WAHKIAKUM COUNTY PUD NO. 1

WAHKIAKUM COUNTY **WASHINGTON**

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WATER SYSTEM CONSOLIDATION STUDY REPORT

G&O #23252
JANUARY 2025

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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INTRODUCTION

Wahkiakum County Public Utility District No. 1 (PUD) has received a grant from the Washington State Department of Health (DOH) to complete a feasibility study for the potential consolidation of the Puget Island Water System and the Town of Cathlamet Water System. A similar study was completed in 2016; however, a consolidation was never completed due to issues with valuation of the system, concerns about revenue loss for the Town, and challenges with how to handle the Town sewer utility if only the water systems were consolidated. This study builds upon the previous study, updates information about the affected utilities, further describes the condition of the Town's sewer facilities, and provides conclusions and recommendations.

Currently the Town of Cathlamet supplies all water to the PUD's Puget Island Water System through an 8-inch diameter intertie. This report identifies and evaluates the benefits and costs of potential consolidation of the Puget Island and Cathlamet Water Systems. It also considers issues associated with the Town sewer system remaining operated by the Town or being acquired by the PUD. The report identifies key technical, administrative, and financial issues that will need to be addressed in a consolidation of the systems. For the purposes of this study, it has been assumed that in a consolidation of the two systems, that the PUD would take control of operation and maintenance of all facilities and services for the two systems. In a consolidation, it has been assumed that all customers would become customers of the PUD and would be subject to rates and requirements set by the PUD.

This report documents the information developed in completion of the following three tasks that were identified in the Scope of Work.

Task 1: Review and Assess the Cathlamet Utility Systems

Task 2: Identify Projects and Estimated Costs for the Cathlamet Utility Systems to Meet Current Standards

Task 3: Evaluate Operational, Managerial, and Financial Needs and Impact on Water Rates

TASK 1: REVIEW AND ASSESS CATHLAMET UTILITY SYSTEMS

Items included in the scope under Task 1 include the following:

- Obtain and review Town of Cathlamet Water System records including the Water System Plan, water treatment plant Monthly Reports, operating budgets, financial statements, and debt service documentation.

- Obtain and review Town of Cathlamet Sewer System records including the Wastewater Treatment Plant Monthly Reports, operating budgets, financial statements, and debt service documentation.
- Assess the condition of system facilities.
- Identify system deficiencies.
- Document findings.

CATHLAMET WATER SYSTEM FACILITY CONDITION ASSESSMENT

The following is a brief summary of the condition of the Cathlamet Water System facilities based upon a review of system facilities and the Town's Water System Plan.

Source of Supply Condition Assessment

The Town of Cathlamet relies on the Elochoman River for 100 percent of its water supply. The raw water intake is located approximately 2 miles east of SR 4 along SR 407. The raw water intake infiltration trench was installed in 1986 and consists of approximately 90 linear feet of perforated 10-inch high-density polyethylene (HDPE) pipe that extends across the width of the Elochoman River. In 2016, a secondary surface water intake was installed on the Elochoman River adjacent to the infiltration trench. The surface water intake consists of a bullet nose screen and valve that connects to the raw water intake pipe.

The two raw water pumps are Floway Model 10JKM four stage line-shaft vertical turbine pumps, with 7.5-hp motors, which were installed in 2012. Each raw water pump is capable of pumping 350 gpm, for a total pumping capacity of 700 gpm. The pumps are in good condition.

Pumping tests performed by the Town in 2022 indicate the raw water intake has a maximum capacity of about 450 gpm (648,000 gpd), though previous tests conducted by Gray & Osborne in 2015 and 2016 found a maximum sustainable rate of 370 gpm. The secondary intake can supply additional raw water when the intake is submerged; however, during extreme low river levels in the late summer and fall the river level can drop below the top of the screen, limiting its output. The Town is currently in the process of evaluating alternatives for improving the secondary screen and plans to complete those improvements in 2024. The Town has also noted the potential vulnerability of having a single source of supply and the Plan discusses some options for potential development of alternative sources in the long term.

Treatment and Disinfection Facilities Condition Assessment

The current water treatment plant (WTP) was completed in 1999 and replaced the original plant, which was constructed in 1967. The current WTP reused the clearwell and raw water intake from the original plant. The WTP has two filtration trains that each consists of an adsorption clarifier followed by a dual media filter. The filter media is currently made up of 18 inches of anthracite coal on top of 9 inches of silica sand and three inches of high-density garnet sand. The raw water sedimentation basin was eliminated during construction of the new filtration plant. The water treatment plant can effectively treat raw water with turbidities up to 150 NTU. At higher turbidities, the filter can become blinded with solids. Based on historical raw turbidity data, it is possible that the existing filter plant could be unable to adequately treat raw water from the Elochoman Intake under some conditions. During these high turbidity events, which occur on average every 2 to 3 years and last 1 to 3 days, the raw water intake pipe and raw water pump have accumulated sediment severely restricting the flow of raw water into the WTP. The Town has connected the water treatment plant air blower to a cleanout on the intake line with flexible hose to periodically flush sediment from the intake.

Disinfection is accomplished with a sodium hypochlorite solution injected into the water before the static mixers, as a pretreatment, and after it has passed through the filters before entering the clearwell. Each raw water pump and filter train has its own sodium hypochlorite injection pump and calibration chamber to verify the pumping rate. In addition to disinfection, the Town adds sodium fluoride to the water to improve dental health.

The WTP has a below grade concrete clearwell. The clearwell is approximately 55,000 gallons and includes baffles to enhance chlorine contact time. The existing clearwell is adequately sized to supply backwash water and provide chlorine contact storage. The filters can only backwash one at a time. If both filters are online and a backwash is initiated, one filter continues to produce water while waiting for the first filter to complete its backwash. If only the lead filter is online when a backwash is initiated, the lag filter comes online and becomes the lead filter. The backwashing filter returns to operation if the demand requires or it remains off as the lag filter. The total volume needed to backwash the filters consecutively is approximately 14,800 gallons. The clearwell, has more than adequate volume to meet this requirement. The clearwell was also designed to meet current CT requirements.

Two 30-hp Floway pumps pump finished water from a 12,400-gallon wet well into the distribution system. Each pump is rated for 300 gpm, for a total pumping capacity of 600 gpm. One pump recently went out of commission and a replacement has been ordered. The second pump is reaching the end of its useful life and is planned to be replaced in 2025. Typical operation consists of the lead pump turning on at 4.5 feet and off at 3.5 feet. If the filter rate is greater than the lead pump can handle, the lag pump will turn on at 5.0 feet. Both pumps will turn off at 3.5 feet.

The Town recently installed a diesel-powered generator at the WTP to allow it to continue to operate in the event of a power outage.

The WTP is generally in good condition. Reviewing monthly reports, the water treatment plant is consistently able to meet water quality requirements. The Town also has a SCADA system in place, but it is in need of an upgrade. The current SCADA system requires the operator to spend significant time at the WTP diagnosing and troubleshooting issues during changing conditions and storms. The SCADA system has also had communication issues with the Greenwood Reservoir, which have caused overflowing from the tank on occasion.

Storage Condition Assessment

The Town has two storage facilities, the Greenwood Reservoir and the Kent's Bridge Reservoir, which provide a total storage capacity of 1.03 million gallons. The Greenwood Reservoir has a nominal storage capacity of 500,000 gallons. It is a welded steel tank constructed in 1967. It has a 52-foot diameter and is 32-feet high. The overflow elevation is 278 feet, the base elevation is 246 feet. The Greenwood Reservoir sets the hydraulic grade line (HGL) of Pressure Zone 1, which includes the Greenwood Road area below the reservoir, downtown Cathlamet, and Puget Island. A pressure transducer located on the side of the Greenwood Reservoir, monitors the water level in the tank. When the water level in the reservoir drops to 29.5 feet, the raw water pumps at the water treatment plant are called and begin operation of the water filters. The raw water pumps are turned off when the water level in the reservoir reaches 31.5 feet. This reservoir was repainted in 2007 and is rescheduled for repainting again in the near future. It is in good condition.

The Kent's Bridge Reservoir has a nominal capacity of 530,000 gallons. It is a glass lined, bolted steel reservoir, constructed in 1998. The existing site has room for a future 530,000-gallon reservoir. The existing reservoir is 62-foot diameter, is 24-feet high, has an overflow elevation of 639 feet, and base elevation of 615 feet. The Kent's Bridge Reservoir sets the hydraulic grade line for Zone 4 and provides source water to three additional pressure zones through cascading PRV stations. Two additional PRV stations allow for the Kent's Bridge Reservoir to provide fire flow to Zone 1. The Kent's Bridge Reservoir is in good condition.

Booster Pump Station Condition Assessment

The Town of Cathlamet operates one booster pump station located at the Greenwood Reservoir site. This booster pump station pumps water from the Greenwood Reservoir to the Kent's Bridge Reservoir when the water level in the Kent's Bridge Reservoir falls below 22 feet. The pump station is equipped with three 40-hp Cornell pumps rated at 200 gpm each with two pumps running. One pump is always designated as a standby pump. Under normal operation, when the Kent's Bridge Reservoir calls for water, one pump delivers approximately 200 gpm to the reservoir. If the water level continues to

drop an additional 6 inches, a second pump is turned on for a total of 400 gpm. This pump station was completed in 1998 and is in acceptable working condition, though public works staff believe the pumps are nearing the end of their useful life and should be replaced in the next 5 to 10 years. One of the three pumps has recently been experiencing issues, and it is likely that the Town will elect to replace this pump in the near future. The station is also equipped with pump control valves and a pressure relief valve due to the high static and dynamic pressures at the pump station. The pump station is equipped with a manual transfer switch to allow use with a portable power generator, but does not have an emergency generator onsite.

Transmission and Distribution System Condition Assessment

The Town of Cathlamet Water System has approximately 20 miles of water main for both transmission and distribution. Approximately 40 percent of the pipe is asbestos cement and over 38 percent is PVC. The majority of the Town's existing distribution system was installed in the 1960s and 1970s. During 1998, over 22,000 linear feet of 8-inch and 12-inch PVC water main were installed to increase fire flow transmission capacity. A summary of the pipe sizes in the water system is included in Table 1.

TABLE 1

Town of Cathlamet Water System Pipe Length and Sizes

Pipe Size	Length (feet)	Percent of Total
0.75-inch	58	0.1%
1.5-inch	122	0.1%
2-inch	2,254	2.0%
3-inch	84	0.1%
4-inch	2,603	2.3%
6-inch	54,098	49.0%
8-inch	44,317	40.1%
12-inch	6,949	6.3%
Total	**110,485**	**100%**

The Town has a 3-year rolling average distribution system leakage (DSL) of 23.8 percent as of the 2022 WUE Report. This is higher than the DOH standard of 10 percent. The DSL appeared to be decreasing in 2019 and 2020, but then increased to 30.8 percent in 2021. In 2022, DSL was reported to be 25.1 percent. This high DSL could be caused in part by the aging pipes that make up much of the Town's water mains, especially in the downtown area. The Town has also noted that the DSL reported in their annual WUE Reports is calculated without accounting for use by the local fire departments due to difficulties in accurately estimating this figure. Issues with the telemetry have also made accurate accounting difficult in recent years, though these will be lessened with an upcoming SCADA update. Therefore, the actual DSL is likely somewhat smaller than reported.

According to the Town staff, significant leaks or water main breaks occur approximately twice per year. The Town estimates that these leak events might account for about 150,000 gallons per year. Areas of specific concern include the main waterline along Elochoman Valley Road and AC waterline from Greenwood Reservoir to SR 4 adjacent to the Cemetery. However, this accounts for a very small percentage of total annual DSL. Reducing DSL further will require additional leak detection and repair, and may also require additional water main replacement.

Telemetry and Controls Conditions Assessment

The telemetry and controls for the water system are designed to operate the treatment plant and associated pumps and the Greenwood Booster Pump Station in response to water level monitors at the Greenwood Reservoir and the Kent's Bridge Reservoir. Reservoir levels are transmitted via phone lines and digitally displayed in the treatment plant lab, and are recorded once per day by hand. There are also two pen chart recorders which can record when high head pumps are running and when the Greenwood pumps are running; however, this feature is not functioning at this time. The reservoir levels are transmitted to the programmable logic controller (PLC) at the water treatment plant that starts and stops the treatment facilities and associated pumps. There is a personal computer-based supervisory control and data acquisition (SCADA) system at the water treatment plant for monitoring the process and recording data. The SCADA system uses a Cimplicity software. There is an autodialer for alarm callout and operators can use PCAnywhere for remote viewing over a standard phone connection.

The water treatment plant is controlled based on the water level in the Greenwood Reservoir. When the pressure transducer at the Greenwood Reservoir senses low water level in the tank, water treatment plant PLC calls the raw water pumps and filter units at the plant to produce water. The high head finished water pumps operate based on a level transducer in the 12,400-gallon pump well at the treatment plant. When the pump well reaches an upper set point, the water treatment plant PLC calls the high head pumps to begin pumping water to the Greenwood Reservoir. The high head pumps continue to pump until the clearwell reaches a lower level pump off set point and the water treatment plant PLC calls them to stop. The PLC signals the chemical feed system to operate when the raw water pumps are operating. The coagulant pumps are automatically adjusted based on a 4-20 mA signal from the Streaming Current Monitor. The filter aid polymer feed pumps must be manually adjusted by the operators based on filter performance and jar testing. The sodium hypochlorite pumps are also manually adjusted to meet CT requirements and maintain an adequate chlorine residual in the distribution system. The fluoride pumps are manually adjusted to maintain a fluoride level of 0.8 to 1.0 mg/L. The operator interface on the water treatment plant control panel allows the operator to change parameters and set points in the PLC.

The telemetry and control system are out of date and is difficult for operators to use because it requires operators to respond to alarm conditions by making a trip to the plant whenever there is an alarm. This results in longer response times if the problem is not actually at the treatment plant. Occasional signal blackout between the WTP and the reservoirs has also been reported over the years. An update of the telemetry and control system is currently in progress.

Service Meters Condition Assessment

All water service customers are metered at the point of delivery and the Town has a master meter at the water treatment plant. Individual service meters have historically been read manually, but the Town is currently switching over to ultrasonic meters and Advanced Metering Infrastructure (AMI), which will allow staff to collect real time data once the AMI collector infrastructure is installed. Currently, approximately 85 percent of meters have been switched over. Approximately 50 percent can be read remotely from the fixed network, about 35 percent can be read remotely by drive by, and about 15 percent remain that are manual read.

CATHLAMET WATER SYSTEM CAPACITY ANALYSIS

The following sections summarize the capacity analysis that was completed in the Town's Water System Plan.

Source of Supply Capacity Analysis

A system's source capacity is dependent on multiple aspects of the system. The water intake, raw water pumps, and water rights could all limit the available source capacity.

As discussed earlier, pumping tests from 2022 indicated that the water intake currently has a maximum capacity of about 450 gpm. A production rate of 450 gpm represents 648,000 gallons in 24 hours of operation.

The current raw water pumps were installed in 2012 and are rated for 350 gpm each for a combined capacity of 700 gpm. This is equivalent to 1,080,000 gpd in 24 hours of pumping or 840,000 gpd in 20 hours of pumping, as recommended by the Department of Health for planning purposes.

The Town has water rights for an instantaneous withdrawal rate of 1.83 cubic feet per second (821 gpm), a seasonal maximum of 202.8 acre-feet between May 1 and September 20 each year, and a maximum annual withdrawal of 633.8 acre-feet per year from the Elochoman River. The Town also has water rights for Abe and Cougar Creeks that are not currently being used. Since the intake pumps and the treatment plant can only handle up to 700 gpm, there will be an instantaneous water right surplus of at least 121 gpm until the pumps and filters are upgraded. According to the 2023 Water System

Plan, there will be an annual water rights surplus of 101.2 acre-feet and a seasonal surplus of 35.3 acre-feet at the end of the 20-year planning period.

The water intake is the most limiting factor to the source supply for the Town. At the currently maximum production rate of 450 gpm, the intake will be unable to meet projected maximum day demand by 2027.

Treatment Capacity Analysis

The treatment plant capacity is dictated by the capacity of the filters. Each filter can treat up to 350 gpm; therefore, the maximum plant capacity is 700 gpm with both filters in operation. The finished water pumps have a combined capacity of 600 gpm. The finished water pumps should be replaced with pumps to match the 700 gpm capacity of the filters. The treatment plant is projected to have adequate capacity through the year 2034.

Storage Capacity Analysis

The DOH Water System Design Manual identifies the following components of reservoir storage volume:

- Operational Storage
- Equalizing Storage
- Standby Storage
- Fire Suppression Storage
- Dead Storage

Table 2 is taken from the 2023 Water System Plan and compares the existing capacity of the Town's reservoirs with projected storage volume requirements.

Standby and fire suppression storage can be consolidated or nested together to reduce total storage requirements, if the local fire authority does not require storage to be additive.

TABLE 2

Storage Analysis Summary (Gallons)

Year	Vos(1)	Ves(2)	Vsb(3)	Vff(4)	Total Required Storage	Total Storage Required w/Nesting	Available Storage	Surplus w/Nesting
2022	76,936	50,243	625,310	540,000	1,292,489	752,489	1,030,000	277,511
2023	76,936	52,703	639,660	540,000	1,309,299	769,299	1,030,000	260,701
2024	76,936	55,247	654,496	540,000	1,326,679	786,679	1,030,000	243,321
2025	76,936	57,790	669,332	540,000	1,344,058	804,058	1,030,000	225,942
2026	76,936	60,375	684,411	540,000	1,361,723	821,723	1,030,000	208,277
2027	76,936	63,127	700,464	540,000	1,380,527	840,527	1,030,000	189,473
2028	76,936	65,837	716,273	540,000	1,399,046	859,046	1,030,000	170,954
2029	76,936	68,672	732,812	540,000	1,418,420	878,420	1,030,000	151,580
2030	76,936	71,591	749,837	540,000	1,438,364	898,364	1,030,000	131,636
2031	76,936	74,510	766,862	540,000	1,458,308	918,308	1,030,000	111,692
2032	76,936	77,595	784,860	540,000	1,479,391	939,391	1,030,000	90,609
2033	76,936	80,680	802,858	540,000	1,500,474	960,474	1,030,000	69,526
2034	76,936	83,891	821,586	540,000	1,522,412	982,412	1,030,000	47,588
2035	76,936	87,101	840,313	540,000	1,544,351	1,004,351	1,030,000	25,649
2036	76,936	90,395	859,527	540,000	1,566,859	1,026,859	1,030,000	3,141
2037	76,936	93,772	879,228	540,000	1,589,936	1,049,936	1,030,000	(19,936)
2038	76,936	97,275	899,658	540,000	1,613,869	1,073,869	1,030,000	(43,869)
2039	76,936	100,819	920,332	540,000	1,638,086	1,098,086	1,030,000	(68,086)
2040	76,936	104,446	941,491	540,000	1,662,874	1,122,874	1,030,000	(92,874)
2041	76,936	108,115	962,894	540,000	1,687,946	1,147,946	1,030,000	(117,946)
2042	76,936	111,909	985,027	540,000	1,713,873	1,173,873	1,030,000	(143,873)
2043	76,936	115,787	1,007,646	540,000	1,740,369	1,200,369	1,030,000	(170,369)

With nesting of standby and fire suppression storage, the water system is projected to require a total storage volume of 1,200,369 gallons by 2043. As shown in the table, the system is projected to have adequate storage capacity through 2036.

Distribution System Hydraulic Analysis

A hydraulic model was used to analyze the hydraulic capacity for the Town of Cathlamet in the 2023 Water System Plan. The model was created using InfoWater's hydraulic modelling software and the Town's previous model, which was created using H2ONet and updated with the Town's water system base map. Current and projected demands were used in the model to evaluate the system's present and future capacity. Maximum day demands were used to evaluate the system's ability to meet maximum day demand plus required fire flows at DOH's required system pressure at 20 psi. Peak hour demands were used to verify that the system is able to meet the DOH standards to supply domestic water at a minimum system wide pressure of 30 psi.

Overall, the model showed that the system is capable of handling peak hour flows through 2043. Two nodes in the model (J96 and J97) showed slight pressure deficiencies during peak hour flow scenarios. These nodes experience pressures just below 30 psi because they are located directly downstream of the Columbia Street PRV, which has a 4-inch and a 1.5-inch valve set at 28 psi and 33 psi, respectively. Pressures could be increased at these nodes by simply adjusting the settings of the PRV valves.

The DOH Water System Design Manual states that a water system should be designed to provide adequate fire flow under maximum day demand conditions, while maintaining a minimum system pressure of 20 psi. Commercial/industrial areas must be capable of providing 1,500 gpm, while residential areas must provide 1,000 gpm. While it is possible to provide greater than 1,000 gpm in a variety of locations outside the town limits, fire flow is considered an urban service and is only required within the town limits. Fire flow modeling results indicated that there are several hydrants in the distribution system within the Town limits which may be unable to supply the minimum required fire flow. However, currently planned capital improvement projects are expected to correct all deficiencies, as shown in the scenarios which include the planned improvements. Table 3 is taken from the 2023 WSP and shows the fire flow deficiencies in bold.

TABLE 3

Fire Flow Deficiencies per Hydraulic Modeling

Hydrant ID	Required Fire Flow (gpm)	Available Flow at Hydrant					Location
		2022	2033	2033 w/CIP	2043	2043 w/CIP	
Residential							
J148	1,000	**851**	**834**	**1,257**	529	1,219	At the school, north of 3rd and Maple Street (6-inch main)
J36	1,000	1,058	1,026	**1,044**	987	1,061	Messinger Hill Drive
J189	1,000	1,025	**992**	**1,013**	951	1,030	Messinger Hill Drive
Industrial/Commercial							
J43	1,500	**1,201**	**1,189**	**1,792**	1,175	1,906	2nd Street (4-inch main)
J39	1,500	1,784	1,723	**1,777**	1,442	1,889	3rd Street (fixed by upgrading 2nd Street line)
J40	1,500	1,641	1,622	**1,781**	1,443	1,893	3rd Street (fixed by upgrading 2nd Street line)
J211	1,500	1,881	1,722	**2,000**	1,442	2,013	3rd Street (fixed by upgrading 2nd Street line)
J84	1,500	1,655	1,835	**1,744**	1,484	1,712	Front Street downtown
J85	1,500	1,564	1,562	**1,690**	1,437	1,648	Front Street downtown

Since the 2023 WSP was adopted, additional PRV stations have been installed on Boege Road and settings have been adjusted on the existing station to create a new pressure zone to the east of the Town. This project has been successful in increasing pressures within the new pressure zone.

SUMMARY OF CATHLAMET WATER SYSTEM DEFICIENCIES

The following sections summarize the identified water system deficiencies. Improvements to correct the identified system deficiencies are described in the 2023 Water System Plan and under Task 2 in this document.

Source of Supply Deficiencies

The Town has adequate water rights to meet current and projected demands. However, the capacity of the raw water intake is currently limiting the system to 450 gpm. The maximum day demand is expected to exceed this capacity in 2027 if improvements are not made.

Treatment Facility Deficiencies

The water treatment plant has adequate capacity for the 20-year planning period. The finished water pumps should be replaced with 350 gpm pumps to match the capacity of the WTP.

Storage Deficiencies

The exterior of the Greenwood Reservoir should be recoated in the next few years.

Distribution System Deficiencies

The hydraulic modeling in the 2023 Water System Plan identified a few deficiencies in the distribution system. The Town also still has distribution leakage exceeding the 10 percent standard.

Telemetry and Control Deficiencies

The existing water system telemetry and control system is inefficient for operators to utilize and should be upgraded.

CATHLAMET SEWER SYSTEM ASSESSMENT

The Cathlamet Sewer System serves the Town, as well as areas to the west and south just outside of town limits. The Town does not have a recent General Sewer Plan. The last General Sewer Plan was completed in January 2003 with an amendment prepared in January 2008 prior to construction of the Town's current Wastewater Treatment Plant.

Information on the Town's sewer system was obtained from the 2003 General Sewer /Wastewater Facilities Plan (GS/WWFP), a site visit to the current WWTP, and discussions with Town staff.

Collection System Condition Assessment

According to the 2003 GS/WWFP, the Town's sewer collection system is made up of approximately 26,400 feet of gravity sewer, ranging in size from 6-inch diameter to 16-inch diameter and 2,100 feet of 3-inch and 4-inch force mains. Much of the sewer collection system is reported to have been reconstructed in 1982. The majority of the gravity pipes are PVC or concrete, though there are also segments of clay, steel, asbestos-cement and ductile iron pipes. The condition of the existing sewer mains is unknown; however, the clay, steel, and asbestos-cement pipes are likely of an age that would require replacement in the next 20 years. In 2013, when the new WWTP was constructed, 2,500 lf of 12-inch diameter ductile iron sewer force main was constructed from the old WWTP to the new WWTP. 2,500 lf of 16-inch diameter ductile iron gravity final effluent pipeline was also constructed from the new WWTP back to the old WWTP. These pipes are only 10 years old and should be in good condition.

The Town currently has six sewer lift stations. The lift stations that are located on Tugboat Alley, Columbia Street (two stations), and Messenger Hill were constructed in 1982. The Messenger Hill lift station is a Hydromatic vacuum prime station with the package station mounted on top of a concrete wet well. This station is equipped with two pumps; however, according to Town staff, only one pump is being run, as the second pump frequently trips its breaker. The Tugboat Alley and Columbia Street stations have been converted to submersible pumps, and all but one pump has been operating well. A replacement for the problematic pump at the Tugboat Alley station has been ordered. These lift stations do not have auxiliary power capabilities, but are reported to have plug-ins for a portable generator. The mechanical and electrical components of these stations are likely at an age that would merit rehabilitation or replacement in the near future. The fifth lift station was constructed in 2013 when the WWTP was relocated from the waterfront to the north side of SR 4. This lift station is located near the old wastewater lagoons and consists of three submersible pumps in a concrete wet well. This lift station has an auxiliary generator. This lift station is reported to be in good condition; however, the telemetry between the lift station and the WWTP has had some issues at the WWTP desktop SCADA computer and should be repaired or replaced. The sixth lift station is the most recent one and is located on Angle Street, and is comprised of one E-one grinder pump inside a wet well.

Wastewater Treatment Facilities Condition Assessment

The existing wastewater treatment facility (WWTF) was constructed in 2013 to replace the previous treatment lagoon and is located on the north side of SR 4 across from Wahkiakum High School. Wastewater from the Town is directed to a submersible influent pump station located near the previous WWTF site. The influent is pumped about 2,500 feet to the WWTF headworks through a 12-inch force main. The WWTF is designed for a maximum month flow of 0.383 mgd and peak hour flow of 2.1 mgd. The WWTF utilizes the following wastewater treatment processes:

- Primary (Physical) Treatment: Influent is screened to remove large debris such as rags, plastics, cans, etc. The screen is washed to return fecal matter back to the influent. Other debris caught in the screen is dewatered and compacted prior to being discharged to a dumpster for off-site landfill disposal. After the screen, the influent flows at a low velocity through gravity grit removal channels, which encourages heavy particulate solids to settle out of the influent via gravity. A refrigerated composite sampler collects influent samples following the grit channels. A parshall flume then measures influent flow.

- Secondary (Biological) Treatment: An activated sludge treatment process is used for secondary treatment. At the Town WWTF, this consists of biological selectors, an oxidation ditch, secondary clarifiers, and solids handling systems necessary to achieve solids recycle and wasting. These processes work in conjunction to remove organic matter, nitrogen and suspended solids from the effluent.

- Disinfection: Effluent undergoes UV disinfection, which inactivates pathogenic microorganisms within the water. The UV disinfection system consists of two closed vessels installed in the effluent piping that contain UV lamps mounted in parallel to the flow of the water.

- Biosolids Treatment: Sludge created from the treatment processes is pumped to two aerobic digesters and sludge drying beds. Due to slow drying in the drying beds, the Town has been using filter bags to dewater sludge and has been storing dewatered biosolids in the drying beds. This process provides for stabilization and pathogen removal necessary to allow the dewatered sludge to be land-applied and permitted disposal sites. The sludge treatment process is capable of producing Class B biosolids.

- Treated effluent from the WWTF is discharged into the Columbia River near the old WWTP lagoons via a 2,500 foot effluent pipeline.

In April 2024, Gray & Osborne staff visited the WWTF and met with the Town's WWTF operators to review the condition of the existing facilities and identify any areas that needed improvement. Further investigation and repairs were conducted by the Town in the months following the WWTF visit, though some facilities still need attention. These facilities are described in Table 4.

TABLE 4

WWTP Condition Issues

Component	Issue	Timeframe
Headworks Screen	Brushes are likely reaching the end of their useful life and should be replaced.	1-3 years
Non-Potable Water Chlorination System	The non-potable water chlorination system is not currently functioning and will likely have to be replaced.	1 year
Plant Drain Pump Station	Due to a programming issue that prevented the intended lag/lead operation, one pump has been going mostly unused. Replacement of the more used pump should be considered in the next few years.	5 years
Dissolved Oxygen Probes	Probes are reaching the end of their useful life and should be replaced.	1-2 years
SCADA System	The SCADA software and the PCs that it runs on are reaching the end of their useful life and should be replaced. When replaced, they should be upgraded so that operators can remotely monitor the plant.	1-3 years
Plant Programmable Logic Controllers (PLCs)	The Plant PLCs will reach the end of their expected useful life in the next 10 years and will need to be replaced. This replacement will need to be coordinated with other system-wide upgrades so that the relevant software can remain consistent throughout the system.	5-10 years

Wastewater System Capacity Assessment

According to Town operating staff, the existing sewer collection lift stations are all operating on a single pump since one of the existing pumps in each lift station are out of service. These pumps should all be replaced to provide the required operational redundancy. Since all lift stations are able to function with only one pump in service, it is likely that that they will have adequate capacity once the redundant pumps are replaced.

To assess the capacity of the existing WWTP, operating records from 2021-23 were reviewed. The Town's National Pollutant Discharge Elimination System (NPDES) Permit requirements are summarized in Table 5.

TABLE 5

Town of Cathlamet WWTP NPDES Discharge Permit

Criteria	Limit
Influent Limits	
Maximum Month Flow (mgd)	0.383 mgd
BOD5 Loading (lbs/day) for Maximum Month	476 lbs/day
TSS Loading (lbs/day) for Maximum Month	523 lbs/day
Effluent Limits	
BOD5 Concentration	30 mg/L
TSS Concentration	30 mg/L
pH	6.0 – 9.0
Fecal Coliform	200/100 mL Monthly Geometric Mean

Figure 1 shows the average monthly influent flow from 2021-2023. The influent flow has typically been less than 55 percent of the WWTP design capacity. Figure 2 shows the average monthly BOD5 and TSS loading from 2021-2023. Influent BOD5 loading has typically been less than 55 percent of the WWTP design capacity. Influent TSS loading has also typically been less than 55 percent of the WWTP design capacity; however, there were some months in with winter of 2021-22 when TSS loading reached about 75 percent of design capacity. Overall, it appears that current influent flows and loadings are well within the current design capacity and the WWTP should have additional capacity to support potential growth in the 10- to 20-year horizon.

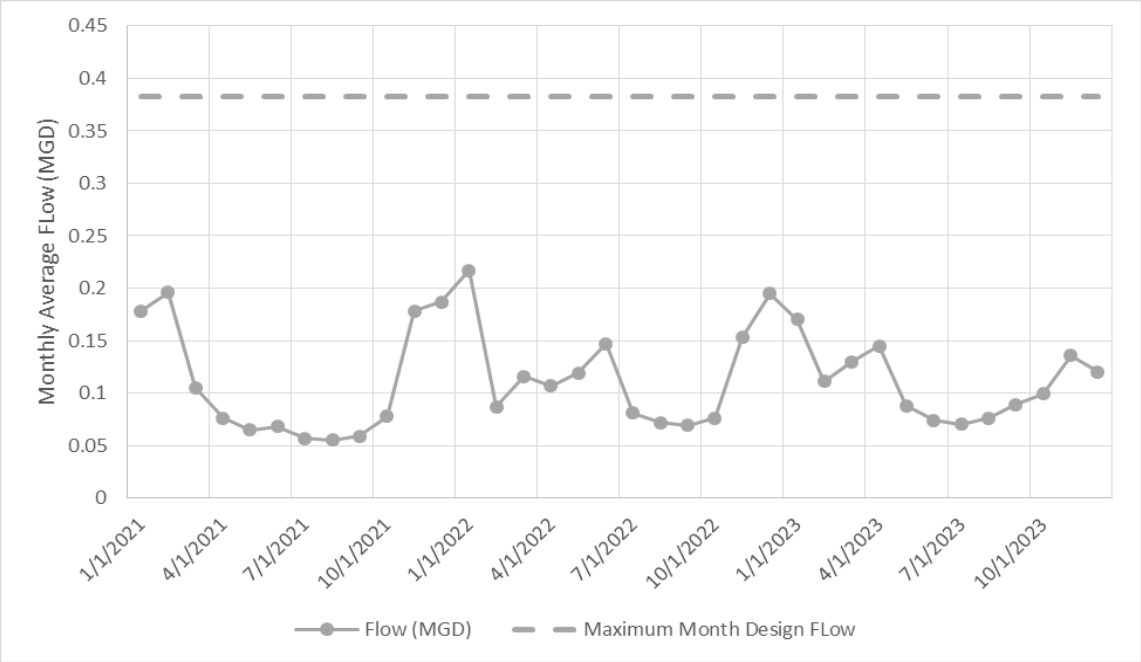

FIGURE 1

WWTP Influent Flow (2021-2023)

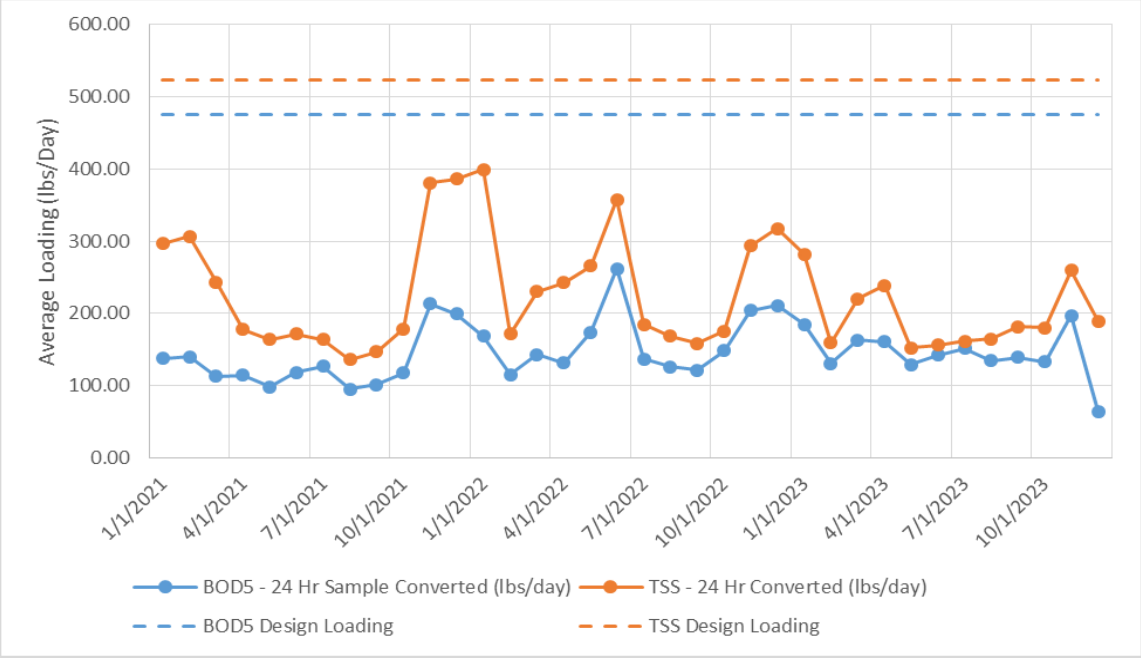

FIGURE 2

WWTP Influent BOD5 and TSS Loading (2021-2023)

Figure 3 shows the effluent quality for BOD5 and TSS from 2021-2023. The WWTP has consistently been able to meet the permit effluent limits for BOD5 and TSS for the last three years. A review of the Ecology permit database did not show any permit violations for water quality issues. A handful of violations were observed due to monitoring or sampling issues.

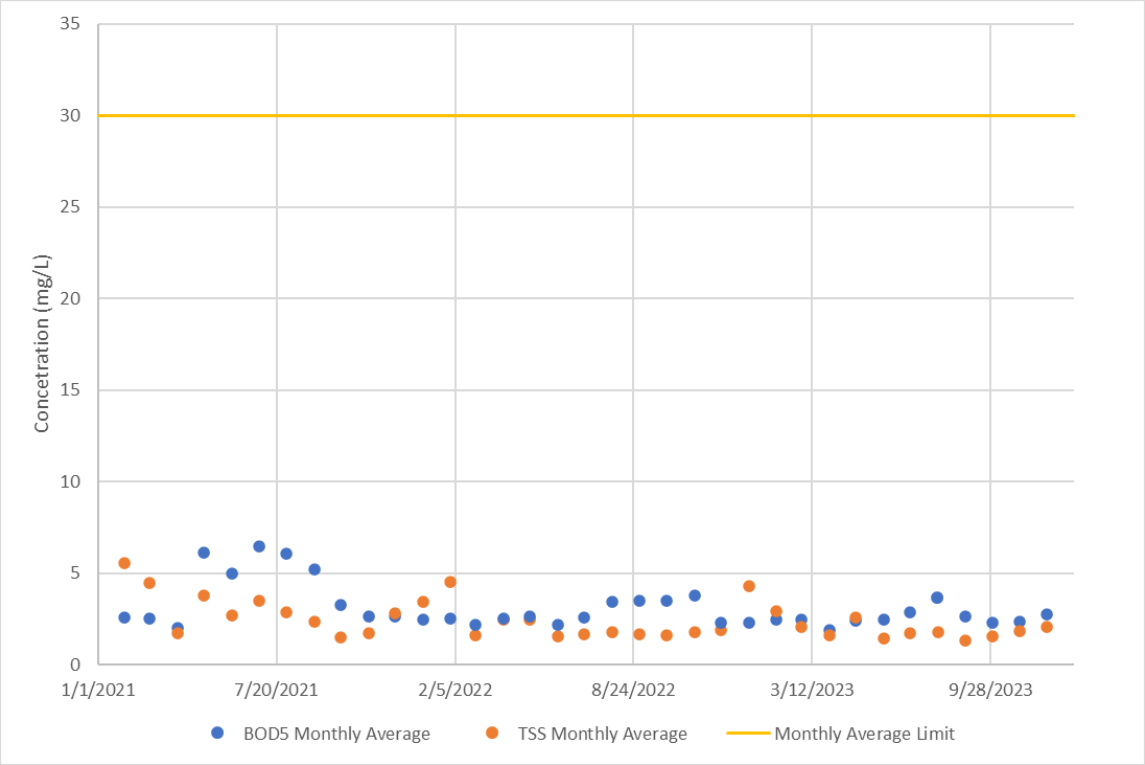

FIGURE 3

WWTP Effluent Monthly Average BOD5 and TSS Concentration (2021-2023)

TASK 2: IDENTIFY PROJECTS AND ESTIMATED COSTS FOR THE CATHLAMET UTILITY SYSTEMS TO MEET CURRENT STANDARDS

WATER SYSTEM IMPROVEMENT PROJECTS

Planned improvements to the Town's Water System were obtained from the Town's draft Water System Plan. These planned improvements are described in the following sections.

SOURCE OF SUPPLY IMPROVEMENT PROJECTS

The Town currently has two source improvement projects scheduled. The first project is to improve the raw water intake by modifying the secondary intake to allow it to collect more water when the river level is low. The estimated cost is $100,000.

The second project is to replace the raw water infiltration gallery. The scheduling of this project is dependent on the results from the completion of the first project. The estimated cost is $1,000,000.

TREATMENT IMPROVEMENT PROJECTS

The Town has identified a project at the treatment plant to replace the two existing 300 gpm finish water pumps with two 350 gpm pumps to match the 700 gpm capacity of the raw water pumps and the filtration basins. The preliminary cost estimate for this project is $60,000.

STORAGE IMPROVEMENT PROJECTS

Town staff have indicated that the exterior of the Greenwood Reservoir should be recoated in the next few years. The estimated cost to recoat the exterior of the tank is $200,000.

DISTRIBUTION SYSTEM IMPROVEMENT PROJECTS

Based on hydraulic modeling, there are two improvements that should be made to the distribution system in order to meet DOH fire flow requirements. The Town is also planning one other project that will increase fire flow availability in the project area.

- 2nd Street Main Replacement – Replace approximately 800 LF of 4-inch (AC) water main with 8-inch (PVC) water main along 2nd Street from the marina at the end of 2nd Street to Una Avenue. The estimated cost is $380,000. Engineering has been completed for this project, but construction has been delayed to prioritize funding for more pressing projects.

- Maple Street Extension – Replace an estimated 500 linear feet of 6-inch fiberglass wrapped PVC water main with 8-inch (PVC) water main from the corner of Maple Street and South 3rd Street to Wahkiakum Middle/Elementary School. The estimated cost is $100,000.

- Jacobson Road Water Main Improvements – Replace approximately 1,700 feet of 6-inch water main with 8-inch (PVC) water main. This project would occur alongside a road replacement project that Wahkiakum County has been discussing. The project does not have a planned start date.

The Town has also budgeted for valve and hydrant replacement and leak detection and repair.

- Valve and Hydrant Replacement Program – The Town has a number of old and aging valves and hydrants. The Town is pursuing a replacement program for these items with a budget of $15,000 per year.

- Leak Detection and Repair – The Town plans on completing leak detection and repair every other year, budgeting $12,000 every other year.

Several developer-financed water main replacements are also planned to occur within the planning period. The Town is not planning to incur any costs associated with these projects.

TELEMETRY AND CONTROL SYSTEM IMPROVEMENT PROJECTS

As discussed in Task 1, the telemetry and control systems are aging and inefficient. The existing system is old and maintenance and repair of the system will become more of a problem over time. Modern control systems provide better system information and control capabilities. The Town is planning on replacing the existing control system with a more reliable system. The estimated cost is $200,000.

SUMMARY OF CATHLAMET WATER SYSTEM IMPROVEMENT PROJECTS

Table 6 shows the estimated costs of projects to correct deficiencies in the Cathlamet Water System.

TABLE 6

Water System Improvement Projects

System Component	Project Description	Estimated Cost	Year Scheduled/ Estimated
Source	Improve Raw Water Intake	$100,000	2024 or 2025
Distribution	2nd Street	$380,000	2026 or later
Treatment	Replace Finish Water Pumps	$60,000	2025
Storage	Repaint Exterior of Greenwood Reservoir	$200,000	2026
Telemetry	SCADA Control System	$200,000	2024 or 2025
Source	Replace Raw Water Infiltration Gallery	$1,000,000	2029
Distribution	Maple Street Extension	$100,000	2031
Distribution	Valve and Hydrant Replacement	$15,000	Each year
Distribution	Leak Detection and Repair	$12,000	Every 2 year
Total Estimated Cost		**$2,151,000**	

The Raw Water Intake Improvements are currently in progress. As mentioned previously, a replacement for one of the finish water pumps has already been ordered and the second pump is still planned to be replaced in 2025. A more detailed discussion of the Town of Cathlamet water system capital improvement plan and financial program from the Town's draft Water System Plan is provided in Appendix A.

SEWER SYSTEM IMPROVEMENT PROJECTS

Collection System Improvements

The estimated cost of projects to correct collection system deficiencies is shown in Table 7.

TABLE 7

Sewer System Improvement Projects

System Component	Project Description	Estimated Cost	Year Estimated
Lift Stations	Replace Inoperable Pumps	$80,000	2024
Lift Stations	Improve Telemetry	$200,000	2025
Lift Stations	Upgrade Electrical Equipment	$1,000,000	2027-2028
Total Estimated Cost		**$1,280,000**	

Although no capacity related issues have been reported in the sewer collection system, some projects should likely be completed to replace aging sewer mains, particularly the clay, steel, and asbestos cement mains.

Wastewater Facility Improvements

The estimated cost of projects to correct collection system deficiencies is shown in Table 8.

TABLE 8

WWTP Improvement Projects

Component	Project Description	Estimated Cost	Year Estimated
Headworks Screen	Replace Brushes and Screen Basket	$20,000	2025
Oxidation Ditch Diffusers	Inspect and Replace Diffusers	$25,000	2024
Aerobic Digester Diffusers	Inspect and Replace Diffusers	$20,000	2025
Non-potable Water Pumps	Replace Non-Potable Water Pumps	$40,000	2026
Non-Potable Water Chlorination System	Repair/Replace Non-Potable Water Disinfection System	$15,000	2024
Plant Drain Pump Station	Replace Plant Drain Pump	$10,000	2024
Dissolved Oxygen Probes	Replace Dissolved Oxygen Probes	$5,000	2025
SCADA System	Replace SCADA System and Computers	$60,000	2025
Plant Programmable Logic Controllers	Replace WWTP PLCs	$150,000	2030
Control System Uninterruptible Power Supplies	Replace UPS’s	$1,000	2024
Laboratory Equipment	Replace Lab Equipment	$50,000	2025
Biosolids Management	Clean out sludge drying bed drains	$10,000	2024
Total Estimated Cost		**$406,000**	

TASK 3: EVALUATE OPERATIONAL, MANAGERIAL, AND FINANCIAL NEEDS AND IMPACT ON UTILITY RATES

OPERATIONAL NEEDS OF CATHLAMET UTILITY SYSTEMS

The Town currently has five public works employees who dedicate different portions of their time to operating and maintaining the water and sewer systems. The Public Works Superintendent, along with four utility maintenance workers run the day-to-day operations of both the water and sewer systems. The Town Clerk-Treasurer and Billing Clerk are in charge of billing and public contact for the water and sewer systems. The estimated breakdown of time spent on water/sewer activities by position is provide in Table 9.

TABLE 9

Cathlamet Public Works Staff Water/Sewer Time Estimate

Position	Estimated Water Time	Estimated Sewer Time	Estimated Other Time
Utility Maintenance Worker	48%	38%	14%
Utility Maintenance Worker	48%	38%	14%
WWTP Operator	2%	98%	0%
WTP Operator	48%	38%	14%
Public Works Superintendent	61%	30%	9%
Billing Clerk	35%	35%	30%
Finance	15%	15%	70%
Project Manager	15%	15%	70%

Based on the above table, it appears that employees equal to approximately three full-time equivalents (FTEs) currently work on water system activities and employees equal to approximately three full-time equivalents (FTEs) currently work on sewer system activities.

Per Department of Health requirements, the Town of Cathlamet Water System must have a certified Water Distribution Manager (WDM) to oversee the system. The Cathlamet water treatment plant requires a Water Treatment Plant Operator 3 (WTPO 3) certified employee. Shift operators of the water treatment plant must have at least a WTPO 2 certification. The Town's water system also requires a certified cross-connection control specialist (CCS 1) and a backflow assembly tester (BAT).

Per the requirements of the Town's WWTP NPDES permit, the Town must have an operator certified for at least a Class II plant routinely onsite and in direct responsible charge of the overall operation at all time. Shift operators must possess at least a Class I certification.

Maintaining certified operators in small rural water and sewer utilities is increasingly challenging as many certified operators are nearing retirement age and fewer people are entering the profession. Providing good management and budgetary support for utilities can be an important element in attracting and maintaining qualified operators.

Since both the Town and the PUD provide water service, maintain water infrastructure, and bill for water related services, there are likely efficiencies and economies of scale that could be gained through consolidation of the two utility systems. The PUD has indicated that they believe that they could operate the combined Cathlamet/Puget Island Water System with one additional employee. It is likely that the PUD would need two additional employees to operate the WWTP and sewer system. Since the PUD does not currently have the required Level 3 certified water operator or Level 2 wastewater operator on staff, the PUD would need to either hire the Town's operators, hire other operators, or have current employees obtain operator certifications over time. The PUD believes that it could complete administrative and billing activities for the combined Cathlamet/Puget Island water system and sewer system with its current administrative staff since the PUD already sends an electric bill to each of the Town's water and sewer customers. Any staffing changes made due to a consolidation would need to consider impacts to any existing labor agreements or employment contracts. Consolidation would likely require changes in the Town's staffing model since currently many positions are funded at least partially through water utility or sewer utility funds.

MANAGERIAL NEEDS OF CATHLAMET UTILITY SYSTEMS

Both the Town of Cathlamet Water and Wastewater Systems are managed by the Town's Public Works Superintendent. The Public Works Superintendent reports to the Mayor and Town Council who establish the budget and set policy direction for the water and sewer systems. If the PUD were to take over the Town's water and sewer systems, the PUD's General Manager would manage the water and sewer systems and would report to the PUD Board of Commissioners who would establish budgets and set policy direction as they currently do for the PUD's three existing water systems.

Currently the Cathlamet water and sewer system are governed by the Town Council who are elected by the citizens of the Town of Cathlamet. If the PUD were to take over the water and sewer systems, these utility systems would be governed by the PUD commissioners who are elected by all residents of Wahkiakum County, including the residents of Cathlamet.

FINANCIAL NEEDS OF CATHLAMET UTILITY SYSTEMS

Water System

Tables 10-12 show the Town of Cathlamet's water fund revenues, expenditures, and a summary of the cash flow in 2022 and 2023. The budgeted funds for 2024 are also shown.

TABLE 10

Summary of Cathlamet Water System Revenues

Item	2022	2023	2024 (Budgeted)
Water Service	$431,870.31	$452,588.22	$460,325.67
Consumption	$211,120.87	$256,946.23	$200,000.00
Installation and Connections	$76,013.19	$60,388.32	$58,000.00
Late Fees	$9,242.19	$9,802.04	$6,500.00
Miscellaneous Revenue	$14,252.92	$1,966.49	$8,600.00
Investment Interest	$24,674.44	$45,187.48	$28,620.00
Utility Tax	$40,077.56	$42,341.18	$43,000.00
Subtotal Revenues	**$807,251.48**	**$869,219.96**	**$805,045.67**
Deposits	$5,340.00	$4,900.00	$8,300.00
Total Revenues	**$812,591.48**	**$874,119.96**	**$813,345.67**

TABLE 11

Summary of Cathlamet Water System Expenses

Item	2022	2023	2024 (Budgeted)
Salaries and Wages	$184,129.15	$202,575.52	$208,100.00
Personnel Benefits	$97,474.84	$106,608.69	$127,500.00
Office Supplies	$124.31	$329.50	$500.00
Tools and Minor Equip	$7,990.11	$6,650.71	$20,000.00
Audit Costs	$5,375.43	$0.00	$6,325.00
Advertising	$0.00	$430.38	$200.00
IT	$6,292.76	$9,155.90	$7,500.00
Training-Travel	$1,558.49	$600.00	$2,000.00
Excise Tax	$28,426.78	$29,793.94	$29,000.00
Utility Tax Due	$46,657.01	$44,660.73	$47,500.00
Operating Permits	$5,106.60	$5,985.60	$8,000.00
Insurance	$20,262.98	$23,514.69	$26,802.49
Utilities	$1,757.58	$1,848.96	$2,000.00
Other Services and Costs	$6,529.66	$11,482.22	$12,000.00
Plant Supplies and Chemicals	$17,702.86	$14,391.91	$22,500.00

TABLE 11 – (continued)

Summary of Cathlamet Water System Expenses

Item	2022	2023	2024 (Budgeted)
Professional Services	$8,790.63	$12,465.36	$18,600.00
Drinking Water Testing	$5,959.00	$2,023.00	$3,000.00
Plant Communications	$2,219.42	$4,151.02	$3,750.00
Utilities PIWS	$29,087.35	$32,905.23	$34,500.00
Plant Repairs and Maint.	$2,668.51	$0.00	$5,000.00
Services Supplies	$30,386.07	$31,712.86	$20,000.00
Distribution Supplies	$16,874.58	$32,366.48	$20,000.00
Vehicle Fuel and Maintenance	$2,833.73	$6,002.38	$7,500.00
Distribution Prof Services	$2,097.07	$3,106.18	$5,000.00
Communications	$7,136.49	$6,350.53	$7,000.00
Reservoir Maint.	$55.46	$0.00	$0.00
Operating Leases	$1,236.81	$1,172.28	$4,900.00
Subtotal Expense	**$538,733.68**	**$590,284.07**	**$649,177.49**
Deposits	$6,842.38	$6,200.00	$8,300.00
Total	**$545,576.06**	**$596,484.07**	**$657,477.49**

TABLE 12

Summary of Cathlamet Water System Cash Flow

Summary	2022	2023	2024
Beginning Balance	$1,210,571.90	$1,190,006.35	$521,430.52
Total Revenues	$812,591.48	$874,119.96	$813,345.67
Total Expenses	$545,576.06	$596,484.07	$657,477.49
Net Revenue	**$267,015.42**	**$277,635.89**	**$155,868.18**
CIP	$199,115.40	$847,364.75	$360,285.15
Transfers to Debt Service Fund	$88,465.57	$98,846.97	$98,327.46
Ending Balance	**$1,190,006.35**	**$521,430.52**	**$218,686.09**

As seen in Table 12, the overall balance of the water utility funds decreased in both 2022 and 2023 and is projected to decrease in 2024 due to capital improvement expenditures, which included water meter replacement, installation of a generator at the WTP, and construction of two new PRV stations on Boege Road.

The Town is currently paying off three loans related to the public water system. The Town's debt service schedule for the next 10 years is shown in Table 13.

TABLE 13

Town of Cathlamet Debt Service Schedule

Year	USDA Water Rev Bond #02, 534-2	PWTF Loan PR18-96103-070	PWTF Loan PC20-96103-045	Total
2024	$20,295.00	$13,865.00	$41,621.59	$75,781.59
2025	$20,295.00		$41,096.67	$61,391.67
2026	$20,295.00		$40,571.75	$60,866.75
2027	$20,295.00		$40,046.82	$60,341.82
2028	$20,295.00		$39,521.90	$59,816.90
2029	$20,295.00		$38,996.99	$59,291.99
2030	$20,295.00		$38,472.05	$58,767.05
2031	$20,295.00		$37,947.15	$58,242.15
2032	$20,295.00		$37,422.20	$57,717.20
2033	$20,295.00		$36,897.31	$57,192.31
Scheduled End Date	2039	2024	2039	

Water Rate Comparison

The Town of Cathlamet's current water rates are summarized in Table 14.

TABLE 14

Town of Cathlamet Water Rates

Meter Size	In-Town Base Rate(1)	Out-of-Town Base Rate(1)	In-Town Usage Rate(2)	Out-of-Town Usage Rate(2)
5/8 inch - 3/4 inch	$52.09	$58.54	$2.58	$3.16
1 inch	$81.47	$85.18	$2.58	$3.16
1-1/2 inch	$108.29	$112.53	$2.58	$3.16
2 inch	$138.41	$143.25	$2.58	$3.16
3 inch	$183.70	$188.10	$2.58	$3.16
4 inch	$240.60	$247.40	$2.58	$3.16

(1) Monthly minimum charge.
(2) Cost per 100 cubic feet of water exceeding 350 cubic feet in any one month.

Multiple-family dwelling units using only one meter are billed as follows: billed as a 5/8-inch meter for single-family, as a 3/4 inch for two to three units, as a 1-inch meter for four to six units, as a 1-1/2-inch meter for seven to ten units, as a 2-inch meter for 11 to 20 units, as a 3-inch meter for 21 units and up, and as a 4-inch meter for schools.

Table 15 shows the current Wahkiakum County PUD No. 1 water rates for the Puget Island Water System.

TABLE 15

Puget Island Water Rates

Meter Size	Base Charge	Usage Fee
5/8 inch - 3/4 inch	$43.00	$2.21
1 inch	$50.74	$2.21
1-1/2 inch	$58.47	$2.21
2 inch	$63.64	$2.21

To compare the Town and PUD water rates, billing totals for a 5/8-inch meter for a selection of water usage volumes ranging from 100 to 1,000 cubic feet are shown in Table 16.

TABLE 16

Comparison of Town and PUD Water Rates

Consumption (cubic feet)	Cathlamet In-Town Bill	Cathlamet Out-of-Town Bill	PUD Bill	Percent Difference in Bill (In-Town)	Percent Difference in Bill (Out-of-Town)
100	$52.09	$58.54	$45.21	-13%	-23%
200	$52.09	$58.54	$47.42	-9%	-19%
300	$52.09	$58.54	$49.63	-5%	-15%
400	$53.38	$59.83	$51.84	-3%	-13%
500	$55.96	$62.41	$54.05	-3%	-13%
600	$58.54	$65.00	$56.26	-4%	-13%
700	$61.13	$67.58	$58.47	-4%	-13%
800	$63.71	$70.16	$60.68	-5%	-14%
900	$66.29	$72.75	$62.89	-5%	-14%
1,000	$68.87	$75.33	$65.10	-5%	-14%

Rates for in-Town customers recently increased, as the Town is working towards adjusting rates to eliminate the difference between in-Town and out-of-Town customers. As shown in Table 16, at the current rates, the water bill for a residential customer inside the town limits would be somewhere between 3 percent and 13 percent lower using the PUD's current rates for an average of about 6 percent. The bill for a residential customer outside the Town limits would be between 13 and 23 percent lower using the PUD's current rates for an average of about 15 percent. If the PUD were to take over the Town water system, the PUD should consider completing a rate study to better understand the revenue impacts of either charging Town customers existing PUD rates or maintaining the Town's current rate structure. The PUD may want to consider a graduated adjustment in rates to minimize impacts to customers.

Sewer System

Tables 17-19 show the Town of Cathlamet's Sewer Fund revenues, expenditures, and a summary of the cash flow in 2022 and 2023. The budgeted funds for 2024 are also shown.

TABLE 17

Cathlamet Sewer System Revenues

Item	2022	2023	2024
Service[(1)]	$713,908.89	$603,507.46	$600,000.00
Installation and Connection	$43,736.49	$17,322.01	$18,000.00
Utility Tax	$42,890.62	$36,478.75	$36,180.00
Late Penalties	$3,657.81	$3,067.96	$3,000.00
Investment Interest	$16,002.53	$38,152.63	$34,000.00
Miscellaneous	$0.00	$4,792.53	$0.00
Subtotal Revenue	**$820,196.34**	**$703,321.34**	**$691,180.00**
Utility Deposits	$15,560.00	$4,100.00	$16,000.00
Total Revenue	**$835,756.34**	**$707,421.34**	**$707,180.00**

(1) After 2022, all revenues from sewer usage rates were combined into the "service" category.

TABLE 18

Cathlamet Sewer System Expenses

Item	2022	2023	2024
Sewer Salaries and Wages	$153,844.02	$174,050.77	$208,400.00
Sewer Personnel Benefits	$76,680.34	$84,126.91	$118,500.00
Sewer Uniform Allowance/Office Supplies	$593.36	$547.29	$500.00
Sewer Tools and Minor Equip.	$7,234.39	$2,974.21	$7,500.00
Sewer Audit Costs	$2,150.18	$0.00	$2,530.00
Sewer Advertising	$0.00	$54.29	$0.00
Sewer Information Tech.	$5,407.36	$8,476.61	$9,000.00
Sewer Training/Travel	$392.64	$701.14	$2,000.00
Sewer Excise Tax	$20,131.78	$23,387.86	$23,900.00
Sewer Utility Tax Due	$49,036.47	$36,402.79	$42,917.31
Sewer Operating Permits	$3,444.34	$4,234.67	$3,000.00
Sewer Insurance	$23,173.14	$26,891.83	$27,120.13
Sewer Utilities	$40,207.45	$35,551.24	$38,500.00
Sewer Other Services and Costs	$4,426.20	$7,153.89	$7,500.00
Sewer Supplies	$30,918.65	$27,293.36	$25,000.00
Sewer Communications	$11,142.49	$10,172.52	$10,700.00
Sewer Repairs and Maint.	$3,744.20	$7,312.61	$5,000.00

TABLE 18 – (continued)

Cathlamet Sewer System Expenses

Item	2022	2023	2024
Sewer Services Supplies	$2,016.81	$5,013.80	$5,000.00
Sewer Vehicle Fuel and Maint.	$1,694.28	$5,031.10	$3,500.00
Sewer Professional Services	$12,625.46	$24,818.00	$10,000.00
Sewer Engineer Services	$2,308.98	$0.00	$0.00
Operating leases	$1,236.81	$1,172.28	$4,500.00
Subtotal Expense	**$452,409.35**	**$485,367.17**	**$555,067.44**
Deposits	$16,561.58	$8,400.00	$16,000.00
Total Expense	**$468,970.93**	**$493,767.17**	**$571,067.44**

TABLE 19

Summary of Cathlamet Sewer System Cash Flow

Summary	2022	2023	2024
Beginning Balance	$611,335.00	$692,406.30	$883,871.71
Total Revenues	$835,756.34	$707,421.34	$707,180.00
Total Expenses	$468,970.93	$493,767.17	$571,067.44
Net Revenue	**$366,785.41**	**$213,654.17**	**$136,112.56**
CIP	$68,491.24	$22,188.76	$50,000.00
Debt Service	$217,222.87	$0.00	$176,858.14
Ending Fund Balance	**$692,406.30**	**$883,871.71**	**$793,126.13**

Table 19 shows the Town is maintaining a relatively stable ending fund balance; however, the Town has not completed many capital improvements in the sewer system over the last few years.

The Town is currently paying off one loan related to the sewer system. The Town's debt service schedule for the next 10 years is shown in Table 20.

TABLE 20

Town of Cathlamet Sewer System Debt Service Schedule

Year	Ecology EL230101
2024	$184,912.10
2025	$184,912.10
2026	$184,912.10
2027	$184,912.10
2028	$184,912.10
2029	$184,912.10
2030	$184,912.10
2031	$184,912.10
2032	$184,912.10
2033	$184,912.10
Scheduled End Date	2053

Sewer Rates

The Town of Cathlamet sewer rates are made up of a base monthly rate and a volume charge based on a customer's "winter average," which is defined for various situations and customer types under Cathlamet Municipal Code (CMC) 13.95.030. The base fee is $100 per residential unit covered by the account.

The winter average is calculated for each customer from December 1st until March 1st, and excludes the first 600 cf of sewage. Currently, this volume charge is $0.35 per cubic foot in excess of 600 cf. So, a single-family customer account with a winter average of 700 cf will have a monthly sewer volume charge of $35 and a total monthly sewer rate of $135. New customers are charged only the base monthly fee until sufficient usage data can be gathered.

Debt Considerations

Both the Cathlamet water and sewer systems have existing outstanding loans for previous capital improvement projects. The terms of these debt obligations will need to be reviewed with legal counsel prior to a consolidation.

Access to Capital Funding

Should the two entities decide to move forward with consolidation of the two utilities, they would be eligible for capital funding through the Drinking Water System Rehabilitation and Consolidation grants. This could help with repair and replacement of aging infrastructure for both systems. The consolidated system might also be better positioned to obtain bond financing due to the size of the consolidated system. Both a consolidated system and the individual systems would continue to be eligible for capital

funding through DWSRF, PWTF, and USDA Rural Development; however, the funding terms and competitiveness of applications would likely be less favorable as individual systems.

Strategies to Offset Lost Town Revenue

If the PUD were to take over the Cathlamet water system and sewer system, the Town would lose a source of revenue that has historically been used to help pay for the services of the public works and administration staff. Although these staff members would have less duties to perform, there would be a loss of efficiency and economy of scale. For this transfer to be attractive to the Town of Cathlamet, there would likely need to be an alternative source of revenue developed to offset this loss of efficiency and economy of scale.

One existing source of revenue that the Town of Cathlamet could continue to collect would be the Town's utility tax. The Town currently levies a 6 percent utility tax on the water bills for its in-Town customers. Revenue from this utility tax goes into the Town's General Fund. Table 21 shows revenues raised by the Town's existing utility tax.

TABLE 21

Historical Water Utility Tax Revenue from 2022 through 2023

Description	2022	2023
Town Water Utility Tax Revenue	$40,078	$42,341
Town Sewer Utility Tax Revenue	$42,891	$36,479
Town Tax Revenue	**$82,968**	**$78,820**

One option for providing new revenue for the Town would be for the Town to increase the utility tax. This could create additional revenue for the Town, although this would have the effective impact of increasing the water and sewer bills for existing customers.

COST OF CONSOLIDATION

If the two systems were to consolidate, there would likely be the following costs associated with consolidation:

1. Legal costs for both entities to draft agreements for transfer of utilities.

2. Staff time for transitioning assets, documentation, and system knowledge.

3. Staff time to restructure Town staffing positions and develop revenue replacement strategies.

4. Development of a water system plan to describe the consolidated water system.

At this time, it is difficult to estimate a cost of these efforts.

ALTERNATIVES TO CONSOLIDATION

The primary alternative to consolidation is to maintain the status quo with two separate, independently owned, operated, and maintained systems. Within this alternative, there are likely a number of permutations that might include strategic partnerships through mutual aid agreements, shared staffing, or shared billing arrangements. These permutations would take additional time and effort to identify, evaluate, and assess. Maintaining the status quo would keep the existing management and operational structure for both systems. With the shortage of qualified, certified operators, it is likely that both systems might continue to struggle to keep their water and sewer operator positions adequately staffed. Both systems would need to continue to find and develop their own sources of capital funding to complete repair and replacement projects. A consolidated system would likely have more access to capital funding to repair and replace aging infrastructure through water system consolidation grant funds. The separate unconsolidated systems would likely require higher water rates over time than the consolidated system due to the economies of scale for a consolidated system.

CONCLUSIONS AND RECOMMENDATIONS

The Town of Cathlamet and the Wahkiakum PUD both operate water utilities in the Cathlamet area. The Town also operates a sewer utility that provides wastewater collection and treatment. The Town's water and sewer utilities are generally in good condition; however, improvements to both utilities will be necessary over the next 5 to 10 years to repair/replace aging infrastructure and keep them operating efficiently. Some economies of scale and operational efficiencies can likely be achieved through the PUD taking over the Cathlamet water and sewer systems through elimination of some duplication in operations and billing activities. Over time, these efficiencies should translate into lower costs of providing service and lower rate increases than might otherwise be necessary. Having water, sewer, and power services for the area being provided by a single utility could also help improve customer service since there would be a single point of contact for utility services in the area. The consolidation of water and sewer services under one utility-focused organization could potentially also help with retention and recruitment of certified operators. The consolidated utility would likely have greater financial, managerial, and technical capacity to operate the water and sewer systems due to economies of scale and a more focused mission of the utility. It appears that the consolidation of these utilities is feasible and likely can provide benefits for both the utilities and customers. The primary challenge with consolidation is the potential for

revenue and staffing impacts with the Town. These impacts could potentially be mitigated through increases in utility taxes or implementation of a utility franchise and associated franchise fee. The following are the recommended next steps for potential consolidation:

1. The governing bodies for both the Town and the PUD should review this study and determine their interest in moving forward with potential consolidation.

2. The value of the Cathlamet utilities should be established through a valuation study to provide a basis for an acquisition agreement. A preliminary valuation estimate of the water and sewer utilities has been included in Appendix B. For the purposes of this study, the valuation has been estimated as the depreciated value of utility assets plus cash reserves, minus outstanding debt.

3. Potential utility tax or other revenue replacement fee alternatives should be further developed to assist the Town with revenue replacement and staffing mitigation.

4. Legal documents for the utility transfer and any associated utility franchise should be developed.

5. Both agencies should pursue water system consolidation funding from the Department of Health to assist with completion of a consolidated water system plan and needed capital improvements to facilitate the consolidation.

APPENDIX A

TOWN OF CATHLAMET
WSP CHAPTERS 8 AND 9

CHAPTER 8

CAPITAL IMPROVEMENT PROGRAM

OBJECTIVE

This chapter presents the Capital Improvement Program (CIP) for the 10- and 20-year planning periods. Recommended water system improvements and associated costs, along with scheduling information is presented in the following sections according to analyses, identified deficiencies, and recommendations identified in Chapter 3 of this plan. For the proposed projects identified in this chapter, preliminary cost estimates are provided in Appendix Q. The project costs are preliminary estimates and are in 2022 dollars and includes predesign, design, permitting, construction, and construction administration costs unless otherwise noted.

Projects that are in progress or completed since the 2015 Water System Plan are shown in Table 8-1.

TABLE 8-1

Capital Improvement Progress Since 2015

Title	Year Scheduled	Year Completed
Water Treatment Plant Interim Intake Modifications	2016	2016
Main Street Water Main Break Repair	-	2018
Columbia Street Water Main Improvements	2020	2021
WTP Generator	2023	In Progress
Boege Road PRV Stations	2023	In Design

CAPITAL IMPROVEMENTS

SOURCE IMPROVEMENTS

As shown in Chapter 3, the Town has adequate water rights to meet all current and projected demands. However, the raw water intake in the Elochoman River does not have adequate capacity to meet projected maximum day demands by 2027.

According to observations and discussions with Town staff, it is suspected that part of the intake structure may be partially obstructed by sediment from the river. Backwashing the infiltration pipe with air blowers only proves partially useful, which leads the Town to believe some other obstruction between the air line and the raw water wet well may be limiting the intake capacity. A thorough cleaning and inspection of the intake is

recommended as a short-term solution to increase capacity. However, a long-term solution is still recommended as well.

Since the Elochoman River is the sole water source for the Town, and subject to periods of high turbidity in winter and low flow in summer, the Town is investigating alternative sources to increase reliability in both quality and quantity. The Town's total water rights, which include surface water rights for the Elochoman River, Cougar Creek, and Abe Creek are sufficient to meet the Town's demand during the 20-year planning period. However, Cougar and Abe Creeks are not developed sufficiently to currently utilize them as potable water sources. The Town has previously investigated a number of options including utilizing the creeks for non-potable uses, particularly during the summer season, thereby reducing the summer season withdrawal from the Elochoman River. All options to utilize the creeks as sources would require construction of significant infrastructure.

Another possibility the Town has discussed with the Washington Department of Ecology is transferring a portion of the water rights from the above creeks to a groundwater source. Ideally, this source would be located upstream of the WTP within the Elochoman River valley. Provided water quality from this groundwater source meets state drinking water standards, the water could be pumped directly into the distribution system. A number of small test wells were installed as part of an unrelated hydrogeologic investigation, which indicated groundwater in the area under artesian pressure. Further investigation will be necessary to ascertain quantities and quality available.

However, Ecology has indicated that there may be water right issues that limit the Town's ability to transfer these rights to another location. A groundwater source would reduce impacts to protected salmonids in the Elochoman River associated with summer low flow and would increase reliability of the Town's source of supply. No further progress has been made on the effort to transfer water rights since 2008. Should the Town decide to pursue a change in water rights, the Town will also evaluate the feasibility of developing the Abe and Cougar Creek sources as either potable or non-potable sources.

Currently, Wahkiakum PUD is working on a project to drill a well on Puget Island for an emergency source for the Puget Island Water System. This is not likely to be used as a source for the Town of Cathlamet as a booster pump station would need to be installed in order to pump water back across the bridge. This would require long term investment from both systems. Puget Island can currently only use this as an emergency source due to the agreement between the Town and the PUD that Cathlamet will be the sole source of water to Puget Island. Consolidation of the two systems is also being considered. The management structure of a combined system has not been agreed upon.

Source projects are identified below.

SO-1: Improve Raw Water Intake
Estimated Cost: $100,000

Pumping tests performed by the Town in 2022 indicate the raw water intake has a maximum capacity of about 450 gpm (648,000 gpd). A secondary surface intake was constructed in 2016, however it does not benefit the treatment plant during extreme low river levels in the summer. This intake could be lowered or modified to allow it to collect more water year-round. This project is scheduled for 2024 because under current projections, unless the Town drastically reduces system-wide DSL and/or maximum day demand, demands will exceed the raw water intake capacity by 2027.

SO-2: Replace Raw Water Infiltration Gallery
Estimated Cost: $1,000,000

The preliminary cost estimate for this project is $1,000,000. This project is scheduled for the 10-year CIP if project SO-1 is completed in the near future. It will likely take approximately 1 to 2 years to design and permit these improvements.

SO-3(a): Transfer or Change Water Rights
Estimated Cost: $20,000

The town currently has a single source of supply, the surface water intake at the Elochoman River. Utilizing a groundwater source would require a transfer or change of the Town's existing water rights since the Elochoman watershed basin is closed to any new appropriations. One other possibility is the purchase of existing groundwater water rights from willing sellers. Additional investigation will be necessary to determine if a transfer, change, or purchase is feasible. The investigation might include the Town conducting a detailed hydrogeologic investigation followed by the subsequent drilling of test wells, and finally the drilling and equipping of production wells. The estimated cost of initiating a water right transfer or change is $20,000. Purchase of a groundwater right is contingent on the availability of water rights for sale in the basin and the actual cost of the right if available. The costs associated for this project do not include design, permitting, construction, or construction administration.

SO-3(b): Detailed Hydrogeologic Investigation
Estimated Cost: $30,000

Conduct a detailed hydrogeologic investigation within a half-mile to either side and the terminal end of the proposed pipeline upstream of the WTP in the Elochoman River valley. The estimated cost of a detailed hydrogeologic investigation is $30,000. The costs associated for this project do not include permitting, construction, or construction administration.

SO-3(c): Drill Test Well
Estimated Cost: $300,000

Following the hydrogeologic investigation and a suitable location(s) determined, complete a test well for a possible production well. The test well will include the services of a hydrogeologist, preliminary investigation and report, 8-inch-diameter test well, pumping tests, and water quality sampling.

SO-3(d): Drill and Equip Production Well
Estimated Cost: $1,100,000

Provided the test well yields adequate results for water quantity and quality for production capacity, a production well will be drilled and equipped. In addition to the well, a transmission main will be required to transport the water from the wellhead to the distribution system or reservoir. The estimated cost for this project includes equipping the well, pump house (if necessary), and transmission main to connect to the system. Since many of these items are dependent upon the outcome of the detailed hydrogeologic investigation the estimate provided is planning level only.

SO-4: Surface Water Diversion/Satellite Water Treatment Plant Feasibility Study
Estimated Cost: $50,000

In addition to the Elochoman River, the existing water rights held by the Town of Cathlamet include the surface water sources of Cougar and Abe Creeks, which are currently not developed. The report would study the feasibility of the project, which would consist of construction of a diversion structure at each source, a common raw water transmission main, a small filtration plant, and distribution main connecting to the existing system.

The estimated cost of the Feasibility Study for this project is $50,000. The costs associated for this project do not include permitting, construction, or construction administration. Following the Feasibility Study, a pilot study would be required, followed by detailed design, plans, and specifications for the project at an estimated cost of $500,000.

The location of the filtration plant is dependent upon the availability of power, site access, and construction easements for the transmission main from the diversions, and the intercept to the distribution system. Water treatment would likely be provided by a Conventional or Membrane Package Plant sized to meet the water rights for those sources, which equates to approximately 0.65 mgd. A Predesign Report would be required to determine the treatment process, raw water quality analysis, and siting locations. Prior to the Predesign Report, the overall cost of this project is highly speculative, but would likely exceed $4,000,000.

Another alternative to be investigated in the Predesign Report would include the use of these sources for the Town's non-potable water requirements such as irrigation at the ball fields, High School, and golf course. This could eliminate the need for treatment. It would also reduce demand at the existing WTP during the summer when low flows in the Elochoman River are typically experienced, thereby providing more water for potable uses. The estimated cost of developing these sources as non-potable sources ranges from $1,000,000 to $3,000,000.

TREATMENT IMPROVEMENTS

The following projects are recommended for the Town's treatment facilities:

WT-1: Install WTP Emergency Generator
Estimated Cost: $176,000

Install a 150 kW generator at the WTP to improve reliability of the system during a power outage. This project is projected currently being constructed and will allow the Town to have its own emergency capabilities and be able to recover the system more quickly during power outages. The costs associated for this project do not include predesign, design, or permitting.

WT-2: Replace Finish Water Pumps
Estimated Cost: $60,000

Replace the two existing 300-gpm finish water pumps with two 350-gpm pumps. This project is included in the 10-year CIP because it is necessary to maximize the treatment plant capacity of 700 gpm.

STORAGE IMPROVEMENTS

As discussed in Chapter 3 of this Plan, the existing distribution system is capable of meeting fire flow requirements in the Town's system, with the exception of a few locations in the downtown area. Hydrant testing and fire flow modeling indicate that required fire flow of 1,500 gpm for industrial/commercial areas cannot currently be achieved in the downtown area along 2nd Street, and one hydrant near the elementary school.

S-1: New 530,000-Gallon Reservoir
Estimated Cost: $4,200,000

Construct a new 530,000-gallon glass lined, bolted steel reservoir adjacent to the existing Kent's Bridge Reservoir. At currently projected demands, the Town is expected to need additional storage capacity by 2037. Kent's Bridge Reservoir site is the ideal location for a new tank because the location has adequate land and the location would allow water to be conveyed to most of the system by gravity, through cascading PRVs.

DISTRIBUTION SYSTEM IMPROVEMENTS

Distribution system deficiencies were identified and improvements were recommended in Chapter 3. Distribution improvements are classified into three major categories: Repair/Replacement, Hydraulic Improvements, and Water Main Extensions. All distribution system improvements will be designed to meet fire flow requirements.

Lengths of water mains to be replaced were estimated from GIS base maps. Actual lengths required may vary when design surveys are performed. Following are the recommended distribution system improvements:

D-1: Boege Road PRV Stations
Estimated Cost: $295,500

Install two new Pressure Reducing Valve (PRV) stations near the intersection of State Route 4 and Boege Road and adjust the settings of the existing Boege Road PRV. This project is currently under design and is scheduled to begin construction in 2023. The project will increase service pressures in the southeastern end of the system without adversely increasing pressures on the west side of the existing Pressure Zone 2.

D-2: Valve and Hydrant Replacement Program
Estimated Cost: $15,000/year

According to operations staff, the Town currently has an abundance of old and aging valves and hydrants. To combat the increased cost of maintenance and replacement of broken valves and hydrants, the Town is pursuing to replace old and aging valves and hydrants with a budget of $15,000 per year.

D-3: 2nd Street Main Replacement
Estimated Cost: $380,000

Replace an estimated 800 linear feet of 4-inch (AC) water main with 8-inch (PVC) water main along 2nd Street from the marina at end of 2nd Street to Una Avenue. This project is projected to begin construction in 2024. This project will increase fire flow availability to the industrial/commercial area along 2nd Street and near the marina.

D-4: Maple Street Extension
Estimated Cost: $100,000

Replace an estimated 500 linear feet of 6-inch fiberglass wrapped PVC water main with 8-inch (PVC) water main from the corner of Maple Street and South 3rd Street to Wahkiakum Middle/Elementary School, to increase fire flow availability.

D-5: Jacobson Road Water Main Improvements
Estimated Cost: $100,000

Wahkiakum County has discussed plans to replace a section of Jacobson Road from SR 4 to Columbia Street. This gives the City an opportunity to upsize the current 6-inch water main with 8-inch (PVC) water main to increase fire flow availability. This improvement would include upsizing approximately 1,700 feet of water main and is placed in the 20-year improvements due to the county not having a defined start date for the project.

D-6: Meter Replacement Program
Estimated Cost: $370,000

The Town is currently in the process of replacing all service meters, which should be complete by the end of 2024. The estimated life of these meters is about 20 years. So, a meter replacement program is included in the 20-year CIP.

D-7: Pipe Replacement Program
Estimated Cost: $100,000/year

The Town has many old and aging pipes within the water system, aside from the projects mentioned above. It is unknown which sections of pipe take priority over another, so, a pipe replacement program is added to the 10- and 20-year CIP with a budget of $100,000 per year (in 2022 dollars). Water pipe areas of concern could arise from leak detection surveys, water main breaks, customer complaints, etc., and funding from the Pipe Replacement Program can be put towards fixing these areas.

DEVELOPER EXTENSIONS

The Town will not incur any costs associated with developer extensions.

DE-1: Front Street Main Replacement
Estimated Cost: $304,000

Replace an estimated 1,240 linear feet of 6-inch (AC) water main with 8-inch (PVC) water main along Front Street from River Street to the Julia Butler Hansen Bridge. This project is included in the 20-year CIP to increase fire flow availability.

DE-2: Greenwood Road Main Replacement
Estimated Cost: $320,000

Replace an estimated 1,350 linear feet of 6-inch (AC) water main with 8-inch (PVC) water main along Greenwood Road from Cedar Lane to Mattie Street to increase fire flow availability.

DE-3: Greenwood Reservoir Main Extension
Estimated Cost: $270,000

Install an estimated 1,200 linear feet of 8-inch water main connecting the main on Greenwood Road south of the Greenwood Reservoir and Morgan Drive. This area will need to be served from the PRV that supplies water from Pressure Zone 4 to Pressure Zone 5. This project will be financed as a developer extension when development occurs in that area. The Town will maintain the water line once it is accepted as complete. The cost estimate for this improvement is $270,000.

DE-4: Crista Vista Main Extension
Estimated Cost: $881,000

Install an estimated 4,200 linear feet of 8-inch (PVC) water main from Clover Street east then south to the intercept with the water main on State Route 4 in order to connect the Crista Vista Water System. This project would likely be developer financed.

DE-5: Upper Elochoman Valley Road Main Extension
Estimated Cost: $1,380,000

Install up to an estimated 7,500 linear feet of 8-inch (PVC) water main from the Water Treatment Plant northeast up the Elochoman Valley Road. The project route would parallel the highway and connect to the proposed new reservoir. In addition, pending the outcome of a hydrogeological investigation and water right transfer, this new water main could also connect the water system to a new groundwater source. The estimated cost of the 7,500 linear feet of water main is $1,380,000. Estimated costs of the new reservoir and groundwater source projects are described above.

DE-6: Una Avenue Main Replacement
Estimated Cost: $155,000

Replace an estimated 600 linear feet of 4-inch (AC) water main with 8-inch (PVC) water main along Una Avenue from 3rd Street to Butler Street to increase fire flow availability.

TELEMETRY AND CONTROL SYSTEM IMPROVEMENTS

T-1: SCADA Control System
Estimated Cost: $200,000

As described in Chapter 3, the existing telemetry and control system requires the operator to spend significant amounts of time at the WTP and the Town has reported occasional signal blackout between the WTP and the reservoirs. The existing system is old, and maintenance and repair of the system will become more of a problem over time. Modern control systems provide better system information and control capabilities. The Town is planning on replacing the existing control system with a more reliable system.

CONSERVATION MEASURES

LD-1: Leak Detection and Repair Program
Estimated Cost: $10,000 Every 3 Years

The Town will pursue a regular leak detection and repair program. The annual cost of leak detection and repair may vary in reality; however, for planning and budgeting purposes the Town will allocate $10,000 every 3 years to leak detection and repair.

PLANNING

P-1: Water System Plan
Estimated Cost: $75,000

Water System Plans are required to be updated every 10 years. The amount budgeted for the next Plan is $75,000 to begin in year 2033.

CAPITAL IMPROVEMENT SCHEDULE

The summary of estimated costs below are in 2022 dollars. The total estimated cost of all recommended capital improvements is $11,334,500, not including developer extensions.

- Source of supply improvements are estimated to cost $2,600,000.
- Water Treatment Plant improvements are estimated to cost $236,000.
- Water storage improvements are estimated to cost $4,200,000.
- Distribution system improvements are estimated to cost $3,953,500.
- Developer extension expenditures are estimated to cost $3,310,000. These will most likely be financed by the developer.
- Telemetry system improvements are estimated to cost $200,000.
- Other capital improvements such as leak detection and water system plan updates are estimated to cost an additional $135,000.

The 10-year capital improvements total $3,566,500. In 2021, the Town served an average of 673 active metered services, serving a total of 822 ERUs (not counting DSL or the intertie with Puget Island). The Town's cost of the 10-year recommended capital improvements constitute a cost of $5,299 per metered connection, or $4,339 per ERU served.

The 20-year capital improvement plan includes those projects to be completed from year 10 through year 20. Many of these projects will be developer financed if they are to be completed. The balance of total project costs from year 10 to year 20 is $11,324,500, not including developer extensions.

The capital improvements identified above are indicated on Figure 8-1. A prioritization schedule and cost summary for the recommended 10- and 20-year Town/developer funded improvements are shown in Table 8-2 and assumes an inflation rate of 4 percent.

N

0 500 1,000 2,000
Feet

LEGEND:

- Distribution System Improvement
- Developer Extension
- Existing Pipes
- Proposed PRV
- TOWN LIMITS
- RETAIL SERVICE AREA
- RESERVOIR
- PRESSURE REDUCING VALVE

CAPITAL IMPROVEMENT PROJECTS APPLYING TO THE WHOLE TOWN OR NOT HAVING A SINGLE LOCATION ARE NOT SHOWN ON THIS MAP

TOWN OF CATHLAMET

WATER SYSTEM PLAN
FIGURE 8-1
CAPITAL IMPROVEMENT PROJECTS

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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TABLE 8-2

Capital Improvement Schedule

No.	Project Title	Total Cost[(1)]	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034-2043
Source														
SO-1	Improve Raw Water Intake	$100,000		$108,200										
SO-2	Replace Raw Water Infiltration Gallery	$1,000,000							$1,316,000					
SO-3(a)	Transfer or Change Water Rights	$20,000												$20,000[(2)]
SO-3(b)	Detailed Hydrogeologic Investigation	$30,000												$30,000[(2)]
SO-3(c)	Drill Test Well	$300,000												$300,000[(2)]
SO-3(d)	Drill and Equip Production Well	$1,100,000												$1,100,000[(2)]
SO-4	Surface Water Diversion and Satellite Water Treatment Plant Feasibility Study	$50,000												$50,000[(2)]
Water Treatment Plant														
WT-1	Install WTP Generator	$176,000	$183,000											
WT-2	Replace Finish Water Pumps	$60,000			$67,500									
Distribution System														
D-1	Boege Road PRV Stations	$295,500	$307,300											
D-2	Miscellaneous Valve Replacement and Installation	$300,000	$15,000	$16,200	$16,900	$17,500	$18,200	$19,000	$19,700	$20,500	$21,300	$22,200	$23,100	$288,400
D-3	2nd Street Main Replacement	$380,000		$411,000										
D-4	Maple Street Extension	$100,000									$142,300			
D-5	Jacobson Street Replacement	$508,000												$508,000[(2)]
D-6	Meter Replacement Program	$370,000												$370,000
D-7	Pipe Replacement Program	$2,000,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$1,000,000
Developer Extensions														
DE-1	Front Street Main Replacement	$304,000[(3)]												
DE-2	Greenwood Road Main Replacement	$320,000[(3)]												
DE-3	Greenwood Reservoir Main Extension	$270,000[(3)]												
DE-4	Crista Vista Main Extension	$881,000[(3)]												
DE-5	Upper Elochoman Valley Road Main Extension	$1,380,000[(3)]												
DE-6	Una Ave Main Replacement	$155,000[(3)]												
Storage														
S-1	New 530,000 Gallon Reservoir	$4,200,000												$4,200,000[(2)]
Telemetry and Control System														
T-1	SCADA Control System	$200,000					$243,300							
Conservation Measures														
LD-1	Leak Detection and Repair Program	$60,000			$11,200			$12,700			$14,200			$54,300
Planning														
P-1	Water System Plan Update	$75,000											$115,500	
Total		**$11,324,500**	**$605,300**	**$635,400**	**$195,600**	**$117,500**	**$361,500**	**$131,700**	**$1,435,700**	**$120,500**	**$277,800**	**$122,200**	**$238,600**	**$7,920,700**

(1) Costs are in 2022 dollars.
(2) Inflation is not included due to the construction year being unknown.
(3) The Town will not incur any costs associated with developer extensions.

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ANALYSIS

A useful metric to assess whether a utility's capital expenditures are adequate to maintain the utility's current level of service long-term is to compare the utility's average annual Capital Improvement Program budget to the total annualized replacement cost of the utility's assets. The total annualized replacement cost is defined as the cost of each asset divided by the expected useful life of that asset, summed for all assets. It is representative of the rate at which the utility's assets are declining in value (in dollars per year), assuming straight-line depreciation. If the utility is spending approximately as much every year on capital improvement projects as the rate at which its assets are declining in value (in dollars per year), the utility can reasonably be expected to maintain its current level of service, assuming that its capital spending is primarily focused on renewal of existing infrastructure. If it is spending significantly less, the utility's level of service could be expected to decline over time, and if it is spending significantly more, the utility's level of service could be expected to improve over time.

As shown in Table 3-28, the total estimated replacement cost in 2022 dollars of the Town's major water system assets is $36,263,150, and the corresponding total annualized replacement cost of those assets is about $619,779. From Table 8-2, the amount the Town plans to spend on capital improvement projects over the 10-year planning period (2023 to 2033) is $3,566,500, or an average of about $356,650 per year. This planned level of spending is less than the water system's annualized replacement cost, so it can be concluded that the Town is likely not investing sufficient resources in its Capital Improvement Program to maintain or improve its current level of service. For this reason, it is recommended that the Town conduct a rate study to analyze how they may better plan for financial viability into the future. Financial analysis for the water utility is provided in Chapter 9.

CHAPTER 9

FINANCIAL PROGRAM

OBJECTIVE

The objective of this chapter is to analyze the Town's total costs of providing water service, review the current rate structure to ensure that the current or proposed adjusted rates are adequate to cover the costs of operation and maintenance, and ascertain the Town's financial capability to implement the 10-Year Capital Improvement Plan as outlined in Chapter 8.

PAST AND PRESENT FINANCIAL STATUS

This section reviews historic revenues and expenses, and current Town of Cathlamet rates. The fund is operated on a balance budget at the end of the year. Projects identified in the yearly budgets are permitted only as funds are available.

WATER RATES

The Town adopted water rates through Ordinance 662-22, which are included in Chapter 13 of the Town of Cathlamet Municipal Code (Appendix F). Water rates for 2022 are summarized in Table 9-1.

TABLE 9-1

Town of Cathlamet 2022 Water Rates

Meter Size	In-Town Base Rate ($/month)[1]	In-Town Usage Rate ($/100cf)[2]	Out-of Town Base Rate ($/month)[1]	Out-of-Town Usage Rate ($/100cf)[2]
5/8 inch	$38.76	$2.65	$56.87	$3.55
3/4 inch	$45.85	$2.65	$70.97	$3.55
1 inch	$61.45	$2.65	$88.96	$3.55
1-1/2 inch	$81.68	$2.65	$117.52	$3.55
2 inch	$104.41	$2.65	$149.61	$3.55
3 inch	$138.57	$2.65	$196.45	$3.55
4 inch	$181.49	$2.65	$258.38	$3.55

(1) Monthly minimum charge. Up to 350 cubic feet of water per month.
(2) Per 100 cubic feet for water consumed that exceeds 350 cubic feet in any one month.

In addition to the above fees, the Town, charges a water hookup fee for new construction, which is $3,000 plus cost of installation within the corporate limits of the Town and $5,000 plus cost of installation outside Town limits.

The Town has a minimum charge for multiple-family dwelling units using only one meter. The minimum charge per month is as follows: billed as a 5/8-inch meter for single-family, 3/4–inch meter for two to three dwelling units, 1-inch meter for four to six dwelling units, 1-1/2-inch meter for 7 to 10 dwelling units, 2-inch meter for 11 to 20 dwelling units, 3-inch meter for 21 units and up, and 4-inch meter for schools.

HISTORIC REVENUES AND EXPENSES

Historic revenues are summarized in Table 9-2.

TABLE 9-2

Summary of Historical Water Revenues

Description	2020	2021	2022
Water Taxes	$37,778	$39,078	$40,078
Intergov. Revenues	$2,088	$-	$3,607
Water Sales	$625,523	$651,230	$655,004
Late Fees	$2,601	$2,789	$9,242
Connections	$36,360	$93,902	$64,000
Investment Interest	$4,296	$1,029	$21,776
Miscellaneous Revenue	$17,007	$25,944	$15,986
Water DOC Loan (PC-20)	$607,388	$-	$-
Loan PC20-96103-045	$9,474	$76,679	$-
Loan PC20-96103-045 Retainage	$23,846	$2,839	$-
Total Water Revenues	**$1,366,361**	**$893,490**	**$809,693**

Historic Expenses are summarized in Table 9-3. These records were provided by the Town.

TABLE 9-3

Summary of Historical Water Expenses

Description	2020	2021	2022
Salaries, Wages, and Benefits	$190,704	$278,863	$281,604
Training/Education	$1,798	$926	$1,558
Professional Services	$11,692	$11,116	$10,888
Water Information Tech	$6,261	$4,482	$6,293
Repairs/Maintenance/Testing	$6,001	$10,614	$8,683
Supplies(1)	$18,956	$36,377	$72,927
Fuel	$3,365	$1,853	$2,834
Rentals, Leases, and Permits	$9,201	$8,303	$6,537

TABLE 9-3 – (continued)

Summary of Historical Water Expenses

Description	2020	2021	2022
Utilities	$42,705	$49,648	$37,687
Communications	$12,745	$8,770	$9,363
Advertising	$935	$161	$-
Insurance	$22,539	$22,104	$20,263
Taxes[2]	$73,294	$84,189	$75,084
Audit Costs	$5,852	$-	$5,375
Capital Improvements	$745,852	$56,734	$199,115
Loan Repayments	$68,092	$99,901	$99,366
Misc.[3]	$646	$4,507	$6,530
Total Water Expenses	**$1,220,636**	**$678,545**	**$844,109**

(1) Includes Water Plant chemicals and supplies, Water Distribution supplies, maintenance parts, and uniforms.
(2) Includes B&O Tax, Water Utility Tax, and Water Excise Tax.
(3) Includes Water vehicle services and other misc. costs.

Based on the calculated revenues and expenses in Tables 9-2 and 9-3, the Cathlamet Water Utility cash flow is summarized in Table 9-4.

TABLE 9-4

Summary of Historical Cathlamet Water Fund Cash Flow

Description	2020	2021	2022
Beginning Fund Balance	$781,169	$926,894	$1,141,839
Total Revenues	$1,366,361	$893,490	$809,693
Total Expenses	$1,220,636	$678,545	$844,109
Ending Fund Balance	**$926,894**	**$1,141,839**	**$1,107,423**

PROJECTED REVENUES AND EXPENDITURES

Table 9-5 shows projected revenues and expenditures. Revenue from water taxes, water sales, late fees, connection charges, and miscellaneous revenues are projected to increase by the 2.3 percent system growth rate. Investment interest is projected to remain constant. Investment income would increase if invested reserves increase and decrease if invested reserves decrease. With proposed capital improvements, capital reserves will be projected to remain steady, so investment income will also be projected to remain steady.

All expenses are projected to increase at an estimated 4 percent annual inflation rate, except for loan repayments. Loan repayments are not expected to increase. Expenses for utilities are also projected to increase by an additional 2.3 percent system growth rate to reflect additional costs associated with a growing system.

Additionally, to fund the projects presented in the 10-year CIP and to grow the Town's water capital reserve fund it is assumed that the water system will increase rates, matching the estimated inflation rate, at four percent annually.

TABLE 9-5

Projected Revenues and Expenditures

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Revenues											
Water Taxes[1]	$40,999.34	$41,942.33	$42,907.00	$43,893.86	$44,903.42	$45,936.20	$46,992.73	$48,073.57	$49,179.26	$50,310.38	$51,467.52
Water Sales[1]	$670,069.47	$712,283.85	$757,157.73	$804,858.67	$855,564.76	$909,465.34	$930,383.05	$951,781.86	$973,672.84	$996,067.31	$1,018,976.86
Rate Increase[2]	$26,802.78	$28,491.35	$30,286.31	$32,194.35	$34,222.59	$36,378.61	$37,215.32	$38,071.27	$38,946.91	$39,842.69	$40,759.07
Late Fees[1]	$9,454.76	$9,672.22	$9,894.68	$10,122.26	$10,355.07	$10,593.24	$10,836.88	$11,086.13	$11,341.11	$11,601.96	$11,868.80
Connections[1]	$65,472.00	$66,977.86	$68,518.35	$70,094.27	$71,706.44	$73,355.68	$75,042.87	$76,768.85	$78,534.54	$80,340.83	$82,188.67
Investment Interest[3]	$21,775.62	$21,775.62	$21,775.62	$21,775.62	$21,775.62	$21,775.62	$21,775.62	$21,775.62	$21,775.62	$21,775.62	$21,775.62
Miscellaneous Revenue[1]	$16,354.03	$16,730.17	$17,114.96	$17,508.61	$17,911.30	$18,323.26	$18,744.70	$19,175.83	$19,616.87	$20,068.06	$20,529.62
CIP Loan (SO-2)	$-	$-	$-	$-	$-	$-	$1,335,700.00	$-	$-	$-	$-
Total Revenue	**$850,928.00**	**$897,873.39**	**$947,654.65**	**$1,000,447.63**	**$1,056,439.21**	**$1,115,827.96**	**$2,476,691.17**	**$1,166,733.13**	**$1,193,067.15**	**$1,220,006.85**	**$1,247,566.17**
Expenditures											
Salaries, Wages, and Benefits[4]	$292,868.15	$304,582.88	$316,766.19	$329,436.84	$342,614.31	$356,318.88	$370,571.64	$385,394.51	$400,810.29	$416,842.70	$433,516.40
Training/Education[4]	$1,620.83	$1,685.66	$1,753.09	$1,823.21	$1,896.14	$1,971.99	$2,050.87	$2,132.90	$2,218.22	$2,306.95	$2,399.22
Professional Services[4]	$11,323.21	$11,776.14	$12,247.18	$12,737.07	$13,246.55	$13,776.41	$14,327.47	$14,900.57	$15,496.59	$16,116.46	$16,761.11
Water Information Tech[4]	$6,544.47	$6,806.25	$7,078.50	$7,361.64	$7,656.10	$7,962.35	$8,280.84	$8,612.08	$8,956.56	$9,314.82	$9,687.41
Repairs/Maintenance/Testing[4]	$9,030.29	$9,391.50	$9,767.16	$10,157.85	$10,564.16	$10,986.73	$11,426.20	$11,883.24	$12,358.57	$12,852.92	$13,367.03
Supplies[4]	$75,844.59	$78,878.37	$82,033.51	$85,314.85	$88,727.44	$92,276.54	$95,967.60	$99,806.31	$103,798.56	$107,950.50	$112,268.52
Fuel[4]	$2,947.08	$3,064.96	$3,187.56	$3,315.06	$3,447.67	$3,585.57	$3,729.00	$3,878.16	$4,033.28	$4,194.61	$4,362.40
Rentals, Leases, and Permits[4]	$6,798.63	$7,070.57	$7,353.39	$7,647.53	$7,953.43	$8,271.57	$8,602.43	$8,946.53	$9,304.39	$9,676.56	$10,063.63
Utilities[5]	$40,096.28	$42,659.24	$45,386.02	$48,287.09	$51,373.60	$54,657.40	$58,151.10	$61,868.12	$65,822.73	$70,030.12	$74,506.45
Communications[4]	$9,738.01	$10,127.53	$10,532.63	$10,953.94	$11,392.09	$11,847.78	$12,321.69	$12,814.56	$13,327.14	$13,860.22	$14,414.63
Advertising[4]	$167.02	$173.70	$180.65	$187.88	$195.39	$203.21	$211.34	$219.79	$228.58	$237.73	$247.24
Insurance[4]	$21,073.50	$21,916.44	$22,793.10	$23,704.82	$24,653.01	$25,639.13	$26,664.70	$27,731.29	$28,840.54	$29,994.16	$31,193.93
Taxes[4]	$78,087.14	$81,210.63	$84,459.05	$87,837.41	$91,350.91	$95,004.95	$98,805.15	$102,757.35	$106,867.65	$111,142.35	$115,588.05
Audit Costs[4]	$-	$5,590.45	$-	$5,814.07	$-	$6,046.63	$-	$6,288.49	$-	$6,540.03	$-
Capital Improvements[4]	$605,300.00	$635,400.00	$195,600.00	$117,500.00	$361,500.00	$131,700.00	$1,435,700.00	$120,500.00	$277,800.00	$122,200.00	$238,600.00
CIP Loan Repayment (SO-2)[7]	$-	$-	$-	$-	$-	$-	$66,785.00	$63,853.59	$63,853.59	$63,853.59	$63,853.59
Loan Repayment (534-2)[6]	$40,590.00	$40,590.00	$40,590.00	$40,590.00	$40,590.00	$40,590.00	$40,590.00	$40,590.00	$40,590.00	$40,590.00	$40,590.00
Loan Repayment (PR-18)[6]	$13,980.81	$13,749.81	$-	$-	$-	$-	$-	$-	$-	$-	$-
Loan Repayment (PC-20)[6]	$44,276.14	$43,872.14	$43,468.13	$43,064.12	$42,660.12	$42,256.11	$41,852.10	$41,448.10	$41,044.09	$40,640.08	$40,236.08
Misc.[4]	$6,790.85	$7,062.48	$7,344.98	$7,638.78	$7,944.33	$8,262.10	$8,592.59	$8,936.29	$9,293.74	$9,665.49	$10,052.11
Expenditures Total	**$1,267,076.99**	**$1,325,608.75**	**$890,541.14**	**$843,372.15**	**$1,107,765.27**	**$911,357.35**	**$2,309,629.70**	**$1,027,342.40**	**$1,209,425.05**	**$1,092,789.83**	**$1,236,488.34**
Operating Cash Flows											
Beginning Cash Balance	$1,103,816	$687,667	$259,932	$317,045	$474,121	$422,795	$627,265	$894,327	$1,033,717	$1,017,360	$1,144,577
Total Revenues	$850,928	$897,873	$947,655	$1,000,448	$1,056,439	$1,115,828	$2,576,691	$1,166,733	$1,193,067	$1,220,007	$1,247,566
Total Expenditures	$1,267,077	$1,325,609	$890,541	$843,372	$1,107,765	$911,357	$2,309,630	$1,027,342	$1,209,425	$1,092,790	$1,236,488
Ending Cash Balance	**$687,667**	**$259,932**	**$317,045**	**$474,121**	**$422,795**	**$627,265**	**$894,327**	**$1,033,717**	**$1,017,360**	**$1,144,577**	**$1,155,654**

(1) All items footnoted number 1 are projected to increase by the projected annual system growth rate of 2.3 percent.
(2) Rate increase is projected to increase identical to the estimated inflation rate of 4 percent.
(3) Investment Interest is projected to remain steady throughout the projected period because, with capital improvement financing, invested reserves will be projected to remain steady.
(4) All items footnoted number 4 are projected to increase at an estimated annual inflation rate of 4 percent.
(5) Utilities are projected to increase at an estimated annual inflation rate of 4 percent plus the projected system growth rate of 2.3 percent.
(6) Debt repayment schedule provided by Town.
(7) The CIP Loan repayment is assumed to be a 40-year annual payment loan with 4 percent interest and 5 percent down the first year.

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FINANCIAL VIABILITY

According to the Department of Health, utilities can work toward financial viability using the following guidelines. The full document detailing these guidelines can be found in Appendix R of this Plan, it is summarized here:

1. **Develop an operating budget.** All utilities should develop a 10-year budget to pay for maintenance and operations of their system. This budget should account for inflation, debt payments, and contributions to reserve accounts. This chapter has established the 10-year operating budget for the Town in Table 9-5.

2. **Take another look at your rates.** Many water systems do not charge enough to pay for basic maintenance and operation of their system, maintain reserve accounts, and make debt payments. Use the 10-year operating budget to assess whether or not your system needs to raise water rates or change rate structure to one which encourages more efficient water use.

3. **Create and fund an operating cash reserve.** This fund should be used only to handle problems with cash flow should there be a lag in income. One suggested approach is to maintain an operating fund with the amount of cash needed to pay for 30 to 45 days of water system costs. Be sure to add funds over time as needed.

4. **Create and fund an emergency reserve.** Your emergency reserve fund should have enough money in it at all times to replace the most vulnerable part of the water system. Transmission lines are the most vulnerable part of the Town of Cathlamet's water system. Based on Table 9-5, the emergency reserve (represented by "Ending Capital Balance") has ample funds to replace a waterline.

5. **Create and fund reserves for capital improvements and equipment replacement.** This fund should be an account set aside to ensure that aging equipment and infrastructure do not become a financial burden for your water system. The Town should develop a list of equipment and infrastructure that will need to be replaced in the next 10 years and keep enough money set aside in the budget to replace it.

RATE STRUCTURE ANALYSIS

The Town's current rate structure includes a meter charge (or base charge) that is based on meter size and a single commodity charge for water use in excess of 350 cubic feet. The fixed service charge should reflect the true costs of delivering water and a minimum use charge. The true costs of delivering water includes current operating costs, the costs

associated with over-sizing the system to meet maximum day demand, and the costs of developing future sources of water. Consumption charges that encourage the efficient use of water include increasing block rates, which have a per-unit charge that increases as water consumption increases, and seasonal rates, which include an additional charge for water use above a certain threshold during months when system demand is highest. The Town does not currently have increasing block rates or seasonal rates but could add one or both of these rate structures to encourage more efficient water use.

The Town show increase rates to at least keep up with inflation

CONCLUSIONS AND RECOMMENDATIONS

Based on our review of the Town's water utility finances and planned capital improvements, the current rates are not sufficient enough to fund operations and planned capital improvements over the 10-year planning period, while maintaining a net positive ending cash balance at the exiting water rates. A rate increase is recommended to maintain reserves through the end of the 10-year planning period. A rate structure analysis will be needed to determine how best to increase revenue while impacting ratepayers the least. Possibilities include adding a second tier rate for use over 1,000 cubic feet of water use per month and seasonal rates when system demand is highest. A rate increase for the fixed service charge may also be necessary.

AVAILABLE CAPITAL IMPROVEMENT FUNDING SOURCES

The following are potential funding sources available for financing public water utility improvements.

Grants:	Community Development Block Grant (CDBG) US Economic Development Administration (US EDA) USDA Forest Service, Rural Assistance Program (USFS) USDA Rural Development (RD)
Loans:	Public Works Trust Fund (PWTF) Community Economic Revitalization Board (CERB) Drinking Water State Revolving Fund (DWSRF) USDA Rural Development (RD)
Bonds:	Revenue Bonds General Obligation Bonds
Other:	Utility Local Improvement Districts

COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG)

The Community Development Block Grant program, administered by the Washington State Department of Commerce, consists of two programs that can be used to fund water system planning and construction projects. The first is the Planning-Only Grant program. This program supports a range of planning activities that lead to implementation of priority projects that benefit low- and moderate-income communities. Funding levels are set at a maximum of $30,000 for most planning projects.

The second program is the General Purpose grant program, which allows applicants to request up to $1 million for design and construction of public facilities, community facilities, housing rehabilitation, or economic development projects that principally benefit low- and moderate-income persons. Local match is not required for either the Planning-Only or General Purpose programs. Applications are typically due in early June, and grants are awarded early September.

PUBLIC WORKS TRUST FUND (PWTF)

The Public Works Trust Fund (PWTF) is a revolving loan fund designed to help local governments finance needed public works projects through low-interest loans and technical assistance. The PWTF, established in 1985 by legislative action, currently offers loans substantially below market rates.

- 5-year preconstruction loans up to $1 million are available; work must be completed within 2 years.

- Construction loans up to $10 million are available with a 20-year loan repayment period. Construction must be completed within 5 years.

- Emergency loans of up to $1 million are offered with a 20-year loan repayment term, or the life of the project, whichever is less.

The application cycle for preconstruction and construction loans is biennial, and the application cycle for emergency loans is open until available funds are exhausted. The next funding cycle is expected to be announced in early 2023. Eligible public works systems include streets and roads, bridges, storm sewers, sanitary sewers, and domestic water. Loans are presently offered for purposes of repair, replacement, rehabilitation, reconstruction or improvement of existing eligible public works systems, and can be sized to meet the needs of growth.

COMMUNITY ECONOMIC REVITALIZATION BOARD (CERB)

The Community Economic Revitalization Board (CERB) offers programs to rural communities for prospective development projects when feasibility is demonstrated. Applicants must provide evidence that a private development or expansion is likely to occur as a result of the public improvements. CERB requires that the project generate either significant job creation or significant private investment in order to be eligible for funding. Grants up to $50,000 with 25 percent (of project cost) matching funds are available for planning, and loans up to $3 million with a maximum 20-year loan term are available for design and construction. Interest rates are 1 percent to 3 percent. Applicants must demonstrate the need for CERB assistance, and a private partner may be required.

DRINKING WATER STATE REVOLVING FUND (DWSRF)

In 1997 the Washington State Department of Health began taking applications for a new loan program called the Drinking Water State Revolving Fund (DWSRF). The program was funded by Congress as part of the 1996 reauthorization of the Safe Drinking Water Act. The program provides low-interest loans to help publicly owned as well as privately owned not-for-profit and for-profit water systems make improvements to water systems for public health protection.

The program is primarily targeted toward projects that will improve public health and safety. Infrastructure improvement projects can also be considered, but are given a lower priority in the ranking. Currently, DWSRF offers loans for preconstruction, construction, and emergency response uses. No local match is required.

- 10-year preconstruction loans for planning and engineering are available with 0 percent interest, 2 percent loan origination fee, 2-year time of performance, and a maximum award of $500,000. Online applications are accepted year-round until funding is exhausted.

- Construction loans are available with a 20-year loan repayment period, or the life of the project, whichever is less. The expected 2022 interest rate is 1.75 percent, and loans are subject to a 1 percent loan fee. The 2022 application period is October 1 through November 30.

- Emergency loans of up to $500,000 are offered with a 0 percent interest rate, 1.5 percent loan fee, 10-year repayment term, and 2-year performance term. Repayment begins the first October after contract execution.

Project rankings and selection are made by the Department of Health; program financial administration is handled by the Department of Commerce.

USDA RURAL DEVELOPMENT

USDA Rural Development (RD) has a loan program that is available to communities whose rates, as a result of projected RD debt payments, are expected to exceed the rates of "similar" communities. Under certain conditions, RD's funding options include a limited grant program. The loan program provides up to 40-year loan terms at an interest rate usually between 2.25 and 4.5 percent. Rates vary depending on hardship condition and market interest rates. RD loans are issued as revenue bonds that require a bond reserve equal to 1 year of debt service. Applications are accepted year-round

US ECONOMIC DEVELOPMENT ADMINISTRATION (US EDA)

US EDA offers competitive grants up to $1 million for projects within Region 10. Projects are selected locally by an economic development district and submitted to Congress for competitive selection among other regions in the United States. Similar to CERB, applicants must have an industrial partner ready to proceed or a feasibility study that establishes realistic job creation.

US FOREST SERVICE

Forest Service grants are available through the Rural Community Assistance Program to assist rural communities that are dependent on natural resources. Project proposals must show a broad community benefit that result in greater ability to improve economically, socially, or environmentally. The project must have the potential for economic development and/or job creation/retention. An application must be located within 100 miles of a Forest Service office and be able to document a history of at least 15 percent dependency on forest products. Grant funds are available for components of planning and design and are limited to $50,000.

REVENUE BONDS

The most common source of funds for construction of major utility improvements is the sale of revenue bonds. These are tax-free bonds are issued by a city or town. The major source of funds for debt service on revenue bonds is from monthly water or sewer service charges. In order to qualify to sell revenue bonds marketable to investors, the bonds typically have contractual provisions for the city or town to meet debt coverage requirements. The city or town must show that its annual net operating income (gross income less operation and maintenance expenses) must be equal to or greater than a factor, typically 1.2 to 1.4 times the annual debt service on all par debt. If a coverage factor has not been specified it will be determined at the time of any future bond issues.

GENERAL OBLIGATION BONDS

A city or town may by council action or special election issue general obligation bonds to finance almost any projects of general benefit to the city or town. The bonds are repaid by tax assessments levied against all privately-owned properties within the city or town. This includes vacant property that would not otherwise contribute to the cost of the specific improvements. This type of bond issue is usually reserved for municipal improvements that are of general benefit to the public, such as arterial streets, bridges, lighting, municipal buildings, firefighting equipment, parks, and water and wastewater facilities. General obligation bonds are the most attractive bonds to investors because they are backed by the municipality's full taxing authority and carry the lowest rate of interest of any type of bond that a city or town may issue.

Disadvantages of general obligation bonds include the following:

- Voter approval is often required. The city or town will incur the legal costs of drafting a ballot measure and pay for the cost of holding a special election. There is also the additional cost of investing staff time in public education of the need for the project, yet there is always uncertainty to the outcome of elections.

- There are legal, as well as practical limits on the amount of general obligation debt a city or town can issue. Financing capital improvements through general obligation debt reduces the ability of the city or town to issue additional general obligation debt, which is often the only source of outside financing for many general government facilities.

UTILITY LOCAL IMPROVEMENT DISTRICTS

Formation of a Utility Local Improvement District (ULID) is a method of financing capital improvements by the sale of bonds. Bonds are retired with revenues collected via assessment on the properties benefitting from the capital improvements funded by the ULID, and via utility revenues. The process for formation and administration of LIDs and ULIDs is outlined in RCW 35.43 through 35.56.

ADDITIONAL RESOURCES

Several additional resources for locating funding opportunities are listed below.

- The Infrastructure Assistance Coordinating Council (IACC) is a nonprofit organization that aims to provide resources and technical assistance to local governments in order to support infrastructure development and maintenance. The IACC's current website is http://www.infrafunding.wa.gov/.

- The Washington Fund Directory is a resource maintained by the Office of the State Treasurer that lists various funding programs by type of project and type of funding. The Washington Fund Directory's current website is https://www.wafunddirectory.wa.gov/.

- The Washington Water and Salmon Fund Finder provides information on grant and loan opportunities for natural resources projects, and is currently located at https://data.wa.gov/stories/s/Washington-Water-Salmon-Fundfinder/xcku-b9qq/.

APPENDIX B

WATER AND SEWER SYSTEM PRELIMINARY VALUATION ESTIMATE

Town of Cathlamet
Preliminary Sewer System Valuation

Item	Description	Quantity	Unit	ENR CCI	Approx Year Installed	Existing Unit RCN	Existing Total RCN	Original Total Cost Per CCI	Expected Service Life	Age in 2024	Original Cost Less Depreciation (OCLD)
Reservoirs											
Greenwood Reservoir	500,000 gallon welded steel tank	1	EA	1074	1967	$1,908,000	$1,908,000	$127,424	75	57	$30,582
Kent's Bridge Reservoir	530,000 gallon glass lined, bolted steel reservoir	1	EA	6958	1998	$2,020,000	$2,020,000	$873,985	75	26	$571,003
Booster Pump Station											
Greenwood Reservoir BPS	CMU building with ###-hp booster pump	1	EA	6958	1998	$750,000	$750,000	$324,499	40	26	$113,575
PRVs											
Greenwood Reservoir PRV		1	EA	6958	1998	$159,000	$159,000	$68,794	50	26	$33,021
Cochran Drive PRV		1	EA	6958	1998	$159,000	$159,000	$68,794	50	26	$33,021
Boege Rd PRV - Elochoman Millworks		1	EA	6958	1998	$159,000	$159,000	$68,794	50	26	$33,021
Boege Rd/SR4 PRVs - Fire Hall & WSDOT Shop		1	EA	15174	2023	$313,000	$313,000	$295,333	50	1	$289,427
Columbia St PRV		1	EA	6958	1998	$159,000	$159,000	$68,794	50	26	$33,021
Eagle Pt. (High School) PRV		1	EA	6958	1998	$159,000	$159,000	$68,794	50	26	$33,021
Interties											
Puget Island Intertie (Meter)		1	EA		Unknown	$159,000	$159,000	$0	50	-	-
Crista Vista Water System Intertie (Meter)		1	EA	15174	2023	$2,500	$2,500	$2,359	50	1	$2,312
Water Treatment Plant (Constructed in 1999)											
WTP Building		1	EA	7137	1999	$820,000	$820,000	$363,913	50	25	$181,956
Raw Water Intake											
Raw Water Intake	Perforated 10-inch high-density polyethylene (HDPE)	1	EA	4295	1986	$500,000	$500,000	$133,537	50	38	$32,049
Secondary Surface Water Intake	Bullet nose screen and valve that connects to the raw water intake pipe	1	EA	10623	2016	$60,000	$60,000	$39,634	50	8	$33,292
Intake Pumps	Floway Model 10JKM four stage line-shaft vertical turbine pumps, with 7.5-hp motors	2	EA	9413	2012	$75,000	$150,000	$87,799	30	12	$52,679
Influent Turbidimeter	Hach Surface Scatter 6	1	EA	10385	2014	$11,000	$11,000	$7,103	10	10	$0
Influent Flow Meter	Siemans Sitrans FM Magflo	1	EA	10385	2014	$5,500	$5,500	$3,552	20	10	$1,776
Chemical Feed System											
Streaming current	Chemtrac SCM2500 (located under filters)	1	EA	10385	2014	$11,000	$11,000	$7,103	10	10	$0
Metering Pumps for coagulant injection	Stenner 85 MHP5	2	EA	15115	2022	$5,500	$11,000	$10,339	10	2	$8,271
Polymer Pumps	Stenner 85 MHP5	2	EA	15115	2022	$5,500	$11,000	$10,339	10	2	$8,271
Pre Chlorine Pumps	Stenner 85 MHP5	2	EA	11538	2018	$5,500	$11,000	$7,892	10	6	$3,157
Fluoride Pumps	Stenner 85 MHP40 . The fluoride pumps are also manually adjusted to maintain 0.7 mg/l	2	EA	11538	2018	$5,500	$11,000	$7,892	10	6	$3,157
Static Mixer	TAH 3-Stage Process Mixer	1	EA	7137	1999	$4,500	$4,500	$1,997	30	25	$333
Filteration											
Filter Unit	USFilter, Trident 210A	2	EA	7137	1999	$1,100,000	$2,200,000	$976,352	40	25	$366,132
Backwash Blowers		2	EA	7137	1999	$53,000	$106,000	$47,042	20	25	$0
Backwash Settling Tank	Two backwash pumps,	1	EA	7137	1999	$212,000	$212,000	$94,085	30	25	$15,681
Tank Sediment Remover	Scavenger Model PLR by Aqua Products, Inc	1	EA	7137	1999	$53,000	$53,000	$23,521	20	25	$0
Finished Water											
Lower Clearwell	High head pumps pump from here into the distribution system.	1	EA	1155	1968	$159,000	$159,000	$11,420	50	56	$0
Upper Clearwell	Includes baffles to enhance chlorine contact time	1	EA	7137	1999	$159,000	$159,000	$70,564	50	25	$35,282
Finished Water Pumps	Original pumps to WTP	2	EA	7137	1999	$85,000	$170,000	$75,445	30	25	$12,574
Post Chlorine Pumps	Stenner 85 MHP5	2	EA	13683	2021	$5,500	$11,000	$9,359	10	3	$6,551
Chlorine Analyzer	No issues, likes the Hach CL17, has to replace reagents every 40-45 days, calibrated every six months	1	EA	10385	2014	$5,500	$5,500	$3,552	10	10	$0
Finished Turbidimeter	Hach Low Range 1720E, calibrated quarterly.	2	EA	10385	2014	$5,500	$11,000	$7,103	10	10	$0
Controls											
Telemetry System	PLCs, Radios, Antennas, Computer	1	EA	7137	1999	$689,000	$689,000	$305,776	20	25	$0
Emergency Power											
Emergency Generator	Cummins QSB7-G5 NR3, 480/277V Voltage Range	1	EA	15174	2023	$265,000	$265,000	$250,043	40	1	$243,791
Other											
Customers water meters	Ranges from 5/8" to 2"	673	EA	8711	2010	$420	$265,000	$143,543	20	14	$43,063
Piping (1)											

0.75-2"	Likely a combination of AC, PVC and GS	2,434	LF	824	Varies	$40	$97,360	$4,989	20	64	$0
3-4"	Likely a combination of AC, PVC, and GS	2,687	LF	824	Varies	$60	$161,220	$8,261	20	64	$0
6"	Likely a combination of AC and PVC	54,098	LF	1186	Varies	$80	$4,327,840	$319,171	75	56	$80,857
8"	Likely a combination of AC and PVC	44,317	LF	6958	Varies	$110	$4,874,870	$2,109,131	75	26	$1,377,966
12"	Likely a combination of AC and PVC	6,949	LF	6958	Varies	$120	$833,880	$360,781	75	26	$235,710
Reserves											
2024 Ending Fund Balance											$218,686
Debt											
USDA Water Rev Bond #02, 534-2											-$324,720
PWTF Loan PR18-96103-070											-$13,865
PWTF Loan PC20-96103-045											-$602,955
Estimated System Value											**$3,191,698**

(1) For most of the pipe system, only approximate installation dates are known. The CCI has been chosen using a weighted average of approximated installation years.

Town of Cathlamet
Preliminary Sewer System Valuation

Item	Description	Quantity	Unit	ENR CCI	Approx Year Installed	Existing Unit RCN	Existing Total RCN	Original Total Cost Per CCI	Expected Service Life	Age in 2024	Original Cost Less Depreciation (OCLD)
Treatment Plant											
WWTP (overall)		1	EA	10143	2013	-	-	$8,649,000	30	11	$5,477,700
Lift Stations											
Tugboat Alley Station	Equipped with 2x submersible pumps; one pump has been experiencing issues and will be replaced soon.	1	EA	8647	2009	$275,000	$275,000	$147,865	30	15	$73,933
Columbia Street Stations	Each station equipped with 2x submersible pumps.	2	EA	8647	2009	$275,000	$550,000	$295,731	30	15	$147,865
Messenger Hill Station	Equipped with 2x surface mounted hydromatic pumps with vacuum prime.	1	EA	3825	1982	$275,000	$275,000	$65,408	30	42	$0
Influent Lift Station	Equipped with 2x submersible pumps and an auxillary generator.	1	EA	10143	2013	$350,000	$350,000	$220,751	30	11	$139,809
Angle Street Station	Small wet well with 1x E-One grinder pump	1	EA	11538	2018	$125,000	$125,000	$89,683	30	6	$71,746
System Piping (1)											
3"-4"	Force main, unspecified/unknown material	2045	LF	3825	Varies	$80	$163,600	$38,912	50	42	$6,226
6"	Majority PVC gravity main	740	LF	3825	Varies	$90	$66,600	$15,841	50	42	$2,535
8"	Gravity sewer of mainly PVC, concrete, or unknown	22560	LF	8492	Varies	$100	$2,256,000	$1,191,289	75	18	$905,380
10"	Gravity sewer of mostly concrete and clay	2261	LF	3825	Varies	$110	$248,710	$59,155	75	42	$26,028
12"	Gravity sewer of mainly AC, and DI force main	3146	LF	11283	Varies	$120	$377,520	$264,870	75	7	$240,149
16"	Mainly gravity sewer for effluent, DI	2650	LF	11698	Varies	$130	$344,500	$250,593	75	5	$233,887
Reserves											
2024 Ending Fund Balance											$793,126
Debt											
Ecology Loan EL230101											-$5,454,907
Esimated System Value											**$2,663,476**

(1) For most of the system, only approximate piping installation dates are known. The CCI has been chosen using a weighted average of the approximate installation years.