



Utility Committee Meeting

June 22, 2022 at 4:00 PM

HYBRID MEETING:

Please join the meeting in-person at the Lake Stevens Sewer District Jim Mitchell Conference Room or virtually via GoToMeeting from your computer, tablet or smartphone.

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Agenda

- 1. Call to order**
- 2. Roll Call (2.17ⁱ)**
- 3. Public Forum** – Non-action items (please limit comments to 3 minutes)
- 4. Project Review (4.20)**
 - a. Draft Comprehensive Sewer Plan (Article 6 of the 2005 Unification Agreement)
 - b. Future Space Needs of The District
 - c. Paths Forward for The City and The District
- 5. Development Review (4.20)**
- 6. Action Items**
 - a. Approval of Meeting Minutes-April 27, 2022
- 7. Next Meeting (7.2)**
- 8. Adjourn**

ⁱ City of Lake Stevens and Lake Stevens Sewer District Unified Sewer Services and Annexation Agreement, May 23, 2005



**LAKE STEVENS
SEWER DISTRICT**
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**Utility Committee Meeting Minutes
April 27, 2022 4:00 pm**

City of Lake Stevens / Lake Stevens Sewer District
By remote participation via GoTo Meeting, Lake Stevens, Washington

1. **Called to Order:** 4:00 PM by Councilmember Tageant
2. **Roll Call (2.17):** Lake Stevens Sewer District – Mariah Low, Johnathan Dix, Melonie Grieser Commissioners Dan Lorentzen, Andrea Wright and Kevin Kosche; City Administrator Gene Brazel, Planning and Development Director Russ Wright, and Councilmember Gary Petershagen, Mayor Brett Gailey and Councilmember Marcus Tageant.
3. **Public Forum –** Non-action items (please limit comments to 3 minutes) There were no prior comments received or from present attendees.
4. **Project Review (4.20)**
 - a. **Accessory Dwelling Units: In Depth Discussion-** Director Wright initiated a conversation about accessory dwelling units. Discussion occurred; no action was taken.
 - b. **2022 District Capitol Projects-** Manager Low facilitated a discussion on this topic. A map of current capital projects was reviewed. Discussion occurred; no action was taken.
5. **Development Review (4.20)**
 - a. The updated district DEA list was reviewed. Discussion occurred; no action was taken.
6. **Approval of Minutes – March 22, 2022** - Commissioner Kosche made a motion to approve the meeting minutes as presented, Commissioner Wright seconded the motion. The motion passed unanimously.
7. **Schedule the Next Meeting (7.2)** Discussion occurred regarding pausing the full group meetings. **Action:** The District and the City would ask their legal representation to halt all legal proceedings until June 30th. The group agreed that the May 2022 meeting would be cancelled in lieu of smaller meetings between representatives from the City and the District.
8. **Adjourn –** Commissioner Wright, made a Motion to adjourn the meeting. Commissioner Kosche seconded the motion. The motion passed unanimously. The meeting adjourned at 4:57 pm.

2022 Utility Committee Chair:

Marcus Tageant, City of Lake Stevens

EXECUTIVE SUMMARY

This *General Sewer/Wastewater Facility Plan (Facility Plan)* for the Lake Stevens Sewer District (District) addresses the District’s planning needs for wastewater collection, transmission, treatment, and disposal for the 20-year planning period. The *Facility Plan* was prepared in accordance with the provisions of the Revised Code of Washington (RCW), Section 90.48, *Water Pollution Control*, Washington Administrative Code (WAC) Section 173-240-050, *General Sewer Plan*, and WAC 173-240-060, *Engineering Report*. Development of the Plan has been coordinated with the Comprehensive Plans of both the City of Lake Stevens and Snohomish County.

POPULATION AND FLOW FORECASTS

Chapter 3 provides detailed information regarding Lake Stevens Urban Growth Area planning and population projections. An annual growth rate of 1.43 percent is used for residential and school connections and 3.5 percent for commercial connections.

Table E-1 presents population projections for the District.

TABLE E-1

Existing and Future LSSD ERUs

	Equivalent Residential Units (ERUs)			
	Residential	Commercial	School	Total
Existing ⁽¹⁾	12,767	812	146	13,725
2021	12,949	870	150	13,969
2027	14,251	1,069	164	15,484
2031	15,175	1,227	173	16,575
2041	17,702	1,731	200	19,632

(1) Existing year for Residential ERUs is 2020 and for Commercial and School connections is 2019.

Chapter 5 provides a detailed evaluation of past flows and loadings, as well as projections for the future. WWTP records for the period from 2013 through 2020 were reviewed and analyzed to determine current wastewater characteristics and influent loadings. Current wastewater flows and loadings were used in conjunction with projected population data to determine projected future wastewater flows and loadings.

Flow monitoring was conducted to confirm existing flow assumptions and to estimate infiltration and inflow (I/I). In general, I/I is assumed to be constant at 1,616 gallons per acres per day (gpac) throughout the 20-year planning period for the developed portions of the service area. (This means ongoing I/I reduction efforts in those areas are assumed to compensate for increased I/I due to growth in the sewer area and deterioration of existing

infrastructure.) An estimated peak hour I/I rate of 1,000 gpad is assumed for new service areas.

Tables E-2 and E-3 summarize the current and projected influent flow and loading projections, respectively.

TABLE E-2

Current and Projected WWTF Influent Flows

Projected Flows (mgd)								
Flow Type	NPDES Permit Limit	85 Percent NPDES Permit Limit	2021	2027	2031	2036	2041	Buildout
Average Dry Weather	--		2.42	2.68	2.87	3.12	3.40	3.79
Average Annual ⁽¹⁾	--		2.92	3.21	3.41	3.69	3.98	4.42
Maximum Month ⁽¹⁾	5.01	4.26	3.79	4.10	4.32	4.62	4.94	5.41
Peak Day ⁽¹⁾	--		6.96	7.33	7.60	7.96	8.36	8.92
Peak Hour ⁽¹⁾	--		9.17 ⁽³⁾	9.74 ⁽³⁾	10.14 ⁽³⁾	10.69 ⁽³⁾	11.28 ⁽³⁾	12.14 ⁽³⁾

- (1) AAF, MMF, PDF are the sum of ADWF in Table 5-10 and the relevant I/I flow in Table 5-11. Flows are reflective of the 20-year storm event that occurred in the winter of 2019-2020.
- (2) BOLD values exceed anticipated NPDES Permit Limits (current design limits).
- (3) PHF is the sum of the peak hour base flow and I/I flow in Table 5-11. A peaking factor of 1.3 was used to calculate the peak hour base flow; refer to Table 5-8 Note 4 for data source.

TABLE E-3

Current and Projected WWTF Influent Loadings

ERUs and Loadings (lb/d)	NPDES Permit	85% NPDES Permit	2021	2027	2031	2036	2041	Buildout
Total ERUs	--		13,969	15,484	16,575	18,041	19,632	21,923
Annual Average BOD ₅	--		6,210	6,883	7,368	8,020	8,727	9,745
Max Month BOD ₅	10,730	9,121	6,825	7,565	8,098	8,815	9,592	10,711
Peak Day BOD ₅	--		10,406	11,534	12,347	13,439	14,625	16,331
Annual Average TSS	--		5,435	6,024	6,448	7,019	7,638	8,529
Max Month TSS	10,190	8,662	5,950	6,595	7,059	7,684	8,361	9,337
Peak Day TSS	--		9,773	10,832	11,596	12,621	13,734	15,337
Annual Average NH ₃ -N			759	841	900	980	1,066	1,191
Max Month NH ₃ -N			831	921	986	1,073	1,168	1,304
Peak Day NH ₃ -N			932	1,033	1,106	1,204	1,310	1,463

COLLECTION SYSTEM EVALUATION

FLOW MONITORING

Flow monitoring was conducted to more accurately estimate infiltration and inflow (I/I) contribution within the District's collection system. Six flow meters were installed around the District's collection system to compare conditions in both older and newer portions of the system. An evaluation of that monitoring effort is provided in Appendix D.

COLLECTION SYSTEM MODELING

Chapter 4 summarizes the collection system and its condition. Chapter 6 summarizes hydraulic modeling of, and recommended improvements for, the collection system.

Hydraulic modeling, conducted with InfoSewer modeling software, identified existing and future capacity deficiencies in pipes and lift stations.

COLLECTION SYSTEM PIPING

The District's collection system includes approximately 126 miles of sewer pipes and 3,750 manholes, as well as a dosing station (to provide high velocity flows to reduce solids settling). As described in Chapter 4, approximately 20 percent of this system is more than 40 years old and shows evidence of infiltration at pipe defects such as misaligned joints, cracks, fractures and holes.

It is recommended that an annual gravity sewer repair and replacement program be established to identify and correct deficiencies in the oldest sections of collection system. The plan will assume that 20 percent of the manholes and 15 percent of the pipes that are currently more than 40 years old will be repaired or replaced as part of an annual replacement program over the next 10 years.

It is also recommended because of its age and inability to remotely detect overflows that the District's dosing station be rehabilitated and access improved within the next 10 years. The equipment and controls should be modernized and communication systems replaced with those meeting current standards.

The results of the hydraulic model are presented in detail in Chapter 6. Where pipes within the collection system were found to have insufficient capacity for either existing or future flows, replacement projects were planned scheduled based on the estimated severity and timing of the capacity deficiency.

LIFT STATIONS

As described in Chapter 4, the District owns, operates and maintains 29 lift stations within its sanitary sewer system. Basic information about each lift station is listed in Chapter 4.

Information from both the 2016 *Lift Station Condition Assessment* and site inspections in 2021 was used to prioritize lift station rehabilitation projects. It is recommended that the following lift stations be rehabilitated within the next 6 years: Lift Stations 1, 2, 3, 3C, 4, 6 and 7. In addition, it is recommended that the following lift stations be rehabilitated within the next 10 years: Lift Stations 5, 8, 10, 11, 12, 14 and 15.

Table E-4 shows the existing and projected flows to each of the District’s lift stations as determined through the hydraulic model. Note that Lift Stations 9 and 10 serve less than 10 houses each and were not included in the hydraulic model.

TABLE E-4

Lift Station Capacity Summary (Existing and 20 Year)

Lift Station ID	Lift Station Capacity (gpm)	Existing Peak Flow (gpm)	Existing Surplus (+)/ Def (-) (gpm)	20-Year Peak Flow (gpm)	20-Year Surplus (+)/ Def (-) (gpm)
LS 1	59	84	-25	95	-36
LS 2	239	108	131	135	104
LS 3	307	71	236	98	209
LS 4	580	304	276	356	224
LS 5	800	661	139	803	-3
LS 6	312	130	182	160	152
LS 7	200	249	-49	295	-95
LS 8	540	530	10	649	-109
LS 11	400	304	96	355	45
LS 12	2,000	936	1,064	1,101	899
LS 14	480	215	265	282	198
LS 15	5,250	2,969	2,281	3,316	1,934
LS 16	155	13	142	14	141
LS 17	800	344	456	627	173
LS 18	290	142	148	Temporary LS	
LS 19	290	184	106	282	8
LS 20	1,650	1,000	650	1,139	511
LS 21	130	76	54	88	42
LS 22	1,544	837	707	1,162	382
LS 1C	650	1,578	-928	1,834	-1,184

TABLE E-4 – (continued)

Lift Station Capacity Summary (Existing and 20 Year)

Lift Station ID	Lift Station Capacity (gpm)	Existing Peak Flow (gpm)	Existing Surplus (+)/ Def (-) (gpm)	20-Year Peak Flow (gpm)	20-Year Surplus (+)/ Def (-) (gpm)
LS 2C	700	810	-110	1,017	-317
LS 3C	200	69	131	91	109
LS 4C	100	47	53	58	42
LS 5C	200	6	194	Temporary LS	
LS 6C	100	23	77	50	50
LS 8C	670	730	-60	900	-230
LS 9C	150	19	131	36	114

WWTF EVALUATION

Chapter 7 provides a detailed evaluation of each unit process of the District’s Wastewater Treatment Facility (WWTF). A spreadsheet-based mathematical model was developed to evaluate the ability of the WWTF to hydraulically convey the projected flows. The analysis starts with establishing the 100-year flood level of the receiving water and then proceeds upstream through each unit process in the plant. When the hydraulic capacity of the conveyance system or unit process is exceeded, flow can be restricted causing the water level in upstream facilities to increase, impacting their performance and potentially causing overflows.

The hydraulic capacity of the existing WWTF is sufficient for the projected peak flows through buildout.

Buildout flows will require a third influent screen to be installed. It is anticipated that the third influent screen will be installed within an existing channel that was designed to be empty until peak flows necessitate its use and a screenings washer-compactor.

The mainstream treatment processes (liquid and solid treatment) were modelled using GPS-X software. To ensure that the GPS-X model was representative of WWTF performance, the model was calibrated using plant data for average dry weather conditions between 2013 and 2020. Based on this evaluation, the existing WWTF is capable of providing adequate treatment to comply with all of the existing effluent permit limits through the planning period, as well as at the projected buildout flows and loads.

The WWTF needs a significant concentration of readily biodegradable carbon compounds in the aeration basin influent to ensure denitrification. The existing gravity thickener provides the opportunity to generate additional readily biodegradable carbon (in the form of Volatile Fatty Acids, or VFAs) from the WWTF influent through an on-site

fermentation process. Generating these VFAs in the gravity thickener could decrease the amount (and cost) of external carbon added. It is recommended that the District trial the production of in the existing gravity thickener because of the potential savings in chemical costs, which cannot be accurately estimated from modeled results.

Based on the evaluation of condition of the mainstream treatment and facility support systems, several equipment items are expected to reach the end of their service lives within the planning period. Given that most major equipment at the WWTF have typical service lives of between 15 and 30 years, while the WWTF has been in operation for nearly 10 years, the WWTF will enter a period of potential high frequency of equipment overhaul and replacement.

The membranes in the Membrane Bioreactor (MBR) are due for replacement. The replacement project will consist of replacing the membrane modules in the existing cassettes and refurbishment of the existing membrane cassettes. This would require the manufacturer's service technicians to replace any worn plastic parts and update the hardware. In addition, the impellers on the permeate pumps would be replaced.

The design peak day flow capacity of the ultraviolet (UV) disinfection system is projected to be exceeded prior to 2031. This is expected to coincide with the end of the useful life of the existing UV system. A replacement UV system would consist of two duty modules and one standby module, in addition to a new power distribution center (PDC). For ease of construction, it is assumed that the second UV channel is equipped with the new system to prevent any lapse in disinfection (or need for a temporary disinfection system) during construction.

WWTF staff are pilot testing alternatives to sodium hydroxide for alkalinity addition. As discussed in Chapter 7, the alternatives would consist of magnesium hydroxide-based or calcium carbonate-based slurries in addition to continuing with sodium hydroxide. Implementation of a final effluent alkalinity addition system is recommended after at least one full year of use of the new mixed liquor alkalinity addition system and new supplemental carbon addition system (discussed in detail in Chapter 7).

Planning level estimates for equipment replacement costs are provided in Table E-5 to help the District prepare for anticipated increases in facility O&M costs. These equipment replacement costs would add to existing O&M costs.

COMPLIANCE WITH THE PUGET SOUND NUTRIENT GENERAL PERMIT

It is anticipated that new permit requirements significantly impacting the WWTF may come from the Puget Sound Nutrient General Permit (PSNGP). The PSNGP is summarized in Chapter 2, and Chapters 7 and 8 provide discussions of the PSNGP in the context of WWTF capital and operating impacts from the new standards. The PSNGP will require the WWTF to reduce effluent loads of total inorganic nitrogen (TIN) such that the annual effluent load is no more than 127,000 lbs/year. If this level is exceeded,

the District must submit for review a proposed approach to reduce the annual effluent load below 127,000 lbs/year. If this level is exceeded for two consecutive years or three times during the permit term, the District must implement the proposed approach to reduce nitrogen loads. Note: The PSNGP has been appealed and subject to a legal challenge, so it is possible that the limits and conditions will change.

Chapter 7 includes discussion of compliance with the PSNGP. Improving denitrification at this facility to the level required to meet the proposed limits (127,000 lbs/year) in the PSNGP would require the addition of an external carbon source to increase the ratio between readily biodegradable carbon and nitrogen entering the anoxic zones in the aeration basins.

The PSNGP suggests that the PSNGP may ask treatment plants to target an effluent TIN concentration of 3 mg-N/L or less after the first permit cycle. As a result, the PSNGP will require the District to submit a nutrient reduction evaluation by the end of 2025. This evaluation will need to include an AKART analysis, economic evaluation, and environmental justice review of alternatives to reduce effluent TIN to a level that is as close to 3 mg/L as feasible. Based on the results of the WWTF modeling effort that was performed as part of the Plan, the existing WWTF is not capable of achieving and effluent TIN concentration of 3 mg/L without significant improvements and additional infrastructure. Therefore, if the 3 mg/L effluent TIN limits are put into effect within the planning period, significant improvements to the WWTF will be required.

TABLE E-5

Anticipated Major Equipment Replacement Costs

Years	Anticipated Major Replacement Items	Estimated Cost
2021-2026	<ul style="list-style-type: none"> • Flash mixer gearbox • Aeration basin fine bubble diffuser membranes • Anaerobic digester clean and inspection 	\$450,000 (\$90,000/year)
2027-2031	<ul style="list-style-type: none"> • Sodium hypochlorite (NPW) metering pumps • Primary sludge pumps • Gravity thickener mechanisms • Thickening centrifuge • Digester draft tube mixers • Boiler tubes • Dewatering centrifuge 	\$1,330,000 (\$266,000/year)

TABLE E-5 – (continued)

Anticipated Major Equipment Replacement Costs

Years	Anticipated Major Replacement Items	Estimated Cost
2032-2036	<ul style="list-style-type: none"> • Influent band screens and washer/compactors • Headworks compressor • Primary clarifier mechanisms • Primary effluent band screens and washer/compactors • Deoxygenation zone jet mixer • Flash mixer • Anoxic zone jet mixer • Aeration basin fine bubble diffuser membranes • Centrate pumps • Odor system drain MH pump • Grit declassifiers • Anaerobic digester clean and inspection 	<p>\$2,832,000 (\$566,300/year)</p>
2037-2041	<ul style="list-style-type: none"> • Process blowers • Plant compressors and dryers • Non-potable water pumps • Biofilter fans • Industrial water pumps • Cooling water pumps • Boilers • Digester heat exchangers • Waste gas burner 	<p>\$3,102,000 (\$620,400/year)</p>

Table E-6 provides a list of current recommended minor improvements at the WWTF.

TABLE E-6

Current WWTF Minor Improvements

Area	Project Description
Aeration Basins	Raise anoxic zone walls with small (4" x 1") stainless steel angles
	Estimated Cost: \$6,000
Equipment Building	Replace corroded membrane backpulse water pipe sections
	Estimated Cost: \$50,000
Blower Room	Install stand-alone cooling units for each process blower enclosure
	Estimated Cost: \$25,000

Table E-7 summarizes the recommended major improvements to the WWTF within the 6-, 10- and 20-year planning periods.

TABLE E-7
WWTF Major Improvements

Improvement Project	Estimated Cost
6-Year Projects	
Mixed Liquor Alkalinity Addition System ⁽¹⁾	\$130,300
Final Alkalinity Addition System	\$79,600
Supplemental Carbon Addition System	\$231,100
Membrane Replacement and System Improvement Project	\$3,411,000
3-Month Fermenter-Thickener Trial Study	\$110,000
10-Year Project	
UV Disinfection System Improvements	\$986,000
20-Year Projects	
None	
Buildout	
Influent Screenings System Improvements	\$996,000

(1) Includes structural modification costs needed to accommodate supplemental carbon addition system.

BIOSOLIDS MANAGEMENT

Chapter 8 provides an evaluation of the District’s biosolids treatment and management systems. The 20-year net present worth and feasibility of Class A and Class B alternatives were evaluated. The primary alternatives 20-year net present worth determined were:

- Class A Biosolids Production – Thermal Drying \$15,346,000
- Class B Biosolids Production – Contracted Hauling \$3,632,000

Although production of Class A biosolids would provide a benefit to the community because the biosolids could be utilized by the general public, the disadvantages, including substantially higher costs, issues with operability and reliability, and site footprint, outweigh those benefits. It is recommended that the District continue to haul Class B biosolids to permitted land application sites.

Table E-8 shows the recommended improvements to the biosolids management system.

TABLE E-8

Biosolids Improvements

Improvement Project	Estimated Cost
6-Year Projects	
Fermenter-Thickener	TBD Based on Trial Study
10-Year Project	
None	
20-Year Projects	
WAS Thickening Rotary Drum Thickening System	\$669,000

CAPITAL IMPROVEMENT PLAN AND FINANCIAL ANALYSIS

Chapter 9 summarizes the capital improvement plan and financial analysis. The proposed system improvements in the CIP are shown below in Table E-9. Each project cost estimate includes sales tax, construction contingency, and design engineering, construction management and permitting. All project costs are based on 2021 dollars. Cost inflation of 5 percent per year from 2022 to 2024 and 2 percent per year thereafter was assumed.

To pay for the capital improvements, the District’s Board of Commissioners passed a Resolution to increase the General Facility Charge from \$10,400 to \$13,500 per ERU, effective May 1, 2022. To fund ongoing maintenance and operations of the sewer system, the Board passed a Resolution to increase the monthly sewer rate from \$86 to \$99 per ERU, effective June 1, 2022.

TABLE E-9
Capital Improvement Plan

Capital Improvement Project	ID	Proposed Funding Source	Estimated Year of Completion	Estimated Total Construction Cost	Estimated District Contribution	Description
Years 1-6 (2022-2027)						
Gravity Sewer System Repair and Replacement			Annual	\$1,500,000	\$1,500,000	Replace 2,300 LF of pipe and 13 MHs annually. 20 percent of MHs and 15 percent pipes over 40 years old over 10-year CIP
Anoxic Zone Wall Improvements	WWTF	Capital	2022	\$6,000	\$6,000	Raise Anoxic Zone Walls to prevent short-circuiting
New LS 23 and FM	H5	Donated	2021 (Complete)	\$1,580,000	\$ -	Construct 401 gpm LS and 2,150 LF 6" FM
TIN Optimization Report	WWTF	Capital	2022	\$30,000	\$30,000	WWTF Process Performance Assessment and Initial Selection of Optimization Strategy per requirements of Nutrient Permit – currently due in March 2023
Backpulse Pipe Replacement	WWTF	Capital	2022 (Under Construction)	\$25,000	\$25,000	Replace corroded membrane backpulse water pipe sections
20 th Street NE and Bus. Loop Road to LS 2C	E2-B	Capital	2022	\$1,150,000	\$1,150,000	Replace 1,560 LF 10" with 15" gravity
Sewer System Comprehensive Plan/Facility Plan Update	Comp	Capital	2022	\$345,000	\$345,000	Evaluate existing WWTF in context of actual operation data to support increased capacity within same footprint

TABLE E-9 – (continued)

Capital Improvement Plan

Capital Improvement Project	ID	Proposed Funding Source	Estimated Year of Completion	Estimated Total Construction Cost	Estimated District Contribution	Description
SR 9 Gravity Crossing	G7-B	Capital	2022 (Under Construction)	\$500,000	\$500,000	Extend 8" gravity sewer in 16" casing across SR 9 to allow gravity sewer service from Basin C2-2 to Basin G1-8 and to proposed LS G1
LS 2C Upgrade	E2-A	Capital	2022	\$2,700,000	\$2,700,000	Upgrade LS 2C from 700 gpm to 1,250 gpm
LS 2C Force Main	E2-C	Capital	2022	\$2,730,000	\$2,730,000	Construct 3,800 LF 10" FM; bypass LS 1C via existing 8" PVC FM
LS 5C Decommission & LSs 4C & 6C Rehabilitation	E4	Capital	2022	\$1,710,000	\$1,710,000	Construct up to 641 LF 8" to LS 4C and decommission LS 5C; Rehab of LS 6C
LS 8C Upgrade & Rehabilitation	D6	Donated	2022	\$1,040,000	\$ -	Increase Capacity from 600 to 1,050 gpm; Includes Replacing 360 LF of 8" FM with 10" FM
Lift Station 11 Rehabilitation	G4	Capital	2022	\$590,000	\$590,000	Lift Station Rehabilitation per general condition assessment - LS 11
New LS G7 & FM	G7-A	Donated	2022 (Under Construction)	\$1,410,000	\$ -	Construct 140 gpm LS and 1,300 LF 4" FM
Process Blower Enclosure Cooling	WWTF	Capital	2022	\$87,200	\$87,200	Repair and improve Blower Room HVAC

TABLE E-9 – (continued)

Capital Improvement Plan

Capital Improvement Project	ID	Proposed Funding Source	Estimated Year of Completion	Estimated Total Construction Cost	Estimated District Contribution	Description
Mixed Liquor Alkalinity Addition System Improvements	WWTF	Capital	2022	\$130,300	\$130,300	Install magnesium hydroxide/calcium carbonate storage and dosage system
Carbon Addition System	WWTF	Capital	2022	\$231,100	\$231,100	Pilot and install supplemental COD addition storage and dosage system
District Office Upgrades - Generator	VBC-A	Capital	2022	\$250,000	\$250,000	Install Emergency Generator and Electrical system upgrade to District office
WWTF Membrane Replacement	WWTF	Capital	2023	\$3,858,000	\$3,858,000	Replace WWTF membranes per Manufacturer's Recommendations - Paid \$482,250 annually 2023 - 2030
LS 1C Rehabilitation	E1-A	Capital	2023	\$740,000	\$740,000	Rehabilitate existing structures and pumping, electrical, control and instrumentation systems, including replacement generator. Increase capacity to 821 gpm
Lift Station 3C Rehabilitation	E7	Capital	2023	\$550,000	\$550,000	Lift Station Rehabilitation per general condition assessment - LS 3C

TABLE E-9 – (continued)

Capital Improvement Plan

Capital Improvement Project	ID	Proposed Funding Source	Estimated Year of Completion	Estimated Total Construction Cost	Estimated District Contribution	Description
Centennial Townhomes DEA	E5-A	Donated	2023	\$340,000	\$ -	Construct 400 LF 10" gravity
LS 1 Rehabilitation	B2	Capital	2024	\$779,000	\$779,000	Rehabilitate LS 1 to increase capacity to 100 gpm and add Generator
Lift Station 6 Rehabilitation	D5	Capital	2024	\$793,000	\$793,000	Lift Station Rehabilitation per general condition assessment - LS 6
New LS H8 and FM	H8	75 percent Donated/ 25 percent Capital	2024	\$1,790,000	\$447,500	Construct 140 gpm LS and 1,200 LF 4" FM; Hisey Project
New Gravity Line - Industrial Area	D7-A	Capital	2024	\$520,000	\$520,000	Construct 840 LF 8" Grav in Easement Area in NE Corner of UGA
District Office Upgrades - 2 nd Floor	VBC-B	Capital	2024	\$250,000	\$250,000	Allowance for upgrade of District office including accessibility improvements and 2nd Floor Remodel - full scope and budget to be determined
Nutrient Reduction Evaluation	WWTF	Capital	2025	\$200,000	\$200,000	Evaluate alternatives to meet 3 mg/L TIN per requirements of Nutrient Permit
131 st Avenue NE	E5-B	Capital	2025	\$1,020,000	\$1,020,000	Construct 1,400 LF 8" gravity

TABLE E-9 – (continued)

Capital Improvement Plan

Capital Improvement Project	ID	Proposed Funding Source	Estimated Year of Completion	Estimated Total Construction Cost	Estimated District Contribution	Description
Lift Station 4 Rehabilitation	D3	Capital	2025	\$902,000	\$902,000	Lift Station Rehabilitation per general condition assessment - LS 4
Lift Station 3 Rehabilitation	D4	Capital	2025	\$624,000	\$624,000	Lift Station Rehabilitation per general condition assessment - LS 3
Lift Station 2 Rehabilitation	B4	Capital	2026	\$780,000	\$780,000	Lift Station Rehabilitation per general condition assessment - LS 2
New Gravity Line - Industrial Area	D7-B	Capital	2026	\$970,000	\$970,000	Construct 3,160 LF 8" gravity in Easement Area in NE Corner of UGA
LS 9 Decommissioning	H7	Capital	2026	\$180,000	\$180,000	Construct 170 LF 8" gravity
Vactor and CCTV Truck Replacement		Capital	2027	\$650,000	\$650,000	Replace existing vactor and CCTV equipment at end of useful life
New LS E8 and FM	E8-A	Capital	2027	\$2,360,000	\$2,360,000	Construct 140 gpm LS and 3,800 LF 4" FM
Basin E8 Collection System (North Machias Road)	E8-B	Capital	2027	\$2,200,000	\$2,200,000	Construct 4,000 LF 8" gravity

TABLE E-9 – (continued)

Capital Improvement Plan

Capital Improvement Project	ID	Proposed Funding Source	Estimated Year of Completion	Estimated Total Construction Cost	Estimated District Contribution	Description
New LS E9 and FM	E9-A	Capital	2027	\$1,710,000	\$1,710,000	Construct 140 gpm LS and 1,700 LF 4" FM
26 th , 27 th and 28 th Places NE	E9-B	Capital	2027	\$1,590,000	\$1,590,000	Construct 2,650 LF 8" gravity
New LS C4 and FM	C4	75 percent Donated/ 25 percent Capital	2027	\$1,340,000	\$335,000	Construct 140 gpm LS and 900 LF 4" FM
Lift Station 7 Rehabilitation and Upgrade	H3-A	50 percent Donated/ 50 percent Capital	2027	\$ 752,000	\$ 376,000	Lift Station Rehabilitation per general condition assessment - LS 7 and Increase capacity to 310 gpm
Years 7-10 (2028-2031)						
Comprehensive Plan Update		Capital	2028	\$200,000	\$200,000	Full 6-year update to Comprehensive Sewer Plan
Mitchell Road Main Replacement	E1-B	Capital	2028	\$560,000	\$560,000	Replace 444 LF 8" with 12" gravity
97 th Drive SE and 99 th Avenue SE	G7-C	Capital	2028	\$1,490,000	\$1,490,000	Construct 1,150 LS 8" gravity
Lift Station 8 Rehabilitation	H2	Capital	2028	\$554,000	\$554,000	Lift Station Rehabilitation per general condition assessment - LS 8 and Increase capacity to 866 gpm

TABLE E-9 – (continued)

Capital Improvement Plan

Capital Improvement Project	ID	Proposed Funding Source	Estimated Year of Completion	Estimated Total Construction Cost	Estimated District Contribution	Description
LS 15 Upgrade and Rehabilitation	D1-A	Capital	2028	\$1,033,000	\$1,033,000	Increase capacity to 5,430 gpm and rehabilitate per condition assessment. 10- to 20-Year CIP
LS 2C FM Extension	E2-E	Donated	2028	\$1,680,000	\$ -	Construct 4,700 LF 10" FM from LS 1C to MH 701. Replaces 50 Year Old FM.
Hartford Road	D7-C	Capital	2029	\$280,000	\$280,000	Construct 450 LF 8" gravity
Dosing Station Reconstruction	A4	Capital	2029	\$1,080,000	\$1,080,000	Modernize Dosing Station, Upgrade communication system and improve pipeline access
WAS Thickener	WWTF	Capital	2030	\$668,800	\$668,800	Install WAS rotary drum thickener system in Digester Building
UV System Addition	WWTF	Capital	2030	\$986,000	\$986,000	Install additional UV banks to existing UV channel.
Lift Station 12 Rehabilitation	B3	Capital	2030	\$760,000	\$760,000	Lift Station Rehabilitation per general condition assessment - LS 12
New LS E10 and FM	E10	75 percent Donated/ 25 percent Capital	2030	\$1,600,000	\$400,000	Construct 140 gpm LS and 1,300 LF 4" FM

TABLE E-9 – (continued)

Capital Improvement Plan

Capital Improvement Project	ID	Proposed Funding Source	Estimated Year of Completion	Estimated Total Construction Cost	Estimated District Contribution	Description
New LS G6 and FM	G6	75 percent Donated/ 25 percent Capital	2030	\$1,390,000	\$347,500	Construct 140 gpm LS and 1,050 LF 4" FM
Lift Station 5 Rehabilitation and Upgrade	D2	Capital	2031	\$536,000	\$536,000	Lift Station Rehabilitation per general condition assessment and upgrade to 880 gpm
Lift Station 14 Rehabilitation	B5	Capital	2031	\$386,000	\$386,000	Lift Station Rehabilitation per general condition assessment - LS 14
Lift Station 10 Rehabilitation	6	Capital	2031	\$585,000	\$585,000	Rehabilitation of LS 10, Year 2031
Years 11-20 (2032-2041)						
Lift Station 20 Rehabilitation	A1	Capital	2032	\$397,000	\$397,000	Lift Station Rehabilitation per general condition assessment - LS 20
New LS C3 and FM	C3	75 percent Donated/ 25 percent Capital	2032	\$1,560,000	\$390,000	Construct 182 gpm LS and 1,400 LF 4" FM
New LS C5 and FM	C5	75 percent Donated/ 25 percent Capital	2032	\$1,730,000	\$432,500	Construct 140 gpm LS and 1,250 LF 4" FM
Lift Station 16 Rehabilitation	A2	Capital	2033	\$423,000	\$423,000	Lift Station Rehabilitation per general condition assessment - LS 16

TABLE E-9 – (continued)

Capital Improvement Plan

Capital Improvement Project	ID	Proposed Funding Source	Estimated Year of Completion	Estimated Total Construction Cost	Estimated District Contribution	Description
Lift Station 9C Rehabilitation	E6	Capital	2033	\$401,000	\$401,000	Lift Station Rehabilitation per general condition assessment - 9C
Purple Pennet and Nyden Farms Roads	H3-B	Capital	2034	\$760,000	\$760,000	Construct 1,050 LF 8" gravity
Lift Station 19 Rehabilitation	G2	Capital	2035	\$465,000	\$465,000	Lift Station Rehabilitation per general condition assessment - LS 19
New LS G3 and FM	G3	75% Donated / 25% Capital	2035	\$1,420,000	\$355,000	Construct 140 gpm LS, 800 LF 4" FM
Lakeview Drive Sewers	D1-E	Donated	2035	\$2,710,000	\$ -	Construct 5,300 LF 8" gravity (ULID?)
Cedar Road Sewers - West Side	D1-B	Donated	2035	\$1,130,000	\$ -	Construct 1,550 LF 8" gravity (ULID?)
Cedar Road Sewers - East Side	D1-C	Donated	2035	\$930,000	\$ -	Construct 1,250 LF 8" gravity (ULID?)
Soper Hill Sewers	D1-D	Donated	2035	\$1,980,000	\$ -	Construct 2,800 LF 8" gravity
Decommission LS 18	C2-A	Capital	2035	\$130,000	\$130,000	Decommission LS 18 after Project C2-B
White Oaks Sewer Extension	C2-B	Donated	2035	\$6,450,000	\$ -	Construct 3,600 LF 10" gravity and 6,800 LF 8" gravity

TABLE E-9 – (continued)

Capital Improvement Plan

Capital Improvement Project	ID	Proposed Funding Source	Estimated Year of Completion	Estimated Total Construction Cost	Estimated District Contribution	Description
Lift Station 21 Rehabilitation	H4	Capital	2035	\$317,000	\$317,000	Lift Station Rehabilitation per general condition assessment - LS 21
Lift Station 17 Rehabilitation	C1	Capital	2037	\$456,000	\$456,000	Lift Station Rehabilitation per general condition assessment - LS 17
Vernon Road West @ VRD	B1-A	Capital	2037	\$1,280,000	\$1,280,000	Replace 473 LF 24" with 30" gravity and 550 LF 24" with 36" gravity
Vernon Road West Trunk @ LS 15 Discharge	B1-C	Capital	2039	\$1,040,000	\$1,040,000	Replace 902 LF 21" gravity with 24" gravity
Lift Station 22 Rehabilitation	H1	Capital	2040	\$453,000	\$453,000	Rehabilitation of LS 22
91 st Avenue SE	B1-B	Capital	2041	\$1,370,000	\$1,370,000	Replace 1,700 LF 8" with 12" gravity in 91 st Avenue SE.

District Development Name	District Project No	Development Location	ERU Count	Project Open Date	DEA Approval Date	Title Xfr & Conn Fee Due Date	Construction start date	Title Xfr Record Date	Permits Not Paid
BATCHELDOR DEA	12205	11927 & 12009 20TH St SE	80	4/29/2022					80
CENTENNIAL SHORT PLAT	12005	2105 131st Ave NE	9	9/17/2020	10/22/2020	11/1/2023			9
COSTCO LAKE STEVENS	12002	2404 S Lake Stevens RD	12.7	4/2/2020	9/22/2021	2/1/2024	Start 2021		12.7
GOLD CREEK LAKE STEVENS	12104	8002 8th St SE	3	7/14/2021	10/28/2021	9/1/2024			3
HILLCREST ESTATES	11709	7625 10th St SE	12	6/2/2017	7/3/2017	9/1/2023	Start 8/2020		12
HINTZ DEA	11907	811 Rhodora Heights Rd	8	7/24/2019	11/1/2019	9/1/2022	Start 8/2020	9/7/2021	8
HISEY I DEA		119XX Machias Cutoff	36	4/1/2022					36
KNUTSON 3 SHORT PLAT (No DEA-Tracking Only)	NA	11321 AND 11319 S Lake Stevens Rd	5	1/9/2020	NA	NA		NA	5
LAKE DR	11905	NHN Lake Dr	48	3/27/2019	4/26/2019	5/1/2022	Start	12/21/2021	48
LEWANDOWSKI 2021	12106	2618 Cedar Rd	2	12/6/2021	1/4/2022	1/1/2025			2
MATTSON HILL	12206	Lot 21, Rucker's Mill Plant No. 2	8	5/18/2022					8
MOUNTAIN VIEW I DEA	11713	910 123rd Ave SE	97	8/10/2017	11/29/2018	11/1/2021	Start 8/2020	9/7/2021	97
MOUNTAIN VIEW II DEA	11911	910 123rd Ave SE	91	12/2/2019	12/23/2019	1/1/2023	Start 8/2020	12/21/2021	91
PELLERIN I DEA	11808	1601,1615,1707,10607 18th St SE	4	9/14/2018	12/5/2018	11/30/2021	2/20/2020	2/20/2020	4
PELLERIN II DEA	11809	10813,10913,10919,11007,11017 18th St SE	97	9/14/2018	12/5/2018	11/30/2021	Start 5/2020	6/18/2021	97
SEDONA DEA	12001	9627 20th St SW	18	1/21/2020	1/21/2020	2/1/2023	7/2/2020	3/10/2021	18
SMITH PROPERTY	12103	9929 South Lake Stevens RD	15	7/8/2021	10/14/2021	9/1/2024			15
SOPER HILL COMMERCIAL	11906	9023 Soper Hill Rd	8	5/31/2019	6/27/2019	7/1/2022	Start 6/2021		8
STEVENS RIDGE ESTATES	11607	502 West Davies Loop Road	1	8/12/2016	9/30/2016	10/1/2019	Start 8/2017	4/18/2018	1
STILLWATER DEA	12202	524 S Davies Rd	23	3/17/2022					23
SKYLINE ELEMENTARY PORTABLES	12102	NA	0	4/20/2021	5/12/2021	6/1/2024	Start 7/2021		0
TOLL ESTATE SUBDIVISION	12003	918 & 927 83rd Ave SE	31	3/30/2020	6/12/2020	3/1/2023	Start 5/2021	1/24/2022	31
VINJE HILLS ESTATES	12203	1317 71st Ave SE	23	4/6/2022					23
WEST LAKE TOWNHOMES	12101	10230 9th St SE	27	4/14/2021	6/22/2021	5/1/2024			27
WRONA	12105	10212 South Lake Stevens Rd	36	9/3/2021	10/12/2021	11/1/2024			36

Total ERU Count 694.7

Outstanding ERU's 694.7

MTG ERU's updated 06/15/22

Project Under Construction ERU's 507.7
Project Not Under Construction ERU's 187

New Accounts