

# PRELIMINARY ENGINEERING REPORT

FOR

CITY OF DUNSMUIR



## WATER SYSTEM IMPROVEMENT PROJECT

JANUARY 2020

JOB No. 204.63

Prepared By:



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## ABBREVIATIONS

The following abbreviations are used in this report:

ADD	Average Daily Demand. This is the average rate of water usage per day within a year. It can be expressed on an individual basis such as gallons per connection per day (GPCD), or on a community basis in million gallons per day (MGD), acre-feet per day, or per year.
AIS	American Iron & Steel
CEQA	California Environmental Quality Act
City	City of Dunsmuir
DDW	Division of Drinking Water
DWR	Department of Water Resources
ENRCCI	Engineering News-Record Construction Cost Index
Ft	Feet
GPD	Gallons Per Day
GPM	Gallons Per Minute
HDD	Horizontal Directional Drilling
HDPE	High-Density Polyethylene
HE	Household Equivalent
HP	Horsepower
ISO	Insurance Services Office
LCC	Life Cycle Cost
MDD	Maximum Day Demand. Same units as ADD.
MG	Million Gallons
MGD	Million Gallons per Day. NOTE: 1 MGD = 694 GPM = 3.07 Ac-ft/Day
MHD	Maximum Hourly Demand. Same units as ADD.
MHI	Median Household Income
Mt. Shasta	City of Mt. Shasta
MWP	Master Water Plan
NEPA	National Environmental Policy Act
NPW	Net Present Worth
O&M	Operations and Maintenance
PACE	PACE Engineering, Inc.
PRV	Pressure Reducing Valve
PSI	Pounds per Square Inch
PVC	Polyvinyl Chloride Pipe
RTU	Radio Telemetry Unit
SCADA	Supervisory Control and Data Acquisition
SDAC	Severely Disadvantaged Community
SWRCB	State Water Resources Control Board
USDA	United States Department of Agriculture
USGS	United States Geological Survey

**CITY OF DUNSMUIR  
WATER SYSTEM IMPROVEMENT PROJECT  
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JANUARY 2020**

**I. PROJECT PLANNING**

**A. LOCATION MAPS**

The City of Dunsmuir (City) is located approximately 50 miles north of Redding, California in Siskiyou County. Figure 1 shows the City's existing water system facilities, tanks, booster pump station, and the City's water source, Mossbrae Springs. As shown in Figure 2, the existing water service boundary encompasses an area of approximately 920 acres.

**B. ENVIRONMENTAL RESOURCES PRESENT**

There does not appear to be any lasting impact on land resources, historic sites, wetlands, flood plains, endangered species, or critical habitat as a result of the proposed project. The project design and construction will need the appropriate permits to be obtained and typical specific mitigation measures taken into account so as to not impact natural resources. These requirements are discussed in Table 1.

**C. POPULATION TRENDS**

The City is primarily residential and has seen a population decrease over the last several decades. The population is estimated at 1,594 people as of 2017<sup>1</sup>. The population was recorded at 1,650 people in the 2010 U.S. Census; 1,923 in the 2000 US Census; and 2,129 in the 1990 US Census, see Table 2.

Based on the 2013-2017 5-Year American Community Survey (U.S. Census Bureau), the median household income (MHI) for Siskiyou County is \$40,884, and the MHI for Dunsmuir is \$35,208. Therefore, the MHI for the City of Dunsmuir is about 52% of the state average of \$67,169, qualifying it as a Severely Disadvantaged Community (SDAC).

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<sup>1</sup> 2013-2017 American Community Survey 5-Year Estimates

## **D. COMMUNITY ENGAGEMENT**

The City conducted Proposition 218 Proceedings over an estimated 90-day period in early 2016. The City made considerable efforts, including numerous presentations during and since the Proposition 218 Proceedings, to ensure the community is aware and understands the need for the project. The City has continued to inform the public of the project needs, with the most recent town hall presentation held on Wednesday, March 6, 2019.

## **II. EXISTING FACILITIES**

### **A. FACILITIES LAYOUT MAP**

The City's existing water facilities are shown on Figure 1.

### **B. HISTORY**

History of the City's major system components are shown in Table 3.

### **C. CONDITION OF EXISTING FACILITIES**

#### **MOSSBRAE SPRINGS HEADWORKS**

The City's water system is supplied by the diversion of four of the sixteen springs which are known collectively as Mossbrae Springs. Water from Mossbrae Springs is collected and discharged to a concrete weir box. The majority of flow is discharged into the City's 18-inch steel water supply main, and the excess overflows to Mossbrae Falls. The springs are located in a remote area along the Sacramento River, north of the City.



**Photo 1 - Mossbrae Springs Headworks**

Based on September 1993 flow measurements, it appears the spring supply was capable of providing water at flow rates of at least 1.75 million gallons per day (MGD) during that month. Historically, the spring supply has been able to supply the City's peak hour demand, except for on a few occasions. Prior to the 2006 booster pump station improvements, inadequate suction pressure occurred a number of times during the summer of 1992. Therefore, if one assumes the spring supply was not quite meeting the estimated maximum hour demand (MHD) of 1.55 MGD, then it can be concluded that the effective supply capacity of the existing spring system was approximately 1.5 MGD during those drought conditions.

According to the Division of Drinking Water (DDW) Standards, the effective capacity of a spring shall be "the lowest anticipated daily yield, based on adequately supported and documented data." In addition, the standards specify that where the capacity of a source varies seasonally, the source capacity shall be the capacity at the time of maximum day demand (MDD). Therefore, it has been estimated the effective capacity of the City's existing Mossbrae Springs facilities is about 1.5 MGD.

The DDW has expressed concern regarding the current condition of the headworks. The piping, which collects water from the springs to a collection structure, has exceeded its useful life and is at risk of failure. This deficient pipe is supported by substandard supports that have the potential to fail. Although no impending leaking or breaching is known to exist, this issue should be addressed before failure occurs.

The existing system also lacks features that would allow City staff to perform routine tasks and respond to emergency situations. Currently, each of the six spring sources cannot be isolated from the rest of the spring collection system. There are also limited means to collect samples for testing the individual source locations.

Additionally, there are health and safety concerns due to the condition of the spring boxes, collection structure, and lack of permanent and immediate chlorination facilities. The spring boxes are in need of new covers with sanitary access hatches to aid in preventing contamination from the surrounding conditions. Specifically, Spring 1 is in need of a new roof for the existing structure. The collection structure, as it stands, appears to be potentially unsanitary and allows for the entrance of insects and rodents. For these reasons, Spring 1 has been taken out of service until improvements can be made. This collection structure could be downsized in order to function more efficiently and in a more controlled environment. Finally, permanent chlorination equipment would allow for immediate treatment of contaminated water in the case of emergency.

On May 29, 2019, the Division of Drinking Water (DDW) issued Compliance Order No. 01\_01\_19(R)\_001 for violation of maximum contaminant level (MCL) for total coliform bacteria and other operational defects. On page 2 of the Compliance Order, DDW states that Dunsmuir “failed the MCL for total coliform bacteria for four months in 2017, for five months in 2018 and for two months in 2019 to date, for a total of eleven months since January 2017.” DDW completed several assessment investigations in an effort to locate the source of total coliform bacteria. DDW’s findings suggested that the poor condition of the spring collection system may be the cause of the ongoing presence of coliform bacteria in the City’s drinking water system. The Compliance Order dictates that Dunsmuir is directed to “improve and/or replace the degraded portions of the spring water system” and “install permanent emergency chlorination facilities” by December 31, 2020. The proposed project will directly address this Compliance Order. Refer to Appendix D.

The springs are the only source of water for the entire City; therefore, the condition at the spring headworks is a top priority.

## **STORAGE TANKS**

Adequate water storage facilities in a water system are important for a number of reasons. It may be necessary to replace a pumped supply with stored water in the case of a power outage or broken pipeline. Also, it is usually more economical to rely on water from storage rather than expanding water supplies to meet peak hour demand flows over and above the 24-hour average flow during MDD. The amount of storage needed to meet these peak demands is normally called equalizing storage. The amount of storage in a water system available for fire demands during MDD conditions also affects the rating by the Insurance Services Office (ISO) for fire protection facilities. As shown in Table 4, there are currently two storage tanks totaling 1.05 MG in the City’s system.



**Photo 2 - Downtown Tank**

The Downtown Tank was constructed in about 1905 and is a subgrade, concrete tank that was rehabilitated with a new gunite liner and composition roof in 1988. Unfortunately, the tank was not constructed at an elevation that would allow it to provide equalizing storage during normal maximum hourly demands. In fact, due to its maximum water surface elevation, water cannot discharge from the tank into the distribution system until the water pressure downtown is about 27 PSI below normal. Thus, the tank functions primarily as emergency and fire storage.

The Lookout Tank was designed by PACE Engineering, Inc. (PACE) and constructed in 2006. The need for this tank was identified in the 1994 Master Water Plan (MWP) to provide adequate pressure and fire flows in the Lookout Zone, as well as provide much needed system storage.



**Photo 3 - Lookout Tank Under Construction**

The majority of the water system functions as one pressure zone based on the hydraulic gradeline of the springs. Under static conditions (i.e., no flow), the pressure downtown and in the southern end of the service area would be excessive. Therefore, a pressure relief valve was installed on the pipeline leading to the Downtown Tank to regulate system pressure. This valve is set to open at approximately 30 PSI, which maintains about 120 PSI pressure at City Hall. The hydraulic gradeline of the valve setpoint is higher than the tank's maximum water surface elevation. Water vented by this pressure relief valve is released into the tank and is subsequently discharged out the tank overflow. The flowmeter on the pipeline into the tank has been inoperable for some time. Based on past flow measurement information, it is estimated that under average daily conditions, about 700 gallons per minute (GPM) overflow from the tank and into the small drainage ditch that flows across town to the Sacramento River. The overflow rate varies with water demands in the water system and is shut off altogether when system demand exceeds the spring supply. A bypass check valve is installed parallel with the pressure relief valve, so water can flow from the tank into the water system during extremely high demands or fire flow conditions.

## **PUMP STATION**

The elevation of the water supply springs is not high enough to provide adequate pressure to the entire City's service area, and a booster pump station was installed decades ago to provide adequate pressure to the Lookout Zone. As part of the improvements required for the first phase of the Mountain Estates Subdivision, the Dunsmuir Water Company required the developer to relocate the booster pump station. In addition, the developer was required to provide a propane-fired, engine-driven pump for emergency backup. Unfortunately, the pump station was relocated to a high point on the 18-inch supply main from the springs where the maximum suction pressure on the booster pumps is only about 8 PSI. This low suction pressure prevented pump operation during periods of high demand. In 2006, both 15 horsepower (HP) pumps in the station were replaced with 25 HP pumps as part of the Lookout Tank Project. In addition, suction piping improvements were made to minimize suction piping friction losses and provide more consistent positive suction pressures. Since these improvements were installed, the booster pump station has operated without interruption.

## **DISTRIBUTION SYSTEM**

As part of the 2015 MWP, an inventory of existing distribution system piping was prepared. The distribution system consists of a network of about 105,000 feet (19.9 miles) of mainline piping from 1-inch to 18-inch diameter. Approximately 80 percent of the distribution system (about 85,000 feet) consists of 4-inch to 18-inch mains. Most of the piping that has been installed in the last 40 years is primarily PVC and should last another 30+ years. About 34,000 feet of distribution system is over 60 years old. Of these pipes, 16,000 feet of mains with known material and age are 60- to 70-year-old steel lines that have a theoretical useful life of 55 to 75 years depending upon the type of lining and coating provided. Although many of these old steel lines are at or beyond their theoretical useful life, the need to replace them is dependent upon their actual condition, which is difficult to ascertain. Approximately 18% of distribution system pipeline material is unknown, as shown in Table 5. One obvious indicator of the condition of pipeline segments with unknown material is the history of leak repairs. Based upon review with City staff, there are a number of water main sections that require frequent repair and should be replaced as soon as possible.

## **SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)**

The City maintains a SCADA system to monitor the Lookout Tank and booster pump station. When the Lookout Tank's water surface level falls below a setpoint, the telemetry system is designed to automatically call the booster pump station to run. The telemetry system consists of one remote terminal unit at the Lookout Tank and one master radio telemetry unit (RTU) at the booster pump station.

## **D. FINANCIAL STATUS OF EXISTING FACILITIES**

Rate Schedule: The City's current water rate schedule was adopted by the City Council effective March 25, 2016 – See Appendix A. Refer to Appendix B for the City's 2015 Water Utility Rate Study. There are currently 1,237 active water connections of which 1,075 are residential.

Annual Budget: An excerpt of the City's adopted 2018-2019 Budget covering the Water Enterprise Fund is included as Appendix C.

As shown on in the 2018-2019 Budget, the budgeted revenue is \$764,301, while the budgeted O&M expenses for the same fiscal year (FY) are expected to be about \$624,778, with \$20,000 budgeted for the utilities line item (energy cost).

Currently, the City has a \$35,199 per year debt service on a 40-year United States Department of Agriculture (USDA) Rural Utilities Service loan dated 1994, which terms out at the end of FY 2034-35. Additionally, the City has a \$1,395 per year debt service on a 20-year State Water Resources Control Board loan dated 2006, which terms out in FY 2025-2026. The City currently has a required debt service reserve of \$35,043.

## **E. WATER / ENERGY / WASTE AUDIT**

The City has not conducted any energy or waste audits related to the water distribution system.

### **III. NEED FOR PROJECT**

#### **A. HEALTH, SANITATION, AND SECURITY**

##### **MOSSBRAE SPRINGS HEADWORKS**

The spring boxes at Mossbrae Springs are in need of new covers with sanitary access hatches to aid in preventing contamination from the surrounding conditions. Specifically, Spring 1 is in need of a new roof for the existing structure. The collection structure, as it stands, appears to be potentially unsanitary and allows for the entrance of insects and rodents. Finally, permanent chlorination equipment is needed to provide immediate treatment of contaminated water in the case of an emergency. Improving the headworks, the City's sole water source, is of critical importance to ensure the health and safety of the community. Furthermore, the improvements are required to be completed by December 31, 2020 per DDW's issued Compliance Order No. 01\_01\_19(R)\_001.

##### **DOWNTOWN TANK**

The Downtown Tank was constructed in about 1905 and is a subgrade, concrete tank. In the 1980s, structural cracks in the walls allowed groundwater intrusion into the tank, which lead to positive bacteria counts. As a result, in around 1988, the tank was rehabilitated with a new gunite liner and composition roof; however, no major structural repairs were performed. Because the tank walls and floor are subgrade, it is inaccessible and is suspected of leaking. If the subgrade tank's integrity is compromised and leaks, it could once again expose the reservoir to groundwater intrusion and associated contaminants. It is important to the health and safety of the community that this tank be replaced with an above-grade tank, which would eliminate this potential risk.

##### **DISTRIBUTION SYSTEM**

In 2013 and 2014, City staff repaired 107 water leaks in its distribution system. In some areas, there is such an extensive leak history that the presence of multiple past leak repair clamps prevents the City from making additional repairs. These well-documented leaks not only disrupt the delivery of safe drinking water to customers, they also pose a serious health risk as leaks expose the water system to potential contaminants. Addressing these leak-prone mains is of high importance to the health and safety of the citizens.

## **B. INFRASTRUCTURE ISSUES**

### **MOSSBRAE SPRINGS HEADWORKS**

The headworks piping, which collects water from the springs to a collection structure, has exceeded its useful life and is at risk of failure. This deficient pipe is supported by substandard supports that have the potential to fail. Although no impending leaking or breaching is known to exist, this issue has been identified by DDW and should be addressed before failure occurs.

### **DOWNTOWN TANK**

The Downtown Tank was constructed in about 1905 and is a subgrade, concrete tank. It was rehabilitated with a new gunite liner and composition roof in 1988; however, no major structural repairs were performed. Unfortunately, the tank was constructed approximately 62 feet lower than Mossbrae Springs, which makes it virtually ineffective in providing equalizing storage during normal maximum hourly demands. In fact, due to its maximum water surface elevation, water cannot discharge from the tank into the distribution system until the water pressure downtown is about 27 PSI below normal. Thus, the tank functions primarily as emergency and fire storage. Due to distribution system hydraulics, a significant portion of the existing service area north of the Interstate 5 bridge across the Sacramento River would be either out of water or have very low water pressure, below minimum state requirements, whenever water is being withdrawn from the Downtown Tank. To prevent water in the tank from becoming stagnant, there is constant overflow—a maximum of approximately 800 GPM during periods of low demand—which is piped out of the tank in the “overflow pipeline.” The pipeline discharges to a drainage, which is routed through a series of culverts and open concrete-lined ditches to the Sacramento River. As a result, the Downtown Tank continuously overflows and is not utilized until the significant pressure drops are seen in the Downtown Zone.

Table 6 summarizes the City's existing and proposed 20-year storage demands as shown in the 2015 MWP. Note that minimum storage demand is composed of equalizing and emergency storage or minimum fire storage, whichever is greater. Desirable

storage, on the other hand, is composed of equalizing storage and ISO fire storage or emergency storage, whichever is the greater. As shown in Table 6, there is an existing water storage deficit in the Downtown Pressure Zone of about 350,000 gallons.

However, a 900,000-gallon tank was determined to be an appropriate replacement size given that 1) it is necessary to provide adequate storage for future growth, 2) a new storage tank would have a useful life of 50 to 60 years, and 3) local grading limitations may limit or hinder construction of a third tank in the future.

## **DISTRIBUTION SYSTEM**

Of the City's distribution system, 16,000 feet of pipelines are known to be 60- to 70-year-old steel lines. Steel lines have a theoretical useful life of 55 to 75 years. The actual life of pipelines versus the theoretical life is dependent on many factors including, but not limited to, the corrosivity of the soil surrounding the pipes, corrosivity of the water within the pipes, and the quality of the original pipeline material and construction workmanship. The ability to predict the actual life expectancy of a pipeline is difficult. However, leak history is a key component in determining the remaining life of a given pipeline (e.g., multiple leaks along a pipeline generally indicate that a pipeline is beyond its useful service life).

In 2013 and 2014, City staff repaired 107 water leaks in its distribution system. In some areas, there is such an extensive leak history, the presence of multiple past leak repair clamps prevents the City from making additional repairs. Therefore, short sections of pipe are replaced.

Certain areas of Dunsmuir are served by undersized mains, primarily 1-inch to 3-inch pipelines that are 40 to 60 years old. Many of these small mains have alignments along back lot lines and under houses. This is a particular problem in the area known as Shasta Retreat. Areas served by undersized mains undergo periods of reduced pressures (i.e., less than the minimum standard of 20 PSI) during periods of high demand.

The City's 2015 MWP created an inventory of the existing distribution system piping. Based on the theoretical service life of pipelines, City repair history, and known undersized mains, the 2015 MWP prioritized repairs to the City's distribution system.

The 2015 MWP identified necessary Immediate and Near-Term Improvements and designated that they be completed by 2022.

### **C. REASONABLE DESIGN CAPACITY**

The proposed project will replace infrastructure identified in the 2015 MWP that have reached or exceeded their useful life. The City's 2015 MWP developed a detailed analysis of past and future water demands. Based on the current General Plan, a growth rate of 0.75 percent was assumed for the next 20 years. To properly meet the needs of this anticipated growth, these improvements are needed.

## **IV. ALTERNATIVES CONSIDERED**

### **A. PROJECT NEED AND SOLUTION**

The City's aging water infrastructure, including the Mossbrae Spring Headworks, Downtown Tank, and identified pipeline, have all reached or exceeded their useful life and all pose health risks to the community. While these components were adequate at the time of their installation, they do not provide adequate service to the current and future populous and, therefore, are in need of replacement. The proposed solutions will install infrastructure to current design standards that will properly serve the community well into the future.

### **B. SOLUTION ALTERNATIVES**

#### **MOSSBRAE SPRINGS ALTERNATIVES**

There were a number of alternative solutions considered herein to address the issues regarding the Mossbrae Spring Headworks, including:

- A1 – Spring Improvements
- A2 – Alternative Water Source
- A3 – Consolidation
- A4 – Do Nothing

#### **Alternative A1 – Spring Improvements**

Existing collection header, piping, support structures, and appurtenances would be replaced to increase the reliability of the City's water source. Isolation and bypass valves would be installed at each spring to allow for isolation of each source from the main collection header. Sample taps would be installed at each spring source for ease of collecting water samples, so each source could be tested individually. Finally, additional improvements would be made to the structures enclosing each spring to protect the City's water supply from contamination or structural failure.

### **Alternative A2 – Alternative Water Source**

Alternative surface water sources may include a lake or stream that flows year-round. However, there are no known locally available and reliable surface water sources other than Mossbrae Falls. Even if available, the likelihood of this surface water source not being fully adjudicated is highly unlikely. Additionally, it is more economical and reliable to continue providing the City with water from Mossbrae Springs due to the lack of treatment this source requires. Using an alternative surface water source will require treatment causing a higher operation cost and unsatisfied residents. Consequently, this alternative is infeasible and is not considered further.

### **Alternative A3 – Consolidation**

Consolidation would combine the City's water system with an adjacent city. The nearest water system of equivalent size is the City of Mt. Shasta (Mt. Shasta). Mt. Shasta utilizes a combination of spring and well water. In general, Mt. Shasta minimizes the use of its wells and relies on its spring source at the upper end of its system to pressurize pipelines. A pipeline connecting the Mt. Shasta system to the City's system would be approximately 5.25 miles long and have a net elevation change of more than 900 feet. This pipeline would connect to the South Mt. Shasta Blvd. pipeline within Mt. Shasta's water system to the City's main at the intersection of Dunsmuir Avenue and Mott Road. Refer to Figure 3.

Pressure reducing stations would be necessary for the new connecting pipeline to prevent bursting and allow proper functioning given the significant elevation change from Mt. Shasta.

Unfortunately, Mt. Shasta does not have excess water supply to offer to the City, and developing additional supply would require a significant capital investment. The intertie between the two cities has a high preliminary cost estimate of approximately \$8M, refer to Table 8, and does not include the cost to develop another water source within Mt. Shasta that would be equal to or greater than the costs associated with Alternative A1. Due to the high cost associated with this alternative, this alternative is considered cost prohibitive.

### **Alternative A4 – Do Nothing**

The Do Nothing Alternative allows for the headworks to continue to deteriorate until failure occurs. Impending failure removes the reliability of this spring source. Therefore, this alternative is considered infeasible.

### **DOWNTOWN TANK ALTERNATIVES**

There were a number of alternative solutions considered herein to address the issues regarding the Downtown Tank, including:

- B1 – Construct 0.9 MG Storage Tank
- B2 – Rehabilitate Existing Tank
- B3 – Construct Two 0.45 MG Storage Tanks
- B4 – Do Nothing

### **Alternative B1 – 0.9 MG Storage Tank**

A new welded steel above-grade 0.9 MG water storage tank would be constructed to meet the project needs and objectives described hereinbefore. The new tank would be located adjacent to the existing tank, at a slightly higher elevation, as shown on Figure 4 and Figure 5. Approximately 1,400 linear feet of new 12-inch pipeline would be constructed from the tank, along Shasta Terrace, to its intersection with Willow Street. By replacing the existing pipe between the tank and Willow Street, which follows a cross-country route, the new pipe would have improved access for maintenance and operation purposes. The pipe would both supply water to and from the new tank. One new fire hydrant would be installed along the pipeline route.

The new tank site, along with its associated pipeline and access road corridors, totals approximately 2.7 acres in size. In addition, a supervisory valve would be installed approximately 0.3 miles northeast of the tank site at the intersection of Dunsmuir Avenue and Spring Street as shown on Figure 4. The supervisory valve would control the water level in the proposed tank and assure water turnover. The increased elevation of the proposed Downtown Tank would also require three new pressure reducing valve (PRV) stations to correct existing excessive water pressures at lower

elevation services along South Dunsmuir, Butterfly, and Scherrer Avenues. These improvement locations are shown on Figure 4. See Table 9 for proposed project cost.

### **Alternative B2 – Rehabilitate Existing Tank**

Alternative B1 would involve an inspection of the existing tank to locate and repair defects. The Downtown Tank is a subsurface tank, and the walls and floor are inaccessible meaning that the repair effort would be significantly hampered. Exposing the exterior wall of the tank would be extremely difficult and potentially dangerous given the unknown means and methods of its construction.

Since the tank acts as a pressure relief for the system, taking the tank out of service for inspection and repair would have catastrophic impacts due to over pressurization of the system. Furthermore, Tank 1 has reached the end of its serviceable life.

While this alternative would allow the existing tank to remain in service by addressing the potential health risk from groundwater intrusion, this does not address any of the other issues associated with the existing tank. These other issues include lack of current and future storage capacity requirements, inability to provide equalizing storage during normal maximum hourly demands and proper pressure due to inadequate elevation, and the potential for future groundwater intrusion. For the aforementioned reasons, repairing the existing tank is not a viable solution and is not considered further.

### **Alternative B3 – Two 0.45 MG Storage Tanks**

Alternative B3 is similar to Alternative B1; however, two 0.45 MG water storage tanks would be constructed instead of a 0.9 MG water storage tank. As in Alternative B1, the new tanks would be located adjacent to the existing tank and at a slightly higher elevation. The same off-site improvements, including the pipeline, supervisory valve, and PRVs, would be constructed in this alternative.

Having two storage tanks instead of a single tank would provide a significant benefit to the City by facilitating the ability to take one tank off-line for routine maintenance while the other can remain in service. Constructing two tanks instead of one will require more

area to be acquired; more earthwork, site work, grading, and retaining wall; additional tree removal; and installation of additional piping, a second foundation, and a second tank. These changes would raise construction costs to approximately \$5.5M, which is more than \$1M higher than Alternative B1. This much higher cost is considered economically not viable, and therefore, this alternative is not considered further.

### **Alternative B4 – Do Nothing**

The Do Nothing Alternative allows for continued public health risks from groundwater intrusion, inadequate and unsafe system pressures at times, and inadequate storage volume. Therefore, this alternative is not feasible and is not considered further.

## **DISTRIBUTION SYSTEM ALTERNATIVES**

There were a number of alternative solutions considered herein to replace the City's aging distribution system, including:

- C1 – Open-Cut Trench Replacement
- C2 – Pipe Bursting Replacement
- C3 – Horizontal Direction Drilling Replacement
- C4 – Do Nothing

### **Alternative C1 – Open-Cut Trench Replacement**

Alternative C1 would utilize the traditional installation method of open-cut trench excavation.

Open-cut trench excavation consists of excavating a trench for the manual installation of each piece of pipe. This method is usually the least expensive method. The open-cut trench method involves excavating down to install the new pipe and then backfilled. If the open-cut trench excavation is located in a non-drive area, the excavation can be backfilled with select native soil and surface vegetation restored by seed or sod. When the open-cut trench excavation is located under pavement, the existing pavement must be saw cut and removed, the excavation filled with granular backfill to prevent settlement, and the pavement replaced.

Environmental impacts of open-cut trench excavation are greater than trenchless methods as it requires more earth disturbance, which increases the potential for erosion. It will also include removal and replacement of pavement in some areas, which increases temporary air quality impacts during construction due to additional earth disturbance and emissions from materials used for repaving.

### **Alternative C2 – Pipe Bursting Replacement**

Alternative 2 would utilize a trenchless installation method known as pipe bursting. Pipe bursting is a trenchless method of replacing buried pipelines without the need for a traditional open-cut trench. Launching and receiving pits replace the trench needed by conventional, open-cut pipe laying. Pipe bursting, which can be either pneumatic, hydraulic expansion, or static pull, fractures the existing pipe and displaces the fragments outwards while a new pipe is drawn in to replace it. Typically, PVC or high-density polyethylene pipe (HDPE) pipe is utilized for the new pipe in the pipe bursting process. Although this technology is trenchless, excavation would still be required at service connections in order to reconnect each service.

Pipe bursting can install pipe that is equal to or one size larger than the existing main; however, it cannot be utilized on mains smaller than four inches or mains with a shallow bury depth. Before bursting can occur, the main must be taken out of service and drained requiring temporary service connections to be installed above-grade. This leaves customers potentially with no fire protection, which causes this to be the greatest drawback of pipe bursting.

Environmental impacts of pipe bursting are less than open-cut trenching in that the amount of excavation and pavement removal and replacement is reduced. This reduces the potential for erosion and air quality impacts.

Due to the limitations of the technology, and the unacceptable conditions it has on affected customers, this alternative is not feasible and is not considered further.

### **Alternative C3 – Horizontal Directional Drill**

Alternative C4 would utilize a trenchless installation method known as horizontal directional drilling (HDD). HDD is a trenchless technology that is typically used when attempting to minimize surface disturbance. HDD relies upon entry and exit pits and requires substantial laydown area for the pipe to be pulled into place. A horizontal hole is drilled and reamed, and the new pipe, which is typically HDPE or fused PVC, is pulled into place.

HDD is not suitable for all soil types and conditions, and the large amount of rock present in Dunsmuir may pose problems during construction. Additionally, HDD has a high risk of drilling through unknown and incorrectly located utilities, which could hamper service to nearby customers.

Environmental impacts of HDD are similar to pipe bursting in that they are less than open-cut trenching. HDD reduces the amount of excavation required and may eliminate pavement removal and replacement costs. This reduces the potential for erosion and air quality impacts.

Due to the known rocky soil conditions in the area and number of known and unknown locations of buried utilities, HDD is not feasible and is not considered further.

### **Alternative C4 – Do Nothing**

Due to the poor condition of existing water mains, health and safety concerns, and excessive maintenance, the “Do Nothing Alternative” is not a viable option. This alternative is not feasible and is not considered further.

## **C. DESIGN CRITERIA**

The City has adopted the City of Redding water distribution system design standards. For areas that are not covered by the City of Redding design standards, industry-recognized design standards are utilized. These standards were used in determining the improvements needed for each alternative.

## **D. MAPS**

Refer to Figures 3 through 6 for the proposed water system improvement alternatives.

## **E. ENVIRONMENTAL IMPACTS**

The proposed alternatives do not appear to have any lasting significant impact on land resources, historic sites, wetlands, flood plains, endangered species, or critical habitat. The project design and construction will need the appropriate permits to be obtained and will take into account typical specific mitigation measures so as to not impact natural resources. CEQA/NEPA documentation was prepared by ENPLAN (Redding, CA).

## **F. LAND REQUIREMENTS**

The considered alternatives would take place within existing publicly owned right-of-way and pipeline easements, with three exceptions. The first exception is that consolidation with the City of Mt. Shasta would require acquisition or right-of-way to install a main between both cities.

The second exception is the new 0.9 MG storage tank would require a 1.4-acre tank site located adjacent to and north of the existing City tank site. The City has recently acquired this site in fee from the Dunsmuir School District (APN 030-280-180). Access to the site will occur along Shasta Terrace Way and the existing driveway serving a home on APN 058-041-190. Thus, the City has obtained a permanent utility easement across the private property.

The third exception is the construction of 0.45 MG storage tanks, which would require more than the 1.4-acre tank site already acquired by the City. Acquiring this additional area from the Dunsmuir School District may not be difficult but would come at additional cost.

## **G. POTENTIAL CONSTRUCTION PROBLEMS**

Due to seasonal weather conditions in the area, construction that requires trench paving or tank painting is not advised from approximately October 15 through April 15. The cold temperatures that are prevalent during this time period significantly impact the ability to pave, perform trench compaction, and paint water storage tanks.

The construction efforts will take place mostly within previously developed roads and disturbed sites; therefore, no major construction problems are envisioned.

## **H. SUSTAINABLE CONSIDERATIONS/CLIMATE CHANGE EVALUATION**

### **WATER AND ENERGY EFFICIENCY**

The proposed alternatives would replace sections of the water system that have a history of significant leaks. Reducing the number of leaks in the system will not only reduce the City's operation and maintenance (O&M) but will limit the amount of water entering the system, and therefore, more water will flow directly from Mossbrae Springs to the Sacramento River. Additionally, the proposed tank replacement with associated supervisory valve will limit the water that normally overflows in the existing tank. This will limit the amount of water entering the system, which will allow more water to flow directly from Mossbrae Springs to the Sacramento River.

## **I. COST ESTIMATES**

The total estimated project costs for the proposed alternatives are shown in Table 7 through Table 10. Cost estimates were not developed for alternatives that were infeasible. Construction costs are based on American Iron & Steel (AIS) requirements. Total project costs are based upon similar prevailing wage rate public works projects constructed in the north state and inflated by the Engineering News Record Construction Cost Index (ENRCCI), which stands at 11,392 for January 2020.

## **J. O&M COST ESTIMATE**

Replacing the leak-prone pipelines in the City's system will reduce the substantial O&M cost the City currently expends on leak repairs. Additionally, improving the infrastructure at Mossbrae Springs will likely address the coliform hits the City has recently been plagued with. Eliminating the potential contamination of coliform will provide O&M savings by eliminating the need to conduct emergency chlorination.

## **V. SELECTION OF AN ALTERNATIVE**

Life Cycle Cost (LCC) estimate is a tool to determine the most cost-effective option among different competing alternatives to purchase, own, operate, maintain, and finally dispose of an object or process. Each alternative should be equally appropriate to be implemented on technical grounds. All the costs are totaled to a present-day value known as net present worth (NPW) or present worth. LCC estimates are based on time of construction and include costs for construction, indirect costs, O&M, and salvage value.

LCC analysis parameters include:

1. Construction costs based on January 2020 dollars (ENRCCI = 11,392).
2. Discount or interest rate based upon the Real Discount Rate, which is a forecast of real interest rates from which the inflation premium has been removed and based on the economic assumptions for the Federal 2020 Budget. Real rates are used for discounting constant-dollar flows, as is often required in cost-effectiveness analysis. The 20-year Real Interest Rate is 1.5% according to the Office of Management and Budget Circular No. A-94, revised November 2018.

LCCs were not carried through for all alternatives. LCC for the feasible alternative and the proposed project are shown in Table 11. As indicated, the most cost-effective alternative components are A1, B1, and C1.

## **VI. PROPOSED PROJECT**

### **A. PRELIMINARY PROJECT DESIGN**

The preliminary design of the proposed project is described for each project component below:

#### **ALTERNATIVE A1 – SPRING IMPROVEMENTS**

Existing collection header, piping, support structures, and appurtenances would be replaced to increase the reliability of the City's water source. Isolation and bypass valves would be installed at each spring to allow for isolation of each source from the main collection header. Sample taps would be installed at each spring source for ease of collecting water samples, so each source could be tested individually. Additionally, the structures enclosing each spring would be removed and replaced with more robust structures to protect the City's water supply from contamination or structural failure. Finally, shotcrete would be installed above the spring boxes as rock slope protection to protect the spring boxes from being impacted by falling rocks.

#### **ALTERNATIVE B1 – 0.9 MG STORAGE TANK**

A new welded steel, above-grade 0.9 MG water storage tank would be constructed to meet the project needs and objectives described hereinbefore. The new tank would be located adjacent to the existing tank, at a slightly higher elevation, as shown on Figure 4 and Figure 5. Approximately 1,400 linear feet of new 12-inch pipeline would be constructed from the tank, along Shasta Terrace, to its intersection with Willow Street. By replacing the existing pipe between the tank and Willow Street, which follows a cross-country route, the new pipe would have improved access for O&M purposes. The pipe would both supply water to and from the new tank. One new fire hydrant would be installed along the pipeline route.

The new tank site, along with its associated pipeline and access road corridors, totals approximately 2.7 acres in size. In addition, a supervisory valve would be installed approximately 0.3 miles northeast of the tank site at the intersection of Dunsmuir Avenue

and Spring Street as shown on Figure 4. The supervisory valve would control the water level in the proposed tank and ensure water turnover. The increased elevation of the proposed Downtown Tank would also require two new PRV stations to correct existing excessive water pressures at lower elevation services along Butterfly and Scherrer Avenues. These improvement locations are shown on Figure 4.

To develop the new tank site, a 15-foot-wide by 110-foot-long gravel-surfaced, all-weather access road would be constructed leading from the west end of the driveway of a residence at 5521 Shasta Terrace up to the new tank site. Additionally, a 12-foot-wide access road would be constructed around the perimeter of the tank.

The proposed tank would be welded steel, coated with epoxy paint on the interior and zinc/acrylic on the exterior, about 61 feet in diameter, and about 44 feet tall. The maximum height to water surface would be about 41 feet from the bottom of the tank. The tank would feature an access ladder with an anti-climb shield and safety cage with landings, as required by the Occupational Safety and Health Administration. Approximately 180 feet of concrete retaining wall would be constructed around the tank. The new tank site would be fenced to minimize vandalism, as required by DDW. Storm water runoff from the new tank site would be directed to a constructed cobble-lined ditch for discharge to the existing drainage located just south of the existing tank.

The new tank would be monitored with an electronic level transmitter that would convey real-time tank level data via radio telemetry to the City's SCADA system. The tank level signal would be used to control the supervisory valve, which would be located below ground in a concrete box. It would be necessary to extend a small, 50-amp electrical service line to the supervisory valve to power electrical and controls equipment.

## **ALTERNATIVE C1 – OPEN-CUT TRENCH REPLACEMENT**

The project will install approximately 24,800 feet of mains to replace old steel mains that have reached or exceeded their useful life. The project will install approximately 40 fire hydrants, which in the wake of devastating fires, providing adequate fire protection is a high priority in the community.

## **B. PROJECT SCHEDULE**

Assuming the City is able to obtain funding for the construction phases of the proposed project, the anticipated project schedule is shown in Table 12.

## **C. PERMITS**

The following permits and approvals will likely be needed prior to implementation of the proposed project:

- City of Dunsmuir – Adopted Environmental Documents for proposed project
- CVRWQCB – Construction General Permit and preparation of a Storm Water Pollution Prevention Plan
- California Department of Forestry and Fire Protection – Timber Harvest Permit
- California Department of Transportation – Encroachment Permit

The following permits may be needed prior to implementation of the proposed project:

- CVRWQCB – Clean Water Act Section 401 Certification
- California Department of Fish and Wildlife – Section 1600 Lake and Streambed Alteration Agreement

## **D. SUSTAINABILITY CONSIDERATIONS**

Water and Energy Efficiency: The proposed project will replace water system infrastructure that has a history of water losses through leaks. Addressing these leaks will ensure that water is utilized efficiency and that excess water will not enter the system but will instead reach the Sacramento River benefiting wildlife and downstream users.

## **E. TOTAL PROJECT COST ESTIMATE**

The total project cost estimates for the proposed project are detailed in Tables 7, 9, and 10. Construction costs are based on AIS requirements. Total project costs are based on January 2020 dollars (ENRCCI = 11,392).

It is anticipated that the 0.9 MG storage tank is to be funded through a California State Water Resources Control Board (SWRCB) grant, the Spring Improvements Project to be funded through a California Department of Water Resources (DWR) grant, and the distribution system improvements will be funded through a USDA low interest loan.

## **F. ANNUAL OPERATING BUDGET**

It is expected construction will be completed fall 2020 (FY 2020-21). As such, financial needs and projections are based on forecast numbers per the City's 2018-2019 adopted budget and modified to reflect expected debt service needs for the proposed project.

### **INCOME**

Revenue forecasts for FY 2020-21 are \$886,000. Refer to Table 6 in the Water Utility Rate Study (Appendix B).

The City is currently in year three of a five-year rate increase, with rates increasing to an average of approximately \$47.80 per household equivalent (HE) per month by the beginning of fiscal year 2020-2021.

### **ANNUAL O&M COSTS**

The improvements recommended in this project will have a relatively low impact on existing daily O&M costs. However, O&M costs will increase proportionate to the change in the consumer price index and salary increases. O&M expenses for FY 2020-21 are projected to be about \$522,147. See Table 5 in the Water Utility Rate Study (Appendix B).

### **DEBT REPAYMENT**

The City currently has a debt service on a 40-year loan issued in 1994 and a 20-year loan issued in 2005, both for capital improvements to the water system. Debt service for these bonds for FY 2020-21 will be \$36,665. User rates were adjusted to fund the applicable debt service and debt service reserve payments. For planning purposes, it is assumed the USDA loan will be 40 years at 2.5% interest.

## **RESERVES**

At the end of FY 2020-21, the City's Water Enterprise Fund is anticipated to have an O&M reserve of approximately \$223,776 or about 25% of operating expenses, which is the goal established in the City's adopted rate study.

### **Debt Service Reserve**

The City currently has a required debt service reserve of \$35,043 as shown in Table 6 in the Water Utility Rate Study (Appendix B). The reserve will be increased by 10% of the annual debt payment of the new USDA loan.

### **Short-Lived Asset Reserve**

A breakdown of short-lived assets is shown in Table 13 and reflects those assets with a useful life of 5 to 15 years. The short-lived assets reserve is intended to collect revenue to replace these assets at the end of their service life. As indicated, the total annual revenue needed to fund this reserve is about \$38,900 per year.

## **VII. CONCLUSION AND RECOMMENDATIONS**

Based upon the available information to date, the recommended project consists of the items summarized in Section VI. The advantages of the recommended alternative include:

- Replacement of aging water main pipes
- Alleviate ongoing maintenance costs and reduce the potential for contamination
- Provide adequate water storage capacity
- Safeguard the City's sole water source

The total project cost, including indirect costs for administration and engineering, is estimated at \$16,602,000 in 2020 dollars.

The City's rates are insufficient to fund a loan covering the entire project. It is anticipated that the 0.9 MG storage tank is to be funded through a SWRCB grant, the Spring Improvements Project to be funded through a California DWR grant, and the distribution system improvements will be funded through a USDA low interest loan. Refer to Table 14 for the Total Project Cost Estimate of the USDA-funded project.



**Table 1: Mitigation Monitoring Checklist**

Mitigation Measure		Monitoring Action
<b>Work Area</b>		
1	Minimize Work Area	Define limits of work area in Contract Documents and delineate any sensitive areas that are to be left undisturbed.
2	Erosion Control	Establish erosion control procedures in Contract Documents including sensitive areas to be left undisturbed. Standard practices required by the County will be strictly adhered to by the construction contractor and enforced by the Engineer.
3	Revegetation of Disturbed Areas	All areas disturbed shall be seeded and mulched. Revegetation shall consist of native species, grasses, and forbs. Revegetation efforts shall be in place prior to the return of the wet season and in no case later than October 15th of each season.
<b>Construction Activities</b>		
1	Dust Control	Roads and work areas likely to generate dust shall be watered during construction activities and swept clean where possible.
2	Noise Control	Work hours will be limited typically to weekdays between the hours of 7 a.m. to 5 p.m. in residential areas unless special activities, i.e. tie-ins, are required at night during periods of low flow times.
<b>Sensitive Resources</b>		
1	Subsurface Cultural Resources	If subsurface cultural materials are encountered during construction activities, all activities shall be halted within a 50-foot radius and an archaeologist called in to examine the artifacts and determine if additional mitigation measures are required.
2	Botanical Field Survey	A botanical field survey shall be conducted in the summer. In the unlikely event that special-status plant species are present, final design shall avoid the plant population(s) to the extent practicable. If avoidance is not feasible, loss of the special-status plants shall be offset through creation of suitable habitat at a minimum 3:1 ratio. A detailed mitigation plan shall be submitted to the City of Dunsmuir and California Department of Fish and Wildlife for review and approval. Mitigation shall be undertaken concurrently with or in advance of the start of project construction.
3	Acoustical Survey	An acoustical survey for bats shall be conducted at the project site by a qualified bat biologist to determine presence or absence of bat species. In the event that western mastiff bats or other special-status bat species are detected, appropriate humane eviction/exclusion measures shall be developed and implemented by the bat biologist in consultation with City of Dunsmuir staff, preceding tree removal activity.
4	Migratory Birds	To ensure that active nests of migratory birds are not disturbed, vegetation removal and construction activities shall occur between August 31 and February 1, if feasible. If vegetation removal or construction must occur during the nesting season, a nesting survey shall be conducted by a qualified biologist to identify active nests. If nesting birds are found, the nest sites shall not be disturbed until after the young have fledged. Further, to prevent nest abandonment and mortality of chicks and eggs, no vegetation removal or construction activities shall occur within 500 feet of an active nest, unless a smaller buffer zone is authorized by the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service.

**Table 2: Population Trend**

<b>Year</b>	<b>Population</b>
1990	2,129
2000	1,923
2010	1,650
2017	1,594

**Table 3: History of Major System Components**

<b>System Component</b>	<b>Name</b>	<b>Year Constructed</b>	<b>Year(s) Renovate</b>	<b>Description of Renovation</b>
Water Source	Mossbrae Spring Headworks	Pre-1905	1970s	Emergency chlorine gas disinfection system installed
Storage Tank	Downtown Tank	~1905	1988	New liner and composition roof
Storage Tank	Lookout Tank	2006	-	
Pump Station	Lookout Pump Station	Unknown	2006	Existing 15 HP pumps replaced with 25 HP pumps

**Table 4: Water Storage Reservoir Inventory**

No.	Reservoir Name	Date Constructed	Type	Volume (MG)	Maximum Water Surface Elevation (Ft)	Base Elevation (Ft)	Tank Dimensions		Existing Pressure Zone Served
							Feet of Water	Tank <sup>(1)</sup> Diameter (Ft)	
1	Downtown	~1905	Concrete	0.40	2538	2526	12	65	Downtown
2	North Dunsmuir (Lookout)	2006	Steel	0.65	2889.5	2861.5	28	63	Lookout

**Total Capacity: 1.05**

Note:

<sup>(1)</sup> Tank diameters are calculated. Calculations are based on tank heights and total volume.

**Table 5: Distribution System Inventory**

<b>Material</b>	<b>Length (Ft)</b>	<b>Percent of Known</b>	<b>Percent of Total</b>
PVC	13,000	15%	12%
Cast Iron	29,800	34%	28%
Steel	33,500	39%	32%
Galvanized	5,300	6%	5%
Ductile Iron	3,300	4%	3%
Asbestos Concrete	1,600	2%	2%
Unknown	18,900	N/A	18%
Total	105,400	100%	100%

**Table 6: Storage Requirements**

Year	MDD (MGD)	Equal Storage <sup>(1)</sup> (MG)	Emergency Storage <sup>(2)</sup> (MG)	Fire Storage <sup>(3)</sup> (MG)	Desirable Storage (MG)	Surplus Storage <sup>(4)</sup> (MG)	Comments
<b>Existing Lookout Zone</b>							
2015	0.04	0.01	0.01	0.30	0.31	0.33	Exist 0.65 MG
2035	0.05	0.01	0.01	0.30	0.31	0.33	-
<b>Existing Prospect Pressure Zone</b>							
2015	0.09	0.02	0.02	0.30	0.32	0.01	-
2035	0.11	0.02	0.03	0.30	0.32	0.01	-
<b>Existing Shasta Retreat Pressure Zone</b>							
2015	0.05	0.01	0.01	0.63	0.64	0.09	-
2035	0.06	0.01	0.01	0.63	0.64	0.59	-
<b>Existing Downtown Pressure Zone</b>							
2015	0.67	0.13	0.17	0.63	0.76	-0.35	Exist. 0.4 MG
2035	0.78	0.16	0.19	0.63	0.79	0.12	Replace w/ 0.9 MG <sup>(5)</sup>
<b>Proposed Downtown Pressure Zone</b>							
2015	0.46	0.09	0.12	0.63	0.72	-	-
2035	0.53	0.11	0.13	0.63	0.74	-	-
<b>Proposed Southern Pressure Zone</b>							
2015	0.21	0.04	0.05	0.30	0.34	-	-
2035	0.24	0.05	0.06	0.30	0.35	-	-
<b>TOTAL</b>							
2015	0.85	0.16	0.20	-	-	-	Exist 1.05
2035	0.93	0.19	0.23	-	-	-	1.55

Notes:

<sup>(1)</sup> Equalization storage based on 20% of MDD.

<sup>(2)</sup> Emergency storage based on 25% of MDD.

<sup>(3)</sup> 0.3 MG storage based on 2,000 GPM fire flow for 2 hours. 0.63 MG storage based on 3,500 GPM fire flow for 3 hours.

<sup>(4)</sup> Surplus storage includes surplus from upstream pressure zones.

<sup>(5)</sup> A 0.9 MG storage tank is recommended to cover total system storage requirements in 2035.

**Table 7: Preliminary Cost Estimate – Spring Improvements (DWR Funded)**

<b>NO.</b>	<b>DESCRIPTION</b>	<b>QTY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL COST</b>
1	Mobilization	1	LS	\$8,320	\$8,320
2	Temporary HDPE bypass piping	1	LS	\$52,000	\$52,000
3	Pipe Demo	1	LS	\$8,320	\$8,320
4	Building Demo	1	LS	\$8,320	\$8,320
5	Spring Demo Conc, Piping, etc.	5	LS	\$3,750	\$18,750
6	18-inch Steel Pipe	75	LF	\$437	\$32,775
7	12-inch Steel Pipe	140	LF	\$420	\$58,800
8	18-inch Ductile Iron Pipe (Below Grade)	50	LS	\$468	\$23,400
9	Pipe Supports	25	LS	\$2,600	\$65,000
10	18-inch Tie-in	1	LS	\$10,400	\$10,400
11	Tablet Chlorinator and Appurtenances	1	LS	\$20,800	\$20,800
12	Power Service Relocation (PP&L Cost)	1	LS	\$10,400	\$10,400
13	Spring Overflow w/ Flap Gate	7	LS	\$5,200	\$36,400
14	Culvert	2	LS	\$3,120	\$6,240
15	Replace Spring 2 Doors, Add Vents	2	EA	\$2,600	\$5,200
16	Spring D Boulder Anchor	1	LS	\$15,600	\$15,600
17	Spring 1 Collection Structure	1	LS	\$26,000	\$26,000
18	Spring D, C, B, and 3 Spring Collection Structure	4	LS	\$20,800	\$83,200
19	Spring Piping, Bypass, Valves, & Sampling Stations	8	LS	\$7,800	\$62,400
20	Shotcrete	1,600	SF	\$37	\$59,200
21	Overflow Structure	1	LS	\$15,600	\$15,600
22	Site Work/Aggregate Base	1	EA	\$20,800	\$20,800
23	Access Road Improvements	1	LS	\$15,600	\$15,600
24	Electrical/Controls	1	EA	\$20,800	\$20,800
25	Mission SCADA System	1	EA	\$15,600	\$15,600
26	Project Sign	1	EA	\$2,075	\$2,075
Subtotal Construction Cost:					\$702,000
Contingency Allowance @ 15%:					\$105,000
<b>TOTAL ESTIMATED CONSTRUCTION COST:</b>					<b>\$807,000</b>
INDIRECT COSTS:					\$271,000
<b>TOTAL ESTIMATED PROJECT COST:</b>					<b>\$1,078,000</b>

**Table 8: Preliminary Cost Estimate – Consolidation**

<b>NO.</b>	<b>DESCRIPTION</b>	<b>QTY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL COST</b>
1	12-inch Water Main w/A5 Bkfl	1,950	LF	\$250	\$487,500
2	12-inch Water Main w/A1 Bkfl	19,910	LF	\$220	\$4,380,200
3	12-inch Water Main w/C Bkfl	5,450	LF	\$200	\$1,090,000
4	12-inch Directional Drill - crossing I-5 N & S on/off ramp	250	LF	\$835	\$208,750
5	12-inch Directional Drill - Hwy 89 crossing	110	LF	\$835	\$91,850
6	6-inch Water Main w/A5 Bkfl (FH Runs)	150	LF	\$155	\$23,250
7	12-inch Gate Valves	10	EA	\$4,420	\$44,200
8	6-inch Gate Valves	6	EA	\$2,290	\$13,740
9	Fire Hydrants	6	EA	\$7,800	\$46,800
10	Supervisory Valve, including electrical and telemetry	1	EA	\$125,000	\$125,000
11	PRV Station	6	EA	\$88,500	\$531,000
12	Combination Air Release and Vacuum Valves	7	EA	\$5,200	\$36,400
13	Concrete Removal and Replacement	50	SF	\$37	\$1,850
14	Adder for Concrete Under Existing Pavement	60	LF	\$32	\$1,920
15	Traffic Control	1	LS	\$20,800	\$20,800
16	Tie-in to Existing Water System	2	EA	\$5,200	\$10,400
17	Trench Sheeting, Shoring, and Bracing, complete	1	LS	\$1,040	\$1,040
18	Project Sign	1	EA	\$2,075	\$2,075
Subtotal Construction Cost:					\$7,116,775
Contingency Allowance @ 20%:					\$1,423,355
<b>TOTAL ESTIMATED CONSTRUCTION COST:</b>					<b>\$8,540,130</b>
INDIRECT COSTS:					\$2,562,000
<b>TOTAL ESTIMATED PROJECT COST:</b>					<b>\$11,102,130</b>

**Table 9: Preliminary Cost Estimate – 0.9 MG Storage Tank (SWRCB Funded)**

NO.	DESCRIPTION	QTY	UNITS	UNIT COST	TOTAL COST
<b>Tank Site &amp; Piping Improvements</b>					
1	12-inch Water Main w/A1 Bkfl	200	LF	\$220	\$44,000
2	12-inch Water Main w/A4 Bkfl	160	LF	\$210	\$33,600
3	12-inch Water Main w/A5 Bkfl	610	LF	\$250	\$152,500
4	12-inch Overflow Piping w/C Bkfl	150	LF	\$140	\$21,000
5	12-inch Overflow Tie-in	1	LS	\$6,750	\$6,750
6	36-inch Culvert Crossing	1	LS	\$8,850	\$8,850
7	6-inch Water Main w/C Bkfl (drain pipe)	180	LF	\$68	\$12,240
8	6-inch Water Main w/A5 Bkfl (FH Runs)	60	LF	\$156	\$9,360
9	12-inch Gate Valves	3	EA	\$4,420	\$13,260
10	6-inch Flow Control Valve	1	EA	\$2,290	\$4,580
11	Fire Hydrants	2	EA	\$4,680	\$4,680
12	6-inch Propeller Meter and Vault	1	EA	\$7,800	\$15,600
13	Manhole for Discharge to Waste and Overflow	1	EA	\$152,500	\$152,500
14	Air Valve	1	EA	\$16,650	\$16,650
15	Drain and Overflow Piping and Valves and Energy Dissipater	1	EA	\$5,200	\$5,200
16	1-inch Water Service w/Box and Meter	2	EA	\$33,300	\$33,300
17	2-inch HDPE Water Service Piping w/C Backfill	130	LS	\$2,100	\$4,200
18	Tie to Existing System	3	EA	\$6,250	\$18,750
<b>0.9 MG Tank</b>					
19	Foundation, including below-tank piping	130	CY	\$1,665	\$233,100
20	Retaining Wall	92	CY	\$1,665	\$153,180
21	Concrete Gutter	350	LF	\$68	\$23,800
22	Below-Tank Piping	1	LS	\$26,000	\$26,000
23	Tank Erection and Painting @ \$1.30/gallon	1	LS	\$1,357,000	\$1,357,000
24	Electrical/SCADA	1	LS	\$67,600	\$67,600
25	Electrical Power Conduit	350	LF	\$47	\$16,450
26	New Electrical Service	1	LS	\$16,700	\$16,700
27	Tree Demo	94	EA	\$1,050	\$98,700
28	Earthwork, Site Work, and Grading	2,000	CY	\$110	\$220,000
29	3-inch Asphalt	3,900	SF	\$6	\$23,400
30	HMA Curb	155	LF	\$60	\$9,300
31	Agg. Base	135	CY	\$110	\$14,850
32	Area Drain and Piping	1	LS	\$6,250	\$6,250
33	Fencing	1	LS	\$44,200	\$44,200
34	Clean-Up, Testing, Submittals, Equip Manuals	1	LS	\$33,300	\$33,300
35	Demo Exist Tank Roof and Fill Existing Tank	1	LS	\$65,000	\$65,000
36	Misc.	1	LS	\$4,700	\$4,700
<b>Supervisory Valve</b>					
37	Supervisory Valve, including electrical and telemetry	1	LS	\$125,000	\$125,000
<b>Pressure Reducing Valve Station</b>					
38	PRV Station	3	LS	\$88,500	\$265,500
Subtotal Construction Cost:					\$3,394,350
Contingency Allowance @ 15%:					\$509,150
<b>TOTAL ESTIMATED CONSTRUCTION COST:</b>					<b>\$3,903,500</b>
SUBTOTAL INDIRECT COSTS:					\$901,500
<b>TOTAL ESTIMATED PROJECT COST:</b>					<b>\$4,805,000</b>

**Table 10: Preliminary Cost Estimate – Open-Cut Trench Replacement (USDA Funded)**

<b>NO.</b>	<b>DESCRIPTION</b>	<b>QTY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL COST</b>
1	10-inch Directional Drill	90	LF	\$400	\$36,000
2	10-inch PVC Water Main w/A1 Backfill	3,700	LF	\$185	\$684,500
3	8-inch PVC Water Main w/A1 Backfill	17,085	LF	\$160	\$2,733,600
4	6-inch PVC Water Main w/A1 Backfill	2,710	LF	\$135	\$365,850
5	4-inch PVC Water Main w/A1 Backfill	1,065	LF	\$125	\$133,125
6	4-inch Water Service w/A1 Backfill	20	LF	\$120	\$2,400
7	2-inch Water Service w/A1 Backfill	120	LF	\$105	\$12,600
8	2-inch Water Service w/A4 Backfill	180	LF	\$95	\$17,100
9	1-inch Water Service w/A1 Backfill	6,085	LF	\$95	\$578,075
10	1-inch Water Service w/A4 Backfill	385	LF	\$90	\$34,650
11	2-inch Water Reconnections	2	EA	\$2,600	\$5,200
12	1-inch Water Service Reroutes	27	EA	\$3,300	\$89,100
13	Fire Hydrants	36	EA	\$7,800	\$280,800
14	10-inch Gate Valves	11	EA	\$3,650	\$40,150
15	8-inch Gate Valves	55	EA	\$2,700	\$148,500
16	6-inch Gate Valves	56	EA	\$2,300	\$128,800
17	4-inch Gate Valves	10	EA	\$1,850	\$18,500
18	2-inch Gate Valves	6	EA	\$1,250	\$7,500
19	4-inch Water Service Box, Plumbing & Meter, Complete	2	EA	\$10,400	\$20,800
20	4-inch Water Check Valve & Box, Complete	2	EA	\$8,000	\$16,000
21	3-inch Water Service Box, Plumbing & Meter, Complete	1	EA	\$6,600	\$6,600
22	2-inch Water Service Box, Plumbing & Meter, Complete	3	EA	\$3,600	\$10,800
23	2-inch Water Check Valve & Box, Complete	2	EA	\$3,000	\$6,000
24	1-inch Water Service Box, Plumbing & Meter, Complete	300	EA	\$950	\$285,000
25	1-inch Water Check Valve & Box, Complete	57	EA	\$520	\$29,640
26	Swap 5/8-inch meter inside existing meter box and provide new lid	870	EA	\$855	\$743,850
27	Swap 3/4-inch meter inside existing meter box and provide new lid	2	EA	\$880	\$1,760
28	Swap 1-inch meter inside existing meter box and provide new lid	16	EA	\$1,000	\$16,000
29	Swap 1½-inch meter inside existing meter box and provide new lid	13	EA	\$2,100	\$27,300
30	Combination Air Valve	1	EA	\$5,200	\$5,200
31	Blow Off	5	EA	\$4,150	\$20,750
32	Concrete Replacement	2,750	SF	\$37	\$101,750
33	Concrete Road Adder	2,300	LF	\$26	\$59,800
34	Laptop computer (with Autoview software) for drive-by reading	1	EA	\$51,000	\$51,000
35	AutoRead Software with FlexNet Module	1	EA	\$6,250	\$6,250
36	Set up and Training (Up to two days)	1	EA	\$5,200	\$5,200
37	Hand-held Reader & stand	1	EA	\$12,500	\$12,500
38	3096 Touch Reader Plus Units	3	EA	\$1,100	\$3,300
39	Command Link & GPS Unit	1	EA	\$3,100	\$3,100
40	GPS Software (Mapping)	1	EA	\$7,200	\$7,200
41	On-going Annual Software Maintenance-First year	1	EA	\$4,125	\$4,125
42	Billing Software modifications	1	EA	\$5,250	\$5,250
43	Additional Meters and Spares	1	LS	\$30,300	\$30,300
44	PRV Station	1	LS	\$85,000	\$85,000
45	Bridge Crossing	1	LS	\$250,000	\$250,000
46	Traffic Control	1	LS	\$150,000	\$150,000
47	Trench Sheeting, Shoring, and Bracing, complete	1	LS	\$40,000	\$40,000
48	Project Sign	1	EA	\$2,075	\$2,075
Subtotal Construction Cost:					<b>\$7,323,000</b>
Contingency Allowance @ 15%:					<b>\$1,098,000</b>
<b>TOTAL ESTIMATED CONSTRUCTION COST:</b>					<b>\$8,421,000</b>
SUBTOTAL INDIRECT COSTS:					<b>\$2,298,000</b>
<b>TOTAL ESTIMATED PROJECT COST:</b>					<b>\$10,719,000</b>

**Table 11: Present Worth Analysis for Proposed Alternative**

<b>Alternative</b>	<b>Total Alternative Cost</b>	<b>Annual O&amp;M</b>	<b>O&amp;M Present Worth (P/A, 0.3%, 20 Yrs)<sup>1</sup> PW Factor = 19.384</b>	<b>Salvage Value</b>	<b>Salvage Value Present Worth (P/F, 0.3%, 20 Yrs)<sup>1</sup> PW Factor = 0.941</b>	<b>Net Present Worth</b>
A1 - Spring Improvements	\$1,078,000	\$10,000	\$193,836	\$770,000	\$725,224	\$919,060
A3 - Consolidation	\$11,102,130	\$15,000	\$290,754	\$7,930,093	\$7,468,951	\$7,759,705
B1 - 0.9 MG Storage Tank	\$4,805,000	\$10,000	\$193,836	\$3,603,750	\$3,394,189	\$3,588,025
C1 - Open-Cut Trench	\$10,719,000	\$13,000	\$251,987	\$7,656,429	\$7,211,201	\$7,463,188
<b>Proposed Project (A1, B1, &amp; C1)</b>	<b>\$16,602,000</b>	<b>\$33,000</b>	<b>\$639,659.60</b>	<b>\$11,858,571</b>	<b>\$11,168,985</b>	<b>\$11,808,645</b>

1. Present worth (PW) based on 0.3% 20-year discount rate. Interest rate based on real 20-year federal discount rate from Appendix C of OMB Circular A-94 per USDA PER guidelines: <https://www.whitehouse.gov/wp-content/uploads/2019/12/Appendix-C.pdf>

**Table 12: Project Schedule**

<b>Action</b>	<b>Target Date</b>	<b>Completion Date</b>
City authorizes PACE to prepare funding applications		Mar 2, 2016
PACE submits Final Drinking Water State Revolving Fund (DWSRF) application for planning funding		Feb 10, 2017
City obtains DWSRF Planning Grant Commitment		Oct 17, 2017
City authorizes PACE to proceed with Environmental Documentation, Engineering Project Report, Survey, and Construction Application		Dec 21, 2017
Draft Environmental to City and PACE for review		Jun 19, 2019
City authorizes PACE to proceed with finalizing construction documents		Jul 1, 2019
Draft Engineering Project Report to City for review		Jul 14, 2019
City adopts Environmental		Jul 17, 2019
City finalizes Engineering Project Report		Jan 29, 2020
USDA RD Funding Application Submitted	Jan 30, 2020	
City obtains construction funding commitments	Mar 16, 2020	
City/PACE advertises for public bids	Apr 1, 2020	
City hosts public bid opening	Apr 30, 2020	
City issues Notice to Proceed to Contractor	Jun 1, 2020	
Construction completed	Oct 15, 2021	

**Table 13: Water Enterprise Fund Short-Lived Asset Reserve**

<b>Short-Lived Asset</b>	<b>Replacement Period</b>	<b>Estimated Cost</b>	<b>Annual Reserve</b>
Computer Work Stations	5	\$5,000	\$1,000
Lab Equipment	5	\$10,000	\$2,000
Trash Pumps and Generators	5	\$3,000	\$600
Utility Locate Equipment	5	\$10,000	\$2,000
Trench Compaction Equipment	5	\$5,000	\$1,000
Meter Reading Equipment	5	\$15,000	\$3,000
Lookout Booster Pumps and Motors	10	\$40,000	\$4,000
Telemetry Equipment	10	\$20,000	\$2,000
Work Truck	10	\$30,000	\$3,000
Emergency Chlorination Equipment Replacement	15	\$19,500	\$1,300
Maintenance on Lookout Booster Pump Station	15	\$15,000	\$1,000
Dump Truck (1/3 cost Sewer, Water, Streets)	15	\$120,000	\$8,000
Backhoe (1/3 cost Sewer, Water, Streets)	15	\$150,000	\$10,000
Subtotal Annual Cost:			\$38,900

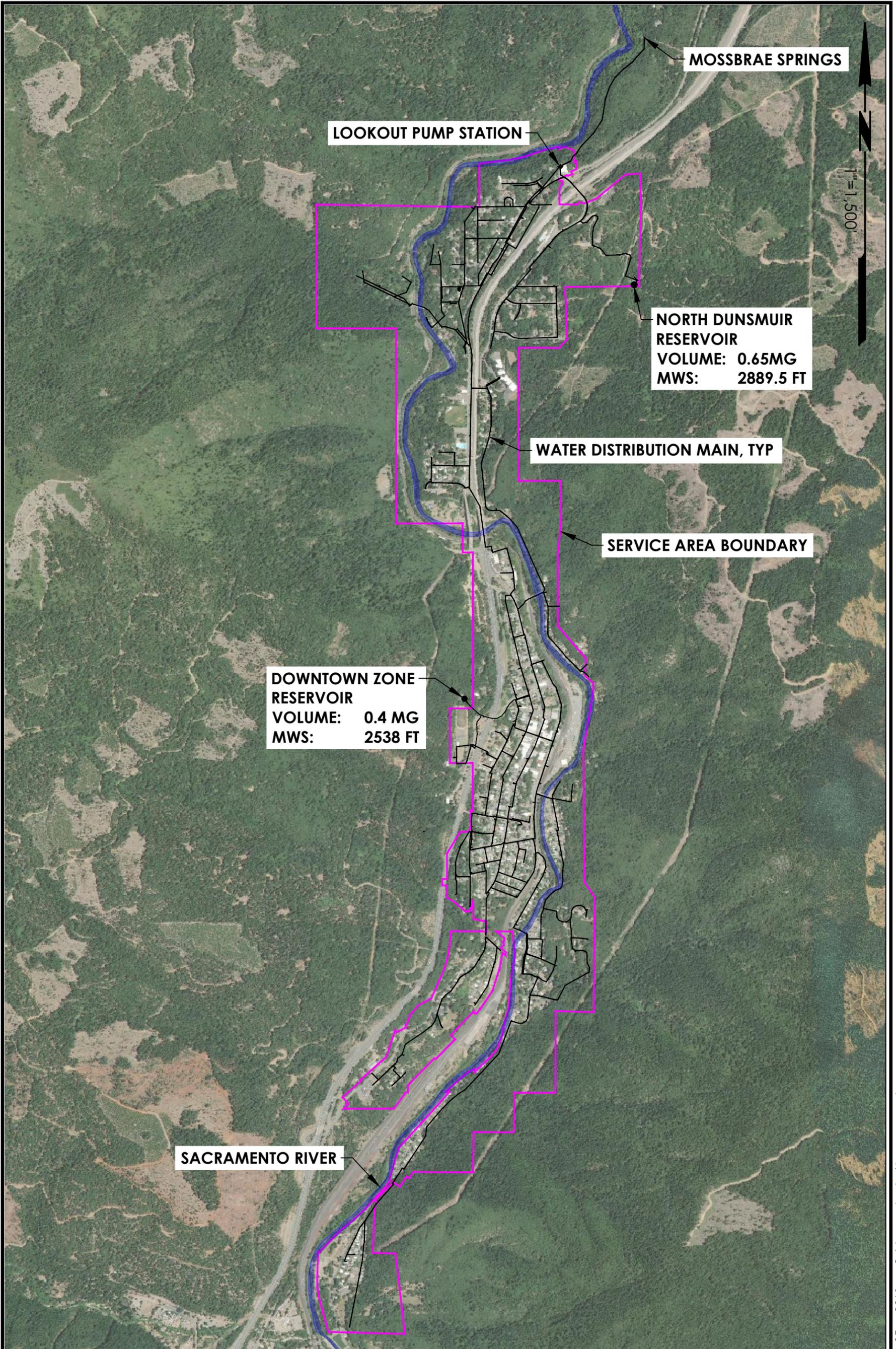
**Table 14: Total Project Cost Estimate – USDA Funded Project**

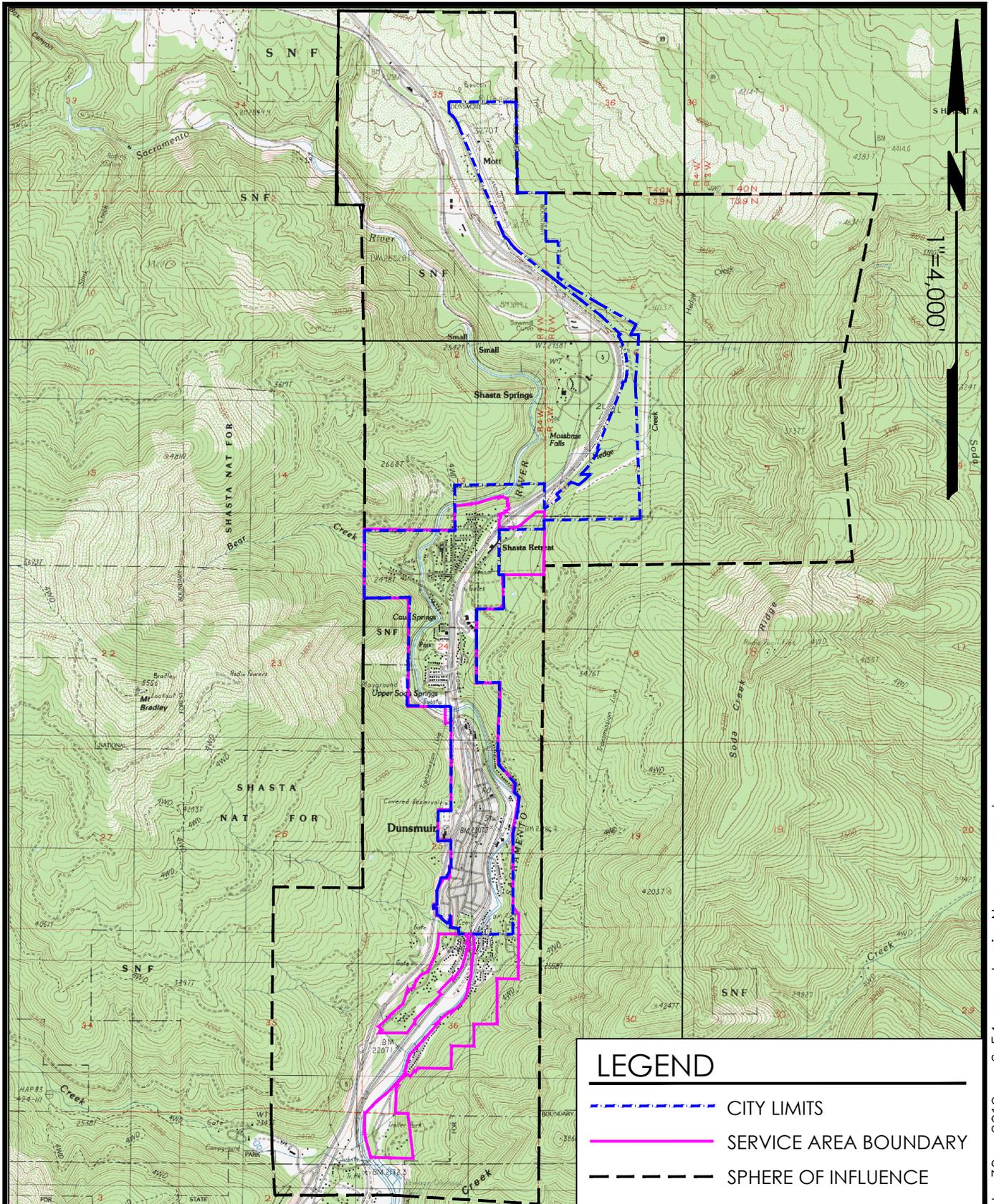
NO.	DESCRIPTION	QTY	UNITS	UNIT COST	TOTAL COST
1	10-inch Directional Drill	90	LF	\$400	\$36,000
2	10-inch PVC Water Main w/A1 Backfill	3,700	LF	\$185	\$684,500
3	8-inch PVC Water Main w/A1 Backfill	17,085	LF	\$160	\$2,733,600
4	6-inch PVC Water Main w/A1 Backfill	2,710	LF	\$135	\$365,850
5	4-inch PVC Water Main w/A1 Backfill	1,065	LF	\$125	\$133,125
6	4-inch Water Service w/A1 Backfill	20	LF	\$120	\$2,400
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11	2-inch Water Reconnections	2	EA	\$2,600	\$5,200
12	1-inch Water Service Reroutes	27	EA	\$3,300	\$89,100
13	Fire Hydrants	36	EA	\$7,800	\$280,800
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22	2-inch Water Service Box, Plumbing & Meter, Complete	3	EA	\$3,600	\$10,800
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48	Project Sign	1	EA	\$2,075	\$2,075
Subtotal Construction Cost:					<b>\$7,323,000</b>
Contingency Allowance @ 15%:					<b>\$1,098,000</b>
<b>TOTAL ESTIMATED CONSTRUCTION COST:</b>					<b>\$8,421,000</b>
<b>INDIRECT COSTS</b>					
Project Administration*:					\$33,000
Project Report*:					\$26,000
Property/Design Surveying & Mapping*:					\$81,000
Environmental Documentation*:					\$67,000
Right-of-Way Acquisition*:					\$13,000
Preliminary Design*:					\$280,000
Permits & Union Pacific Railroad Encroachment Permit:					\$32,000
Final Design:					\$394,000
Bond Counsel Services:					\$50,000
Bidding:					\$30,000
Construction Administration:					\$422,000
Construction Observation:					\$590,000
Post Construction Services:					\$20,000
Interim Financing Fees & Interest:					\$260,000
SUBTOTAL INDIRECT COSTS:					<b>\$2,298,000</b>
Drinking Water State Revolving Fund Planning Grant:					<b>-\$500,000</b>
<b>TOTAL ESTIMATED PROJECT COST:</b>					<b>\$10,219,000</b>

\*DWSRF Planning Grant Tasks

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**FIGURES**



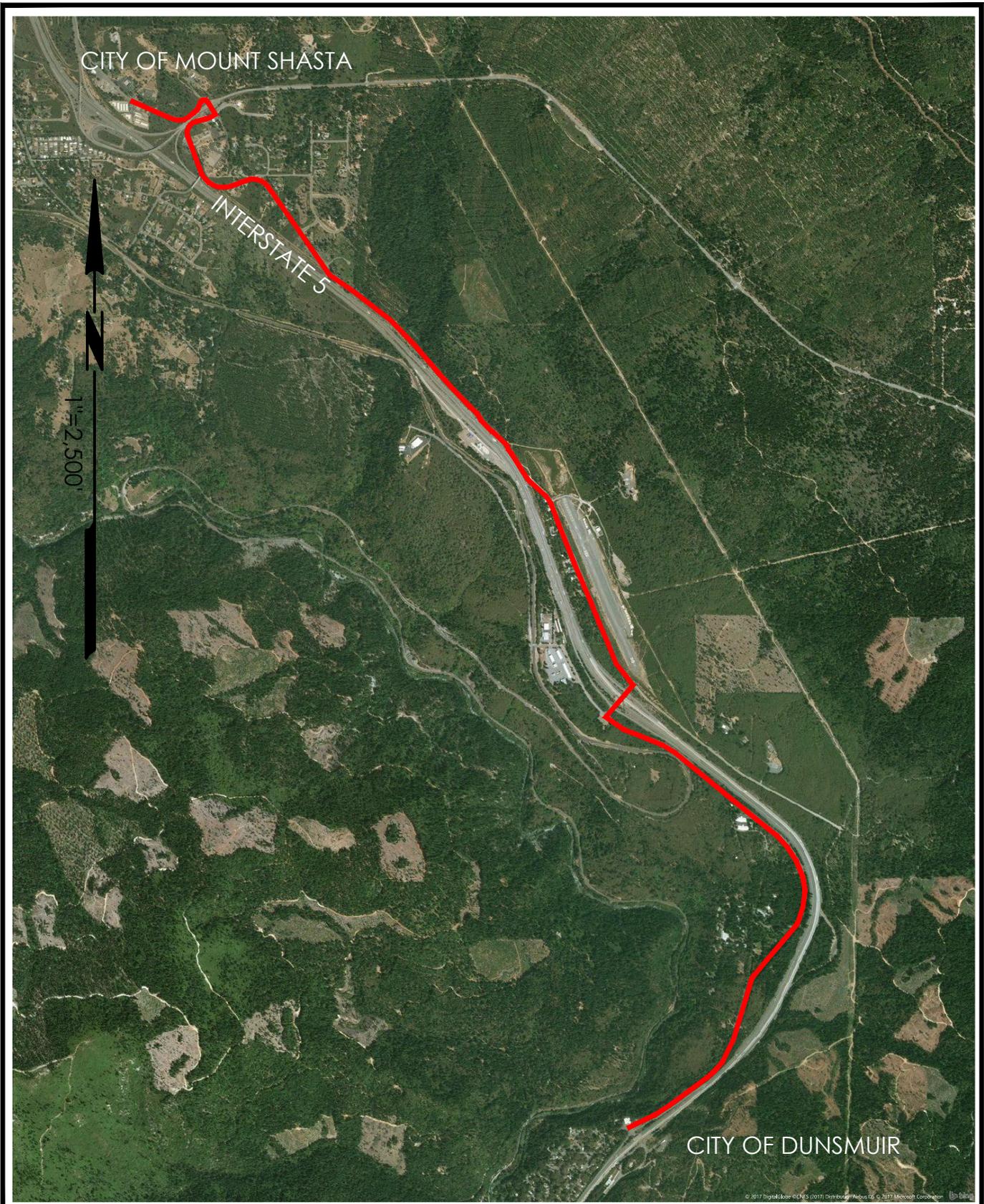


DATE  
7/19



CITY OF DUNSMUIR  
SERVICE AREA  
BOUNDARY

FIGURE 2  
JOB #204.63



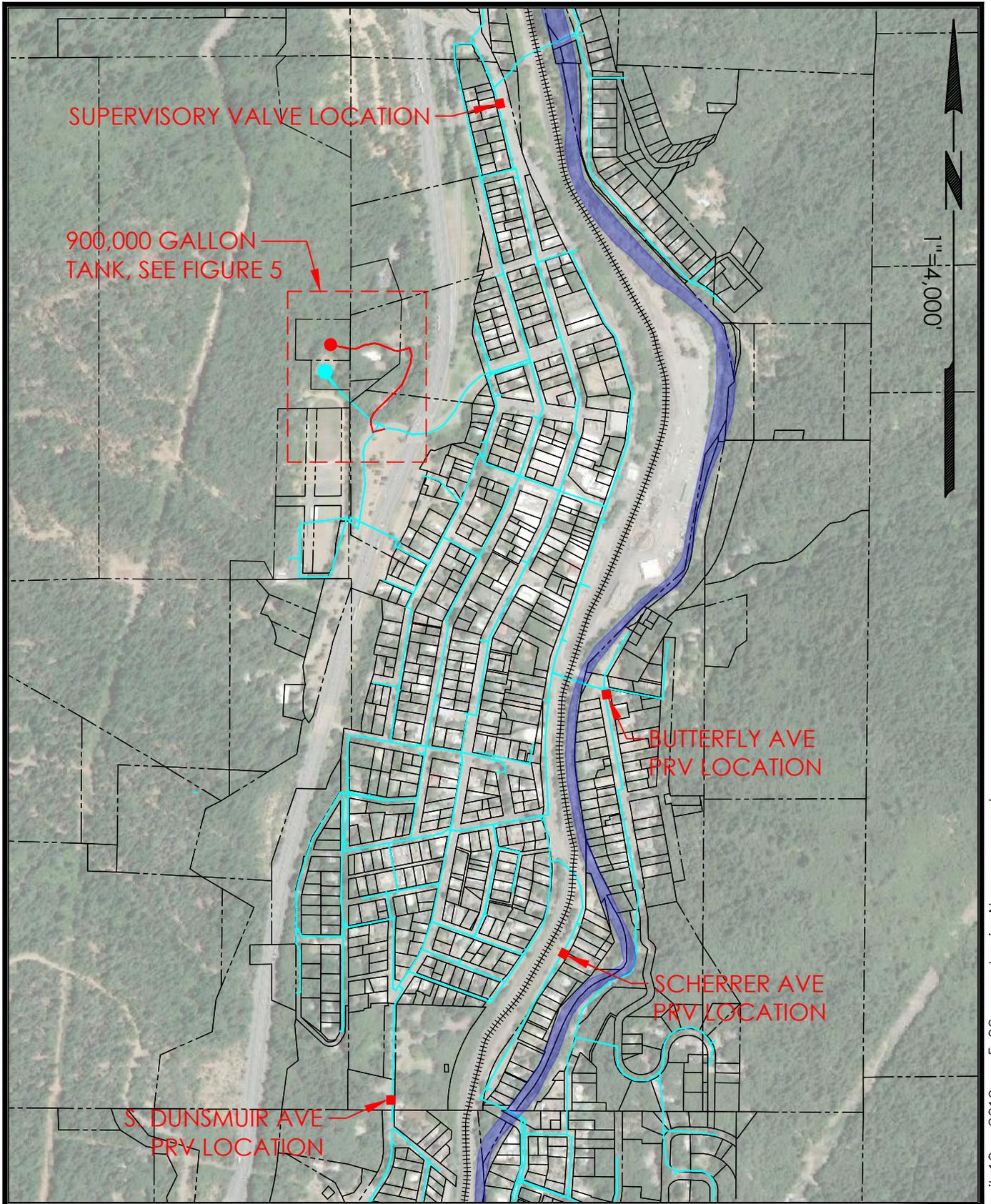
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4/19



CITY OF DUNSMUIR  
WATER SYSTEM IMPROVEMENT PROJECT  
CONSOLIDATION ALTERNATIVE

FIGURE 3  
JOB # 204.63

Plot Date: January 25, 2018 - 4:16 pm Login Name: pcibart  
File Name: M:\Jobs\0204\0204.63 Water Main Replacement Project - Planning\PC Report Drafting\Consolidation.dwg, Layout: 8.5x11 Portrait



SUPERVISORY VALVE LOCATION

900,000 GALLON TANK, SEE FIGURE 5

BUTTERFLY AVE PRV LOCATION

SCHERRER AVE PRV LOCATION

S. DUNSMUIR AVE PRV LOCATION

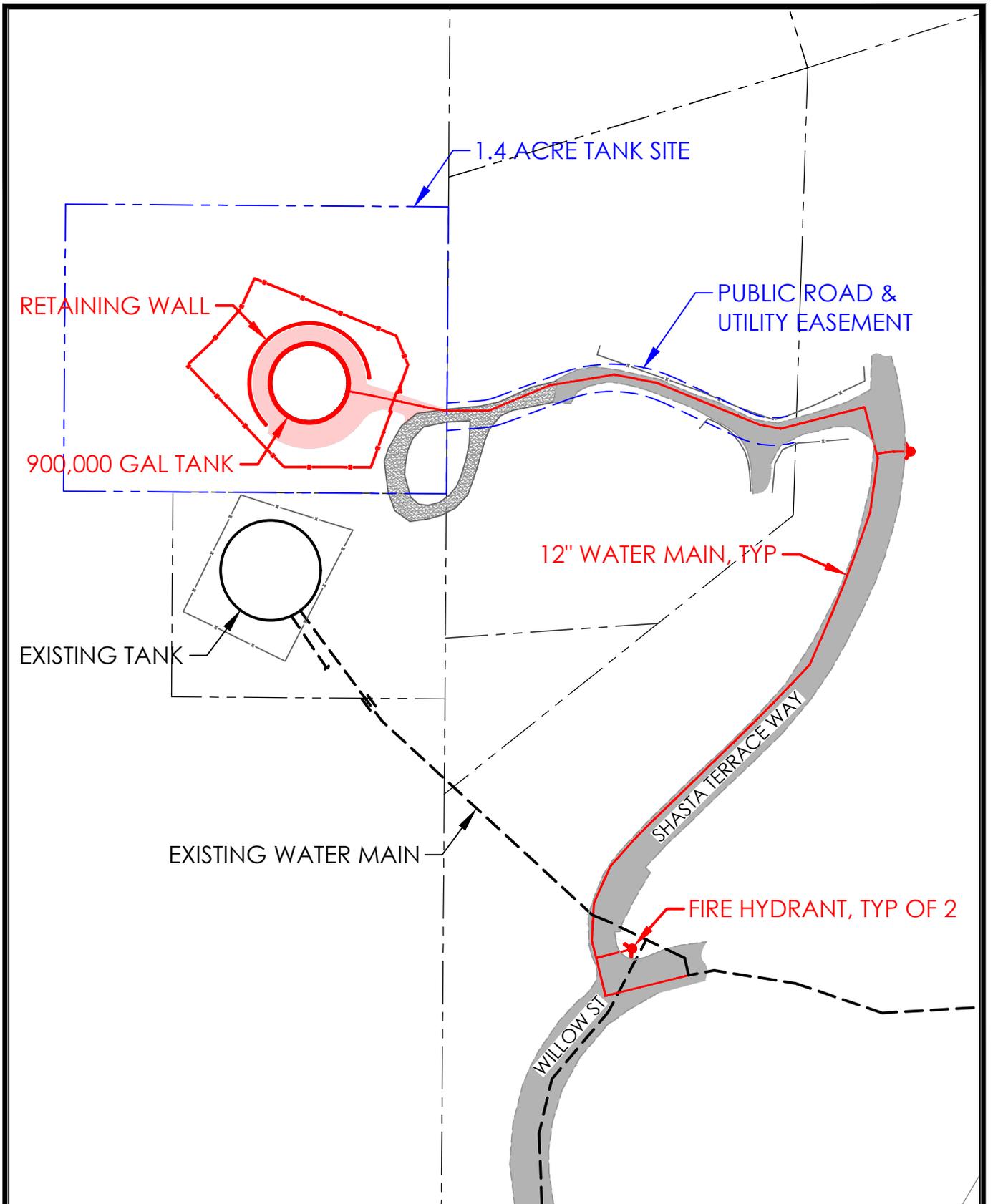
1"=4,000'

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4/19



CITY OF DUNSMUIR  
PROPOSED STORAGE TANK  
PROJECT OVERVIEW

FIGURE 4  
JOB #204.63



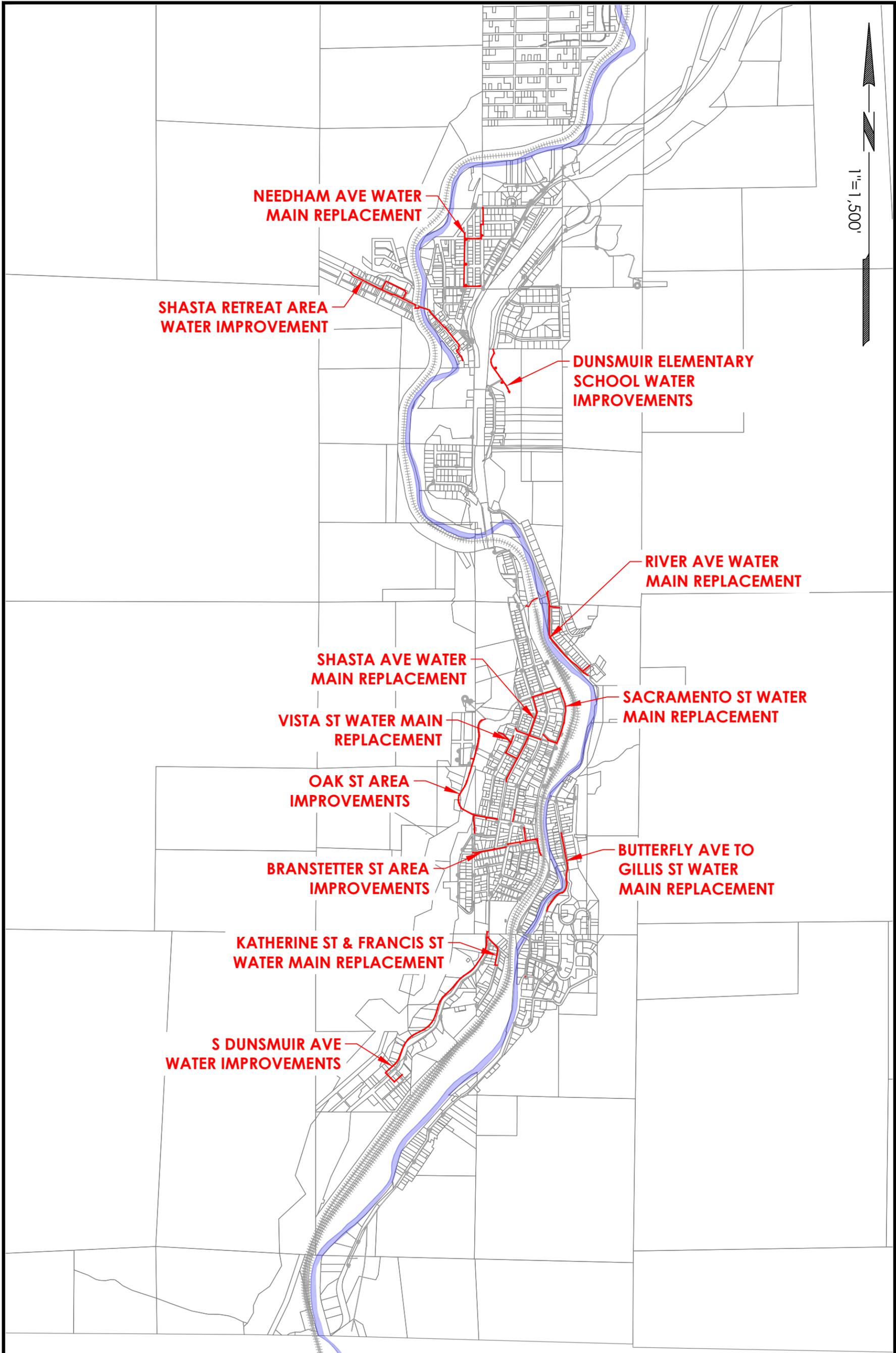
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CITY OF DUNSMUIR  
PROPOSED STORAGE TANK  
IMPROVEMENTS

FIGURE 5

JOB #204.63



**CITY OF DUNSMUIR  
PROPOSED DISTRIBUTION  
SYSTEM IMPROVEMENTS**

FIGURE 6

DATE: 9/19

JOB #204.63

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## **APPENDICES**

# **APPENDIX A**

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Rate Adoption Study

## **NOTICE OF PUBLIC HEARING ON PROPOSED WATER RATE INCREASES**

**Thursday, March 3, 2016, at 6 p.m.  
Council Chambers, 5902 Dunsmuir Ave., Dunsmuir, CA 96025**

The City of Dunsmuir wishes to notify you of a Public Hearing before the City Council on March 3, 2016, at 6:00 p.m. in the City Council Chambers, 5902 Dunsmuir Ave., Dunsmuir, CA, to discuss proposed water rate increases that, if approved, will commence on March 25, 2016, and continue through December 25, 2021.

The City will accept public comments at the Public Hearing. Written protests may be submitted before or at this Public Hearing. Written protest may be hand-delivered or mailed to the City Clerk at City Hall, 5915 Dunsmuir Ave., Dunsmuir, CA 96025, or personally submitted at the City Council meeting prior to the close of the Public Hearing. To be valid, protest must be in writing, state opposition to the proposed rate increases, and include the property owner's or customer's name and address, as well as the parcel number or address of the property served. Protests must be signed by the property owner or by the tenant directly responsible for payment of the fess subject to the proposed increase. Only one protest will be counted per parcel. While oral comments at the public hearing are welcome, those comments will not qualify as a valid written protest.

The proposed water rate increases are necessary to address the need to replace water mains that are beyond their use expectancy. Recent water system master plan report and water utility rate study report show source of water served by Dunsmuir water utility is excellent. Both reports note that the distribution system (water mains) has not been adequately maintained and 50,000 feet of old steel pipes with a life expectancy of 50 years are still in the ground 10, 20 and more years beyond when they should have been replaced. This has resulted in an

extremely large number of leaks occurring and needing to be temporarily fixed by clamps. This has resulted in loss of water and continuous need to decontaminate large sections of water mains adjacent to the break in the pipe.

In order to correct the “lack of maintenance” found to exist, a series of rate increases are proposed over the next five years. Along with grants anticipated to be received and low interest loans that may be available, increased fees are needed to adequately move maintenance of the water system forward.

A CDBG grant that has been awarded will replace about 6,200 feet of pipe. Remaining improvements to correct deficiencies are needed to about 23,400 additional feet of old steel pipe. Estimated cost for this work is \$9.4 million. City is awaiting word that IRWM grant for \$1.25 million applied for but yet to be awarded will be available to replace more mains in 2016. City has also applied for \$2.197 million grant to replace 105 years old leaking concrete water tank located adjacent to High School and water mains that serve it. If funded, that work could be done in 2017.

The remaining \$5.5 million needed is to replace an additional 16,200 feet of old steel pipe well beyond its life expectancy. None of the proposed work will serve new development or growth. Therefore developer fees are not available for this work.

It is proposed water rates be gradually increased in phases over the next five years. The rates proposed will allow for some of the remaining work to be planned and engineered. When rates reach 1½% of median household income, the City would be eligible to apply for and receive additional grants and 40 year low interest loans to fund the remaining portion of work and service the loan(s) from fee revenues.

The proposed rates are based upon the Water Utility Rate study prepared by PACE Engineering and that report is available for review at City Hall.

If a majority of the property owners and/or current customers of record receiving water or having water available protest, the rates will not be increased. If that occurs, water rates will remain the same in the City of Dunsmuir and the water service areas outside City of Dunsmuir. There will be no moneys to replace overaged and stressed water mains and the integrity of the Dunsmuir water utility delivery system will remain at risk.

## Proposed Rate Increases

	Current	Proposed 2016-17	Proposed 2017-18	Proposed 2018-19	Proposed 2019-20	Proposed 2020-21	
<b><u>CONSUMPTION CHARGES (\$/Unit, 1 Unit=750 Gallons)</u></b>							
6 - 10 Units	-	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
11 - 30 Units	\$2.92	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
31 - 120 Units	\$2.07	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
Excess over 120 Units	\$1.14	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
<b><u>MONTHLY SERVICE CHARGES (\$/Mo)</u></b>							
							<b>Capacity Factor</b>
5/8" Meter	\$26.00	\$28.80	\$31.60	\$34.40	\$37.20	\$40.00	1.0
3/4" Meter	\$47.24	\$43.20	\$47.40	\$51.60	\$55.80	\$60.00	1.5
1" Meter	\$76.24	\$72.00	\$79.00	\$86.00	\$93.00	\$100.00	2.5
1-1/2" Meter	\$143.37	\$144.00	\$158.00	\$172.00	\$186.00	\$200.00	5.0
2" Meter	\$219.35	\$230.40	\$252.80	\$275.20	\$297.60	\$320.00	8.0
3" Meter	\$387.28	\$432.00	\$474.00	\$516.00	\$558.00	\$600.00	15.0
4" Meter	\$575.24	\$720.00	\$790.00	\$860.00	\$930.00	\$1,000.00	25.0
Flat Rate	\$27.60	\$30.58	\$33.55	\$36.53	\$39.49	\$42.45	

## **RESOLUTION NO. 2016-02**

### **A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF DUNSMUIR IN ACCORDANCE WITH DUNSMUIR CITY CODE SECTION 13.40.120 D. TO INCREASE RATES FOR WATER UTILITY SERVICES**

**WHEREAS**, the City commissioned an update to the 1994 Water Master Plan which is designated 2015 Dunsmuir Water Master Plan; and

**WHEREAS**, the 2015 Dunsmuir Water Master Plan reported a significant number of water main sections that should have been replaced years ago, and need to replace over 105 years old water storage tank to insure water pressure and fire protection in major sections of the City; and

**WHEREAS**, the City also commissioned the 2015 Water Utility Rate Study which reported need to increase rates for water utility services to enable replacement of water mains and water storage tank; and

**WHEREAS**, the City Council appointed an Ad Hoc Committee of two councilmembers and three community members to review, comment and provide recommendations regarding the Water Master Plan update and the Water Utility Rate study; and

**WHEREAS**, the Ad Hoc Committee, City staff, and City Council have agreed that the water utility rate increases are necessary to maintain the health and safety of the Dunsmuir Water system.

**WHEREAS**, the Ad Hoc Committee and the City Council have found that the proposed rates are equitable and fairly distribute the burden of system costs among the various classes of customers; and

**WHEREAS**, all meetings of the Ad Hoc Committee and City Council to consider the Water Master Plan and Water Utility Rate Study were notice and open to the public; and

**WHEREAS**, in accordance with provisions of State Law a notice of public hearing was mailed to all property owners regarding the proposed rates increased, and in accordance with City Council direction was also mailed to all customers; and

**WHEREAS**, protests filed regarding the rates were not sufficient to cause the proposed rates not to be adopted.

**NOW, THEREFORE, BE IT RESOLVED** by the City Council of the City of Dunsmuir as follows:

**Section 1.** The Water Utility Rate increases shown below are hereby adopted and to be effective throughout the Dunsmuir Water service area as of March 25 of each year beginning March 25, 2016.

**City of Dunsmuir - Water Utility  
Water Rates**

	Current 2015-16	Proposed 2016-17	Proposed 2017-18	Proposed 2018-19	Proposed 2019-20	Proposed 2020-21	
<b><u>CONSUMPTION CHARGES (\$/Unit, 1 Unit=750 Gallons)</u></b>							
6 - 10 Units	-	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
11 - 30 Units	\$2.92	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
31 - 120 Units	\$2.07	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
Excess over 120 Units	\$1.14	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
<b><u>MONTHLY SERVICE CHARGES (\$/Mo)</u></b>							<b>Capacity Factor</b>
5/8" Meter	\$26.00	\$28.80	\$31.60	\$34.40	\$37.20	\$40.00	1.0
3/4" Meter	\$47.24	\$43.20	\$47.40	\$51.60	\$55.80	\$60.00	1.5
1" Meter	\$76.24	\$72.00	\$79.00	\$86.00	\$93.00	\$100.00	2.5
1-1/2" Meter	\$143.37	\$144.00	\$158.00	\$172.00	\$186.00	\$200.00	5.0
2" Meter	\$219.35	\$230.40	\$252.80	\$275.20	\$297.60	\$320.00	8.0
3" Meter	\$387.28	\$432.00	\$474.00	\$516.00	\$558.00	\$600.00	15.0
4" Meter	\$575.24	\$720.00	\$790.00	\$860.00	\$930.00	\$1,000.00	25.0
Flat Rate	\$27.60	\$30.58	\$33.55	\$36.53	\$39.49	\$42.45	

**Section 2.** Any rates and fees of the City for water and water service which have heretofore been fixed by ordinance or resolution which are inconsistent with or in conflict with any of the rates and charges set forth herein are hereby repealed and rescinded to the extent of their inconsistency, effective March 25, 2016.

**Section 3.** A "Water Service Standby" fee equivalent to one-half of the meter base rate for a particular service is hereby established. This charge shall apply to those customers who request their water be turned off for periods throughout the year, such as vacation or second homes. The rationale for this fee is that operation and maintenance of the water system is an ongoing, day-to-day activity, benefiting all water services connected to the system, whether they are consuming water at a particular time or not.

**Section 4.** A "Water Service Modification" fee of \$50.00 per request is hereby established. The intent of this fee is to assess a reasonable charge to a customer requesting that a meter be shut off, turned on, or modified in some way.

**Section 5. CEQA EXEMPTION.** The approval of said water rates and fees by this City Council is exempt from the requirements of the California Environmental Quality Act under the provisions of the Public Resources Code, Section 21080 (b)(8), and this Council makes this claim of exemption pursuant to said section and authorized claim of exemption to be filed with the appropriate agencies.

**Section 6. VALIDITY.** That if any section, subsection, sentence, clause, or phrase in this Resolution or the application thereof to any person or circumstances is for any reason held invalid, the validity of the remainder of the Resolution or the application of such provision to other persons or circumstances shall not be affected thereby. The City Council hereby declares that it would have passed this Resolution and each section, subsection, sentence, clause, or phrase thereof, irrespective of the fact that one or more sections, subsections, sentences, clauses, or phrases or the application thereof to any person or circumstance be held invalid.

**Section 7. INCONSISTENCIES.** All resolutions or parts of resolutions inconsistent with this resolution are hereby repealed to the extent of such inconsistency.

**Section 8. PUBLISHED.** That the City Clerk shall certify to the passage of this resolution and cause the same to be posted at designated sites within the City and published in a newspaper distributed within the City of Dunsmuir.

\* \* \* \* \*

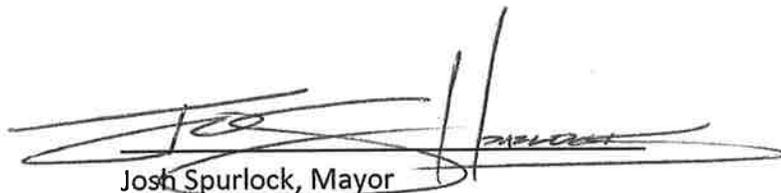
This resolution was considered at a public hearing held on March 3, 2016, and was adopted by the City Council of the City of Dunsmuir by the following vote:

AYES: Craig, Deutsch, Keisler, Spurlock

NOES: None

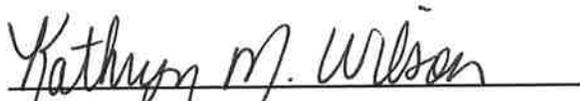
ABSENT: None

ABSTAINING: None



Josh Spurlock, Mayor

ATTEST:



Kathryn Wilson, City Clerk

## **APPENDIX B**

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2015 Water Utility Rate Study

# **WATER UTILITY RATE STUDY**

**CITY OF DUNSMUIR**

**NOVEMBER 2015**



# WATER UTILITY RATE STUDY

FOR

CITY OF DUNSMUIR  
5915 DUNSMUIR AVENUE  
DUNSMUIR, CA 96025

JOB No. 204.52

NOVEMBER 2015

PREPARED BY:

**PACE**   
ENGINEERING  
REDDING, CALIFORNIA



11/12/15

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## **ABBREVIATIONS**

AWWA	American Water Works Association
CDBG	Community Development Block Grant
CF	Cubic Feet (Note 100 CF = 748 gallons)
CPI	Consumer Price Index
CWCC	California Water Conservation Council
DIF	Development Impact Fee
DWSRF	Drinking Water State Revolving Fund
ENR	Engineering News Record
FY	Fiscal Year
GPM	Gallons per Minute
HE	Household Equivalent (i.e., typical single-family home)
HHS	Department of Health and Human Services
IRWM	Integrated Regional Water Management
M	Million
MG	Million gallons
MHI	Median Household Income
MOU	Memorandum of Understanding
MWP	Master Water Plan
RD	Rural Development
SCADA	Supervisory Control and Data Acquisition
SRF	State Revolving Fund
SWRCB	State Water Resource Control Board

# CHAPTER I

## EXECUTIVE SUMMARY

### **INTRODUCTION**

The City of Dunsmuir (City) owns and operates a water system consisting of spring supply facilities, storage reservoirs, a pump station, pressure reducing valve stations, and distribution piping. The water system is operated by the City as an independent enterprise through the Water Enterprise Fund.

### **PURPOSE AND SCOPE**

PACE Engineering prepared the City's 1994 Master Water Plan (MWP) and was hired in 2014 to prepare an update to an old master plan and perform a water utility rate study. Analysis of the Development Impact Fees needed to fund the system improvements related to growth is not included in the Scope of Work.

This report presents the results of the review and analysis of the City's current Water Enterprise Fund rates. This review was conducted to determine if the current rate structure can provide the revenues needed to allow the City to recover the total costs of the Water Enterprise from existing and future customers. Costs that were reviewed included the costs of operation and maintenance, debt service, normal additions and replacements to the systems, administrative costs, and capital improvement programs.

The purpose of the study is to identify possible changes to the City's current rate structures, which may be required to provide the future revenues needed to meet projected costs. In addition, the City requested that the rate structures be equitable such that, as nearly as practical, each customer would pay their fair share of the costs of providing the services received.

The scope of this study includes a review and analysis of the operation of the City's Water Enterprise based upon historic expenditures and revenues. Future revenue requirements for funding capital improvements are based on findings from the 2015 MWP, which was completed concurrently with this study.

In order to facilitate public involvement and create a transparent environment from which the rate study was generated, the City formed a “Citizen’s Committee” made up of two City Council members and three community members. Five (5) public workshops were completed with the Citizen’s Committee in which members of the public attended to hear discussions and offer feedback. In addition, draft rate study results were presented at two City council meetings for consideration and comment by the public.

The work performed included:

- Hosting public meetings with Citizen’s Committee members to collect and review available information and review the methodology to be used in the development of the recommended rate structures for water services.
- Reviewing historical account information and anticipated future costs for the 5-year study period (FY 2016-17 through FY 2020-21).
- Prioritize capital improvement funding needs based on results of the City’s 2015 MWP, completed concurrently with the rate study.
- Develop a forecast of the annual revenue requirements.
- Recommend rate structures that will generate the level of revenue needed, with a distribution of those costs on an equitable basis between current and new customers, as well as by class of customer.

## **STUDY ASSUMPTIONS**

The following assumptions were used to analyze and project future costs, revenues, and rates for this study:

- Proposed Water Enterprise Fund rates must generate sufficient revenues to cover the costs of system operation and maintenance, replacement capital improvements, and debt service allocated to system users.

- The Water Enterprise Funds will operate with a balanced budget, maintaining adequate reserve and replacement funds.

## **WATER RATE AND FINANCIAL RECOMMENDATIONS**

**SUMMARY OF FINDINGS:** Findings related to the City’s water rates are summarized below:

- The current water rate structure consists of a fixed monthly service charge and “declining block” consumption rate schedule that applies to all water use in excess of 7,500 gallons (10 units) per month. The fixed monthly service charge for each account is based on hydraulic capacity of the size of meter that serves the account.
- The current water rate structure is fairly easy to understand and administer. However, the “declining block” structure does not promote water conservation and benefits high water users within the community. Therefore, it is not the most equitable to all user classes.
- Currently, approximately 57 percent of water rate revenues are generated from the fixed monthly service charges. The remaining 43 percent are derived from consumption charges and are subject to changes in overall water consumption.
- Reduced consumption during years with higher than normal rainfall can result in less revenue than anticipated based on historical consumption records. Therefore, it is recommended the City adopt a policy of maintaining a minimum operating reserve of 25 percent of total budget expenses less on-going capital projects.
- Water rates need to provide sufficient revenues to sustain the capital replacement program at levels desired for long-term system reliability.

**WATER RATE RECOMMENDATIONS:** The water rates recommended for adoption for FY 2016-17 through FY 2020-21 are summarized in Table 1. These water rates were adopted by the City Council at its November 5, 2015 regular council meeting. The analyses contained in this report assume that the proposed FY 2016-17 rates will become effective on July 1, 2016.

**TABLE 1**  
**City of Dunsmuir - Water Utility**  
**Recommended Water Rates**

	Current FY 15-16	Proposed FY 16-17	Proposed FY 17-18	Proposed FY 18-19	Proposed FY 19-20	Proposed FY 20-21	
<b>CONSUMPTION CHARGES (\$/Unit, 1 Unit=750 Gallons)</b>							
6 - 10 Units	-	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
11 - 40 Units	\$2.92	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
41 - 160 Units	\$2.07	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
Excess over 160 Units	\$1.15	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
<b>MONTHLY SERVICE CHARGES (\$/Mo)</b>							<b>Capacity Factor</b>
5/8" Meter	\$26.00	\$28.80	\$31.60	\$34.40	\$37.20	\$40.00	1.0
(Note 1): 5/8" Meter (Lifeline or Low Income)	\$24.00	\$26.80	\$29.60	\$32.40	\$35.20	\$38.00	-
3/4" Meter	\$47.24	\$43.20	\$47.40	\$51.60	\$55.80	\$60.00	1.5
1" Meter	\$76.24	\$72.00	\$79.00	\$86.00	\$93.00	\$100.00	2.5
1-1/2" Meter	\$143.37	\$144.00	\$158.00	\$172.00	\$186.00	\$200.00	5.0
2" Meter	\$219.35	\$230.40	\$252.80	\$275.20	\$297.60	\$320.00	8.0
3" Meter	\$387.28	\$432.00	\$474.00	\$516.00	\$558.00	\$600.00	15.0
4" Meter	\$575.24	\$720.00	\$790.00	\$860.00	\$930.00	\$1,000.00	25.0
Flat Rate	\$27.60	\$30.58	\$33.55	\$36.53	\$39.49	\$42.45	
NOTES: 1. Only applies to qualifying families with 5/8" meter.							

The current average water bill for a typical residence with 5/8" meter is about \$34.50 per month. If the same water use trends continue, it is expected the average water bill for a 5/8" residential customer will increase to about \$47.77 per month by FY 2020-21 based on the proposed rates shown in Table 1.

The recommendations for the water rate structure include:

- The City should continue to determine each account's fixed monthly service charge based on the meter hydraulic capacity factors shown in the far right column in Table 1, wherein the base rate reflects the hydraulic impact on the water system resulting from the larger meter size.

- Similar to the City’s Sewer Enterprise Fund, it is recommended the City gradually increase water rates such that the average monthly rate exceeds 1.5% of the median household income (MHI) within the service area. This will allow the City to qualify for larger grants and favorable terms on long-term, low interest loans for funding large capital replacement projects in the future.
- It is recommended the City adopt a “Lifeline” or low-income base water rate for qualifying families with 5/8” meter. It is proposed the discount be \$2 per month off the normal base charge. The City should work with its legal counsel to develop an application form which, 1) requires proof of income, and 2) establishes the income threshold from which the applicant’s income is compared. Income thresholds are typically established by the Department of Health and Human Services (HHS) or other similar agency.
- The current “declining” tiered rate structure should be eliminated, and a “uniform” rate structure adopted, as proposed. In the future, the City may even consider moving toward an “inclining” tiered rate structure.

**WATER FINANCIAL PLAN RECOMMENDATIONS:** The following recommendations are made with respect to the water fund structure and reserve policies. These recommendations are intended to improve the financial condition of the water utility and minimize the potential for future rate volatility.

- The water utility should maintain a minimum operating reserve of 25 percent of the budgeted total expenses less on-going capital projects. The designated operating reserve will provide funds available for emergencies, unanticipated fluctuations in revenues relative to costs, and other unforeseeable events.
- The water utility should maintain a Debt Reserve Fund and a Short-Lived Assets Replacement Reserve Fund in accordance with the Letter of Conditions associated with the City’s loans from USDA Rural Development.
- Water Improvements Fund – The City enacted a series of water rate increases in 2013 and 2014 to increase the 5/8” base rate from \$18 to \$26 per month. This increase resulted in accumulation of revenue to allow the City to immediately begin planning and design

for major water system replacement projects. Additional accumulated revenue should be used for this purpose. After the projects are constructed, additional revenue will be used to make annual debt payments on long-term loans and fund-required reserves. Specific capital project needs were identified in the 2015 MWP.

- It is recommended the City adopt a “Water Service Modification” fee of \$50 per request. The intent of this fee is to assess a reasonable charge to a customer requesting that a meter be shut off, turned on, or modified in some way.
- It is recommended the City adopt a “Water Service Standby” fee equivalent to one-half of the meter base rate for a particular service. This charge shall apply to those customers who request their water be turned off for periods throughout the year, such as vacation or second homes. The rationale is that operation and maintenance of the water system is an ongoing, day-to-day activity, benefiting all water services connected to the water system, whether they are consuming water at a particular time or not.
- Review inflationary trends annually using the American Cities Municipal Index, and confirm that inflation is still within the inflation factors used in the five-year financial plan. Higher than projected inflation may require adjustments to the proposed rate schedule.
- Update this Utility Rate Study within five years, such that a new five-year study can be adopted and implemented by July 1, 2021.

## CHAPTER II WATER UTILITY

### **CURRENT WATER USE RATES**

The City implemented a series of water rate increases between July 2010 and April 2014 that increased the fixed monthly rate from \$13 to \$26 per month for single family customers with 5/8” meters. The fixed monthly service charge allocated 10 units of water to each single-family customer. One unit of water is equal to 750 gallons. Consumption rates were increased as well. Table 2, below, summarizes the City’s historical water rates since July 2001.

Based on City financial data, it is estimated that the fixed monthly service charges generated about 57 percent of the water rate revenues for FY 2014-15. The remaining 43 percent is generated through consumption charges based on the actual water used.

**TABLE 2  
City of Dunsmuir – Water Utility  
Historical and Current Water Use Rates**

	July 1, 2001 to June 30, 2010	July 1, 2010 to Sept. 30, 2013	Oct. 1, 2013 to March 31, 2014	April 1, 2014 to June 30, 2016
<b><u>Consumption Charges (\$/Unit)</u></b>				
11-40 Units	\$1.46	\$2.02	\$2.47	\$2.92
41-60 Units	\$1.03	\$1.43	\$1.75	\$2.07
Excess over 160 Units	\$0.57	\$0.79	\$0.97	\$1.15
<b><u>Monthly Service Charges (\$/Month)</u></b>				
5/8” Meter	\$13	\$18	\$22	\$26

## HISTORICAL GROWTH AND EXPENDITURES

**WATER UTILITY CUSTOMERS AND WATER USE – HISTORY:** According to City-data.com, there has not been significant growth within the City of Dunsmuir in recent years. Data indicates the population of Dunsmuir between 2000 and 2013 has increased by about 17.7 percent. It is not anticipated this growth trend will change much in the coming years due to local economic factors and the fact that the majority of easily developable land in Dunsmuir is mostly developed. The north Dunsmuir area to Mott Airport has the highest potential for future growth, but the City is unaware of any pending or potential developments in this area.

For planning purposes for this rate study and to project the most conservative revenue projections, it is assumed the population served by the City’s water system will be unchanged for the next five years. If unexpected growth does occur, and revenue is higher than projected, the City will apply the additional funds toward replacement of deteriorated infrastructure.

In July 2014, the City of Dunsmuir had a total of 1,220 water accounts. The accounts are segregated into the following meter sizes:

	<u>No. of Accounts</u>
5/8” Meter:	1,170
3/4” Meter:	2
1” Meter:	16
1-1/2” Meter:	13
2” Meter:	15
3” Meter:	3
<u>4” Meter:</u>	<u>1</u>
TOTAL:	1,220

Significant fluctuations in water demand due to weather variations can impact the stability of the water utility revenue. To a lesser degree, local economic conditions can also impact water consumption and water utility revenue. Thus, it will be important to maintain adequate operating reserves to handle the loss in expected revenue during low water consumption years. The

proposed rate increases will likely cause some customers to conserve water use in order to reduce the financial impact of the rate increases. This phenomenon is called “price elasticity.” For revenue projection purposes, it has been assumed the projected revenue will be reduced by 20% of the expected increase.

**WATER UTILITY EXPENDITURES:** Water utility expenditures for operation and maintenance and for replacement capital projects are normally made from the Water Enterprise Fund. Table 3 is a summary of the Water Enterprise Expenditures for FY 2012-13 through 2014-15. Itemized expenditures for FY 2013-2014 were not available.

**TABLE 3  
City of Dunsmuir – Water Utility  
Historical Expenditures**

	Expended (FY 12-13)	Expended (FY 13-14)	Expended (FY 14-15)
Personnel & Related Expenses	\$133,358	\$135,792	\$130,054
Contract Services	\$5,731	\$-	\$8,368
General & Administrative Services	\$59,952	\$-	\$92,198
Repairs and Maintenance	\$17,656	\$-	\$31,641
Materials and Supplies	\$23,812	\$-	\$22,077
Insurance and Permits	\$14,599	\$-	\$21,106
Bad Debt	\$2,564	\$-	\$0
Principal & Interest Payments on Debt	\$38,879	\$-	\$35,499
Depreciation & Amortization	\$0	\$0	\$0
<b>Total Expenditures:</b>	<b>\$296,551</b>	<b>\$402,031</b>	<b>\$340,943</b>

Historically, the City has not funded depreciation. The water utility annual depreciation is about \$135,000 per year, which equates to about \$7.66 per month, per 5/8” meter equivalent. According to American Water Works Association (AWWA), Principles of Water Rates, Fees, and Charges, Manual M1, it is appropriate, and even recommended that the City not account for depreciation when determining user fees. This is because the most appropriate, straight-forward, and defensible approach for municipalities to establish user rates is to use the “Cash-Needs” approach described in AWWA Manual M1. The “Cash-Needs” approach utilizes debt obligations and capital improvement needs when determining rates. The “Utility-Basis” approach considers depreciation and return on rate base. The “Utility-Basis” approach is more appropriate for large privately-owned and investor-owned utilities.

## **WATER RATE DEVELOPMENT**

**CURRENT WATER RATE REVENUE REQUIREMENT:** As indicated in the 1994 MWP, there were about 50,000 feet of old steel pipelines throughout the City that have reached or exceeded their useful lives. Since 1994, the City has replaced small portions of this piping using its own resources or grant funding from various sources. Unfortunately, because the City's water rates are so low, it can only qualify for small grants such as the Community Development Block Grants, which are difficult to obtain. In the last nine years, the City has obtained \$3.0M in CDBG grant money to make improvements to the water system. At this rate of funding, it would take another 30 to 40 years to replace worn-out infrastructure.

The City expects to receive about \$1.25M through the Integrated Regional Water Management (IRWM) Proposition 84 program, administered by Department of Water Resources, to fund additional water main replacement work in South and North Dunsmuir. The South Dunsmuir work will enable the City to complete the work not funded by the recent \$1.22M CDBG grant. It is expected the IRWM program will receive an influx of Proposition 1 money that may be available for future water main replacement projects, which will help the City reduce the need for long-term loans. As such, it is highly recommended the City continue to actively participate in the IRWM funding program.

While the IRWM funding program has the potential to help the City replace worn-out infrastructure, it is not expected to be adequate to provide all the funding necessary to replace worn-out infrastructure. Therefore, the City will need to take advantage of the more traditional funding programs, such as those administered by USDA Rural Development (RD) and the Drinking Water State Revolving Fund (DWSRF) programs. In order to accomplish this, the City's average annual water rates must be at least 1.5% of the median household income (MHI) for the area. In other words, the grant funding agencies expect water users to be paying at least 1.5% of their income toward water before qualifying for grants.

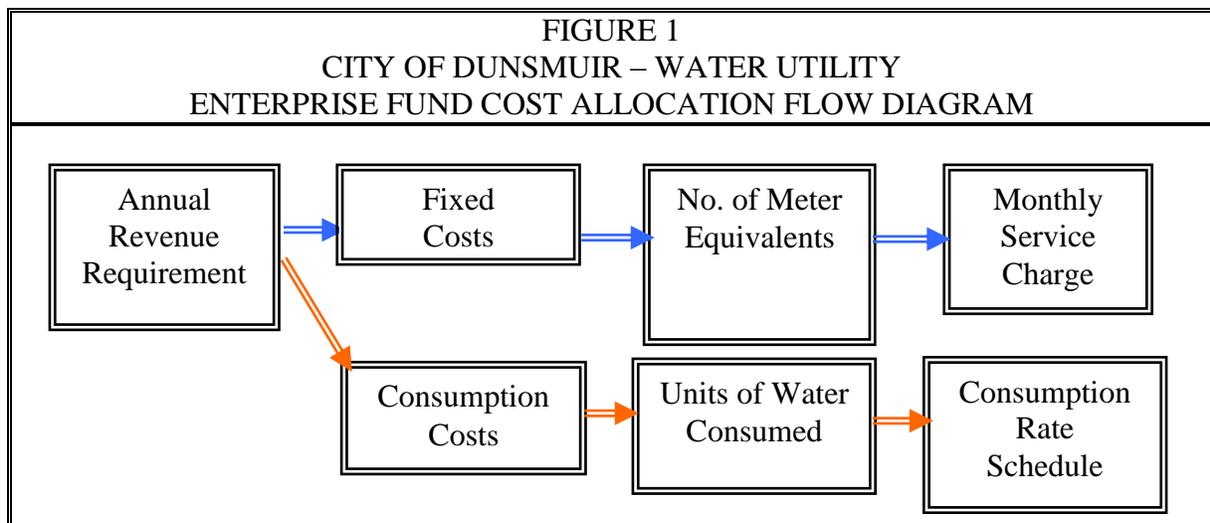
Recently, the City was able to successfully increase its sewer rates to 1.5% of MHI and obtain a 70% grant to fund state-mandated improvements to its wastewater treatment facility.

For all of the reasons described above, the City’s future revenue requirements will be based on gradually increasing water rates to 1.5% of MHI and using collected funds to initiate planning and design of recommended improvements and to debt service long-term loans.

Analysis of the FY 2014-15 water rate revenue requirement is based on the City’s FY 2014-15 adopted budget. The annual water enterprise rate revenue requirement is based on water system operation and maintenance cost plus debt service obligations and replacement capital improvement needs, less other water system revenues such as interest earnings and other income.

**COST OF SERVICE ANALYSIS:** Development of water rate recommendations normally involves two primary steps. First, the Water Enterprise Fund costs are allocated to functional cost components, and then, a rate structure is designed to incorporate these cost components. The goal is to allocate the costs and design a rate structure that results in the costs being proportionately distributed among customer classes.

There are a number of ways to allocate costs for rate setting purposes. Some are rather complex, requiring a significant effort to develop and to administer. Others are somewhat simpler to develop, understand, and administer. The City’s current rate structure allocates the water system costs into two specific categories. These include Fixed Costs and Consumptive Costs as shown on Figure 1.



**Fixed Costs:** Fixed costs tend to vary in relation to the number and size of the meters and services and in relation to the magnitude of the service demand. These costs may be properly distributed among customer classes by recognizing factors that are generally responsible for those costs being incurred. Historically, the City has distributed meter size costs in close proportion to the rated hydraulic capacity of each meter. This method is commonly used and recognized in American Water Works Association (AWWA) Manual M1. In addition, it is more representative of the true impact to the water system. Thus, it is proposed the City adjust its meter factors to match the hydraulic capacity factors presented by AWWA.

**Consumption Costs:** Much discussion was made during the Citizen’s Committee workshops regarding the best consumption rate approach. Essentially, there are three general approaches for establishing consumption rates, briefly described below:

**Declining Block:** In a declining block structure, as water use increases, the cost-per-unit of water decreases. Some argue that this structure is justified due to the economy of scale when producing water, i.e. the cost per unit of water is less for the last unit produced than the first unit produced. However, this structure does not promote water conservation, which is necessary when managing a fixed resource, like a water supply. The City’s current consumption rates are based on a declining block structure.

**Uniform Block:** As the name implies, the uniform block establishes one rate per unit of water consumed beyond the base rate allocation. In other words, there is one rate for water used no matter how much water, beyond the base allocation, is consumed.

**Inclining Block:** The inclining block is the most popular consumption rate structure and is based on an increasing cost per unit of water. The more water used, the higher cost per unit. This structure promotes water conservation and lower overall water use. Recent court decisions have made the inclining block structure more difficult to administer because Proposition 218 requires consumers be charged for the actual cost of benefit received. Thus, the inclining block cannot be used, exclusively, for punitive reasons.

In a typical water system, consumption rates are based, in part, on the varying costs to operate elements in the water system, such as treatment and pumping facilities. For example, costs to

operate these facilities typically remain consistent or increase with increased water use. Hence the reason many agencies use an inclining block rate structure. However, Dunsmuir's water system is gravity fed, does not have treatment facilities, and only has one booster pump station in the system. Therefore, a uniform consumption rate block fits the City's system best.

Consumption costs are recovered from customers based on actual water usage.

**WATER RATE DESIGN:** There are many ways to structure water rates; however, there are important concepts to adhere to in order to promote “buy-in” from the community, such as:

- Rate structures should be easy to understand and implement.
- Rates should promote efficient allocation of the resource, i.e. conservation minded.
- Rates should be equitable and non-discriminating, i.e. cost-based.
- There should be continuity in the rate making philosophy over time. Drastic changes in rate structures should be avoided.
- Rates should consider other utility policies, such as economic development and planning for the future.
- Rates should consider the customer's ability to pay.
- Rates should provide month-to-month and year-to-year revenue stability within the water enterprise fund.
- Water rates should recover adequate revenue to fund the following:
  - Day-to-day operation and maintenance expenses, including short-lived asset reserves intended to replace short-lived assets periodically.
  - Debt service obligations for long-term capital improvement loans, including required reserves by the funding agency.
  - Capital project replacement costs.

Many water systems separate expenses into “fixed” and “variable” categories. Fixed expenses are those that do not vary as a result of changing water consumption. Variable expenses are those expenses that change with varying water consumption, such as treatment and pumping costs. Since Dunsmuir does not have treatment facilities and only one booster pump station, the majority of the City's water system expenses would fall into the “fixed” category.

The California Water Conservation Council (CWCC) developed a memorandum of understanding (MOU) in 2010 which establishes a goal for water agencies to collect 30% of its revenue from fixed rates and 70% from consumption rates after 2013. The intent of this MOU is to promote water conservation and requires an “inclining” consumption rate block to obtain this goal. Even though not law, agencies that are signatory to this MOU are striving toward this goal. It is not believed Dunsmuir is signatory to this MOU. It would be very difficult for Dunsmuir to reach this goal because, as indicated above, the majority of the City’s water expenses are fixed.

Also, the September 2013 court ruling in San Juan Capistrano, regarding the legality of implementing punitive consumption rates associated with an inclining block structure, challenges this approach. For these reasons, it is not recommended the City strive to meet the “fixed” versus “consumption” revenue goals established by the CWCC.

**Fixed Monthly Service Charges:** An over emphasis on consumptive charges can create revenue volatility, especially during abnormally wet conditions when lower than expected water sales significantly reduces revenues. Thus, it is recommended that the City strive to set its fixed monthly service charges to collect a similar amount of annual revenue, as has occurred in the past.

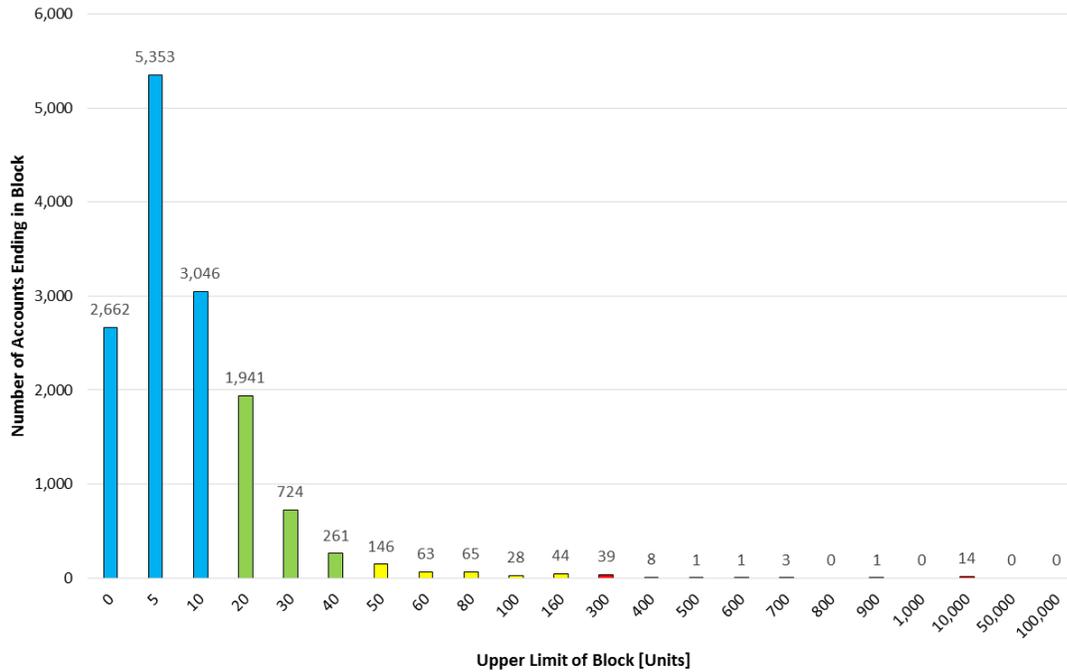
In order to remain consistent with current and prior practices, it is recommended the City continue to utilize the “meter hydraulic capacity” basis for determining the fixed monthly service charges for meters larger than 5/8” in size. This will require small decreases to the 3/4” and 1” meter size base rates initially. The 1-1/2” and 2” meter factors will increase slightly over the existing factors. The meter factors for 3” and 4” meters will have a more substantial increase over the others, as their current factors were less than the AWWA-recommended factors.

Historically, the City’s base rate included 10 units (7,500 gallons) of water. Water consumed above this amount was paid for at consumption rates. A review of the City’s actual water consumption for FY 13-14 revealed the average wintertime water consumption was about 4.9 units per month. Wintertime water use is often used to determine the minimum amount of water needed to sustain a household, independent of irrigation needs.

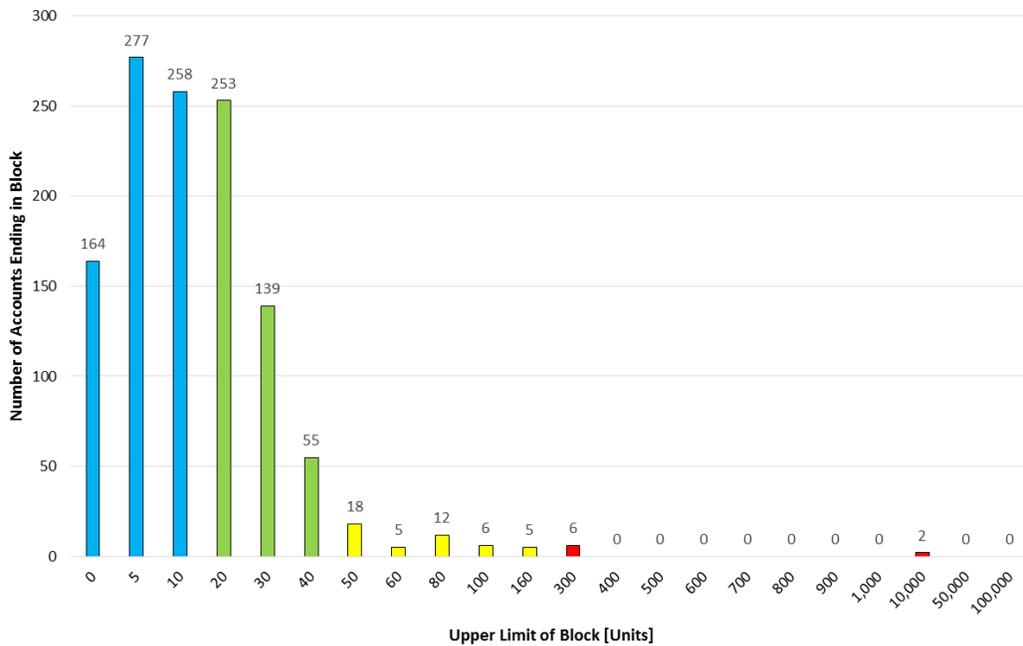
After concerns expressed by some citizens during the public ad hoc committee meetings, further investigation was conducted to evaluate summertime and overall annual water use. According to

City billing records, approximately 46% of all water bills during a one-year period (July 1, 2013 to June 30, 2014) consumed less than 5 units of water, see Figure 2. In addition, approximately 27% of customers in July 2014 consumed less than 5 units of water, see Figure 3.

**Figure 2 – Annual Water Bill Consumption Distribution**



**Figure 3 – July 2013 Water Bill Consumption Distribution**



Clearly, there is a distinct user class than consumes less than 5 units of water per month throughout the year, including during peak demand periods. Therefore it is proposed the amount of water allocated in the base rate be reduced from 10 units to 5 units.

Another significant factor in establishing fixed monthly service charges is the need to accumulate revenue to fund replacement of worn-out water mains and service piping. The 2015 MWP identified approximately 39,500 feet of old water main and service pipe that, 1) has exhibited a severe leak history, or 2) are over 60 years old and have exceeded their useful lives. An additional 6,200 feet of water main and service pipe is being replaced as part of the current CDBG-funded project.

It was recommended in the City's 1994 MWP that a program be developed to begin replacing much of this old piping. Unfortunately, a comprehensive plan was never implemented. The City has been able to replace small portions of this old piping over the last 20 years by obtaining small grants, but because water rates are so low, it has been unable to secure any larger grants.

Therefore, it is proposed the City incrementally increase its rates over time, such that the "1.5% of MHI" threshold can be met in about five years. In the meantime, the accumulated revenue can be used to begin planning and design of water main replacement projects and securing long-term financing. After construction, the future increased revenue will be used to debt service long-term loans.

The Citizen's Committee recommended the City implement a "lifeline" water rate that provides a discounted base rate for qualifying low income families. A monthly discount of \$2 per month is consistent with other local agencies in Siskiyou County. Consumption rates would not be discounted.

**Consumption Rates:** As discussed hereinbefore, the City currently utilizes a "declining block" consumption rate. This structure promotes "water use" as opposed to water conservation, and creates a scenario where lower consumption water users subsidize those that use the most water. The best consumption rate structure to promote water conservation is the "inclining block." However, the change from a "decreasing" block to "increasing" block was viewed by the Citizen's Committee as too drastic to implement all at once. Therefore, it is recommended

the City convert to a “uniform” consumption rate in which all water consumed above that which is included in the base rate will be charged one rate per unit of water consumed.

The consumptive rates are formulated to generate the remaining revenue required over and above the revenue generated by the base rate to fund fixed expenses. However, in order to generate revenue to replace worn-out pipelines and gradually increase the overall average monthly rate per single-family resident to 1.5% of MHI, it is recommended the consumption rate be increased along with the base rate.

**MULTI-YEAR FINANCIAL PLAN GUIDELINES:** In order to develop a recommendation regarding future rates, we developed a multi-year financial plan for the water enterprise. This financial plan considers both capital and operating programs. Specific plan elements are described below.

**Capital Projects:** The City’s new 2015 MWP recommended a number of improvements to correct existing deficiencies and replace infrastructure that has met or exceeded its useful life. Recommended improvements were prioritized into the following categories and reference is made to cost estimate tables contained in the new 2015 MWP.

**Current Improvements:** Current Improvements are improvements that are already funded and expected to be constructed by summer 2016. The work includes replacement of approximately 6,200 feet of water main and service pipe in Scherer Ave., Blackberry Hill, Willow St., Bush St., Butterfly Ave., and Oak St. Refer to Table 13 in the 2015 MWP. These particular areas suffer from inadequate system pressures during peak demand periods and inadequate fire flows during all demand periods. In addition, some areas, such as Butterfly Ave. and Bush St. have experienced considerable leak repair efforts by City staff in recent years. The value of these projects is about \$1.22M and are being funded by a CDBG grant.

**Immediate Improvements:** Immediate Improvements are intended to, 1) correct existing water system deficiencies, and 2) replace water pipelines that have exhibited a considerable leak history in recent years. Refer to Table 14 in the 2015 MWP. The immediate improvements consist of replacing approximately 23,400 feet of water main

and service pipe at various locations throughout the City. The total project value of immediate improvements is about \$9.4M. It is expected that \$1.25M of this amount will be funded through the latest round of IRWM Proposition 84 grant funding. Construction completion is expected by late summer 2016. The remaining \$8.15M worth of immediate improvements is not yet funded; however, the City has adequate capital project reserve funds to initiate the planning and design efforts for the \$2.917M Downtown Tank Relocation & Replacement Project in hopes that it will be well positioned to obtain IRWM Proposition funding when the funding becomes available in summer 2016. In addition, it is recommended the City initiate planning and design of a \$5.5M capital replacement project as soon as possible using capital project reserve funds.

Near-Term Improvements: Near-Term Improvements represent replacement costs for the portion of the City's distribution system that has met or exceeded its useful life. These pipelines have not yet developed an extensive leak history like the projects contained in the Current and Immediate Improvements categories. However, over time, it is expected these pipelines will begin to create O&M challenges. Therefore, it is recommended the City begin to plan for replacement of approximately 16,200 feet of water main and service pipe. The project value for the Near-Term Improvements is about \$5.54M, refer to Table 15 in the 2015 MWP.

The total value of unfunded Immediate and Near-Term Improvements is about \$13.69M. The 2015 MWP also identifies about \$8.01M of As-Developed Improvements to the City's water system that are needed to accommodate future growth. These improvements would be funded by developers at the time of development through yet-to-be-determined Development Impact Fees. Therefore, there is no consideration for funding the As-Developed Improvements with current and proposed rates. Since the projects identified in the Immediate and Near-Term Improvements categories are intended to replace worn-out infrastructure or correct existing deficiencies, it is proposed existing rate payers fund these improvements.

It will not be possible to implement a \$13.69M project at one time based on the City's current water rates. Therefore, it is proposed the City gradually increase rates and implement phased projects over the next five years. Table 4 contains a breakdown of current and planned capital improvement projects for completing the recommendations established in the 2015 MWP. As

indicated, the total value of projects identified in the 2015 MWP is about \$16.164M. Of this amount, \$1.22M is currently funded by a CDBG grant. An additional \$1.25M is expected to be funded by a IRWM Proposition 84 grant. It is hopeful the \$2.917M Downtown Tank Relocation and Replacement Project will be funded by a future IRWM Proposition 1 grant.

**TABLE 4**  
**City of Dunsmuir – Water Utility**  
**Proposed Capital Project Financing Plan**

Description	Project Cost	Funding Source	Status	Year Complete
2015 Water Main Replacement Project	\$1.22M	CDBG Grant	Funded	2016
North & South Dunsmuir Water Main Replacement Project	\$1.25M	IRWM Grant	Pending	2016
Downtown Tank Relocation & Replacement Project	\$2.917M	IRWM Grant	Hopeful	2016
Phase I – Water Main Replacement	\$5.5 M	USDA Loan	Planned	2018
Phase II – Water Main Replacement	\$4.285M	USDA Loan	Planned	2020
Total:	\$15.172M			
Master Plan Capital Project:	\$16.164M			
Shortfall:	\$0.992M			

Subtracting the current, pending, and hopeful grant-funded projects leaves about \$10.777M worth of non-grant-funded improvements. It is recommended the City pursue these projects with its own accumulated capital reserve funds and long-term, low-interest loans. Due to the current amount of capital reserve funding, it is recommended the City immediately begin planning and design for a Phase I \$5.5M project. Then, during FY 2017-18, begin planning and design for a Phase II \$4.285M project. If the City is unable to obtain a grant component for the Phase II project, there will be about a \$0.992M shortfall for completing all projects identified in the 2015 MWP.

It is recommended the City pursue long-term, low-interest loans with USDA Rural Development, as their funding program has the benefit of 40-year loan terms, which lowers the monthly obligation by rate payers. Also, there is a USDA Area Specialist in Siskiyou County who is experienced and capable of working with the City throughout project implementation.

**Reserve Accounts:** Operation reserves ranging from 10 percent to 40 percent of annual operating costs are common for public water utilities. Given the potential for fluctuations in annual water sales, which can result in variable water rate revenues, it is recommended the City maintain an operating reserve equal to at least 25 percent of its annual operation maintenance and debt service expenses. This is equivalent to about three months of operating expenses to be available in reserve at all times.

Currently, the City does not fund a short-lived asset reserve; however, it does fund a debt service reserve for a 1994 USDA-funded water project. Debt service reserves are typically required by a funding agency in order to maintain a reserve account containing the equivalent of a one-year principal and interest payment. As such, the City is required to set aside 10 percent of an annual payment each year for ten years, until the reserve account is fully funded. The City will need to establish debt service reserves for all future loans used for funding capital improvements.

Short-lived asset reserves are required when utilizing USDA Rural Development funding. Essentially, revenue is set aside each month that is intended to replace short-lived assets – those with expected lives of five to fifteen years. Examples of short-lived assets include pumps/motors, electrical/controls/SCADA equipment, building maintenance and repair, etc. Whether USDA Rural Development financing is used or not, it is a good practice to maintain such a reserve in order to keep a well-maintained and reliable system. Therefore, it is recommended the proposed financial plan reflect funding a short-lived asset reserve.

**Financial Plan Assumptions:** The following is a list of the primary assumptions used in developing the multi-year financial plans:

- Operation and Maintenance costs will increase at 1 percent per year. These values are less than Consumer Price Index (CPI) inflation but correlate with actual inflation of City expenses in past years. As such, it is recommended the City verify its actual expenses with projected expense amounts.
- It is assumed projected construction costs will increase at 3 percent per year, which is equal to the average annual increase in the ENR Construction Cost Index over the last 5 years.

- Even though the 2015 MWP uses a 1 percent per year growth in water consumption, it was decided no growth would be anticipated for the purpose of generating revenue projections in this rate study. This approach is considered conservative in that, if growth occurs, any increase in revenue may be offset by the price elasticity effect by consumers to conserve water use to avoid higher water bills.
- When water rates are increased, it is human nature to reduce consumption to compensate for the increased cost. As such, it is prudent planning to allow for this price elasticity when making revenue projections. AWWA Manual M1 suggests rate planners assume price elasticity of 10 percent to 30 percent, absent an extensive study. This means that revenue projection increases should be reduced 10 percent to 30 percent to account for price elasticity. For the City, it is assumed price elasticity will be 20 percent. All revenue projections in this study reflect a 20 percent reduction in the increase to account for price elasticity.
- It is anticipated the City will fund planning and design for a Phase I \$5.5M project in 2016 and secure a 100% long-term, low-interest loan to fund the construction effort. Then, in FY 2017-18, it is anticipated the City will complete planning and design for a Phase II \$4.285M, with construction funded with a 100% long-term, low-interest loan. As discussed above, there could be a \$0.992M funding shortfall if the City does not obtain a grant component with the Phase II project. If no grant monies are obtained, the City is still in position to complete about 94% of the improvements recommended in the 2015 MWP.
- It is recommended the City add a Water Department Operator in FY 15-16 in order to add a needed resource to an over-taxed department.
- It is recommended the City implement a \$50 “Water Service Modification” fee that will be applied when a customer requests a shutoff or activation. It is not clear, yet, what impact this will have on revenue.
- It is recommended the City adopt a “Water Service Standby” fee equivalent to one-half of the meter base rate for a particular service. This charge will apply to those customers who request their water be turned off for extended periods throughout the year, such as

vacation or second homes. The rationale is that operation and maintenance of the water system is an ongoing, day-to-day activity, benefiting all water services connected to the water system, whether they are consuming water at a particular time or not.

- Maintain a separate Operating Reserve Fund of 25% of the annual operating and debt service expenditures.
- Maintain a separate Debt Service Reserve Fund based on requirements set forth in future funding agreements for long-term loan financing.
- Allocate a Short-Lived Assets Reserve fund as required by the USDA Rural Development financing. The amount will be determined after financial analyses performed as part of final funding applications.
- Depreciation will remain unfunded.

**Financial Plan Results:** A 5-year projection of the Water Enterprise Fund budget and revenue requirements is shown in Table 5. As shown under the Capital Outlay summary, it is anticipated the City would fund the planning and design efforts for two capital improvements projects, occurring in FY 15-16 and FY 17-18. Debt service requirements, including reserve requirements, for the respective projects are shown under “Debt Services” under O&M Expenses.

**TABLE 5**  
**City of Dunsmuir - Water Enterprise Fund**  
**Projected Expenditures and Transfers**

	Inflation Factor	Actual (FY 14-15)	Budgeted (FY 15-16)	Projected (FY 16-17)	Projected (FY 17-18)	Projected (FY 18-19)	Projected (FY 19-20)	Projected (FY 20-21)	
<b>O&amp;M Expenses</b>									
71XX	Salaries and Benefits	1.0%	\$126,419	\$127,683	\$128,960	\$130,250	\$131,552	\$132,868	\$134,196
7200	Training and Education	1.0%	\$516	\$521	\$526	\$532	\$537	\$542	\$548
7210	Meetings and Travel	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7230	Subscriptions; Memberships/Dues	1.0%	\$2,510	\$2,535	\$2,560	\$2,586	\$2,612	\$2,638	\$2,664
7240	Clothing/Cleaning	1.0%	\$609	\$615	\$621	\$627	\$634	\$640	\$646
7300	Professional Services	1.0%	\$5,262	\$5,315	\$5,368	\$5,421	\$5,476	\$5,530	\$5,586
7310	Contract/Special Services	1.0%	\$1,565	\$1,581	\$1,596	\$1,612	\$1,629	\$1,645	\$1,661
7330	Contract Lab Analysis	1.0%	\$1,541	\$1,556	\$1,572	\$1,588	\$1,604	\$1,620	\$1,636
7410	Adv/Notices	1.0%	\$236	\$238	\$241	\$243	\$246	\$248	\$251
7480	Management/Admin. Charges	1.0%	\$89,837	\$90,735	\$91,643	\$92,559	\$93,485	\$94,420	\$95,364
7600	Equipment/Replacement (<\$1,000)	1.0%	\$59	\$60	\$60	\$61	\$61	\$62	\$63
7610	Equipment Maint & Replacement (Tank Insp & Pipe Loc.)	1.0%	\$462	\$467	\$471	\$476	\$481	\$486	\$490
7620	Vehicle Fuel	1.0%	\$4,525	\$4,570	\$4,616	\$4,662	\$4,709	\$4,756	\$4,803
7630	Vehicle Maintenance	1.0%	\$6,114	\$6,175	\$6,237	\$6,299	\$6,362	\$6,426	\$6,490
7640	Radio Replc/Repair	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7710	Property Taxes	1.0%	\$2,125	\$2,146	\$2,168	\$2,189	\$2,211	\$2,233	\$2,256
7720	Maintenance Buildings/Grounds	1.0%	\$292	\$295	\$298	\$301	\$304	\$307	\$310
7730	Utilities	1.0%	\$16,442	\$16,606	\$16,772	\$16,940	\$17,110	\$17,281	\$17,454
7750	Phone	1.0%	\$950	\$960	\$969	\$979	\$989	\$998	\$1,008
7760	Leases/Rentals	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7830	Valve Hydrant Repair	1.0%	\$374	\$378	\$382	\$385	\$389	\$393	\$397
7840	Pump Station Maintenance	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7860	Depreciation	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7900	Office Supplies	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7920	Supplies/Materials	1.0%	\$1,372	\$1,386	\$1,400	\$1,414	\$1,428	\$1,442	\$1,456
7930	Postage	1.0%	\$2,792	\$2,820	\$2,848	\$2,877	\$2,905	\$2,934	\$2,964
7950	Water Main Repairs	1.0%	\$18,323	\$18,506	\$18,691	\$18,878	\$19,067	\$19,258	\$19,450
7960	Roadbase asphalt	1.0%	\$2,013	\$2,033	\$2,053	\$2,074	\$2,095	\$2,116	\$2,137
8100	Liability Insurance-Assessment	1.0%	\$12,217	\$12,339	\$12,463	\$12,587	\$12,713	\$12,840	\$12,969
8100	Liability Insurance	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8110	Property Insurance	1.0%	\$2,258	\$2,281	\$2,303	\$2,326	\$2,350	\$2,373	\$2,397
8130	Permits & Licenses	1.0%	\$6,631	\$6,697	\$6,764	\$6,832	\$6,900	\$6,969	\$7,039
8200	Equipment Replacement- Handheld meter readers ( <b>See Capital Outlay</b> )	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0

**TABLE 5**  
**City of Dunsmuir - Water Enterprise Fund**  
**Projected Expenditures and Transfers**

	Inflation Factor	Actual (FY 14-15)	Budgeted (FY 15-16)	Projected (FY 16-17)	Projected (FY 17-18)	Projected (FY 18-19)	Projected (FY 19-20)	Projected (FY 20-21)
8270.10 Water Engineering Report	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8270.17 Hydrant Repair	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8300 Interest	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8270.01 Water Main Projects	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8600 Operating Transfers Out	1.0%	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Water Department Operator</b>	<b>1.0%</b>	<b>\$0</b>	<b>\$0</b>	<b>\$75,000</b>	<b>\$75,750</b>	<b>\$76,508</b>	<b>\$77,273</b>	<b>\$78,045</b>
<b>Debt Services</b>								
35 Debt Repayment - Princ./Int. - '94 Water COP's		\$35,499	\$34,833	\$35,166	\$34,499	\$35,199	\$35,199	\$35,199
36 Debt/Debt Reserve/SA Reserve - Phase I Water Project (Note 1)						\$272,550	\$272,550	\$272,550
37 Debt/Debt Reserve/SA Reserve - Phase II Water Project (Note 2)								\$214,086
<b>Subtotal</b>		<b>\$340,943</b>	<b>\$343,331</b>	<b>\$421,749</b>	<b>\$424,948</b>	<b>\$702,103</b>	<b>\$706,046</b>	<b>\$924,116</b>
<b>Capital Outlay</b>								
<b>Downtown Tank Relocation &amp; Replacement Project</b>								
- Planning/Surveys/Enviro/Permits/ROW Aquis (Note 3)			\$151,252					
- Final Design and Bidding (Note 4)			\$192,000					
<b>Phase I - Water Main Replacement Project</b>								
- Planning/Design/Environmental/Funding Acquisition/Bidding (Note 5)				\$150,000	\$350,000			
<b>Phase II - Water Main Replacement Project</b>								
- Planning/Design/Environmental/Funding Acquisition/Bidding (Note 6)						\$300,000	\$120,000	
Allowance toward remaining water main replacements								\$300,000
<b>Subtotal</b>		<b>\$0</b>	<b>\$343,252</b>	<b>\$150,000</b>	<b>\$350,000</b>	<b>\$300,000</b>	<b>\$120,000</b>	<b>\$300,000</b>
<b>Total Expenditures and Transfers</b>		<b>\$340,943</b>	<b>\$686,583</b>	<b>\$571,749</b>	<b>\$774,948</b>	<b>\$1,002,103</b>	<b>\$826,046</b>	<b>\$1,224,116</b>

NOTES:

- 1 Debt service for Phase I Water Project begins in FY 2018-19, and reflects debt service (principal and interest), 10% debt service reserve, and short-lived asset reserve. Total Project Cost is \$5.5M.
- 2 Debt service for Phase II Water Project begins in FY 2020-21, and reflects debt service (principal and interest), 10% debt service reserve, and short-lived asset reserve. Total Project Cost is \$4.285M.
- 3 Reflects work necessary to acquire easements and tank site and complete environmental in order to position the City to apply for Proposition 1 grant funding during the first IRWM allocation - solicitation expected in spring 2016.
- 4 If the Downtown Tank Project is invited by the Upper Sac/McCloud IRWM Region to submit a final funding application, the City will need to initiate design and bidding prior to receiving a formal funding commitment.
- 5 Reflects expenditures for planning, design, environmental, and bidding in order to construct Phase I - Water Main Replacement Project (\$5.5M), beginning in FY 2016-17.
- 6 Reflects expenditures for planning, design, environmental, and bidding in order to construct Phase II - Water Main Replacement Project (\$4.285M) in FY 2018-19.

Table 6 presents a summary of the 5-year financial plan values based on the fixed monthly rate for 5/8” meters increasing from \$26.00 per month beginning in FY 2016-17 to \$40 per month in FY 20-21. Also shown are the beginning reserve fund balances, revenues, expenditures, and year-end operating reserve for the Water Enterprise Fund. As can be seen, the City has a sizable accumulation of revenue resulting from past rate increases. This revenue will allow the City to begin planning and design of capital projects immediately without the need to acquire interim financing. At the end of FY 20-21, the year-end operating reserve is projected to be about 33 percent, or near the 25 percent goal.

The financial plan projected revenues are based on estimated normal water consumption each year during the planning period. However, annual revenues will still be subject to fluctuation with varying water consumption. It is expected that during above normal rainfall years, a reduction in revenue may be experienced.

**TABLE 6**

**City of Dunsmuir – Water Enterprise Fund**

**Summary of Enterprise Fund Financial Plan with 100% of Normal Water Use**

	Actual (FY 14-15)	Budgeted (FY 15-16)	Projected (FY 16-17)	Projected (FY 17-18)	Projected (FY 18-19)	Projected (FY 19-20)	Projected (FY 20-21)
<b>ASSUMPTIONS USED</b>							
Annual Increase in Water Use		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Annual 5/8" Rate Increase		0.0%	10.8%	9.7%	8.9%	8.1%	7.5%
<b>WATER RATES USED</b>							
5/8" Meter Monthly Service Charge (Up to 3,750 gallons)	\$26.00	\$26.00	\$28.80	\$31.60	\$34.40	\$37.20	\$40.00
Lifeline 5/8" Meter Monthly Service Charge	n/a	n/a	\$23.04	\$25.28	\$27.52	\$29.76	\$32.00
All Other Consumption Rate (3,751 to 22,500 gallons)	\$2.92	\$2.92	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50
Consumption Rate (22,501 to 90,000 gallons)	\$2.07	\$2.07	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50
Excess Consumption Rate (over 90,000 gallons)	\$1.15	\$1.15	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50
<b>BEGINNING FUNDS AVAILABLE BALANCE</b>	<b>\$455,793</b>	\$697,043	\$590,802	\$979,811	\$890,470	\$625,024	\$596,935
<b>REVENUES</b>							
Fixed Service Charges (Includes 5 Units)	<b>\$480,685</b>	\$480,685	\$447,000	\$491,000	\$528,000	\$578,000	\$621,000
Consumption Charges	<b>\$126,000</b>	\$126,000	\$197,000	\$221,000	\$235,000	\$246,000	\$256,000
Investment Income - LAIF	\$508	\$400	\$350	\$450	\$500	\$800	\$800
Other Operation Income-Penalties	\$7,790	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000
<b>Income from Water Connection Fees</b>	\$2,253	\$2,300	\$2,200	\$2,200	\$2,200	\$2,200	\$2,200
Reimbursement from Prop 1 IRWM Grant	\$0	\$0	\$343,252	\$0	\$0	\$0	\$0
<b>Total Revenue:</b>	\$617,236	\$615,385	\$995,802	\$720,650	\$771,700	\$833,000	\$886,000

**TABLE 6**

**City of Dunsmuir – Water Enterprise Fund**

**Summary of Enterprise Fund Financial Plan with 100% of Normal Water Use**

	Actual (FY 14-15)	Budgeted (FY 15-16)	Projected (FY 16-17)	Projected (FY 17-18)	Projected (FY 18-19)	Projected (FY 19-20)	Projected (FY 20-21)
<b>EXPENDITURES</b>							
<b>Water Enterprise</b>	\$340,943	\$343,331	\$421,749	\$424,948	\$702,103	\$706,046	\$924,116
<b>Transfer to Capital Improvements Fund (From Table 1)</b>	<u>\$0</u>	<u>\$343,252</u>	<u>\$150,000</u>	<u>\$350,000</u>	<u>\$300,000</u>	<u>\$120,000</u>	<u>\$300,000</u>
<b>Total Expenditures</b>	\$340,943	\$686,583	\$571,749	\$774,948	\$1,002,103	\$826,046	\$1,224,116
<b>RESTRICTED RESERVES</b>							
<b>Debt Service Reserve on '94 Water COP's</b>	\$35,043	\$35,043	\$35,043	\$35,043	\$35,043	\$35,043	\$35,043
<b>ENDING BALANCE/OPERATING RESERVE</b>	<b>\$697,043</b>	<b>\$590,802</b>	<b>\$979,811</b>	<b>\$890,470</b>	<b>\$625,024</b>	<b>\$596,935</b>	<b>\$223,776</b>
<b>YEAR-END OPERATING RESERVE</b>	<b>204%</b>	<b>172%</b>	<b>232%</b>	<b>210%</b>	<b>89%</b>	<b>85%</b>	<b>24%</b>
Notes: 1. Excluding unfunded depreciation expense.							

**PROPOSED RATES:** A summary of the proposed water rates for all meter sizes used in the 5-year financial plan are shown in Table 7. Specific proposed changes to the City’s current water rates structure are described below.

- The water allocation in the base rate will be reduced from 10 units (7,500 gallons) to 5 units (3,750 gallons) per month, matching the typical wintertime water consumption for single-family residences in the City of Dunsmuir.
- Base rates for larger (than 5/8”) meter sizes will be adjusted to match AWWA-rated meter hydraulic capacity factors, which match closely with the City’s current practice.
- Consumption rates will be changed from a “declining” block to a “uniform” block structure.
- The City intends to implement a “lifeline” or low-income base rate for 5/8” meter customers that qualify based on meeting maximum household income requirements established by the State of California. The discount will be \$2 per month and will not apply to consumption rates.
- The City intends to implement a \$50 “Water Service Modification” fee that will be applied when someone requests a shutoff or activation of a water service.

As indicated in Table 6, the proposed water rates will increase the typical residential bill between 10.8 percent per year in FY 16-17 and 7.5 percent per year in FY 20-21. It is projected the proposed rate increases will result in an average monthly single-family water bill in FY 20-21 of about \$47.80 per month, which exceeds the “1.5% of MHI” threshold established by the USDA Rural Development and DWSRF funding programs. Hence, the City will qualify for larger grants.

**TABLE 7**  
**City of Dunsmuir - Water Utility**  
**Recommended Water Rates**

	Current FY 15-16	Proposed FY 16-17	Proposed FY 17-18	Proposed FY 18-19	Proposed FY 19-20	Proposed FY 20-21	
<b>CONSUMPTION CHARGES (\$/Unit, 1 Unit=750 Gallons)</b>							
6 - 10 Units	-	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
11 - 40 Units	\$2.92	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
41 - 160 Units	\$2.07	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
Excess over 160 Units	\$1.15	\$2.10	\$2.20	\$2.30	\$2.40	\$2.50	
<b>MONTHLY SERVICE CHARGES (\$/Mo)</b>							<b>Capacity Factor</b>
5/8" Meter	\$26.00	\$28.80	\$31.60	\$34.40	\$37.20	\$40.00	1.0
(Note 1): 5/8" Meter (Lifeline or Low Income)	\$24.00	\$26.80	\$29.60	\$32.40	\$35.20	\$38.00	-
3/4" Meter	\$47.24	\$43.20	\$47.40	\$51.60	\$55.80	\$60.00	1.5
1" Meter	\$76.24	\$72.00	\$79.00	\$86.00	\$93.00	\$100.00	2.5
1-1/2" Meter	\$143.37	\$144.00	\$158.00	\$172.00	\$186.00	\$200.00	5.0
2" Meter	\$219.35	\$230.40	\$252.80	\$275.20	\$297.60	\$320.00	8.0
3" Meter	\$387.28	\$432.00	\$474.00	\$516.00	\$558.00	\$600.00	15.0
4" Meter	\$575.24	\$720.00	\$790.00	\$860.00	\$930.00	\$1,000.00	25.0
Flat Rate	\$27.60	\$30.58	\$33.55	\$36.53	\$39.49	\$42.45	
NOTES: 1. Only applies to qualifying families with 5/8" meter.							

A tabulation of water rates for neighboring water purveyors is shown in Table 8. As one can see, the fixed monthly service charges vary from \$18.35 to \$44.05 per month, and the consumption rates are also quite variable. Figure 4 indicates estimated average monthly water bills for each agency based on 8.1 units (6,075 gallons) per monthly consumption. **It should be remembered that some of these agencies have relatively new systems and are not subject to the relatively high repair and rehabilitation costs associated with replacement of a significant quantity of worn-out distribution piping.**

**TABLE 8**  
**City of Dunsmuir**  
**USER FEE COMPARISON**

PURVEYOR	EFFECTIVE DATE	BASE RATE (For smallest service)	VOLUME OF WATER INCLUDED IN BASE RATE	LOWER LIMIT	UPPER LIMIT	VOLUME UNITS	COST PER UNIT VOLUME	FEE TYPE
City of Mt. Shasta	2015	\$18.35	Unlimited	0	Unlimited	100 CF	\$0.00	Flat
City of Ashland	2014	\$23.50 (Increases with meter size)	0	0	300	100 CF	\$2.43	Per Unit
				301	1000	100 CF	\$2.99	Per Unit
				1001	2500	100 CF	\$4.00	Per Unit
				2501	and above	100 CF	\$5.17	Per Unit
Bella Vista WD (M&I)	2015	\$44.05 (Increases with meter size)	0	0	2000	100 CF	\$0.47	Per Unit
				2001	2400	100 CF	\$1.50	Per Unit
				2401	and above	100 CF	\$2.50	Per Unit
Mountain Gate CSD	2015	\$39.22 (Increases with meter size)	800	801	2000	100 CF	\$0.88	Per Unit
				2001	10000	100 CF	\$1.48	Per Unit
				10001	and above	100 CF	\$1.76	Per Unit
Nevada City	2014	\$22.50 (Increases with meter size)	0	0	8000	1000 gal	\$2.15	Per Unit
				8001	and above	1000 gal	\$2.80	Per Unit
City of Oroville	2015	\$31.19 (Increases with meter size)	0	1	800	100 CF	\$2.45	Per Unit
				801	2200	100 CF	\$2.63	Per Unit
				2201	and above	100 CF	\$3.09	Per Unit
City of Redding	2015	\$18.14 (Increases with meter size)	0	0	1100	100 CF	\$0.55	Per Unit
				1101	3600	100 CF	\$1.47	Per Unit
				3601	and above	100 CF	\$1.81	Per Unit
Shasta CSD	2015	\$52.37	1,000	1001	2000	100 CF	\$8.20	Flat
				2001	and above	100 CF	\$0.82	Per Unit
City of Shasta Lake	2015	\$20.98 (Increases with meter size)	0	0	1000	100 CF	\$1.27	Per Unit
				1001	5000	100 CF	\$1.46	Per Unit
				5001	and above	100 CF	\$1.78	Per Unit
City of Williams	2015	\$20.43 (Increases with meter size)	0	0	and above	100 CF	\$1.80	Per Unit
City of Willows	2015	\$37.03 (Increases with meter size)	0	0	800	100 CF	\$1.71	Per Unit
				801	2500	100 CF	\$1.83	Per Unit
				2501	and above	100 CF	\$2.06	Per Unit

**TABLE 8**  
**City of Dunsmuir**  
**USER FEE COMPARISON**

PURVEYOR	EFFECTIVE DATE	BASE RATE (For smallest service)	VOLUME OF WATER INCLUDED IN BASE RATE	LOWER LIMIT	UPPER LIMIT	VOLUME UNITS	COST PER UNIT VOLUME	FEE TYPE
City of Yreka	2015	\$31.60 (Increases with meter size)	100 (or 13.3 CF)	101	10000	1000 gal	\$1.86	Per Unit
				10001	35000	1000 gal	\$2.05	Per Unit
				35001	and above	1000 gal	\$2.23	Per Unit
Centerville CSD	2015	\$20.75 (Increases with meter size)	100	101	7000	1000 gal	\$0.67	Per Unit
				7001	12000	1000 gal	\$0.69	Per Unit
				12001	17000	1000 gal	\$0.71	Per Unit
				17001	22000	1000 gal	\$0.73	Per Unit
				22001	26000	1000 gal	\$0.75	Per Unit
				26001	30000	1000 gal	\$0.77	Per Unit
				17001	and above	1000 gal	\$0.79	Per Unit
City of Dunsmuir	2015	\$26.00	1,000	1001	4000	100 CF	\$2.92	Per Unit
				4001	16000	100 CF	\$2.07	Per Unit
				16001	and above	100 CF	\$1.15	Per Unit
City of Dunsmuir	2020	\$40.00	500	501	3000	100 CF	\$2.50	Per Unit
				3001	12000	100 CF	\$2.50	Per Unit
				12001	and above	100 CF	\$2.50	Per Unit
City of Weed	2015	\$21.45 (Increases with meter size)	1000	1001	and above	100 CF	\$0.96	Per Unit
Clear Creek CSD	2015	\$33.63 (Increases with meter size)	100	101	9000	100 CF	\$0.65	Per Unit
				9001	15000	100 CF	\$0.67	Per Unit
				15001	and above	100 CF	\$0.70	Per Unit
McCloud CSD	2015	\$40.00	0	0	and above	100 CF	\$0.00	Flat

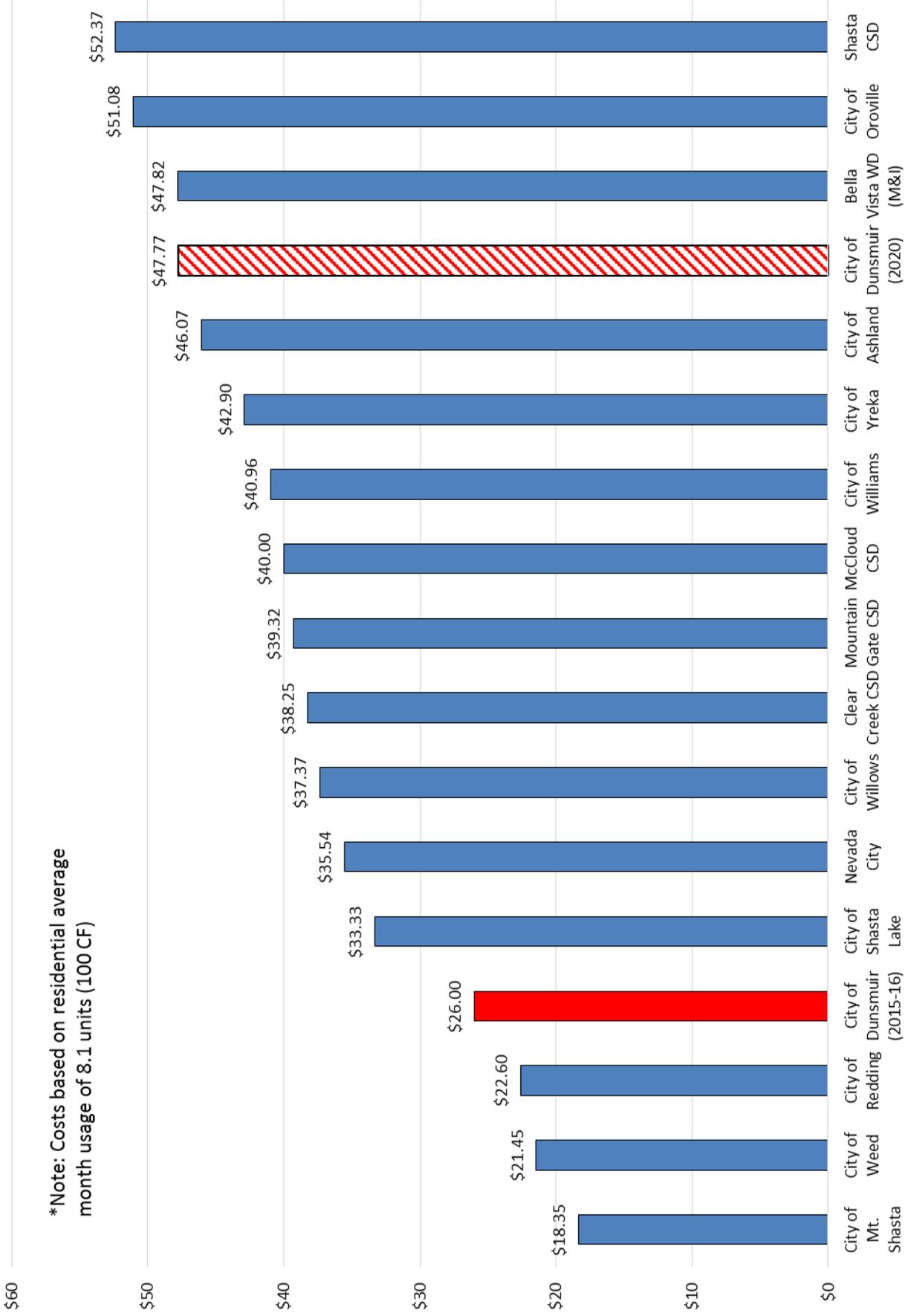
NOTE: 100 CF = 748 GALLONS

**PROPOSED NON-RATE RELATED CHANGES:** As a result of review and analysis of the City’s current practices regarding water rate implementation, it is recommended the following changes be made:

- There are two metered customers in the Shasta Retreat area that are billed on a flat-rate basis. According to City staff, the City council stepped in to resolve a dispute between the two property owners a number of years ago regarding the taking of irrigation water from a nearby creek. According to water consumption records, these two customers are among the 20 highest water users in the City. It is recommended these services are converted back to a “charge-based-on-use” basis, which will be a state requirement by year 2020.
- There are 46 unmetered water services in the Shasta Retreat area. Adding water meters will require an extensive amount of distribution system improvements because multiple houses are served off the same pipelines, and existing pipelines are too small and located outside public rights-of-way. Improvements to this area only benefit the customers in that area. Thus, the City will attempt to obtain grant funding for these improvements.

**FIGURE 4**

**USER RATE COMPARISON**



\*Note: Costs based on residential average month usage of 8.1 units (100 CF)

## **APPENDIX C**

---

Dunsmuir 2018-2019 Budget Excerpt



Home of the Best Water on Earth

# City of Dunsmuir

## Budget 2018-2019



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# Water

## Fiscal Year 2018-2019

The Water Enterprise is responsible for the delivery of safe reliable drinking water to the citizens of Dunsmuir. It provides 24 hour service and support to the public by responding to customer concerns, emergency water breaks/repairs, and ensuring the City has high quality drinking water in adequate supply for firefighting, domestic, and commercial use. The Water Enterprise also operates and maintains the water distribution system to the property at the water meter.

The City, and staff of the Water Enterprise, are proud to call Dunsmuir’s water the “Best Water on Earth”.

### Water Services

- Provide daily maintenance to the system to keep it in operation
- Maintain the distribution system to keep it fully functioning

Fiscal Year 2018-2019  
Department Detail  
Dept. Water  
Fund 30

	Department Detail					
	Prior Fiscal Year's		Current		Proposed	
	2015-16 Actual	2016-17 Actual	2017-18 Budget Estimated		2018-19 Rec'md Adopted	
<b>Funding Sources</b>						
30 - Water	610,012	514,016	532,301	590,000	625,301	625,301
31 - Water Improvement					140,000	140,000
Total Revenue	610,012	514,016	532,301	590,000	764,301	764,301
<b>Department Expenditures</b>						
Operations	485,492	379,288	445,239	416,771	624,778	624,778
Total Expenditures	485,492	379,288	445,239	416,771	624,778	624,778

City of Dunsmuir  
Annual Budget

Fund: 30 - WATER ENTERPRISE

Revenues	Prior Year	Current Year -----							
		Original Budget	Amended Budget	Actual Thru June	Estimated Total	17-18 Req	18-19 Draft	18-19 Adopted	
Dept: 000 GENERAL	Actual	Budget	Budget	June	Total				
4220.00 HOOKUP PERMITS	3,425	0	3,500	4,506	0	3,500	3,500	3,500	
4340.00 PENALTIES	8,398	0	7,800	7,242	0	7,800	7,800	7,800	
4400.00 INTEREST - LAIF	803	0	1,000	7,181	0	1,000	3,000	3,000	
4420.00 INTEREST - OTHER	1	0	1	1	0	1	1	1	
4960.00 WATER CHARGES	501,389	0	520,000	567,242	0	520,000	624,000	610,000	
4995.00 ON/OFF FEE	0	0	0	1,375	0		1,000	1,000	
5150.00 UNCLASSIFIED REVENUES	0	0	0	301	0				
<b>GENERAL</b>	<b>514,016</b>	<b>0</b>	<b>532,301</b>	<b>587,848</b>	<b>0</b>	<b>532,301</b>	<b>639,301</b>	<b>625,301</b>	
<b>Total Revenues</b>	<b>514,016</b>	<b>0</b>	<b>532,301</b>	<b>587,848</b>	<b>0</b>	<b>532,301</b>	<b>639,301</b>	<b>625,301</b>	
Expenditures									
Dept: 000 GENERAL									
7100.00 SALARIES	109,343	0	107,453	126,371	126,627	107,453	181,077	181,077	
7110.00 OVERTIME	5,384	0	5,588	1,346	1,795	5,588	5,588	5,588	
7130.00 FICA	8,478	0	8,220	9,770	9,824	8,220	14,000	14,000	
7140.00 PERS	17,718	0	9,330	10,783	10,950	9,330	16,300	16,300	
7145.00 CALPERS UNFUNDED LIABILITY	0	0	6,043	7,534	10,045	6,043	21,784	21,784	
7150.00 GROUP INSURANCE	44,376	0	50,158	56,610	56,392	50,158	84,040	84,040	
7160.00 WORKMAN COMP INSURANCE	8,565	0	8,662	8,660	8,660	8,662	23,508	23,508	
7170.00 UNEMPLOYMENT	482	0	0	482	643				
7180.00 DEFERRED COMP	1,559	0	2,161	1,803	1,786	2,161	3,622	3,622	
7200.00 TRAINING & EDUCATION	570	0	3,000	860	739	3,000	3,000	3,000	
7220.00 PHYSICAL EXAMS	0	0	200	0	0	200	200	200	
7230.00 SUB/MEMBERSHIP DUES	1,260	0	2,500	1,288	1,224	2,500	2,500	2,500	
7240.00 CLOTHING/CLEANING	611	0	600	502	494	600	600	600	
7300.00 PROFESSIONAL SERVICES	2,160	0	2,000	2,933	2,054	2,000	2,000	2,000	
7310.00 CONTRACT/SPECIAL SERV	2,956	0	2,800	2,235	2,384	2,800	2,800	2,800	
7330.00 CONTRACT LAB ANALYSIS	5,057	0	5,000	2,365	2,641	5,000	5,000	5,000	
7340.00 LITIGATION EXPENSE	7,500	0	7,000	5,956	6,667	7,000	7,000	7,000	
7410.00 ADV/NOTICES	0	0	300	908	827	300	1,000	1,000	
7480.00 MANAGEMENT/ADM CHARGES	69,291	0	73,473	64,834	62,869	73,473	87,473	73,473	
7600.00 EQUIPMENT/REPLACEMENT < \$1000	290	0	500	0	0	500			

City of Dunsmuir  
Annual Budget

7610.00 EQUIP MAINT & RPLC	783	0	16,331	10,744	14,325	10,000	10,000	10,000
7620.00 VEHICLE FUEL	5,193	0	5,500	5,555	5,141	5,500	5,500	5,500
7630.00 VEHICLE MAINTENANCE	4,444	0	5,000	1,316	813	5,000	5,000	5,000
7640.00 RADIO REPLC/REPAIR	0	0	1	0	0		2,400	2,400
7710.00 PROPERTY TAXES	4,619	0	3,000	439	585	3,000	3,000	3,000
7720.00 MAINTENANCE BUILDINGS/GROUNDS	0	0	500	0	0	500	500	500
7730.00 UTILITIES	19,882	0	19,000	18,812	19,222	19,000	20,000	20,000
7750.00 PHONE CHARGES	1,734	0	1,500	1,287	1,334	1,500	1,500	1,500
7770.00 SPRINGS MAINTENANCE	177	0	200	0	0	200	2,500	2,500
7830.00 VALVE/HYDRANT REPAIR	4,258	0	5,000	2,627	0	5,000	7,500	7,500
7840.00 PUMP STATION MAINTENANCE	322	0	500	0	0	500	500	500
7900.00 OFFICE EXPENSES	616	0	500	642	678	500	700	700
7920.00 SUPPLIES/MATERIALS	1,555	0	2,000	915	932	2,000	2,000	2,000
7930.00 POSTAGE	1,944	0	2,000	2,237	2,000	2,000	2,000	2,000
7950.00 MAIN REPAIRS & MAINTENANCE	16,361	0	17,000	18,363	22,904	17,000	17,000	17,000
7960.00 ROAD BASE/ASPHALT	854	0	4,000	830	1,107	4,000	5,000	5,000
7975.00 Regulatory Fines	0	0	0	1,002	1,336			
8100.00 LIABILITY INSURANCE	11,516	0	13,168	13,170	17,561	13,168	29,665	29,665
8100.10 SCORE ASSESSMENT	3,159	0	15,800	15,800	21,067	15,800	17,498	17,498
8110.00 PROPERTY INSURANCE	2,480	0	3,495	3,497	4,662	3,495	4,267	4,267
8130.00 PERMITS & LICENSES	13,791	0	10,256	-4,011	-5,348	10,256	10,256	10,256
8200.00 EQUIPMENT REPLACEMENT	0	0	3,000	1,771	0	3,000	3,000	3,000
8210.00 VEHICLE REPLACEMENT	0	0	22,500	0	0	22,500	22,500	22,500
8270.01 WATER MAIN PROJECTS	0	0	0	1,193	1,591		5,000	5,000
8600.00 BAD DEBT	0	0	0	180	240			
GENERAL	<u>379,288</u>	<u>0</u>	<u>445,239</u>	<u>401,609</u>	<u>416,771</u>	<u>438,907</u>	<u>638,778</u>	<u>624,778</u>
Total Expenditures	<u>379,288</u>	<u>0</u>	<u>445,239</u>	<u>401,609</u>	<u>416,771</u>	<u>438,907</u>	<u>638,778</u>	<u>624,778</u>
WATER ENTERPRISE	<u>134,728</u>	<u>0</u>	<u>87,062</u>	<u>186,239</u>	<u>-416,771</u>	<u>93,394</u>	<u>523</u>	<u>523</u>

**RESOLUTION 2018-09**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF DUNSMUIR  
ADOPTING THE 2018-2019 OPERATING BUDGET**

**WHEREAS**, the City of Dunsmuir adopts an operating budget which constitutes a fiscal and operating plan for the City; and

**WHEREAS**, the City Council of the City of Dunsmuir has reviewed and approved the staff-proposed operating budget for the 2018-2019 fiscal year; and

**NOW, THEREFORE BE IT RESOLVED**, by the City Council of the City of Dunsmuir that it:

1. Adopts the City of Dunsmuir 2018-2019 Budget as introduced by staff June 21, 2018, and
2. Directs and authorizes the City Manager to:
  - A. Administer the Budget for 2018-2019
  - B. To provide these documents to the City Council and make them available to the public

\*\*\*\*\*

**IT IS HEREBY CERTIFIED** that the foregoing Resolution 2018-09 was introduced and duly adopted by the City Council of the City of Dunsmuir at a regular meeting held on the 21st day of June 2018, by the following vote:

AYES: Shanta, Keisler, Spurlock, Deutsch, Craig  
NOES: None  
ABSENT: None  
ABSTAIN: None

  
\_\_\_\_\_  
Mayor, Deutsch

ATTEST:

  
\_\_\_\_\_  
Deputy City Clerk Iskra

## **APPENDIX D**

---

Compliance Order No. 01\_01\_19(R)\_001



GAVIN NEWSOM  
GOVERNOR

JARED BLUMENFELD  
SECRETARY FOR  
ENVIRONMENTAL PROTECTION

## State Water Resources Control Board

Division of Drinking Water

May 29, 2019

Certified Mail:

7017 0190 0000 6412 9304

City of Dunsmuir  
5915 Dunsmuir Ave.  
Dunsmuir, CA 96025

Attn: Randy Johnson, Interim City Manager

**COMPLIANCE ORDER NO. 01\_01\_19(R)\_001 FOR VIOLATIONS OF MAXIMUM CONTAMINANT LEVEL FOR TOTAL COLIFORM BACTERIA AND OTHER OPERATIONAL DEFECTS, CITY OF DUNSMUIR PUBLIC WATER SYSTEM, SYSTEM #4710002**

Enclosed is a compliance order issued to the **City of Dunsmuir**.

Any person who is aggrieved by an order or decision issued by the deputy director of the Division of Drinking Water under Article 8 (commencing with Health and Safety Code section 116625) or Article 9 (commencing with Health and Safety Code section 116650), of the Safe Drinking Water Act (Chapter 4, Part 12, Division 104, of the Health and Safety Code) may file a petition with the State Water Board for reconsideration of the order or decision. Appendix 1 contains the relevant statutory provisions for filing a petition for reconsideration (Health and Safety Code section 116701).

Petitions must be received by the State Board within 30 days of the issuance of the order or decision by the Deputy Director. The date of issuance is the date when the Division of Drinking Water mails a copy of the order or decision. If the 30th day falls on a Saturday, Sunday, or state holiday, the petition is due the following business day. Petitions must be received by 5:00 p.m. Information regarding filing petitions may be found at:

[http://www.waterboards.ca.gov/drinking\\_water/programs/petitions/index.shtml](http://www.waterboards.ca.gov/drinking_water/programs/petitions/index.shtml)

If you have any questions, please contact Craig Bunas at (530) 224-4887 or me at (530) 224-4875.



Barry Sutter, P.E., Klamath District Engineer  
Division of Drinking Water  
STATE WATER RESOURCES CONTROL BOARD

Enclosures

cc: Richard L. Hinrichs, P.E., Chief – DDW – Northern California Section

E. JOAQUIN ESQUIVEL, CHAIR | EILEEN SOBECK, EXECUTIVE DIRECTOR

364 Knollcrest Drive, Suite 101, Redding, CA 96002 | [www.waterboards.ca.gov](http://www.waterboards.ca.gov)



1 (hereinafter "Division") and the Deputy Director for the Division (hereinafter "Deputy  
2 Director"), hereby issues a compliance order to City of Dunsmuir (hereinafter, Dunsmuir)  
3 for repeated violations of California Code of Regulations (CCR), Section 64426.1,  
4 Maximum Contaminant Level (MCL) for Total Coliform Bacteria.

5  
6 **APPLICABLE AUTHORITIES**

7 **Section 64426.1 (Total Coliform Maximum Contaminant Level), CCR states in**  
8 **relevant part:**

9  
10 (b) A public water system is in violation of the total coliform MCL when any of the  
11 following occurs:

- 12 (1) For a public water system which collects at least 40 samples per month, more  
13 than 5.0 percent of the samples collected during any month are total coliform-  
14 positive; or  
15 (2) For a public water system which collects fewer than 40 samples per month, more  
16 than one sample collected during any month is total coliform-positive; or  
17 (3) Any repeat sample is fecal coliform-positive or E. coli-positive; or  
18 (4) Any repeat sample following a fecal coliform-positive or E. coli-positive routine  
19 sample is total coliform-positive.

20  
21 **STATEMENT OF FACTS**

22 The City of Dunsmuir is classified as a Community public water system serving  
23 approximately 1,259 connections and 1,923 people and is required by regulations to  
24 collect samples and report coliform analysis results of four water samples per month.  
25 Dunsmuir failed the MCL for total coliform bacteria for four months in 2017, for five  
26 months in 2018 and for two months in 2019 to date, for a total of eleven months since  
27 January 2017. A citation was issued by the Division for each of the above mentioned

1 MCL violations. Several Level 2 Assessment investigations were completed in an effort  
2 to determine the source of total coliform bacteria. The results of these assessments  
3 suggest that the poor condition of the spring collection system may be contributing to the  
4 ongoing presence of coliform bacteria in the drinking water system. Apart from removing  
5 one of the spring sources from the supply, Dunsmuir has not made significant  
6 improvements to its water system to help prevent future total coliform MCL violations.

7  
8 In addition, it has been reported to the Division that emergency or precautionary  
9 disinfection by chlorination, a standard method used by other water systems, is not  
10 possible for fear of contaminating the Sacramento River because one of the primary  
11 water storage tanks overflows uncontrollably and constantly into the Sacramento River.

### 12 13 **DETERMINATION**

14 The Division has determined that Dunsmuir failed the total coliform MCL eleven times  
15 since January 2017, and has subsequently failed to properly identify and remediate the  
16 source of the total coliform.

17  
18 The Division has also determined that the total coliform bacteria in the drinking water  
19 cannot be practically treated using the existing infrastructure and standard chlorination  
20 methods due to uncontrolled overflow from one of the tanks into the Sacramento River.

### 21 22 **DIRECTIVES**

23 Dunsmuir is hereby directed to take the following actions:

- 24  
25 1. By December 31, 2020, improve and/or replace the degraded portions of the spring  
26 water collection system.

- 1 2. By December 31, 2020, make physical improvements to the system, and/or  
2 operational improvements such that, when necessary, the entire water system can  
3 be disinfected without discharging chlorinated water into surface waters; and, install  
4 permanent emergency chlorination facilities.  
5
- 6 3. If Dunsmuir is unable to perform the tasks specified in this Order for any reason,  
7 whether within or beyond its control, and if Dunsmuir notifies the Division in writing  
8 no less than thirty days in advance of the due date, the Division may extend the time  
9 for performance if Dunsmuir demonstrates that it has used its best efforts to comply  
10 with the schedule and other requirements of this Order.  
11
- 12 4. If Dunsmuir fails to perform any of the tasks specified in this Order by the time  
13 described herein or by the time as subsequently extended pursuant to Item 4 above,  
14 Dunsmuir shall be deemed to have failed to comply with the obligations of this Order  
15 and may be subject to additional enforcement action, including civil penalties  
16 specified in the CHSC, Section 116650.  
17

18 All submittals required by this Compliance Order shall be submitted to the Division of  
19 Drinking Water at the following address:

20  
21 Barry Sutter, P.E., Klamath District Engineer  
22 Division of Drinking Water  
23 STATE WATER RESOURCES CONTROL BOARD  
364 Knollcrest Drive, Suite 101  
24 Redding, CA 96002

25 The Division reserves the right to make such modifications to this Compliance Order as it  
26 may deem necessary to protect public health and safety. Such modifications may be  
27 issued as amendments to this Compliance Order and shall be effective upon issuance.

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Nothing in this Compliance Order relieves Dunsmuir of its obligation to meet the requirements of the California Safe Drinking Water Act (CHSC, Division 104, Part 12, Chapter 4, commencing with Section 116270), or any regulation, standard, permit or order issued thereunder.

**PARTIES BOUND**

This Compliance Order shall apply to and be binding upon Dunsmuir, its owners, shareholders, officers, directors, agents, employees, contractors, successors, and assignees.

**SEVERABILITY**

The Directives of this Compliance Order are severable, and Dunsmuir shall comply with each and every provision thereof notwithstanding the effectiveness of any provision.

**FURTHER ENFORCEMENT ACTION**

The California SDWA authorizes the Division to issue a citation or compliance order with assessment of administrative penalties to a public water system for violation or continued violation of the requirements of the California SDWA or any permit, regulation, permit or order issued or adopted thereunder including, but not limited to, failure to correct a violation identified in a citation or compliance order. The California SDWA also authorizes the Division to take action to suspend or revoke a permit that has been issued to a public water system if the system has violated applicable law or regulations or has failed to comply with an order of the Division; and to petition the superior court to take various enforcement measures against a public water system that has failed to comply with an order of the Division. The Division does not waive any further enforcement action by issuance of this citation or compliance order.

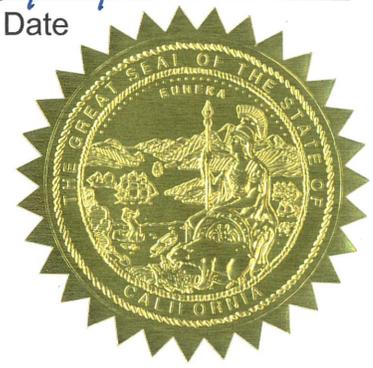
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*Richard L. Hinrichs*

*5/29/2019*

Richard L. Hinrichs, P.E., Chief  
Northern California Section  
Drinking Water Field Operations Branch  
State Water Resources Control Board

Date



Certified Mail No. 7017 0190 0000 6412 9304