LAKE WHATCOM WATER & SEWER DISTRICT

1220 Lakeway Drive
Bellingham, WA, 98229

(360) 734-9224
Fax 738-8250

MEMORANDUM

Date: August 4, 2021

From: Lake Whatcom Water & Sewer District

RE: Meeting Procedures During the Covid-19 Emergency

Lake Whatcom Water & Sewer District continues to operate under adjusted procedures in order to provide continuous service to our customers. That said, we are taking precautions in an effort to protect the health and safety of our staff, commissioners, and customers. Our lobby is currently closed to the public, and we are practicing social distancing guidelines as suggested by Governor Inslee and the CDC.

For the foreseeable future, Commissioners will be attending regular meetings by phone/video conference. Per Governor Inslee's Proclamation No. 20-28.3, the District will provide access to interested public via phone/internet utilizing the GoToMeeting platform.

If you would like to attend the August 11, 2021 Work Session or regular board meeting, details can be found below. In this evolving climate, we are committed to doing everything possible to provide opportunity for public comment as well as promote health and safety. As such, the District requests that if possible, public submit comments in written form by noon the day before a scheduled meeting for inclusion in the meeting discussion.

We appreciate your understanding and patience during these uncertain times. If you have any questions, please contact Administrative Assistant Rachael Hope at rachael.hope@lwwsd.org or 360-734-9224.

August 11, 2021 Work Session & Regular Board Meeting

Work Session 5:30 – 6:30 PM (PDT) Regular Board Meeting 6:30 PM - 8:30 PM (PDT)

Please join my meeting from your computer, tablet or smartphone.
https://global.gotomeeting.com/join/494851533

You can also dial in using your phone.
United States: +1 (872) 240-3212

Access Code: 494-851-533

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LAKE WHATCOM WATER AND SEWER DISTRICT
1220 Lakeway Drive
Bellingham, WA 98229

WORK SESSION OF THE BOARD OF COMMISSIONERS
AGENDA
August 11, 2021
5:30 p.m. – Work Session

1. CALL TO ORDER

2. SPECIFIC ITEMS OF WORK
   A. Sudden Valley Water Treatment Plant Master Plan Alternatives Analysis

3. ADJOURNMENT

WORK SESSION	**Sudden Valley Water Treatment Plant Presentation of Preferred Configuration**		
DATE SUBMITTED:	August 4, 2021	MEETING DATE:	August 11, 2021
TO: BOARD OF COMMISSIONERS		FROM: Bill Hunter, Assist. GM/District Engineer	
GENERAL MANAGER APPROVAL			
ATTACHED DOCUMENTS		1. Stakeholder Engagement Plan Diagrams 2. Select Slides from FCSG 5/26/2021 Rate Study Presentation 3. 4/19/2021 Memo Summarizing Minimum, Medium, & Maximum Configurations	
TYPE OF ACTION REQUESTED		RESOLUTION ☐	FORMAL ACTION/ MOTION ☐ / INFORMATIONAL /OTHER ☒

BACKGROUND / EXPLANATION OF IMPACT

The objective of this Board workshop is to present the preferred configuration for Sudden Valley Water Treatment Plant (SVWTP) Improvements to be implemented over the next 20+ years of capital improvements. Gray and Osborne (G&O) will be presenting the current preferred configuration based on input from District operations and maintenance staff in July.

This workshop is Meeting #1 for Board and Public Input as shown in the attached Stakeholder Engagement Plan presented to the Board on 5/26/2021. Due to the large amount of information and numerous alternatives, the idea is to provide the Board and public information resources to review and think about over the next couple weeks. Then, at Meeting #2 (tentatively scheduled for August 25, 2021) we review and collect Board and public comments and questions in an attempt to finalize a preferred configuration.

The District created a SVWTP project information web page that has all of the information developed to date, with documents organized for quick access and review at any time by anyone. The link to that page is here: https://lwwsd.org/sudden-valley-water-treatment-plant-facility-improvement-plan/

G&O's slide presentation will be available on the web page following the workshop.

The following project goals and objects were developed over the past 9-months as part of the tech memo presentations by G&O. They were created to evaluate the numerous alternatives and identify the best ones to include in the preferred configuration of SVWTP improvements. In no particular priority, the key long-term goals and objectives to date are:

- G1 - Maintain exceptional water quality performance record
- G2 - Accommodate immediate need for additional space and separation of chemicals/electrical equipment
- G3 - Provide adequate equipment and process redundancy
- G4 - Improve access and flexibility for equipment repair/rehabilitation and/or future expansion
- G5 - Provide capacity for full buildout flow (1,400 gpm)
- G6 - Provide treatment equipment for 30-50 year time period

FISCAL IMPACT

Select rate study slides from the 5/26/2021 presentation by FCSG are attached for reference. An internal memo dated 4/19/2021 is also attached that summarizes Minimum, Medium, and Maximum SVWTP Improvements.

The financial impacts to District rates are shown in the FCSG slides.

The Medium Improvements developed in April 2021 are very close to the current preferred configuration that G&O will be presenting on August 11, 2021.

APPLICABLE EFFECTIVE UTILITY MANAGEMENT ATTRIBUTE(S)

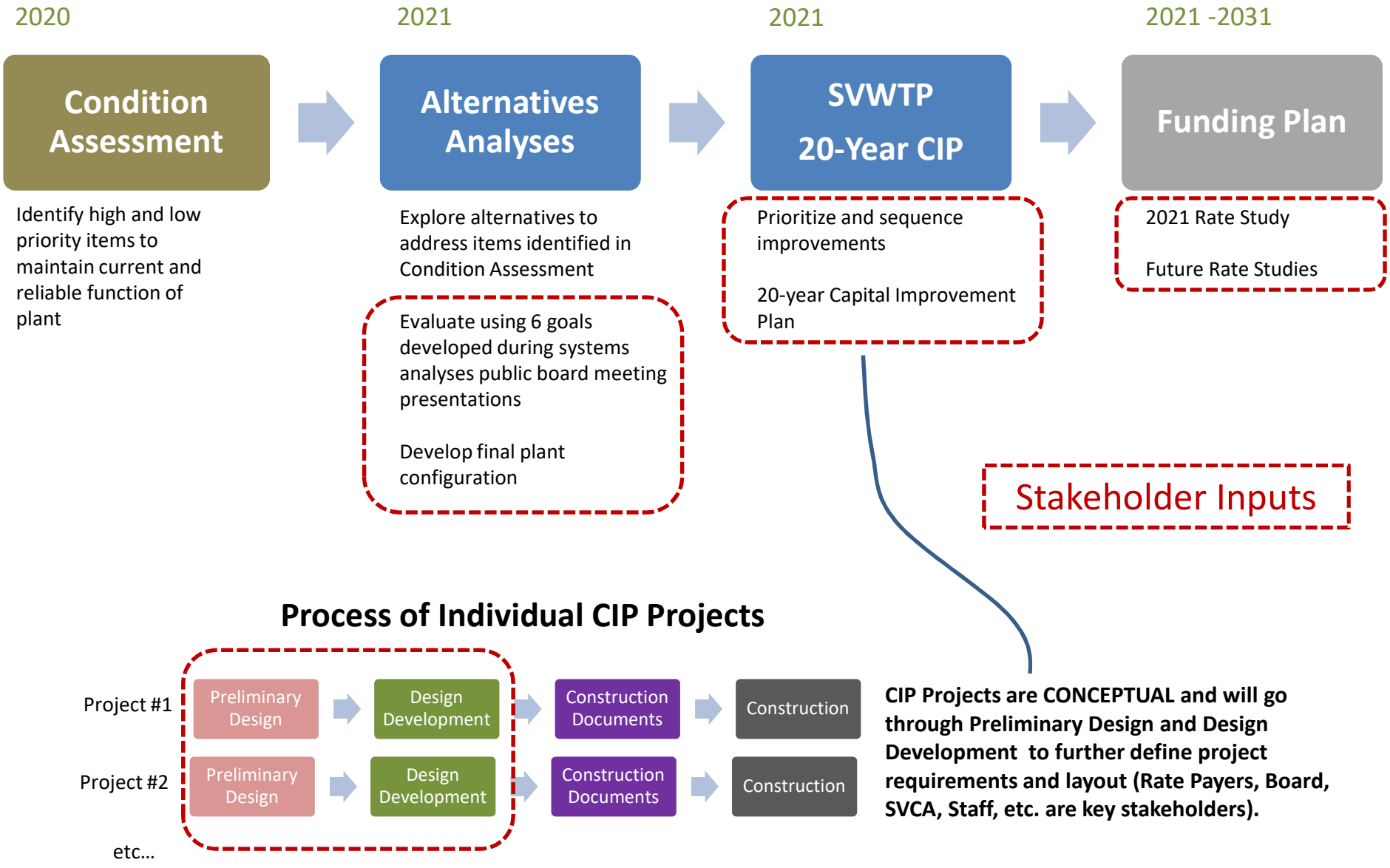
Product Quality
Operational Optimization
Infrastructure Strategy and Performance
Water Resource Sustainability

RECOMMENDED BOARD ACTION

No action is recommended at this time.

PROPOSED MOTION

Not applicable.


2020
2021
2021
2021 -2031
Condition Assessment
Alternatives Analyses
SVWTP 20-Year CIP
Funding Plan
Identify high and low priority items to maintain current and reliable function of plant
Explore alternatives to address items identified in Condition Assessment
Evaluate using 6 goals developed during systems analyses public board meeting presentations
Develop final plant configuration
Prioritize and sequence improvements
20-year Capital Improvement Plan
2021 Rate Study
Future Rate Studies
Stakeholder Inputs
Process of Individual CIP Projects
Project #1
Project #2
etc…
Preliminary Design
Design Development
Construction Documents
Construction
Preliminary Design
Design Development
Construction Documents
Construction
CIP Projects are CONCEPTUAL and will go through Preliminary Design and Design Development to further define project requirements and layout (Rate Payers, Board, SVCA, Staff, etc. are key stakeholders).

Public Board Meeting Presentations
- Pump Performance
- Chemical Systems
- Disinfection Systems
- Backwash Systems
- Filtration System
- Tier 2/3 Seismic and Structural
- Structural/Architectural Workspace
- NACE III Coating Inspection

G&O and Engineering Department develop Preferred Configuration

Measure against 6 goals identified during System Analyses presentations

<u>Meeting #1</u>
Present Preferred Configuration

Review alternatives for each system

<u>Meeting #2</u>
Review/collect staff comments and questions

Adjust Preferred Configuration

<u>Meeting #1</u>
Present Staff's recommended Preferred Configuration

8/11/2021 Workshop

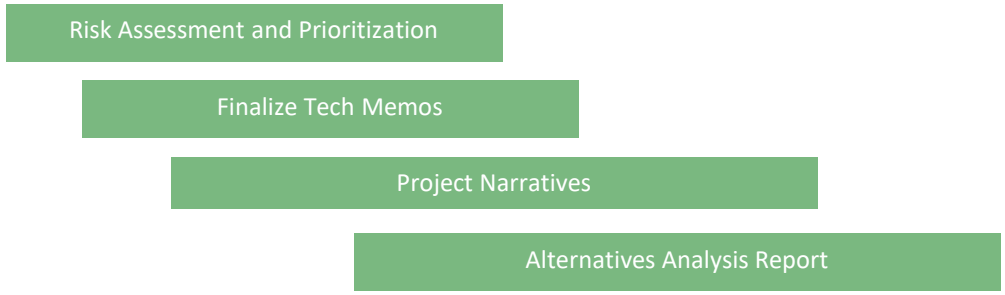
Review alternatives for each system

<u>Meeting #2</u>
Review/collect Board and public comments and questions

Tentatively 8/25/2021

Finalize Preferred Configuration

Completion of Remaining Scope of Work Items by G&O



Water & Sewer Utilities Rate Study

Gordon Wilson, Sr. Program Manager
Tage Aaker, Project Manager
May 26, 2021

FCS GROUP
Solutions-Oriented Consulting

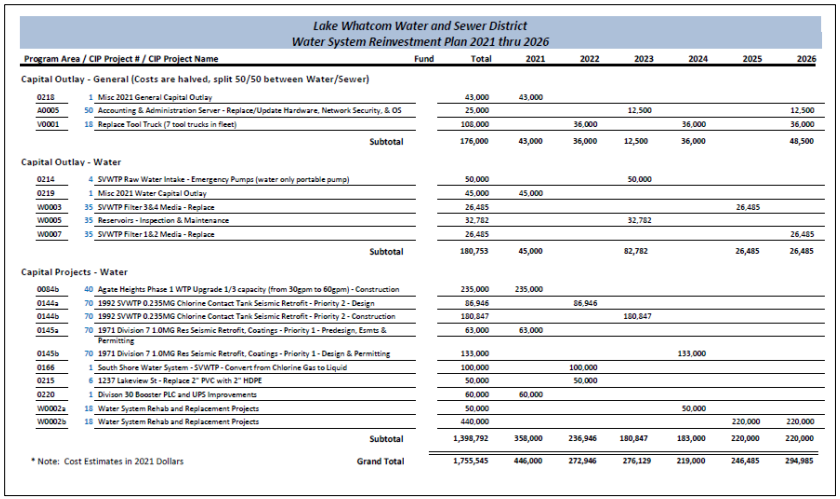
Water Revenue Requirement

Water Capital Improvement Plan (CIP)

- **The District's water capital plans involve two key pieces**

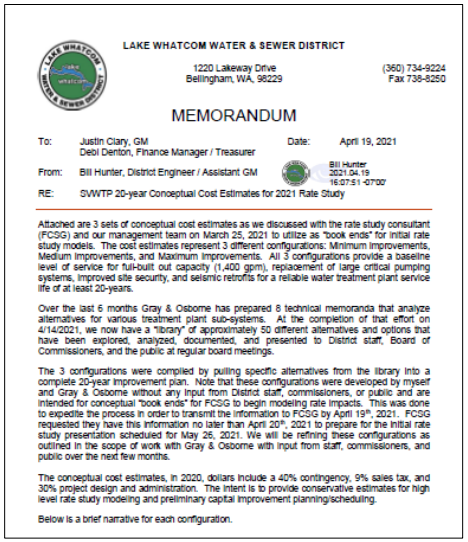
1. **2021-26 Adopted CIP:**
   - » Routine capital
   - » Repair and replacement
   - » Minor WTP maintenance

2. **Sudden Valley Water Treatment Plant (SVWTP) 20-year Conceptual Cost Estimates for 2021 Rate Study (Memo)**
   - » Major capital needs to meet system buildout
   - » Draft numbers for rate planning only



Lake Whatcom Water and Sewer District
Water System Reinvestment Plan 2021 thru 2026

Program Area / CIP Project # / CIP Project Name	Fund	Total	2021	2022	2023	2024	2025	2026
Capital Outlay - General (Costs are halved, split 50/50 between Water/Sewer)								
0218 1 Misc 2021 General Capital Outlay		43,000	43,000					
A0005 50 Accounting & Administration Server - Replace/Update Hardware, Network Security, & OS		25,000			12,500			12,500
V0001 18 Replace Tool Truck (7 tool trucks in fleet)		108,000		36,000		36,000		36,000
Subtotal		176,000	43,000	36,000	12,500	36,000		48,500
Capital Outlay - Water								
0214 4 SVWTP Raw Water Intake - Emergency Pumps (water only portable pump)		50,000			50,000			
0219 1 Misc 2021 Water Capital Outlay		45,000	45,000					
W0003 35 SVWTP Filter 3&4 Media - Replace		26,485					26,485	
W0005 35 Reservoirs - Inspection & Maintenance		32,782			32,782			
W0007 35 SVWTP Filter 1&2 Media - Replace		26,485						26,485
Subtotal		180,753	45,000		82,782		26,485	26,485
Capital Projects - Water								
0084b 40 Agate Heights Phase 1 WTP Upgrade 1/3 capacity (from 30gpm to 60gpm) - Construction		235,000	235,000					
0144a 70 1992 SVWTP 0.235MG Chlorine Contact Tank Seismic Retrofit - Priority 2 - Design		86,946		86,946				
0144b 70 1992 SVWTP 0.235MG Chlorine Contact Tank Seismic Retrofit - Priority 2 - Construction		180,847			180,847			
0145a 70 1971 Division 7 1.0MG Res Seismic Retrofit, Coatings - Priority 1 - Predesign, Esmts & Permitting		63,000	63,000					
0145b 70 1971 Division 7 1.0MG Res Seismic Retrofit, Coatings - Priority 1 - Design & Permitting		133,000				133,000		
0166 1 South Shore Water System - SVWTP - Convert from Chlorine Gas to Liquid		100,000		100,000				
0215 6 1237 Lakeview St - Replace 2" PVC with 2" HDPE		50,000		50,000				
0220 1 Divison 30 Booster PLC and UPS Improvements		60,000	60,000					
W0002a 18 Water System Rehab and Replacement Projects		50,000				50,000		
W0002b 18 Water System Rehab and Replacement Projects		440,000					220,000	220,000
Subtotal		1,398,792	358,000	236,946	180,847	183,000	220,000	220,000
* Note: Cost Estimates in 2021 Dollars	**Grand Total**	1,755,545	446,000	272,946	276,129	219,000	246,485	294,985



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MEMORANDUM

To: Justin Clary, GM
Debi Denton, Finance Manager / Treasurer

Date: April 19, 2021

From: Bill Hunter, District Engineer / Assistant GM

Bill Hunter 2021.04.19 16:07:51 -07'00'

RE: SVWTP 20-year Conceptual Cost Estimates for 2021 Rate Study

Attached are 3 sets of conceptual cost estimates as we discussed with the rate study consultant (FCSG) and our management team on March 25, 2021 to utilize as "book ends" for initial rate study models. The cost estimates represent 3 different configurations: Minimum Improvements, Medium Improvements, and Maximum Improvements. All 3 configurations provide a baseline level of service for full-built out capacity (1,400 gpm), replacement of large critical pumping systems, improved site security, and seismic retrofits for a reliable water treatment plant service life of at least 20-years.

Over the last 6 months Gray & Osborne has prepared 8 technical memoranda that analyze alternatives for various treatment plant sub-systems. At the completion of that effort on 4/14/2021, we now have a "library" of approximately 50 different alternatives and options that have been explored, analyzed, documented, and presented to District staff, Board of Commissioners, and the public at regular board meetings.

The 3 configurations were compiled by pulling specific alternatives from the library into a complete 20-year improvement plan. Note that these configurations were developed by myself and Gray & Osborne without any input from District staff, commissioners, or public and are intended for conceptual "book ends" for FCSG to begin modeling rate impacts. This was done to expedite the process in order to transmit the information to FCSG by April 19th, 2021. FCSG requested they have this information no later than April 20th, 2021 to prepare for the initial rate study presentation scheduled for May 26, 2021. We will be refining these configurations as outlined in the scope of work with Gray & Osborne with input from staff, commissioners, and public over the next few months.

The conceptual cost estimates, in 2020, dollars include a 40% contingency, 9% sales tax, and 30% project design and administration. The intent is to provide conservative estimates for high level rate study modeling and preliminary capital improvement planning/scheduling.

Below is a brief narrative for each configuration.

Sudden Valley Water Treatment Plant (SVWTP)

- **3 conceptual cost configurations (out of many)**
  - » Minimum Improvements
  - » Medium Improvements
  - » Maximum Improvements

- **All 3 configurations provide the following**
  - » A baseline level-of-service for full build out capacity (1,400 GPM)
  - » Replace large critical pumping systems
  - » Improved site security / seismic retrofits for reliable water treatment plant service

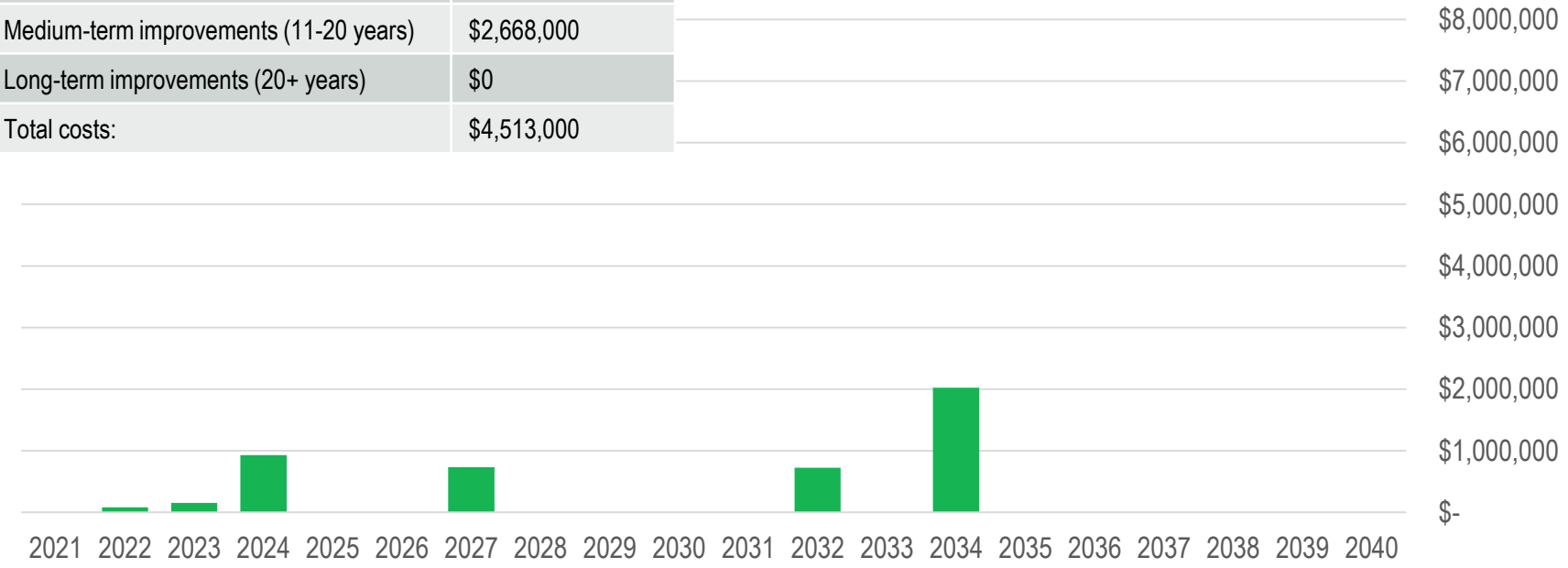
- **Three scenarios are intended to provide bookends for rate study forecast**

SVWTP: Minimum

Minimum Improvements.

- **Continue Operating within Existing Building Facilities** (Filters, Chemicals, Electrical Remain in Current Positions)
- **New 0.3 MG Steel Chlorine Contact Basin**
- Replace Pumping Systems and Liquid Alum System
- Seismic and Site Security Improvements
- Provides Full-Build Out Capacity (1,400 GPM)

Time Range	Cost (2020$)
Short-term improvements (0-10 years)	$1,845,000
Medium-term improvements (11-20 years)	$2,668,000
Long-term improvements (20+ years)	$0
Total costs:	$4,513,000

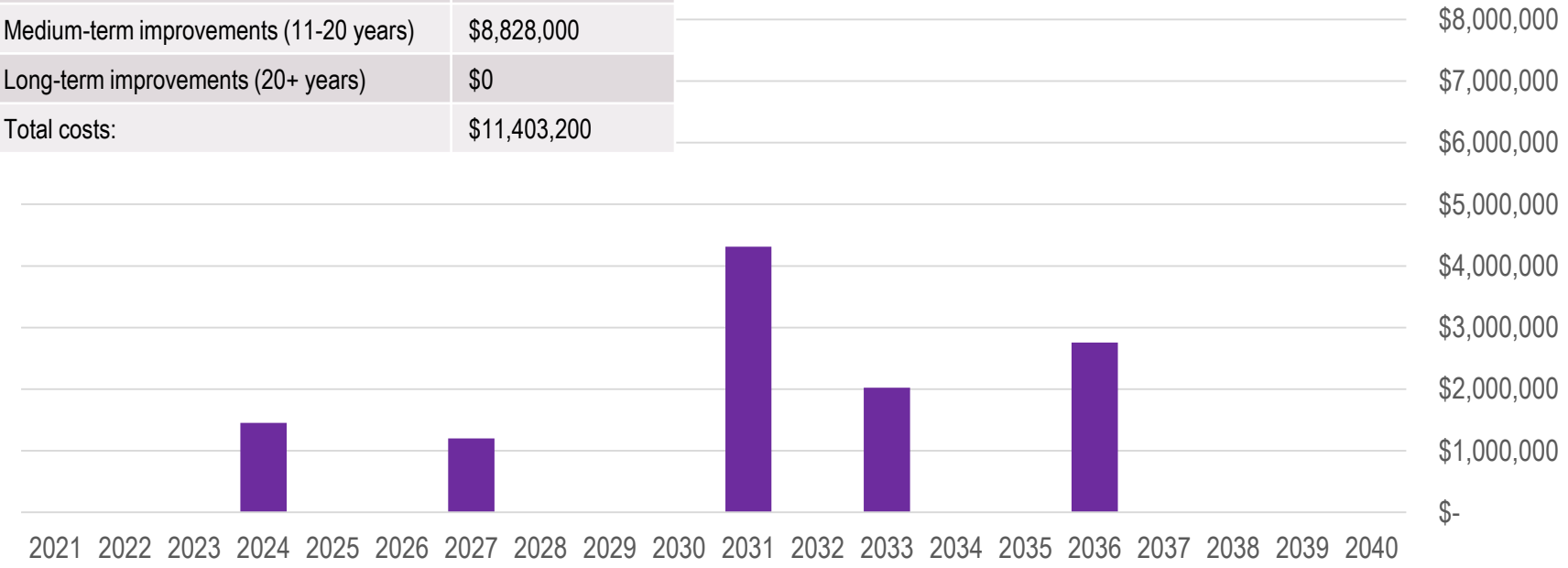


SVWTP: Medium

Medium Improvements.

- **New Building for Soda Ash and Liquid Alum Chemicals**
- **New 0.3 MG Steel Chlorine Contact Basin**
- Replace Pumping Systems, Improve Existing Chlorine Gas System to Meet Current Codes
- Backwash Water Recycling using Repurposed Existing Chlorine Contact Basin
- Seismic and Site Security Improvements
- Provides Full-Build Out Capacity (1,400 GPM)

Time Range	Cost (2020 $)
Short-term improvements (0-10 years)	$2,575,200
Medium-term improvements (11-20 years)	$8,828,000
Long-term improvements (20+ years)	$0
Total costs:	$11,403,200



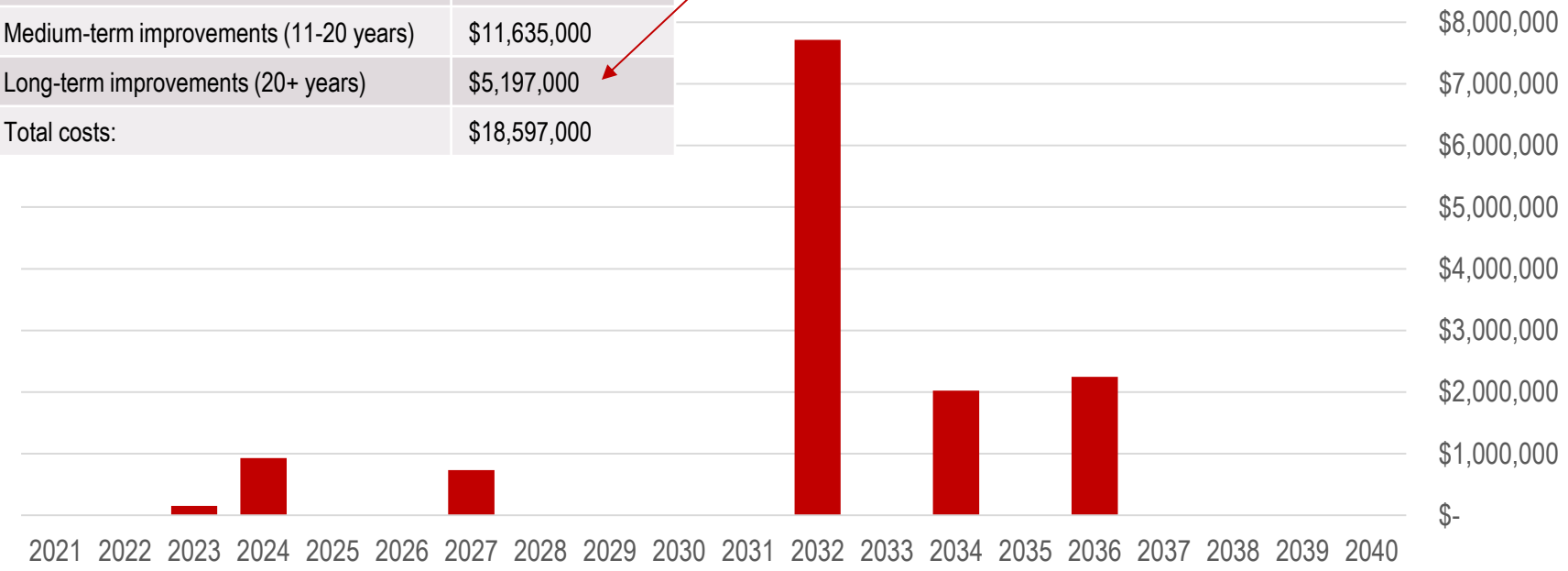
SVWTP: Maximum

Maximum Improvements.

- **New Building for Soda Ash, Liquid Alum, Onsite Chlorine Generation, New Clarifier/Filter Package System**
- **New 0.3 MG Steel Chlorine Contact Basin**
- Replace Pumping Systems, Backwash Water Recycling using New Underground Vault
- Seismic and Site Security Improvements, Rehab Existing Chlorine Contact Basin (Redundant Tank)
- Accommodations for a Future Dissolved Air Floatation System
- Provides Full-Build Out Capacity (1,400 GPM).

Time Range	Cost (2020 $)
Short-term improvements (0-10 years)	$1,765,000
Medium-term improvements (11-20 years)	$11,635,000
Long-term improvements (20+ years)	$5,197,000
Total costs:	$18,597,000

Note: Long-term costs not included in 20-year forecast.



Revenue Requirements by Scenario

- **All scenarios cover:**
  - » Forecast operating expenditures based on 2021 adopted budget
  - » Existing debt obligations
  - » 2021-26 adopted CIP, plus an average of $250,000/yr. 2027 and beyond
  - » One of these SVWTP project configurations
    - – Minimum
    - – Medium
    - – Maximum

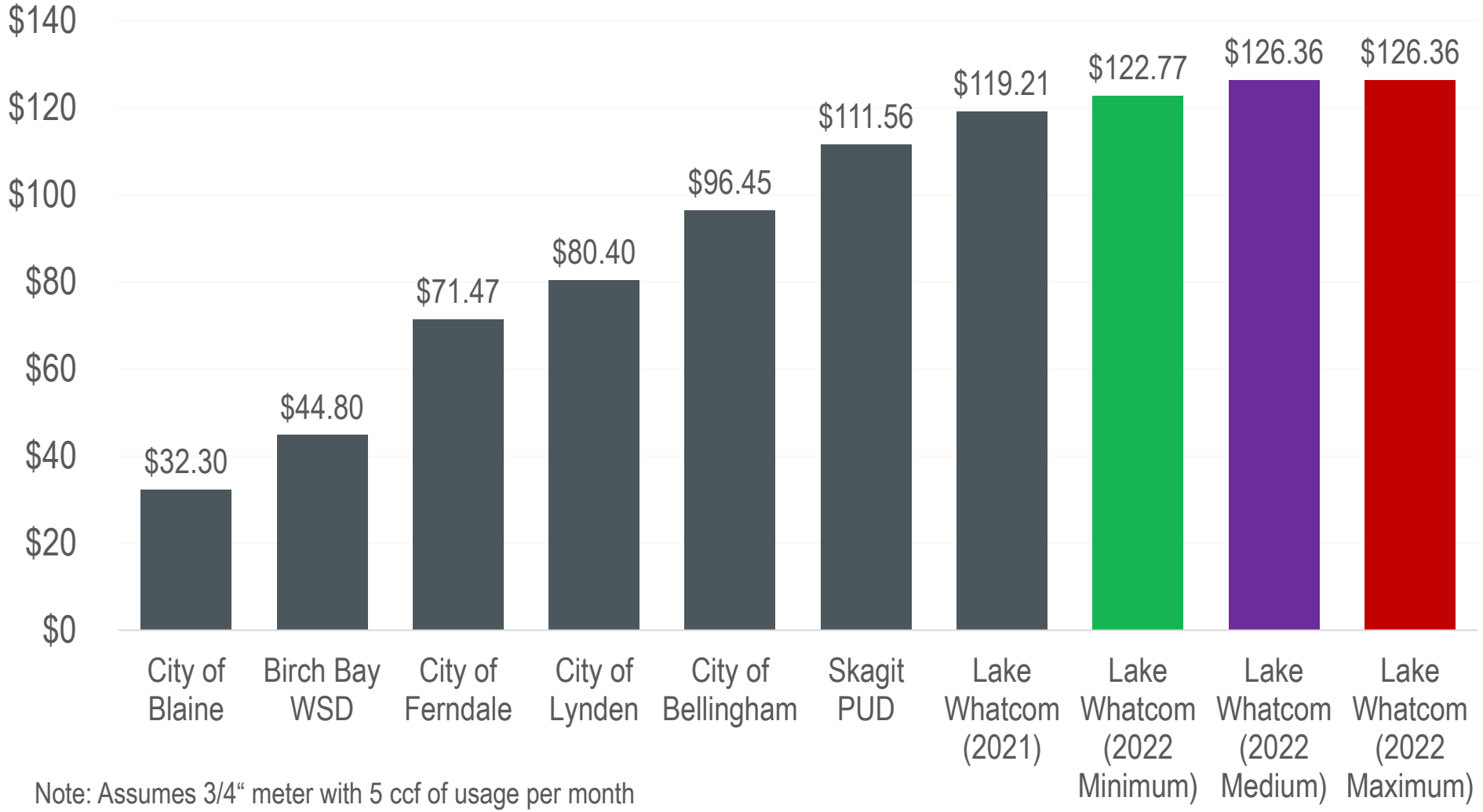
Summary of Water Utility Scenarios

Metric	Scenario 1	Scenario 2	Scenario 3
Capital (inflated)	$13.4 million	$23.3 million	$26.5 million
Debt	$4.75 million	$11.75 million	$13.25 million
Increases	2022-40: 3% / yr.	2022-24: 6% / yr. 2025-2040: 3% / yr.	2022-25: 6% / yr. 2026-2040: 3% / yr.

Three years of 6% increases / yr.

Four years of 6% increases / yr.

Single-Family Bi-Monthly Water Rates



Note: Assumes 3/4“ meter with 5 ccf of usage per month

Public Works Board: Affordability Index

Affordability Index (AI)

A measure of the consumer's financial ability to pay for utility services.

Rates are deemed to be affordable if they are less than two (2) percent of the median household income (MHI).

Metrics in 2022	Amount
Single family water charge (2-months): medium	$126.36
Single family water charge (annual): medium	$758
Median household income (annual)	$56,800
Annual water charge ÷ MHI	**1.3%**

Sources:
City of Bellingham MHI; 2015-19 ACS 5-Year Estimates (converted to 2022 dollars)
Washington State Public Works Board Traditional Programs Construction, Pre-Construction, and Emergency Construction Loans Application Guidelines May 10, 2021

Water Utility: Next Steps

- **FCS GROUP recommends planning for the Medium Improvement Scenario Rate Strategy**
  - » Plan to adopt one to four years of 6% rate increases depending on final SVWTP costs
  - » Revisit and come back to the District Board with updated SVWTP cost estimates in late summer 2021
  - » Anticipated new debt issuance: $11.75 - $13.25 million
  - » Assumes flexibility with recently adopted Debt Service Coverage target of 1.75 (per Res. 187)

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Debi Denton, Finance Manager / Treasurer

Date: April 19, 2021

From: Bill Hunter, District Engineer / Assistant GM

RE: SVWTP 20-year Conceptual Cost Estimates for 2021 Rate Study

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The 3 configurations were compiled by pulling specific alternatives from the library into a complete 20-year improvement plan. Note that these configurations were developed by myself and Gray & Osborne without any input from District staff, commissioners, or public and are intended for conceptual "book ends" for FCSG to begin modeling rate impacts. This was done to expedite the process in order to transmit the information to FCSG by April 19th, 2021. FCSG requested they have this information no later than April 20th, 2021 to prepare for the initial rate study presentation scheduled for May 26, 2021. We will be refining these configurations as outlined in the scope of work with Gray & Osborne with input from staff, commissioners, and public over the next few months.

The conceptual cost estimates, in 2020, dollars include a 40% contingency, 9% sales tax, and 30% project design and administration. The intent is to provide conservative estimates for high level rate study modeling and preliminary capital improvement planning/scheduling.

Below is a brief narrative for each configuration.

Minimum Improvements. This configuration includes the minimum amount of improvements while still providing a reliable system for full system buildout (1,400 gpm). Equipment remains in current locations. No new building structures are proposed except for a new 0.3 MG chlorine contact basin (CCB) to accommodate the full buildout flow. Seismic issues are addressed in the existing Main Building and Pump Building. Site security is improved with perimeter fencing, sensors, and cameras. In summary, with the exception of a new 0.3 MG CCB, this scenario will continue operating within existing building facilities.

Short-Term Improvements (0-10 years)

Finished Water Pump Replacement

Div 7 - Exist 2 pumps 100hp 700gpm@445ft. Div 22 - Exist 2 pumps 150hp 700gpm@608ft. Replace pumps, motors, and MCC. Includes upgrade to VFDs.

Liquid Alum System Replacement

Continue to use liquid alum as a coagulant. Replace the existing storage tank and metering pump system, continue to store and pump the alum solution within the existing WTP Main Building, and provide new alum handling equipment.

Clearwell Transfer Pump Replacement

Exist 2 pumps 20hp 1,400gpm@43ft. Replace pumps, motors, and MCC. Includes replacing existing starters with VFDs.

Raw Water Pump Replacement

Exist 2 pumps 20 hp 1,400gpm@40ft. Replace pumps, motors, and MCC. Includes replacement of existing VFDs.

Site Security Improvements

Approximately 550 LF of new perimeter security fencing, intrusion sensors, access gates, and security cameras.

Long-Term Improvements (>10 years)

WTP Main Building Seismic Retrofits

Seismic bracing/anchorage of wall framing at restroom, wall-mounted transformer, HVAC unit, fluid piping, electrical panels.

Finish Water Pump Building Seismic Retrofits

Remove and replace masonry partition walls with wood-framed walls. Seismic bracing/anchorage of generator exhaust, gas heating unit, natural gas piping, fluid piping, gas meter, wall-mounted transformer, water heater, conduit runs, electrical panels.

New 0.3 MG Steel Chlorine Contact Basin

Construction of a new 300,000 gallon welded steel CCB to replace the existing steel tank.

Rehabilitate Existing Filter 1/2

Modify the existing filter vessel with a new ladder and rehabilitate the existing Filters vessel coating system, replace/rehabilitate floc tank. No building, site, electrical, HVAC, or telemetry/SCADA improvements are included with this alternative.

Medium Improvements. This configuration addresses more of the project goals identified through the alternatives analyses process. It provides for full system build out (1,400 gpm), new building space to separate chemicals and electrical equipment, improves access and flexibility for equipment repair, rehabilitation and/or future expansion, rehabilitates/repurposes the existing CCB for backwash storage, and implements backwash water recycling. Chemical equipment is relocated to a new building, except chlorine gas system remains in existing building but with modifications required to bring the system up to current chemical use and storage codes. Includes new 0.3 MG chlorine contact basin for full buildout flow. Seismic issues are addressed in Main Building and Pump Building. Site security is improved with perimeter fencing, sensors, and cameras.

Short-Term Improvements (0-10 years)

Finished Water Pump Replacement

Div 7 - Exist 2 pumps 100hp 700gpm@445ft. Div 22 - Exist 2 pumps 150hp 700gpm@608ft. Replace pumps, motors, and MCC. Includes upgrade to VFDs.

Clearwell Transfer Pump Replacement

Exist 2 pumps 20hp 1400gpm@43ft. Replace pumps, motors, and MCC. Includes replacing existing starters with VFDs.

Raw Water Pump Replacement

Exist 2 pumps 20 hp 1400gpm@40ft. Replace pumps, motors, and MCC. Includes replacement of existing VFDs.

WTP Main Building Seismic Retrofits

Seismic bracing/anchorage of wall framing at restroom, wall-mounted transformer, HVAC unit, fluid piping, electrical panels.

Finish Water Pump Building Seismic Retrofits

Remove and replace masonry partition walls with wood-framed walls. Seismic bracing/anchorage of generator exhaust, gas heating unit, natural gas piping, fluid piping, gas meter, wall-mounted transformer, water heater, conduit runs, electrical panels.

Existing Chlorine Gas System Modifications

Includes utilizing chlorine gas disinfection but includes providing upgrades to the facility so that it meets current building and safety codes.

Site Security Improvements

Approximately 550 LF of new perimeter security fencing, intrusion sensors, access gates, and security cameras.

Long-Term Improvements (>10 years)

Chemical Addition System Improvements

Continue to utilize liquid alum coagulant and 50LB soda ash bags delivered by a commercial vendor. Relocate the chemical systems to a new 500 SF building. Upgrade chemical metering systems to include metering pump skids that include calibration columns and various valves/piping. New 2,500 gallon alum tank. Refurbish and relocate existing soda ash tank to new building, replace mixer.

New 0.3 MG Steel Chlorine Contact Basin

Construction of a new 300,000 gallon welded steel CCB to replace the existing steel tank.

Rehabilitate Existing Filter 1/2

Modify the existing filter vessel with a new ladder and rehabilitate the existing Filters vessel coating system, replace/rehabilitate floc tank. No building, site, electrical, HVAC, or telemetry/SCADA improvements are included with this alternative.

Existing CCB Rehabilitation / Repurposing

Rehabilitate and repurpose existing 225,000 gallon CCB for backwash storage. Address inadequate uplift resistance of the foundation and lack of piping flexibility. Replace interior and exterior coatings, seal weld interior, replace existing vent, install additional access hatch, remove interior and exterior ladder cages, cover for hatch padlock, replace hand hole screws with tamperproof devices.

Backwash Recycle Implementation

Direct backwash supernatant back to the existing raw water piping upstream of the flocculation tank but will maintain a connection to the municipal sewer system in the event that recycle water does not meet water quality requirements. Utilize existing 225,000 CCB that is repurposed for back wash storage facility, 70 to 140 gpm duplex recycle pump station, and replacement of the existing backwash discharge pumps with 600 to 800 gpm VFD pumps.

Maximum Improvements. This configuration addresses all of the project goals identified through the alternatives analyses process. It provides for full system build out (1,400 gpm), a new building that houses alum, soda ash, onsite chlorine generation system, and new clarifier/filter package filtration systems. Implement backwash water recycling utilizing new underground vault. Includes new 0.3 MG chlorine contact basin for full buildout flow. Seismic issues are addressed in Main Building and Pump Building. Site security is improved with perimeter fencing, sensors, and cameras. It also provides accommodations for a future dissolved air floatation system, and rehabilitation of the existing CCB for use as a redundant contact tank.

Short-Term Improvements (0-10 years)

Finished Water Pump Replacement

Div 7 - Exist 2 pumps 100hp 700gpm@445ft. Div 22 - Exist 2 pumps 150hp 700gpm@608ft. Replace pumps, motors, and MCC. Includes upgrade to VFDs.

Clearwell Transfer Pump Replacement

Exist 2 pumps 20hp 1400gpm@43ft. Replace pumps, motors, and MCC. Includes replacing existing starters with VFDs.

Raw Water Pump Replacement

Exist 2 pumps 20 hp 1400gpm@40ft. Replace pumps, motors, and MCC. Includes replacement of existing VFDs.

Site Security Improvements

Approximately 550 LF of new perimeter security fencing, intrusion sensors, access gates, and security cameras.

Medium-Term Improvements (10 - 20 years)

Chemical Addition System Improvements

Includes continued use of liquid alum as a coagulant and replacing the existing storage tank and metering pump system, but relocating the new alum handling equipment to a new separate building. Includes delivery of dry soda ash within a mini-bulk or super sack storage vessel, offloading the chemical from the delivery vehicle, and staging it onto the loading and distribution equipment where it is delivered to the storage tank via a shaft-less screw conveyor or a pneumatic blower located in new building.

OSHG Disinfection Implementation

Remove existing chlorine gas equipment from service and install new 20-25 ppd On-Site Hypochlorite Generation (OSHG) equipment within new building.

New 0.3 MG Steel Chlorine Contact Basin

Construction of a new 300,000 gallon welded steel CCB to replace the existing steel tank.

New Mixed Media Filters & Associated Building

Remove existing filters from service, construct new separate building, install new package filtration units that include a contact adsorption clarifier in the new building, construction of an enclosed electrical room within the WTP Main Building, and rehabilitating the WTP Main Building to include additional work/laboratory and storage space.

Backwash Recycle Implementation

Direct backwash supernatant back to the existing raw water piping upstream of the existing flocculation tank but maintain a connection to the municipal sewer system in the event that recycle water does not meet water quality requirements. Installation of a new 193,000 gallon below-grade storage facility, 70 to 140 gpm duplex recycle pump station, and replacement of the existing backwash discharge pumps with 600 to 800 gpm VFD pumps.

Long-Term Improvements (>20 years)

Existing CCB Rehabilitation

Rehabilitate existing 225,000 gallon CCB. Address inadequate uplift resistance of the foundation and lack of piping flexibility. Replace interior and exterior coatings, seal weld interior, replace existing vent, install additional access hatch, remove interior and exterior ladder cages, cover for hatch padlock, replace hand hole screws with tamperproof equipment.

Dissolved Air Flotation Implementation

Package DAF system installed in expansion of previous new building structure. Includes construction of building expansion, site improvements, additional building and site piping, and connections to the treatment system.

LAKE WHATCOM WATER AND SEWER DISTRICT

SUDDEN VALLEY WTP ASSESSMENT & ALTERNATIVES ANALYSIS PROJECT
MINIMUM IMPROVEMENTS COST ESTIMATE SUMMARY

Combined Improvements
April 19, 2021
G&O# 20434.00

NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
Short -Term Improvements (0 - 10 years)					
1	Finished Water Pump Replacement	1	LS	$ 455,000	$ 455,000
2	Liquid Alum System Replacement	1	LS	$ 40,000	$ 40,000
3	Clearwell Transfer Pump Replacement	1	LS	$ 210,000	$ 210,000
4	Raw Water Pump Replacement	1	LS	$ 150,000	$ 150,000
5	Site Security Improvements	1	LS	$ 75,000	$ 75,000
				Subtotal [1]	**$ 930,000**
				Contingency (40%)	$ 372,000
				Washington State Sales Tax (9.0%) [2]	$ 117,000
				Design and Project Administration (30%) [3]	$ 426,000
				TOTAL SHORT TERM CONSTRUCTION COST	**$ 1,845,000**
Long-Term Improvements (>10 years)					
6	WTP Main Building Seismic Retrofits	1	LS	$ 75,000	$ 75,000
7	Finished Water Pump Building Seismic Retrofits	1	LS	$ 180,000	$ 180,000
8	New 0.3 MG Steel Chlorine Contact Basin (CCB)	1	LS	$ 990,000	$ 990,000
9	Rehabilitate Existing Filter Vessel 1/2	1	LS	$ 100,000	$ 100,000
				Subtotal [1]	**$ 1,345,000**
				Contingency (40%)	$ 538,000
				Washington State Sales Tax (9.0%) [2]	$ 169,000
				Design and Project Administration (30%) [3]	$ 616,000
				TOTAL LONG TERM CONSTRUCTION COST	**$ 2,668,000**
				TOTAL SHORT TERM CONSTRUCTION COST	**$ 1,845,000**
				TOTAL LONG TERM CONSTRUCTION COST	**$ 2,668,000**
				TOTAL ALTERNATIVE CONSTRUCTION COST	**$ 4,513,000**

1) Costs listed are in 2020 dollars
2) Current sales tax rate is 8.7%.
3) Standard project design and administration fees are 30% of the subtotal including contingency and tax and is provided for planning purposes only.

LAKE WHATCOM WATER AND SEWER DISTRICT

SUDDEN VALLEY WTP ASSESSMENT & ALTERNATIVES ANALYSIS PROJECT
MEDIUM IMPROVEMENTS COST ESTIMATE SUMMARY

Combined Improvements
April 19, 2021
G&O# 20434.00

NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
Short -Term Improvements (0 - 10 years)					
1	Finished Water Pump Replacement	1	LS	$ 455,000	$ 455,000
2	Clearwell Transfer Pump Replacement	1	LS	$ 210,000	$ 210,000
3	Raw Water Pump Replacement	1	LS	$ 150,000	$ 150,000
4	WTP Main Building Seismic Retrofits	1	LS	$ 75,000	$ 75,000
5	Finished Water Pump Building Seismic Retrofits	1	LS	$ 180,000	$ 180,000
6	Existing Chlorine Gas System Modifications	1	LS	$ 153,000	$ 153,000
7	Site Security Improvements	1	LS	$ 75,000	$ 75,000
				Subtotal [1]	**$ 1,298,000**
				Contingency (40%)	$ 519,200
				Washington State Sales Tax (9.0%) [2]	$ 164,000
				Design and Project Administration (30%) [3]	$ 594,000
				TOTAL SHORT TERM CONSTRUCTION COST	**$ 2,575,200**
Long-Term Improvements (>10 years)					
8	Chemical Addition System Improvements	1	LS	$ 2,110,000	$ 2,110,000
9	New 0.3 MG Steel Chlorine Contact Basin (CCB)	1	LS	$ 990,000	$ 990,000
10	Existing Filter Rehabilitation	1	LS	$ 100,000	$ 100,000
11	Existing CCB Rehabilitation / Repurposing	1	LS	$ 620,000	$ 620,000
12	Backwash Recycle Implementation	1	LS	$ 630,000	$ 630,000
				Subtotal [1]	**$ 4,450,000**
				Contingency (40%)	$ 1,780,000
				Washington State Sales Tax (9.0%) [2]	$ 561,000
				Design and Project Administration (30%) [3]	$ 2,037,000
				TOTAL LONG TERM CONSTRUCTION COST	**$ 8,828,000**
				TOTAL SHORT TERM CONSTRUCTION COST	**$ 2,575,200**
				TOTAL LONG TERM CONSTRUCTION COST	**$ 8,828,000**
				TOTAL ALTERNATIVE CONSTRUCTION COST	**$ 11,403,200**

1) Costs listed are in 2020 dollars
2) Current sales tax rate is 8.7%.
3) Standard project design and administration fees are 30% of the subtotal including contingency and tax and is provided for planning purposes only.

LAKE WHATCOM WATER AND SEWER DISTRICT

SUDDEN VALLEY WTP ASSESSMENT & ALTERNATIVES ANALYSIS PROJECT
MAXIMUM IMPROVEMENTS COST ESTIMATE SUMMARY

Combined Improvements
April 19, 2021
G&O# 20434.00

NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
Short -Term Improvements (0 - 10 years)					
1	Finished Water Pump Replacement	1	LS	$ 455,000	$ 455,000
2	Clearwell Transfer Pump Replacement	1	LS	$ 210,000	$ 210,000
3	Raw Water Pump Replacement	1	LS	$ 150,000	$ 150,000
4	Site Security Improvements	1	LS	$ 75,000	$ 75,000
				Subtotal [1]	**$ 890,000**
				Contingency (40%)	$ 356,000
				Washington State Sales Tax (9.0%) [2]	$ 112,000
				Design and Project Administration (30%) [3]	$ 407,000
				TOTAL SHORT TERM CONSTRUCTION COST	**$ 1,765,000**
Medium -Term Improvements (10 - 20 years)					
5	Chemical Addition System Improvements	1	LS	$ 150,000	$ 150,000
6	OSHG Disinfection Implementation	1	LS	$ 275,000	$ 275,000
7	New 0.3 MG Steel Chlorine Contact Basin (CCB)	1	LS	$ 990,000	$ 990,000
8	New Mixed Media Filters & Associated Building	1	LS	$ 3,350,000	$ 3,350,000
9	Backwash Recycle Implementation	1	LS	$ 1,100,000	$ 1,100,000
				Subtotal [1]	**$ 5,865,000**
				Contingency (40%)	$ 2,346,000
				Washington State Sales Tax (9.0%) [2]	$ 739,000
				Design and Project Administration (30%) [3]	$ 2,685,000
				TOTAL MEDIUM TERM CONSTRUCTION COST	**$ 11,635,000**
Long -Term Improvements (>20 years)					
10	Existing CCB Rehabilitation	1	LS	$ 620,000	$ 620,000
11	Dissolved Air Flotation Implementation	1	LS	$ 2,000,000	$ 2,000,000
				Subtotal [1]	**$ 2,620,000**
				Contingency (40%)	$ 1,048,000
				Washington State Sales Tax (9.0%) [2]	$ 330,000
				Design and Project Administration (30%) [3]	$ 1,199,000
				TOTAL LONG TERM CONSTRUCTION COST	**$ 5,197,000**
				TOTAL SHORT TERM CONSTRUCTION COST	**$ 1,765,000**
				TOTAL MEDIUM TERM CONSTRUCTION COST	**$ 11,635,000**
				TOTAL LONG TERM CONSTRUCTION COST	**$ 5,197,000**
				TOTAL ALTERNATIVE CONSTRUCTION COST	**$ 18,597,000**

1) Costs listed are in 2020 dollars
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