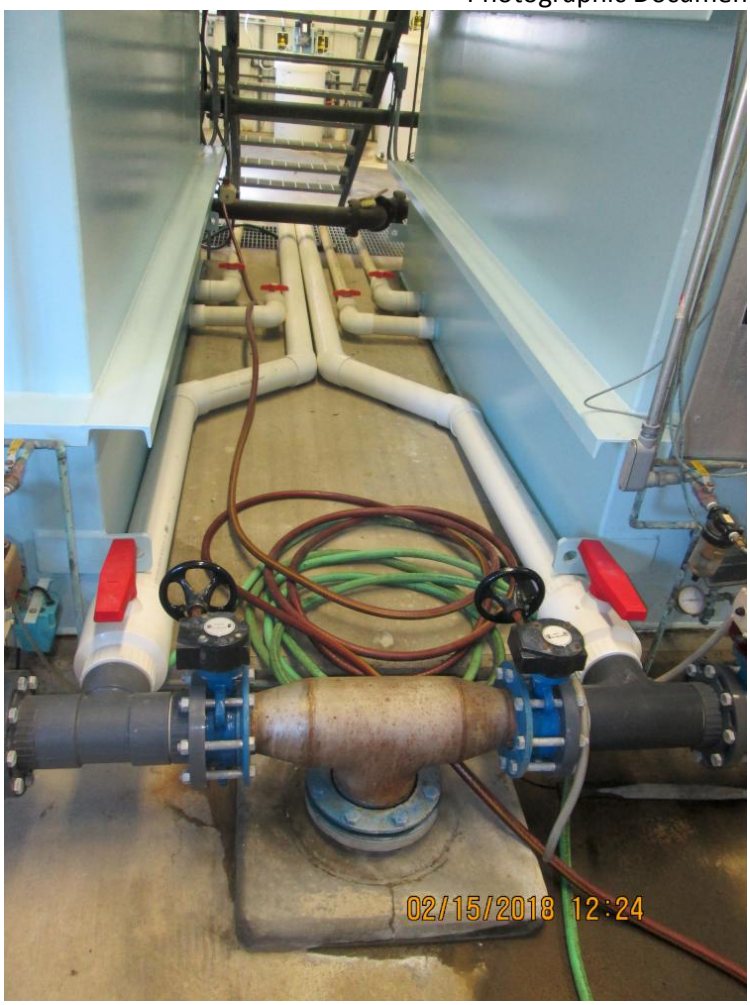

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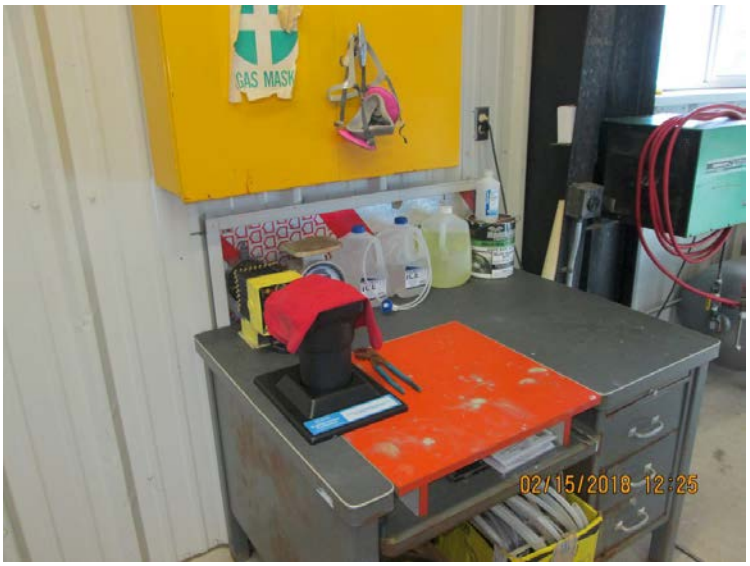
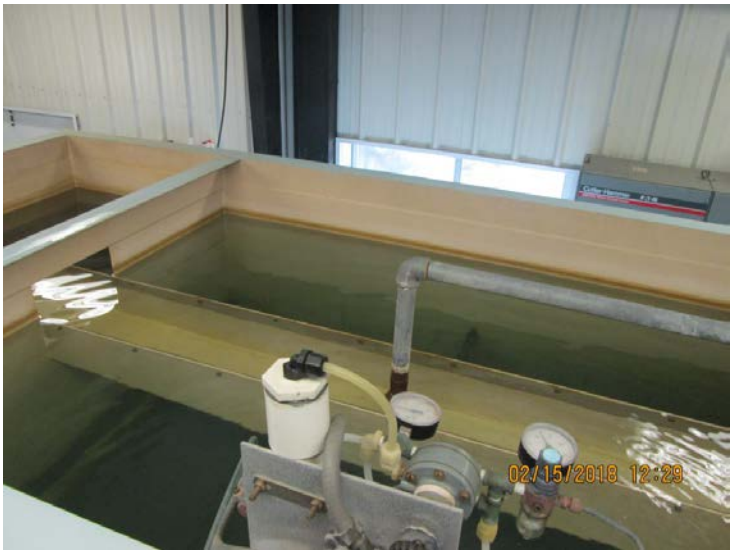


Photograph 106: WTP-Workstation

Photograph 107: WTP-Air Compressor



Photograph 108: Filter #1 (upflow clarifier & floc/sedimentation basin)

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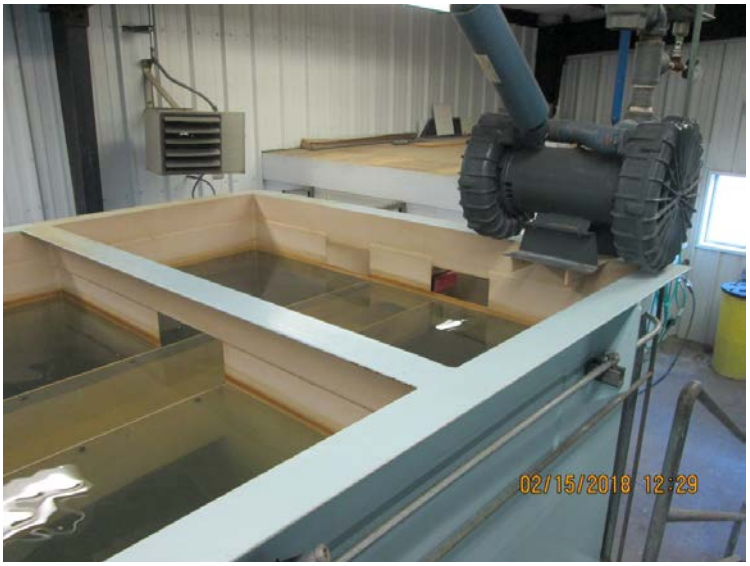
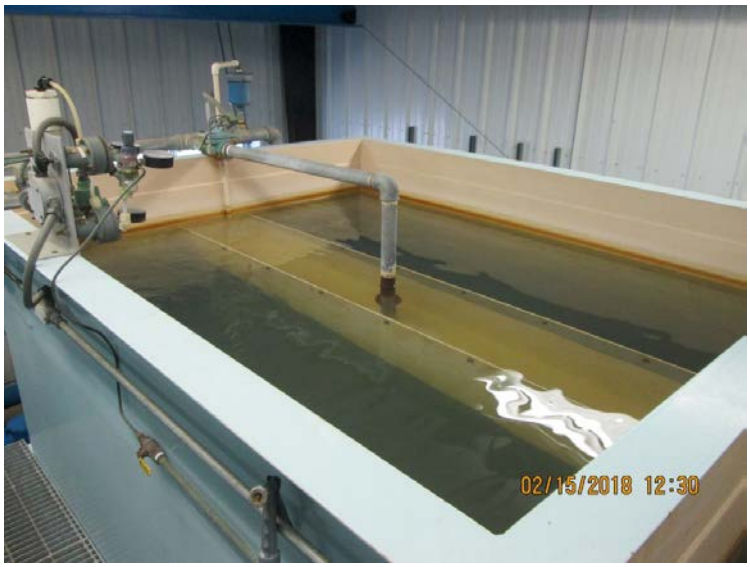


Photograph 110: Filter #2 (upflow clarifier & floc/sedimentation basin)



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Photograph 115:

Appendix I

Water System Violations

Drinking Water Branch

Violations

Return Links

Water System Detail

Water Systems

Water System Search

County Map

Glossary

Water System No. :	ID2290018	**Federal Type :**	C
Water System Name :	JULIAETTA CITY OF	**State Type :**	C
Principal County Served :	LATAH	**Primary Source :**	SW
Status :	A	**Activity Date :**	01-01-1974

****Please note: some of these violations may have been resolved and/or returned to compliance. Please click on the violation to view more information on its compliance status.**

Group Violations

Violation No.	Status	Violation Type	Violation Name	Analyte Group Code	Analyte Group Name	Water System Facility State Asgn ID	Water System Facility Name

Total Number of Records Fetched = 0

Individual Violations

Violation No.	Status	Violation Type	Violation Name	Analyte Code	Analyte Name	Water System Facility State Asgn ID	Water System Facility Name
2019-3033	V	46	INADEQUATE DBP PRECURSOR REMOVAL	2920	CARBON, TOTAL	E0005255T	POTLATCH RIVER TP
2018-3032	V	46	INADEQUATE DBP PRECURSOR REMOVAL	2920	CARBON, TOTAL	E0005255T	POTLATCH RIVER TP
2018-3031	V	02	MCL, AVERAGE	1040	NITRATE	E0005256	WELL #5
2018-3030	V	46	INADEQUATE DBP PRECURSOR REMOVAL	2920	CARBON, TOTAL	E0005255T	POTLATCH RIVER TP
2018-3027	V	01	MCL, SINGLE SAMPLE	1040	NITRATE	E0005256	WELL #5
2018-3022	V	36	MONITORING, RTN/RPT MAJOR (SWTR-FILTER)	0999	CHLORINE	T2290018DS1	DISTRIBUTION SYSTEM
2018-3023	V	27	MONITORING, ROUTINE (DBP), MAJOR	0999	CHLORINE	T2290018DS1	DISTRIBUTION SYSTEM
2018-3021	V	3A	MONITORING, ROUTINE, MINOR (RTCR)	3014	E. COLI	null	null
1994-394	V	01	MCL, SINGLE SAMPLE	1040	NITRATE	null	null
1985-885	V	03	MONITORING, ROUTINE MAJOR	3000	COLIFORM (PRE-TCR)	null	null
1984-1484	V	02	MCL, AVERAGE	3000	COLIFORM (PRE-TCR)	null	null
1984-1384	V	02	MCL, AVERAGE	3000	COLIFORM (PRE-TCR)	null	null
1984-1284	V	03	MONITORING, ROUTINE MAJOR	3000	COLIFORM (PRE-TCR)	null	null
1983-1083	V	02	MCL, AVERAGE	3000	COLIFORM (PRE-TCR)	null	null
1983-983	V	02	MCL, AVERAGE	3000	COLIFORM (PRE-TCR)	null	null
1982-1182	V	02	MCL, AVERAGE	3000	COLIFORM (PRE-TCR)	null	null
1981-481	V	03	MONITORING, ROUTINE MAJOR	3000	COLIFORM (PRE-TCR)	null	null
1980-780	V	02	MCL, AVERAGE	3000	COLIFORM (PRE-TCR)	null	null
1980-280	V	03	MONITORING, ROUTINE MAJOR	3000	COLIFORM (PRE-TCR)	null	null
1980-680	V	02	MCL, AVERAGE	3000	COLIFORM (PRE-TCR)	null	null

1980-180	V	03	MONITORING, ROUTINE MAJOR	3000	COLIFORM (PRE-TCR)	null	null
1980-580	V	03	MONITORING, ROUTINE MAJOR	4000	GROSS ALPHA, EXCL. RADON & U	null	null

Total Number of Records Fetched = 22

Appendix J

Resolution 2019-02- Fee Structure

FY2020 Budget

Resolution 2019-02

A RESOLUTION OF THE CITY OF JULIAETTA, IDAHO, COMPILING A LICENSE AND FEE SCHEDULE AND WATER, SEWER, GARBAGE RATE SCHEDULE

WHEREAS, a review of all fees has been made by the Mayor and City Council, and

WHEREAS, a schedule of all licenses, fees and water, sewer, garbage rates has been compiled.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF JULIAETTA, IDAHO THAT LICENSES, FEES, AND RATES, ACCORDING TO THE FOLLOWING LICENSE AND FEE SCHEDULE AND THE WATER, SEWER, AND GARBAGE RATE SCHEDULE SHALL BE ASSESSED BY THE CITY TREASURER OF THE CITY OF JULIAETTA.

LICENSE AND FEE SCHEDULE

BEER AND WINE LICENSES:

Beer consumed on premises	$ 25.00
Retail beer consumer off premises	$ 25.00
Wine consumed on premises	$ 25.00
Retail wine, consumed off premises	$ 25.00
Alcoholic liquor consumed on premises	$ 225.00
Alcohol Catering Permit	$ 25.00

Planning & Zoning Rates:

Variance	Actual cost incurred
Annexation	Actual cost incurred
Vacation	Actual cost incurred
Minor Subdivision:	$150 plus actual engineering fees for review of plat.
Major Subdivision:	
Application for Preliminary Plat:	$150, plus $10 per lot, plus estimated engineering fees for review of plat
Application for Final Plat:	$100, plus $10 per lot, plus estimated engineering fees For review of plat
Filing of Final Plat:	$150, plus Bond for Subdivision Improvements, plus Deposit for estimated engineering fees for review of construction plans and inspection of public improvements. Development agreement must be signed by developer prior to filing plat.

All applicants shall reimburse the City for all reasonable engineering expenses incurred by the City.

Building Permit	Set by building inspector, based on valuation
Manufactured home installation permit	
Singlewide	$ 100.00
Doublewide	$ 200.00
Triplewide	$ 300.00
Transference to real property permit	$ 100.00
Juliaetta Cemetery Rate	
Cemetery Plot	$ 50.00
Television Donation per month	$ 5.00
Donation to Juliaetta Television Association	
Rental fees for Gazebo, Concession stand and Social Room	
Gazebo	no charge
City Hall Annex	
Single day use	$10.00
Per Month	$30.00/month
Concession Stand 1 – 3 days	$25.00
Concession Stand over 3 days (continuous use for a season)	$40.00/month
Fees to be paid at the time of rental	
Copies	
Black & White (per page)	$ .10
Color (per page)	$ .20
Fax	
Fax (per page)	$ .10
Record request Fees	
Copies of Black & White Copies City Records up to 100 pages	no charge
Copies of Black & White Copies City Records over 100 pages	$ .10/page
Administrative costs (over 2 hours)	City's direct cost for time spent (overtime hours may be charged)
Attorney Fees	Actual fees incurred approving request of records
Certified Copies of City Records	$1.00 per page (Includes affidavit of Clerk)
Extraordinary copies	City's direct cost of duplication (Maps, electronic media, oversized documents, etc.)
Transcripts	City's direct cost of professional transcription

The City Clerk or Treasurer may require advance payment for the charges established herein.

WATER, SEWER, AND GARBAGE RATE SCHEDULE

Water Rates		
Water connection fee		$1,500.00
Tapping fee		$ 500.00
Meter		$ 500.00
Water usage rate up to 6,000 gallons per month		$ 45.00
From 6001 to 12,000 gallons per month	(per 1000 gallons)	$ 1.50
From 12,001 to 300,000 gallons per month	(per 1000 gallons)	$ 2.50
For over 300,000 gallons per month	(per 1000 gallons)	$ 4.00
Return Check Fee		$ 25.00
Water turn on fee		$ 25.00
Water Rates from City Hydrant		
Truck load (up to 6,000 gallons)		$ 50.00
Truck load (up to 6,000 gallons) not previously approved		$ 100.00
Sewer Rates		
Sewer connection fee		$1,400.00
Tapping Fee		$ 300.00
Sewer usage rate per month		$ 30.00
Garbage Rates		
35 gallon roll cart per month		$ 21.00
65 gallon roll cart per month		$ 25.00
95 gallon roll cart per month		$ 29.00
Extra bag fee		$ 3.00
1 yard dumpster per month		$ 66.25
2 yard dumpster per month		$ 120.25
3 yard dumpster per month		$ 174.00
4 yard dumpster per month		$ 232.00
6 yard dumpster per month		$ 332.50
Extra yard fee		$ 35.00
Roll cart exchange fee (after first 60 days)		$ 15.50

This resolution shall take effect and be in force from and after its passage and approval beginning October 1, 2019.

This resolution shall supersede all other resolutions and ordinances for the setting of rates and fees.

PASSED by the City Council and APPROVED by the Mayor this 10th day of September, 2019.

_____

RICHARD GROSECLOSE, MAYOR

ATTEST:

_____

Wendy A. Sandino, City Clerk

Report Criteria:
Journal = 7

Account Number	Title	Reference	Description	Period	Period Amount
10-31-200	Property taxes - Penalty	1.0100	Proposed Budget for FYE 2020	00/19	135,074.00-
10-31-303	Sales tax -inventory phase out	2.0100	Proposed Budget for FYE 2020	00/19	18,959.00-
10-32-100	Liquor apportionment	3.0100	Proposed Budget for FYE 2020	00/19	23,186.00-
10-32-200	Highway user	5.0100	Proposed Budget for FYE 2020	00/19	21,334.00-
10-32-250	Highway user Reserve	6.0100	Proposed Budget for FYE 2020	00/19	6,677.00-
10-32-400	Revenue sharing	7.0100	Proposed Budget for FYE 2020	00/19	23,934.00-
10-33-300	Interest earnings	8.0100	Proposed Budget for FYE 2020	00/19	4,000.00-
10-33-400	Business licenses and permits	9.0100	Proposed Budget for FYE 2020	00/19	500.00-
10-36-999	Cash Carryover	10.0100	Proposed Budget for FYE 2020	00/19	293,682.00-
10-50-100	Salaries	11.0100	Proposed Budget for FYE 2020	00/19	31,000.00
10-50-105	Salary Adjustment	12.0100	Proposed Budget for FYE 2020	00/19	4,400.00
10-50-130	Payroll expense - FICA	13.0100	Proposed Budget for FYE 2020	00/19	2,700.00
10-50-135	Payroll expense - PERSI	14.0100	Proposed Budget for FYE 2020	00/19	3,600.00
10-50-140	Payroll expense-Workman's Comp	15.0100	Proposed Budget for FYE 2020	00/19	1,500.00
10-50-145	Payroll expense - Other	16.0100	Proposed Budget for FYE 2020	00/19	1,000.00
10-50-200	Legal fees	17.0100	Proposed Budget for FYE 2020	00/19	8,600.00
10-50-205	Accounting fees	18.0100	Proposed Budget for FYE 2020	00/19	11,000.00
10-50-210	Other Professional fees	19.0100	Proposed Budget for FYE 2020	00/19	1,200.00
10-50-215	Legal Publications	20.0100	Proposed Budget for FYE 2020	00/19	2,000.00
10-50-220	Printing and binding	21.0100	Proposed Budget for FYE 2020	00/19	400.00
10-50-225	Phone	22.0100	Proposed Budget for FYE 2020	00/19	4,000.00
10-50-230	Meeting and Travel	23.0100	Proposed Budget for FYE 2020	00/19	3,500.00
10-50-235	Dues	24.0100	Proposed Budget for FYE 2020	00/19	1,300.00
10-50-240	Insurance	25.0100	Proposed Budget for FYE 2020	00/19	4,000.00
10-50-245	Avista	26.0100	Proposed Budget for FYE 2020	00/19	5,800.00
10-50-250	Building Repairs	27.0100	Proposed Budget for FYE 2020	00/19	1,500.00
10-50-255	Miscellaneous	28.0100	Proposed Budget for FYE 2020	00/19	1,200.00
10-50-260	Supplies	29.0100	Proposed Budget for FYE 2020	00/19	3,000.00
10-50-285	Office Expense	30.0100	Proposed Budget for FYE 2020	00/19	1,300.00
10-50-290	Tools	31.0100	Proposed Budget for FYE 2020	00/19	600.00
10-50-295	J_K Recreational	32.0100	Proposed Budget for FYE 2020	00/19	1,000.00
10-50-300	Codifing Ordinances	33.0100	Proposed Budget for FYE 2020	00/19	700.00
10-50-305	Computer	34.0100	Proposed Budget for FYE 2020	00/19	6,000.00
10-50-310	Trail	35.0100	Proposed Budget for FYE 2020	00/19	1,000.00
10-50-315	Flowers	36.0100	Proposed Budget for FYE 2020	00/19	600.00
10-50-330	Pool	37.0100	Proposed Budget for FYE 2020	00/19	500.00
10-50-333	KJ7 Sponsorship	38.0100	Proposed Budget for FYE 2020	00/19	50.00
10-50-334	J-K Heritage Foundation	39.0100	Proposed Budget for FYE 2020	00/19	50.00
10-50-335	Festival	40.0100	Proposed Budget for FYE 2020	00/19	500.00
10-50-337	Christmas Lights	41.0100	Proposed Budget for FYE 2020	00/19	1,000.00
10-50-339	Christmas Candy	42.0100	Proposed Budget for FYE 2020	00/19	300.00
10-60-245	Avista	43.0100	Proposed Budget for FYE 2020	00/19	700.00
10-60-250	Building Repairs	44.0100	Proposed Budget for FYE 2020	00/19	500.00
10-60-255	Miscellaneous	45.0100	Proposed Budget for FYE 2020	00/19	200.00
10-60-260	Supplies	46.0100	Proposed Budget for FYE 2020	00/19	300.00
10-60-800	Capital Outlay	47.0100	Proposed Budget for FYE 2020	00/19	1,000.00
10-70-140	Payroll expense-Workman's Comp	48.0100	Proposed Budget for FYE 2020	00/19	300.00
10-70-225	Phone	49.0100	Proposed Budget for FYE 2020	00/19	900.00
10-70-230	Meeting and Travel	50.0100	Proposed Budget for FYE 2020	00/19	400.00
10-70-245	Avista	51.0100	Proposed Budget for FYE 2020	00/19	1,000.00
10-70-250	PPE	52.0100	Proposed Budget for FYE 2020	00/19	2,800.00
10-70-255	Communications	53.0100	Proposed Budget for FYE 2020	00/19	2,400.00
10-70-260	Supplies	54.0100	Proposed Budget for FYE 2020	00/19	3,700.00
10-70-265	Maintenance/Repair	55.0100	Proposed Budget for FYE 2020	00/19	1,300.00

Account Number	Title	Reference	Description	Period	Period Amount
10-70-270	Auto Fuel	56.0100	Proposed Budget for FYE 2020	00/19	800.00
10-70-275	Fittings, Appliances & Hose	57.0100	Proposed Budget for FYE 2020	00/19	5,000.00
10-70-280	Vehicle Repairs	58.0100	Proposed Budget for FYE 2020	00/19	6,100.00
10-70-290	Internet	59.0100	Proposed Budget for FYE 2020	00/19	100.00
10-70-375	Police	60.0100	Proposed Budget for FYE 2020	00/19	8,650.00
10-70-800	Capital Outlay	61.0100	Proposed Budget for FYE 2020	00/19	200.00
10-80-100	Salaries	62.0100	Proposed Budget for FYE 2020	00/19	30,000.00
10-80-130	Payroll expense - FICA	63.0100	Proposed Budget for FYE 2020	00/19	2,600.00
10-80-135	Payroll expense - PERSI	64.0100	Proposed Budget for FYE 2020	00/19	3,600.00
10-80-140	Payroll expense-Workman's Comp	65.0100	Proposed Budget for FYE 2020	00/19	2,000.00
10-80-145	Payroll expense - Other	66.0100	Proposed Budget for FYE 2020	00/19	100.00
10-80-150	Medical Insurance	67.0100	Proposed Budget for FYE 2020	00/19	6,500.00
10-80-210	Other Professional fees	68.0100	Proposed Budget for FYE 2020	00/19	1,000.00
10-80-225	Phone	69.0100	Proposed Budget for FYE 2020	00/19	400.00
10-80-240	Insurance	70.0100	Proposed Budget for FYE 2020	00/19	3,200.00
10-80-245	Avista	71.0100	Proposed Budget for FYE 2020	00/19	12,500.00
10-80-255	Miscellaneous	72.0100	Proposed Budget for FYE 2020	00/19	500.00
10-80-260	Supplies	73.0100	Proposed Budget for FYE 2020	00/19	800.00
10-80-265	Equipment Repairs	74.0100	Proposed Budget for FYE 2020	00/19	5,000.00
10-80-270	Auto Fuel	75.0100	Proposed Budget for FYE 2020	00/19	2,800.00
10-80-271	Street Repairs	76.0100	Proposed Budget for FYE 2020	00/19	20,000.00
10-80-280	Vehicle Repairs	77.0100	Proposed Budget for FYE 2020	00/19	1,000.00
10-80-285	Office Expense	78.0100	Proposed Budget for FYE 2020	00/19	500.00
10-80-400	Gravel	79.0100	Proposed Budget for FYE 2020	00/19	1,000.00
10-80-405	Sidewalks	80.0100	Proposed Budget for FYE 2020	00/19	2,000.00
10-80-410	Snow Removal	81.0100	Proposed Budget for FYE 2020	00/19	3,500.00
10-80-415	Tree Trimming	82.0100	Proposed Budget for FYE 2020	00/19	1,300.00
10-80-420	Storm Drain	83.0100	Proposed Budget for FYE 2020	00/19	2,000.00
10-80-430	Weed Spray	84.0100	Proposed Budget for FYE 2020	00/19	700.00
10-80-700	New Mower	85.0100	Proposed Budget for FYE 2020	00/19	4,500.00
10-80-701	Signs	86.0100	Proposed Budget for FYE 2020	00/19	400.00
10-80-702	Street Sweeper	87.0100	Proposed Budget for FYE 2020	00/19	500.00
10-80-705	Equipment Fuel	88.0100	Proposed Budget for FYE 2020	00/19	1,700.00
10-80-800	Capital Outlay	89.0100	Proposed Budget for FYE 2020	00/19	11,000.00
10-90-100	Salaries	90.0100	Proposed Budget for FYE 2020	00/19	2,900.00
10-90-130	Payroll expense - FICA	91.0100	Proposed Budget for FYE 2020	00/19	250.00
10-90-140	Payroll expense-Workman's Comp	92.0100	Proposed Budget for FYE 2020	00/19	600.00
10-90-245	Avista	93.0100	Proposed Budget for FYE 2020	00/19	2,400.00
10-90-250	Building Repairs	94.0100	Proposed Budget for FYE 2020	00/19	2,800.00
10-90-255	Miscellaneous	95.0100	Proposed Budget for FYE 2020	00/19	800.00
10-90-260	Supplies	96.0100	Proposed Budget for FYE 2020	00/19	500.00
10-90-265	Equipment Repairs	97.0100	Proposed Budget for FYE 2020	00/19	500.00
10-90-430	Weed Spray	98.0100	Proposed Budget for FYE 2020	00/19	1,500.00
10-90-450	Trail	99.0100	Proposed Budget for FYE 2020	00/19	1,000.00
10-90-452	Park Maintenance	100.0100	Proposed Budget for FYE 2020	00/19	4,500.00
10-90-454	Lights Park	101.0100	Proposed Budget for FYE 2020	00/19	300.00
10-90-705	Equipment Fuel	102.0100	Proposed Budget for FYE 2020	00/19	500.00
10-90-800	Capital Outlay	103.0100	Proposed Budget for FYE 2020	00/19	11,000.00
20-37-100	Water Sales	104.0100	Proposed Budget for FYE 2020	00/19	183,500.00-
20-85-100	Salaries	105.0100	Proposed Budget for FYE 2020	00/19	38,000.00
20-85-105	Salary Adjustment	106.0100	Proposed Budget for FYE 2020	00/19	2,500.00
20-85-130	Payroll expense - FICA	107.0100	Proposed Budget for FYE 2020	00/19	3,200.00
20-85-135	Payroll expense - PERSI	108.0100	Proposed Budget for FYE 2020	00/19	4,200.00
20-85-140	Payroll expense-Workman's Comp	109.0100	Proposed Budget for FYE 2020	00/19	2,000.00
20-85-145	Payroll expense - Other	110.0100	Proposed Budget for FYE 2020	00/19	1,000.00
20-85-150	Medical Insurance	111.0100	Proposed Budget for FYE 2020	00/19	5,000.00
20-85-200	Legal fees	112.0100	Proposed Budget for FYE 2020	00/19	500.00

Account Number	Title	Reference	Description	Period	Period Amount
20-85-205	Accounting fees	113.0100	Proposed Budget for FYE 2020	00/19	5,500.00
20-85-210	Other Professional fees	114.0100	Proposed Budget for FYE 2020	00/19	500.00
20-85-215	Legal Publications	115.0100	Proposed Budget for FYE 2020	00/19	500.00
20-85-220	Printing and binding	116.0100	Proposed Budget for FYE 2020	00/19	500.00
20-85-225	Phone	117.0100	Proposed Budget for FYE 2020	00/19	850.00
20-85-230	Meeting and Travel	118.0100	Proposed Budget for FYE 2020	00/19	2,000.00
20-85-235	Dues	119.0100	Proposed Budget for FYE 2020	00/19	1,000.00
20-85-240	Insurance	120.0100	Proposed Budget for FYE 2020	00/19	3,300.00
20-85-245	Avista	121.0100	Proposed Budget for FYE 2020	00/19	22,000.00
20-85-255	Miscellaneous	122.0100	Proposed Budget for FYE 2020	00/19	500.00
20-85-260	Supplies	123.0100	Proposed Budget for FYE 2020	00/19	1,500.00
20-85-265	Equipment Repairs	124.0100	Proposed Budget for FYE 2020	00/19	3,000.00
20-85-270	Auto Fuel	125.0100	Proposed Budget for FYE 2020	00/19	1,500.00
20-85-272	System Repairs	126.0100	Proposed Budget for FYE 2020	00/19	12,000.00
20-85-275	Water Line System Repairs	183.0100	Proposed Budget for FYE 2020	00/19	73,150.00
20-85-280	Vehicle Repairs	127.0100	Proposed Budget for FYE 2020	00/19	500.00
20-85-282	Equipment Rental	128.0100	Proposed Budget for FYE 2020	00/19	200.00
20-85-285	Office Expense	129.0100	Proposed Budget for FYE 2020	00/19	500.00
20-85-287	Treatment supplies	130.0100	Proposed Budget for FYE 2020	00/19	6,000.00
20-85-302	Bank Charges	131.0100	Proposed Budget for FYE 2020	00/19	100.00
20-85-600	Depreciation expense	132.0100	Proposed Budget for FYE 2020	00/19	76,946.00
20-85-605	Amortization	133.0100	Proposed Budget for FYE 2020	00/19	65,840.00
20-85-620	Testing	134.0100	Proposed Budget for FYE 2020	00/19	7,000.00
20-85-625	New Hook-up expense	135.0100	Proposed Budget for FYE 2020	00/19	1,000.00
20-85-630	Restock	136.0100	Proposed Budget for FYE 2020	00/19	2,000.00
20-85-635	DEQ	137.0100	Proposed Budget for FYE 2020	00/19	1,144.00
20-85-705	Equipment Fuel	138.0100	Proposed Budget for FYE 2020	00/19	100.00
20-85-710	Meters	139.0100	Proposed Budget for FYE 2020	00/19	1,000.00
20-85-715	Well Repair	140.0100	Proposed Budget for FYE 2020	00/19	1,000.00
20-85-720	Reservoir Cleaning	141.0100	Proposed Budget for FYE 2020	00/19	4,000.00
20-85-800	Capital Outlay	142.0100	Proposed Budget for FYE 2020	00/19	11,000.00
30-37-100	Sewer Sales	143.0100	Proposed Budget for FYE 2020	00/19	95,000.00-
30-87-100	Salaries	144.0100	Proposed Budget for FYE 2020	00/19	38,000.00
30-87-105	Salary Adjustment	145.0100	Proposed Budget for FYE 2020	00/19	1,800.00
30-87-130	Payroll expense - FICA	146.0100	Proposed Budget for FYE 2020	00/19	3,500.00
30-87-135	Payroll expense - PERSI	147.0100	Proposed Budget for FYE 2020	00/19	4,500.00
30-87-140	Payroll expense-Workman's Comp	148.0100	Proposed Budget for FYE 2020	00/19	1,500.00
30-87-145	Payroll expense - Other	149.0100	Proposed Budget for FYE 2020	00/19	100.00
30-87-150	Medical Insurance	150.0100	Proposed Budget for FYE 2020	00/19	6,500.00
30-87-200	Legal fees	151.0100	Proposed Budget for FYE 2020	00/19	200.00
30-87-205	Accounting fees	152.0100	Proposed Budget for FYE 2020	00/19	5,500.00
30-87-210	Other Professional fees	153.0100	Proposed Budget for FYE 2020	00/19	1,000.00
30-87-215	Legal Publications	154.0100	Proposed Budget for FYE 2020	00/19	100.00
30-87-220	Printing and binding	155.0100	Proposed Budget for FYE 2020	00/19	100.00
30-87-225	Phone	156.0100	Proposed Budget for FYE 2020	00/19	500.00
30-87-230	Meeting and Travel	157.0100	Proposed Budget for FYE 2020	00/19	2,000.00
30-87-235	Dues	158.0100	Proposed Budget for FYE 2020	00/19	500.00
30-87-240	Insurance	159.0100	Proposed Budget for FYE 2020	00/19	3,300.00
30-87-245	Avista	160.0100	Proposed Budget for FYE 2020	00/19	11,000.00
30-87-255	Miscellaneous	161.0100	Proposed Budget for FYE 2020	00/19	500.00
30-87-260	Supplies	162.0100	Proposed Budget for FYE 2020	00/19	2,600.00
30-87-265	Equipment Repairs	163.0100	Proposed Budget for FYE 2020	00/19	4,800.00
30-87-270	Auto Fuel	164.0100	Proposed Budget for FYE 2020	00/19	1,500.00
30-87-272	System Repairs	165.0100	Proposed Budget for FYE 2020	00/19	6,000.00
30-87-280	Vehicle Repairs	166.0100	Proposed Budget for FYE 2020	00/19	500.00
30-87-282	Equipment Rental	167.0100	Proposed Budget for FYE 2020	00/19	100.00
30-87-285	Office Expense	168.0100	Proposed Budget for FYE 2020	00/19	400.00

Account Number	Title	Reference	Description	Period	Period Amount
30-87-287	Treatment supplies	169.0100	Proposed Budget for FYE 2020	00/19	9,700.00
30-87-605	Amortization	170.0100	Proposed Budget for FYE 2020	00/19	23,226.00
30-87-620	Testing	171.0100	Proposed Budget for FYE 2020	00/19	3,900.00
30-87-625	New Hook-up expense	172.0100	Proposed Budget for FYE 2020	00/19	1,000.00
30-87-630	Restock	173.0100	Proposed Budget for FYE 2020	00/19	600.00
30-87-640	Sludge Disposal	174.0100	Proposed Budget for FYE 2020	00/19	3,000.00
30-87-705	Equipment Fuel	175.0100	Proposed Budget for FYE 2020	00/19	300.00
30-87-750	Sewer Upgrade	176.0100	Proposed Budget for FYE 2020	00/19	3,000.00
30-87-755	Safety Equiptment	177.0100	Proposed Budget for FYE 2020	00/19	500.00
30-87-800	Capital Outlay	178.0100	Proposed Budget for FYE 2020	00/19	11,000.00
40-37-100	Garbage Sales	179.0100	Proposed Budget for FYE 2020	00/19	90,000.00-
40-88-210	Other Professional Fees	180.0100	Proposed Budget for FYE 2020	00/19	4,000.00
40-88-285	Office Expense	181.0100	Proposed Budget for FYE 2020	00/19	500.00
40-88-620	Collection expense	182.0100	Proposed Budget for FYE 2020	00/19	83,790.00
Grand Totals:					.00

Report Criteria:
Journal = 7

Appendix K

Juliaetta Demographics

State of Idaho-Demographics

Demographics Report (Juliaetta, Idaho)

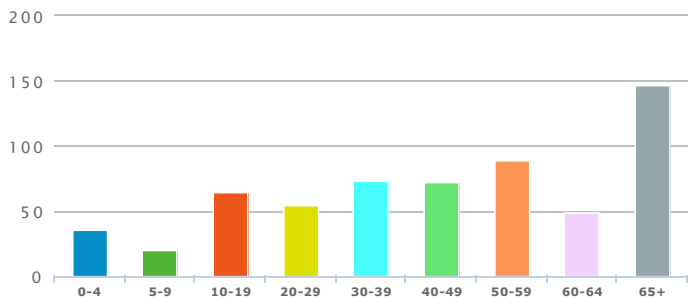
Population (2019)

TOTAL
597

Population (2024)

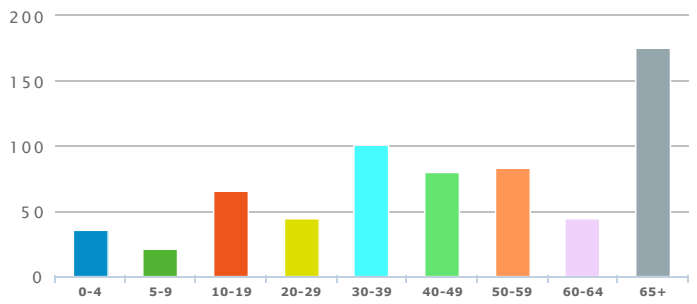
TOTAL
649

Age Distribution (2019)



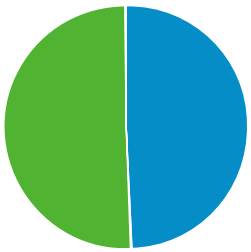
	TOTAL	%
0-4	36	6.03
5-9	20	3.35
10-19	65	10.89
20-29	55	9.21
30-39	73	12.23
40-49	72	12.06
50-59	89	14.91
60-64	49	8.21
65+	147	24.62

Age Distribution (2024)



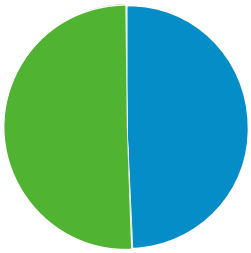
	TOTAL	%
0-4	36	5.55
5-9	21	3.24
10-19	66	10.17
20-29	45	6.93
30-39	101	15.56
40-49	80	12.33
50-59	83	12.79
60-64	44	6.78
65+	176	27.12

Sex (2019)



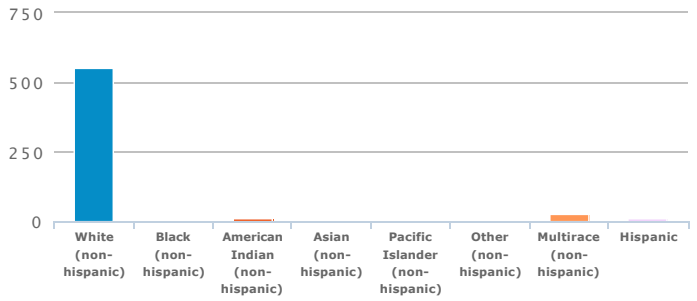
	TOTAL	%
Male	295	49.41
Female	302	50.59

Sex (2024)



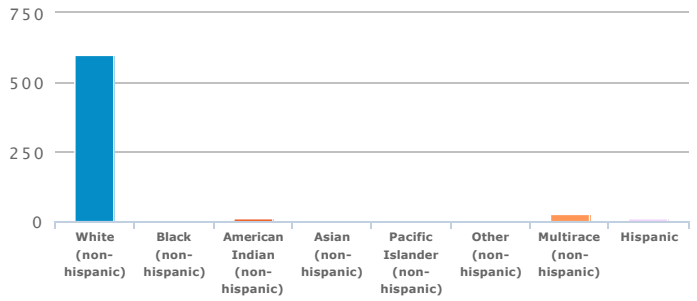
	TOTAL	%
Male	320	49.31
Female	329	50.69

Ethnicity Distribution (2019)



	TOTAL	%
White (non-hispanic)	551	92.29
Black (non-hispanic)	2	0.34

Ethnicity Distribution (2024)

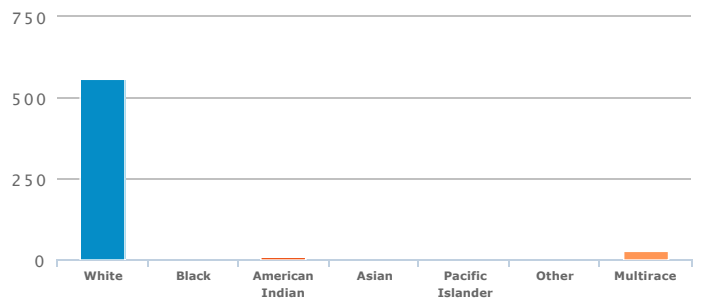


	TOTAL	%
White (non-hispanic)	598	92.14
Black (non-hispanic)	4	0.62

American Indian (non-hispanic)	8	1.34
Asian (non-hispanic)		0.00
Pacific Islander (non-hispanic)	2	0.34
Other (non-hispanic)	1	0.17
Multirace (non-hispanic)	26	4.36
Hispanic	8	1.34

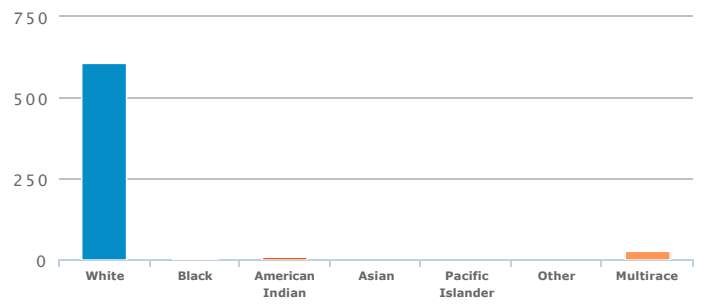
American Indian (non-hispanic)	8	1.23
Asian (non-hispanic)		0.00
Pacific Islander (non-hispanic)	2	0.31
Other (non-hispanic)	1	0.15
Multirace (non-hispanic)	28	4.31
Hispanic	8	1.23

Race Distribution (2019)



	TOTAL	%
White	559	93.63
Black	2	0.34
American Indian	8	1.34
Asian		0.00
Pacific Islander	2	0.34
Other	1	0.17
Multirace	26	4.36

Race Distribution (2024)



	TOTAL	%
White	606	93.37
Black	4	0.62
American Indian	8	1.23
Asian	1	0.15
Pacific Islander	2	0.31
Other	1	0.15
Multirace	28	4.31

Total Households (2019)

	TOTAL	%
Households	277	n/a
Families	176	63.54

Total Households (2024)

	TOTAL	%
Households	294	n/a
Families	193	65.65

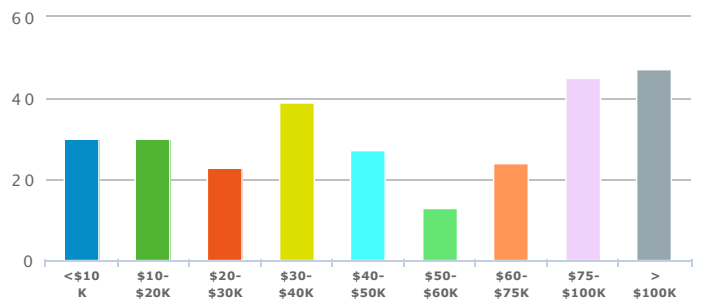
Average Household Income (2019)

TOTAL
45,454

Average Household Income (2024)

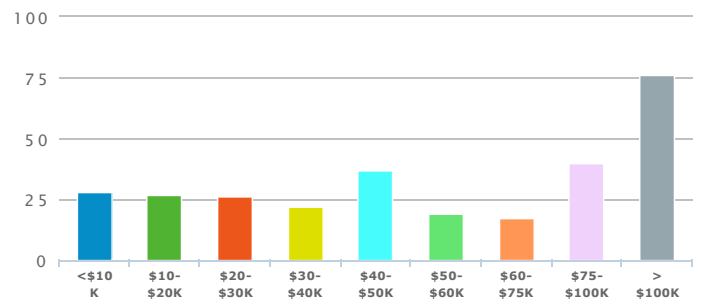
TOTAL
53,157

Household Income Distribution (2019)



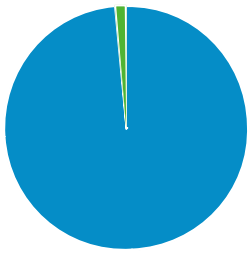
	TOTAL	%
<$10 K	30	10.83
$10-$20K	30	10.83
$20-$30K	23	8.30
$30-$40K	39	14.08
$40-$50K	27	9.75
$50-$60K	13	4.69
$60-$75K	24	8.66
$75-$100K	45	16.25
> $100K	47	16.97

Household Income Distribution (2024)



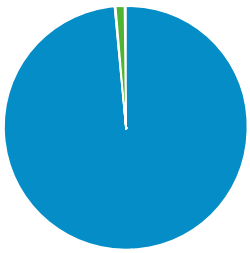
	TOTAL	%
<$10 K	28	9.52
$10-$20K	27	9.18
$20-$30K	26	8.84
$30-$40K	22	7.48
$40-$50K	37	12.59
$50-$60K	19	6.46
$60-$75K	17	5.78
$75-$100K	40	13.61
> $100K	76	25.85

Labor Force Status (2019)



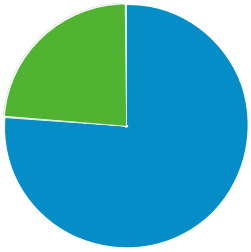
	TOTAL	%
Labor Force	346	n/a
Employed	341	98.55
Unemployed	5	1.45
In Armed Forces		n/a
Not In Labor Force	164	n/a

Labor Force Status (2024)



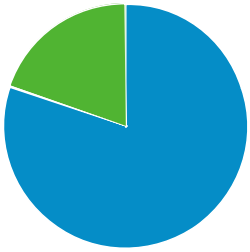
	TOTAL	%
Labor Force	378	n/a
Employed	373	98.68
Unemployed	5	1.32
In Armed Forces		n/a
Not In Labor Force	179	n/a

Total Number of Housing (2019)



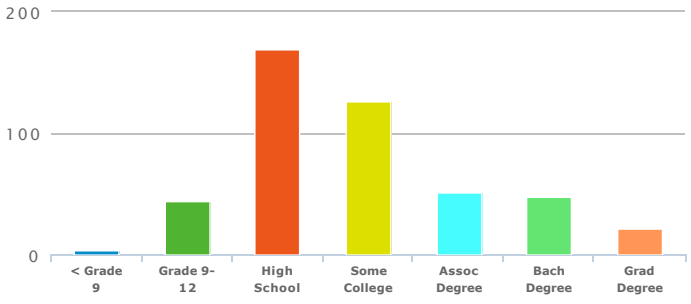
	TOTAL	%
Total Dwellings	295	n/a
Owner-Occupied Dwellings	211	76.17
Renter-Occupied Dwellings	66	23.83
Housing Units Occupied	277	93.90

Total Number of Housing (2024)



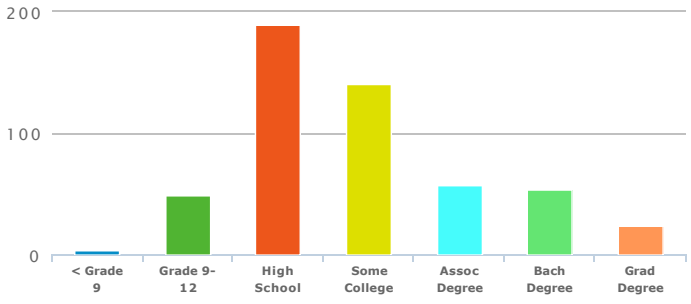
	TOTAL	%
Total Dwellings	310	n/a
Owner-Occupied Dwellings	236	80.27
Renter-Occupied Dwellings	58	19.73
Housing Units Occupied	294	94.84

Education Attainment (2019)



	TOTAL	%
< Grade 9	4	0.86
Grade 9-12	44	9.50
High School	169	36.50
Some College	126	27.21
Assoc Degree	51	11.02
Bach Degree	48	10.37
Grad Degree	21	4.54

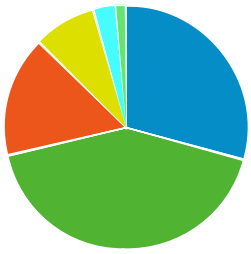
Education Attainment (2024)



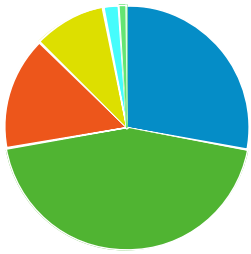
	TOTAL	%
< Grade 9	4	0.77
Grade 9-12	49	9.46
High School	189	36.49
Some College	141	27.22
Assoc Degree	57	11.00
Bach Degree	54	10.42
Grad Degree	24	4.63

Size of Household (2019)

Size of Household (2024)



	TOTAL	%
1 Person	81	29.24
2 Person	116	41.88
3 Person	44	15.88
4 Person	23	8.30
5 Person	8	2.89
6+ Person	4	1.44



	TOTAL	%
1 Person	82	27.89
2 Person	130	44.22
3 Person	44	14.97
4 Person	28	9.52
5 Person	6	2.04
6+ Person	3	1.02

Source: Applied Geographic Solutions, 2019