

Colton's Sewer System Upgrade

The Town Council wanted to let all residents know about the town's upcoming Sewer System Upgrade decision. The town must upgrade the sewer system to stay in compliance with Ecology and the EPA. The town's engineers, Keller and Associates have come up with 3 possible options. The upgrade that the council has chosen is the least expensive option, that will not require the town to purchase any more property, but it will upgrade the town's wastewater system. This option will cost approximately 3.3 million dollars.

The town has applied for a Department of Ecology loan and if it is awarded to the town, Ecology will forgive 1.1 million dollars of it. With this being said, the town must raise the sewer rate to cover the rest of the loan.

The council is proposing to raise the sewer rate \$20 a month to \$69.83 beginning January, 2023 and then will increase again, to cover the exact cost of the loan. Please read the attached information to have a better understanding of what the town has to do, to be in compliance with the Department of Ecology.

You are always welcome to come to a council meeting to ask questions or raise concerns. The council will vote on raising the sewer rates at the November 7th council meeting at 7:30 pm.

If you have any questions or concerns, please contact Steve at 509-229-3717 or Jenni at 509-229-3887.

The Town of Colton owns and operates a wastewater collection system and lagoon wastewater treatment plant (WWTP). The Town of Colton discharges treated effluent under a National Pollution Discharge Elimination System (NPDES) Permit administered by the Washington State Department of Ecology. The Permit outlines the conditions for seasonal discharge of treated effluent into Union Flat Creek between November 1st and April 30th. The current permit went into effect on June 1st, 2015 with an expiration date of May 31st, 2020. The permit is administratively extended as compliance items are addressed. Ecology has set a compliance schedule for the disinfection upgrade to reach substantial completion by December 31st, 2023. Following start-up of the improved disinfection system, the WWTP must meet the WQBEL total residual chlorine limits by December 31st, 2024.

The WWTP and collection system for the Town were constructed in 1975. The influent from the Town's collection system is sampled, pumped, and measured at the influent lift station. From there, the wastewater flows through the three facultative lagoons where it undergoes biological treatment. A fourth cell holds the treated wastewater and an effluent pump is used to lift the water to the chlorine disinfection system where it is disinfected prior to discharge. The flow is sampled in accordance with NPDES Permit No. WA-0023175. From November 1st to April 30th the treated effluent is conveyed to the Union Flat Creek through an 8-inch diameter pipe.

The influent lift station conveys all of the influent wastewater into the WWTP through one of the two pumps. The lift station is a package lift station manufactured by Hydronix, Inc. and was installed in 1975 when the WWTP was constructed. The pumps and controls were most recently rebuilt in 1995. Approximately 2-3 years ago one pump had its impeller replaced. The pumps are well past their expected lifespan. Each pump is a 2 horsepower (HP), 230 V, 3 phase submersible pump with a current capacity of 150 gpm. A new influent flow meter was recently installed in December 2020 to more accurately measure flow from the collection system. Before installation of the new influent flow meter, the influent flow was estimated by Town staff to be approximately 172 gpm, and the flows reported on Discharge Monitoring Reports (DMR) were calculated utilizing pump runtimes. The pumps are controlled based on the water level in the wet well using floats to inform the control panel. An alarm for high level in the wet well turns on an alarm and light. An emergency 15 kW generator was installed to operate the lift station, effluent pump, and chlorination system. Variable frequency drives (VFDs), controls, and a radio alarm system connects the influent pumps. The radio alarm system will connect the influent lift station with the well-house and deliver alarms via text message to Town staff. There is currently no screening to remove large objects from the influent. Screening would protect the influent pumps and remove debris prior to reaching the lagoons.

There are four lagoons at the WWTP that were all constructed in 1975. Three are facultative lagoons and the fourth is a settling pond. The lagoons are lined with a 10-mil PVC liner, nearing the end of its expected lifespan. Newer lagoons in Washington must use 40-mil PVC or 60-mil thick high-density polyethylene (HDPE) and either a double-liner with leak detection or a single-liner with groundwater monitoring. The existing liner is protected on the bottom by a 6-inch thick layer of soil and on the sides with a 6-inch layer of rip-rap. The lagoons have a 3:1 side slope. PVC transfer piping connects the lagoons. The facultative lagoons (Cells 1 through 3) are lined up to the 5-foot water depth and water levels above this depth would likely cause lagoon leakage. The Town recently drew down Cell 3 and found the liner was ripped in several locations. They believe it may have been caused by muskrats. The Town has not noticed other locations with holes or rips. Solids have not been removed from the lagoons since they were constructed. A few surveys of the solids have been made, most recently in May 2021. The estimated sludge depths were 2 feet in Cell 1, 1.6 feet in Cell 2, and 1.3 feet in Cell 3. Due to the proximity of the lagoons to the gun club, sludge samples from Cell 1 were analyzed in 2004 for lead. As reported in the 2004 amendment, the average result for the four samples was 49 mg/kg lead. Additional testing was completed in September 2021 for Cells 1 and 2 with a lead result of 118,000 mg/kg and 168 mg/kg respectively. An influent control structure is used to direct the pumped influent to either Cell 1 or Cell 2. Control structures between each lagoon allow a lagoon to be bypassed for maintenance. The stop logs in the control structures were replaced in April 2021. Normally, the control structures remain open, so the water levels are fairly similar between lagoons. However, the way the control structures are built, it is difficult to draw down the lagoons to hold further flows during the non-discharge season. A baffle was recently installed in 2020 in the corner of Cell 3 before the control structure leading to Cell 4. The baffle is designed to improve settling and prevent algae from traveling from Cell 3 to Cell 4. A submersible pump lifts the effluent from Cell 4 to the chlorine contact chamber. The pump is suspended in the cell by a cable held up with a boom arm to avoid pumping solids from the bottom of the cell. The pump is approximately 3-4 years old. The pumped flow travels through a 2-inch hose. The hose is on the ground, which leaves it exposed and potentially susceptible to freezing.

During this period, the WWTP regularly met permit limits for effluent BOD5 concentrations, loadings and removal percentages but did exceed the effluent concentration limit for two months during 2020 and the removal percentage limit twice during the period. TSS concentrations, loadings, and removal percentages, however, regularly did not meet permit requirements. The Clean Water Act of 1972 provides

the primary regulations for water quality in the waters of the United States. It requires that point source contributions to surface waters obtain a discharge permit (currently permits are issued by the State of Washington Department of Ecology as NPDES permits). These permits determine the conditions for discharge into surface waters. The WWTP has struggled to maintain compliance with the NPDES effluent limits. Additionally, new permit limits for total residual chlorine are set to go into effect on December 31st, 2024. Without improvements, the WWTP will be unable to meet the NPDES effluent limits during the planning period. There have not been any recent overflows at the Colton WWTP. Overflows are a public health and sanitation concern as they involve events when untreated or undertreated effluent overflows onto the ground or is discharged to surface water. Security is another concern. The WWTP lagoons and disinfection are secured by a barbed-wire fence. Although there is no fence around the influent lift station, the building and vault are locked. The majority of the WWTP was constructed in 1975. Some of the equipment, such as the lift station pumps, is past the end of its expected useful life. Also, typically the expected life for lagoon liners is approximately 50 years, so aging infrastructure is becoming a larger concern. The lagoon liner in Cell 3 has been ripped in several locations, which require repairs.

The influent lift station pumps, lagoon treatment capacity, and disinfection system all need upgrades. The project would include new influent lift station pumps and an influent screen inside a building. Cell 1 would be bypassed to avoid possible issues with the solids from the shooting range. The liners would be replaced in the existing lagoons. Aeration would be added to Cells 2 and 3 to increase the BOD and TSS treatment capacity of the WWTP. Converting the cells from facultative lagoons to partial mix aerated lagoons will also reduce the pH as there will be far less algae. During the summer the influent would be stored in the treatment lagoons, which would require approximately 10 inches of storage depth across Cells 2, 3, and 4. To achieve the stringent total residual chlorine limits, chemical dechlorination would be used along with an automatic monitoring system to control chemical usage. Biosolids would settle in polishing Cell 4 and be periodically removed by a contractor. It is assumed the contractor will be able to dewater and dispose of the sludge in a landfill. Although currently not included, additional items to consider during the design are baffles in the lagoons to reduce short-circuiting and adding piping, pumps, and valving to return water from Cell 4 to Cell 2 for additional process control. The costs shown below are a Class 5 cost opinion by the Association for the Advancement of Cost Engineering (AACE). The range of accuracy for a Class 5 cost estimate is broad (-50 to 100%) due to the uncertainty in specific design requirements and the economic climate when a project is bid, and it is the industry standard for planning-level estimates. The costs are based on experience with similar recent WWTP upgrade projects. For the most part, the total estimated probable project costs include contractor markups and 30% contingencies (which is typical of a planning-level estimate), costs for engineering design, construction management services, inspection, as well as administrative costs. These costs should be updated as the project is further refined in the pre-design and design phases.

The Items listed below are the total estimated cost to upgrade the town's WWTP (2021 dollars)

New Lift Station Pumps	\$ 30,00
Influent Screen and Building	\$ 350,000
Lagoon Modifications and Liner Replacement	\$ 350,000
Sludge Removal	\$ 250,000
Aeration for Cells 2 and 3	\$ 100,000
Winter Storage Lagoon	\$ -
Chlorine Dosing System	\$ 170,000
Dechlorination System	\$ 150,000
Irrigation Pump Station	\$ -
Transmission Piping	\$ -
Irrigation System	\$ -
Miscellaneous (Piping, Valves, Fence, etc.)	\$ 70,000
Electrical/Controls	\$ 80,000
Improvements Subtotal	\$ 1,550,000
General Conditions (10%)	\$ 160,000
Subtotal	\$ 1,710,000
Contingency (30%)	\$ 520,000
Subtotal	\$ 2,230,000
Contractor OH&P (15%)	\$ 340,000
Total Construction Cost	\$ 2,570,000
Design Engineering (13%)	\$ 390,000
Construction Engineering & Inspection (10%)	\$ 260,000
Admin/Legal (2%)	\$ 60,000
Total Project Cost	\$ 3,280,000

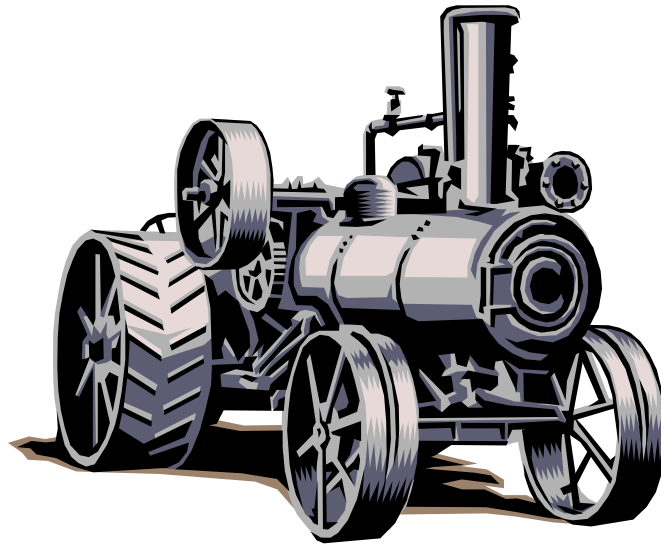


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Town of Colton incorporated in 1890