

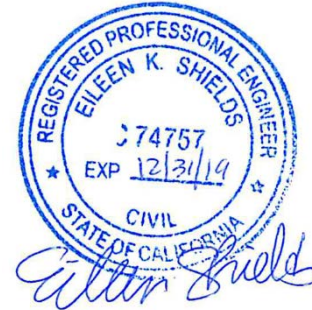
TECHNICAL MEMORANDUM

To: Jeremy Ghent
District Administrator
South San Luis Obispo County Sanitation District

From: Eileen Shields, PE
Vanessa Imani

Date: April 23, 2019

Re: **South San Luis Obispo County Sanitation District
Wastewater Treatment Plant Life Expectancy Analysis**



1. Introduction

1.1. Objective

The South San Luis Obispo County Sanitation District (SSLOCSO or District) owns and operates the SSLOCSO Wastewater Treatment Plant (WWTP). The District is implementing the WWTP Redundancy Project to meet the Regional Water Quality Control Board's (RWQCB) regulations. The objective of this Technical Memorandum (TM) is to provide a Life Expectancy Analysis in conformance with the Coastal Development Permit (CDP) No 13-16-0233. The purpose of the Life Expectancy Analysis is to evaluate long-term costs of maintaining the plant at its current location with the primary purpose being to help determine when the plant cannot function without substantial investment in new infrastructure and protective measures, and when it might be appropriate to relocate the existing WWTP.

1.2. CDP Requirements

CDP #13-16-0233 was approved on May 10, 2017. Item 5 of the Special Condition (Section III) calls for a Life Expectancy Analysis. The permit stipulates that the Analysis should include an evaluation of annual and long-term costs of maintaining existing plant at its current location, including repairing/maintaining and replacing existing components, upgrading existing components to meet regulatory (RWQCB or other) requirements/specifications, and responding to coastal hazards risk (including flood-proofing existing and new components over time). The Analysis must include the following minimum components:

- Information on each component at the WWTP (e.g., headworks, clarifiers, digesters, etc.)
- Installation date of each component
- Upgraded component dates and the current condition of that equipment
- Major upgrade events
- The expected lifespan and repair/maintenance and replacement costs of each component
- Remaining years for each component and the overall WWTP.
- Costs of anticipated habitat mitigation requirements for impacts from potential flood control projects
- Conclusions regarding the expected point in time when investments in infrastructure (including continued flood protection measures) at the current plant location outweigh investing in a relocated plant at a location safe from flooding and other coastal hazards.

1.3. Previous Studies

The following studies and documents were reviewed during preparation of this report:

- Alternatives for Production of Recycled Water Technical Memorandum No. 7 (Kennedy Jenks, October 2017)
- Evaluation of Wastewater Treatment Plant Site Alternatives and Conceptual Costs for Coastal Development Permit Application (MKN & Associates, September 2016)
- Redundancy Project Opinion of Probable Construction Cost (Kennedy Jenks, April 2019)
- WWTP Equipment Replacement Inventory (updated by District staff in 2018)

2. WWTF Components

2.1. Component Information

The WWTP is a conventional facility with mechanical screens, grit removal, two primary clarifiers, a fixed film reactor (FFR), a secondary clarifier, and a chlorine disinfection system. **Table 3-1** provides information on each existing component at the WWTP.

Table 3-1: History of Existing Facility			
System Component	Year Constructed	Year(s) Renovated	Description of Renovation
Influent Pumping Station	1966	1999, 2005 2012, 2014, 2015	1999: Pump service 2005: Diesel bypass pump and motor installed 2012: Pump and valve service 2014: Three VFDs installed 2015: Fourth VFD installed
Headworks	1966	2017	Mechanical bar screens and washer compactor installed
Grit Removal System	2017	NA	Recently installed
Primary Clarifier #1	1966	1990, 1998, 2012, 2016	1990: Second sludge pump installed 1998: VFDs installed 2012: Mechanism, drive and bridge refurbished 2016: Sludge pump #1 replaced
Primary Clarifier #2	1990	2016, 2017	2016: Sludge pump VFD installed 2017: Sludge pump replaced
Fixed Film Reactor (FFR)	1986	2007, 2008, 2011, 2012, 2013, 2014	2007: Blower motors serviced 2008: Feed pump VFD serviced 2011: Inlet valve serviced 2012: Feed pump serviced 2013: Feed pumps, and valves serviced 2014: Feed pump #3, valving, and VFD installed
Secondary Clarifier	1986	1998, 2008, 2010, 2013	1998: Sludge pump VFD installed 2008: Scum pump #2 installed 2010: Scum pump #1 installed 2013: Sludge pump replaced

Table 3-1: History of Existing Facility			
System Component	Year Constructed	Year(s) Renovated	Description of Renovation
Chlorine Contact Chamber	2004	2005, 2016	VFDs for effluent pumps installed (both years)
Outfall	1964	1978	Outfall serviced and Pismo Beach WWTP effluent line connected
Sludge Digester #1	1964	2005	Coating replaced; cleanout, gas train piping, site glasses, Air Pollution Control District equipment, and valves serviced
Sludge Digester #2	1992	2008, 2009	2008: Coating replaced, cleanout installed 2009: Gas train piping serviced, site glasses, Air Pollution Control District equipment, and valves installed or replaced
Sludge Drying Beds	1965		
Sludge Heating and Mixing System	1982	2005, 2007, 2012, 2014, 2015, 2017	2005: Chopper pump replacement 2007: Heat exchanger serviced, boiler installed 2012: Sludge feed pumps installed, macerator installed 2014: Boiler serviced 2015: Sludge feed pump VFDs installed, macerator serviced 2017: Hot Water and Sludge recirculation system serviced
Centrifuge	1965	2017	New centrifuge and building constructed in 2017

The WWTP currently requires redundant secondary treatment processes to help ensure compliance with water quality requirements. The Redundancy Project is an expansion of the existing WWTP, set to begin construction in 2020. The Project includes aeration basins, a secondary clarifier, sludge thickeners, building with blower and electrical rooms, conveyance/pumping facilities, emergency generator, rehabilitation of the existing secondary clarifier, supporting electrical and instrumentation, yard piping, site improvements, and flood protection.

The District previously developed an inventory of the existing WWTP equipment, including condition, original installation date, replacement date and costs. MKN met with District staff to discuss and update the existing WWTP equipment replacement inventory. The list of equipment was reviewed and the condition, replacement dates, and costs were updated.

An estimate of ongoing costs to maintain the plant in the existing location was developed by combining the District’s WWTP Equipment Inventory and the opinion of probable construction cost for the Redundancy Project. Life expectancy for the Redundancy Project components were estimated in order to include anticipated future replacement costs. The cost analysis, shown in Appendix A, estimates the ongoing cost of maintaining the facility at its current location. The analysis includes the current and anticipated WWTP equipment, grouped by major process. The following data are included in the cost analysis (Appendix A):

- **Current Year** – 2018, used for escalating costs

- **WWTP Equipment** – Process area or category
- **Item** – Specific equipment or material
- **Equipment Number** (if known) – District staff equipment ID
- **Replacement Criteria** – Notes under this column include “Idled” or “Unused” equipment, or equipment that will be rehabilitated/replaced with the “Redundancy Project,” or similar. If equipment is idled, or unused replacement years. Estimated next replacement year was forced to 2021 for equipment planned for replacement with redundancy project, or soon after the redundancy project.
- **Rplc – yrs** – Replacement Years, the estimated life expectancy or life cycle for equipment
- **Original Installation Date**
- **Last Done/Project** – The year the equipment/material was last replaced (if applicable) or when it is projected to be replaced if in the future
- **Inspected & Deferred Year** – Column includes the year which equipment is inspected and found to be in good working order so replacement is deferred. For this analysis, it is assumed the ‘estimated next replacement year’ is the year after ‘inspected & deferred year’. The District has shelf spares for critical pieces of equipment.
- **\$ at New/Replacement** – The recorded or estimated cost of the equipment/material the last time it was installed/replaced.
- **Current Cost** – Estimates the current cost based on the ‘Cost for new/replacement’ and escalation
- **Estimated Next Replacement Year** – Calculates the estimated next replacement year based on the “Last Replaced (year)” and the Replacement years

The following assumptions were used in the analysis:

- Life expectancy for materials and equipment is based on industry standards, operator input, and is adjusted by experience or frequency of use
- Current costs are estimated using original installation cost or previous replacement cost and scaled to the current year (updated to 2018) using the US Bureau of Labor Cost of Living Adjustment index.
- Midpoint of construction for the Redundancy Project is 2021
- Costs for operations including power, chemical, staffing, monitoring and reporting were not included, since these costs are not unique to the existing plant site.
- Costs for maintenance and replacement of portable lab or vehicle equipment was not included, since these would be relocated in the case of a new plant site
- The cost analysis begins at approximately 2016, with only a few replacement items tracked as “pre-2016”, around the time when Coastal Commission staff requested the District assess relocation of the plant.
- The flood proofing that will be installed as part of the Redundancy Project is designed to meet modeled sea rise levels through 2050 at a minimum. Flood proofing should be reevaluated within the next 30 years and as new information on sea level rise or flood control projects become available.
- No habitat mitigation from flood proofing projects are required at this time. This should be reevaluated in conjunction with any updates to flood proofing, not anticipated for 30 years or more.

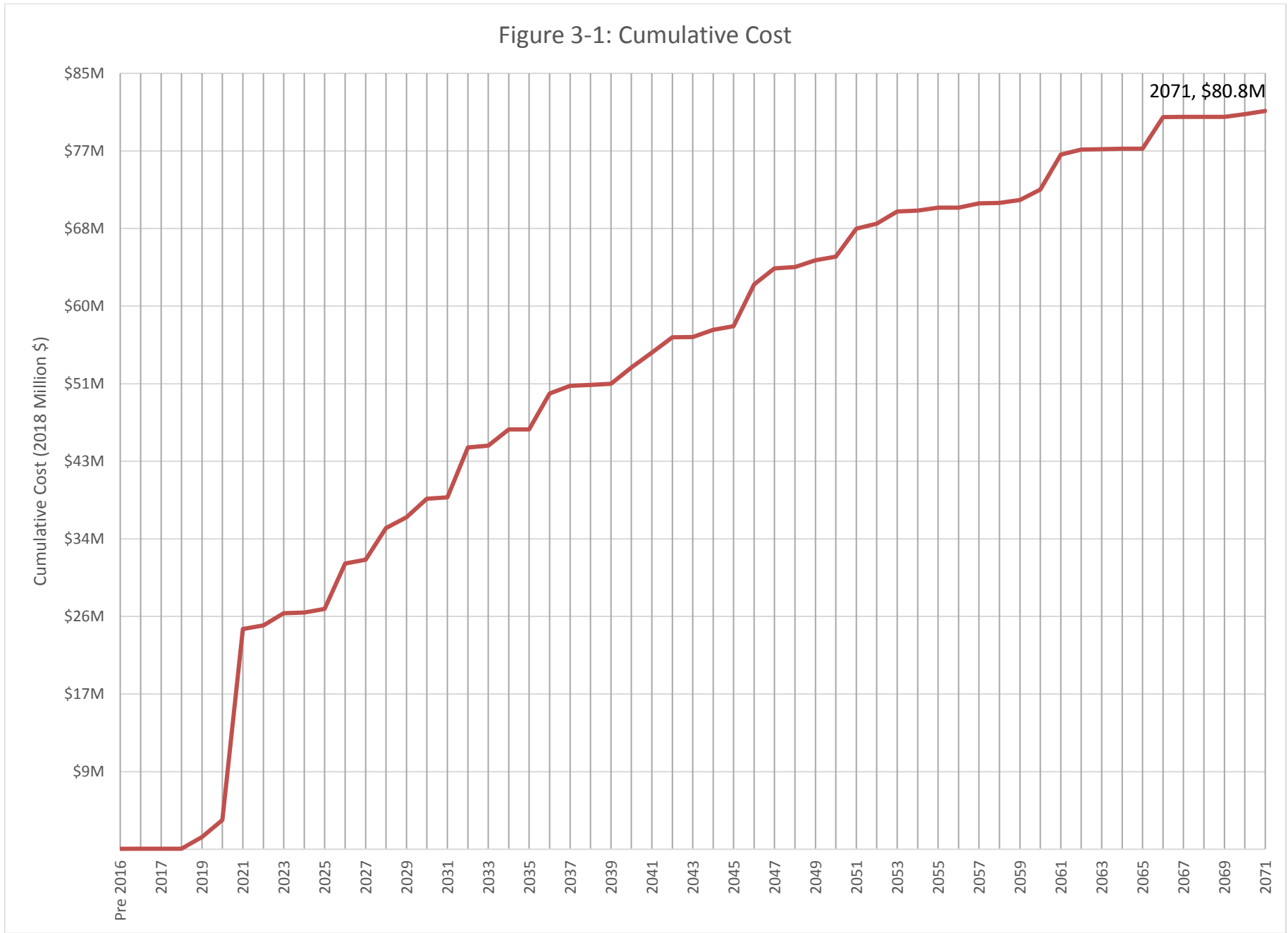
Annual costs were calculated by summing the replacement costs for existing components and costs from the Redundancy Project upgrade, plus the ongoing costs for replacement of the improved WWTP. The analysis was run to 2071, approximately 50 years beyond the Redundancy Project Improvements. A graph summarizing the cumulative cost over time in 2018 million dollars is provided in Figure 3-1. By 2071, the cumulative cost is estimated to be approximately \$81 million dollars (2018 dollars).

The Technical Memorandum of SSLOCSO WWTP Site Alternatives (MKN, September 2016) identified conceptual costs for a relocated WWTP that meets current effluent requirements and provides a similar level of treatment as the existing facility. The conceptual cost to relocate the WWTP was estimated to be between \$110 and 130 million (2016 dollars, or \$130 to 160 million escalated to 2026, as an assumed midpoint of construction), not

including land use, siting, demolition of the existing WWTP, or institutional constraints. Relocation is anticipated to require seven to 11 years for planning, permitting, design, and construction.

The WWTP Redundancy Project is necessary whether or not the plant is relocated. Therefore, the cost for the Project (\$21M in 2019 dollars), as well as any other plant repair/replacement costs required to keep the plant operating over the seven to 11 years of a plant relocation project, would be required. Assuming planning for a plant relocation began in 2020 and relocation was completed between 2027 and 2031, approximately \$31 to 37 million dollars would be required to maintain the existing plant. Based on these results, maintaining the WWTP at the existing location is the most cost-effective solution at this time.

Figure 3-1: Cumulative Cost



APPENDIX A - Cost Analysis

SSLOCSD WWTP LIFE EXPECTANCY COST ANALYSIS

Equipment	Current Year	2018															
	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	Pre 2016	2016	2017	2018	2019	2020	2021
Headworks	Structure			60	1966	1966		\$350,000	\$1,027,600	2026							
	Structure Coating			25	1966	2001		\$30,000	\$41,340	2026							
	Parshall Flume Flow Transmitter			5	1966	2012	2018	\$5,000	\$5,575	2019					\$5,575		
	Influent Slide Gate			55	1966	1966		\$20,000	\$58,720	2021							\$58,720
	Mechanical Bar Screens (2)			20	2017	2017		\$427,000	\$442,372	2037							
	Washer Compactor			15	2017	2017		\$150,000	\$155,400	2032							
	Influent Pump #1 (3,500 gpm)			20	1966	2012		\$50,000	\$55,750	2032							
	Pump 1 Effluent Valve	RW 14 (16")			20	1966	2012		\$2,000	\$2,230	2032						
	RW 14 Check Valve				20	1966	2012		\$2,000	\$2,230	2032						
	Pump 2 Influent Valve	RW 13 (16")			20	1966	2012		\$2,000	\$2,230	2032						
	Influent Pump #2 (3,500 gpm)				20	1966	2013		\$50,000	\$55,250	2033						
	Pump 2 Effluent Valve	RW 15 (12")			20	1966	2012		\$2,000	\$2,230	2032						
	RW 15 Check Valve				20	1966	2012		\$2,000	\$2,230	2032						
	RW12 (16-inch)	RW 12 (16")			35	1966	2012		\$2,000	\$2,230	2047						
	Influent Pump #3 (3,500 gpm)				20	1966	1999		\$37,000	\$52,762	2019					\$52,762	
	RW 16 14-inch	RW 16 (14")			34	1966	2012		\$2,000	\$2,230	2046						
	RW 16 Check Valve				34	1966	2012		\$2,000	\$2,230	2046						
	RW 10 16-inch	RW 10 (16")			20	1966	2012		\$2,000	\$2,230	2032						
	Influent Pump #4 (3,500 gpm)				20	1966	2012		\$50,000	\$55,750	2032						
	Influent Pump #1 VFD				15	2014	2014		\$10,000	\$10,970	2029						
	Influent Pump #2 VFD				15	2014	2014		\$10,000	\$10,970	2029						
	Influent Pump #3 VFD				15	2014	2014		\$10,000	\$10,970	2029						
	Influent Pump #4 VFD				15	1966	2015		\$10,000	\$10,760	2030						
	RW 17 (16-inch)	RW 17 (16")			20	1966	2012		\$2,000	\$2,230	2032						
	RW 17 Check Valve				20	1966	2012		\$2,000	\$2,230	2032						
Diesel Pump Inlet valve	RW 19 (12")			20	1966	2012		\$2,000	\$2,230	2032							
Diesel Pump				15	2005	2015		\$20,000	\$21,520	2030							
Diesel Motor				20	2005	2005		\$60,000	\$76,080	2025							
Hydro ranger				5	1966	2016		\$5,000	\$5,280	2021						\$5,280	
Grit Removal	Grit King			30	2017	2017		\$342,000	\$354,312	2047							
	Grit Classifier			15	2017	2017		\$150,000	\$155,400	2032							
Splitter Box	Structure			60	1966	1966		\$350,000	\$1,027,600	2026							
	Structure coating			20	2012	2012		\$40,000	\$44,600	2032							
	Effluent Valve to PC#2	RW 21 (24")		20	1966	1996	2018	\$4,700	\$6,951	2019					\$6,951		
	Effluent Valve to PC#1	RW 23 (20")		20	1966	2011		\$6,000	\$6,810	2031							
Effluent Valve to Bypass Primary	RW 22 (20")			20	1966	2011		\$6,000	\$6,810	2031							
Primary Clar #1	Clarifier #1 Structure			70	1966	1966		\$500,000	\$1,468,000	2036							
	Clarifier #1 Coating			15	1966	2012		\$20,000	\$22,300	2027							
	Clarifier #1 Mechanism			50	1966	2012		\$140,000	\$156,100	2062							
	Clarifier #1 Drive			30	1966	2012		\$136,195	\$151,857	2042							
	Clarifier #1 Bridge			30	1966	2012		\$77,189	\$86,066	2042							
	Clarifier #1 Sludge Pump #1			5	1966	2018		\$20,000	\$20,000	2023							
	Clarifier #1 Sludge Pump #1 VFD			15	1966	2018		\$5,000	\$5,000	2033							
	Clarifier #1 Sludge Pump #2			5	1966	1990	2019	\$13,000	\$21,281	2020					\$21,281		
Clarifier #1 Sludge Pump #2 VFD			15	1966	1998	2019	\$5,000	\$7,255	2020					\$7,255			
Primary Clar #2	Clarifier #2 Structure			50	1990	1990		\$900,000	\$1,473,300	2040							
	Clarifier #2 Coating		Redundancy Project	30	1990	1990	2018	\$25,000	\$40,925	2019					\$40,925		
	Clarifier #2 Mechanism		Redundancy Project	25	1990	1990	2018	\$250,000	\$409,250	2019					\$409,250		
	Clarifier #2 Drive		Redundancy Project	25	1990	1990	2018	\$90,500	\$148,149	2019					\$148,149		
	Clarifier #2 Bridge		Redundancy Project	25	1990	1990	2018	\$51,000	\$83,487	2019					\$83,487		
	Clarifier #2 Sludge Pump #4			4	1990	2017		\$20,000	\$20,720	2021						\$20,720	
	Clarifier #2 Sludge Pump #4 VFD			15	1990	2016		\$5,000	\$5,280	2031							
	Clarifier #2 Sludge Pump #6		rarely used	4	1990	1990	2019	\$13,000	\$21,281	2020					\$21,281		
Clarifier #2 Sludge Pump #6 VFD		rarely used	15	1990	1990	2019	\$3,500	\$5,730	2020					\$5,730			
FFR	FFR #1 Structure			50	1986	1986		\$1,200,000	\$2,178,000	2036							



	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	Pre 2016	2016	2017	2018	2019	2020	2021
	FFR #1 Rotary Mechanism		after Redun. Proj	30	1986	1986	2022	\$250,000	\$453,750	2023							
	FFR #1 Media		after Redun. Proj	30	1986	1986	2022	\$450,000	\$816,750	2023							
	FFR Pump 1 Inlet Valve	FF1 (12")		20	1986	2013		\$3,000	\$3,315	2033							
	FFR Feed Pump #1			25	1986	2013		\$35,000	\$38,675	2038							
	FFR Feed Pump 1# VFD			15	1986	2013		\$10,000	\$11,050	2028							
	FFR Pump #1 Outlet Valve	FF3 (12")		20	1986	2013		\$3,000	\$3,315	2033							
	FFR Pump #2 Inlet Valve			20	1986	2011		\$3,000	\$3,405	2031							
	FFR Feed Pump #2	FF2 (12")		25	1986	2012		\$35,000	\$39,025	2037							
	FFR Feed Pump #2 VFD			15	1986	2008		\$10,000	\$11,980	2023							
	FFR Pump #2 Outlet Valve			20	1986	2011		\$3,000	\$3,405	2031							
	FFR Pump #3 Inlet Valve			20	2014	2014		\$3,000	\$3,291	2034							
	FFR Feed Pump #3			25	2014	2014		\$35,000	\$38,395	2039							
	FFR Pump #3 VFD			15	2014	2014		\$10,000	\$10,970	2029							
	FFR Pump #3 Outlet Valve			20	2014	2014		\$3,000	\$3,291	2034							
	FFR Blower #1			30	1986	1986	2019	\$3,000	\$5,445	2020						\$5,445	
	FFR Blower #1 Motor			20	1986	2007		\$10,000	\$12,060	2027							
	FFR Blower #2			30	1986	1986	2019	\$3,000	\$5,445	2020						\$5,445	
	FFR Blower #2 Motor			20	1986	2007		\$10,000	\$12,060	2027							
Sec Clar #1	Sec Clarifier #1 Structure			60	1966	1966		\$900,000	\$2,642,400	2026							
	Sec Clarifier #1 Coating		Redundancy Projct	60	1986	1986	2020	\$30,000	\$54,450	2021							\$54,450
	Sec Clarifier #1 Mechanism		Redundancy Projct	60	1986	1986	2020	\$240,000	\$435,600	2021							\$435,600
	Sec Clarifier #1 Drive		Redundancy Projct	31	1986	1986	2020	\$80,000	\$145,200	2021							\$145,200
	Sec Clarifier #1 Bridge		Redundancy Projct	31	1986	1986	2020	\$100,000	\$181,500	2021							\$181,500
	Sec Clarifier #1 Sludge Pump		Redundancy Projct	10	2013	2013	2020	\$8,000	\$8,840	2021							\$8,840
	Sec Clarifier #1 Sludge Pump VFD		Redundancy Projct	15	1998	1998	2020	\$5,000	\$7,255	2021							\$7,255
	Sec Clarifier #1 Scum Pump #1		Redundancy Projct	10	2010	2010	2020	\$20,000	\$23,160	2021							\$23,160
	Sec Clarifier #1 Scum Pump #2		Redundancy Projct	10	2008	2008	2020	\$20,000	\$23,960	2021							\$23,960
Thickener #1	Sludge Thickener #1 Structure		not used	100	1979	1979		\$35,000	\$75,705	2079							
	Sludge Thickener #1 Coating		not used	100	1979	1979		\$25,000	\$54,075	2079							
	Thickener #1 Mechanism		not used	100	1979	1979		\$35,000	\$75,705	2079							
	Thickener #1 Drive		not used	100	1979	1979		\$85,000	\$183,855	2079							
	Plant Air System		not used	25	1979	2004		\$60,000	\$78,300	2029							
Digester #1	Digester #1			70	1964	1964		\$480,000	\$1,431,360	2034							
	Digester #1 Coating			15	2005	2018		\$130,000	\$130,000	2033							
	Digester #1 Cleanout			10	1964	2017		\$300,000	\$310,800	2027							
	Digester #1 Gas Train Piping			25	1964	2005		\$228,170	\$289,320	2030							
	Site glasses			10	1964	2018		\$16,000	\$16,000	2028							
	APCD Pieces			10	1964	2005	2019	\$40,000	\$50,720	2020						\$50,720	
	Digester #1 Valves			25	1964	2005		\$25,000	\$31,700	2030							
Digester #2	Digester #2			50	1992	1992		\$900,000	\$1,424,700	2042							
	Digester #2 Coating			10	1992	2008	2018	\$100,000	\$119,800	2019					\$119,800		
	Digester #2 Cleanout			10	2008	2008	2018	\$50,000	\$59,900	2019					\$59,900		
	Digester #2 Gas Train Piping			25	1992	2009		\$228,170	\$267,415	2034							
	Site glasses			15	2009	2009		\$15,500	\$18,166	2024							
	APCD pieces			10	2009	2009	2019	\$40,000	\$46,880	2020						\$46,880	
	Digester #2 Valves			25	2009	2009		\$25,000	\$29,300	2034							
Heating & Mixing	Heating and Mixing Building			50	1982	1982		\$580,741	\$1,122,572	2032							
	Sludge Recirc Pump #1			30	1982	2017		\$21,000	\$21,756	2047							
	Recirc Pump #1 Motor			30	1982	2017		\$3,500	\$3,626	2047							
	Vaughn Chopper Pump			20	1982	2005		\$30,000	\$38,040	2025							
	Boiler			15	2007	2014		\$100,000	\$109,700	2029							
	Hot Water Recirc Pump			20	1982	2017		\$21,000	\$21,756	2037							
	Hot Water Recirc Pump Motor			20	1982	2017		\$1,900	\$1,968	2037							
	Heat Exchanger #1			30	1982	2007		\$7,617	\$9,186	2037							
	Sludge Feed Pump #1			7	2012	2012	2019	\$20,000	\$22,300	2020						\$22,300	

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	Sludge Feed Pump #1 VFD			15	2015	2015		\$5,000	\$5,380	2030							
	Sludge Feed Pump #2			7	2012	2012	2019	\$20,000	\$22,300	2020						\$22,300	
	Sludge Feed Pump #2 VFD			15	2015	2015		\$5,000	\$5,380	2030							
	Macerator			15	2012	2015		\$20,000	\$21,520	2030							
Reclaim Water Station	Amiad Filters			20	2011	2011		\$10,000	\$11,350	2031							
Flare	Flare			25	1964	2003		\$4,200	\$5,620	2028							
Chemical Feed	Ferric Chloride Tank			15	1992	2007		\$10,000	\$12,060	2022							
	Ferric Chloride Feed Pump			15	1992	2016		\$5,000	\$5,280	2031							
	Sodium Hypochlorite Tank 6K			20	1979	2010		\$10,000	\$11,580	2030							
	Sodium Hypochlorite Tank 3K			20	1979	2010		\$6,000	\$6,948	2030							
	Sodium Hypochlorite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022							
	Sodium Bisulfite Tank			25	1990	1990	2018	\$6,000	\$9,822	2019					\$9,822		
	Sodium Bisulfite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022							
	CCT Chemical System			10	1990	2016		\$30,000	\$31,680	2026							
	Polymer Feed Systems			30	1990	1990		\$12,000	\$19,644	2020						\$19,644	
Effluent	Chlorine Contact Chamber			60	2007	2006		\$2,700,000	\$3,364,200	2066							
	Effluent Pump 100HP #1			30	2005	2006		\$45,000	\$56,070	2036							
	vfd			15	2005	2016		\$10,000	\$10,560	2031							
	Effluent Pump 100 HP #2			30	2005	2006		\$45,000	\$56,070	2036							
	vfd			10	2005	2005	2018	\$10,000	\$12,680	2019					\$12,680		
	Ocean Outfall			50	1964	1978		\$1,500,000	\$3,414,000	2028							
Flow Meters	ISCO 2100 Flow Meter			10	2016	2016		\$5,250	\$5,544	2026							
	ISCO 2100 Flow Meter			10	2017	2017		\$5,250	\$5,439	2027							
Solids Handling																	
	Biosolids slab			40	2018	2018		\$50,000	\$50,000	2058							
	Centrifuge Building			50	2010	2010		\$1,000,000	\$1,158,000	2060							
	Centrifuge			15	2010	2017		\$1,000,000	\$1,036,000	2032							
	Centrifuge Macerator			15	2008	2008		\$25,000	\$29,950	2023							
Miscellaneous	Emergency Generator			20	2009	2009		\$600,000	\$703,200	2029							
	Cogeneration Unit	Idled		10	2009	2009	2019	\$470,000	\$1,500,000	2020						\$1,500,000	
	Plant Well Water System			20	1982	2005		\$163,147	\$206,870	2025							
	Plant Well Water pump			10	1982	2016		\$5,000	\$5,280	2026							
	Standby Water Well			20	1964	1999		\$4,500	\$6,417	2019					\$6,417		
	Operations Building			50	1982	1982		\$844,161	\$1,631,763	2032							
	Maintenance Shop			50	1982	1982		\$202,495	\$391,423	2032							
	Maintenance Building			50	1996	1996		\$205,000	\$303,195	2046							
	Facility Asphalt			30	1992	1992		\$20,000	\$31,660	2022							
	Digester #2 sump pump #1			10	1996	2009	2019	\$6,000	\$7,032	2020						\$7,032	
	Digester #2 sump pump #2			10	1996	2018		\$6,000	\$6,000	2028							
	Security System annual maintenance			1	2006	2006		\$1,500	\$1,500	NA	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
	IT System annual maintenance			1	2016	2016		\$2,000	\$2,000	NA	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
	SCADA System			10	2016	2016		\$100,000	\$105,600	2026							
	Fuel Tank			35	1980	2017		\$5,000	\$5,180	2052							
	Arroyo Grande Pipe Bridge			34	1966	2017		\$90,000	\$300,000	2051							
	MCC/Cogen Building			50	1982	1982		\$400,000	\$773,200	2032							
	MCC Electrical Boxes			40	1982	1982		\$180,000	\$347,940	2022							
	Plant Electrical			30	1966	2010		\$250,000	\$289,500	2040							
REDUNDANCY PROJECT																	
Aeration Tank Feed Pump Station																	
	Hatch and concrete coating			30	2021	2021			\$156,100	2051							\$156,100
	Gates			25	2021	2021			\$184,400	2046							\$184,400
	Valves			20	2021	2021			\$17,600	2041							\$17,600
	Piping and Fittings			30	2021	2021			\$368,100	2051							\$368,100

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	Pre 2016	2016	2017	2018	2019	2020	2021
	Pumps			20	2021	2021			\$235,700	2041							\$235,700
	Flow Meter			10	2021	2021			\$12,800	2031							\$12,800
WAS Pumping Station																	
	Concrete			60	2021	2021			\$9,100	2081							\$9,100
	Pumps			20	2021	2021			\$61,100	2041							\$61,100
	Valves			20	2021	2021			\$9,700	2041							\$9,700
	Piping and Fittings			30	2021	2021			\$26,800	2051							\$26,800
	Flow Meter			10	2021	2021			\$6,400	2031							\$6,400
Activated Sludge Aeration Basins																	
	Concrete			60	2021	2021			\$3,885,100	2081							\$3,885,100
	Blowers			30	2021	2021			\$813,600	2051							\$813,600
	Flow Meter			10	2021	2021			\$3,700	2031							\$3,700
	Diffusers			30	2021	2021			\$614,800	2051							\$614,800
	Gates			25	2021	2021			\$458,000	2046							\$458,000
	Valves			20	2021	2021			\$800	2041							\$800
	Piping and Fittings			30	2021	2021			\$426,500	2051							\$426,500
Blower Building																	
	Building CMU			50	2021	2021			\$346,800	2071							\$346,800
	Concrete			60	2021	2021			\$272,000	2081							\$272,000
New Secondary Clarifier																	
	Concrete			60	2021	2021			\$2,642,400	2081							\$2,642,400
	Gates			25	2021	2021			\$639,000	2046							\$639,000
	Pumps			20	2021	2021			\$161,300	2041							\$161,300
	Valves			20	2021	2021			\$39,000	2041							\$39,000
	Piping and Fittings			30	2021	2021			\$160,200	2051							\$160,200
WAS Thickening																	
	Concrete Repair			30	2021	2021			\$5,700	2051							\$5,700
	Gates			25	2021	2021			\$32,200	2046							\$32,200
	Pumps			20	2021	2021			\$862,000	2041							\$862,000
	Piping and Fittings			30	2021	2021			\$86,300	2051							\$86,300
	Valves			20	2021	2021			\$17,900	2041							\$17,900
	Flow Meter			10	2021	2021			\$17,900	2031							\$17,900
Site Improvements																	
				25	2021	2021			\$2,939,700	2046							\$2,939,700
Instrumentation and Electrical																	
				40	2021	2021			\$3,823,000	2061							\$3,823,000
Emergency Generator																	
	Generator			20	2021	2021			\$222,200	2041							\$222,200
	Concrete			30	2021	2021			\$38,300	2051							\$38,300
Flood Mitigation Improvements																	
				29	2021	2021			\$338,600	2050							\$338,600
	Total								\$57,798,270		\$47,454	\$6,615	\$10,314	\$3,500	\$1,287,263	\$1,853,861	\$20,909,849
	Cumulative (2018 \$)										\$47,454	\$54,069	\$64,382	\$67,882	\$1,355,145	\$3,209,007	\$24,118,856
	Cumulative (Escalated 2% per year)										\$47,454	\$54,069	\$64,382	\$67,882	\$1,382,248	\$3,337,367	\$25,565,987

SSLOCSD WWTP LIFE EXPECTANCY COST ANALYSIS

Equipment	Current Year	2018															
	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2022	2023	2024	2025	2026	2027	
Headworks	Structure			60	1966	1966		\$350,000	\$1,027,600	2026					\$1,027,600		
	Structure Coating			25	1966	2001		\$30,000	\$41,340	2026					\$41,340		
	Parshall Flume Flow Transmitter			5	1966	2012	2018	\$5,000	\$5,575	2019			\$5,575				
	Influent Slide Gate			55	1966	1966		\$20,000	\$58,720	2021							
	Mechanical Bar Screens (2)			20	2017	2017		\$427,000	\$442,372	2037							
	Washer Compactor			15	2017	2017		\$150,000	\$155,400	2032							
	Influent Pump #1 (3,500 gpm)			20	1966	2012		\$50,000	\$55,750	2032							
	Pump 1 Effluent Valve	RW 14 (16")			20	1966	2012		\$2,000	\$2,230	2032						
	RW 14 Check Valve				20	1966	2012		\$2,000	\$2,230	2032						
	Pump 2 Influent Valve	RW 13 (16")			20	1966	2012		\$2,000	\$2,230	2032						
	Influent Pump #2 (3,500 gpm)				20	1966	2013		\$50,000	\$55,250	2033						
	Pump 2 Effluent Valve	RW 15 (12")			20	1966	2012		\$2,000	\$2,230	2032						
	RW 15 Check Valve				20	1966	2012		\$2,000	\$2,230	2032						
	RW12 (16-inch)	RW 12 (16")			35	1966	2012		\$2,000	\$2,230	2047						
	Influent Pump #3 (3,500 gpm)				20	1966	1999		\$37,000	\$52,762	2019						
	RW 16 14-inch	RW 16 (14")			34	1966	2012		\$2,000	\$2,230	2046						
	RW 16 Check Valve				34	1966	2012		\$2,000	\$2,230	2046						
	RW 10 16-inch	RW 10 (16")			20	1966	2012		\$2,000	\$2,230	2032						
	Influent Pump #4 (3,500 gpm)				20	1966	2012		\$50,000	\$55,750	2032						
	Influent Pump #1 VFD				15	2014	2014		\$10,000	\$10,970	2029						
	Influent Pump #2 VFD				15	2014	2014		\$10,000	\$10,970	2029						
	Influent Pump #3 VFD				15	2014	2014		\$10,000	\$10,970	2029						
	Influent Pump #4 VFD				15	1966	2015		\$10,000	\$10,760	2030						
	RW 17 (16-inch)	RW 17 (16")			20	1966	2012		\$2,000	\$2,230	2032						
	RW 17 Check Valve				20	1966	2012		\$2,000	\$2,230	2032						
	Diesel Pump Inlet valve	RW 19 (12")			20	1966	2012		\$2,000	\$2,230	2032						
	Diesel Pump				15	2005	2015		\$20,000	\$21,520	2030						
Diesel Motor				20	2005	2005		\$60,000	\$76,080	2025			\$76,080				
Hydro ranger				5	1966	2016		\$5,000	\$5,280	2021					\$5,280		
Grit Removal	Grit King			30	2017	2017		\$342,000	\$354,312	2047							
	Grit Classifier			15	2017	2017		\$150,000	\$155,400	2032							
Splitter Box	Structure			60	1966	1966		\$350,000	\$1,027,600	2026					\$1,027,600		
	Structure coating			20	2012	2012		\$40,000	\$44,600	2032							
	Effluent Valve to PC#2	RW 21 (24")		20	1966	1996	2018	\$4,700	\$6,951	2019							
	Effluent Valve to PC#1	RW 23 (20")		20	1966	2011		\$6,000	\$6,810	2031							
	Effluent Valve to Bypass Primary	RW 22 (20")		20	1966	2011		\$6,000	\$6,810	2031							
Primary Clar #1	Clarifier #1 Structure			70	1966	1966		\$500,000	\$1,468,000	2036							
	Clarifier #1 Coating			15	1966	2012		\$20,000	\$22,300	2027						\$22,300	
	Clarifier #1 Mechanism			50	1966	2012		\$140,000	\$156,100	2062							
	Clarifier #1 Drive			30	1966	2012		\$136,195	\$151,857	2042							
	Clarifier #1 Bridge			30	1966	2012		\$77,189	\$86,066	2042							
	Clarifier #1 Sludge Pump #1			5	1966	2018		\$20,000	\$20,000	2023		\$20,000					
	Clarifier #1 Sludge Pump #1 VFD			15	1966	2018		\$5,000	\$5,000	2033							
	Clarifier #1 Sludge Pump #2			5	1966	1990	2019	\$13,000	\$21,281	2020				\$21,281			
	Clarifier #1 Sludge Pump #2 VFD			15	1966	1998	2019	\$5,000	\$7,255	2020							
Primary Clar #2	Clarifier #2 Structure			50	1990	1990		\$900,000	\$1,473,300	2040							
	Clarifier #2 Coating		Redundancy Project	30	1990	1990	2018	\$25,000	\$40,925	2019							
	Clarifier #2 Mechanism		Redundancy Project	25	1990	1990	2018	\$250,000	\$409,250	2019							
	Clarifier #2 Drive		Redundancy Project	25	1990	1990	2018	\$90,500	\$148,149	2019							
	Clarifier #2 Bridge		Redundancy Project	25	1990	1990	2018	\$51,000	\$83,487	2019							
	Clarifier #2 Sludge Pump #4			4	1990	2017		\$20,000	\$20,720	2021				\$20,720			
	Clarifier #2 Sludge Pump #4 VFD			15	1990	2016		\$5,000	\$5,280	2031							
	Clarifier #2 Sludge Pump #6		rarely used	4	1990	1990	2019	\$13,000	\$21,281	2020			\$21,281				
	Clarifier #2 Sludge Pump #6 VFD		rarely used	15	1990	1990	2019	\$3,500	\$5,730	2020							
FFR	FFR #1 Structure			50	1986	1986		\$1,200,000	\$2,178,000	2036							



	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2022	2023	2024	2025	2026	2027
	FFR #1 Rotary Mechanism		after Redun. Proj	30	1986	1986	2022	\$250,000	\$453,750	2023		\$453,750				
	FFR #1 Media		after Redun. Proj	30	1986	1986	2022	\$450,000	\$816,750	2023		\$816,750				
	FFR Pump 1 Inlet Valve	FF1 (12")		20	1986	2013		\$3,000	\$3,315	2033						
	FFR Feed Pump #1			25	1986	2013		\$35,000	\$38,675	2038						
	FFR Feed Pump 1# VFD			15	1986	2013		\$10,000	\$11,050	2028						
	FFR Pump #1 Outlet Valve	FF3 (12")		20	1986	2013		\$3,000	\$3,315	2033						
	FFR Pump #2 Inlet Valve			20	1986	2011		\$3,000	\$3,405	2031						
	FFR Feed Pump #2	FF2 (12")		25	1986	2012		\$35,000	\$39,025	2037						
	FFR Feed Pump #2 VFD			15	1986	2008		\$10,000	\$11,980	2023		\$11,980				
	FFR Pump #2 Outlet Valve			20	1986	2011		\$3,000	\$3,405	2031						
	FFR Pump #3 Inlet Valve			20	2014	2014		\$3,000	\$3,291	2034						
	FFR Feed Pump #3			25	2014	2014		\$35,000	\$38,395	2039						
	FFR Pump #3 VFD			15	2014	2014		\$10,000	\$10,970	2029						
	FFR Pump #3 Outlet Valve			20	2014	2014		\$3,000	\$3,291	2034						
	FFR Blower #1			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #1 Motor			20	1986	2007		\$10,000	\$12,060	2027						\$12,060
	FFR Blower #2			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #2 Motor			20	1986	2007		\$10,000	\$12,060	2027						\$12,060
Sec Clar #1	Sec Clarifier #1 Structure			60	1966	1966		\$900,000	\$2,642,400	2026					\$2,642,400	
	Sec Clarifier #1 Coating		Redundancy Projct	60	1986	1986	2020	\$30,000	\$54,450	2021						
	Sec Clarifier #1 Mechanism		Redundancy Projct	60	1986	1986	2020	\$240,000	\$435,600	2021						
	Sec Clarifier #1 Drive		Redundancy Projct	31	1986	1986	2020	\$80,000	\$145,200	2021						
	Sec Clarifier #1 Bridge		Redundancy Projct	31	1986	1986	2020	\$100,000	\$181,500	2021						
	Sec Clarifier #1 Sludge Pump		Redundancy Projct	10	2013	2013	2020	\$8,000	\$8,840	2021						
	Sec Clarifier #1 Sludge Pump VFD		Redundancy Projct	15	1998	1998	2020	\$5,000	\$7,255	2021						
	Sec Clarifier #1 Scum Pump #1		Redundancy Projct	10	2010	2010	2020	\$20,000	\$23,160	2021						
	Sec Clarifier #1 Scum Pump #2		Redundancy Projct	10	2008	2008	2020	\$20,000	\$23,960	2021						
Thickener #1	Sludge Thickener #1 Structure		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Sludge Thickener #1 Coating		not used	100	1979	1979		\$25,000	\$54,075	2079						
	Thickener #1 Mechanism		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Thickener #1 Drive		not used	100	1979	1979		\$85,000	\$183,855	2079						
	Plant Air System		not used	25	1979	2004		\$60,000	\$78,300	2029						
Digester #1	Digester #1			70	1964	1964		\$480,000	\$1,431,360	2034						
	Digester #1 Coating			15	2005	2018		\$130,000	\$130,000	2033						
	Digester #1 Cleanout			10	1964	2017		\$300,000	\$310,800	2027						\$310,800
	Digester #1 Gas Train Piping			25	1964	2005		\$228,170	\$289,320	2030						
	Site glasses			10	1964	2018		\$16,000	\$16,000	2028						
	APCD Pieces			10	1964	2005	2019	\$40,000	\$50,720	2020						
	Digester #1 Valves			25	1964	2005		\$25,000	\$31,700	2030						
Digester #2	Digester #2			50	1992	1992		\$900,000	\$1,424,700	2042						
	Digester #2 Coating			10	1992	2008	2018	\$100,000	\$119,800	2019						
	Digester #2 Cleanout			10	2008	2008	2018	\$50,000	\$59,900	2019						
	Digester #2 Gas Train Piping			25	1992	2009		\$228,170	\$267,415	2034						
	Site glasses			15	2009	2009		\$15,500	\$18,166	2024		\$18,166				
	APCD pieces			10	2009	2009	2019	\$40,000	\$46,880	2020						
	Digester #2 Valves			25	2009	2009		\$25,000	\$29,300	2034						
Heating & Mixing	Heating and Mixing Building			50	1982	1982		\$580,741	\$1,122,572	2032						
	Sludge Recirc Pump #1			30	1982	2017		\$21,000	\$21,756	2047						
	Recirc Pump #1 Motor			30	1982	2017		\$3,500	\$3,626	2047						
	Vaughn Chopper Pump			20	1982	2005		\$30,000	\$38,040	2025				\$38,040		
	Boiler			15	2007	2014		\$100,000	\$109,700	2029						
	Hot Water Recirc Pump			20	1982	2017		\$21,000	\$21,756	2037						
	Hot Water Recirc Pump Motor			20	1982	2017		\$1,900	\$1,968	2037						
	Heat Exchanger #1			30	1982	2007		\$7,617	\$9,186	2037						
	Sludge Feed Pump #1			7	2012	2012	2019	\$20,000	\$22,300	2020						\$22,300

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2022	2023	2024	2025	2026	2027
	Sludge Feed Pump #1 VFD			15	2015	2015		\$5,000	\$5,380	2030						
	Sludge Feed Pump #2			7	2012	2012	2019	\$20,000	\$22,300	2020						\$22,300
	Sludge Feed Pump #2 VFD			15	2015	2015		\$5,000	\$5,380	2030						
	Macerator			15	2012	2015		\$20,000	\$21,520	2030						
Reclaim Water Station	Amiad Filters			20	2011	2011		\$10,000	\$11,350	2031						
Flare	Flare			25	1964	2003		\$4,200	\$5,620	2028						
Chemical Feed	Ferric Chloride Tank			15	1992	2007		\$10,000	\$12,060	2022	\$12,060					
	Ferric Chloride Feed Pump			15	1992	2016		\$5,000	\$5,280	2031						
	Sodium Hypochlorite Tank 6K			20	1979	2010		\$10,000	\$11,580	2030						
	Sodium Hypochlorite Tank 3K			20	1979	2010		\$6,000	\$6,948	2030						
	Sodium Hypochlorite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022	\$5,575					
	Sodium Bisulfite Tank			25	1990	1990	2018	\$6,000	\$9,822	2019						
	Sodium Bisulfite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022	\$5,575					
	CCT Chemical System			10	1990	2016		\$30,000	\$31,680	2026					\$31,680	
	Polymer Feed Systems			30	1990	1990		\$12,000	\$19,644	2020						
Effluent	Chlorine Contact Chamber			60	2007	2006		\$2,700,000	\$3,364,200	2066						
	Effluent Pump 100HP #1			30	2005	2006		\$45,000	\$56,070	2036						
	vfd			15	2005	2016		\$10,000	\$10,560	2031						
	Effluent Pump 100 HP #2			30	2005	2006		\$45,000	\$56,070	2036						
	vfd			10	2005	2005	2018	\$10,000	\$12,680	2019						
	Ocean Outfall			50	1964	1978		\$1,500,000	\$3,414,000	2028						
Flow Meters	ISCO 2100 Flow Meter			10	2016	2016		\$5,250	\$5,544	2026					\$5,544	
	ISCO 2100 Flow Meter			10	2017	2017		\$5,250	\$5,439	2027						\$5,439
Solids Handling																
	Biosolids slab			40	2018	2018		\$50,000	\$50,000	2058						
	Centrifuge Building			50	2010	2010		\$1,000,000	\$1,158,000	2060						
	Centrifuge			15	2010	2017		\$1,000,000	\$1,036,000	2032						
	Centrifuge Macerator			15	2008	2008		\$25,000	\$29,950	2023	\$29,950					
Miscellaneous	Emergency Generator			20	2009	2009		\$600,000	\$703,200	2029						
	Cogeneration Unit		Idled	10	2009	2009	2019	\$470,000	\$1,500,000	2020						
	Plant Well Water System			20	1982	2005		\$163,147	\$206,870	2025			\$206,870			
	Plant Well Water pump			10	1982	2016		\$5,000	\$5,280	2026					\$5,280	
	Standby Water Well			20	1964	1999		\$4,500	\$6,417	2019						
	Operations Building			50	1982	1982		\$844,161	\$1,631,763	2032						
	Maintenance Shop			50	1982	1982		\$202,495	\$391,423	2032						
	Maintenance Building			50	1996	1996		\$205,000	\$303,195	2046						
	Facility Asphalt			30	1992	1992		\$20,000	\$31,660	2022	\$31,660					
	Digester #2 sump pump #1			10	1996	2009	2019	\$6,000	\$7,032	2020						
	Digester #2 sump pump #2			10	1996	2018		\$6,000	\$6,000	2028						
	Security System annual maintenance			1	2006	2006		\$1,500	\$1,500	NA	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
	IT System annual maintenance			1	2016	2016		\$2,000	\$2,000	NA	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
	SCADA System			10	2016	2016		\$100,000	\$105,600	2026					\$105,600	
	Fuel Tank			35	1980	2017		\$5,000	\$5,180	2052						
	Arroyo Grande Pipe Bridge			34	1966	2017		\$90,000	\$300,000	2051						
	MCC/Cogen Building			50	1982	1982		\$400,000	\$773,200	2032						
	MCC Electrical Boxes			40	1982	1982		\$180,000	\$347,940	2022	\$347,940					
	Plant Electrical			30	1966	2010		\$250,000	\$289,500	2040						
REDUNDANCY PROJECT																
Aeration Tank Feed Pump Station																
	Hatch and concrete coating			30	2021	2021			\$156,100	2051						
	Gates			25	2021	2021			\$184,400	2046						
	Valves			20	2021	2021			\$17,600	2041						
	Piping and Fittings			30	2021	2021			\$368,100	2051						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2022	2023	2024	2025	2026	2027
	Pumps			20	2021	2021			\$235,700	2041						
	Flow Meter			10	2021	2021			\$12,800	2031						
WAS Pumping Station																
	Concrete			60	2021	2021			\$9,100	2081						
	Pumps			20	2021	2021			\$61,100	2041						
	Valves			20	2021	2021			\$9,700	2041						
	Piping and Fittings			30	2021	2021			\$26,800	2051						
	Flow Meter			10	2021	2021			\$6,400	2031						
Activated Sludge Aeration Basins																
	Concrete			60	2021	2021			\$3,885,100	2081						
	Blowers			30	2021	2021			\$813,600	2051						
	Flow Meter			10	2021	2021			\$3,700	2031						
	Diffusers			30	2021	2021			\$614,800	2051						
	Gates			25	2021	2021			\$458,000	2046						
	Valves			20	2021	2021			\$800	2041						
	Piping and Fittings			30	2021	2021			\$426,500	2051						
Blower Building																
	Building CMU			50	2021	2021			\$346,800	2071						
	Concrete			60	2021	2021			\$272,000	2081						
New Secondary Clarifier																
	Concrete			60	2021	2021			\$2,642,400	2081						
	Gates			25	2021	2021			\$639,000	2046						
	Pumps			20	2021	2021			\$161,300	2041						
	Valves			20	2021	2021			\$39,000	2041						
	Piping and Fittings			30	2021	2021			\$160,200	2051						
WAS Thickening																
	Concrete Repair			30	2021	2021			\$5,700	2051						
	Gates			25	2021	2021			\$32,200	2046						
	Pumps			20	2021	2021			\$862,000	2041						
	Piping and Fittings			30	2021	2021			\$86,300	2051						
	Valves			20	2021	2021			\$17,900	2041						
	Flow Meter			10	2021	2021			\$17,900	2031						
Site Improvements																
				25	2021	2021			\$2,939,700	2046						
Instrumentation and Electrical																
				40	2021	2021			\$3,823,000	2061						
Emergency Generator																
	Generator			20	2021	2021			\$222,200	2041						
	Concrete			30	2021	2021			\$38,300	2051						
Flood Mitigation Improvements																
				29	2021	2021			\$338,600	2050						
	Total								\$57,798,270		\$411,576	\$1,335,930	\$75,839	\$378,071	\$4,985,156	\$410,759
	Cumulative (2018 \$)										\$24,530,431	\$25,866,361	\$25,942,200	\$26,320,272	\$31,305,428	\$31,716,187
	Cumulative (Escalated 2% per year)										\$26,492,866	\$28,452,997	\$29,055,264	\$30,005,110	\$36,314,296	\$37,425,100

SSLOCSD WWTP LIFE EXPECTANCY COST ANALYSIS

Equipment	Current Year	2018														
	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2028	2029	2030	2031	2032	2033
Headworks	Structure			60	1966	1966		\$350,000	\$1,027,600	2026						
	Structure Coating			25	1966	2001		\$30,000	\$41,340	2026						
	Parshall Flume Flow Transmitter			5	1966	2012	2018	\$5,000	\$5,575	2019						
	Influent Slide Gate			55	1966	1966		\$20,000	\$58,720	2021						
	Mechanical Bar Screens (2)			20	2017	2017		\$427,000	\$442,372	2037						
	Washer Compactor			15	2017	2017		\$150,000	\$155,400	2032						\$155,400
	Influent Pump #1 (3,500 gpm)			20	1966	2012		\$50,000	\$55,750	2032						\$55,750
	Pump 1 Effluent Valve	RW 14 (16")			20	1966	2012		\$2,000	\$2,230	2032					\$2,230
	RW 14 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					\$2,230
	Pump 2 Influent Valve	RW 13 (16")			20	1966	2012		\$2,000	\$2,230	2032					\$2,230
	Influent Pump #2 (3,500 gpm)				20	1966	2013		\$50,000	\$55,250	2033					\$55,250
	Pump 2 Effluent Valve	RW 15 (12")			20	1966	2012		\$2,000	\$2,230	2032					\$2,230
	RW 15 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					\$2,230
	RW12 (16-inch)	RW 12 (16")			35	1966	2012		\$2,000	\$2,230	2047					
	Influent Pump #3 (3,500 gpm)				20	1966	1999		\$37,000	\$52,762	2019					
	RW 16 14-inch	RW 16 (14")			34	1966	2012		\$2,000	\$2,230	2046					
	RW 16 Check Valve				34	1966	2012		\$2,000	\$2,230	2046					
	RW 10 16-inch	RW 10 (16")			20	1966	2012		\$2,000	\$2,230	2032					\$2,230
	Influent Pump #4 (3,500 gpm)				20	1966	2012		\$50,000	\$55,750	2032					\$55,750
	Influent Pump #1 VFD				15	2014	2014		\$10,000	\$10,970	2029	\$10,970				
	Influent Pump #2 VFD				15	2014	2014		\$10,000	\$10,970	2029	\$10,970				
	Influent Pump #3 VFD				15	2014	2014		\$10,000	\$10,970	2029	\$10,970				
	Influent Pump #4 VFD				15	1966	2015		\$10,000	\$10,760	2030		\$10,760			
	RW 17 (16-inch)	RW 17 (16")			20	1966	2012		\$2,000	\$2,230	2032					\$2,230
	RW 17 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					\$2,230
	Diesel Pump Inlet valve	RW 19 (12")			20	1966	2012		\$2,000	\$2,230	2032					\$2,230
	Diesel Pump				15	2005	2015		\$20,000	\$21,520	2030		\$21,520			
	Diesel Motor				20	2005	2005		\$60,000	\$76,080	2025					
Hydro ranger				5	1966	2016		\$5,000	\$5,280	2021						
Grit Removal	Grit King			30	2017	2017		\$342,000	\$354,312	2047						
	Grit Classifier			15	2017	2017		\$150,000	\$155,400	2032					\$155,400	
Splitter Box	Structure			60	1966	1966		\$350,000	\$1,027,600	2026						
	Structure coating			20	2012	2012		\$40,000	\$44,600	2032					\$44,600	
	Effluent Valve to PC#2	RW 21 (24")		20	1966	1996	2018	\$4,700	\$6,951	2019						
	Effluent Valve to PC#1	RW 23 (20")		20	1966	2011		\$6,000	\$6,810	2031				\$6,810		
	Effluent Valve to Bypass Primary	RW 22 (20")		20	1966	2011		\$6,000	\$6,810	2031				\$6,810		
Primary Clar #1	Clarifier #1 Structure			70	1966	1966		\$500,000	\$1,468,000	2036						
	Clarifier #1 Coating			15	1966	2012		\$20,000	\$22,300	2027						
	Clarifier #1 Mechanism			50	1966	2012		\$140,000	\$156,100	2062						
	Clarifier #1 Drive			30	1966	2012		\$136,195	\$151,857	2042						
	Clarifier #1 Bridge			30	1966	2012		\$77,189	\$86,066	2042						
	Clarifier #1 Sludge Pump #1			5	1966	2018		\$20,000	\$20,000	2023	\$20,000					
	Clarifier #1 Sludge Pump #1 VFD			15	1966	2018		\$5,000	\$5,000	2033					\$5,000	
	Clarifier #1 Sludge Pump #2			5	1966	1990	2019	\$13,000	\$21,281	2020						
	Clarifier #1 Sludge Pump #2 VFD			15	1966	1998	2019	\$5,000	\$7,255	2020						
Primary Clar #2	Clarifier #2 Structure			50	1990	1990		\$900,000	\$1,473,300	2040						
	Clarifier #2 Coating		Redundancy Project	30	1990	1990	2018	\$25,000	\$40,925	2019						
	Clarifier #2 Mechanism		Redundancy Project	25	1990	1990	2018	\$250,000	\$409,250	2019						
	Clarifier #2 Drive		Redundancy Project	25	1990	1990	2018	\$90,500	\$148,149	2019						
	Clarifier #2 Bridge		Redundancy Project	25	1990	1990	2018	\$51,000	\$83,487	2019						
	Clarifier #2 Sludge Pump #4			4	1990	2017		\$20,000	\$20,720	2021						
	Clarifier #2 Sludge Pump #4 VFD			15	1990	2016		\$5,000	\$5,280	2031				\$5,280		
	Clarifier #2 Sludge Pump #6		rarely used	4	1990	1990	2019	\$13,000	\$21,281	2020						
	Clarifier #2 Sludge Pump #6 VFD		rarely used	15	1990	1990	2019	\$3,500	\$5,730	2020						
FFR	FFR #1 Structure			50	1986	1986		\$1,200,000	\$2,178,000	2036						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2028	2029	2030	2031	2032	2033
	FFR #1 Rotary Mechanism		after Redun. Proj	30	1986	1986	2022	\$250,000	\$453,750	2023						
	FFR #1 Media		after Redun. Proj	30	1986	1986	2022	\$450,000	\$816,750	2023						
	FFR Pump 1 Inlet Valve	FF1 (12")		20	1986	2013		\$3,000	\$3,315	2033						\$3,315
	FFR Feed Pump #1			25	1986	2013		\$35,000	\$38,675	2038						
	FFR Feed Pump 1# VFD			15	1986	2013		\$10,000	\$11,050	2028	\$11,050					
	FFR Pump #1 Outlet Valve	FF3 (12")		20	1986	2013		\$3,000	\$3,315	2033						\$3,315
	FFR Pump #2 Inlet Valve			20	1986	2011		\$3,000	\$3,405	2031				\$3,405		
	FFR Feed Pump #2	FF2 (12")		25	1986	2012		\$35,000	\$39,025	2037						
	FFR Feed Pump #2 VFD			15	1986	2008		\$10,000	\$11,980	2023						
	FFR Pump #2 Outlet Valve			20	1986	2011		\$3,000	\$3,405	2031				\$3,405		
	FFR Pump #3 Inlet Valve			20	2014	2014		\$3,000	\$3,291	2034						
	FFR Feed Pump #3			25	2014	2014		\$35,000	\$38,395	2039						
	FFR Pump #3 VFD			15	2014	2014		\$10,000	\$10,970	2029	\$10,970					
	FFR Pump #3 Outlet Valve			20	2014	2014		\$3,000	\$3,291	2034						
	FFR Blower #1			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #1 Motor			20	1986	2007		\$10,000	\$12,060	2027						
	FFR Blower #2			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #2 Motor			20	1986	2007		\$10,000	\$12,060	2027						
Sec Clar #1	Sec Clarifier #1 Structure			60	1966	1966		\$900,000	\$2,642,400	2026						
	Sec Clarifier #1 Coating		Redundancy Projec	60	1986	1986	2020	\$30,000	\$54,450	2021						
	Sec Clarifier #1 Mechanism		Redundancy Projec	60	1986	1986	2020	\$240,000	\$435,600	2021						
	Sec Clarifier #1 Drive		Redundancy Projec	31	1986	1986	2020	\$80,000	\$145,200	2021						
	Sec Clarifier #1 Bridge		Redundancy Projec	31	1986	1986	2020	\$100,000	\$181,500	2021						
	Sec Clarifier #1 Sludge Pump		Redundancy Projec	10	2013	2013	2020	\$8,000	\$8,840	2021				\$8,840		
	Sec Clarifier #1 Sludge Pump VFD		Redundancy Projec	15	1998	1998	2020	\$5,000	\$7,255	2021						
	Sec Clarifier #1 Scum Pump #1		Redundancy Projec	10	2010	2010	2020	\$20,000	\$23,160	2021				\$23,160		
	Sec Clarifier #1 Scum Pump #2		Redundancy Projec	10	2008	2008	2020	\$20,000	\$23,960	2021				\$23,960		
Thickener #1	Sludge Thickener #1 Structure		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Sludge Thickener #1 Coating		not used	100	1979	1979		\$25,000	\$54,075	2079						
	Thickener #1 Mechanism		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Thickener #1 Drive		not used	100	1979	1979		\$85,000	\$183,855	2079						
	Plant Air System		not used	25	1979	2004		\$60,000	\$78,300	2029	\$78,300					
Digester #1	Digester #1			70	1964	1964		\$480,000	\$1,431,360	2034						
	Digester #1 Coating			15	2005	2018		\$130,000	\$130,000	2033						\$130,000
	Digester #1 Cleanout			10	1964	2017		\$300,000	\$310,800	2027						
	Digester #1 Gas Train Piping			25	1964	2005		\$228,170	\$289,320	2030			\$289,320			
	Site glasses			10	1964	2018		\$16,000	\$16,000	2028	\$16,000					
	APCD Pieces			10	1964	2005	2019	\$40,000	\$50,720	2020			\$50,720			
	Digester #1 Valves			25	1964	2005		\$25,000	\$31,700	2030			\$31,700			
Digester #2	Digester #2			50	1992	1992		\$900,000	\$1,424,700	2042						
	Digester #2 Coating			10	1992	2008	2018	\$100,000	\$119,800	2019	\$119,800					
	Digester #2 Cleanout			10	2008	2008	2018	\$50,000	\$59,900	2019	\$59,900					
	Digester #2 Gas Train Piping			25	1992	2009		\$228,170	\$267,415	2034						
	Site glasses			15	2009	2009		\$15,500	\$18,166	2024						
	APCD pieces			10	2009	2009	2019	\$40,000	\$46,880	2020			\$46,880			
	Digester #2 Valves			25	2009	2009		\$25,000	\$29,300	2034						
Heating & Mixing	Heating and Mixing Building			50	1982	1982		\$580,741	\$1,122,572	2032					\$1,122,572	
	Sludge Recirc Pump #1			30	1982	2017		\$21,000	\$21,756	2047						
	Recirc Pump #1 Motor			30	1982	2017		\$3,500	\$3,626	2047						
	Vaughn Chopper Pump			20	1982	2005		\$30,000	\$38,040	2025						
	Boiler			15	2007	2014		\$100,000	\$109,700	2029	\$109,700					
	Hot Water Recirc Pump			20	1982	2017		\$21,000	\$21,756	2037						
	Hot Water Recirc Pump Motor			20	1982	2017		\$1,900	\$1,968	2037						
	Heat Exchanger #1			30	1982	2007		\$7,617	\$9,186	2037						
	Sludge Feed Pump #1			7	2012	2012	2019	\$20,000	\$22,300	2020						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2028	2029	2030	2031	2032	2033
	Sludge Feed Pump #1 VFD			15	2015	2015		\$5,000	\$5,380	2030			\$5,380			
	Sludge Feed Pump #2			7	2012	2012	2019	\$20,000	\$22,300	2020						
	Sludge Feed Pump #2 VFD			15	2015	2015		\$5,000	\$5,380	2030			\$5,380			
	Macerator			15	2012	2015		\$20,000	\$21,520	2030			\$21,520			
Reclaim Water Station	Amiad Filters			20	2011	2011		\$10,000	\$11,350	2031				\$11,350		
Flare	Flare			25	1964	2003		\$4,200	\$5,620	2028	\$5,620					
Chemical Feed	Ferric Chloride Tank			15	1992	2007		\$10,000	\$12,060	2022						
	Ferric Chloride Feed Pump			15	1992	2016		\$5,000	\$5,280	2031				\$5,280		
	Sodium Hypochlorite Tank 6K			20	1979	2010		\$10,000	\$11,580	2030			\$11,580			
	Sodium Hypochlorite Tank 3K			20	1979	2010		\$6,000	\$6,948	2030			\$6,948			
	Sodium Hypochlorite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022					\$5,575	
	Sodium Bisulfite Tank			25	1990	1990	2018	\$6,000	\$9,822	2019						
	Sodium Bisulfite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022					\$5,575	
	CCT Chemical System			10	1990	2016		\$30,000	\$31,680	2026						
	Polymer Feed Systems			30	1990	1990		\$12,000	\$19,644	2020						
Effluent	Chlorine Contact Chamber			60	2007	2006		\$2,700,000	\$3,364,200	2066						
	Effluent Pump 100HP #1			30	2005	2006		\$45,000	\$56,070	2036						
	vfd			15	2005	2016		\$10,000	\$10,560	2031				\$10,560		
	Effluent Pump 100 HP #2			30	2005	2006		\$45,000	\$56,070	2036						
	vfd			10	2005	2005	2018	\$10,000	\$12,680	2019		\$12,680				
	Ocean Outfall			50	1964	1978		\$1,500,000	\$3,414,000	2028	\$3,414,000					
Flow Meters	ISCO 2100 Flow Meter			10	2016	2016		\$5,250	\$5,544	2026						
	ISCO 2100 Flow Meter			10	2017	2017		\$5,250	\$5,439	2027						
Solids Handling																
	Biosolids slab			40	2018	2018		\$50,000	\$50,000	2058						
	Centrifuge Building			50	2010	2010		\$1,000,000	\$1,158,000	2060						
	Centrifuge			15	2010	2017		\$1,000,000	\$1,036,000	2032					\$1,036,000	
	Centrifuge Macerator			15	2008	2008		\$25,000	\$29,950	2023						
Miscellaneous	Emergency Generator			20	2009	2009		\$600,000	\$703,200	2029		\$703,200				
	Cogeneration Unit		Idled	10	2009	2009	2019	\$470,000	\$1,500,000	2020			\$1,500,000			
	Plant Well Water System			20	1982	2005		\$163,147	\$206,870	2025						
	Plant Well Water pump			10	1982	2016		\$5,000	\$5,280	2026						
	Standby Water Well			20	1964	1999		\$4,500	\$6,417	2019						
	Operations Building			50	1982	1982		\$844,161	\$1,631,763	2032					\$1,631,763	
	Maintenance Shop			50	1982	1982		\$202,495	\$391,423	2032					\$391,423	
	Maintenance Building			50	1996	1996		\$205,000	\$303,195	2046						
	Facility Asphalt			30	1992	1992		\$20,000	\$31,660	2022						
	Digester #2 sump pump #1			10	1996	2009	2019	\$6,000	\$7,032	2020			\$7,032			
	Digester #2 sump pump #2			10	1996	2018		\$6,000	\$6,000	2028	\$6,000					
	Security System annual maintenance			1	2006	2006		\$1,500	\$1,500	NA	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
	IT System annual maintenance			1	2016	2016		\$2,000	\$2,000	NA	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
	SCADA System			10	2016	2016		\$100,000	\$105,600	2026						
	Fuel Tank			35	1980	2017		\$5,000	\$5,180	2052						
	Arroyo Grande Pipe Bridge			34	1966	2017		\$90,000	\$300,000	2051						
	MCC/Cogen Building			50	1982	1982		\$400,000	\$773,200	2032					\$773,200	
	MCC Electrical Boxes			40	1982	1982		\$180,000	\$347,940	2022						
	Plant Electrical			30	1966	2010		\$250,000	\$289,500	2040						
REDUNDANCY PROJECT																
Aeration Tank Feed Pump Station																
	Hatch and concrete coating			30	2021	2021			\$156,100	2051						
	Gates			25	2021	2021			\$184,400	2046						
	Valves			20	2021	2021			\$17,600	2041						
	Piping and Fittings			30	2021	2021			\$368,100	2051						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2028	2029	2030	2031	2032	2033
	Pumps			20	2021	2021			\$235,700	2041						
	Flow Meter			10	2021	2021			\$12,800	2031				\$12,800		
WAS Pumping Station																
	Concrete			60	2021	2021			\$9,100	2081						
	Pumps			20	2021	2021			\$61,100	2041						
	Valves			20	2021	2021			\$9,700	2041						
	Piping and Fittings			30	2021	2021			\$26,800	2051						
	Flow Meter			10	2021	2021			\$6,400	2031				\$6,400		
Activated Sludge Aeration Basins																
	Concrete			60	2021	2021			\$3,885,100	2081						
	Blowers			30	2021	2021			\$813,600	2051						
	Flow Meter			10	2021	2021			\$3,700	2031				\$3,700		
	Diffusers			30	2021	2021			\$614,800	2051						
	Gates			25	2021	2021			\$458,000	2046						
	Valves			20	2021	2021			\$800	2041						
	Piping and Fittings			30	2021	2021			\$426,500	2051						
Blower Building																
	Building CMU			50	2021	2021			\$346,800	2071						
	Concrete			60	2021	2021			\$272,000	2081						
New Secondary Clarifier																
	Concrete			60	2021	2021			\$2,642,400	2081						
	Gates			25	2021	2021			\$639,000	2046						
	Pumps			20	2021	2021			\$161,300	2041						
	Valves			20	2021	2021			\$39,000	2041						
	Piping and Fittings			30	2021	2021			\$160,200	2051						
WAS Thickening																
	Concrete Repair			30	2021	2021			\$5,700	2051						
	Gates			25	2021	2021			\$32,200	2046						
	Pumps			20	2021	2021			\$862,000	2041						
	Piping and Fittings			30	2021	2021			\$86,300	2051						
	Valves			20	2021	2021			\$17,900	2041						
	Flow Meter			10	2021	2021			\$17,900	2031				\$17,900		
Site Improvements																
				25	2021	2021			\$2,939,700	2046						
Instrumentation and Electrical																
				40	2021	2021			\$3,823,000	2061						
Emergency Generator																
	Generator			20	2021	2021			\$222,200	2041						
	Concrete			30	2021	2021			\$38,300	2051						
Flood Mitigation Improvements																
				29	2021	2021			\$338,600	2050						
	Total								\$57,798,270		\$3,476,170	\$1,170,961	\$2,023,000	\$172,829	\$5,456,578	\$200,380
	Cumulative (2018 \$)										\$35,192,356	\$36,363,317	\$38,386,317	\$38,559,146	\$44,015,724	\$44,216,104
	Cumulative (Escalated 2% per year)										\$42,230,827	\$44,363,247	\$47,599,033	\$48,584,524	\$56,340,127	\$57,480,936

SSLOCSD WWTP LIFE EXPECTANCY COST ANALYSIS

Equipment	Current Year	2018														
	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2034	2035	2036	2037	2038	2039
Headworks	Structure			60	1966	1966		\$350,000	\$1,027,600	2026						
	Structure Coating			25	1966	2001		\$30,000	\$41,340	2026						
	Parshall Flume Flow Transmitter			5	1966	2012	2018	\$5,000	\$5,575	2019						
	Influent Slide Gate			55	1966	1966		\$20,000	\$58,720	2021						
	Mechanical Bar Screens (2)			20	2017	2017		\$427,000	\$442,372	2037				\$442,372		
	Washer Compactor			15	2017	2017		\$150,000	\$155,400	2032						
	Influent Pump #1 (3,500 gpm)			20	1966	2012		\$50,000	\$55,750	2032						
	Pump 1 Effluent Valve	RW 14 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	RW 14 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					
	Pump 2 Influent Valve	RW 13 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	Influent Pump #2 (3,500 gpm)				20	1966	2013		\$50,000	\$55,250	2033					
	Pump 2 Effluent Valve	RW 15 (12")			20	1966	2012		\$2,000	\$2,230	2032					
	RW 15 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					
	RW12 (16-inch)	RW 12 (16")			35	1966	2012		\$2,000	\$2,230	2047					
	Influent Pump #3 (3,500 gpm)				20	1966	1999		\$37,000	\$52,762	2019					
	RW 16 14-inch	RW 16 (14")			34	1966	2012		\$2,000	\$2,230	2046					
	RW 16 Check Valve				34	1966	2012		\$2,000	\$2,230	2046					
	RW 10 16-inch	RW 10 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	Influent Pump #4 (3,500 gpm)				20	1966	2012		\$50,000	\$55,750	2032					
	Influent Pump #1 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #2 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #3 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #4 VFD				15	1966	2015		\$10,000	\$10,760	2030					
	RW 17 (16-inch)	RW 17 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	RW 17 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					
	Diesel Pump Inlet valve	RW 19 (12")			20	1966	2012		\$2,000	\$2,230	2032					
	Diesel Pump				15	2005	2015		\$20,000	\$21,520	2030					
Diesel Motor				20	2005	2005		\$60,000	\$76,080	2025						
Hydro ranger				5	1966	2016		\$5,000	\$5,280	2021						
Grit Removal	Grit King			30	2017	2017		\$342,000	\$354,312	2047						
	Grit Classifier			15	2017	2017		\$150,000	\$155,400	2032						
Splitter Box	Structure			60	1966	1966		\$350,000	\$1,027,600	2026						
	Structure coating			20	2012	2012		\$40,000	\$44,600	2032						
	Effluent Valve to PC#2	RW 21 (24")		20	1966	1996	2018	\$4,700	\$6,951	2019					\$6,951	
	Effluent Valve to PC#1	RW 23 (20")		20	1966	2011		\$6,000	\$6,810	2031						
Effluent Valve to Bypass Primary	RW 22 (20")			20	1966	2011		\$6,000	\$6,810	2031						
Primary Clar #1	Clarifier #1 Structure			70	1966	1966		\$500,000	\$1,468,000	2036			\$1,468,000			
	Clarifier #1 Coating			15	1966	2012		\$20,000	\$22,300	2027						
	Clarifier #1 Mechanism			50	1966	2012		\$140,000	\$156,100	2062						
	Clarifier #1 Drive			30	1966	2012		\$136,195	\$151,857	2042						
	Clarifier #1 Bridge			30	1966	2012		\$77,189	\$86,066	2042						
	Clarifier #1 Sludge Pump #1			5	1966	2018		\$20,000	\$20,000	2023						
	Clarifier #1 Sludge Pump #1 VFD			15	1966	2018		\$5,000	\$5,000	2033						
	Clarifier #1 Sludge Pump #2			5	1966	1990	2019	\$13,000	\$21,281	2020						
	Clarifier #1 Sludge Pump #2 VFD			15	1966	1998	2019	\$5,000	\$7,255	2020		\$7,255				
Primary Clar #2	Clarifier #2 Structure			50	1990	1990		\$900,000	\$1,473,300	2040						
	Clarifier #2 Coating		Redundancy Project	30	1990	1990	2018	\$25,000	\$40,925	2019						
	Clarifier #2 Mechanism		Redundancy Project	25	1990	1990	2018	\$250,000	\$409,250	2019						
	Clarifier #2 Drive		Redundancy Project	25	1990	1990	2018	\$90,500	\$148,149	2019						
	Clarifier #2 Bridge		Redundancy Project	25	1990	1990	2018	\$51,000	\$83,487	2019						
	Clarifier #2 Sludge Pump #4			4	1990	2017		\$20,000	\$20,720	2021						
	Clarifier #2 Sludge Pump #4 VFD			15	1990	2016		\$5,000	\$5,280	2031						
	Clarifier #2 Sludge Pump #6		rarely used	4	1990	1990	2019	\$13,000	\$21,281	2020						
Clarifier #2 Sludge Pump #6 VFD		rarely used	15	1990	1990	2019	\$3,500	\$5,730	2020		\$5,730					
FFR	FFR #1 Structure			50	1986	1986		\$1,200,000	\$2,178,000	2036			\$2,178,000			

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2034	2035	2036	2037	2038	2039
	FFR #1 Rotary Mechanism		after Redun. Proj	30	1986	1986	2022	\$250,000	\$453,750	2023						
	FFR #1 Media		after Redun. Proj	30	1986	1986	2022	\$450,000	\$816,750	2023						
	FFR Pump 1 Inlet Valve	FF1 (12")		20	1986	2013		\$3,000	\$3,315	2033						
	FFR Feed Pump #1			25	1986	2013		\$35,000	\$38,675	2038					\$38,675	
	FFR Feed Pump 1# VFD			15	1986	2013		\$10,000	\$11,050	2028						
	FFR Pump #1 Outlet Valve	FF3 (12")		20	1986	2013		\$3,000	\$3,315	2033						
	FFR Pump #2 Inlet Valve			20	1986	2011		\$3,000	\$3,405	2031						
	FFR Feed Pump #2	FF2 (12")		25	1986	2012		\$35,000	\$39,025	2037				\$39,025		
	FFR Feed Pump #2 VFD			15	1986	2008		\$10,000	\$11,980	2023					\$11,980	
	FFR Pump #2 Outlet Valve			20	1986	2011		\$3,000	\$3,405	2031						
	FFR Pump #3 Inlet Valve			20	2014	2014		\$3,000	\$3,291	2034	\$3,291					
	FFR Feed Pump #3			25	2014	2014		\$35,000	\$38,395	2039						\$38,395
	FFR Pump #3 VFD			15	2014	2014		\$10,000	\$10,970	2029						
	FFR Pump #3 Outlet Valve			20	2014	2014		\$3,000	\$3,291	2034	\$3,291					
	FFR Blower #1			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #1 Motor			20	1986	2007		\$10,000	\$12,060	2027						
	FFR Blower #2			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #2 Motor			20	1986	2007		\$10,000	\$12,060	2027						
Sec Clar #1	Sec Clarifier #1 Structure			60	1966	1966		\$900,000	\$2,642,400	2026						
	Sec Clarifier #1 Coating		Redundancy Projec	60	1986	1986	2020	\$30,000	\$54,450	2021						
	Sec Clarifier #1 Mechanism		Redundancy Projec	60	1986	1986	2020	\$240,000	\$435,600	2021						
	Sec Clarifier #1 Drive		Redundancy Projec	31	1986	1986	2020	\$80,000	\$145,200	2021						
	Sec Clarifier #1 Bridge		Redundancy Projec	31	1986	1986	2020	\$100,000	\$181,500	2021						
	Sec Clarifier #1 Sludge Pump		Redundancy Projec	10	2013	2013	2020	\$8,000	\$8,840	2021						
	Sec Clarifier #1 Sludge Pump VFD		Redundancy Projec	15	1998	1998	2020	\$5,000	\$7,255	2021			\$7,255			
	Sec Clarifier #1 Scum Pump #1		Redundancy Projec	10	2010	2010	2020	\$20,000	\$23,160	2021						
	Sec Clarifier #1 Scum Pump #2		Redundancy Projec	10	2008	2008	2020	\$20,000	\$23,960	2021						
Thickener #1	Sludge Thickener #1 Structure		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Sludge Thickener #1 Coating		not used	100	1979	1979		\$25,000	\$54,075	2079						
	Thickener #1 Mechanism		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Thickener #1 Drive		not used	100	1979	1979		\$85,000	\$183,855	2079						
	Plant Air System		not used	25	1979	2004		\$60,000	\$78,300	2029						
Digester #1	Digester #1			70	1964	1964		\$480,000	\$1,431,360	2034	\$1,431,360					
	Digester #1 Coating			15	2005	2018		\$130,000	\$130,000	2033						
	Digester #1 Cleanout			10	1964	2017		\$300,000	\$310,800	2027				\$310,800		
	Digester #1 Gas Train Piping			25	1964	2005		\$228,170	\$289,320	2030						
	Site glasses			10	1964	2018		\$16,000	\$16,000	2028					\$16,000	
	APCD Pieces			10	1964	2005	2019	\$40,000	\$50,720	2020						
	Digester #1 Valves			25	1964	2005		\$25,000	\$31,700	2030						
Digester #2	Digester #2			50	1992	1992		\$900,000	\$1,424,700	2042						
	Digester #2 Coating			10	1992	2008	2018	\$100,000	\$119,800	2019						
	Digester #2 Cleanout			10	2008	2008	2018	\$50,000	\$59,900	2019						
	Digester #2 Gas Train Piping			25	1992	2009		\$228,170	\$267,415	2034	\$267,415					
	Site glasses			15	2009	2009		\$15,500	\$18,166	2024						\$18,166
	APCD pieces			10	2009	2009	2019	\$40,000	\$46,880	2020						
	Digester #2 Valves			25	2009	2009		\$25,000	\$29,300	2034	\$29,300					
Heating & Mixing	Heating and Mixing Building			50	1982	1982		\$580,741	\$1,122,572	2032						
	Sludge Recirc Pump #1			30	1982	2017		\$21,000	\$21,756	2047						
	Recirc Pump #1 Motor			30	1982	2017		\$3,500	\$3,626	2047						
	Vaughn Chopper Pump			20	1982	2005		\$30,000	\$38,040	2025						
	Boiler			15	2007	2014		\$100,000	\$109,700	2029						
	Hot Water Recirc Pump			20	1982	2017		\$21,000	\$21,756	2037				\$21,756		
	Hot Water Recirc Pump Motor			20	1982	2017		\$1,900	\$1,968	2037				\$1,968		
	Heat Exchanger #1			30	1982	2007		\$7,617	\$9,186	2037				\$9,186		
	Sludge Feed Pump #1			7	2012	2012	2019	\$20,000	\$22,300	2020						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2034	2035	2036	2037	2038	2039
	Sludge Feed Pump #1 VFD			15	2015	2015		\$5,000	\$5,380	2030						
	Sludge Feed Pump #2			7	2012	2012	2019	\$20,000	\$22,300	2020						
	Sludge Feed Pump #2 VFD			15	2015	2015		\$5,000	\$5,380	2030						
	Macerator			15	2012	2015		\$20,000	\$21,520	2030						
Reclaim Water Station	Amiad Filters			20	2011	2011		\$10,000	\$11,350	2031						
Flare	Flare			25	1964	2003		\$4,200	\$5,620	2028						
Chemical Feed	Ferric Chloride Tank			15	1992	2007		\$10,000	\$12,060	2022				\$12,060		
	Ferric Chloride Feed Pump			15	1992	2016		\$5,000	\$5,280	2031						
	Sodium Hypochlorite Tank 6K			20	1979	2010		\$10,000	\$11,580	2030						
	Sodium Hypochlorite Tank 3K			20	1979	2010		\$6,000	\$6,948	2030						
	Sodium Hypochlorite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022						
	Sodium Bisulfite Tank			25	1990	1990	2018	\$6,000	\$9,822	2019						
	Sodium Bisulfite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022						
	CCT Chemical System			10	1990	2016		\$30,000	\$31,680	2026			\$31,680			
	Polymer Feed Systems			30	1990	1990		\$12,000	\$19,644	2020						
Effluent	Chlorine Contact Chamber			60	2007	2006		\$2,700,000	\$3,364,200	2066						
	Effluent Pump 100HP #1			30	2005	2006		\$45,000	\$56,070	2036			\$56,070			
	vfd			15	2005	2016		\$10,000	\$10,560	2031						
	Effluent Pump 100 HP #2			30	2005	2006		\$45,000	\$56,070	2036			\$56,070			
	vfd			10	2005	2005	2018	\$10,000	\$12,680	2019						
	Ocean Outfall			50	1964	1978		\$1,500,000	\$3,414,000	2028						
Flow Meters	ISCO 2100 Flow Meter			10	2016	2016		\$5,250	\$5,544	2026			\$5,544			
	ISCO 2100 Flow Meter			10	2017	2017		\$5,250	\$5,439	2027				\$5,439		
Solids Handling																
	Biosolids slab			40	2018	2018		\$50,000	\$50,000	2058						
	Centrifuge Building			50	2010	2010		\$1,000,000	\$1,158,000	2060						
	Centrifuge			15	2010	2017		\$1,000,000	\$1,036,000	2032						
	Centrifuge Macerator			15	2008	2008		\$25,000	\$29,950	2023					\$29,950	
Miscellaneous	Emergency Generator			20	2009	2009		\$600,000	\$703,200	2029						
	Cogeneration Unit		Idled	10	2009	2009	2019	\$470,000	\$1,500,000	2020						
	Plant Well Water System			20	1982	2005		\$163,147	\$206,870	2025						
	Plant Well Water pump			10	1982	2016		\$5,000	\$5,280	2026			\$5,280			
	Standby Water Well			20	1964	1999		\$4,500	\$6,417	2019						\$6,417
	Operations Building			50	1982	1982		\$844,161	\$1,631,763	2032						
	Maintenance Shop			50	1982	1982		\$202,495	\$391,423	2032						
	Maintenance Building			50	1996	1996		\$205,000	\$303,195	2046						
	Facility Asphalt			30	1992	1992		\$20,000	\$31,660	2022						
	Digester #2 sump pump #1			10	1996	2009	2019	\$6,000	\$7,032	2020						
	Digester #2 sump pump #2			10	1996	2018		\$6,000	\$6,000	2028					\$6,000	
	Security System annual maintenance			1	2006	2006		\$1,500	\$1,500	NA	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
	IT System annual maintenance			1	2016	2016		\$2,000	\$2,000	NA	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
	SCADA System			10	2016	2016		\$100,000	\$105,600	2026			\$105,600			
	Fuel Tank			35	1980	2017		\$5,000	\$5,180	2052						
	Arroyo Grande Pipe Bridge			34	1966	2017		\$90,000	\$300,000	2051						
	MCC/Cogen Building			50	1982	1982		\$400,000	\$773,200	2032						
	MCC Electrical Boxes			40	1982	1982		\$180,000	\$347,940	2022						
	Plant Electrical			30	1966	2010		\$250,000	\$289,500	2040						
REDUNDANCY PROJECT																
Aeration Tank Feed Pump Station																
	Hatch and concrete coating			30	2021	2021			\$156,100	2051						
	Gates			25	2021	2021			\$184,400	2046						
	Valves			20	2021	2021			\$17,600	2041						
	Piping and Fittings			30	2021	2021			\$368,100	2051						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2034	2035	2036	2037	2038	2039
	Pumps			20	2021	2021			\$235,700	2041						
	Flow Meter			10	2021	2021			\$12,800	2031						
WAS Pumping Station																
	Concrete			60	2021	2021			\$9,100	2081						
	Pumps			20	2021	2021			\$61,100	2041						
	Valves			20	2021	2021			\$9,700	2041						
	Piping and Fittings			30	2021	2021			\$26,800	2051						
	Flow Meter			10	2021	2021			\$6,400	2031						
Activated Sludge Aeration Basins																
	Concrete			60	2021	2021			\$3,885,100	2081						
	Blowers			30	2021	2021			\$813,600	2051						
	Flow Meter			10	2021	2021			\$3,700	2031						
	Diffusers			30	2021	2021			\$614,800	2051						
	Gates			25	2021	2021			\$458,000	2046						
	Valves			20	2021	2021			\$800	2041						
	Piping and Fittings			30	2021	2021			\$426,500	2051						
Blower Building																
	Building CMU			50	2021	2021			\$346,800	2071						
	Concrete			60	2021	2021			\$272,000	2081						
New Secondary Clarifier																
	Concrete			60	2021	2021			\$2,642,400	2081						
	Gates			25	2021	2021			\$639,000	2046						
	Pumps			20	2021	2021			\$161,300	2041						
	Valves			20	2021	2021			\$39,000	2041						
	Piping and Fittings			30	2021	2021			\$160,200	2051						
WAS Thickening																
	Concrete Repair			30	2021	2021			\$5,700	2051						
	Gates			25	2021	2021			\$32,200	2046						
	Pumps			20	2021	2021			\$862,000	2041						
	Piping and Fittings			30	2021	2021			\$86,300	2051						
	Valves			20	2021	2021			\$17,900	2041						
	Flow Meter			10	2021	2021			\$17,900	2031						
Site Improvements																
				25	2021	2021			\$2,939,700	2046						
Instrumentation and Electrical																
				40	2021	2021			\$3,823,000	2061						
Emergency Generator																
	Generator			20	2021	2021			\$222,200	2041						
	Concrete			30	2021	2021			\$38,300	2051						
Flood Mitigation Improvements																
				29	2021	2021			\$338,600	2050						
	Total								\$57,798,270		\$1,771,297	\$16,485	\$3,916,999	\$846,106	\$106,105	\$126,191
	Cumulative (2018 \$)										\$45,987,402	\$46,003,886	\$49,920,885	\$50,766,991	\$50,873,096	\$50,999,288
	Cumulative (Escalated 2% per year)										\$60,703,370	\$61,645,207	\$67,892,404	\$70,058,448	\$71,222,335	\$72,418,988

SSLOCSD WWTP LIFE EXPECTANCY COST ANALYSIS

Equipment	Current Year	2018															
	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2040	2041	2042	2043	2044	2045	
Headworks	Structure			60	1966	1966		\$350,000	\$1,027,600	2026							
	Structure Coating			25	1966	2001		\$30,000	\$41,340	2026							
	Parshall Flume Flow Transmitter			5	1966	2012	2018	\$5,000	\$5,575	2019							
	Influent Slide Gate			55	1966	1966		\$20,000	\$58,720	2021							
	Mechanical Bar Screens (2)			20	2017	2017		\$427,000	\$442,372	2037							
	Washer Compactor			15	2017	2017		\$150,000	\$155,400	2032							
	Influent Pump #1 (3,500 gpm)			20	1966	2012		\$50,000	\$55,750	2032							
	Pump 1 Effluent Valve	RW 14 (16")			20	1966	2012		\$2,000	\$2,230	2032						
	RW 14 Check Valve				20	1966	2012		\$2,000	\$2,230	2032						
	Pump 2 Influent Valve	RW 13 (16")			20	1966	2012		\$2,000	\$2,230	2032						
	Influent Pump #2 (3,500 gpm)				20	1966	2013		\$50,000	\$55,250	2033						
	Pump 2 Effluent Valve	RW 15 (12")			20	1966	2012		\$2,000	\$2,230	2032						
	RW 15 Check Valve				20	1966	2012		\$2,000	\$2,230	2032						
	RW12 (16-inch)	RW 12 (16")			35	1966	2012		\$2,000	\$2,230	2047						
	Influent Pump #3 (3,500 gpm)				20	1966	1999		\$37,000	\$52,762	2019						
	RW 16 14-inch	RW 16 (14")			34	1966	2012		\$2,000	\$2,230	2046						
	RW 16 Check Valve				34	1966	2012		\$2,000	\$2,230	2046						
	RW 10 16-inch	RW 10 (16")			20	1966	2012		\$2,000	\$2,230	2032						
	Influent Pump #4 (3,500 gpm)				20	1966	2012		\$50,000	\$55,750	2032						
	Influent Pump #1 VFD				15	2014	2014		\$10,000	\$10,970	2029					\$10,970	
	Influent Pump #2 VFD				15	2014	2014		\$10,000	\$10,970	2029					\$10,970	
	Influent Pump #3 VFD				15	2014	2014		\$10,000	\$10,970	2029					\$10,970	
	Influent Pump #4 VFD				15	1966	2015		\$10,000	\$10,760	2030						\$10,760
RW 17 (16-inch)	RW 17 (16")			20	1966	2012		\$2,000	\$2,230	2032							
RW 17 Check Valve				20	1966	2012		\$2,000	\$2,230	2032							
Diesel Pump Inlet valve	RW 19 (12")			20	1966	2012		\$2,000	\$2,230	2032							
Diesel Pump				15	2005	2015		\$20,000	\$21,520	2030						\$21,520	
Diesel Motor				20	2005	2005		\$60,000	\$76,080	2025						\$76,080	
Hydro ranger				5	1966	2016		\$5,000	\$5,280	2021							
Grit Removal	Grit King			30	2017	2017		\$342,000	\$354,312	2047							
	Grit Classifier			15	2017	2017		\$150,000	\$155,400	2032							
Splitter Box	Structure			60	1966	1966		\$350,000	\$1,027,600	2026							
	Structure coating			20	2012	2012		\$40,000	\$44,600	2032							
	Effluent Valve to PC#2	RW 21 (24")		20	1966	1996	2018	\$4,700	\$6,951	2019							
	Effluent Valve to PC#1	RW 23 (20")		20	1966	2011		\$6,000	\$6,810	2031							
	Effluent Valve to Bypass Primary	RW 22 (20")		20	1966	2011		\$6,000	\$6,810	2031							
Primary Clar #1	Clarifier #1 Structure			70	1966	1966		\$500,000	\$1,468,000	2036							
	Clarifier #1 Coating			15	1966	2012		\$20,000	\$22,300	2027			\$22,300				
	Clarifier #1 Mechanism			50	1966	2012		\$140,000	\$156,100	2062							
	Clarifier #1 Drive			30	1966	2012		\$136,195	\$151,857	2042			\$151,857				
	Clarifier #1 Bridge			30	1966	2012		\$77,189	\$86,066	2042			\$86,066				
	Clarifier #1 Sludge Pump #1			5	1966	2018		\$20,000	\$20,000	2023							
	Clarifier #1 Sludge Pump #1 VFD			15	1966	2018		\$5,000	\$5,000	2033							
	Clarifier #1 Sludge Pump #2			5	1966	1990	2019	\$13,000	\$21,281	2020							
	Clarifier #1 Sludge Pump #2 VFD			15	1966	1998	2019	\$5,000	\$7,255	2020							
Primary Clar #2	Clarifier #2 Structure			50	1990	1990		\$900,000	\$1,473,300	2040	\$1,473,300						
	Clarifier #2 Coating		Redundancy Project	30	1990	1990	2018	\$25,000	\$40,925	2019							
	Clarifier #2 Mechanism		Redundancy Project	25	1990	1990	2018	\$250,000	\$409,250	2019					\$409,250		
	Clarifier #2 Drive		Redundancy Project	25	1990	1990	2018	\$90,500	\$148,149	2019					\$148,149		
	Clarifier #2 Bridge		Redundancy Project	25	1990	1990	2018	\$51,000	\$83,487	2019					\$83,487		
	Clarifier #2 Sludge Pump #4			4	1990	2017		\$20,000	\$20,720	2021							
	Clarifier #2 Sludge Pump #4 VFD			15	1990	2016		\$5,000	\$5,280	2031							
	Clarifier #2 Sludge Pump #6		rarely used	4	1990	1990	2019	\$13,000	\$21,281	2020							
	Clarifier #2 Sludge Pump #6 VFD		rarely used	15	1990	1990	2019	\$3,500	\$5,730	2020							
FFR	FFR #1 Structure			50	1986	1986		\$1,200,000	\$2,178,000	2036							

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2040	2041	2042	2043	2044	2045
	FFR #1 Rotary Mechanism		after Redun. Proj	30	1986	1986	2022	\$250,000	\$453,750	2023						
	FFR #1 Media		after Redun. Proj	30	1986	1986	2022	\$450,000	\$816,750	2023						
	FFR Pump 1 Inlet Valve	FF1 (12")		20	1986	2013		\$3,000	\$3,315	2033						
	FFR Feed Pump #1			25	1986	2013		\$35,000	\$38,675	2038						
	FFR Feed Pump 1# VFD			15	1986	2013		\$10,000	\$11,050	2028				\$11,050		
	FFR Pump #1 Outlet Valve	FF3 (12")		20	1986	2013		\$3,000	\$3,315	2033						
	FFR Pump #2 Inlet Valve			20	1986	2011		\$3,000	\$3,405	2031						
	FFR Feed Pump #2	FF2 (12")		25	1986	2012		\$35,000	\$39,025	2037						
	FFR Feed Pump #2 VFD			15	1986	2008		\$10,000	\$11,980	2023						
	FFR Pump #2 Outlet Valve			20	1986	2011		\$3,000	\$3,405	2031						
	FFR Pump #3 Inlet Valve			20	2014	2014		\$3,000	\$3,291	2034						
	FFR Feed Pump #3			25	2014	2014		\$35,000	\$38,395	2039						
	FFR Pump #3 VFD			15	2014	2014		\$10,000	\$10,970	2029					\$10,970	
	FFR Pump #3 Outlet Valve			20	2014	2014		\$3,000	\$3,291	2034						
	FFR Blower #1			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #1 Motor			20	1986	2007		\$10,000	\$12,060	2027						
	FFR Blower #2			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #2 Motor			20	1986	2007		\$10,000	\$12,060	2027						
Sec Clar #1	Sec Clarifier #1 Structure			60	1966	1966		\$900,000	\$2,642,400	2026						
	Sec Clarifier #1 Coating		Redundancy Projec	60	1986	1986	2020	\$30,000	\$54,450	2021						
	Sec Clarifier #1 Mechanism		Redundancy Projec	60	1986	1986	2020	\$240,000	\$435,600	2021						
	Sec Clarifier #1 Drive		Redundancy Projec	31	1986	1986	2020	\$80,000	\$145,200	2021						
	Sec Clarifier #1 Bridge		Redundancy Projec	31	1986	1986	2020	\$100,000	\$181,500	2021						
	Sec Clarifier #1 Sludge Pump		Redundancy Projec	10	2013	2013	2020	\$8,000	\$8,840	2021						
	Sec Clarifier #1 Sludge Pump VFD		Redundancy Projec	15	1998	1998	2020	\$5,000	\$7,255	2021						
	Sec Clarifier #1 Scum Pump #1		Redundancy Projec	10	2010	2010	2020	\$20,000	\$23,160	2021						
	Sec Clarifier #1 Scum Pump #2		Redundancy Projec	10	2008	2008	2020	\$20,000	\$23,960	2021						
Thickener #1	Sludge Thickener #1 Structure		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Sludge Thickener #1 Coating		not used	100	1979	1979		\$25,000	\$54,075	2079						
	Thickener #1 Mechanism		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Thickener #1 Drive		not used	100	1979	1979		\$85,000	\$183,855	2079						
	Plant Air System		not used	25	1979	2004		\$60,000	\$78,300	2029						
Digester #1	Digester #1			70	1964	1964		\$480,000	\$1,431,360	2034						
	Digester #1 Coating			15	2005	2018		\$130,000	\$130,000	2033						
	Digester #1 Cleanout			10	1964	2017		\$300,000	\$310,800	2027						
	Digester #1 Gas Train Piping			25	1964	2005		\$228,170	\$289,320	2030						
	Site glasses			10	1964	2018		\$16,000	\$16,000	2028						
	APCD Pieces			10	1964	2005	2019	\$40,000	\$50,720	2020						
	Digester #1 Valves			25	1964	2005		\$25,000	\$31,700	2030						
Digester #2	Digester #2			50	1992	1992		\$900,000	\$1,424,700	2042			\$1,424,700			
	Digester #2 Coating			10	1992	2008	2018	\$100,000	\$119,800	2019						
	Digester #2 Cleanout			10	2008	2008	2018	\$50,000	\$59,900	2019						
	Digester #2 Gas Train Piping			25	1992	2009		\$228,170	\$267,415	2034						
	Site glasses			15	2009	2009		\$15,500	\$18,166	2024						
	APCD pieces			10	2009	2009	2019	\$40,000	\$46,880	2020						
	Digester #2 Valves			25	2009	2009		\$25,000	\$29,300	2034						
Heating & Mixing	Heating and Mixing Building			50	1982	1982		\$580,741	\$1,122,572	2032						
	Sludge Recirc Pump #1			30	1982	2017		\$21,000	\$21,756	2047						
	Recirc Pump #1 Motor			30	1982	2017		\$3,500	\$3,626	2047						
	Vaughn Chopper Pump			20	1982	2005		\$30,000	\$38,040	2025						\$38,040
	Boiler			15	2007	2014		\$100,000	\$109,700	2029				\$109,700		
	Hot Water Recirc Pump			20	1982	2017		\$21,000	\$21,756	2037						
	Hot Water Recirc Pump Motor			20	1982	2017		\$1,900	\$1,968	2037						
	Heat Exchanger #1			30	1982	2007		\$7,617	\$9,186	2037						
	Sludge Feed Pump #1			7	2012	2012	2019	\$20,000	\$22,300	2020						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2040	2041	2042	2043	2044	2045
	Sludge Feed Pump #1 VFD			15	2015	2015		\$5,000	\$5,380	2030						\$5,380
	Sludge Feed Pump #2			7	2012	2012	2019	\$20,000	\$22,300	2020						
	Sludge Feed Pump #2 VFD			15	2015	2015		\$5,000	\$5,380	2030						\$5,380
	Macerator			15	2012	2015		\$20,000	\$21,520	2030						\$21,520
Reclaim Water Station	Amiad Filters			20	2011	2011		\$10,000	\$11,350	2031						
Flare	Flare			25	1964	2003		\$4,200	\$5,620	2028						
Chemical Feed	Ferric Chloride Tank			15	1992	2007		\$10,000	\$12,060	2022						
	Ferric Chloride Feed Pump			15	1992	2016		\$5,000	\$5,280	2031						
	Sodium Hypochlorite Tank 6K			20	1979	2010		\$10,000	\$11,580	2030						
	Sodium Hypochlorite Tank 3K			20	1979	2010		\$6,000	\$6,948	2030						
	Sodium Hypochlorite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022						
	Sodium Bisulfite Tank			25	1990	1990	2018	\$6,000	\$9,822	2019						\$9,822
	Sodium Bisulfite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022						
	CCT Chemical System			10	1990	2016		\$30,000	\$31,680	2026						
	Polymer Feed Systems			30	1990	1990		\$12,000	\$19,644	2020						
Effluent	Chlorine Contact Chamber			60	2007	2006		\$2,700,000	\$3,364,200	2066						
	Effluent Pump 100HP #1			30	2005	2006		\$45,000	\$56,070	2036						
	vfd			15	2005	2016		\$10,000	\$10,560	2031						
	Effluent Pump 100 HP #2			30	2005	2006		\$45,000	\$56,070	2036						
	vfd			10	2005	2005	2018	\$10,000	\$12,680	2019						
	Ocean Outfall			50	1964	1978		\$1,500,000	\$3,414,000	2028						
Flow Meters	ISCO 2100 Flow Meter			10	2016	2016		\$5,250	\$5,544	2026						
	ISCO 2100 Flow Meter			10	2017	2017		\$5,250	\$5,439	2027						
Solids Handling																
	Biosolids slab			40	2018	2018		\$50,000	\$50,000	2058						
	Centrifuge Building			50	2010	2010		\$1,000,000	\$1,158,000	2060						
	Centrifuge			15	2010	2017		\$1,000,000	\$1,036,000	2032						
	Centrifuge Macerator			15	2008	2008		\$25,000	\$29,950	2023						
Miscellaneous	Emergency Generator			20	2009	2009		\$600,000	\$703,200	2029						
	Cogeneration Unit		Idled	10	2009	2009	2019	\$470,000	\$1,500,000	2020						
	Plant Well Water System			20	1982	2005		\$163,147	\$206,870	2025						\$206,870
	Plant Well Water pump			10	1982	2016		\$5,000	\$5,280	2026						
	Standby Water Well			20	1964	1999		\$4,500	\$6,417	2019						
	Operations Building			50	1982	1982		\$844,161	\$1,631,763	2032						
	Maintenance Shop			50	1982	1982		\$202,495	\$391,423	2032						
	Maintenance Building			50	1996	1996		\$205,000	\$303,195	2046						
	Facility Asphalt			30	1992	1992		\$20,000	\$31,660	2022						
	Digester #2 sump pump #1			10	1996	2009	2019	\$6,000	\$7,032	2020						
	Digester #2 sump pump #2			10	1996	2018		\$6,000	\$6,000	2028						
	Security System annual maintenance			1	2006	2006		\$1,500	\$1,500	NA	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
	IT System annual maintenance			1	2016	2016		\$2,000	\$2,000	NA	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
	SCADA System			10	2016	2016		\$100,000	\$105,600	2026						
	Fuel Tank			35	1980	2017		\$5,000	\$5,180	2052						
	Arroyo Grande Pipe Bridge			34	1966	2017		\$90,000	\$300,000	2051						
	MCC/Cogen Building			50	1982	1982		\$400,000	\$773,200	2032						
	MCC Electrical Boxes			40	1982	1982		\$180,000	\$347,940	2022						
	Plant Electrical			30	1966	2010		\$250,000	\$289,500	2040	\$289,500					
REDUNDANCY PROJECT																
Aeration Tank Feed Pump Station																
	Hatch and concrete coating			30	2021	2021			\$156,100	2051						
	Gates			25	2021	2021			\$184,400	2046						
	Valves			20	2021	2021			\$17,600	2041	\$17,600					
	Piping and Fittings			30	2021	2021			\$368,100	2051						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2040	2041	2042	2043	2044	2045
	Pumps			20	2021	2021			\$235,700	2041		\$235,700				
	Flow Meter			10	2021	2021			\$12,800	2031						
WAS Pumping Station																
	Concrete			60	2021	2021			\$9,100	2081						
	Pumps			20	2021	2021			\$61,100	2041		\$61,100				
	Valves			20	2021	2021			\$9,700	2041		\$9,700				
	Piping and Fittings			30	2021	2021			\$26,800	2051						
	Flow Meter			10	2021	2021			\$6,400	2031						
Activated Sludge Aeration Basins																
	Concrete			60	2021	2021			\$3,885,100	2081						
	Blowers			30	2021	2021			\$813,600	2051						
	Flow Meter			10	2021	2021			\$3,700	2031						
	Diffusers			30	2021	2021			\$614,800	2051						
	Gates			25	2021	2021			\$458,000	2046						
	Valves			20	2021	2021			\$800	2041		\$800				
	Piping and Fittings			30	2021	2021			\$426,500	2051						
Blower Building																
	Building CMU			50	2021	2021			\$346,800	2071						
	Concrete			60	2021	2021			\$272,000	2081						
New Secondary Clarifier																
	Concrete			60	2021	2021			\$2,642,400	2081						
	Gates			25	2021	2021			\$639,000	2046						
	Pumps			20	2021	2021			\$161,300	2041		\$161,300				
	Valves			20	2021	2021			\$39,000	2041		\$39,000				
	Piping and Fittings			30	2021	2021			\$160,200	2051						
WAS Thickening																
	Concrete Repair			30	2021	2021			\$5,700	2051						
	Gates			25	2021	2021			\$32,200	2046						
	Pumps			20	2021	2021			\$862,000	2041		\$862,000				
	Piping and Fittings			30	2021	2021			\$86,300	2051						
	Valves			20	2021	2021			\$17,900	2041		\$17,900				
	Flow Meter			10	2021	2021			\$17,900	2031						
Site Improvements																
				25	2021	2021			\$2,939,700	2046						
Instrumentation and Electrical																
				40	2021	2021			\$3,823,000	2061						
Emergency Generator																
	Generator			20	2021	2021			\$222,200	2041		\$222,200				
	Concrete			30	2021	2021			\$38,300	2051						
Flood Mitigation Improvements																
				29	2021	2021			\$338,600	2050						
	Total								\$57,798,270		\$1,766,300	\$1,630,800	\$1,688,423	\$14,550	\$807,788	\$389,050
	Cumulative (2018 \$)										\$52,765,588	\$54,396,388	\$56,084,811	\$56,099,361	\$56,907,148	\$57,296,199
	Cumulative (Escalated 2% per year)										\$75,982,446	\$79,418,726	\$83,005,520	\$84,149,041	\$86,498,865	\$88,236,146

SSLOCSD WWTP LIFE EXPECTANCY COST ANALYSIS

Equipment	Current Year	2018														
	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2046	2047	2048	2049	2050	2051
Headworks	Structure			60	1966	1966		\$350,000	\$1,027,600	2026						
	Structure Coating			25	1966	2001		\$30,000	\$41,340	2026						\$41,340
	Parshall Flume Flow Transmitter			5	1966	2012	2018	\$5,000	\$5,575	2019						
	Influent Slide Gate			55	1966	1966		\$20,000	\$58,720	2021						
	Mechanical Bar Screens (2)			20	2017	2017		\$427,000	\$442,372	2037						
	Washer Compactor			15	2017	2017		\$150,000	\$155,400	2032		\$155,400				
	Influent Pump #1 (3,500 gpm)			20	1966	2012		\$50,000	\$55,750	2032						
	Pump 1 Effluent Valve	RW 14 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	RW 14 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					
	Pump 2 Influent Valve	RW 13 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	Influent Pump #2 (3,500 gpm)				20	1966	2013		\$50,000	\$55,250	2033					
	Pump 2 Effluent Valve	RW 15 (12")			20	1966	2012		\$2,000	\$2,230	2032					
	RW 15 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					
	RW12 (16-inch)	RW 12 (16")			35	1966	2012		\$2,000	\$2,230	2047		\$2,230			
	Influent Pump #3 (3,500 gpm)				20	1966	1999		\$37,000	\$52,762	2019					
	RW 16 14-inch	RW 16 (14")			34	1966	2012		\$2,000	\$2,230	2046	\$2,230				
	RW 16 Check Valve				34	1966	2012		\$2,000	\$2,230	2046	\$2,230				
	RW 10 16-inch	RW 10 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	Influent Pump #4 (3,500 gpm)				20	1966	2012		\$50,000	\$55,750	2032					
	Influent Pump #1 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #2 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #3 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #4 VFD				15	1966	2015		\$10,000	\$10,760	2030					
	RW 17 (16-inch)	RW 17 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	RW 17 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					
	Diesel Pump Inlet valve	RW 19 (12")			20	1966	2012		\$2,000	\$2,230	2032					
	Diesel Pump				15	2005	2015		\$20,000	\$21,520	2030					
Diesel Motor				20	2005	2005		\$60,000	\$76,080	2025						
Hydro ranger				5	1966	2016		\$5,000	\$5,280	2021						
Grit Removal	Grit King			30	2017	2017		\$342,000	\$354,312	2047		\$354,312				
	Grit Classifier			15	2017	2017		\$150,000	\$155,400	2032		\$155,400				
Splitter Box	Structure			60	1966	1966		\$350,000	\$1,027,600	2026						
	Structure coating			20	2012	2012		\$40,000	\$44,600	2032						
	Effluent Valve to PC#2	RW 21 (24")		20	1966	1996	2018	\$4,700	\$6,951	2019						
	Effluent Valve to PC#1	RW 23 (20")		20	1966	2011		\$6,000	\$6,810	2031					\$6,810	
	Effluent Valve to Bypass Primary	RW 22 (20")		20	1966	2011		\$6,000	\$6,810	2031					\$6,810	
Primary Clar #1	Clarifier #1 Structure			70	1966	1966		\$500,000	\$1,468,000	2036						
	Clarifier #1 Coating			15	1966	2012		\$20,000	\$22,300	2027						
	Clarifier #1 Mechanism			50	1966	2012		\$140,000	\$156,100	2062						
	Clarifier #1 Drive			30	1966	2012		\$136,195	\$151,857	2042						
	Clarifier #1 Bridge			30	1966	2012		\$77,189	\$86,066	2042						
	Clarifier #1 Sludge Pump #1			5	1966	2018		\$20,000	\$20,000	2023						
	Clarifier #1 Sludge Pump #1 VFD			15	1966	2018		\$5,000	\$5,000	2033			\$5,000			
	Clarifier #1 Sludge Pump #2			5	1966	1990	2019	\$13,000	\$21,281	2020						
	Clarifier #1 Sludge Pump #2 VFD			15	1966	1998	2019	\$5,000	\$7,255	2020						
Primary Clar #2	Clarifier #2 Structure			50	1990	1990		\$900,000	\$1,473,300	2040						
	Clarifier #2 Coating		Redundancy Project	30	1990	1990	2018	\$25,000	\$40,925	2019				\$40,925		
	Clarifier #2 Mechanism		Redundancy Project	25	1990	1990	2018	\$250,000	\$409,250	2019						
	Clarifier #2 Drive		Redundancy Project	25	1990	1990	2018	\$90,500	\$148,149	2019						
	Clarifier #2 Bridge		Redundancy Project	25	1990	1990	2018	\$51,000	\$83,487	2019						
	Clarifier #2 Sludge Pump #4			4	1990	2017		\$20,000	\$20,720	2021						
	Clarifier #2 Sludge Pump #4 VFD			15	1990	2016		\$5,000	\$5,280	2031	\$5,280					
	Clarifier #2 Sludge Pump #6		rarely used	4	1990	1990	2019	\$13,000	\$21,281	2020						
	Clarifier #2 Sludge Pump #6 VFD		rarely used	15	1990	1990	2019	\$3,500	\$5,730	2020						
FFR	FFR #1 Structure			50	1986	1986		\$1,200,000	\$2,178,000	2036						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Est'd Nxt Rplcmnt	2046	2047	2048	2049	2050	2051
	FFR #1 Rotary Mechanism		after Redun. Proj	30	1986	1986	2022	\$250,000	\$453,750	2023						
	FFR #1 Media		after Redun. Proj	30	1986	1986	2022	\$450,000	\$816,750	2023						
	FFR Pump 1 Inlet Valve	FF1 (12")		20	1986	2013		\$3,000	\$3,315	2033						
	FFR Feed Pump #1			25	1986	2013		\$35,000	\$38,675	2038						
	FFR Feed Pump 1# VFD			15	1986	2013		\$10,000	\$11,050	2028						
	FFR Pump #1 Outlet Valve	FF3 (12")		20	1986	2013		\$3,000	\$3,315	2033						
	FFR Pump #2 Inlet Valve			20	1986	2011		\$3,000	\$3,405	2031						\$3,405
	FFR Feed Pump #2	FF2 (12")		25	1986	2012		\$35,000	\$39,025	2037						
	FFR Feed Pump #2 VFD			15	1986	2008		\$10,000	\$11,980	2023						
	FFR Pump #2 Outlet Valve			20	1986	2011		\$3,000	\$3,405	2031						\$3,405
	FFR Pump #3 Inlet Valve			20	2014	2014		\$3,000	\$3,291	2034						
	FFR Feed Pump #3			25	2014	2014		\$35,000	\$38,395	2039						
	FFR Pump #3 VFD			15	2014	2014		\$10,000	\$10,970	2029						
	FFR Pump #3 Outlet Valve			20	2014	2014		\$3,000	\$3,291	2034						
	FFR Blower #1			30	1986	1986	2019	\$3,000	\$5,445	2020					\$5,445	
	FFR Blower #1 Motor			20	1986	2007		\$10,000	\$12,060	2027		\$12,060				
	FFR Blower #2			30	1986	1986	2019	\$3,000	\$5,445	2020					\$5,445	
	FFR Blower #2 Motor			20	1986	2007		\$10,000	\$12,060	2027		\$12,060				
Sec Clar #1	Sec Clarifier #1 Structure			60	1966	1966		\$900,000	\$2,642,400	2026						
	Sec Clarifier #1 Coating		Redundancy Projec	60	1986	1986	2020	\$30,000	\$54,450	2021						
	Sec Clarifier #1 Mechanism		Redundancy Projec	60	1986	1986	2020	\$240,000	\$435,600	2021						
	Sec Clarifier #1 Drive		Redundancy Projec	31	1986	1986	2020	\$80,000	\$145,200	2021						
	Sec Clarifier #1 Bridge		Redundancy Projec	31	1986	1986	2020	\$100,000	\$181,500	2021						
	Sec Clarifier #1 Sludge Pump		Redundancy Projec	10	2013	2013	2020	\$8,000	\$8,840	2021						
	Sec Clarifier #1 Sludge Pump VFD		Redundancy Projec	15	1998	1998	2020	\$5,000	\$7,255	2021						
	Sec Clarifier #1 Scum Pump #1		Redundancy Projec	10	2010	2010	2020	\$20,000	\$23,160	2021						
	Sec Clarifier #1 Scum Pump #2		Redundancy Projec	10	2008	2008	2020	\$20,000	\$23,960	2021						
Thickener #1	Sludge Thickener #1 Structure		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Sludge Thickener #1 Coating		not used	100	1979	1979		\$25,000	\$54,075	2079						
	Thickener #1 Mechanism		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Thickener #1 Drive		not used	100	1979	1979		\$85,000	\$183,855	2079						
	Plant Air System		not used	25	1979	2004		\$60,000	\$78,300	2029						
Digester #1	Digester #1			70	1964	1964		\$480,000	\$1,431,360	2034						
	Digester #1 Coating			15	2005	2018		\$130,000	\$130,000	2033			\$130,000			
	Digester #1 Cleanout			10	1964	2017		\$300,000	\$310,800	2027						
	Digester #1 Gas Train Piping			25	1964	2005		\$228,170	\$289,320	2030						
	Site glasses			10	1964	2018		\$16,000	\$16,000	2028						
	APCD Pieces			10	1964	2005	2019	\$40,000	\$50,720	2020						
	Digester #1 Valves			25	1964	2005		\$25,000	\$31,700	2030						
Digester #2	Digester #2			50	1992	1992		\$900,000	\$1,424,700	2042						
	Digester #2 Coating			10	1992	2008	2018	\$100,000	\$119,800	2019						
	Digester #2 Cleanout			10	2008	2008	2018	\$50,000	\$59,900	2019						
	Digester #2 Gas Train Piping			25	1992	2009		\$228,170	\$267,415	2034						
	Site glasses			15	2009	2009		\$15,500	\$18,166	2024						
	APCD pieces			10	2009	2009	2019	\$40,000	\$46,880	2020						
	Digester #2 Valves			25	2009	2009		\$25,000	\$29,300	2034						
Heating & Mixing	Heating and Mixing Building			50	1982	1982		\$580,741	\$1,122,572	2032						
	Sludge Recirc Pump #1			30	1982	2017		\$21,000	\$21,756	2047		\$21,756				
	Recirc Pump #1 Motor			30	1982	2017		\$3,500	\$3,626	2047		\$3,626				
	Vaughn Chopper Pump			20	1982	2005		\$30,000	\$38,040	2025						
	Boiler			15	2007	2014		\$100,000	\$109,700	2029						
	Hot Water Recirc Pump			20	1982	2017		\$21,000	\$21,756	2037						
	Hot Water Recirc Pump Motor			20	1982	2017		\$1,900	\$1,968	2037						
	Heat Exchanger #1			30	1982	2007		\$7,617	\$9,186	2037						
	Sludge Feed Pump #1			7	2012	2012	2019	\$20,000	\$22,300	2020						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2046	2047	2048	2049	2050	2051
	Sludge Feed Pump #1 VFD			15	2015	2015		\$5,000	\$5,380	2030						
	Sludge Feed Pump #2			7	2012	2012	2019	\$20,000	\$22,300	2020						
	Sludge Feed Pump #2 VFD			15	2015	2015		\$5,000	\$5,380	2030						
	Macerator			15	2012	2015		\$20,000	\$21,520	2030						
Reclaim Water Station	Amiad Filters			20	2011	2011		\$10,000	\$11,350	2031						\$11,350
Flare	Flare			25	1964	2003		\$4,200	\$5,620	2028						
Chemical Feed	Ferric Chloride Tank			15	1992	2007		\$10,000	\$12,060	2022						
	Ferric Chloride Feed Pump			15	1992	2016		\$5,000	\$5,280	2031	\$5,280					
	Sodium Hypochlorite Tank 6K			20	1979	2010		\$10,000	\$11,580	2030					\$11,580	
	Sodium Hypochlorite Tank 3K			20	1979	2010		\$6,000	\$6,948	2030					\$6,948	
	Sodium Hypochlorite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022						
	Sodium Bisulfite Tank			25	1990	1990	2018	\$6,000	\$9,822	2019						
	Sodium Bisulfite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022						
	CCT Chemical System			10	1990	2016		\$30,000	\$31,680	2026						
	Polymer Feed Systems			30	1990	1990		\$12,000	\$19,644	2020					\$19,644	
Effluent	Chlorine Contact Chamber			60	2007	2006		\$2,700,000	\$3,364,200	2066						
	Effluent Pump 100HP #1			30	2005	2006		\$45,000	\$56,070	2036						
	vfd			15	2005	2016		\$10,000	\$10,560	2031	\$10,560					
	Effluent Pump 100 HP #2			30	2005	2006		\$45,000	\$56,070	2036						
	vfd			10	2005	2005	2018	\$10,000	\$12,680	2019						
	Ocean Outfall			50	1964	1978		\$1,500,000	\$3,414,000	2028						
Flow Meters	ISCO 2100 Flow Meter			10	2016	2016		\$5,250	\$5,544	2026						
	ISCO 2100 Flow Meter			10	2017	2017		\$5,250	\$5,439	2027						
Solids Handling																
	Biosolids slab			40	2018	2018		\$50,000	\$50,000	2058						
	Centrifuge Building			50	2010	2010		\$1,000,000	\$1,158,000	2060						
	Centrifuge			15	2010	2017		\$1,000,000	\$1,036,000	2032	\$1,036,000					
	Centrifuge Macerator			15	2008	2008		\$25,000	\$29,950	2023						
Miscellaneous	Emergency Generator			20	2009	2009		\$600,000	\$703,200	2029					\$703,200	
	Cogeneration Unit		Idled	10	2009	2009	2019	\$470,000	\$1,500,000	2020						
	Plant Well Water System			20	1982	2005		\$163,147	\$206,870	2025						
	Plant Well Water pump			10	1982	2016		\$5,000	\$5,280	2026						
	Standby Water Well			20	1964	1999		\$4,500	\$6,417	2019						
	Operations Building			50	1982	1982		\$844,161	\$1,631,763	2032						
	Maintenance Shop			50	1982	1982		\$202,495	\$391,423	2032						
	Maintenance Building			50	1996	1996		\$205,000	\$303,195	2046	\$303,195					
	Facility Asphalt			30	1992	1992		\$20,000	\$31,660	2022						
	Digester #2 sump pump #1			10	1996	2009	2019	\$6,000	\$7,032	2020						
	Digester #2 sump pump #2			10	1996	2018		\$6,000	\$6,000	2028						
	Security System annual maintenance			1	2006	2006		\$1,500	\$1,500	NA	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
	IT System annual maintenance			1	2016	2016		\$2,000	\$2,000	NA	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
	SCADA System			10	2016	2016		\$100,000	\$105,600	2026						
	Fuel Tank			35	1980	2017		\$5,000	\$5,180	2052						
	Arroyo Grande Pipe Bridge			34	1966	2017		\$90,000	\$300,000	2051						\$300,000
	MCC/Cogen Building			50	1982	1982		\$400,000	\$773,200	2032						
	MCC Electrical Boxes			40	1982	1982		\$180,000	\$347,940	2022						
	Plant Electrical			30	1966	2010		\$250,000	\$289,500	2040						
REDUNDANCY PROJECT																
Aeration Tank Feed Pump Station																
	Hatch and concrete coating			30	2021	2021			\$156,100	2051						\$156,100
	Gates			25	2021	2021			\$184,400	2046	\$184,400					
	Valves			20	2021	2021			\$17,600	2041						
	Piping and Fittings			30	2021	2021			\$368,100	2051						\$368,100

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2046	2047	2048	2049	2050	2051
	Pumps			20	2021	2021			\$235,700	2041						
	Flow Meter			10	2021	2021			\$12,800	2031						
WAS Pumping Station																
	Concrete			60	2021	2021			\$9,100	2081						
	Pumps			20	2021	2021			\$61,100	2041						
	Valves			20	2021	2021			\$9,700	2041						
	Piping and Fittings			30	2021	2021			\$26,800	2051						\$26,800
	Flow Meter			10	2021	2021			\$6,400	2031						
Activated Sludge Aeration Basins																
	Concrete			60	2021	2021			\$3,885,100	2081						
	Blowers			30	2021	2021			\$813,600	2051						\$813,600
	Flow Meter			10	2021	2021			\$3,700	2031						
	Diffusers			30	2021	2021			\$614,800	2051						\$614,800
	Gates			25	2021	2021			\$458,000	2046	\$458,000					
	Valves			20	2021	2021			\$800	2041						
	Piping and Fittings			30	2021	2021			\$426,500	2051						\$426,500
Blower Building																
	Building CMU			50	2021	2021			\$346,800	2071						
	Concrete			60	2021	2021			\$272,000	2081						
New Secondary Clarifier																
	Concrete			60	2021	2021			\$2,642,400	2081						
	Gates			25	2021	2021			\$639,000	2046	\$639,000					
	Pumps			20	2021	2021			\$161,300	2041						
	Valves			20	2021	2021			\$39,000	2041						
	Piping and Fittings			30	2021	2021			\$160,200	2051						\$160,200
WAS Thickening																
	Concrete Repair			30	2021	2021			\$5,700	2051						\$5,700
	Gates			25	2021	2021			\$32,200	2046	\$32,200					
	Pumps			20	2021	2021			\$862,000	2041						
	Piping and Fittings			30	2021	2021			\$86,300	2051						\$86,300
	Valves			20	2021	2021			\$17,900	2041						
	Flow Meter			10	2021	2021			\$17,900	2031						
Site Improvements																
				25	2021	2021			\$2,939,700	2046	\$2,939,700					
Instrumentation and Electrical																
				40	2021	2021			\$3,823,000	2061						
Emergency Generator																
	Generator			20	2021	2021			\$222,200	2041						
	Concrete			30	2021	2021			\$38,300	2051						\$38,300
Flood Mitigation Improvements																
				29	2021	2021			\$338,600	2050					\$338,600	
Total									\$57,798,270		\$4,585,575	\$1,756,344	\$138,500	\$747,625	\$391,162	\$3,073,020
Cumulative (2018 \$)											\$61,881,774	\$63,638,118	\$63,776,618	\$64,524,243	\$64,915,405	\$67,988,425
Cumulative (Escalated 2% per year)											\$96,535,567	\$100,548,226	\$102,042,588	\$104,529,273	\$106,461,264	\$112,860,785

SSLOCSD WWTP LIFE EXPECTANCY COST ANALYSIS

Equipment	Current Year	2018														
	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2052	2053	2054	2055	2056	2057
Headworks	Structure			60	1966	1966		\$350,000	\$1,027,600	2026						
	Structure Coating			25	1966	2001		\$30,000	\$41,340	2026						
	Parshall Flume Flow Transmitter			5	1966	2012	2018	\$5,000	\$5,575	2019						
	Influent Slide Gate			55	1966	1966		\$20,000	\$58,720	2021						
	Mechanical Bar Screens (2)			20	2017	2017		\$427,000	\$442,372	2037						\$442,372
	Washer Compactor			15	2017	2017		\$150,000	\$155,400	2032						
	Influent Pump #1 (3,500 gpm)			20	1966	2012		\$50,000	\$55,750	2032	\$55,750					
	Pump 1 Effluent Valve	RW 14 (16")			20	1966	2012		\$2,000	\$2,230	2032	\$2,230				
	RW 14 Check Valve				20	1966	2012		\$2,000	\$2,230	2032	\$2,230				
	Pump 2 Influent Valve	RW 13 (16")			20	1966	2012		\$2,000	\$2,230	2032	\$2,230				
	Influent Pump #2 (3,500 gpm)				20	1966	2013		\$50,000	\$55,250	2033	\$55,250				
	Pump 2 Effluent Valve	RW 15 (12")			20	1966	2012		\$2,000	\$2,230	2032	\$2,230				
	RW 15 Check Valve				20	1966	2012		\$2,000	\$2,230	2032	\$2,230				
	RW12 (16-inch)	RW 12 (16")			35	1966	2012		\$2,000	\$2,230	2047					
	Influent Pump #3 (3,500 gpm)				20	1966	1999		\$37,000	\$52,762	2019					
	RW 16 14-inch	RW 16 (14")			34	1966	2012		\$2,000	\$2,230	2046					
	RW 16 Check Valve				34	1966	2012		\$2,000	\$2,230	2046					
	RW 10 16-inch	RW 10 (16")			20	1966	2012		\$2,000	\$2,230	2032	\$2,230				
	Influent Pump #4 (3,500 gpm)				20	1966	2012		\$50,000	\$55,750	2032	\$55,750				
	Influent Pump #1 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #2 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #3 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #4 VFD				15	1966	2015		\$10,000	\$10,760	2030					
	RW 17 (16-inch)	RW 17 (16")			20	1966	2012		\$2,000	\$2,230	2032	\$2,230				
	RW 17 Check Valve				20	1966	2012		\$2,000	\$2,230	2032	\$2,230				
Diesel Pump Inlet valve	RW 19 (12")			20	1966	2012		\$2,000	\$2,230	2032	\$2,230					
Diesel Pump				15	2005	2015		\$20,000	\$21,520	2030						
Diesel Motor				20	2005	2005		\$60,000	\$76,080	2025						
Hydro ranger				5	1966	2016		\$5,000	\$5,280	2021						
Grit Removal	Grit King			30	2017	2017		\$342,000	\$354,312	2047						
	Grit Classifier			15	2017	2017		\$150,000	\$155,400	2032						
Splitter Box	Structure			60	1966	1966		\$350,000	\$1,027,600	2026						
	Structure coating			20	2012	2012		\$40,000	\$44,600	2032	\$44,600					
	Effluent Valve to PC#2	RW 21 (24")		20	1966	1996	2018	\$4,700	\$6,951	2019						
	Effluent Valve to PC#1	RW 23 (20")		20	1966	2011		\$6,000	\$6,810	2031						
	Effluent Valve to Bypass Primary	RW 22 (20")		20	1966	2011		\$6,000	\$6,810	2031						
Primary Clar #1	Clarifier #1 Structure			70	1966	1966		\$500,000	\$1,468,000	2036						
	Clarifier #1 Coating			15	1966	2012		\$20,000	\$22,300	2027						
	Clarifier #1 Mechanism			50	1966	2012		\$140,000	\$156,100	2062						
	Clarifier #1 Drive			30	1966	2012		\$136,195	\$151,857	2042						
	Clarifier #1 Bridge			30	1966	2012		\$77,189	\$86,066	2042						
	Clarifier #1 Sludge Pump #1			5	1966	2018		\$20,000	\$20,000	2023						
	Clarifier #1 Sludge Pump #1 VFD			15	1966	2018		\$5,000	\$5,000	2033						
	Clarifier #1 Sludge Pump #2			5	1966	1990	2019	\$13,000	\$21,281	2020						
	Clarifier #1 Sludge Pump #2 VFD			15	1966	1998	2019	\$5,000	\$7,255	2020						
Primary Clar #2	Clarifier #2 Structure			50	1990	1990		\$900,000	\$1,473,300	2040						
	Clarifier #2 Coating		Redundancy Project	30	1990	1990	2018	\$25,000	\$40,925	2019						
	Clarifier #2 Mechanism		Redundancy Project	25	1990	1990	2018	\$250,000	\$409,250	2019						
	Clarifier #2 Drive		Redundancy Project	25	1990	1990	2018	\$90,500	\$148,149	2019						
	Clarifier #2 Bridge		Redundancy Project	25	1990	1990	2018	\$51,000	\$83,487	2019						
	Clarifier #2 Sludge Pump #4			4	1990	2017		\$20,000	\$20,720	2021						
	Clarifier #2 Sludge Pump #4 VFD			15	1990	2016		\$5,000	\$5,280	2031						
	Clarifier #2 Sludge Pump #6		rarely used	4	1990	1990	2019	\$13,000	\$21,281	2020						
	Clarifier #2 Sludge Pump #6 VFD		rarely used	15	1990	1990	2019	\$3,500	\$5,730	2020						
FFR	FFR #1 Structure			50	1986	1986		\$1,200,000	\$2,178,000	2036						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2052	2053	2054	2055	2056	2057
	FFR #1 Rotary Mechanism		after Redun. Proj	30	1986	1986	2022	\$250,000	\$453,750	2023		\$453,750				
	FFR #1 Media		after Redun. Proj	30	1986	1986	2022	\$450,000	\$816,750	2023		\$816,750				
	FFR Pump 1 Inlet Valve	FF1 (12")		20	1986	2013		\$3,000	\$3,315	2033		\$3,315				
	FFR Feed Pump #1			25	1986	2013		\$35,000	\$38,675	2038						
	FFR Feed Pump 1# VFD			15	1986	2013		\$10,000	\$11,050	2028						
	FFR Pump #1 Outlet Valve	FF3 (12")		20	1986	2013		\$3,000	\$3,315	2033		\$3,315				
	FFR Pump #2 Inlet Valve			20	1986	2011		\$3,000	\$3,405	2031						
	FFR Feed Pump #2	FF2 (12")		25	1986	2012		\$35,000	\$39,025	2037						
	FFR Feed Pump #2 VFD			15	1986	2008		\$10,000	\$11,980	2023						
	FFR Pump #2 Outlet Valve			20	1986	2011		\$3,000	\$3,405	2031						
	FFR Pump #3 Inlet Valve			20	2014	2014		\$3,000	\$3,291	2034			\$3,291			
	FFR Feed Pump #3			25	2014	2014		\$35,000	\$38,395	2039						
	FFR Pump #3 VFD			15	2014	2014		\$10,000	\$10,970	2029						
	FFR Pump #3 Outlet Valve			20	2014	2014		\$3,000	\$3,291	2034			\$3,291			
	FFR Blower #1			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #1 Motor			20	1986	2007		\$10,000	\$12,060	2027						
	FFR Blower #2			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #2 Motor			20	1986	2007		\$10,000	\$12,060	2027						
Sec Clar #1	Sec Clarifier #1 Structure			60	1966	1966		\$900,000	\$2,642,400	2026						
	Sec Clarifier #1 Coating		Redundancy Projec	60	1986	1986	2020	\$30,000	\$54,450	2021						
	Sec Clarifier #1 Mechanism		Redundancy Projec	60	1986	1986	2020	\$240,000	\$435,600	2021						
	Sec Clarifier #1 Drive		Redundancy Projec	31	1986	1986	2020	\$80,000	\$145,200	2021	\$145,200					
	Sec Clarifier #1 Bridge		Redundancy Projec	31	1986	1986	2020	\$100,000	\$181,500	2021	\$181,500					
	Sec Clarifier #1 Sludge Pump		Redundancy Projec	10	2013	2013	2020	\$8,000	\$8,840	2021						
	Sec Clarifier #1 Sludge Pump VFD		Redundancy Projec	15	1998	1998	2020	\$5,000	\$7,255	2021						
	Sec Clarifier #1 Scum Pump #1		Redundancy Projec	10	2010	2010	2020	\$20,000	\$23,160	2021						
	Sec Clarifier #1 Scum Pump #2		Redundancy Projec	10	2008	2008	2020	\$20,000	\$23,960	2021						
Thickener #1	Sludge Thickener #1 Structure		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Sludge Thickener #1 Coating		not used	100	1979	1979		\$25,000	\$54,075	2079						
	Thickener #1 Mechanism		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Thickener #1 Drive		not used	100	1979	1979		\$85,000	\$183,855	2079						
	Plant Air System		not used	25	1979	2004		\$60,000	\$78,300	2029			\$78,300			
Digester #1	Digester #1			70	1964	1964		\$480,000	\$1,431,360	2034						
	Digester #1 Coating			15	2005	2018		\$130,000	\$130,000	2033						
	Digester #1 Cleanout			10	1964	2017		\$300,000	\$310,800	2027						
	Digester #1 Gas Train Piping			25	1964	2005		\$228,170	\$289,320	2030			\$289,320			
	Site glasses			10	1964	2018		\$16,000	\$16,000	2028						
	APCD Pieces			10	1964	2005	2019	\$40,000	\$50,720	2020						
	Digester #1 Valves			25	1964	2005		\$25,000	\$31,700	2030			\$31,700			
Digester #2	Digester #2			50	1992	1992		\$900,000	\$1,424,700	2042						
	Digester #2 Coating			10	1992	2008	2018	\$100,000	\$119,800	2019						
	Digester #2 Cleanout			10	2008	2008	2018	\$50,000	\$59,900	2019						
	Digester #2 Gas Train Piping			25	1992	2009		\$228,170	\$267,415	2034						
	Site glasses			15	2009	2009		\$15,500	\$18,166	2024						
	APCD pieces			10	2009	2009	2019	\$40,000	\$46,880	2020						
	Digester #2 Valves			25	2009	2009		\$25,000	\$29,300	2034						
Heating & Mixing	Heating and Mixing Building			50	1982	1982		\$580,741	\$1,122,572	2032						
	Sludge Recirc Pump #1			30	1982	2017		\$21,000	\$21,756	2047						
	Recirc Pump #1 Motor			30	1982	2017		\$3,500	\$3,626	2047						
	Vaughn Chopper Pump			20	1982	2005		\$30,000	\$38,040	2025						
	Boiler			15	2007	2014		\$100,000	\$109,700	2029						
	Hot Water Recirc Pump			20	1982	2017		\$21,000	\$21,756	2037						\$21,756
	Hot Water Recirc Pump Motor			20	1982	2017		\$1,900	\$1,968	2037						\$1,968
	Heat Exchanger #1			30	1982	2007		\$7,617	\$9,186	2037						
	Sludge Feed Pump #1			7	2012	2012	2019	\$20,000	\$22,300	2020						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2052	2053	2054	2055	2056	2057
	Sludge Feed Pump #1 VFD			15	2015	2015		\$5,000	\$5,380	2030						
	Sludge Feed Pump #2			7	2012	2012	2019	\$20,000	\$22,300	2020						
	Sludge Feed Pump #2 VFD			15	2015	2015		\$5,000	\$5,380	2030						
	Macerator			15	2012	2015		\$20,000	\$21,520	2030						
Reclaim Water Station	Amiad Filters			20	2011	2011		\$10,000	\$11,350	2031						
Flare	Flare			25	1964	2003		\$4,200	\$5,620	2028	\$5,620					
Chemical Feed	Ferric Chloride Tank			15	1992	2007		\$10,000	\$12,060	2022						
	Ferric Chloride Feed Pump			15	1992	2016		\$5,000	\$5,280	2031						
	Sodium Hypochlorite Tank 6K			20	1979	2010		\$10,000	\$11,580	2030						
	Sodium Hypochlorite Tank 3K			20	1979	2010		\$6,000	\$6,948	2030						
	Sodium Hypochlorite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022						
	Sodium Bisulfite Tank			25	1990	1990	2018	\$6,000	\$9,822	2019						
	Sodium Bisulfite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022						
	CCT Chemical System			10	1990	2016		\$30,000	\$31,680	2026						
	Polymer Feed Systems			30	1990	1990		\$12,000	\$19,644	2020						
Effluent	Chlorine Contact Chamber			60	2007	2006		\$2,700,000	\$3,364,200	2066						
	Effluent Pump 100HP #1			30	2005	2006		\$45,000	\$56,070	2036						
	vfd			15	2005	2016		\$10,000	\$10,560	2031						
	Effluent Pump 100 HP #2			30	2005	2006		\$45,000	\$56,070	2036						
	vfd			10	2005	2005	2018	\$10,000	\$12,680	2019						
	Ocean Outfall			50	1964	1978		\$1,500,000	\$3,414,000	2028						
Flow Meters	ISCO 2100 Flow Meter			10	2016	2016		\$5,250	\$5,544	2026						
	ISCO 2100 Flow Meter			10	2017	2017		\$5,250	\$5,439	2027						
Solids Handling																
	Biosolids slab			40	2018	2018		\$50,000	\$50,000	2058						
	Centrifuge Building			50	2010	2010		\$1,000,000	\$1,158,000	2060						
	Centrifuge			15	2010	2017		\$1,000,000	\$1,036,000	2032						
	Centrifuge Macerator			15	2008	2008		\$25,000	\$29,950	2023						
Miscellaneous	Emergency Generator			20	2009	2009		\$600,000	\$703,200	2029						
	Cogeneration Unit	Idled		10	2009	2009	2019	\$470,000	\$1,500,000	2020						
	Plant Well Water System			20	1982	2005		\$163,147	\$206,870	2025						
	Plant Well Water pump			10	1982	2016		\$5,000	\$5,280	2026						
	Standby Water Well			20	1964	1999		\$4,500	\$6,417	2019						
	Operations Building			50	1982	1982		\$844,161	\$1,631,763	2032						
	Maintenance Shop			50	1982	1982		\$202,495	\$391,423	2032						
	Maintenance Building			50	1996	1996		\$205,000	\$303,195	2046						
	Facility Asphalt			30	1992	1992		\$20,000	\$31,660	2022	\$31,660					
	Digester #2 sump pump #1			10	1996	2009	2019	\$6,000	\$7,032	2020						
	Digester #2 sump pump #2			10	1996	2018		\$6,000	\$6,000	2028						
	Security System annual maintenance			1	2006	2006		\$1,500	\$1,500	NA	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
	IT System annual maintenance			1	2016	2016		\$2,000	\$2,000	NA	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
	SCADA System			10	2016	2016		\$100,000	\$105,600	2026						
	Fuel Tank			35	1980	2017		\$5,000	\$5,180	2052	\$5,180					
	Arroyo Grande Pipe Bridge			34	1966	2017		\$90,000	\$300,000	2051						
	MCC/Cogen Building			50	1982	1982		\$400,000	\$773,200	2032						
	MCC Electrical Boxes			40	1982	1982		\$180,000	\$347,940	2022						
	Plant Electrical			30	1966	2010		\$250,000	\$289,500	2040						
REDUNDANCY PROJECT																
Aeration Tank Feed Pump Station																
	Hatch and concrete coating			30	2021	2021			\$156,100	2051						
	Gates			25	2021	2021			\$184,400	2046						
	Valves			20	2021	2021			\$17,600	2041						
	Piping and Fittings			30	2021	2021			\$368,100	2051						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2052	2053	2054	2055	2056	2057
	Pumps			20	2021	2021			\$235,700	2041						
	Flow Meter			10	2021	2021			\$12,800	2031						
WAS Pumping Station																
	Concrete			60	2021	2021			\$9,100	2081						
	Pumps			20	2021	2021			\$61,100	2041						
	Valves			20	2021	2021			\$9,700	2041						
	Piping and Fittings			30	2021	2021			\$26,800	2051						
	Flow Meter			10	2021	2021			\$6,400	2031						
Activated Sludge Aeration Basins																
	Concrete			60	2021	2021			\$3,885,100	2081						
	Blowers			30	2021	2021			\$813,600	2051						
	Flow Meter			10	2021	2021			\$3,700	2031						
	Diffusers			30	2021	2021			\$614,800	2051						
	Gates			25	2021	2021			\$458,000	2046						
	Valves			20	2021	2021			\$800	2041						
	Piping and Fittings			30	2021	2021			\$426,500	2051						
Blower Building																
	Building CMU			50	2021	2021			\$346,800	2071						
	Concrete			60	2021	2021			\$272,000	2081						
New Secondary Clarifier																
	Concrete			60	2021	2021			\$2,642,400	2081						
	Gates			25	2021	2021			\$639,000	2046						
	Pumps			20	2021	2021			\$161,300	2041						
	Valves			20	2021	2021			\$39,000	2041						
	Piping and Fittings			30	2021	2021			\$160,200	2051						
WAS Thickening																
	Concrete Repair			30	2021	2021			\$5,700	2051						
	Gates			25	2021	2021			\$32,200	2046						
	Pumps			20	2021	2021			\$862,000	2041						
	Piping and Fittings			30	2021	2021			\$86,300	2051						
	Valves			20	2021	2021			\$17,900	2041						
	Flow Meter			10	2021	2021			\$17,900	2031						
Site Improvements																
				25	2021	2021			\$2,939,700	2046						
Instrumentation and Electrical																
				40	2021	2021			\$3,823,000	2061						
Emergency Generator																
	Generator			20	2021	2021			\$222,200	2041						
	Concrete			30	2021	2021			\$38,300	2051						
Flood Mitigation Improvements																
				29	2021	2021			\$338,600	2050						
	Total								\$57,798,270		\$543,210	\$1,341,500	\$88,382	\$324,520	\$3,500	\$469,596
	Cumulative (2018 \$)										\$68,531,635	\$69,873,134	\$69,961,516	\$70,286,036	\$70,289,536	\$70,759,132
	Cumulative (Escalated 2% per year)										\$115,133,146	\$118,784,328	\$120,333,808	\$122,297,702	\$123,709,583	\$125,951,255

SSLOCSD WWTP LIFE EXPECTANCY COST ANALYSIS

Equipment	Current Year	2018														
	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2058	2059	2060	2061	2062	2063
Headworks	Structure			60	1966	1966		\$350,000	\$1,027,600	2026						
	Structure Coating			25	1966	2001		\$30,000	\$41,340	2026						
	Parshall Flume Flow Transmitter			5	1966	2012	2018	\$5,000	\$5,575	2019						
	Influent Slide Gate			55	1966	1966		\$20,000	\$58,720	2021						
	Mechanical Bar Screens (2)			20	2017	2017		\$427,000	\$442,372	2037						
	Washer Compactor			15	2017	2017		\$150,000	\$155,400	2032						
	Influent Pump #1 (3,500 gpm)			20	1966	2012		\$50,000	\$55,750	2032						
	Pump 1 Effluent Valve	RW 14 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	RW 14 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					
	Pump 2 Influent Valve	RW 13 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	Influent Pump #2 (3,500 gpm)				20	1966	2013		\$50,000	\$55,250	2033					
	Pump 2 Effluent Valve	RW 15 (12")			20	1966	2012		\$2,000	\$2,230	2032					
	RW 15 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					
	RW12 (16-inch)	RW 12 (16")			35	1966	2012		\$2,000	\$2,230	2047					
	Influent Pump #3 (3,500 gpm)				20	1966	1999		\$37,000	\$52,762	2019					
	RW 16 14-inch	RW 16 (14")			34	1966	2012		\$2,000	\$2,230	2046					
	RW 16 Check Valve				34	1966	2012		\$2,000	\$2,230	2046					
	RW 10 16-inch	RW 10 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	Influent Pump #4 (3,500 gpm)				20	1966	2012		\$50,000	\$55,750	2032					
	Influent Pump #1 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #2 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #3 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #4 VFD				15	1966	2015		\$10,000	\$10,760	2030					
	RW 17 (16-inch)	RW 17 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	RW 17 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					
	Diesel Pump Inlet valve	RW 19 (12")			20	1966	2012		\$2,000	\$2,230	2032					
	Diesel Pump				15	2005	2015		\$20,000	\$21,520	2030					
Diesel Motor				20	2005	2005		\$60,000	\$76,080	2025						
Hydro ranger				5	1966	2016		\$5,000	\$5,280	2021						
Grit Removal	Grit King			30	2017	2017		\$342,000	\$354,312	2047						
	Grit Classifier			15	2017	2017		\$150,000	\$155,400	2032						
Splitter Box	Structure			60	1966	1966		\$350,000	\$1,027,600	2026						
	Structure coating			20	2012	2012		\$40,000	\$44,600	2032						
	Effluent Valve to PC#2	RW 21 (24")		20	1966	1996	2018	\$4,700	\$6,951	2019						
	Effluent Valve to PC#1	RW 23 (20")		20	1966	2011		\$6,000	\$6,810	2031						
	Effluent Valve to Bypass Primary	RW 22 (20")		20	1966	2011		\$6,000	\$6,810	2031						
Primary Clar #1	Clarifier #1 Structure			70	1966	1966		\$500,000	\$1,468,000	2036						
	Clarifier #1 Coating			15	1966	2012		\$20,000	\$22,300	2027						
	Clarifier #1 Mechanism			50	1966	2012		\$140,000	\$156,100	2062					\$156,100	
	Clarifier #1 Drive			30	1966	2012		\$136,195	\$151,857	2042						
	Clarifier #1 Bridge			30	1966	2012		\$77,189	\$86,066	2042						
	Clarifier #1 Sludge Pump #1			5	1966	2018		\$20,000	\$20,000	2023						
	Clarifier #1 Sludge Pump #1 VFD			15	1966	2018		\$5,000	\$5,000	2033						
	Clarifier #1 Sludge Pump #2			5	1966	1990	2019	\$13,000	\$21,281	2020						
	Clarifier #1 Sludge Pump #2 VFD			15	1966	1998	2019	\$5,000	\$7,255	2020						
Primary Clar #2	Clarifier #2 Structure			50	1990	1990		\$900,000	\$1,473,300	2040						
	Clarifier #2 Coating		Redundancy Project	30	1990	1990	2018	\$25,000	\$40,925	2019						
	Clarifier #2 Mechanism		Redundancy Project	25	1990	1990	2018	\$250,000	\$409,250	2019						
	Clarifier #2 Drive		Redundancy Project	25	1990	1990	2018	\$90,500	\$148,149	2019						
	Clarifier #2 Bridge		Redundancy Project	25	1990	1990	2018	\$51,000	\$83,487	2019						
	Clarifier #2 Sludge Pump #4			4	1990	2017		\$20,000	\$20,720	2021						
	Clarifier #2 Sludge Pump #4 VFD			15	1990	2016		\$5,000	\$5,280	2031						
	Clarifier #2 Sludge Pump #6		rarely used	4	1990	1990	2019	\$13,000	\$21,281	2020						
	Clarifier #2 Sludge Pump #6 VFD		rarely used	15	1990	1990	2019	\$3,500	\$5,730	2020						
FFR	FFR #1 Structure			50	1986	1986		\$1,200,000	\$2,178,000	2036						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2058	2059	2060	2061	2062	2063
	FFR #1 Rotary Mechanism		after Redun. Proj	30	1986	1986	2022	\$250,000	\$453,750	2023						
	FFR #1 Media		after Redun. Proj	30	1986	1986	2022	\$450,000	\$816,750	2023						
	FFR Pump 1 Inlet Valve	FF1 (12")		20	1986	2013		\$3,000	\$3,315	2033						
	FFR Feed Pump #1			25	1986	2013		\$35,000	\$38,675	2038						\$38,675
	FFR Feed Pump 1# VFD			15	1986	2013		\$10,000	\$11,050	2028						
	FFR Pump #1 Outlet Valve	FF3 (12")		20	1986	2013		\$3,000	\$3,315	2033						
	FFR Pump #2 Inlet Valve			20	1986	2011		\$3,000	\$3,405	2031						
	FFR Feed Pump #2	FF2 (12")		25	1986	2012		\$35,000	\$39,025	2037					\$39,025	
	FFR Feed Pump #2 VFD			15	1986	2008		\$10,000	\$11,980	2023						
	FFR Pump #2 Outlet Valve			20	1986	2011		\$3,000	\$3,405	2031						
	FFR Pump #3 Inlet Valve			20	2014	2014		\$3,000	\$3,291	2034						
	FFR Feed Pump #3			25	2014	2014		\$35,000	\$38,395	2039						
	FFR Pump #3 VFD			15	2014	2014		\$10,000	\$10,970	2029						
	FFR Pump #3 Outlet Valve			20	2014	2014		\$3,000	\$3,291	2034						
	FFR Blower #1			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #1 Motor			20	1986	2007		\$10,000	\$12,060	2027						
	FFR Blower #2			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #2 Motor			20	1986	2007		\$10,000	\$12,060	2027						
Sec Clar #1	Sec Clarifier #1 Structure			60	1966	1966		\$900,000	\$2,642,400	2026						
	Sec Clarifier #1 Coating		Redundancy Projec	60	1986	1986	2020	\$30,000	\$54,450	2021						
	Sec Clarifier #1 Mechanism		Redundancy Projec	60	1986	1986	2020	\$240,000	\$435,600	2021						
	Sec Clarifier #1 Drive		Redundancy Projec	31	1986	1986	2020	\$80,000	\$145,200	2021						
	Sec Clarifier #1 Bridge		Redundancy Projec	31	1986	1986	2020	\$100,000	\$181,500	2021						
	Sec Clarifier #1 Sludge Pump		Redundancy Projec	10	2013	2013	2020	\$8,000	\$8,840	2021						
	Sec Clarifier #1 Sludge Pump VFD		Redundancy Projec	15	1998	1998	2020	\$5,000	\$7,255	2021						
	Sec Clarifier #1 Scum Pump #1		Redundancy Projec	10	2010	2010	2020	\$20,000	\$23,160	2021						
	Sec Clarifier #1 Scum Pump #2		Redundancy Projec	10	2008	2008	2020	\$20,000	\$23,960	2021						
Thickener #1	Sludge Thickener #1 Structure		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Sludge Thickener #1 Coating		not used	100	1979	1979		\$25,000	\$54,075	2079						
	Thickener #1 Mechanism		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Thickener #1 Drive		not used	100	1979	1979		\$85,000	\$183,855	2079						
	Plant Air System		not used	25	1979	2004		\$60,000	\$78,300	2029						
Digester #1	Digester #1			70	1964	1964		\$480,000	\$1,431,360	2034						
	Digester #1 Coating			15	2005	2018		\$130,000	\$130,000	2033						
	Digester #1 Cleanout			10	1964	2017		\$300,000	\$310,800	2027						
	Digester #1 Gas Train Piping			25	1964	2005		\$228,170	\$289,320	2030						
	Site glasses			10	1964	2018		\$16,000	\$16,000	2028						
	APCD Pieces			10	1964	2005	2019	\$40,000	\$50,720	2020						
	Digester #1 Valves			25	1964	2005		\$25,000	\$31,700	2030						
Digester #2	Digester #2			50	1992	1992		\$900,000	\$1,424,700	2042						
	Digester #2 Coating			10	1992	2008	2018	\$100,000	\$119,800	2019						
	Digester #2 Cleanout			10	2008	2008	2018	\$50,000	\$59,900	2019						
	Digester #2 Gas Train Piping			25	1992	2009		\$228,170	\$267,415	2034	\$267,415					
	Site glasses			15	2009	2009		\$15,500	\$18,166	2024						
	APCD pieces			10	2009	2009	2019	\$40,000	\$46,880	2020						
	Digester #2 Valves			25	2009	2009		\$25,000	\$29,300	2034	\$29,300					
Heating & Mixing	Heating and Mixing Building			50	1982	1982		\$580,741	\$1,122,572	2032						
	Sludge Recirc Pump #1			30	1982	2017		\$21,000	\$21,756	2047						
	Recirc Pump #1 Motor			30	1982	2017		\$3,500	\$3,626	2047						
	Vaughn Chopper Pump			20	1982	2005		\$30,000	\$38,040	2025						
	Boiler			15	2007	2014		\$100,000	\$109,700	2029						
	Hot Water Recirc Pump			20	1982	2017		\$21,000	\$21,756	2037						
	Hot Water Recirc Pump Motor			20	1982	2017		\$1,900	\$1,968	2037						
	Heat Exchanger #1			30	1982	2007		\$7,617	\$9,186	2037						
	Sludge Feed Pump #1			7	2012	2012	2019	\$20,000	\$22,300	2020						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2058	2059	2060	2061	2062	2063
	Sludge Feed Pump #1 VFD			15	2015	2015		\$5,000	\$5,380	2030						
	Sludge Feed Pump #2			7	2012	2012	2019	\$20,000	\$22,300	2020						
	Sludge Feed Pump #2 VFD			15	2015	2015		\$5,000	\$5,380	2030						
	Macerator			15	2012	2015		\$20,000	\$21,520	2030						
Reclaim Water Station	Amiad Filters			20	2011	2011		\$10,000	\$11,350	2031						
Flare	Flare			25	1964	2003		\$4,200	\$5,620	2028						
Chemical Feed	Ferric Chloride Tank			15	1992	2007		\$10,000	\$12,060	2022						
	Ferric Chloride Feed Pump			15	1992	2016		\$5,000	\$5,280	2031						
	Sodium Hypochlorite Tank 6K			20	1979	2010		\$10,000	\$11,580	2030						
	Sodium Hypochlorite Tank 3K			20	1979	2010		\$6,000	\$6,948	2030						
	Sodium Hypochlorite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022						
	Sodium Bisulfite Tank			25	1990	1990	2018	\$6,000	\$9,822	2019						
	Sodium Bisulfite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022						
	CCT Chemical System			10	1990	2016		\$30,000	\$31,680	2026						
	Polymer Feed Systems			30	1990	1990		\$12,000	\$19,644	2020						
Effluent	Chlorine Contact Chamber			60	2007	2006		\$2,700,000	\$3,364,200	2066						
	Effluent Pump 100HP #1			30	2005	2006		\$45,000	\$56,070	2036						
	vfd			15	2005	2016		\$10,000	\$10,560	2031						
	Effluent Pump 100 HP #2			30	2005	2006		\$45,000	\$56,070	2036						
	vfd			10	2005	2005	2018	\$10,000	\$12,680	2019						
	Ocean Outfall			50	1964	1978		\$1,500,000	\$3,414,000	2028						
Flow Meters	ISCO 2100 Flow Meter			10	2016	2016		\$5,250	\$5,544	2026						
	ISCO 2100 Flow Meter			10	2017	2017		\$5,250	\$5,439	2027						
Solids Handling																
	Biosolids slab			40	2018	2018		\$50,000	\$50,000	2058	\$50,000					
	Centrifuge Building			50	2010	2010		\$1,000,000	\$1,158,000	2060		\$1,158,000				
	Centrifuge			15	2010	2017		\$1,000,000	\$1,036,000	2032						
	Centrifuge Macerator			15	2008	2008		\$25,000	\$29,950	2023						
Miscellaneous	Emergency Generator			20	2009	2009		\$600,000	\$703,200	2029						
	Cogeneration Unit		Idled	10	2009	2009	2019	\$470,000	\$1,500,000	2020						
	Plant Well Water System			20	1982	2005		\$163,147	\$206,870	2025						
	Plant Well Water pump			10	1982	2016		\$5,000	\$5,280	2026						
	Standby Water Well			20	1964	1999		\$4,500	\$6,417	2019						
	Operations Building			50	1982	1982		\$844,161	\$1,631,763	2032						
	Maintenance Shop			50	1982	1982		\$202,495	\$391,423	2032						
	Maintenance Building			50	1996	1996		\$205,000	\$303,195	2046						
	Facility Asphalt			30	1992	1992		\$20,000	\$31,660	2022						
	Digester #2 sump pump #1			10	1996	2009	2019	\$6,000	\$7,032	2020						
	Digester #2 sump pump #2			10	1996	2018		\$6,000	\$6,000	2028						
	Security System annual maintenance			1	2006	2006		\$1,500	\$1,500	NA	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
	IT System annual maintenance			1	2016	2016		\$2,000	\$2,000	NA	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
	SCADA System			10	2016	2016		\$100,000	\$105,600	2026						
	Fuel Tank			35	1980	2017		\$5,000	\$5,180	2052						
	Arroyo Grande Pipe Bridge			34	1966	2017		\$90,000	\$300,000	2051						
	MCC/Cogen Building			50	1982	1982		\$400,000	\$773,200	2032						
	MCC Electrical Boxes			40	1982	1982		\$180,000	\$347,940	2022					\$347,940	
	Plant Electrical			30	1966	2010		\$250,000	\$289,500	2040						
REDUNDANCY PROJECT																
Aeration Tank Feed Pump Station																
	Hatch and concrete coating			30	2021	2021			\$156,100	2051						
	Gates			25	2021	2021			\$184,400	2046						
	Valves			20	2021	2021			\$17,600	2041						
	Piping and Fittings			30	2021	2021			\$368,100	2051						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2058	2059	2060	2061	2062	2063
	Pumps			20	2021	2021			\$235,700	2041						
	Flow Meter			10	2021	2021			\$12,800	2031						
WAS Pumping Station																
	Concrete			60	2021	2021			\$9,100	2081						
	Pumps			20	2021	2021			\$61,100	2041						
	Valves			20	2021	2021			\$9,700	2041						
	Piping and Fittings			30	2021	2021			\$26,800	2051						
	Flow Meter			10	2021	2021			\$6,400	2031						
Activated Sludge Aeration Basins																
	Concrete			60	2021	2021			\$3,885,100	2081						
	Blowers			30	2021	2021			\$813,600	2051						
	Flow Meter			10	2021	2021			\$3,700	2031						
	Diffusers			30	2021	2021			\$614,800	2051						
	Gates			25	2021	2021			\$458,000	2046						
	Valves			20	2021	2021			\$800	2041						
	Piping and Fittings			30	2021	2021			\$426,500	2051						
Blower Building																
	Building CMU			50	2021	2021			\$346,800	2071						
	Concrete			60	2021	2021			\$272,000	2081						
New Secondary Clarifier																
	Concrete			60	2021	2021			\$2,642,400	2081						
	Gates			25	2021	2021			\$639,000	2046						
	Pumps			20	2021	2021			\$161,300	2041						
	Valves			20	2021	2021			\$39,000	2041						
	Piping and Fittings			30	2021	2021			\$160,200	2051						
WAS Thickening																
	Concrete Repair			30	2021	2021			\$5,700	2051						
	Gates			25	2021	2021			\$32,200	2046						
	Pumps			20	2021	2021			\$862,000	2041						
	Piping and Fittings			30	2021	2021			\$86,300	2051						
	Valves			20	2021	2021			\$17,900	2041						
	Flow Meter			10	2021	2021			\$17,900	2031						
Site Improvements																
				25	2021	2021			\$2,939,700	2046						
Instrumentation and Electrical																
				40	2021	2021			\$3,823,000	2061				\$3,823,000		
Emergency Generator																
	Generator			20	2021	2021			\$222,200	2041						
	Concrete			30	2021	2021			\$38,300	2051						
Flood Mitigation Improvements																
				29	2021	2021			\$338,600	2050						
	Total								\$57,798,270		\$53,500	\$300,215	\$1,161,500	\$3,826,500	\$546,565	\$42,175
	Cumulative (2018 \$)										\$70,812,632	\$71,112,847	\$72,274,347	\$76,100,847	\$76,647,412	\$76,689,587
	Cumulative (Escalated 2% per year)										\$127,462,738	\$129,425,382	\$132,984,799	\$141,547,576	\$144,097,135	\$145,710,216

SSLOCSD WWTP LIFE EXPECTANCY COST ANALYSIS

Equipment	Current Year	2018														
	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2064	2065	2066	2067	2068	2069
Headworks	Structure			60	1966	1966		\$350,000	\$1,027,600	2026						
	Structure Coating			25	1966	2001		\$30,000	\$41,340	2026						
	Parshall Flume Flow Transmitter			5	1966	2012	2018	\$5,000	\$5,575	2019						
	Influent Slide Gate			55	1966	1966		\$20,000	\$58,720	2021						
	Mechanical Bar Screens (2)			20	2017	2017		\$427,000	\$442,372	2037						
	Washer Compactor			15	2017	2017		\$150,000	\$155,400	2032						
	Influent Pump #1 (3,500 gpm)			20	1966	2012		\$50,000	\$55,750	2032						
	Pump 1 Effluent Valve	RW 14 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	RW 14 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					
	Pump 2 Influent Valve	RW 13 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	Influent Pump #2 (3,500 gpm)				20	1966	2013		\$50,000	\$55,250	2033					
	Pump 2 Effluent Valve	RW 15 (12")			20	1966	2012		\$2,000	\$2,230	2032					
	RW 15 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					
	RW12 (16-inch)	RW 12 (16")			35	1966	2012		\$2,000	\$2,230	2047					
	Influent Pump #3 (3,500 gpm)				20	1966	1999		\$37,000	\$52,762	2019					
	RW 16 14-inch	RW 16 (14")			34	1966	2012		\$2,000	\$2,230	2046					
	RW 16 Check Valve				34	1966	2012		\$2,000	\$2,230	2046					
	RW 10 16-inch	RW 10 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	Influent Pump #4 (3,500 gpm)				20	1966	2012		\$50,000	\$55,750	2032					
	Influent Pump #1 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #2 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #3 VFD				15	2014	2014		\$10,000	\$10,970	2029					
	Influent Pump #4 VFD				15	1966	2015		\$10,000	\$10,760	2030					
	RW 17 (16-inch)	RW 17 (16")			20	1966	2012		\$2,000	\$2,230	2032					
	RW 17 Check Valve				20	1966	2012		\$2,000	\$2,230	2032					
	Diesel Pump Inlet valve	RW 19 (12")			20	1966	2012		\$2,000	\$2,230	2032					
	Diesel Pump				15	2005	2015		\$20,000	\$21,520	2030					
Diesel Motor				20	2005	2005		\$60,000	\$76,080	2025						
Hydro ranger				5	1966	2016		\$5,000	\$5,280	2021						
Grit Removal	Grit King			30	2017	2017		\$342,000	\$354,312	2047						
	Grit Classifier			15	2017	2017		\$150,000	\$155,400	2032						
Splitter Box	Structure			60	1966	1966		\$350,000	\$1,027,600	2026						
	Structure coating			20	2012	2012		\$40,000	\$44,600	2032						
	Effluent Valve to PC#2	RW 21 (24")		20	1966	1996	2018	\$4,700	\$6,951	2019						
	Effluent Valve to PC#1	RW 23 (20")		20	1966	2011		\$6,000	\$6,810	2031						
	Effluent Valve to Bypass Primary	RW 22 (20")		20	1966	2011		\$6,000	\$6,810	2031						
Primary Clar #1	Clarifier #1 Structure			70	1966	1966		\$500,000	\$1,468,000	2036						
	Clarifier #1 Coating			15	1966	2012		\$20,000	\$22,300	2027						
	Clarifier #1 Mechanism			50	1966	2012		\$140,000	\$156,100	2062						
	Clarifier #1 Drive			30	1966	2012		\$136,195	\$151,857	2042						
	Clarifier #1 Bridge			30	1966	2012		\$77,189	\$86,066	2042						
	Clarifier #1 Sludge Pump #1			5	1966	2018		\$20,000	\$20,000	2023						
	Clarifier #1 Sludge Pump #1 VFD			15	1966	2018		\$5,000	\$5,000	2033						
	Clarifier #1 Sludge Pump #2			5	1966	1990	2019	\$13,000	\$21,281	2020						
	Clarifier #1 Sludge Pump #2 VFD			15	1966	1998	2019	\$5,000	\$7,255	2020						
Primary Clar #2	Clarifier #2 Structure			50	1990	1990		\$900,000	\$1,473,300	2040						
	Clarifier #2 Coating		Redundancy Project	30	1990	1990	2018	\$25,000	\$40,925	2019						
	Clarifier #2 Mechanism		Redundancy Project	25	1990	1990	2018	\$250,000	\$409,250	2019						
	Clarifier #2 Drive		Redundancy Project	25	1990	1990	2018	\$90,500	\$148,149	2019						
	Clarifier #2 Bridge		Redundancy Project	25	1990	1990	2018	\$51,000	\$83,487	2019						
	Clarifier #2 Sludge Pump #4			4	1990	2017		\$20,000	\$20,720	2021						
	Clarifier #2 Sludge Pump #4 VFD			15	1990	2016		\$5,000	\$5,280	2031						
	Clarifier #2 Sludge Pump #6		rarely used	4	1990	1990	2019	\$13,000	\$21,281	2020						
	Clarifier #2 Sludge Pump #6 VFD		rarely used	15	1990	1990	2019	\$3,500	\$5,730	2020						
FFR	FFR #1 Structure			50	1986	1986		\$1,200,000	\$2,178,000	2036						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2064	2065	2066	2067	2068	2069
	FFR #1 Rotary Mechanism		after Redun. Proj	30	1986	1986	2022	\$250,000	\$453,750	2023						
	FFR #1 Media		after Redun. Proj	30	1986	1986	2022	\$450,000	\$816,750	2023						
	FFR Pump 1 Inlet Valve	FF1 (12")		20	1986	2013		\$3,000	\$3,315	2033						
	FFR Feed Pump #1			25	1986	2013		\$35,000	\$38,675	2038						
	FFR Feed Pump 1# VFD			15	1986	2013		\$10,000	\$11,050	2028						
	FFR Pump #1 Outlet Valve	FF3 (12")		20	1986	2013		\$3,000	\$3,315	2033						
	FFR Pump #2 Inlet Valve			20	1986	2011		\$3,000	\$3,405	2031						
	FFR Feed Pump #2	FF2 (12")		25	1986	2012		\$35,000	\$39,025	2037						
	FFR Feed Pump #2 VFD			15	1986	2008		\$10,000	\$11,980	2023						
	FFR Pump #2 Outlet Valve			20	1986	2011		\$3,000	\$3,405	2031						
	FFR Pump #3 Inlet Valve			20	2014	2014		\$3,000	\$3,291	2034						
	FFR Feed Pump #3			25	2014	2014		\$35,000	\$38,395	2039	\$38,395					
	FFR Pump #3 VFD			15	2014	2014		\$10,000	\$10,970	2029						
	FFR Pump #3 Outlet Valve			20	2014	2014		\$3,000	\$3,291	2034						
	FFR Blower #1			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #1 Motor			20	1986	2007		\$10,000	\$12,060	2027						
	FFR Blower #2			30	1986	1986	2019	\$3,000	\$5,445	2020						
	FFR Blower #2 Motor			20	1986	2007		\$10,000	\$12,060	2027						
Sec Clar #1	Sec Clarifier #1 Structure			60	1966	1966		\$900,000	\$2,642,400	2026						
	Sec Clarifier #1 Coating		Redundancy Projec	60	1986	1986	2020	\$30,000	\$54,450	2021						
	Sec Clarifier #1 Mechanism		Redundancy Projec	60	1986	1986	2020	\$240,000	\$435,600	2021						
	Sec Clarifier #1 Drive		Redundancy Projec	31	1986	1986	2020	\$80,000	\$145,200	2021						
	Sec Clarifier #1 Bridge		Redundancy Projec	31	1986	1986	2020	\$100,000	\$181,500	2021						
	Sec Clarifier #1 Sludge Pump		Redundancy Projec	10	2013	2013	2020	\$8,000	\$8,840	2021						
	Sec Clarifier #1 Sludge Pump VFD		Redundancy Projec	15	1998	1998	2020	\$5,000	\$7,255	2021						
	Sec Clarifier #1 Scum Pump #1		Redundancy Projec	10	2010	2010	2020	\$20,000	\$23,160	2021						
	Sec Clarifier #1 Scum Pump #2		Redundancy Projec	10	2008	2008	2020	\$20,000	\$23,960	2021						
Thickener #1	Sludge Thickener #1 Structure		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Sludge Thickener #1 Coating		not used	100	1979	1979		\$25,000	\$54,075	2079						
	Thickener #1 Mechanism		not used	100	1979	1979		\$35,000	\$75,705	2079						
	Thickener #1 Drive		not used	100	1979	1979		\$85,000	\$183,855	2079						
	Plant Air System		not used	25	1979	2004		\$60,000	\$78,300	2029						
Digester #1	Digester #1			70	1964	1964		\$480,000	\$1,431,360	2034						
	Digester #1 Coating			15	2005	2018		\$130,000	\$130,000	2033						
	Digester #1 Cleanout			10	1964	2017		\$300,000	\$310,800	2027						
	Digester #1 Gas Train Piping			25	1964	2005		\$228,170	\$289,320	2030						
	Site glasses			10	1964	2018		\$16,000	\$16,000	2028						
	APCD Pieces			10	1964	2005	2019	\$40,000	\$50,720	2020						
	Digester #1 Valves			25	1964	2005		\$25,000	\$31,700	2030						
Digester #2	Digester #2			50	1992	1992		\$900,000	\$1,424,700	2042						
	Digester #2 Coating			10	1992	2008	2018	\$100,000	\$119,800	2019						
	Digester #2 Cleanout			10	2008	2008	2018	\$50,000	\$59,900	2019						
	Digester #2 Gas Train Piping			25	1992	2009		\$228,170	\$267,415	2034						
	Site glasses			15	2009	2009		\$15,500	\$18,166	2024						
	APCD pieces			10	2009	2009	2019	\$40,000	\$46,880	2020						
	Digester #2 Valves			25	2009	2009		\$25,000	\$29,300	2034						
Heating & Mixing	Heating and Mixing Building			50	1982	1982		\$580,741	\$1,122,572	2032						
	Sludge Recirc Pump #1			30	1982	2017		\$21,000	\$21,756	2047						
	Recirc Pump #1 Motor			30	1982	2017		\$3,500	\$3,626	2047						
	Vaughn Chopper Pump			20	1982	2005		\$30,000	\$38,040	2025						
	Boiler			15	2007	2014		\$100,000	\$109,700	2029						
	Hot Water Recirc Pump			20	1982	2017		\$21,000	\$21,756	2037						
	Hot Water Recirc Pump Motor			20	1982	2017		\$1,900	\$1,968	2037						
	Heat Exchanger #1			30	1982	2007		\$7,617	\$9,186	2037				\$9,186		
	Sludge Feed Pump #1			7	2012	2012	2019	\$20,000	\$22,300	2020						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2064	2065	2066	2067	2068	2069
	Sludge Feed Pump #1 VFD			15	2015	2015		\$5,000	\$5,380	2030						
	Sludge Feed Pump #2			7	2012	2012	2019	\$20,000	\$22,300	2020						
	Sludge Feed Pump #2 VFD			15	2015	2015		\$5,000	\$5,380	2030						
	Macerator			15	2012	2015		\$20,000	\$21,520	2030						
Reclaim Water Station	Amiad Filters			20	2011	2011		\$10,000	\$11,350	2031						
Flare	Flare			25	1964	2003		\$4,200	\$5,620	2028						
Chemical Feed	Ferric Chloride Tank			15	1992	2007		\$10,000	\$12,060	2022						
	Ferric Chloride Feed Pump			15	1992	2016		\$5,000	\$5,280	2031						
	Sodium Hypochlorite Tank 6K			20	1979	2010		\$10,000	\$11,580	2030						
	Sodium Hypochlorite Tank 3K			20	1979	2010		\$6,000	\$6,948	2030						
	Sodium Hypochlorite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022						
	Sodium Bisulfite Tank			25	1990	1990	2018	\$6,000	\$9,822	2019						
	Sodium Bisulfite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022						
	CCT Chemical System			10	1990	2016		\$30,000	\$31,680	2026						
	Polymer Feed Systems			30	1990	1990		\$12,000	\$19,644	2020						
Effluent	Chlorine Contact Chamber			60	2007	2006		\$2,700,000	\$3,364,200	2066			\$3,364,200			
	Effluent Pump 100HP #1			30	2005	2006		\$45,000	\$56,070	2036			\$56,070			
	vfd			15	2005	2016		\$10,000	\$10,560	2031						
	Effluent Pump 100 HP #2			30	2005	2006		\$45,000	\$56,070	2036			\$56,070			
	vfd			10	2005	2005	2018	\$10,000	\$12,680	2019						
	Ocean Outfall			50	1964	1978		\$1,500,000	\$3,414,000	2028						
Flow Meters	ISCO 2100 Flow Meter			10	2016	2016		\$5,250	\$5,544	2026						
	ISCO 2100 Flow Meter			10	2017	2017		\$5,250	\$5,439	2027						
Solids Handling																
	Biosolids slab			40	2018	2018		\$50,000	\$50,000	2058						
	Centrifuge Building			50	2010	2010		\$1,000,000	\$1,158,000	2060						
	Centrifuge			15	2010	2017		\$1,000,000	\$1,036,000	2032						
	Centrifuge Macerator			15	2008	2008		\$25,000	\$29,950	2023						
Miscellaneous	Emergency Generator			20	2009	2009		\$600,000	\$703,200	2029						
	Cogeneration Unit	Idled		10	2009	2009	2019	\$470,000	\$1,500,000	2020						
	Plant Well Water System			20	1982	2005		\$163,147	\$206,870	2025						
	Plant Well Water pump			10	1982	2016		\$5,000	\$5,280	2026						
	Standby Water Well			20	1964	1999		\$4,500	\$6,417	2019						
	Operations Building			50	1982	1982		\$844,161	\$1,631,763	2032						
	Maintenance Shop			50	1982	1982		\$202,495	\$391,423	2032						
	Maintenance Building			50	1996	1996		\$205,000	\$303,195	2046						
	Facility Asphalt			30	1992	1992		\$20,000	\$31,660	2022						
	Digester #2 sump pump #1			10	1996	2009	2019	\$6,000	\$7,032	2020						
	Digester #2 sump pump #2			10	1996	2018		\$6,000	\$6,000	2028						
	Security System annual maintenance			1	2006	2006		\$1,500	\$1,500	NA	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
	IT System annual maintenance			1	2016	2016		\$2,000	\$2,000	NA	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
	SCADA System			10	2016	2016		\$100,000	\$105,600	2026						
	Fuel Tank			35	1980	2017		\$5,000	\$5,180	2052						
	Arroyo Grande Pipe Bridge			34	1966	2017		\$90,000	\$300,000	2051						
	MCC/Cogen Building			50	1982	1982		\$400,000	\$773,200	2032						
	MCC Electrical Boxes			40	1982	1982		\$180,000	\$347,940	2022						
	Plant Electrical			30	1966	2010		\$250,000	\$289,500	2040						
REDUNDANCY PROJECT																
Aeration Tank Feed Pump Station																
	Hatch and concrete coating			30	2021	2021			\$156,100	2051						
	Gates			25	2021	2021			\$184,400	2046						
	Valves			20	2021	2021			\$17,600	2041						
	Piping and Fittings			30	2021	2021			\$368,100	2051						

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2064	2065	2066	2067	2068	2069
	Pumps			20	2021	2021			\$235,700	2041						
	Flow Meter			10	2021	2021			\$12,800	2031						
WAS Pumping Station																
	Concrete			60	2021	2021			\$9,100	2081						
	Pumps			20	2021	2021			\$61,100	2041						
	Valves			20	2021	2021			\$9,700	2041						
	Piping and Fittings			30	2021	2021			\$26,800	2051						
	Flow Meter			10	2021	2021			\$6,400	2031						
Activated Sludge Aeration Basins																
	Concrete			60	2021	2021			\$3,885,100	2081						
	Blowers			30	2021	2021			\$813,600	2051						
	Flow Meter			10	2021	2021			\$3,700	2031						
	Diffusers			30	2021	2021			\$614,800	2051						
	Gates			25	2021	2021			\$458,000	2046						
	Valves			20	2021	2021			\$800	2041						
	Piping and Fittings			30	2021	2021			\$426,500	2051						
Blower Building																
	Building CMU			50	2021	2021			\$346,800	2071						
	Concrete			60	2021	2021			\$272,000	2081						
New Secondary Clarifier																
	Concrete			60	2021	2021			\$2,642,400	2081						
	Gates			25	2021	2021			\$639,000	2046						
	Pumps			20	2021	2021			\$161,300	2041						
	Valves			20	2021	2021			\$39,000	2041						
	Piping and Fittings			30	2021	2021			\$160,200	2051						
WAS Thickening																
	Concrete Repair			30	2021	2021			\$5,700	2051						
	Gates			25	2021	2021			\$32,200	2046						
	Pumps			20	2021	2021			\$862,000	2041						
	Piping and Fittings			30	2021	2021			\$86,300	2051						
	Valves			20	2021	2021			\$17,900	2041						
	Flow Meter			10	2021	2021			\$17,900	2031						
Site Improvements																
				25	2021	2021			\$2,939,700	2046						
Instrumentation and Electrical																
				40	2021	2021			\$3,823,000	2061						
Emergency Generator																
	Generator			20	2021	2021			\$222,200	2041						
	Concrete			30	2021	2021			\$38,300	2051						
Flood Mitigation Improvements																
				29	2021	2021			\$338,600	2050						
	Total								\$57,798,270		\$41,895	\$3,500	\$3,479,840	\$12,686	\$3,500	\$3,500
	Cumulative (2018 \$)										\$76,731,482	\$76,734,982	\$80,214,822	\$80,227,508	\$80,231,008	\$80,234,508
	Cumulative (Escalated 2% per year)										\$147,324,446	\$148,865,866	\$157,221,052	\$158,850,466	\$160,462,016	\$162,073,706

SSLOCSD WWTP LIFE EXPECTANCY COST ANALYSIS

Equipment	Current Year	2018											
	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2070	2071	
Headworks	Structure			60	1966	1966		\$350,000	\$1,027,600	2026			
	Structure Coating			25	1966	2001		\$30,000	\$41,340	2026			
	Parshall Flume Flow Transmitter			5	1966	2012	2018	\$5,000	\$5,575	2019			
	Influent Slide Gate			55	1966	1966		\$20,000	\$58,720	2021			
	Mechanical Bar Screens (2)			20	2017	2017		\$427,000	\$442,372	2037			
	Washer Compactor			15	2017	2017		\$150,000	\$155,400	2032			
	Influent Pump #1 (3,500 gpm)			20	1966	2012		\$50,000	\$55,750	2032			
	Pump 1 Effluent Valve	RW 14 (16")			20	1966	2012		\$2,000	\$2,230	2032		
	RW 14 Check Valve				20	1966	2012		\$2,000	\$2,230	2032		
	Pump 2 Influent Valve	RW 13 (16")			20	1966	2012		\$2,000	\$2,230	2032		
	Influent Pump #2 (3,500 gpm)				20	1966	2013		\$50,000	\$55,250	2033		
	Pump 2 Effluent Valve	RW 15 (12")			20	1966	2012		\$2,000	\$2,230	2032		
	RW 15 Check Valve				20	1966	2012		\$2,000	\$2,230	2032		
	RW12 (16-inch)	RW 12 (16")			35	1966	2012		\$2,000	\$2,230	2047		
	Influent Pump #3 (3,500 gpm)				20	1966	1999		\$37,000	\$52,762	2019		
	RW 16 14-inch	RW 16 (14")			34	1966	2012		\$2,000	\$2,230	2046		
	RW 16 Check Valve				34	1966	2012		\$2,000	\$2,230	2046		
	RW 10 16-inch	RW 10 (16")			20	1966	2012		\$2,000	\$2,230	2032		
	Influent Pump #4 (3,500 gpm)				20	1966	2012		\$50,000	\$55,750	2032		
	Influent Pump #1 VFD				15	2014	2014		\$10,000	\$10,970	2029		
	Influent Pump #2 VFD				15	2014	2014		\$10,000	\$10,970	2029		
	Influent Pump #3 VFD				15	2014	2014		\$10,000	\$10,970	2029		
	Influent Pump #4 VFD				15	1966	2015		\$10,000	\$10,760	2030		
	RW 17 (16-inch)	RW 17 (16")			20	1966	2012		\$2,000	\$2,230	2032		
	RW 17 Check Valve				20	1966	2012		\$2,000	\$2,230	2032		
	Diesel Pump Inlet valve	RW 19 (12")			20	1966	2012		\$2,000	\$2,230	2032		
	Diesel Pump				15	2005	2015		\$20,000	\$21,520	2030		
	Diesel Motor				20	2005	2005		\$60,000	\$76,080	2025		
	Hydro ranger				5	1966	2016		\$5,000	\$5,280	2021		
	Grit Removal	Grit King			30	2017	2017		\$342,000	\$354,312	2047		
		Grit Classifier			15	2017	2017		\$150,000	\$155,400	2032		
	Splitter Box	Structure			60	1966	1966		\$350,000	\$1,027,600	2026		
Structure coating				20	2012	2012		\$40,000	\$44,600	2032			
Effluent Valve to PC#2		RW 21 (24")			20	1966	1996	2018	\$4,700	\$6,951	2019		
Effluent Valve to PC#1		RW 23 (20")			20	1966	2011		\$6,000	\$6,810	2031		
	Effluent Valve to Bypass Primary	RW 22 (20")			20	1966	2011		\$6,000	\$6,810	2031		
Primary Clar #1	Clarifier #1 Structure			70	1966	1966		\$500,000	\$1,468,000	2036			
	Clarifier #1 Coating			15	1966	2012		\$20,000	\$22,300	2027			
	Clarifier #1 Mechanism			50	1966	2012		\$140,000	\$156,100	2062			
	Clarifier #1 Drive			30	1966	2012		\$136,195	\$151,857	2042			
	Clarifier #1 Bridge			30	1966	2012		\$77,189	\$86,066	2042			
	Clarifier #1 Sludge Pump #1			5	1966	2018		\$20,000	\$20,000	2023			
	Clarifier #1 Sludge Pump #1 VFD			15	1966	2018		\$5,000	\$5,000	2033			
	Clarifier #1 Sludge Pump #2			5	1966	1990	2019	\$13,000	\$21,281	2020			
	Clarifier #1 Sludge Pump #2 VFD			15	1966	1998	2019	\$5,000	\$7,255	2020			
Primary Clar #2	Clarifier #2 Structure			50	1990	1990		\$900,000	\$1,473,300	2040			
	Clarifier #2 Coating		Redundancy Project	30	1990	1990	2018	\$25,000	\$40,925	2019			
	Clarifier #2 Mechanism		Redundancy Project	25	1990	1990	2018	\$250,000	\$409,250	2019			
	Clarifier #2 Drive		Redundancy Project	25	1990	1990	2018	\$90,500	\$148,149	2019			
	Clarifier #2 Bridge		Redundancy Project	25	1990	1990	2018	\$51,000	\$83,487	2019			
	Clarifier #2 Sludge Pump #4			4	1990	2017		\$20,000	\$20,720	2021			
	Clarifier #2 Sludge Pump #4 VFD			15	1990	2016		\$5,000	\$5,280	2031			
	Clarifier #2 Sludge Pump #6		rarely used	4	1990	1990	2019	\$13,000	\$21,281	2020			
	Clarifier #2 Sludge Pump #6 VFD		rarely used	15	1990	1990	2019	\$3,500	\$5,730	2020			
FFR	FFR #1 Structure			50	1986	1986		\$1,200,000	\$2,178,000	2036			

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2070	2071
	FFR #1 Rotary Mechanism		after Redun. Proj	30	1986	1986	2022	\$250,000	\$453,750	2023		
	FFR #1 Media		after Redun. Proj	30	1986	1986	2022	\$450,000	\$816,750	2023		
	FFR Pump 1 Inlet Valve	FF1 (12")		20	1986	2013		\$3,000	\$3,315	2033		
	FFR Feed Pump #1			25	1986	2013		\$35,000	\$38,675	2038		
	FFR Feed Pump 1# VFD			15	1986	2013		\$10,000	\$11,050	2028		
	FFR Pump #1 Outlet Valve	FF3 (12")		20	1986	2013		\$3,000	\$3,315	2033		
	FFR Pump #2 Inlet Valve			20	1986	2011		\$3,000	\$3,405	2031		
	FFR Feed Pump #2	FF2 (12")		25	1986	2012		\$35,000	\$39,025	2037		
	FFR Feed Pump #2 VFD			15	1986	2008		\$10,000	\$11,980	2023		
	FFR Pump #2 Outlet Valve			20	1986	2011		\$3,000	\$3,405	2031		
	FFR Pump #3 Inlet Valve			20	2014	2014		\$3,000	\$3,291	2034		
	FFR Feed Pump #3			25	2014	2014		\$35,000	\$38,395	2039		
	FFR Pump #3 VFD			15	2014	2014		\$10,000	\$10,970	2029		
	FFR Pump #3 Outlet Valve			20	2014	2014		\$3,000	\$3,291	2034		
	FFR Blower #1			30	1986	1986	2019	\$3,000	\$5,445	2020		
	FFR Blower #1 Motor			20	1986	2007		\$10,000	\$12,060	2027		
	FFR Blower #2			30	1986	1986	2019	\$3,000	\$5,445	2020		
	FFR Blower #2 Motor			20	1986	2007		\$10,000	\$12,060	2027		
Sec Clar #1	Sec Clarifier #1 Structure			60	1966	1966		\$900,000	\$2,642,400	2026		
	Sec Clarifier #1 Coating		Redundancy Projec	60	1986	1986	2020	\$30,000	\$54,450	2021		
	Sec Clarifier #1 Mechanism		Redundancy Projec	60	1986	1986	2020	\$240,000	\$435,600	2021		
	Sec Clarifier #1 Drive		Redundancy Projec	31	1986	1986	2020	\$80,000	\$145,200	2021		
	Sec Clarifier #1 Bridge		Redundancy Projec	31	1986	1986	2020	\$100,000	\$181,500	2021		
	Sec Clarifier #1 Sludge Pump		Redundancy Projec	10	2013	2013	2020	\$8,000	\$8,840	2021		
	Sec Clarifier #1 Sludge Pump VFD		Redundancy Projec	15	1998	1998	2020	\$5,000	\$7,255	2021		
	Sec Clarifier #1 Scum Pump #1		Redundancy Projec	10	2010	2010	2020	\$20,000	\$23,160	2021		
	Sec Clarifier #1 Scum Pump #2		Redundancy Projec	10	2008	2008	2020	\$20,000	\$23,960	2021		
Thickener #1	Sludge Thickener #1 Structure		not used	100	1979	1979		\$35,000	\$75,705	2079		
	Sludge Thickener #1 Coating		not used	100	1979	1979		\$25,000	\$54,075	2079		
	Thickener #1 Mechanism		not used	100	1979	1979		\$35,000	\$75,705	2079		
	Thickener #1 Drive		not used	100	1979	1979		\$85,000	\$183,855	2079		
	Plant Air System		not used	25	1979	2004		\$60,000	\$78,300	2029		
Digester #1	Digester #1			70	1964	1964		\$480,000	\$1,431,360	2034		
	Digester #1 Coating			15	2005	2018		\$130,000	\$130,000	2033		
	Digester #1 Cleanout			10	1964	2017		\$300,000	\$310,800	2027		
	Digester #1 Gas Train Piping			25	1964	2005		\$228,170	\$289,320	2030		
	Site glasses			10	1964	2018		\$16,000	\$16,000	2028		
	APCD Pieces			10	1964	2005	2019	\$40,000	\$50,720	2020		
	Digester #1 Valves			25	1964	2005		\$25,000	\$31,700	2030		
Digester #2	Digester #2			50	1992	1992		\$900,000	\$1,424,700	2042		
	Digester #2 Coating			10	1992	2008	2018	\$100,000	\$119,800	2019		
	Digester #2 Cleanout			10	2008	2008	2018	\$50,000	\$59,900	2019		
	Digester #2 Gas Train Piping			25	1992	2009		\$228,170	\$267,415	2034		
	Site glasses			15	2009	2009		\$15,500	\$18,166	2024		
	APCD pieces			10	2009	2009	2019	\$40,000	\$46,880	2020		
	Digester #2 Valves			25	2009	2009		\$25,000	\$29,300	2034		
Heating & Mixing	Heating and Mixing Building			50	1982	1982		\$580,741	\$1,122,572	2032		
	Sludge Recirc Pump #1			30	1982	2017		\$21,000	\$21,756	2047		
	Recirc Pump #1 Motor			30	1982	2017		\$3,500	\$3,626	2047		
	Vaughn Chopper Pump			20	1982	2005		\$30,000	\$38,040	2025		
	Boiler			15	2007	2014		\$100,000	\$109,700	2029		
	Hot Water Recirc Pump			20	1982	2017		\$21,000	\$21,756	2037		
	Hot Water Recirc Pump Motor			20	1982	2017		\$1,900	\$1,968	2037		
	Heat Exchanger #1			30	1982	2007		\$7,617	\$9,186	2037		
	Sludge Feed Pump #1			7	2012	2012	2019	\$20,000	\$22,300	2020		

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2070	2071
	Sludge Feed Pump #1 VFD			15	2015	2015		\$5,000	\$5,380	2030		
	Sludge Feed Pump #2			7	2012	2012	2019	\$20,000	\$22,300	2020		
	Sludge Feed Pump #2 VFD			15	2015	2015		\$5,000	\$5,380	2030		
	Macerator			15	2012	2015		\$20,000	\$21,520	2030		
Reclaim Water Station	Amiad Filters			20	2011	2011		\$10,000	\$11,350	2031		
Flare	Flare			25	1964	2003		\$4,200	\$5,620	2028		
Chemical Feed	Ferric Chloride Tank			15	1992	2007		\$10,000	\$12,060	2022		
	Ferric Chloride Feed Pump			15	1992	2016		\$5,000	\$5,280	2031		
	Sodium Hypochlorite Tank 6K			20	1979	2010		\$10,000	\$11,580	2030		
	Sodium Hypochlorite Tank 3K			20	1979	2010		\$6,000	\$6,948	2030		
	Sodium Hypochlorite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022		
	Sodium Bisulfite Tank			25	1990	1990	2018	\$6,000	\$9,822	2019		
	Sodium Bisulfite Feed Pump			10	1979	2012		\$5,000	\$5,575	2022		
	CCT Chemical System			10	1990	2016		\$30,000	\$31,680	2026		
	Polymer Feed Systems			30	1990	1990		\$12,000	\$19,644	2020		
Effluent	Chlorine Contact Chamber			60	2007	2006		\$2,700,000	\$3,364,200	2066		
	Effluent Pump 100HP #1			30	2005	2006		\$45,000	\$56,070	2036		
	vfd			15	2005	2016		\$10,000	\$10,560	2031		
	Effluent Pump 100 HP #2			30	2005	2006		\$45,000	\$56,070	2036		
	vfd			10	2005	2005	2018	\$10,000	\$12,680	2019		
	Ocean Outfall			50	1964	1978		\$1,500,000	\$3,414,000	2028		
Flow Meters	ISCO 2100 Flow Meter			10	2016	2016		\$5,250	\$5,544	2026		
	ISCO 2100 Flow Meter			10	2017	2017		\$5,250	\$5,439	2027		
Solids Handling												
	Biosolids slab			40	2018	2018		\$50,000	\$50,000	2058		
	Centrifuge Building			50	2010	2010		\$1,000,000	\$1,158,000	2060		
	Centrifuge			15	2010	2017		\$1,000,000	\$1,036,000	2032		
	Centrifuge Macerator			15	2008	2008		\$25,000	\$29,950	2023		
Miscellaneous	Emergency Generator			20	2009	2009		\$600,000	\$703,200	2029		
	Cogeneration Unit		Idled	10	2009	2009	2019	\$470,000	\$1,500,000	2020		
	Plant Well Water System			20	1982	2005		\$163,147	\$206,870	2025		
	Plant Well Water pump			10	1982	2016		\$5,000	\$5,280	2026		
	Standby Water Well			20	1964	1999		\$4,500	\$6,417	2019		
	Operations Building			50	1982	1982		\$844,161	\$1,631,763	2032		
	Maintenance Shop			50	1982	1982		\$202,495	\$391,423	2032		
	Maintenance Building			50	1996	1996		\$205,000	\$303,195	2046		
	Facility Asphalt			30	1992	1992		\$20,000	\$31,660	2022		
	Digester #2 sump pump #1			10	1996	2009	2019	\$6,000	\$7,032	2020		
	Digester #2 sump pump #2			10	1996	2018		\$6,000	\$6,000	2028		
	Security System annual maintenance			1	2006	2006		\$1,500	\$1,500	NA	\$1,500	\$1,500
	IT System annual maintenance			1	2016	2016		\$2,000	\$2,000	NA	\$2,000	\$2,000
	SCADA System			10	2016	2016		\$100,000	\$105,600	2026		
	Fuel Tank			35	1980	2017		\$5,000	\$5,180	2052		
	Arroyo Grande Pipe Bridge			34	1966	2017		\$90,000	\$300,000	2051		
	MCC/Cogen Building			50	1982	1982		\$400,000	\$773,200	2032		
	MCC Electrical Boxes			40	1982	1982		\$180,000	\$347,940	2022		
	Plant Electrical			30	1966	2010		\$250,000	\$289,500	2040	\$289,500	
REDUNDANCY PROJECT												
Aeration Tank Feed Pump Station												
	Hatch and concrete coating			30	2021	2021			\$156,100	2051		
	Gates			25	2021	2021			\$184,400	2046		
	Valves			20	2021	2021			\$17,600	2041		
	Piping and Fittings			30	2021	2021			\$368,100	2051		

	Item	Equip #	Replace Criteria	Rplc - yrs	Orig	Last Done/ Projected	Inspected & Deferred Year	\$ at New/ Replaced	Current Cost	Estd Nxt Rplcmnt	2070	2071
	Pumps			20	2021	2021			\$235,700	2041		
	Flow Meter			10	2021	2021			\$12,800	2031		
WAS Pumping Station												
	Concrete			60	2021	2021			\$9,100	2081		
	Pumps			20	2021	2021			\$61,100	2041		
	Valves			20	2021	2021			\$9,700	2041		
	Piping and Fittings			30	2021	2021			\$26,800	2051		
	Flow Meter			10	2021	2021			\$6,400	2031		
Activated Sludge Aeration Basins												
	Concrete			60	2021	2021			\$3,885,100	2081		
	Blowers			30	2021	2021			\$813,600	2051		
	Flow Meter			10	2021	2021			\$3,700	2031		
	Diffusers			30	2021	2021			\$614,800	2051		
	Gates			25	2021	2021			\$458,000	2046		
	Valves			20	2021	2021			\$800	2041		
	Piping and Fittings			30	2021	2021			\$426,500	2051		
Blower Building												
	Building CMU			50	2021	2021			\$346,800	2071		\$346,800
	Concrete			60	2021	2021			\$272,000	2081		
New Secondary Clarifier												
	Concrete			60	2021	2021			\$2,642,400	2081		
	Gates			25	2021	2021			\$639,000	2046		
	Pumps			20	2021	2021			\$161,300	2041		
	Valves			20	2021	2021			\$39,000	2041		
	Piping and Fittings			30	2021	2021			\$160,200	2051		
WAS Thickening												
	Concrete Repair			30	2021	2021			\$5,700	2051		
	Gates			25	2021	2021			\$32,200	2046		
	Pumps			20	2021	2021			\$862,000	2041		
	Piping and Fittings			30	2021	2021			\$86,300	2051		
	Valves			20	2021	2021			\$17,900	2041		
	Flow Meter			10	2021	2021			\$17,900	2031		
Site Improvements												
				25	2021	2021			\$2,939,700	2046		
Instrumentation and Electrical												
				40	2021	2021			\$3,823,000	2061		
Emergency Generator												
	Generator			20	2021	2021			\$222,200	2041		
	Concrete			30	2021	2021			\$38,300	2051		
Flood Mitigation Improvements												
				29	2021	2021			\$338,600	2050		
	Total								\$57,798,270		\$293,000	\$350,300
	Cumulative (2018 \$)										\$80,527,508	\$80,877,808
	Cumulative (Escalated 2% per year)										\$164,276,117	\$166,608,285