South San Luis Obispo County
SANITATION DISTRICT

REQUEST FOR PROPOSALS

Wastewater Treatment Plant (WWTP) Condition Assessment

Proposals Due: Wednesday, May 6, 2026

Release Date: April 6, 2026

SOUTH SAN LUIS OBISPO COUNTY SANITATION DISTRICT
REQUEST FOR PROPOSALS
FOR
WASTEWATER TREATMENT PLANT CONDITION ASSESSMENT

I. INSTRUCTION TO PROPOSERS

A. Receipt and Opening of Proposals

The South San Luis Obispo County Sanitation District (District) invites qualified firms to submit sealed proposals for professional services to support District staff in assessing the current conditions of the Wastewater Treatment Plant (WWTP) in Oceano, California. Proposals will be received by the District's Project Manager, Eileen Shields, via email by **5:00 PM PST on Wednesday, May 6, 2026**:

Eileen Shields
eshields@mknassociates.us

Electronic proposal should be in PDF format and clearly titled with your firm name and the project name as follows:

Proposal for Wastewater Treatment Plant Condition Assessment for the SSLOCSD WWTP

If the proposal file is larger than 20 GB, provide link to FTP or file transfer site for download. Alternatively, a portable drive with PDF file can be mailed to the District. Contact the District's Project Manager for the mailing address. Packages must be received by 5:00 PM PST on May 6, 2026. The District will not accept faxed copies of the submittals.

Proposals will not be opened publicly. Any proposal received after the established closing date and time will not be accepted and will be returned to the proposer unopened.

A copy of the RFP, including requirements for the proposals, may be obtained through the District's website at sslocsd.org. Proposals may be withdrawn upon written request at any time prior to the established closing date and time. The proposer or the proposer's authorized agent must sign such request.

B. Examination of Requirements

Each proposer must carefully examine the requirements of the RFP. Each proposer shall meet all the terms and conditions of the RFP. By submitting a proposal, the proposer acknowledges acceptance of all provisions of the RFP.

C. Communications

All timely requests for information submitted in writing will receive a written response from the District. Any oral communication shall not be binding on the District. All requests for information must be provided in writing and directed to the District's Project Manager: Eileen Shields at eshields@mknassociates.us. To be considered, all requests for information must be received by 5:00 PM PST on April 22, 2026. Responses and Addenda will be posted on the District's website by April 29, 2026.

II. BACKGROUND

A. Project Background

The District owns and operates a wastewater treatment plant (WWTP) in Oceano, California, that provides treatment and disposal of wastewater collected from the cities of Arroyo Grande and Grover Beach as well as the Oceano Community Services District (Oceano CSD). On average, approximately 2.3 million gallons per day (MGD) of wastewater is generated by these communities. The WWTP is designed to handle a maximum month average flow rate of 5.1 MGD and provides secondary treatment and disinfection prior to discharge to the ocean. The treatment process consists of screening, grit removal, primary clarification, secondary treatment (fixed film reactor and aeration basins), final/secondary clarification, and disinfection. Waste sludge is thickened, anaerobically digested, then dewatered using either concrete-lined drying beds or a centrifuge.

In 2025, the District completed the WWTP Redundancy Project, the largest capital improvement at the wastewater treatment plant since the 1980s WWTP Improvements. The Redundancy Project added a fully redundant secondary treatment train, including new activated sludge aeration basins and a secondary clarifier. This investment significantly improved operational reliability by providing the flexibility to remove one secondary clarifier and/or the fixed-film reactor from service for maintenance or repairs without compromising treatment performance or regulatory compliance. The project also addressed existing water quality concerns and incorporated flood-proofing measures intended to protect critical infrastructure from a 100-year flood event.

While the Redundancy Project strengthened near-term resiliency, its planning and design process highlighted significant long-term challenges associated with maintaining and expanding infrastructure at the existing WWTP site. Most notably, the project required approval of a Coastal Development Permit (CDP) from the California Coastal Commission, which presented substantial regulatory hurdles. In its findings, the Commission acknowledged that the redundant infrastructure was necessary and warranted in the near term to address water quality and operational reliability needs. However, the CDP also clearly stated that the addition of new wastewater treatment infrastructure at the existing site over the long term would be inappropriate and inconsistent with Coastal Act Section 30253, which requires new development to minimize risks to life and property in areas subject to flooding and coastal hazards.

To balance these competing considerations, the CDP—adopted on May 10, 2017—authorized the Redundancy Project under a limited 30-year temporary approval, with mandatory reevaluations at 10-year intervals in 2027 and 2037. These reevaluations are intended to reassess flood and coastal hazard risks, and confirm that diligent progress has been made on meeting the conditions of the CDP. As a result, the District is now approaching a critical planning horizon in which it desires a clear understanding of the condition of the existing facilities, the investments required to maintain safe and reliable operations at the current site, and how those investments compare to potential relocation options.

A thorough WWTP Condition Assessment is therefore essential at this time. This effort would provide a systematic evaluation of the structural, mechanical, electrical, and process condition of the WWTP facilities, identify near-term deficiencies and vulnerabilities, and quantify the short-, mid-, and long-term capital investments required to maintain the plant at its current location. Importantly, the plan would distinguish between investments necessary to sustain existing infrastructure versus those that would extend the useful life of the plant in a regulatory and environmentally constrained setting.

The resulting planning document would serve as a critical decision-making tool for the District, enabling an informed comparison between the costs, risks, and regulatory constraints associated with continued operation at the existing site and the potential costs and benefits of relocating the WWTP. It would also position the District to respond proactively to upcoming CDP reevaluation milestones by providing clear, defensible documentation of infrastructure needs, long-term risks, and strategic options.

B. Project Goals

The primary goal of the condition assessment project is to assess and document the condition of the WWTP infrastructure and develop an updated Capital Improvements Plan (CIP) and plan for ongoing asset management to maintain the facility in excellent condition. Project objectives include the following:

- Assess current conditions and remaining useful life of major infrastructure and equipment
- Define and evaluate criticality of assets
- Prioritize and provide improvement recommendations, including Repair and Rehabilitation (R&R) schedule and projects for 10-year CIP
- Develop planning-level projected repair and rehabilitation project schedule and costs through at least 2050.
- Consolidate plant records
- Evaluate alternatives and provide recommendations for ongoing Asset Management System
- Consultants may propose additional services that supplement the condition assessment, capital planning, or asset management objectives. Clearly identify any additional services as optional and define the scope, approach, and associated additional costs.

III. REQUESTED SERVICES

A. General Scope of Services

The minimum scope of work to meet project objectives is described below. Proposers are encouraged to review the requirements of the RFP, examine reference documents, and develop a scope of services suited to the Project. Additional services may be considered but should be presented separately as optional tasks.

Task 1. Project Management

The consultant is expected to perform general project management duties, including but not limited to:

1. Coordinate and attend a Kickoff Meeting with District staff.

2. Conduct a workshop with District staff to review the preliminary results of the Condition Assessment and develop the Criticality Scoring matrix for potential improvements to the WWTP.

3. Present and discuss draft report findings with City staff.

4. Provide a monthly status report to the District. This report shall include progress in the last month, anticipated progress for the upcoming month, upcoming submittals/milestones, upcoming meetings/workshops, and data requests/project needs.

5. Manage, administer, and coordinate work of all subconsultants, as applicable.

Task 2. Data Gathering and Review

Review plant records and other relevant documents to understand plant characteristics and Operator needs. The Consultant will request from the District historical information necessary to understand the historical progression of improvements to the WWTP. In addition, the Consultant will obtain information through field investigations or inspections. Interviews or workshops with District staff will also be conducted to obtain a clear understanding of the WWTP and the operational concerns or issues. Workshops can be performed during plant inspections or at other times as required. The data expected to be collected and reviewed includes, but is not limited to:

- NPDES Permit
- Coastal Development Permit (2017)
- WWTP Previous Reports or Special Studies
- Existing CIP
- WWTP Record Drawings
- Operation and Maintenance (O&M) Manuals
- Historical Operational Reports and Maintenance Records as requested by the Consultant

- Existing flow data and other operational data as requested by the Consultant
- Current or ongoing CIP planning efforts and overall budget constraints

The Consultant will perform the following services related to data collection and review:

1. Develop a comprehensive list of documents needed for review

2. Conduct a Workshop(s) with District Operations Staff to determine operational needs

3. Review collected data and determine the age of all existing structures and WWTP equipment

4. Identify issues (based on conversations/workshops with District staff and review of operational logs) related to treatment processes and equipment performance

Task 3. Field Condition Assessment

The Consultant will provide focused/comprehensive visual condition inspections of each aboveground facility utilizing professional personnel familiar with the design and operation of wastewater treatment processes. The inspection team will include professional personnel with expertise in structural, electrical, instrumentation and controls (I&C), chemical, and mechanical engineering. Field data to be collected includes, but is not limited to:

1. Evaluate the existing conditions of all civil, structural, mechanical, and electrical equipment. Specific emphasis will be placed upon the structural conditions of the process units and mechanical and electrical equipment.

2. Evaluate the condition of all walls and slabs that can be visually seen aboveground or above the water surface for any cracks, leaks, or other repairs necessary.

3. Evaluate the structural condition and apparent compliance with current structural standards of the following facilities: the headworks structure; splitter structures; primary clarifiers; chlorine contact tank; anaerobic digesters; solids dewatering building; chemical storage and containment; maintenance and shop building; heating and mixing building; and the office building. Additionally, evaluate structures for structural deficiencies and defects. Provide recommendations for materials testing if warranted to confirm structural condition.

4. Evaluate existing panel boxes and controls, and evaluate the existing electrical networks to evaluate current condition, evaluate remaining life; and evaluate options to optimize the networks to reduce energy costs, increase reliability, and make scalable to facilitate future expansion.

5. Evaluate all existing instruments, controls, programable logic controllers (PLC), and supervisory control and data acquisition (SCADA) systems. The evaluation

should include, but is not limited to a listing of all pertinent assets (including name, manufacturer, model, age, obsolescence, and condition).

6. Evaluate existing mechanical equipment and include an assessment of corrosion.

7. Prepare an inventory of maintainable equipment within each structure to be used for asset management planning.

Task 4. Ocean Outfall Condition Assessment

Evaluate condition of ocean outfall pipeline through internal pipeline inspection. The ocean outfall is 30 and 36 inches in diameter, extending approximately 4,400 feet offshore. The outfall was externally visually inspected from terminus to landfall in 2025 in accordance with the District's NPDES permit. A more in-depth interior inspection, via radar, lidar, sonar, CCTV and/or other method, from the chlorine contact tank to the outfall terminus is desired. Overnight inspection during period of low flow and low tide conditions may be necessary.

Task 5. Assessment Plan and Schedule Report

Based upon the structures and equipment condition, operations, or defects determined at the WWTP, the Consultant will prepare a draft Assessment Plan and Schedule. The Assessment Plan and Schedule will be developed from the following activities:

1. Perform a desktop estimation of remaining life of equipment (i.e., process, electrical, and I&C) and structures (i.e., tanks and buildings).

2. Describe the condition assessment scoring approach.

3. Identify critical facilities.

4. Assess the risks associated with each facility.

5. Generate a list of recommendations to address the issues identified.

6. Prioritize facilities based on condition and risk assessment.

7. Develop a cost opinion range for equipment renewal, modifications, and capital projects for each facility, and provide short-term, mid-term, and long-term CIP necessary to meet service demands.

8. Provide draft Assessment Plan and Schedule using a 20- to 25-year planning horizon tailored to meet the District's operational and financial objectives.

9. Provide a final Assessment Plan and Schedule following District review/comments on the draft.

B. Other Recommended/Optional Tasks

Important aspects of the project may require additional attention. Therefore, the Consultant is encouraged to identify, discuss, and develop a proposed scope/fee for additional work that they believe, in their professional judgement, to be necessary.

C. Reports and Documentation

At a minimum, submit a Draft and Final report documenting all work performed. Submit final versions of backup items for the District's future use, such as the condition assessment reports, asset inventory, project estimates, project prioritization, and consolidated plant drawings, in formats usable by the District.

IV. PROJECT SCHEDULE

The anticipated project schedule is summarized below. The dates are tentative and subject to change.

Issue RFP	April 6, 2026, 5:00 PM PST
Written Questions Due	April 22, 2026, 5:00 PM PST
Responses to Questions Posted	April 29, 2026, 5:00 PM PST
Proposals Due	May 6, 2026, 5:00 PM PST
Consultant Interviews (at the District's Option)	May - June, TBD
Consultant Selection / Board Approval	June - July
Notice to Proceed	July - Aug

V. GENERAL TERMS AND CONDITIONS

A. Proposal Requirements

1. Content: The proposal shall be concise, well organized, and demonstrate the proposer's understanding of the Project and their applicable qualifications and experience. The proposal shall be limited to materials needed to convey the requirements of this RFP. Proposals should include the minimum Proposal Content as described in Section VI. Any additional materials that will support your proposal may be included. However, if they do not directly address the stated requirements, please include them in a separate appendix. The District will consider all material submitted but concentrate on that which addresses the District's Project requirements.

2. Subconsultants: Identify all subconsultants to be used during the term of the Project and provide a list of responsible staff and their qualifications. The Prime Consultant in the proposal shall be responsible for a minimum of 80% of the Project work.

3. Insurance: The consultant shall obtain at their own cost an insurance policy meeting the District's requirements as described in the Standard Agreement (Appendix A).

4. Consultant's Compensation: Submit the fee proposal in a separate sealed envelope for hard copy submittals and as an explicitly titled separate PDF for electronic copies, included with the overall proposal to clearly distinguish the fee from the technical proposal. The Consultant's fee shall include all items described in this scope of work, with optional items (if applicable) shown separately. Include a breakdown of professionals to be assigned; the estimated hours for each task per professional; the hourly rates for each professional assigned; subtotals of the man-hour costs for each task, subconsultant costs, and other direct costs to be billed; and project total costs.

5. Commitment: The proposal shall be signed by an individual with power to bind the company in its proposal. Parts or the entire proposal will be the basis for the contract for the work.

6. Statement of Contract Disqualifications: Consultant shall include a signed statement of whether it or any of its employees or officers who have a proprietary interest in it has ever been disqualified, removed, or otherwise prevented from proposing on or completing a municipal government project for any reason. If so, provide a description and explanation of the circumstances.

7. Exceptions: Consultant shall certify that they take no exceptions to this RFP, including but not limited to the provisions of the District's Standard Agreement (Appendix A). If the Consultant takes any exceptions, identify the specific portion and provide a full explanation.

B. Contract Award and Execution

1. The District reserves the right to reject any or all responses to this RFP, to waive any insubstantial irregularities in this RFP or any proposal, to negotiate with all qualified sources, or to cancel in part or in its entirety this RFP.

2. If a contract cannot be negotiated with a selected Consultant for any reason, the District reserves the right to select the next most qualified proposer.

3. The District reserves discretion to determine the ability, competency, and responsibility of the Consultant. Before award, Consultant may be required to furnish evidence of capability to adequately perform the work in a timely manner as deemed necessary by the District.

4. The District reserves the right to interview proposers as needed.

5. The Consultant shall provide proof of insurance in the coverages and amounts specified in the Standard Agreement (included in Appendix A) within 5 calendar days after notice of selection as a precondition to contract execution and issuance of a Notice to Proceed.

6. Even if selected, the District reserves the right to terminate any agreement reached with the selected firm at any time and in an appropriate manner.

VI. PROPOSAL CONTENT AND SELECTION PROCESS

A. Proposal Content

1. Cover Letter/Executive Summary
2. Experience and References
    - Include a minimum of three references for similar projects. Provide summary of project and a reference contact name, phone number, and email address.
3. Project Organization and Key Personnel
4. Project Understanding and Proposed Scope of Work
5. Proposed Fee and Rate Schedule
6. Proposed Project Schedule
7. Acknowledgement, Exceptions, Disqualifications, Insurance Certification

B. Proposal Evaluation and Consultant Selection

The selection will be qualifications-based. Proposals will be scored as follows:

Criteria	Possible Points
Project Understanding	20
Relevant Experience	30
Proposed Scope of Work	30
Project Schedule	10
Proposal clarity and organization	10
Total	100

Upon evaluation of the proposals, the District will determine the top firm(s) they feel are most qualified for this Project based on clarity of the proposal and experience. Interviews may be conducted at the District's discretion. Upon selection of the top-ranked proposer, the District will review proposed fee and work to negotiate the contract with the selected proposer. If the contract negotiation is not successful, the District will work to negotiate with the second-ranked proposer.

VII. ATTACHMENTS

A. SSLOCSD Standard Professional Services Agreement

B. WWTP Site Plan & Process Schematic

C. Coastal Development Permit for WWTP Redundancy Project (#3-16-0233)

D. April 23, 2019 WWTP Life Expectancy Analysis Technical Memorandum

Attachment A
SSLOCSD Standard Agreement

SOUTH SAN LUIS OBISPO COUNTY SANITATION DISTRICT
PROFESSIONAL SERVICES AGREEMENT
WITH
_____

THIS AGREEMENT is made and entered into this __ day of _____, 20__ ("Effective Date"), by and between the SOUTH SAN LUIS OBISPO COUNTY SANITATION DISTRICT, a municipal corporation ("District"), and _____, a [state] [type of corporation] ("Consultant").

W I T N E S S E T H:

A. WHEREAS, District proposes to utilize the services of Consultant as an independent contractor to _____, as more fully described herein; and

B. WHEREAS, Consultant represents that it has that degree of specialized expertise contemplated within California Government Code Section 37103, and holds all necessary licenses to practice and perform the services herein contemplated; and

C. WHEREAS, District and Consultant desire to contract for the specific services described in Exhibit "A" (the "Project") and desire to set forth their rights, duties and liabilities in connection with the services to be performed; and

D. WHEREAS, no official or employee of District has a financial interest, within the provisions of Sections 1090-1092 of the California Government Code, in the subject matter of this Agreement.

NOW, THEREFORE, for and in consideration of the mutual covenants and conditions contained herein, the parties hereby agree as follows:

1.0. SERVICES PROVIDED BY CONSULTANT

1.1. Scope of Services. Consultant shall provide the professional services described in the Consultant's Proposal ("Proposal"), attached hereto as Exhibit "A" and incorporated herein by this reference.

1.2. Professional Practices. All professional services to be provided by Consultant pursuant to this Agreement shall be provided by personnel experienced in their respective fields and in a manner consistent with the standards of care, diligence and skill ordinarily exercised by professional consultants in similar fields and circumstances in accordance with sound professional practices. Consultant also warrants that it is familiar with all laws that may affect its performance of this Agreement and shall advise District of any changes in any laws that may affect Consultant's performance of this Agreement. Consultant shall keep itself informed of State and Federal laws and regulations which in any manner affect those employed by it or in any way affect the performance of its service pursuant to this Agreement. The Consultant shall at all times observe and comply with all such laws and regulations. Officers and employees shall not be liable at law or in equity occasioned by failure of the Consultant to comply with this section.

1.3. Performance to Satisfaction of District. Consultant agrees to perform all the work to the complete satisfaction of the District and within the hereinafter specified. Evaluations of the work will be done by the District Administrator or his or her designee. If the quality of work is not satisfactory, District in its discretion has the right to:

(a) Meet with Consultant to review the quality of the work and resolve the matters of concern;

(b) Require Consultant to repeat the work at no additional fee until it is satisfactory; and/or

(c) Terminate the Agreement as hereinafter set forth.

1.4. Warranty. Consultant warrants that it shall perform the services required by this Agreement in compliance with all applicable Federal and California employment laws, including, but not limited to, those laws related to minimum hours and wages; occupational health and safety; fair employment and employment practices; workers' compensation insurance and safety in employment; and all other Federal, State and local laws and ordinances applicable to the services required under this Agreement. Consultant shall indemnify and hold harmless District from and against all claims, demands, payments, suits, actions, proceedings, and judgments of every nature and description including attorneys' fees and costs, presented, brought, or recovered against District for, or on account of any liability under any of the above-mentioned laws, which may be incurred by reason of Consultant's performance under this Agreement.

1.5. Non-discrimination. In performing this Agreement, Consultant shall not engage in, nor permit its agents to engage in, discrimination in employment of persons because of their race, religion, color, national origin, ancestry, age, physical handicap, medical condition, marital status, sexual gender or sexual orientation, except as permitted pursuant to Section 12940 of the Government Code. Such actions shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. Consultant agrees to post in conspicuous places, available to employees and applicants for employment, a notice setting forth provisions of this non-discrimination clause.

Consultant shall, in all solicitations and advertisements for employees placed by, or on behalf of, Consultant, state that all qualified applicants will receive consideration for employment without regard to age, race, color, religion, sex, marital status, national origin, or mental or physical disability. Consultant shall cause the paragraphs contained in this Section to be inserted in all subcontracts for any work covered by the Agreement, provided that the foregoing provisions shall not apply to subcontracts for standard commercial supplies or raw materials.

1.6. Non-Exclusive Agreement. Consultant acknowledges that District may enter into agreements with other consultants for services similar to the services that are subject to this Agreement or may have its own employees perform services similar to those services contemplated by this Agreement.

1.7. Delegation and Assignment. This is a personal service contract, and the duties set forth herein shall not be delegated or assigned to any person or entity without the prior written consent of District. Consultant may engage a subcontractor(s) as permitted by law and may employ other personnel to perform services contemplated by this Agreement at Consultant's sole cost and expense. All insurance requirements contained in this Agreement are independently applicable to any and all subcontractors that Consultant may engage during the term of this Agreement.

1.8. Confidentiality. Employees of Consultant in the course of their duties may have access to financial, accounting, statistical, and personnel data of private individuals and employees of District. Consultant covenants that all data, documents, discussion, or other information developed or received by Consultant or provided for performance of this Agreement are deemed confidential and shall not be disclosed by Consultant without written authorization by District. District shall grant such authorization if disclosure is required by law. All District data shall be returned to District upon the termination of this Agreement. Consultant's covenant under this Section shall survive the termination of this Agreement.

2.0. COMPENSATION AND BILLING

2.1. Compensation. Consultant shall be paid in accordance with the fee schedule set forth in Exhibit "A." Consultant's total compensation shall not exceed _____ Dollars ($ _____.00).

2.2. Additional Services. Consultant shall not receive compensation for any services provided outside the scope of services specified in the Consultant's Proposal or which is inconsistent with or in violation of the provisions of this Agreement unless the District or the Project Manager for this Project, prior to Consultant performing the additional services, approves such additional services in writing. It is specifically understood that oral requests and/or approvals of such additional services or additional compensation shall be barred and are unenforceable. Should the District request in writing additional services that increase the hereinabove described "SCOPE OF SERVICES", an additional fee based upon the Consultant's standard hourly rates shall be paid to the Consultant for such additional services. Such increase in additional fees shall be limited to 25% of the total contract sum or $25,000 whichever is more. The District Engineer is authorized to approve a Change Order for such additional services.

2.3. Method of Billing. Consultant may submit invoices to the District for approval on a progress basis, but no more often than two times a month. Said invoice shall be based on the total of all Consultant's services which have been completed to District's sole satisfaction. District shall pay Consultant's invoice within forty-five (45) days from the date District receives said invoice. Each invoice shall describe in detail, the services performed, the date of performance, and the associated time for completion. Any additional services approved and performed pursuant to this Agreement shall be designated as "Additional Services" and shall identify the number of the authorized change order, where applicable, on all invoices.

2.4. Records and Audits. Records of Consultant's services relating to this Agreement shall be maintained in accordance with generally recognized accounting principles and shall be made available to District or its Project Manager for inspection and/or audit at mutually convenient times for a period of three (3) years from the Effective Date.

3.0. TIME OF PERFORMANCE

3.1. Commencement and Completion of Work. The professional services to be performed pursuant to this Agreement shall commence within five (5) days from the Effective Date of this Agreement. Said services shall be performed in strict compliance with the Project Schedule approved by District as set forth in Exhibit "A."

3.2. Excusable Delays. Neither party shall be responsible for delays or lack of performance resulting from acts beyond the reasonable control of the party or parties. Such acts shall include, but not be limited to, acts of God, fire, strikes, material shortages, compliance

with laws or regulations, riots, acts of war, or any other conditions beyond the reasonable control of a party. If a delay beyond the control of the Consultant is encountered, a time extension may be mutually agreed upon in writing by the District and the Consultant. The Consultant shall present documentation satisfactory to the District to substantiate any request for a time extension.

4.0. TERM AND TERMINATION

4.1. Term. This Agreement shall commence on the Effective Date and continue for a period of _____ months, ending on _____, 20__, unless previously terminated as provided herein or as otherwise agreed to in writing by the parties.

4.2. Notice of Termination. The District reserves and has the right and privilege of canceling, suspending or abandoning the execution of all or any part of the work contemplated by this Agreement, with or without cause, at any time, by providing at least fifteen (15) days prior written notice to Consultant. The termination of this Agreement shall be deemed effective upon receipt of the notice of termination. In the event of such termination, Consultant shall immediately stop rendering services under this Agreement unless directed otherwise by the District. If the District suspends, terminates or abandons a portion of this Agreement such suspension, termination or abandonment shall not make void or invalidate the remainder of this Agreement.

If the Consultant defaults in the performance of any of the terms or conditions of this Agreement, it shall have ten (10) days after service upon it of written notice of such default in which to cure the default by rendering a satisfactory performance. In the event that the Consultant fails to cure its default within such period of time, the District shall have the right, notwithstanding any other provision of this Agreement, to terminate this Agreement without further notice and without prejudice to any other remedy to which it may be entitled at law, in equity or under this Agreement.

The District shall have the right, notwithstanding any other provisions of this Agreement, to terminate this Agreement, at its option and without prejudice to any other remedy to which it may be entitled at law, in equity or under this Agreement, immediately upon service of written notice of termination on the Consultant, if the latter should:

a. Be adjudged a bankrupt;

b. Become insolvent or have a receiver of its assets or property appointed because of insolvency;

c. Make a general assignment for the benefit of creditors;

d. Default in the performance of any obligation or payment of any indebtedness under this Agreement;

e. Suffer any judgment against it to remain unsatisfied or unbonded of record for thirty (30) days or longer; or

f. Institute or suffer to be instituted any procedures for reorganization or rearrangement of its affairs.

4.3. Compensation. In the event of termination, District shall pay Consultant for

reasonable costs incurred and professional services satisfactorily performed up to and including the date of District's written notice of termination within thirty-five (35) days after service of the notice of termination. Compensation for work in progress shall be prorated based on the percentage of work completed as of the effective date of termination in accordance with the fees set forth herein. In ascertaining the professional services actually rendered hereunder up to the effective date of termination of this Agreement, consideration shall be given to both completed work and work in progress, to complete and incomplete drawings, and to other documents pertaining to the services contemplated herein whether delivered to the District or in the possession of the Consultant. District shall not be liable for any claim of lost profits.

4.4. Documents. In the event of termination of this Agreement, all documents prepared by Consultant in its performance of this Agreement including, but not limited to, finished or unfinished design, development and construction documents, data studies, drawings, maps and reports, shall be delivered to the District within ten (10) days of delivery of termination notice to Consultant, at no cost to District. Any use of uncompleted documents without specific written authorization from Consultant shall be at District's sole risk and without liability or legal expense to Consultant.

5.0. INSURANCE

5.1. Minimum Scope and Limits of Insurance. Consultant shall obtain, maintain, and keep in full force and effect during the life of this Agreement all the following minimum scope of insurance coverages with an insurance company admitted to do business in California, rated "A," Class X, or better in the most recent Best's Key Insurance Rating Guide, and approved by District:

(a) Broad-form commercial general liability, in a form at least as broad as ISO from #CG 00 01 04 13, including premises-operations, products/completed operations, broad form property damage, blanket contractual liability, independent contractors, personal injury or bodily injury with a policy limit of not less than One Million Dollars ($1,000,000.00), combined single limits, per occurrence. If such insurance contains a general aggregate limit, it shall apply separately to this Agreement or shall be twice the required occurrence limit. If Consultant maintains higher limits than the specified minimum limits, District requires and shall be entitled to coverage for the high limits maintained by the Consultant.

(b) Business automobile liability for owned vehicles, hired, and non-owned vehicles, with a policy limit of not less than One Million Dollars ($1,000,000.00), combined single limits, each incident for bodily injury and property damage.

(c) Workers' compensation insurance as required by the State of California and Employers Liability Insurance with a minimum limit of $1,000,000 per accident for any employee or employees of Consultant. Consultant agrees to waive, and to obtain endorsements from its workers' compensation insurer waiving subrogation rights under its workers' compensation insurance policy against the District, its officers, agents, employees, and volunteers for losses arising from work performed by Consultant for the District and to require each of its subcontractors, if any, to do likewise under their workers' compensation insurance policies.

Before execution of this Agreement by the District, the Consultant shall file with the Public Works Director/District Engineer the following signed certification:

> I am aware of, and will comply with, Section 3700 of the Labor Code, requiring every employer to be insured against liability of Workers' Compensation or to undertake self-insurance before commencing any of the work.

The Consultant shall also comply with Section 3800 of the Labor Code by securing, paying for and maintaining, in full force and effect for the duration of this Agreement, complete Workers' Compensation Insurance, and shall furnish a Certificate of Insurance to the Public Works Director/District Engineer before execution of this Agreement by the District. The District, its officers and employees shall not be responsible for any claims in law or equity occasioned by failure of the consultant to comply with this section.

(d) Professional errors and omissions ("E&O") liability insurance with policy limits of not less than One Million Dollars ($1,000,000.00), combined single limits, per occurrence and aggregate. Architects' and engineers' coverage shall be endorsed to include contractual liability. If the policy is written as a "claims made" policy, the retro date shall be prior to the start of the contract work. Consultant shall obtain and maintain said E&O liability insurance during the life of this Agreement and for three years after completion of the work hereunder.

Neither the DISTRICT nor any of its elected or appointed officials, officers, agents, employees, or volunteers makes any representation that the types of insurance and the limits specified to be carried by Consultant under this Agreement are adequate to protect Consultant. If Consultant believes that any such insurance coverage is insufficient, Consultant shall provide, at its own expense, such additional insurance as Consultant deems adequate.

5.2. Endorsements. The commercial general liability insurance policy and business automobile liability policy shall contain or be endorsed to contain the following provisions as worded below.

(a) Additional insureds: "The South San Luis Obispo County Sanitation District and its elected and appointed boards, officers, officials, agents, employees, and volunteers are additional insureds with respect to: liability arising out of activities performed by or on behalf of the Consultant pursuant to its contract with the District; products and completed operations of the Consultant; premises owned, occupied or used by the Consultant; automobiles owned, leased, hired, or borrowed by the Consultant."

(b) Notice: "Consultant shall provide immediate written notice if (1) any of the required insurance policies is terminated; (2) the limits of any of the required policies are reduced; (3) or the deductible or self-insured retention is increased. In the event of any cancellation or reduction in coverage or limits of any insurance, Consultant shall forthwith obtain and

submit proof of substitute insurance. Should Consultant fail to immediately procure other insurance, as specified, to substitute for any canceled policy, the District may procure such insurance at Consultant's sole cost and expense."

(c) Other insurance: "The Consultant's insurance coverage shall be primary insurance as respects the South San Luis Obispo County Sanitation District, its officers, officials, agents, employees, and volunteers. Any other insurance maintained by the South San Luis Obispo County Sanitation District shall be excess and not contributing with the insurance provided by this policy."

(d) Any failure to comply with the reporting provisions of the policies shall not affect coverage provided to the South San Luis Obispo County Sanitation District, its officers, officials, agents, employees, and volunteers.

(e) The Consultant's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

5.3. Deductible or Self-Insured Retention. If any of such policies provide for a deductible or self-insured retention to provide such coverage, the amount of such deductible or self-insured retention shall be approved in advance by District. No policy of insurance issued as to which the District is an additional insured shall contain a provision which requires that no insured except the named insured can satisfy any such deductible or self-insured retention.

5.4. Certificates of Insurance. Consultant shall provide to District certificates of insurance showing the insurance coverages and required endorsements described above, in a form and content approved by District, prior to performing any services under this Agreement. The certificates of insurance and endorsements shall be attached hereto as Exhibit "B" and incorporated herein by this reference.

5.5. Non-limiting. Nothing in this Section shall be construed as limiting in any way, the indemnification provision contained in this Agreement, or the extent to which Consultant may be held responsible for payments of damages to persons or property.

6.0. GENERAL PROVISIONS

6.1. Entire Agreement. This Agreement constitutes the entire agreement between the parties with respect to any matter referenced herein and supersedes any and all other prior writings and oral negotiations. This Agreement may be modified only in writing and signed by the parties in interest at the time of such modification. The terms of this Agreement shall prevail over any inconsistent provision in any other contract document appurtenant hereto, including exhibits to this Agreement.

6.2. Representatives. The District Administrator or his or her designee shall be the representative of District for purposes of this Agreement and may issue all consents, approvals, directives and agreements on behalf of the District, called for by this Agreement, except as otherwise expressly provided in this Agreement.

Consultant shall designate a representative for purposes of this Agreement who shall be authorized to issue all consents, approvals, directives and agreements on behalf of

Consultant called for by this Agreement, except as otherwise expressly provided in this Agreement.

6.3. Project Managers. District shall designate a Project Manager to work directly with Consultant in the performance of this Agreement. It shall be the Consultant's responsibility to assure that the Project Manager is kept informed of the progress of the performance of the services and the Consultant shall refer any decision, which must be made by District, to the Project Manager. Unless otherwise specified herein, any approval of District required hereunder shall mean the approval of the Project Manager.

Consultant shall designate a Project Manager who shall represent it and be its agent in all consultations with District during the term of this Agreement and who shall not be changed by Consultant without the express written approval by the District. Consultant or its Project Manager shall attend and assist in all coordination meetings called by District.

6.4. Notices. Any notices, documents, correspondence or other communications concerning this Agreement, or the work hereunder may be provided by personal delivery, facsimile or if mailed, shall be addressed as set forth below and placed in a sealed envelope, postage prepaid, and deposited in the United States Postal Service. Such communication shall be deemed served or delivered: a) at the time of delivery if such communication is sent by personal delivery; b) at the time of transmission if such communication is sent by facsimile; and c) 72 hours after deposit in the U.S. Mail as reflected by the official U.S. postmark if such communication is sent through regular United States mail.

IF TO CONSULTANT:	IF TO DISTRICT:
_____	South San Luis Obispo County
_____	Sanitation District
_____	1600 Aloha Place
	Oceano, CA 93445
Tel: _____	Tel: 805-489-6666
Fax: _____	Fax: _____
Attn: _____	Attn: _____

6.5. Attorneys' Fees. In the event that litigation is brought by any party in connection with this Agreement, the prevailing party shall be entitled to recover from the opposing party all costs and expenses, including reasonable attorneys' fees, incurred by the prevailing party in the exercise of any of its rights or remedies hereunder or the enforcement of any of the terms, conditions, or provisions hereof.

6.6. Governing Law. This Agreement shall be governed by and construed under the laws of the State of California without giving effect to that body of laws pertaining to conflict of laws. In the event of any legal action to enforce or interpret this Agreement, the parties hereto agree that the sole and exclusive venue shall be a court of competent jurisdiction located in San Luis Obispo County, California. Consultant agrees to submit to the personal jurisdiction of such court in the event of such action.

6.7. Assignment. Consultant shall not voluntarily or by operation of law assign, transfer, sublet or encumber all or any part of Consultant's interest in this Agreement without District's prior written consent. Any attempted assignment, transfer, subletting or encumbrance shall be void and shall constitute a breach of this Agreement and cause for termination of this

Agreement. Regardless of District's consent, no subletting or assignment shall release Consultant of Consultant's obligation to perform all other obligations to be performed by Consultant hereunder for the term of this Agreement.

6.8. Indemnification and Hold Harmless. Consultant agrees to defend, indemnify, hold free and harmless the District, its elected and appointed officials, officers, agents and employees, at Consultant's sole expense, from and against any and all claims, demands, actions, suits or other legal proceedings arising out of, pertaining to, or relating to the performance of Consultant brought against the District, its elected and appointed officials, officers, agents and employees arising out of the performance of the Consultant, its employees, and/or authorized subcontractors, of the work undertaken pursuant to this Agreement. The defense obligation provided for hereunder shall apply whenever any claim, action, complaint or suit asserts liability against the District, its elected and appointed officials, officers, agents and employees based upon the performance of the Consultant, its employees, and/or authorized subcontractors under this Agreement, whether or not the Consultant, its employees, and/or authorized subcontractors are specifically named or otherwise asserted to be liable. Notwithstanding the foregoing, the Consultant shall not be liable for the defense or indemnification of the District for claims, actions, complaints or suits arising out of the sole active negligence or willful misconduct of the District. This provision shall supersede and replace all other indemnity provisions contained either in the District's specifications or Consultant's Proposal, which shall be of no force and effect.

6.9. Independent Contractor. Consultant is and shall be acting at all times as an independent contractor and not as an employee of District. Consultant shall have no power to incur any debt, obligation, or liability on behalf of District or otherwise act on behalf of District as an agent. Neither District nor any of its agents shall have control over the conduct of Consultant or any of Consultant's employees, except as set forth in this Agreement. Consultant shall not, at any time, or in any manner, represent that it or any of its employees are in any manner agents or employees of District. Consultant shall secure, at its sole expense, and be responsible for any and all payment of Income Tax, Social Security, State Disability Insurance Compensation, Unemployment Compensation, and other payroll deductions for Consultant and its officers, agents, and employees, and all business licenses, if any are required, in connection with the services to be performed hereunder. Consultant shall indemnify and hold District harmless from any and all taxes, assessments, penalties, and interest asserted against District by reason of the independent contractor relationship created by this Agreement. Consultant further agrees to indemnify and hold District harmless from any failure of Consultant to comply with the applicable worker's compensation laws. District shall have the right to offset against the amount of any fees due to Consultant under this Agreement any amount due to District from Consultant as a result of Consultant's failure to promptly pay to District any reimbursement or indemnification arising under this paragraph.

6.10. PERS Eligibility Indemnification. In the event that Consultant or any employee, agent, or subcontractor of Consultant providing services under this Agreement claims or is determined by a court of competent jurisdiction or the California Public Employees Retirement System (PERS) to be eligible for enrollment in PERS as an employee of the District, Consultant shall indemnify, defend, and hold harmless District for the payment of any employee and/or employer contributions for PERS benefits on behalf of Consultant or its employees, agents, or subcontractors, as well as for the payment of any penalties and interest on such contributions, which would otherwise be the responsibility of District.

Notwithstanding any other agency, state or federal policy, rule, regulation, law or ordinance to the contrary, Consultant and any of its employees, agents, and subcontractors

providing service under this Agreement shall not qualify for or become entitled to, and hereby agree to waive any claims to, any compensation, benefit, or any incident of employment by District, including but not limited to eligibility to enroll in PERS as an employee of District and entitlement to any contribution to be paid by District for employer contribution and/or employee contributions for PERS benefits.

6.11. Cooperation. In the event any claim or action is brought against District relating to Consultant's performance or services rendered under this Agreement, Consultant shall render any reasonable assistance and cooperation which District might require.

6.12. Ownership of Documents. All findings, reports, documents, information and data including, but not limited to, computer tapes or discs, preliminary notes, working documents, files and tapes furnished or prepared by Consultant or any of its subcontractors in the course of performance of this Agreement, shall be and remain the sole property of District. Consultant agrees that any such documents or information shall not be made available to any individual or organization without the prior consent of District but shall be made available to the District within ten (10) days of request or within ten (10) days of termination. Any use of such documents for other projects not contemplated by this Agreement, and any use of incomplete documents, shall be at the sole risk of District and without liability or legal exposure to Consultant. District shall indemnify and hold harmless Consultant from all claims, damages, losses, and expenses, including attorneys' fees, arising out of or resulting from District's use of such documents for other projects not contemplated by this Agreement or use of incomplete documents furnished by Consultant. Consultant shall deliver to District any findings, reports, documents, information, data, preliminary notes and working documents, in any form, including but not limited to, computer tapes, discs, files audio tapes or any other Project related items as requested by District or its authorized representative, at no additional cost to the District. Consultant or Consultant's agents shall execute such documents as may be necessary from time to time to confirm District's ownership of the copyright in such documents.

6.13. Public Records Act Disclosure. Consultant has been advised and is aware that this Agreement and all reports, documents, information, and data, including, but not limited to, computer tapes, discs, or files furnished or prepared by Consultant, or any of its subcontractors, pursuant to this Agreement and provided to District may be subject to public disclosure as required by the California Public Records Act (California Government Code Section 7920.000 *et seq.*). Exceptions to public disclosure may be those documents or information that qualify as trade secrets, as that term is defined in the California Government Code Section 7924.510(f), and of which Consultant informs District of such trade secret. The District will endeavor to maintain as confidential all information obtained by it that is designated as a trade secret. The District shall not, in any way, be liable or responsible for the disclosure of any trade secret including, without limitation, those records so marked if disclosure is deemed to be required by law or by order of the Court.

6.14. Conflict of Interest. Consultant and its officers, employees, associates and subconsultants, if any, will comply with all conflict of interest statutes of the State of California applicable to Consultant's services under this agreement, including, but not limited to, the Political Reform Act (Government Code Sections 81000, *et seq*.) and Government Code Section 1090. During the term of this Agreement, Consultant and its officers, employees, associates and subconsultants shall not, without the prior written approval of the District Representative, perform work for another person or entity for whom Consultant is not currently performing work that would require Consultant or one of its officers, employees, associates or subconsultants to abstain from a decision under this Agreement pursuant to a conflict of interest statute.

6.15. Responsibility for Errors. Consultant shall be responsible for its work and results under this Agreement. Consultant, when requested, shall furnish clarification and/or explanation as may be required by the District's representative, regarding any services rendered under this Agreement at no additional cost to District. In the event that an error or omission attributable to Consultant occurs, then Consultant shall, at no cost to District, provide all necessary design drawings, estimates and other Consultant professional services necessary to rectify and correct the matter to the sole satisfaction of District and to participate in any meeting required with regard to the correction.

6.16. Prohibited Employment. Consultant will not employ any regular employee of District while this Agreement is in effect.

6.17. Order of Precedence. In the event of an inconsistency in this Agreement and any of the attached Exhibits, the terms set forth in this Agreement shall prevail. If, and to the extent this Agreement incorporates by reference any provision of any document, such provision shall be deemed a part of this Agreement. Nevertheless, if there is any conflict among the terms and conditions of this Agreement and those of any such provision or provisions so incorporated by reference, the conflict shall be resolved by giving precedence in the following order, if applicable: This Agreement, the District's Request for Proposals, the Consultant's Proposal.

6.18. Costs. Each party shall bear its own costs and fees incurred in the preparation and negotiation of this Agreement and in the performance of its obligations hereunder except as expressly provided herein.

6.19. No Third Party Beneficiary Rights. This Agreement is entered into for the sole benefit of District and Consultant and no other parties are intended to be direct or incidental beneficiaries of this Agreement and no third party shall have any right in, under or to this Agreement.

6.20. Headings. Paragraphs and subparagraph headings contained in this Agreement are included solely for convenience and are not intended to modify, explain or to be a full or accurate description of the content thereof and shall not in any way affect the meaning or interpretation of this Agreement.

6.21. Construction. The parties have participated jointly in the negotiation and drafting of this Agreement. In the event an ambiguity or question of intent or interpretation arises with respect to this Agreement, this Agreement shall be construed as if drafted jointly by the parties and in accordance with its fair meaning. There shall be no presumption or burden of proof favoring or disfavoring any party by virtue of the authorship of any of the provisions of this Agreement.

6.22. Amendments. Only a writing executed by the parties hereto or their respective successors and assigns may amend this Agreement.

6.23. Waiver. The delay or failure of either party at any time to require performance or compliance by the other of any of its obligations or agreements shall in no way be deemed a waiver of those rights to require such performance or compliance. No waiver of any provision of this Agreement shall be effective unless in writing and signed by a duly authorized representative of the party against whom enforcement of a waiver is sought. The waiver of any right or remedy in respect to any occurrence or event shall not be deemed a waiver of any right

or remedy in respect to any other occurrence or event, nor shall any waiver constitute a continuing waiver.

6.24. Severability. If any provision of this Agreement is determined by a court of competent jurisdiction to be unenforceable in any circumstance, such determination shall not affect the validity or enforceability of the remaining terms and provisions hereof or of the offending provision in any other circumstance. Notwithstanding the foregoing, if the value of this Agreement, based upon the substantial benefit of the bargain for any party, is materially impaired, which determination made by the presiding court or arbitrator of competent jurisdiction shall be binding, then both parties agree to substitute such provision(s) through good faith negotiations.

6.25. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original. All counterparts shall be construed together and shall constitute one agreement.

6.26. Corporate Authority. The persons executing this Agreement on behalf of the parties hereto warrant that they are duly authorized to execute this Agreement on behalf of said parties and that by doing so the parties hereto are formally bound to the provisions of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by and through their respective authorized officers, as of the date first above written.

SOUTH SAN LUIS OBISPO COUNTY SANITATION DISTRICT,
A public agency

_____ Date: _____
[Chair or District Administrator]

ATTEST:

_____
Clerk of the Board
South San Luis Obispo County Sanitation District

CONSULTANT

_____ Date: _____
Signature

_____
Name and Title

_____
Social Security or Taxpayer ID Number

APPROVED AS TO FORM:

_____ Date: _____
Keith F. Collins, District Legal Counsel

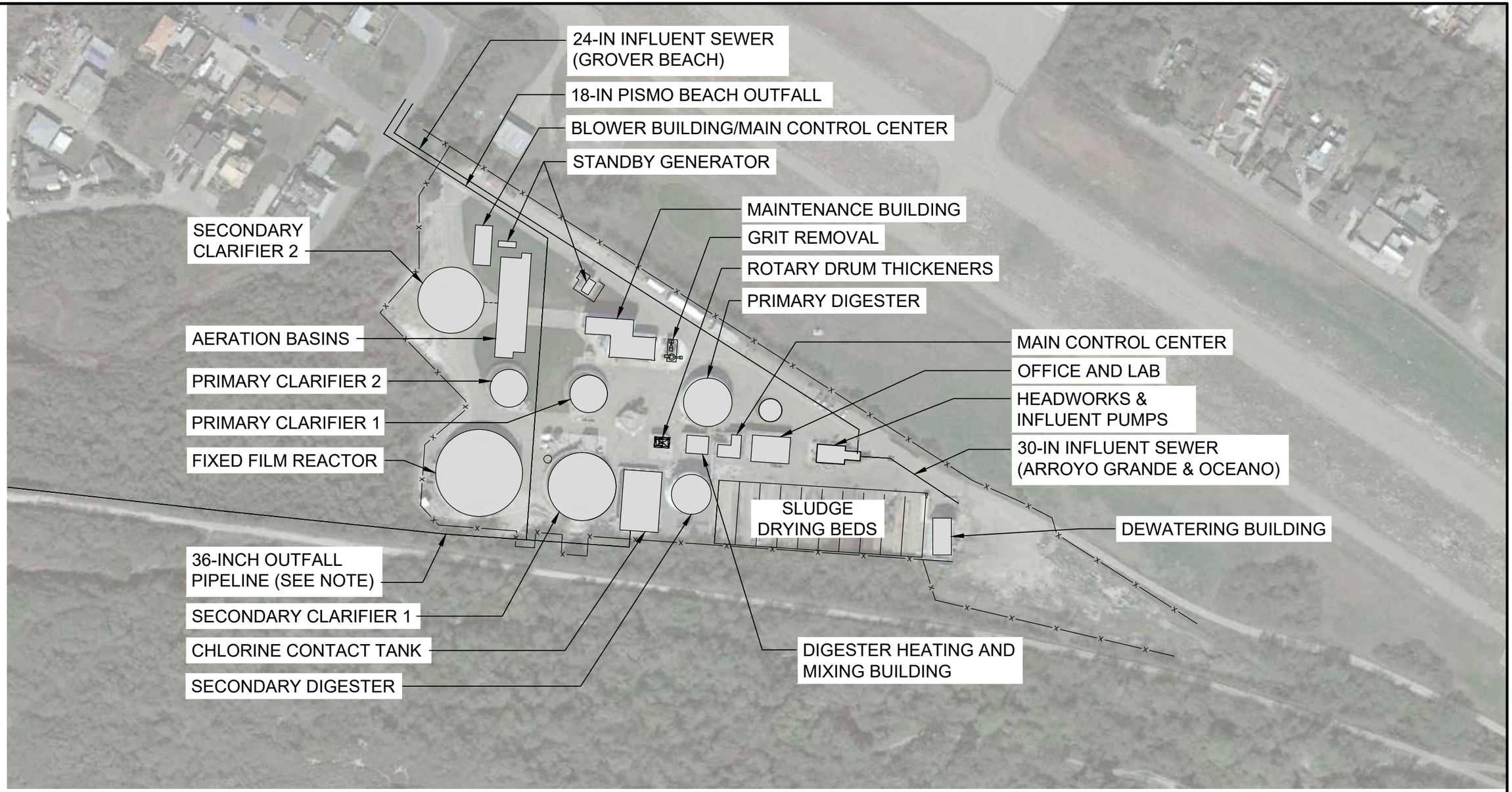
EXHIBIT A

CONSULTANT'S PROPOSAL AND SCOPE OF WORK

EXHIBIT B

CERTIFICATES OF INSURANCE AND ENDORSEMENTS

Attachment B
WWTP Site Plan & Process Schematic



NOTE:
WASTEWATER PIPING AND OCEAN OUTFALL ALIGNMENT IS APPROXIMATE AND FOR ILLUSTRATIVE PURPOSES ONLY. OUTFALL TRANSITIONS TO 30-IN PIPE NEAR SHORELINE, TRAVERSES APPROXIMATELY 5000 LINEAR FEET UNDER THE OCEAN BOTTOM, DAYLIGHTS AND TRANSITIONS TO A 30-IN DIFFUSER FOR DISCHARGE IN APPROXIMATELY 55 FEET OF WATER.

N

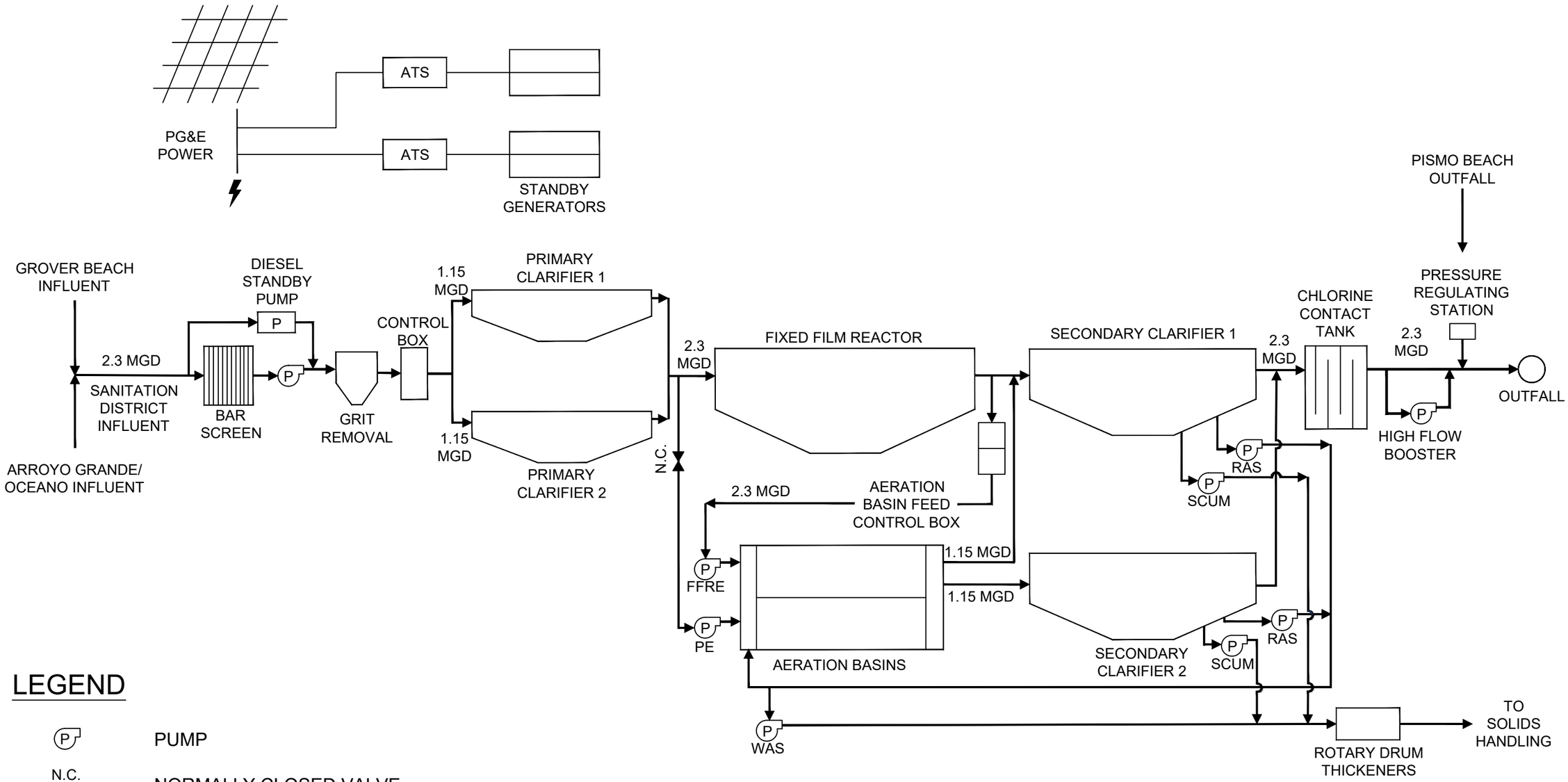
0 200' 400'

354 PACIFIC STREET
SAN LUIS OBISPO, CA 93401 (805) 329-4773

SOUTH SAN LUIS OBISPO COUNTY
SANITATION DISTRICT

WASTEWATER TREATMENT PLANT

FIGURE
2



LEGEND

P	PUMP
N.C.	NORMALLY CLOSED VALVE
1.15 MGD	FLOW DIRECTION AND AVERAGE DAILY FLOW IN MILLIONS OF GALLONS PER DAY
ATS	AUTOMATIC TRANSFER SWITCH

354 PACIFIC STREET
SAN LUIS OBISPO, CA 93401 (805) 329-4773

SOUTH SAN LUIS OBISPO COUNTY SANITATION DISTRICT

WWTP PROCESS SCHEMATIC

FIGURE 3

Attachment C
Coastal Development Permit for WWTP Redundancy Project (#3-16-0233)

CALIFORNIA COASTAL COMMISSION
CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060
PHONE: (831) 427-4863
FAX: (831) 427-4877
WEB: WWW.COASTAL.CA.GOV

W37a

ADOPTED

CDP approved:	5/10/2017
Staff report prepared by:	Daniel Robinson
Staff report date:	5/19/2017
Hearing date:	6/7/2017

REVISED FINDINGS

Application Number:	**3-16-0233**
Applicant:	**South San Luis Obispo County Sanitation District**
Project Location:	1600 Aloha Place, Oceano, San Luis Obispo County.
Project Description:	Installation of redundancy/backup infrastructure and other improvements, including minor flood-proofing, and recognition of after-the-fact development at the District's Oceano Wastewater Treatment Plant.
Commission Action:	Approved with Conditions (May 10, 2017)
Staff Recommendation:	Adopt Revised Findings

STAFF NOTE

On May 10, 2017, the Coastal Commission unanimously approved a coastal development permit (CDP) with conditions for the South San Luis Obispo County Sanitation District's wastewater treatment plant improvements. At that time, the Commission modified the staff recommendation to allow a 30-year term for the CDP, subject to verification of progress towards meeting the terms and conditions of the CDP at 10-year intervals. Because the Commission-approved project substantially differed from staff's recommendation (i.e., staff had recommended a 10-year term for the CDP), this report contains revisions reflecting the Commission's deliberations and action on this matter. Commissioners who are eligible to vote on the revised findings are those from the prevailing side at the May 10, 2017 hearing (i.e., Commissioners Bochco, Brownsey, Cox, Groom, Howell, Luévano, Peskin, Shallenberger, Sundberg, Turnbull-Sanders, Uranga, and Vargas).

SUMMARY OF COMMISSION ACTION

The South San Luis Obispo County Sanitation District (SSLOCSD) ("the District") owns and operates a wastewater treatment plant (WWTP) that is permitted under National Pollutant Discharge Elimination System (NPDES) Permit No. CA0048003 and Regional Water Quality Control Board (RWQCB) Waste Discharge Requirements Order No. R3-2009-0046. The existing plant provides secondary treatment with disinfection to treat wastewater through the use of a system of mechanical screens, primary clarifiers, fixed film reactors, one secondary clarifier, and chlorination. The plant is designed and permitted to treat a peak dry weather flow of 5.0 million gallons per day (mgd).

Currently, the existing treatment plant cannot meet effluent limits at the permitted design flow if the fixed film reactors or the secondary clarifier are out of service because there is no backup, or redundant, system for either process. To address this issue, RWQCB Order R3-2009-0046 anticipated the addition of redundancy infrastructure to be installed at this WWTP so that major wastewater facility components can be removed from service for routine maintenance or repairs, or be shut down in case of mechanical failure or emergency, without risking violation of effluent permit limits. The addition of redundancy infrastructure does not add capacity to handle higher flows than currently permitted, and no additional treatment capacity is intended to be pursued by the District based on current plans and policies adopted by the member agencies and within the service area. The project also includes other new development scheduled to be constructed in 2017,[1] as well as after-the-fact (ATF) recognition of development that has previously occurred at the WWTP site without proper authorization through a coastal development permit (CDP).[2] Finally, to ensure certain critical components of the WWTP are safe from potential flooding in the near-term, the project also improves/raises four existing critical components above the 100-year flood elevation level. All proposed redundancy components, the ATF and the new proposed development (including the flood-proofing improvements) will be, or have been, installed within the existing plant site on property that has been previously disturbed. No sensitive species or sensitive habitat is found on the site, which is enclosed by chain link fencing on all sides.

The Commission believes the redundancy infrastructure is necessary and warranted in the near term and critical to avoiding potential water quality problems, and notes that it is also anticipated by the RWQCB. The other new proposed development and ATF development is minor and provides needed improvements to ensure a functioning facility and one that helps to protect human health and the environment and prevent sewage spills due to aging infrastructure. Finally, the flood-proofing work ensures certain critical components are above the 100-year flood elevation. These are all appropriate approvals in the near-term.

---

[1] In terms of other new development proposed, the project includes installation of a new biosolids concrete slab and improvements to the headworks facility building.

[2] Violations of the Coastal Act exist on the subject property including, but not limited to a) installation of a new chlorine contact chamber, including a new concrete basin tank and pump station completed in 2004; b) installation of a replacement floodwall and new flood gates to protect the headworks building completed in 2006; c) installation of a new dewatered sludge conveyor system completed in 2014; and d) installation of a new grit removal system completed in 2016. Approval of this application pursuant to the staff recommendation, issuance of the permit, and the Applicant's subsequent compliance with all terms and conditions of the permit will result in resolution of the above described violations.

However, the Commission believes adding new infrastructure to the site in the long term would be inappropriate and inconsistent with Coastal Act Section 30253, which requires new development to minimize risk to life and property from flooding. This project does not minimize risk, but substantially adds risk by placing new infrastructure in a high flood hazard area. Staff, including the Commission's senior coastal engineer and sea level rise team, has concluded (based on an analysis of submitted reports) that the WWTP is already impacted by flooding and that flooding impacts to the WWTP are likely to become even more frequent in the future at this location. The site is in a low-lying location, located between Arroyo Grande Creek, the Meadow Creek Lagoon complex and the Pacific Ocean. A range of flooding events has occurred in this area in the past, some of which have impacted the District's WWTP (including a major event in 2010). These flooding events are more likely to occur in the future because of changes in climate.

Thus, in order to find consistency with Section 30253, the Commission approves a limited-30-year temporary authorization, with two 10-year Executive Director reevaluation requirements (see below), to both address shorter-term water quality and flood-proofing issues that require immediate attention, but also require a thorough evaluation of a long-term relocation option, to ensure minimized risk occurs in the long term. To better understand flooding and sea level rise impacts over time and to inform the 10-year reevaluations as part of the 30-year authorization provided here, the District is required to submit a Coastal Hazards Monitoring Plan within six months of approval (i.e., by November 10, 2017). In addition, the District is required to submit a Life Expectancy Analysis within two years (i.e., by May 10, 2019) in order to provide information on the expected costs of maintaining and upgrading the existing plant over time relative to the life expectancy of individual components and the plant as a whole. Finally, the District is also required to submit a Coastal Hazards Response Plan within five years (i.e., by May 10, 2022) to expand on prior work done by the District to study alternative site locations and feasibility issues and costs related to eventual total plant relocation.[3]

To ensure that the District makes adequate progress towards meeting the terms and conditions of this approval, including with respect to the aforementioned plans and analyses, the Executive Director is tasked with verifying that significant and diligent progress has been made on meeting the terms and conditions of this approval, with formal evaluations at 10-year intervals (i.e., May 10, 2027 and May 10, 2037). If the Executive Director is satisfied with the progress made towards such compliance at these intervals, then the authorization will continue. If the Executive Director is not satisfied with the progress, then the matter will be brought to the Commission for consideration and potential action, which may include, but not be limited to, changes to the CDP authorization duration.

Additional conditions, including final plans, a construction plan, visual conditions to ensure new infrastructure is less visible from Highway 1, and an indemnity provision, all combine to result in an approvable project at this location for the specified term (thirty years), consistent with the

[3] The District has provided a preliminary analysis of three alternative locations and some preliminary information on projected relocation costs.

Coastal Act. Therefore, as conditioned, the Commission-approved project is consistent with the Coastal Act.

TABLE OF CONTENTS

APPENDICES

EXHIBITS

CORRESPONDENCE

I. MOTION AND RESOLUTION

Staff recommends a **YES** vote on the motion below. Passage of this motion will result in adoption of revised findings as set forth in this report. The motion requires a majority vote of the members of the prevailing side present at the revised findings hearing, with at least three of the prevailing members voting. Only those Commissioners on the prevailing side of the Commission's action are eligible to vote on the revised findings. The Commissioners eligible to vote are Commissioners Bochco, Brownsey, Cox, Groom, Howell, Luévano, Peskin, Shallenberger, Sundberg, Turnbull-Sanders, Uranga, and Vargas.

Motion: *I move that the Commission adopt the revised findings in support of the Commission's action on May 10, 2017 approving Coastal Development Permit Number 3-16-0233, and I recommend a* ***yes*** *vote.*

Resolution: *The Commission hereby adopts the revised findings set forth below for Coastal Development Permit Number 3-16-0233 on the grounds that the findings support the Commission's decision made on May 10, 2017, and accurately reflect the reasons for it.*

II. STANDARD CONDITIONS

This permit is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment**. The permit is not valid and development shall not commence until a copy of the permit, signed by the Permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation.** Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the Permittee to bind all future owners and possessors of the subject property to the terms and conditions.

III. SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

1. **Approved Project.** This CDP authorizes: installation of South San Luis Obispo County Sanitation District (SSLOCSD) redundancy equipment and other related development, including flood-proofing, some of which is being authorized after the fact, all as described and shown on the plans titled "Site Plan – Proposed Development" prepared by Kennedy/Jenks Consultants dated March 2017 and dated received in the Central Coast District Office on March 22, 2017 (see **Exhibit 3**).

   By acceptance of this CDP, the Permittee acknowledges and agrees that the intent of this approval is an interim, and thus temporary, authorization for the Approved Project in order to allow for the continued operation and function of the SSLOCSD wastewater treatment plant (WWTP) in the shorter term, including to protect water quality and public health, while simultaneously allowing time to plan and consider alternatives for future WWTP relocation away from coastal hazard risks in the longer term. Thus, this approval represents the appropriate amount and duration of development at this time, but which necessarily requires planning for long-term adaptation to coastal hazard risks, including future WWTP relocation, while also providing for continued function and operation of the WWTP in the short term. This approval additionally recognizes limited additional measures to ensure continuing function of the WWTP in the shorter term as may be necessary, including measures to address flooding and other coastal hazards (including as these hazards may be exacerbated by sea level rise) upon determination by the Executive Director that the limited additional measures fall within the scope of authorized development of this CDP or do not require a CDP amendment.

   Any such additional measures shall be the minimum necessary to abate the identified problem, and only be allowed if they are required to ensure the continuous operation of the WWTP to protect water quality and public health, and shall be removed and the affected area restored to its pre-construction state or better upon WWTP relocation or expiration of this CDP. By acceptance of this CDP, the Permittee agrees to waive any rights that it may have under Coastal Act section 30235, the County's LCP, or other applicable laws, to shoreline protection to protect the development authorized by this permit.

2. **Duration of Authorization.** The Approved Project identified in Special Condition 1 is authorized for 30 years from the date of approval (i.e., through May 10, 2047, the expiration date of this CDP). By acceptance of this CDP, the Permittee acknowledges and agrees that the project authorized pursuant to this CDP is thus interim and temporary, and is-permitted for the time frame identified in order to provide a reasonable period of time for the Permittee to plan, develop, consider, and implement a long-term solution to address flooding and related coastal hazard threats to the SSLOCSD WWTP, and to address coastal resource impacts associated with maintaining the WWTP at this location (e.g., impacts associated with any coastal hazards protection measures, including potentially lagoon management or creek levee maintenance or expansion to protect the existing WWTP from coastal hazards risk, etc.). The long-term solution must include evaluation of the eventual relocation of the plant to an area that is safe from these and other coastal hazards, and to an area that does not

require protective devices or substantial alterations of rivers and streams, including lagoon breaching and other lagoon management.

In early 2027 and early 2037 (and in no event later than May 10, 2027 and May 10, 2037, respectively) the Permittee shall request a determination from the Executive Director about whether significant and diligent progress has been made on meeting the terms and conditions of this CDP. At that time, the Permittee shall submit to the Executive Director documentation specified in the CDP that the Permittee or the Executive Director deems necessary or appropriate to evaluate and demonstrate compliance in this regard. If the Executive Director is satisfied with the progress made towards such compliance at these intervals, then the Executive Director shall notify the Permittee of this determination, and the authorization will continue. If the Executive Director reasonably concludes that the Permittee is not making significant and diligent progress with respect to the terms and conditions of this CDP, then the Executive Director shall notify the Permittee of this determination, and the matter will be brought to the Commission for consideration and potential action, which may include but not be limited to changes to the CDP authorization duration.

The Permittee also acknowledges and agrees that it shall remove the approved development in its entirety and restore the affected areas to their pre-development condition or better within one year of the expiration date of this CDP or submit a complete (i.e., including all necessary information identified by Commission staff as required for filing purposes) CDP amendment request to the Commission prior to the expiration date of this CDP (i.e., before May 10, 2047) to extend the expiration date of this CDP as necessary to retain the approved development in its current location as part of that request. Any CDP amendment that includes retention of the approved development in its current location may not be approved without a showing of significant and diligent action taken in furtherance of the proposals recommended in the approved Coastal Hazards Response Plan (see **Special Condition 6**), and not just reliance on an expectation of long-term operation of the WWTP at the present location.

3. **Redundancy Project Plans.** PRIOR TO ISSUANCE OF THE CDP, the Permittee shall submit two full-scale sets of Redundancy Project Plans to the Executive Director for review and approval. The Redundancy Project Plans shall be substantially in conformance with the overall site plan submitted to the Coastal Commission, dated March 2017 by Kennedy/Jencks Consultants and received in the Coastal Commission's Central Coast District office on March 22, 2017. The Redundancy Project Plans shall include site plans, elevations, grading plans, drainage plans, and plans showing how all new and after-the-fact infrastructure (tanks, buildings, equipment, etc.,), and all other WWTP components if possible (e.g., such as the white "digester" tanks), that will be (or is) visible from Highway 1 will be painted or stained green or an earth-tone color to minimize visibility from Highway 1 and to blend into its surroundings. The Permittee shall undertake development in accordance with the approved Redundancy Project Plans. Minor adjustments to the approved Redundancy Project Plans may be allowed by the Executive Director if such adjustments: (1) are deemed reasonable and necessary; and (2) do not adversely impact coastal resources.

4. **Coastal Hazards Monitoring Plan.** WITHIN SIX MONTHS OF THE DATE OF THE APPROVAL OF THIS CDP (i.e., no later than November 10, 2017), the Permittee shall submit two copies of a Coastal Hazards Monitoring Plan to the Executive Director for review and approval. The Monitoring Plan shall establish the framework and parameters for: (1)

regularly monitoring flood and other coastal hazards at the site and management responses to those hazards both on and off-site (e.g., lagoon management, levee expansion, etc.); (2) identifying how those hazards are impacting and affecting the operations of the wastewater treatment plant; (3) identifying changes necessary to allow continued appropriate and required functioning of the plant; and (4) identifying flood/hazard 'triggers' to establish when actions (such as retrofits, upgrades, and including plant relocation) need to be pursued in response to specific flood/hazard events or flood management activities. At a minimum, the Monitoring Plan shall include metrics for assessing site conditions and potential responses related to flooding of the site from Arroyo Grande Creek as it may be influenced by coastal flooding and sea level rise during both typical and extreme storm events, including in relation to emergency effluent discharge, violations of effluent discharge limits, emergency response measures (e.g., lagoon management, levee expansion, etc.), use of redundancy equipment, flood-required repairs, incidents where prior flood-proofing failed, and other appropriate evaluation metrics. Upon Executive Director approval of the Monitoring Plan, the Permittee shall implement the monitoring and other measures identified in the Plan, and shall submit monitoring reports as established in the Plan at least annually for Executive Director review and approval, with the first monitoring report due by no later than May 10, 2019. Each such report shall include and describe changes since the prior year's report, as well as cumulatively describing changes over time. Extension to the six-month deadline for submittal of the Coastal Hazards Monitoring Plan may be granted by the Executive Director for good cause.

5. **Life Expectancy Analysis.** WITHIN TWO YEARS OF THE DATE OF THE APPROVAL OF THIS CDP (i.e., no later than May 10, 2019), the Permittee shall submit two copies of a Life Expectancy Analysis to the Executive Director for review and approval. The Analysis shall include an evaluation of the annual and long-term costs of maintaining the 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 (including in relation to offsite flood-proofing mechanisms such as lagoon management and expansion of the Arroyo Grande Creek Levee), etc.). The primary purpose of such Analysis is to help determine when the plant cannot function without substantial investment in new infrastructure and protective measures, all serving to help define the point at a future date when it might be appropriate to relocate the existing WWTP.

   The Analysis shall, at a minimum, include information on each component at the WWTP (e.g., headworks, clarifiers, digesters, etc.), the 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 based on industry accepted sources, manufacturers' information, and the reports of other municipalities with similarly sized facilities, and remaining years for each component and the overall WWTP. The Analysis shall include costs of anticipated habitat mitigation requirements for impacts from potential flood control projects, and conclusions must be included regarding the expected point in time when investments in infrastructure (included continued flood protection measures) at the current plant location outweigh investing in a relocated plant at a location that is safe from flooding and other coastal hazards. All

conclusions shall be supported by clear supporting documentation and evidence. Extension to the two-year deadline for submittal of the Life Expectancy Analysis may be granted by the Executive Director for good cause.

6. **Coastal Hazards Response Plan.** WITHIN FIVE YEARS OF THE DATE OF THE APPROVAL OF THIS CDP (i.e., no later than May 10, 2022), the Permittee shall submit two copies of a Coastal Hazards Response Plan to the Executive Director for review and approval. The Response Plan shall build upon the work completed to date as described in the document titled "Technical Memorandum" (by MKN dated September 9, 2016 and received in the Central Coast District Office on September 12, 2016 – see **Exhibit 8**), all of which shall be expanded to build upon the provisions of the approved Coastal Hazards Monitoring Plan (**Special Condition 4**) and the Life Expectancy Analysis (**Special Condition 5**), to provide a clear long-term plan for addressing flooding and other coastal hazards as well as coastal resource impacts at the WWTP over the long-term. The Response Plan shall, at a minimum, include a detailed cost-benefit analysis comparing the costs and benefits of maintaining the plant at the present location (via **Special Condition 5** above) versus relocating the plant to an area safe from flooding and other coastal hazards at defined times (e.g., 2027, 2037, 2047, etc.) or in response to defined triggers (e.g., as identified in the approved Coastal Hazards Monitoring Plan (**Special Condition 4**)). Expected costs of purchasing land for a relocated plant must be included, as must expected costs to decommission the existing plant and to restore the site to its natural state, and costs to upgrade the plant (including a relocated plant) to full tertiary treatment (or better) and water recycling (including addressing the potential for joint satellite facilities and/or collaborations with nearby communities for water recycling). Any costs associated with new pumps or lift stations necessary (including rerouting of sewer pipes to the relocated plant, etc.) shall also be included. The Response Plan shall include a timeline of potential major relocation events, including expected timeframes for land acquisition, planning, permitting, design, construction and eventual operation, of a relocated plant. Extension to the five-year deadline for submittal of the Coastal Hazards Response Plan may be granted by the Executive Director for good cause.

7. **Construction Plan.** PRIOR TO ISSUANCE OF THE CDP, the Permittee shall submit two sets of a Construction Plan to the Executive Director for review and approval. The Construction Plan shall, at a minimum, include the following:

   (a) Construction Areas. The Construction Plan shall identify the specific location of all construction areas, all staging areas, all storage areas, and all construction access corridors (to the construction site and staging areas). All such areas within which construction activities and/or staging are to take place shall be minimized in order to have the least impact on public views and other coastal resources.

   (b) Construction Methods and Timing. The Construction Plan shall specify the construction methods to be used, including all methods to be used to keep the construction areas separated from adjacent sensitive habitats, including all methods to be used to protect adjacent waterbodies, such as Meadow Creek, Arroyo Grande Creek and the Pacific Ocean. All erosion control/water quality best management practices to be implemented during construction and their location shall be noted. These measures shall be designed to prevent erosion, sedimentation, and the discharge of pollutants during

construction to the maximum degree feasible, and shall be selected and designed in accordance with the California Storm Water Best Management Practices Handbook.

(c) Construction Requirements. The Construction Plan shall include the following construction requirements specified by written notes on the Construction Plan. Minor adjustments to the following construction requirements may be allowed by the Executive Director if such adjustments: (1) are deemed reasonable and necessary; and (2) do not adversely impact coastal resources.

- All work shall take place during daylight hours (i.e., from one hour before sunrise to one hour after sunset). Nighttime work and lighting of the work area are prohibited.
- Construction (including but not limited to construction activities, and materials and/or equipment storage) is prohibited outside of the defined construction, staging, and storage areas.
- Any equipment washing, servicing, and refueling activities on the site shall be located at least 50 feet from the perimeter fence, and shall only be allowed at designated locations as noted on the Plan. Appropriate best management practices shall be used to ensure that no spills of petroleum products or other chemicals take place during these activities.
- The construction site shall maintain good construction site housekeeping controls and procedures (e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain, including covering exposed piles of soil and wastes; dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather; remove all construction debris from the site; etc.).
- All erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each workday. At a minimum, silt fences, or equivalent apparatus, shall be installed at the perimeter of the construction site to prevent construction-related runoff and/or sediment from entering into adjacent riparian areas and wetlands.
- The Permittee shall notify planning staff of the Coastal Commission's Central Coast District Office at least three working days in advance of commencement of construction or maintenance activities, and immediately upon completion of construction or maintenance activities.

All requirements above and all requirements of the approved Construction Plan shall be enforceable components of this CDP. The Permittee shall undertake development in accordance with this condition and the approved Construction Plan. Minor adjustments to the above construction requirements may be allowed by the Executive Director if such adjustments: (1) are deemed reasonable and necessary; and (2) do not adversely impact coastal resources.

8. Construction Site Documents & Construction Coordinator. DURING ALL CONSTRUCTION:

(a) Construction Site Documents. Copies of the signed CDP and the approved Construction Plan shall be maintained in a conspicuous location at the construction job site at all times, and such copies shall be available for public review on request. All persons involved with the construction shall be briefed on the content and meaning of the CDP and the approved Construction Plan, and the public review requirements applicable to them, prior to commencement of construction.

(b) Construction Coordinator. A construction coordinator shall be designated to be contacted during construction should questions arise regarding the construction (in case of both regular inquiries and emergencies), and the coordinator's contact information (i.e., address, phone numbers, email address, etc.) including, at a minimum, a telephone number and email address that will be made available 24 hours a day for the duration of construction, shall be conspicuously posted at the job site where such contact information is readily visible from public viewing areas while still protecting public views as much as possible, along with an indication that the construction coordinator should be contacted in the case of questions regarding the construction (in case of both regular inquiries and emergencies). The construction coordinator shall record the contact information (name, address, email, phone number, etc.) and nature of all complaints received regarding the construction, and shall investigate complaints and take remedial action, if necessary, within 24 hours of receipt of the complaint or inquiry.

9. Public View Camouflage Verification. IMMEDIATELY FOLLOWING COMPLETION OF CONSTRUCTION OF THE APPROVED PROJECT, the Permittee shall submit photographic and any other appropriate evidence demonstrating that all new and after-the-fact infrastructure (tanks, buildings, equipment, etc.,) and all other WWTP components if possible (e.g., such as the white "digester" tanks) that will be (or are) visible from Highway 1 has been painted or stained green or an earth-tone color as directed by **Special Condition 3** above.

10. Assumption of Risk, Waiver of Liability, and Indemnity Agreement. By acceptance of this CDP, the Permittee acknowledges and agrees on behalf of itself and all successors and assigns:

(a) Coastal Hazards. That the site is subject to extreme coastal hazards including but not limited to episodic and long-term shoreline retreat and coastal erosion, high seas, ocean waves, storms, tsunami, coastal flooding, landslides, bluff and geologic instability, and the interaction of same;

(b) Assume Risks. To assume the risks to the Permittee and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development;

(c) Waive Liability. To unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards;

(d) Indemnification. To indemnify and hold harmless the Coastal Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred

in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards; and,

(e) Property Owner Responsible. That any adverse effects to property caused by the permitted project shall be fully the responsibility of the property owner.

11. Indemnification by Permittee/Liability for Costs and Attorneys' Fees. By acceptance of this CDP, the Permittee agrees to reimburse the Coastal Commission in full for all Coastal Commission costs and attorneys' fees (including (1) those charged by the Office of the Attorney General, and (2) any court costs and attorneys' fees that the Coastal Commission may be required by a court to pay) that the Coastal Commission incurs in connection with the defense of any action brought by a party other than the Permittee against the Coastal Commission, its officers, employees, agents, successors and assigns challenging the approval or issuance of this CDP. The Coastal Commission retains complete authority to conduct and direct the Commission's defense of any such action against the Coastal Commission.

IV. FINDINGS AND DECLARATIONS

A. PROJECT LOCATION, BACKGROUND, AND DESCRIPTION,

Project Location and Background

The proposed project site is at the South San Luis Obispo County Sanitation District's (District's) Wastewater Treatment Plant (WWTP), which is located at 1600 Aloha Place in the unincorporated community of Oceano, in southern San Luis Obispo County. The WWTP is located on a 10.84-acre parcel just south of and adjacent to the Oceano County Airport and just north of Arroyo Grande Creek and its associated levee (see **Exhibit 1** for location maps and aerials). The surrounding area between the ocean and Highway 1 to the northeast is comprised of residential and industrial development, and visitor serving facilities. This area of Oceano is within the Commission's original (retained) permitting jurisdiction in a low-lying area (between 11 and 14 feet NAVD)[4] near to the coast (i.e., about 1,200 feet inland of the beach).

The WWTP also sits at the confluence of Arroyo Grande Creek and the Meadow Creek Lagoon complex, which form a series of lagoons near the beach to the west of the site. Because of its location, the site currently experiences flooding events from primarily winter storms that produce flows that swell these nearby adjacent waterbodies. For this reason, and specifically due to the presence of Arroyo Grande Creek, the site is located wholly within the County's Flood Hazard (FH) zone. Oceano Dunes State Vehicular Recreation Area (ODSVRA) is located immediately to the southwest of the WWTP on the other side of Arroyo Grande Creek.

The WWTP was originally designed and built in the mid 1960's with an original flow capacity of 2.5 million gallons per day (mgd). Today the WWTP, which serves the communities of Oceano, Arroyo Grande, and the City of Grover Beach, has an overall flow capacity of 5.0 mgd,[5] provides secondary treatment, and discharges into the Pacific Ocean via an ocean outfall west of the plant. The Commission has issued permits and waivers in the past for upgrades, new components, and improvements to the facility.[6]

Project Description

The primary reason for the proposed project is to provide redundancy or backup infrastructure[7] to the WWTP so that major wastewater facility components can periodically be removed from

[4] NAVD refers to the North American Vertical Datum of 1988, a fixed reference for elevations determined by geodetic leveling.

[5] A plant enlargement in 1986 increased capacity from the original 2.5 mgd to 3.3. mgd (CDP 4-86-129), and further improvements in 1990 increased the capacity to 5.0 mgd through design modifications and RWQCB approval.

[6] For example, the Commission approved CDPs 152-31, 197-11, 417-34, 4-86-129, 3-02-028, and CDP waivers 3-95-095-W and 3-08-056-W

[7] In July 2005, Kennedy Jencks Consultants completed a long range plan for the WWTP. The Plan determined that no expansion of capacity or flow is necessary and that the plant meets current discharge requirements. However, a lack of critical backup systems threatens the plant's ability to reliably meet discharge standards at all times, particularly during maintenance and repair operations. The Plan recommended improvements that will provide sufficient redundancy to ensure uninterrupted meeting of current and future wastewater treatment standards under all circumstances.

service for routine maintenance or repairs, or be shut down in case of mechanical failure or emergency, while maintaining operation of the WWTP and without risking violation of Regional Water Quality Control Board (RWQCB) effluent permit limits.[8] The redundancy component of the project has been anticipated for some time by the RWQCB at this site through its Permit Order No. R3-2009-0046 (on file in the Commission's Central Coast District office).

The proposed project includes a number of different components, which will be installed within the existing WWTP site on previously disturbed surfaces.[9] See **Exhibit 2** for photos of the project site and **Exhibit 3** for the project's site plan.

Redundancy
The proposed redundancy infrastructure includes the following:

- Installation of two new activated sludge aeration basins, one new secondary clarifier, one new fixed film reactor effluent pump station, one new waste activated sludge thickening centrifuge, and modifications to the existing dewatering platform to accommodate the new centrifuge.
- Installation of a new motor control center building, which includes a new blower and electrical equipment.
- Installation of associated development, including yard piping, instrumentation, power and control panels, electrical ducts, and control and power conduits.

Other New Development
The District also proposes to install a new biosolids storage slab adjacent to the existing centrifuge building on the far eastern edge of the WWTP, as well as make minor improvements within the headworks facility building (i.e., replacement of augers with mechanical bar screens, including some electrical panel relocation and bypass piping).

After-the-fact Development
The project also includes after-the-fact (ATF) recognition of development that has previously occurred on the project site without a CDP, including: a) installation of a new chlorine contact chamber, including a new concrete basin and pump station (completed in 2004); b) installation of a floodwall and flood gates to protect the headworks building (completed in 2006); c) installation of a new dewatered sludge conveyor system (completed in 2014) [10]; and d) installation of a new grit removal system (completed in 2016).

Flood-Proofing
The project also includes elevation measures to move four existing critical WWTP components above the 100-year flood elevation level. Specifically, existing flood brackets would be raised at the standby power building, the power generation station, and the control building/office; and a

[8] The addition of redundancy infrastructure does not add capacity to handle higher flows than currently permitted by the RWQCB (in terms of the volumetric discharges of wastewater), and thus the proposed project does not include an increase in wastewater treatment capacity.

[9] Approximately 90% of the WWTP site is paved and/or built over with structures or equipment; the remaining 10% consists of undeveloped areas consisting of a mix of imported fill soils and disturbed native soils.

[10] The conveyor system will be removed upon completion and operation of the biosolids storage slab (see below).

new flood barrier would be installed around an existing transformer located northeast of the control building/office.

B. STANDARD OF REVIEW

The proposed project is located within the Commission's retained/original CDP jurisdiction area because it is in an area of historic tidelands that were filled, and thus the standard of review is Chapter 3 of the Coastal Act, with the San Luis Obispo County Local Coastal Program (LCP) policies and standards providing guidance.

C. HAZARDS

Coastal Act Section 30253 requires that new development minimize risk to life and property in areas of high flood hazard areas, and ensure long-term structural integrity, and states in relevant part:

> ***Section 30253.*** *New development shall do all of the following:*
>
> *(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
>
> *(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

Coastal Act Section 30253 requires that new development minimize risks to life and property from geologic and coastal hazards, such as flooding. Section 30253 also requires new development to assure stability and structural integrity, to not create or contribute to erosion or geologic instability, and not to rely on protective devices.

The San Luis Obispo County LCP, which acts as guidance for the proposed project, also includes a number of policies and standards designed to minimize risk of new development located in high flood hazard areas, including Hazards Policy 1, which requires that all new development proposed within areas subject to natural hazards from geologic or flood conditions (including beach erosion) be located and designed to minimize risks to human life and property. The LCP also contains a Flood Hazard (FH) combining designation (zone) for areas where new development and associated uses may be subject to potential hazards to life and property from potential inundation by a 100-year flood or for sites located within coastal high hazard areas.[11] If new development is to occur in such areas, certain siting, construction, and other requirements apply. For example, LCP Hazard Policy 1 requires that all new development proposed within areas subject to natural hazards from geologic or flood conditions (including beach erosion) shall

[11] The areas of special flood hazard are identified by the Federal Insurance Administration, through the Federal Emergency Management Agency, in a scientific and engineering report entitled "The Flood Insurance Study for San Luis Obispo County," dated July 18, 1985, with accompanying flood insurance rate maps and flood area boundary maps, as they may be subsequently revised from time to time. The flood insurance study is on file in the County's Public Works office.

be located and designed to minimize risks to human life and property. Further, the LCP's Flood Hazard (FH) combining, or overlay, designation (see **Exhibit 4**) maps specific areas of the coastal zone where terrain characteristics present new development and associated uses with potential hazards to life and property from potential inundation by a 100-year frequency flood or from other coastal hazards. In these areas, which include the project site, to comply with the Coastal Act and relevant LCP policies regarding coastal hazards, new development must adhere to certain general hazard avoidance requirements (i.e., it must be located outside of the flood hazard areas to the maximum extent feasible*)* and, in situations where it is infeasible to site new development outside of the flood hazard area, must be constructed to certain construction standards, pursuant to LCP Coastal Zone Land Use Ordinance (CZLUO) Section 23.07.066 (see **Exhibit 6** for the full construction standards required per Section 23.07.066 and all other relevant LCP policies and standards related to hazards).

Analysis

Coastal Act Section 30253 requires that new development minimize risks to life and property from geologic and coastal hazards, such as flooding. Section 30253 also requires new development to assure stability and structural integrity, and that it neither create nor contribute to erosion or geologic instability nor rely on protective devices. As stated above, the proposed project is located wholly within the Commission's original jurisdiction, which consists of an area of low-lying former tidelands, and is within the County's Flood Hazard (FH) zone due to the presence of a number of creeks and lagoons in the immediate vicinity of the WWTP. In addition, the project site is located about 1,200 feet inland from the beach.

The Applicant submitted a sea level rise analysis (SLR analysis) prepared by ESA, dated August 3, 2016, to evaluate the existing and future exposure of the WWTP to flooding. The ESA report indicates that the WWTP (and other development in this area) is subject to flooding in three main ways: 1) existing and future coastal flooding and erosion impacts associated with wave overtopping of the Arroyo Grande Creek levee and into the Meadow Creek Lagoon complex; 2) fluvial flooding on Arroyo Grande Creek, associated with extreme rainfall-runoff events, which overtops the levee; and 3) estuarine flooding caused by elevated water levels in Meadow Creek Lagoon, and associated with moderate fluvial flows in combination with a closed and elevated Arroyo Grande Creek Lagoon. According to the SLR analysis, the primary flood mechanism that will increase due to climate change will be the estuarine flood.

A major flooding event in the area occurred in December 2010, and primarily resulted from estuarine flooding (i.e., high water levels in Arroyo Grande Lagoon blocked drainage through a tide gate (between Arroyo Grande and the Meadow Creek Lagoon complex) and backed up water levels into the Meadow Creek Lagoon complex). The peak water level at that time was reported by the County and the District to be 12.3 feet NAVD. Floodwaters at that time flooded several low-lying residences in the area as well as the main access entrance[12] to the WWTP and also damaged the electrical system that powers the pumps, which resulted in a wastewater spill and operational failures. It should be noted that the County's flood threshold to implement measures to protect adjacent residential development in the area and the WWTP's main access

[12] The WWTP's main access entrance is at the intersection of Aloha Place and Honolulu Avenue at the northwest corner of the site. A secondary access point is located near the existing centrifuge building at the far southeastern end of the site. This secondary access is at elevation 13 feet NAVD.

point is 10.4 feet NAVD. Due to a limited record regarding flood events, this 2010 flood level was used as the "maximum" flood level in the modeling analysis for future flood conditions, as described in more detail below.

Current Site Characteristics
From the Applicant's SLR analysis, the WWTP ground elevations (excluding the access road), range from approximately 11 feet NAVD to over 14 feet NAVD, with most of the site located between 12 and 13 feet NAVD (see page 3 of **Exhibit 7** for topographic site elevations). The current FEMA Flood Insurance Rate Map (FIRM) for this area indicates that the 100-year Base Flood Elevation (BFE) at the WWTP site is approximately 2.5 feet *above* the existing ground elevations, but generally ranges from between 14 and 16 feet, or approximately 15 feet over the whole of the site (see **Exhibit 5**). Thus, the WWTP is currently vulnerable to extreme events, such as a large storm with a 100-year return period, as well as events comparable to the December 2010 flood.

However, the existing WWTP does include flood protection designed to ensure certain components, especially "critical" components,[13] are protected during flood events (including through the use of flood brackets, floodwalls, floodgates, barriers, etc.). Per CZLUO Section 23.07.066, all non-residential development in the FH zone must be flood-proofed to a minimum of one-foot above the 100-year storm flood profile level. The Applicant has also provided a technical memorandum, by Kennedy/Jenks Consultants, dated September 7, 2016 and received on September 12, 2016 (and which uses data from the above SLR analysis), which identifies elevations of existing components on site. Based on the technical memorandum, the lowest elevation of existing flood protection for any component on the site is 12.8 feet[14] (see **Exhibit 7** for a full list of WWTP components and their corresponding elevations**)**.[15] Commission staff's understanding is that certain existing facilities were installed with flood proofing measures as part of an improvement project in 1979 and that further flood protection measures were added more recently: some in 2006 (i.e., raising the flood protection wall height around the headworks and pumping plant, and installing heavy-duty floodgates),[16] and some soon after the 2010 flood event.[17]

[13] Critical components are those components of the WWTP that must remain functioning at all times in order to continue to provide service without potentially causing unintended effluent discharges.

[14] This is the transformer, which is one of four critical components of to be protected above the 100-year BFE as part of this project. The existing flood protection elevation of the standby power building is 13.81 and the centrifuge includes flood protection to 17.75 feet. The standby power building is proposed as part of this project to be raised from 13.81 to 15.75 feet NAVD, one-foot above (freeboard) the 100-year BFE.

[15] The Applicant's SLR analysis states that "critical facilities have been protected with flood barriers and gates to elevation 14.4 feet NAVD. This statement from the SLR analysis is based on "personal communication with a former plant superintendent (John Clemmons)."

[16] This development project is one of the four ATF components of the proposed project requested by the District to be recognized as part of this project.

[17] For example, Gerhardt Hubner, District Manager, has stated (in an email dated April, 11, 2017) that silt gates were installed around certain building/areas prior to the 2010 event, which are designed to prevent debris or mud from entering a critical piece of equipment or room. In addition, after 2010, the WWTP relocated electrical wires/wiring to eliminate vulnerability, constructed a v-ditch in front of the standby generator area to divert stormwater (one area that had standing water in 2010 event), and routinely runs and checks the bypass pump at the headworks and other pumps for functionality.

Future Site Characteristics
The WWTP site will experience more frequent and more intense flooding episodes in the future due to expected sea level rise (SLR) and associated flooding of Arroyo Grande Creek and its lagoon and the Meadow Creek Lagoon complex. These episodes will be as a result of coastal flooding, fluvial flooding, or estuarine flooding, as described in the above section, with the estuarine flooding being the primary risk.

The SLR analysis uses the Commission's recently adopted Sea Level Rise Policy Guidance document (2015), which recommends using scenarios that represent a range of possible sea level rise amounts that may result from climate change and focuses specifically on the medium and high SLR projections.[18] As stated above, because there is limited data on extreme flooding events for the site, the SLR analysis used the 2010 flood event (that peaked at 12.3 feet NAVD) as the "maximum" flood event in the modelling simulations. Based on this analysis, for the year 2050, the maximum flood elevation is expected to range from 12.7 to 13.2 feet NAVD, for medium and high sea level rise projections, respectively. For the year 2100, the maximum flood elevation is expected to be 13.9 to 15.6 feet NAVD, for medium and high projections, respectively. To reiterate, current flood thresholds related to the WWTP are as follows: 10.4 feet NAVD for the WWTP's main access point and adjacent residential development in the area; 12.3 feet NAVD represents the peak flood elevation reached by the 2010 flood event; and 12.8 feet NAVD represents the lowest critical component currently flood proofed to. Thus, by 2050, the maximum flood elevation will be above the 2010 peak flood elevation and well above the flooding threshold of the WWTP's main access point.

To better understand how the site and WWTP infrastructure may be impacted in the future, the Applicant's SLR analysis identifies how often flooding events may occur on the site in the future. Due to the limited flood record, the analysis could not evaluate the return periods of extreme events with sufficient confidence. Instead, the analysis uses a semi-quantitative method that identifies generalized event frequencies (as defined below) to describe how often a given water level would occur at the WWTP. Event frequencies are described as follows where the "% exceedance" refers to the percentage of time that the water level (or flood event) would be greater than a certain elevation:

- **Rare (extreme) water levels**: less than 1% exceedance, expected to have a 10-year return period or greater and occur during a relatively large storm.
- **Nuisance water levels:** between 1% and 10% exceedance, expected to have approximately a 1-year return period.

[18] Sea level rise projections are typically presented in ranges due to several sources of uncertainty regarding future greenhouse gas emissions and the physical responses of earth systems (such as ice sheet loss) to climate change. Here, the range in SLR projections for both 2050 and 2100 represent possible sea level rise based on two specific scenarios of future greenhouse gas emissions (so four scenarios total). The high SLR projection relates to the high emissions scenario which assumes continued fossil-fuel intensive energy use, along with population growth that peaks mid-century, high economic growth, and development of more efficient technologies. The medium scenario assumes the same population, economic, and technological growth as the high scenario, but also assumes that energy would be derived from a balance of sources, thereby reducing greenhouse gas emissions.

- **Typical water levels:** greater than 10% exceedance, expected to be representative of typical conditions and daily water levels.[19]

The current frequency of a flood that is comparable to the 2010 event benchmark of 12 feet NAVD at the site is defined as rare (specifically, a less than 0.01% exceedance value), as is the flooding frequency for the County's threshold for residences and WWTP main access at 10.4 feet NAVD (a 0.2% exceedance value). Based on the SLR analysis for the project that includes the proposed flood protection, the risk that the WWTP infrastructure would be flooded by a somewhat large storm (such as a storm with a 10-year return period) is reduced to almost zero in the short term.

In the future, the Applicant's analysis concludes that by 2050 (33 years from now), under the "high" SLR scenario (24 inches of SLR), adjacent residential areas and the WWTP's two access points would be routinely flooded by "typical" water levels, even though the WWTP itself may still be safe from relatively large storms (those with a 10-year return period) due to its existing and proposed flood protection measures. By 2100 (83 years from now), however, under the "high" SLR scenario (66 inches of SLR), adjacent residential areas and the WWTP's two access points would again be routinely flooded, and the WWTP itself would see "nuisance" flooding from even moderate-size storms, such as those with an annual (or even more common) return period.

Thus, based on the Applicant's analysis, the WWTP site and several of the existing buildings and critical facilities are currently at elevations where they may be subject to rare flooding currently, and flooding could increase in frequency with rising sea level. The elevation of some of the WWTP components (and as part of this project, four critical facilities at the WWTP are to be elevated at least up to 15.75 feet NAVD) will avoid or minimize flood impacts from somewhat large storms (those with a 10-year return period) for current conditions and as influenced by SLR until approximately 2070 (53 years from now) under the high SLR scenario.

However, the existing access to the WWTP is at a low elevation and it is likely to be regularly impacted by 2050.[20] Also, the 12-foot NAVD flood thresholds, based on the 2010 event, will continue to be exceeded somewhat *rarely* by 2050, but by the end of the century will be exceeded on a *typical* basis. The secondary access point will be relied on more heavily as the main access point is routinely flooded; however, at 13 feet NAVD, this access will also be flooded (albeit rarely) by 2050, and routinely flooded earlier than the WWTP itself. Importantly, in addition to increasing flood risk from the smaller events (10-year return periods or less) included in the SLR analysis, the site would also be expected to flood from more extreme events, such as a 100-year event, which were not explicitly included in the SLR analysis.

Preliminary Inconsistency with 30253

[19] These terms are defined relative to existing site grades at the WWTP and the associated potential flood consequences.

[20] The typical water levels in the Meadow Creek Lagoon will be greater than 10 feet NAVD by 2050, and greater than 12 feet NAVD by 2100. Changes in the typical water levels represent permanent inundation and imply that land use changes will need to be implemented.

Even though the frequency of flooding of the WWTP itself is not expected to be significant for several decades, adding any new development to a low-lying flood prone area, particularly for critical infrastructure like redundancy or backup infrastructure (within the County's FH zone) does not minimize risk to life and property, as required by the first part of Coastal Act Section 30253. In fact, adding any new development, especially development that adds significant infrastructure and investment to the site (including in terms of size, scope, and cost, etc.) actually *increases* risk to life and property at an already inherently risky location. The WWTP also *currently* suffers from periodic flooding events, and is only able to function adequately and safely at this location because of its existing flood protection measures. Thus, the long-term allowance of the development approved here would be inconsistent with 30253 on the basis that it does not minimize risk to life and property.

Consistency with 30253 as Conditioned

While it would be inconsistent with the Coastal Act and the Commission's Sea Level Rise guidance to approve critical infrastructure in a location that is subject to the above-described SLR and flooding hazards, the proposed project is ancillary to existing critical infrastructure and is needed to ensure the existing development operates safely, even in the short term. This is because the WWTP would be without redundancy, or backup, infrastructure that are critically needed so that major wastewater facility components can periodically be removed from service for routine maintenance and repairs, or be shut down in case of mechanical failure or emergency, while maintaining operation of the WWTP. And specifically, the flood-proofing (i.e., "elevation") components of the proposed project are necessary to prevent recurrence of a wastewater spill in case of flooding of magnitude such as the one that occurred in 2010 and to ensure compliance with the RWQCB's effluent permit limits. Thus, the proposed project is necessary to ensure proper functioning of the WWTP to current standards and measures at this time, when the flooding risks discussed above are not yet significant. In addition, the proposed project has been anticipated by the RWQCB at this site through its Permit Order No. R3-2009-0046. Furthermore, the RWQCB strongly supports this project because the upgrades will presently protect human health and the environment and prevent sewage spills due to aging infrastructure.

The Commission concurs that the project is needed in the *immediate* term. However, adding new permanent infrastructure to the site is inappropriate and inconsistent with Section 30253(a) of the Coastal Act over the long term, given the conclusions based on the technical review of projected SLR and future flooding data for this site, as described above. As mentioned, the site is in a low-lying location (former tidelands that have been filled), located between the Arroyo Grande Creek and Lagoon to the south and Meadow Creek and Lagoon to the north, and the Pacific Ocean to the west. Flooding events have occurred in this area in the past which have impacted the WWTP, including a major flooding event in 2010 that resulted in a wastewater spill. The Commission's senior engineer, Dr. Lesley Ewing, has concluded that without efforts to elevate or flood proof portions of the WWTP, site flooding and resultant damage to the facilities is likely to occur more frequently at the WWTP in the future with more serious consequences due to changes in climate and associated sea level rise.

Coastal Act Section 30253 requires the project to minimize future risk, assure long-term stability and structural integrity, and not require protective measures in the future that would substantially

alter natural landforms along bluffs and cliffs. For the proposed project, the main concern under Section 30253 of the Coastal Act is minimizing risk to life and property. This is particularly critical given the dynamic estuarine and coastal environment within which the proposed project would be surrounded. The Commission finds that the approval of the proposed redundancy system, other minor development to improve the functioning of the facility, ATF recognition of previous work done on site, and flood-proofing improvements, are appropriate *interim* measures to provide continuing wastewater services to the Oceano community while the District explores long-term solutions for the WWTP given future increased flooding scenarios, including options for future relocation of the entire WWTP.[21] The Commission believes that a 30-year authorization, with 10-year Executive Director progress evaluation requirements (see below), is appropriate in this case given the issues facing this wastewater treatment plant. In addition, a 30-year authorization will also help the District in its efforts to secure funding for the project.

Thus, **Special Condition 1** authorizes the proposed project on a *temporary* basis to allow for the continued operation and function of the WWTP, including to presently protect water quality and public health, while simultaneously allowing time to plan for future WWTP relocation away from coastal hazard risks when the time is right. **Special Condition 1** also recognizes that limited measures to ensure continuing function of the WWTP may be necessary in the interim, including measures to address flooding and other coastal hazards (including as these hazards may be exacerbated by sea level rise), that they shall be the minimum necessary to abate the identified problem, shall only be allowed if they are required to ensure the continuous operation of the WWTP to protect water quality and public health, and shall be removed and the affected area restored to its pre-construction state upon WWTP relocation or expiration of this CDP. **Special Condition 2** authorizes the project for 30 years to both address present-term water quality and flood-proofing issues that require immediate attention, and to allow for a thorough evaluation of the relocation option to an area that is safe from flooding and other coastal hazards and does not require protective devices or substantial alterations of rivers and streams. Special Condition 2 also requires 10-year and 20-year Executive Director evaluation requirements to ensure that the District is showing significant progress on meeting the terms and conditions of this approval (see below).

Specifically, to ensure that the District makes adequate progress towards meeting the terms and conditions of this approval, the Executive Director is tasked with verifying that significant and diligent progress has been made on meeting the terms and conditions of this approval, with formal evaluations at 10-year intervals (i.e., May 10, 2027 and May 10, 2037). If the Executive Director is satisfied with the progress made towards such compliance at these intervals, then the authorization will continue. If the Executive Director reasonably believes that adequate progress is not being made toward such compliance at these intervals, as required by the terms and

[21] It is worth noting that although expiration of the authorization for the development approved by this CDP may not necessarily require SSLOCSD to remove the portions of the WWTP which are authorized by prior CDPs with continuing validity, as a practical matter continuing future operation of the WWTP may depend on authorization of this CDP and the results of the every-10-year progress evaluation. Or, the District may need to seek a permit amendment for those prior CDPs in order to address future SLR-related flooding hazards (which may not be found consistent with Section 30253(a) of the Coastal Act for substantially the same reasons discussed herein, although that would be evaluated at the time of a future application). Therefore, it is incumbent on the District to consider future relocation of the entire WWTP, and the District should not assume that long-term operation of the WWTP at its present location can necessarily be found Coastal Act consistent.

conditions of the CDP, then the matter will be brought to the Commission for consideration and potential action, which may include, but not be limited to, changes to the CDP authorization duration. **See Special Condition 2.**

Special Conditions 4, 5, and 6 are vitally important to assessing progress made towards meeting the terms and conditions of this CDP. In terms of **Special Condition 4**, critical to the task of minimizing risk and ensuring long-term stability, as required by Section 30253, is a formal long-term monitoring program for the WWTP. If the approved project is damaged in the future (e.g., as a result of flooding), this could lead to potentially serious water quality impacts, similar to that which occurred as a result of the 2010 flooding event. Such damages could adversely affect nearby beaches resulting from sewage spills and/or create a health hazard to the public using the beaches. Thus, in order to ensure that the Applicant and the Commission understand how flooding impacts are affecting the WWTP over time, the Applicant is required to submit a Coastal Hazards Monitoring Plan (**Special Condition 4**) to establish the framework and parameters for: (1) regularly monitoring flood and other coastal hazards at the site and management responses to those hazards both on and off-site (e.g., lagoon management, levee expansion, etc.); (2) identifying how those hazards are impacting and affecting the operations of the WWTP; (3) identifying changes necessary to allow continued appropriate and required functioning of the plant; and (4) identifying flood/hazard 'triggers' to establish when WWTP changes (including up to and including plant relocation) need to be pursued in response to specific flood/hazard events or flood management activities.

Further, to ensure that the District and the Commission fully understand the annual and long-term costs of maintaining the existing plant at its current location, **Special Condition 5** requires a Life Expectancy Analysis to be submitted within two years of approval. The primary purpose of such an analysis is to determine when the WWTP cannot function without substantial investment in new infrastructure and protective measures, at which point it might be appropriate to relocate the existing WWTP. The Life Expectancy Analysis shall include information on each component at the WWTP (e.g., headworks, clarifiers, digesters, etc.), the 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 based on industry accepted sources, manufacturers' information, and the reports of other municipalities with similarly sized facilities, and the expected remaining years of use for each component and for the overall WWTP. Conclusions must be included regarding the expected point in time when investments in infrastructure (including continued flood protection measures) at the current WWTP location outweigh investing in a relocated plant at a location that is safe from flooding and other coastal hazards.

Finally, to ensure that the District is planning for a relocated WWTP in order to ensure consistency with Section 30253(a) of the Coastal Act, **Special Condition 6** requires a Coastal Hazards Response Plan to build upon the work completed to date as described in the document titled *"Technical Memorandum, Evaluation of Wastewater Treatment Plant Site Alternatives and Conceptual Costs for CDP Application"* by MKN and dated September 9, 2016 (see **Exhibit 8**), which provides initial information on conceptual costs for a relocated WWTP that meets current effluent requirements and provides a similar level of treatment to the existing facility. This memorandum identified three offsite locations that have at least 12 acres of area, are located

outside of the flood hazard designation, and are an allowed use in the applicable land use zone (see page 6 of **Exhibit 8** for the three identified sites).[22] The Coastal Hazards Response Plan is intended to also expand upon the required Coastal Hazards Monitoring Plan (**Special Condition 4**) and the Life Expectancy Analysis (**Special Condition 5**) to provide a clear long-term plan for addressing flooding and other coastal hazards as well as coastal resource impacts at the WWTP over the long-term, including total relocation of the WWTP. The Coastal Hazards Response Plan would build upon the costs of maintaining the plant at the present location (via **Special Condition 5**), by requiring an assessment of costs and benefits of relocating the plant to an area safe from flooding and other coastal hazards over time. The analysis would include expected costs of purchasing land for a relocated plant, as well as expected costs to: decommission the existing plant and to restore the site to its natural state; upgrade the plant (including a relocated plant) to full tertiary treatment (or better); provide for water recycling (including addressing the potential for joint satellite facilities and/or collaborations with nearby communities for water recycling); and include a timeline of potential major relocation events, including expected timeframes for land acquisition, planning, permitting, design, construction and eventual operation, of a relocated plant. The intent would then be for the District to eventually submit a CDP amendment request or new CDP application to the Commission to authorize implementation of the approved Coastal Hazards Response Plan. **Special Condition 3** also requires submittal of full-scale project plans for the redundancy project.[23]

In addition, in terms of recognizing and assuming the hazard risks for shoreline development, the Commission's experience in evaluating proposed developments in areas subject to hazards has been that permittees continue to pursue development despite periodic episodes of heavy storm damage and other such occurrences. Development in such dynamic environments is susceptible to damage due to such long-term and episodic processes. Past occurrences statewide have resulted in public costs (through low interest loans, grants, subsidies, direct assistance, etc.) in the millions of dollars. As a means of allowing continued development in areas subject to these hazards while avoiding placing the economic burden for damages onto the people of the State of California, applicants are regularly required to acknowledge site hazards and agree to waive any claims of liability on the part of the Commission for allowing the development to proceed. Accordingly, this approval is conditioned for the Applicant to assume all risks for developing at this location (**see Special Condition 10**).

Lastly, Coastal Act Section 30620(c)(1) authorizes the Commission to require Applicants to reimburse the Commission for expenses incurred in processing CDP applications. Thus, the

[22] Costs for relocation to any of the three sites range from $110 million to $130 million in 2016 dollars, and $130-$160 million in 2026 (at anticipated midpoint of construction), but does not include costs for property acquisition, easement acquisition or other categories that cannot be reasonably estimated. The memorandum also anticipates a timeline of seven to 11 years for planning, permitting, design, and construction of such a new facility.

[23] 100% project plans have not been produced yet for the redundancy portion of the proposed project, based on an expected timeline provided by the District for this project. Plan sets for other proposed and ATF development as part of this project, including the: 1) Biosolids Storage Slab 2) Grit Removal Equipment; 3) Headworks Improvements; 4) Chlorine Contact Chamber Improvements; 5) Floodwall Replacement and Flood Gates; and 6) Dewatered Sludge Conveyor System, have all been received in the Commission's Central Coast District Office. Finally, flood-proofing components must be in substantial conformance with the Site Plan, pursuant to Special Condition 3.

Commission is authorized to require reimbursement for expenses incurred in defending its action on the pending CDP application in the event that the Commission's action is challenged by a party other than the Applicant. Therefore, consistent with Section 30620(c), the Commission imposes a condition requiring reimbursement for any costs and attorneys' fees that the Commission incurs in connection with the defense of any action brought by a party other than the Applicant challenging the approval or issuance of this CDP (**Special Condition 11**).

Hazards Conclusion

The existing WWTP is currently threatened with flooding events. The proposed project has been designed to ensure that critical WWTP components are located above the 100-year base flood elevation. Even so, the site is in an area of high flood hazard that will be flooded more frequently over time due to sea level rise. However, the proposed project includes redundancy/backup components that are critically needed at the present time so that major wastewater facility components can periodically be removed from service for routine maintenance and repairs, or be shut down in case of mechanical failure or emergency, while maintaining operation of the WWTP. And specifically, the flood-proofing (i.e., the "elevation" measures) components of the proposed project are necessary to help prevent recurrence of a wastewater spill such as the one that occurred in 2010 and to ensure compliance with the RWQCB's effluent permit limits. Thus, the proposed project is necessary to ensure proper functioning of the WWTP to current standards and measures, in the near term. Special Conditions are included to ensure that the project is allowed in the near-term for these purposes, and that a long-term solution to the WWTP is initiated. Therefore, with respect to coastal hazards, the project, as conditioned, can be found consistent with Coastal Act Section 30253.

D. MARINE RESOURCES/WATER QUALITY

The Coastal Act protects the marine and freshwater resources and offshore habitat located in the vicinity of this site. Coastal Act Sections 30230 and 30231 specifically state:

> ***Section 30230.*** *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*
>
> ***Section 30231.*** *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

Analysis

The project site is located in a low-lying area, which currently experiences flooding events

primarily during winter storms that produce flows that swell and overtop nearby waterbodies such as Arroyo Grande Creek and Lagoon, and Oceano and Meadow Creeks and Lagoons. For this reason, the site is located wholly within the LCP's Flood Hazard (FH) zone.

As discussed above, the primary purpose of the proposed project is to install redundancy or backup infrastructure to the WWTP so that major wastewater facility components can periodically be removed from service for routine maintenance or repairs, or be shut down in case of mechanical failure or emergency, while maintaining operation of the WWTP and without risking violation of RWQCB effluent permit limits. The District is also proposing to elevate four existing critical WWTP components above the 100-year flood elevation level. Thus, as proposed, the project, as operational, will protect marine and freshwater resources and water quality by helping to prevent wastewater spills into nearby creeks that flow into the ocean.

However, with respect to construction impacts, this project will require the movement and placement of large equipment, workers, materials, and supplies. To protect the water quality of nearby creeks (which flow into the ocean) during construction, **Special Condition 7** requires submission of a Construction Plan that includes the methods typically required by the Commission to protect water quality and marine resources during construction (including maintaining good construction site housekeeping controls and procedures, the use of appropriate erosion and sediment controls, requiring any equipment washing, refueling, or servicing at the site to be done at least 50 feet from the site's perimeter fence, etc.). To further protect marine resources and offshore habitat, **Special Condition 8** requires construction documents to be kept at the site for inspection, and also requires a construction coordinator to be available to respond to any inquiries that arise during construction. Thus, as conditioned, the project is consistent with Coastal Act Sections 30230 and 30231 regarding protection of marine and freshwater resources and offshore habitat.

E. SCENIC AND VISUAL RESOURCES

Coastal Act Section 30251, cited below, protects the aesthetic and visual quality of coastal areas.

> ***Section 30251.*** *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

Analysis

Coastal Act Section 30251 requires that scenic and visual qualities of coastal areas be considered and protected as a resource of public importance. New development must be sited and designed to protect views to and along the ocean and scenic coastal areas and where feasible to restore and enhance visual quality in visually degraded areas. The proposed project includes new

development located within the existing WWTP site. The project site is located less than half a mile from Highway 1. Currently, the view from Highway 1 includes dense vegetation with the ocean in the distance. The tops of certain components of the existing WWTP extend up from the dense surrounding vegetation and are visible from Highway 1, specifically the WWTP's white-colored tanks (see **Exhibit 9**). Some of the proposed redundancy infrastructure, the ATF infrastructure, as well as some of the proposed flood-proofing components, may be visible from Highway 1.

Thus, the proposed project will likely have new impacts on public views in a scenic coastal area. To ensure consistency with Coastal Act Section 30251, **Special Condition 3** and **9** requires that all new infrastructure, as well as the ATF infrastructure authorized by this CDP, that is visible from Highway 1, is to be painted or stained green or an earth-tone to blend in with the dense vegetation that surrounds the WWTP. In addition, this condition also authorizes the Applicant to paint the existing non-ATF infrastructure these same colors in order to achieve enhanced consistency with Section 30251 of the Coastal Act at the site. Thus to mitigate for new impacts, which can be limited with conditions but not completely avoided, enhancement of public views from Highway 1 and other public areas can be achieved through the painting and/or staining of existing infrastructure. As conditioned, the proposed project is consistent with the visual protection requirements of Coastal Act Section 30251.

F. PUBLIC ACCESS AND RECREATION

Coastal Act Section 30604(c) requires that every coastal development permit issued for any development between the nearest public road and the sea "shall include a specific finding that the development is in conformity with the public access and public recreation policies of [Coastal Act] Chapter 3." The proposed project is located seaward of the first through public road (Highway 1). Coastal Act Section 30210 requires maximization of public access consistent with public safety needs, etc., Coastal Act Sections 30212(a)(1) and (a)(2) require new public access in development projects located between the nearest public roadway to the shoreline and along the coast except where it is inconsistent with public safety, etc., and where adequate access exists nearby:

> ***Section 30210.*** *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*
>
> ***Section 30212(a)(1)(2).*** *Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where: (1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, (2) adequate access exists nearby…*

The proposed project is located between the nearest public road and the sea and within an existing, fenced wastewater treatment facility. Providing for public access through this industrial site, however, would be inconsistent with public safety due to the presence of substantial industrial wastewater equipment and materials. In addition, public access to the shoreline in the

Oceano area is readily available, including south of the WWTP along the Arroyo Grande Creek levee and to the northwest at the ends of Juanita Avenue, Pier Avenue, and a number of other roads that terminate at the beach in Oceano. Thus, adequate public access exists nearby the WWTP and the project, as proposed, is consistent with Coastal Act Section 30210 and 30212(a)(1)(2).

G. ENVIRONMENTALLY SENSITIVE HABITAT AREAS

Coastal Act Section 30240(b) requires that development adjacent to ESHA be sited and designed to prevent impacts to such areas, and states:

> ***Section 30240(b).*** *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

The proposed project includes development adjacent to riparian and wetland habitats, which are located just outside of the project site (see aerial photos and on-site photos in **Exhibits 1** and **2,** respectively). However, all proposed and ATF development would be located and constructed on existing paved or previously disturbed soils located within the fenced-in boundary of the WWTP site. Furthermore, **Special Condition 7** includes adequate protections of the adjacent habitats during construction through the use of erosion and sediment controls (such as silt fencing), construction site housekeeping controls and procedures, and a prohibition on equipment washing, servicing, and refueling within 50 feet of the WWTP's perimeter fence. As conditioned, the project is consistent with Coastal Act Section 30240(b).

H. VIOLATION

Violations of the Coastal Act exist on the subject property including, but not limited to the following unpermitted development: a) installation of a new chlorine contact chamber, including a new concrete basin tank and pump station completed in 2004; b) installation of a replacement floodwall and new flood gates to protect the headworks building completed in 2006; c) installation of a new dewatered sludge conveyor system completed in 2014; and d) installation of a new grit removal system completed in 2016. Issuance of the CDP and compliance with all of the terms and conditions of this permit will result in resolution of the aforementioned violations of the Coastal Act on the subject property.

Although development has taken place prior to submission of this permit application, consideration of this application by the Commission has been based solely upon the Chapter 3 policies of the Coastal Act. Commission review and action on this permit does not constitute a waiver of any legal action with regard to the alleged violations, nor does it constitute an implied statement of the Commission's position regarding the legality of development, other than the development addressed herein, undertaken on the subject site without a coastal permit. In fact, approval of this permit is possible only because of the conditions included herein and failure to comply with these conditions would also constitute a violation of this permit and of the Coastal Act. Accordingly, the Applicant remains subject to enforcement action just as it was prior to this

permit approval for engaging in unpermitted development, unless and until the conditions of approval included in this permit are satisfied.

Failure to comply with the terms and conditions of this permit may result in the institution of enforcement action under the provisions of Chapter 9 of the Coastal Act. Only as conditioned is the proposed development consistent with the Coastal Act.

I. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect that the activity may have on the environment.

The Applicant, South San Luis Obispo County Sanitation District (SSLOCSD), acting as the CEQA lead agency, adopted a Mitigated Negative Declaration (MND) for the proposed project on July 7, 2010. The SSLOCSD also prepared an Addendum to the adopted MND, dated September 7, 2016, to bring the existing MND documentation up to date as appropriate. This Addendum updated sections related to Biological Resources and Sea Level Rise and Flooding. The Coastal Commission's review and analysis of coastal development permit applications has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. (14 CCR Section 15251(c).) The preceding coastal development permit findings discuss the relevant coastal resource issues with the proposal, and the permit conditions identify appropriate modifications to avoid and/or lessen any potential for adverse impacts to said resources.

As such, there are no additional feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse environmental effects which approval of the proposed project, as conditioned, would have on the environment within the meaning of CEQA. Thus, if so conditioned, the proposed project will not result in any significant environmental effects for which feasible mitigation measures have not been employed consistent with CEQA Section 21080.5(d)(2)(A).

APPENDIX A – SUBSTANTIVE FILE DOCUMENTS

1. *SSLOCSD Wastewater Treatment Facility Redundancy Project, Sea Level Rise Analysis,* Environmental Science Associates (ESA), dated August 3, 2016.
2. *Long Range Plan Wastewater Treatment Plant Improvements, South San Luis Obispo County Sanitation District,* Kennedy Jenks Consultants, July 2005.
3. *Technical Memorandum, Evaluation of Wastewater Treatment Plant Site Alternatives and Conceptual Costs for CDP Application,* MKN, September 9, 2016.
4. *Technical Memorandum, Redundancy Project – Flood Risk Mitigation Strategy,* Kennedy/Jenks Consultants, September 7, 2016.
5. *Mitigated Negative Declaration,* July 7, 2010, and Addendum, September 7, 2016
6. *Delineation of Waters of the United States and State of California, South San Luis Obispo County Sanitation District Wastewater Facility Redundancy Project,* Kevin Merk Associates, LLC (KMA), August 2016.

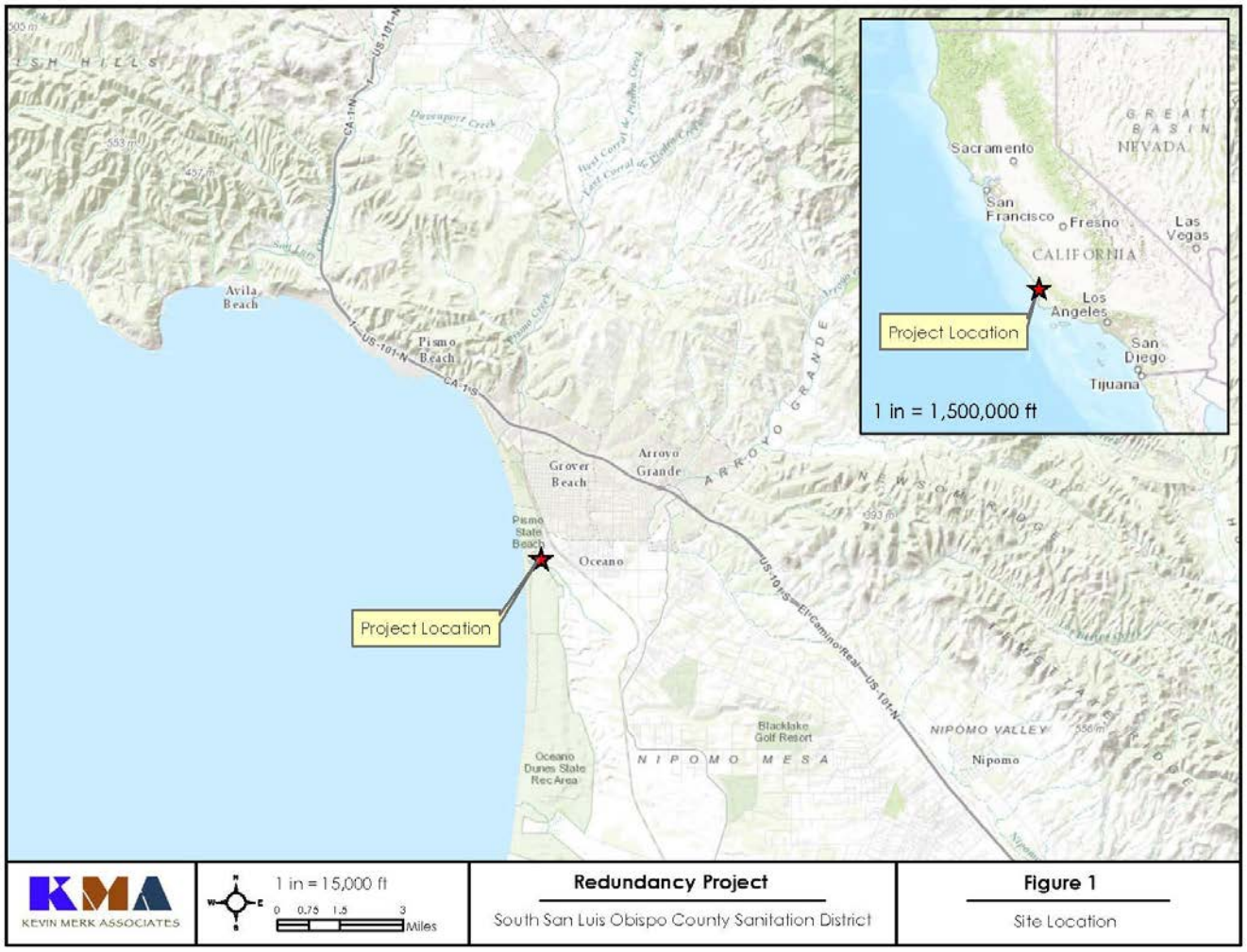
APPENDIX B – STAFF CONTACT WITH AGENCIES AND GROUPS

South San Luis Obispo County Sanitation District (Gerhardt Hubner, District Manager)

Regional Water Quality Control Board (Katie DiSimone)

Northern Chumash Tribal Council (Fred Collins)

South San Luis Obispo County Sanitation District Wastewater Treatment Plant (WWTP)

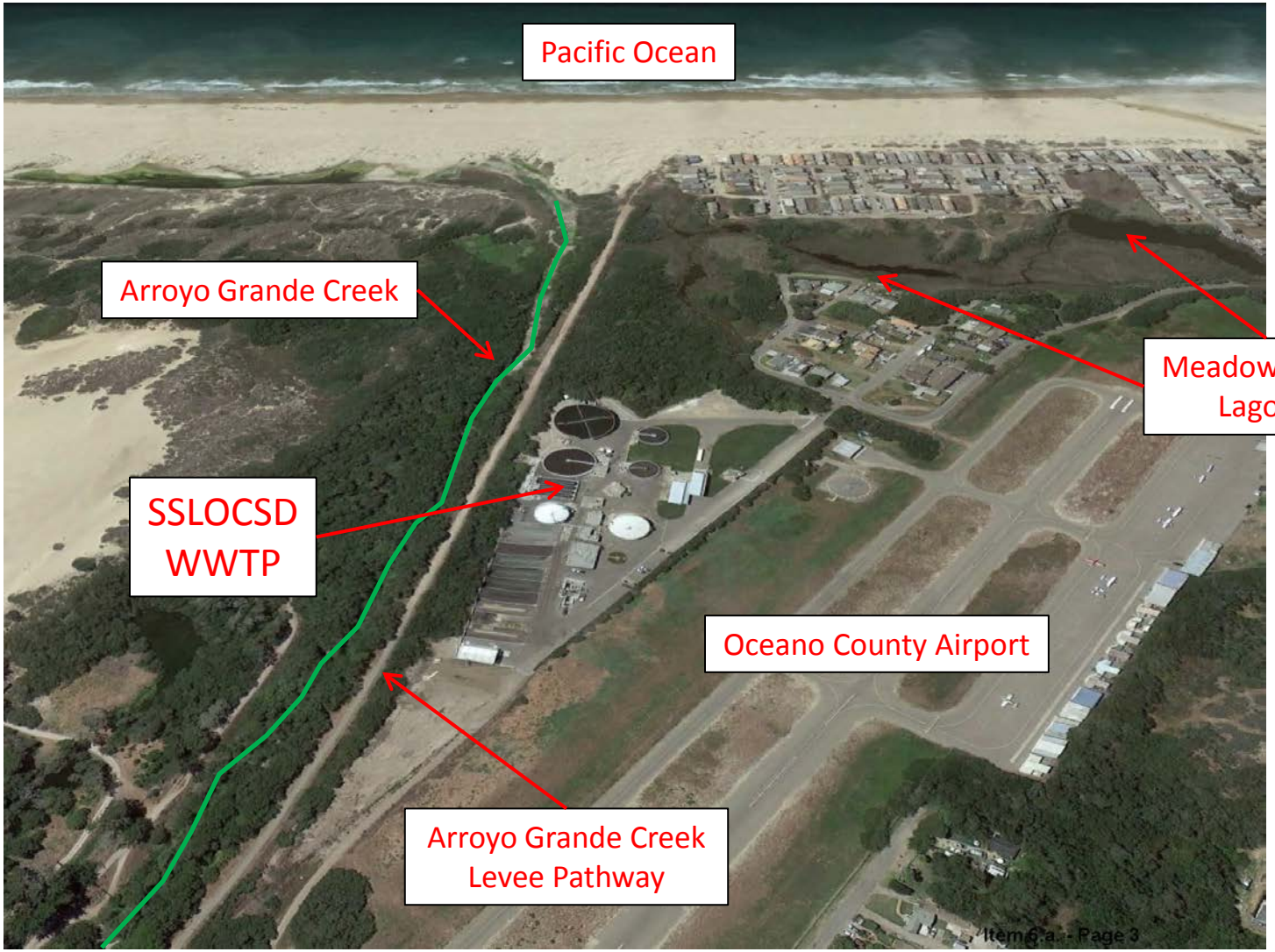


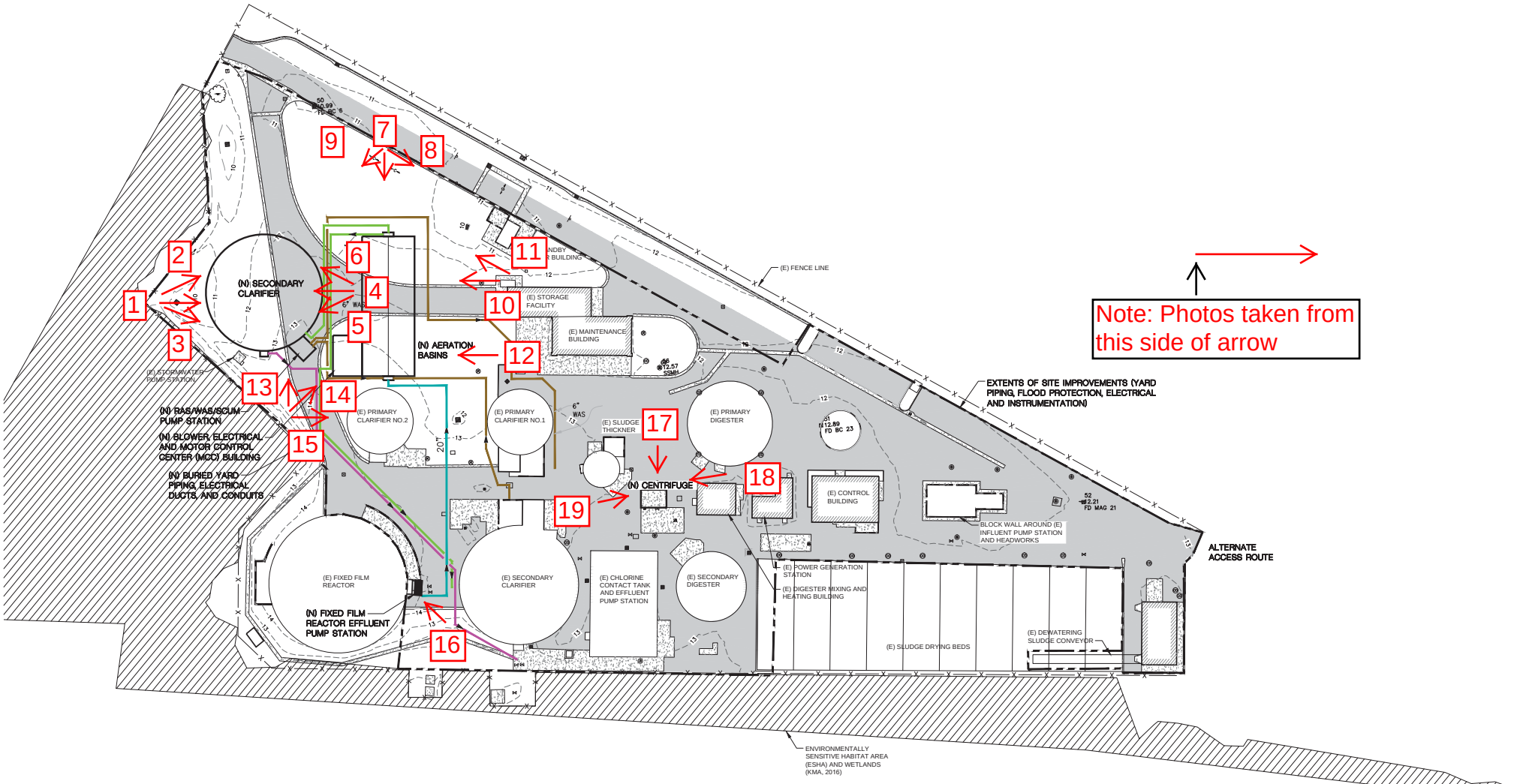
3-16-0233
Exhibit 1
Page 1 of 3

SOURCE:Aerial-NAIP 2012

SSLOCSD WWTF Redundancy Project Sea Level Rise Analysis. D150915.00

Figure 2
Site Map


Pacific Ocean
Arroyo Grande Creek
Meadow Creek Lagoon
SSLOCSD WWTP
Oceano County Airport
Arroyo Grande Creek Levee Pathway
Item 6.a. - Page 3



Note: Photos taken from this side of arrow

LEGEND

- GROUND SURFACE CONTOUR LINE
- FENCE LINE
- (E) EXISTING FACILITIES
- (N) NEW FACILITIES PROPOSED
- PAVED AREAS
- ENVIRONMENTALLY SENSITIVE HABITAT AREA AND WETLANDS (KMA, 2016)
- SOLIDS PIPING (RAS/WAS)
- SECONDARY EFFLUENT PIPING
- MIXED LIQUOR PIPING
- FFR EFFLUENT PIPING

PLAN VIEW
0 20 40 60
1"=40'

Kennedy/Jenks Consultants

SO. SAN LUIS OBISPO CO. SANITATION DISTRICT
SAN LUIS OBISPO COUNTY, CALIFORNIA

SITE PLAN - PROPOSED IMPROVEMENTS

K/J 1668009*00

3-16-0233
Exhibit 2
Page 1 of 11

Photo 1 - East toward new Secondary Clarifier

Photo 2 - East (slight north) toward new Secondary Clarifier

Photo 3 - East (slight south) toward new Secondary Clarifier

Photo 4 - West toward new Secondary Clarifier

Photo 5 - West (slight south) toward new Secondary Clarifier

Photo 6 - West (slight north) toward new Secondary Clarifier

Photo 7 - South toward new Secondary Clarifier and new Aeration Basin

Photo 8 - South (slight east) toward existing utility (new Aeration Basin on far right of photo)

Photo 9 - South (slight west) (New Secondary Clarifier on left side of photo)

Photo 10 - West toward new Aeration Basin

Photo 11 - West (slight north) toward north side of new Aeration Basin

Photo 12 - West toward new Aeration Basin (south of road)

Photo 13 - North toward new Secondary Clarifier

Photo 14 - North (slight east) toward new Secondary Clarifier and new Aeration Basin

Photo 15 - East (new Aeration Basin on left side of photo)

Photo 16 - North (west) toward new Fixed Film Reactor Effluent Pump Station

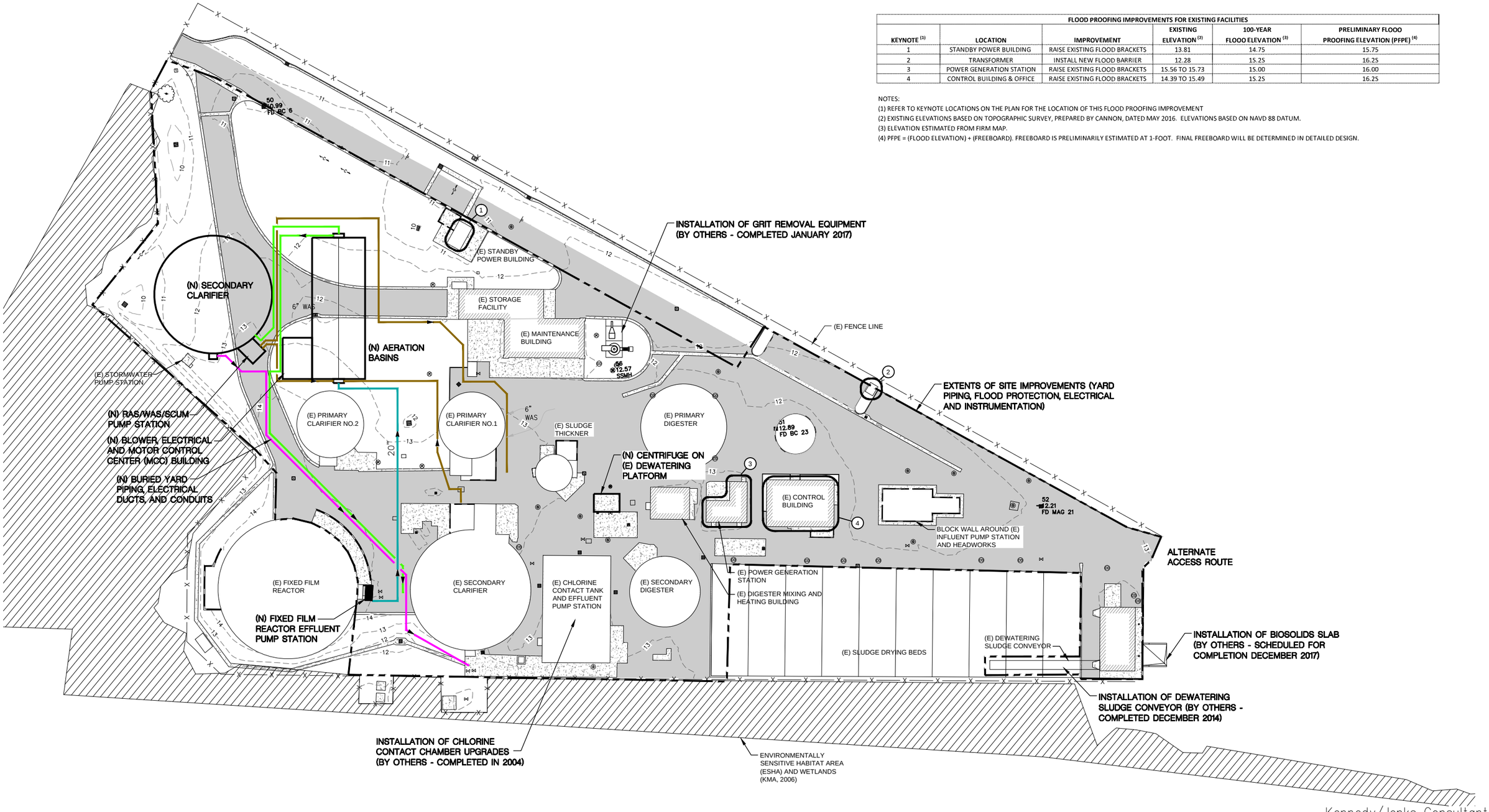
Photo 17 - South toward new Centrifuge

Photo 18 - West toward new Centrifuge

Photo 19 - East toward new Centrifuge

FLOOD PROOFING IMPROVEMENTS FOR EXISTING FACILITIES					
KEYNOTE [1]	LOCATION	IMPROVEMENT	EXISTING ELEVATION [2]	100-YEAR FLOOD ELEVATION [3]	PRELIMINARY FLOOD PROOFING ELEVATION (PFPE) [4]
1	STANDBY POWER BUILDING	RAISE EXISTING FLOOD BRACKETS	13.81	14.75	15.75
2	TRANSFORMER	INSTALL NEW FLOOD BARRIER	12.28	15.25	16.25
3	POWER GENERATION STATION	RAISE EXISTING FLOOD BRACKETS	15.56 TO 15.73	15.00	16.00
4	CONTROL BUILDING & OFFICE	RAISE EXISTING FLOOD BRACKETS	14.39 TO 15.49	15.25	16.25

NOTES:
(1) REFER TO KEYNOTE LOCATIONS ON THE PLAN FOR THE LOCATION OF THIS FLOOD PROOFING IMPROVEMENT
(2) EXISTING ELEVATIONS BASED ON TOPOGRAPHIC SURVEY, PREPARED BY CANNON, DATED MAY 2016. ELEVATIONS BASED ON NAVD 88 DATUM.
(3) ELEVATION ESTIMATED FROM FIRM MAP.
(4) PFPE = (FLOOD ELEVATION) + (FREEBOARD). FREEBOARD IS PRELIMINARILY ESTIMATED AT 1-FOOT. FINAL FREEBOARD WILL BE DETERMINED IN DETAILED DESIGN.



LEGEND

- GROUND SURFACE CONTOUR LINE
- FENCE LINE
- (E) EXISTING FACILITIES
- (N) NEW FACILITIES PROPOSED
- PAVED AREAS
- ENVIRONMENTALLY SENSITIVE HABITAT AREA AND WETLANDS (KMA, 2016)
- SOLIDS PIPING (RAS/WAS)
- SECONDARY EFFLUENT PIPING
- MIXED LIQUOR PIPING
- FFR EFFLUENT PIPING

PLAN VIEW
0 20 40 60
1"=40'

Kennedy/Jenks Consultants

3-16-0233
Exhibit 3
Page 1 of 1

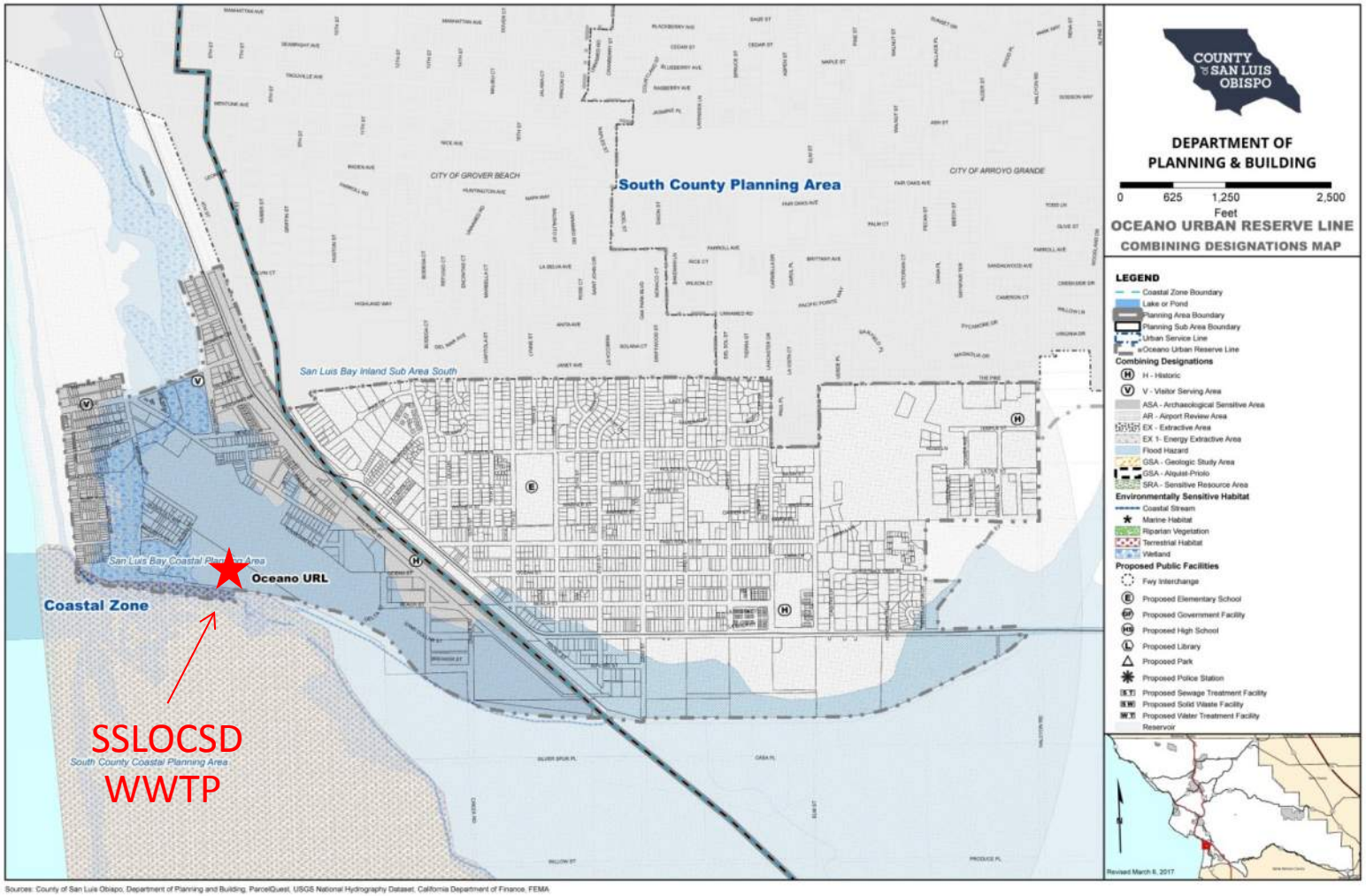
SO. SAN LUIS OBISPO CO. SANITATION DISTRICT
SAN LUIS OBISPO COUNTY, CALIFORNIA

SITE PLAN - PROPOSED IMPROVEMENTS

K/J 1668009*00
MARCH 2017

CAD FILE: \\scl\O-DRIVE\16\1668009.00_SSLOCSD_RedundancyProject\Site-FIGURE.dwg LAST EDIT DATE: Mar 22, 2017 – 9:44am LAST EDIT BY: LMM

San Luis Obispo County Flood Hazard Map (Oceano Area)



2015 Preliminary FEMA FIRM Map
(Oceano Area)

Figure 10
Existing conditions FEMA 100-year floodplain (in blue)

3-16-0233
Exhibit 5
Page 1 of 1

Applicable SLO LCP Hazards Policies and Standards (3-16-0233)

LCP Hazards Policy 1. *New Development. All new development proposed within areas subject to natural hazards from geologic or flood conditions (including beach erosion) shall be located and designed to minimize risks to human life and property. Along the shoreline new development (with the exception of coastal-dependent uses or public recreation facilities) shall be designed so that shoreline protective devices (such as seawalls, cliff retaining walls, revetments, breakwaters, groins) that would substantially alter landforms or natural shoreline processes, will not be needed for the life of the structure. Construction of permanent structures on the beach shall be prohibited except for facilities necessary for public health and safety such as lifeguard towers. [THIS POLICY SHALL BE IMPLEMENTED AS A STANDARD.]*

LCP Hazards Policy 2. *Erosion and Geologic Stability. New development shall ensure structural stability while not creating or contributing to erosion or geological instability. [THIS POLICY SHALL BE IMPLEMENTED AS A STANDARD AND PURSUANT TO SECTION 23.07.086 OF THE CZLUO.]*

LCP Hazards Policy 3. *Development Review in Hazard Areas. The county shall require a detailed review of development proposed within the geologic study area and flood hazard combining designations as indicated on the Land Use Element maps for the coastal zone. The review shall be performed by a qualified registered and/or certified engineering geologist and shall be adequately detailed to provide recommendations and conclusions consistent with this plan. Residential, commercial and industrial development shall be prohibited within the l00 year floodplain (l% chance of inundation in any year) as delineated in the Flood Hazard combining designation except for those areas within an urban reserve line. [THIS POLICY SHALL BE IMPLEMENTED PURSUANT TO SECTIONS 23.07.082, 23.07.084, 23.07.062 AND 23.07.066 OF THE CZLUO.]*

LCP Coastal Zone Land Use Ordinance (CZLUO) Section 23.07.062 (c). *Applicability of Flood Hazard Standards: All uses proposed within a Flood Hazard combining designation are subject to the standards of Sections 23.07.064 through 23.07.066, except:*

c. Existing uses: The continuance, operation, repair, or maintenance of any lawful use of land existing on the effective date of this title is permitted. Any expansion or alteration of an existing structure or use, or grading of a site, shall be conducted in accordance with all applicable provisions of this title.

LCP CZLUO Section 23.07.064. *Flood Hazard Area Permit and Processing Requirements: Drainage Plan required.*

LCP CZLUO Section 23.07.065. *General Hazard Avoidance:*

*a. **New Development in Flood Hazard Areas.** New structural development, including expansions, additions and improvements to existing development, shall be located outside of the flood hazard areas to the maximum extent feasible. All new structural development located in a flood hazard area, including expansions, additions, improvements, and repairs to existing development, shall be constructed consistent with the standards set forth in Section 23.07.066.*

*b. **Improvement/repair to existing structures in Flood Hazard Areas.** Where the value of improvements or repairs to existing structures located in flood hazard areas is greater than 50 percent of the market value of the existing structure before the start of construction of the new structure or any improvement, and prior to the damage requiring the repair, all structural*

development (existing and proposed) shall be located outside of flood hazard areas to the maximum extent feasible. This can be determined by the assessment roll or by a current appraisal…. Any structural development (existing and proposed) that cannot be located outside of flood hazard areas shall be constructed and/or reconstructed consistent with the standards set forth in Section 23.07.066.

LCP CZLUO Section 23.07.066. *Construction Standards:*

a. Construction, general:

1. *No construction or grading is to limit the capacity of the floodway or increase flood heights on existing structures unless the adverse effect of the increase is rectified to the satisfaction of the Director of Public Works. In no case shall flood heights be increased above that allowed under the Federal Flood Insurance Program.*
2. *Structures shall be anchored to prevent collapse, lateral movement or flotation that could result in damage to other structures or restriction of bridge openings and narrow sections of the stream or river.*
3. *Service facilities such as electrical and heating equipment are to be floodproofed or constructed at minimum of one-foot above the 100-year storm flood profile level for the site*
4. *Water supply and sanitary sewage systems shall be designed to minimize infiltration of flood waters into the system and discharge from systems into flood waters.*
5. *On-site waste disposal systems shall be located to avoid their being impaired or contaminated during flooding.*
6. *All buildings or structures shall be located landward of the mean high tide.*
7. *Residential, commercial and industrial development shall be prohibited outside of urban and village reserve lines.*
8. *Whenever a watercourse is to be altered or relocated, the Department of Planning and Building shall notify adjacent communities and the California Department of Water Resources and evidence of such notification shall be sent to the Federal Insurance Administration*
9. *Fully enclosed areas below the lowest floor that are subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria: i) A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding; ii) The bottom of all openings shall be no higher than one foot above grade; iii) Openings may be equipped with screens, louvers, valves or other coverings or devices provided that they permit the automatic entry and exit of flood waters.*
10. *On the basis of structural plans and the depth analysis, the ground floor of all structures is to be constructed at a minimum of one-foot above the 100-year storm flood profile level. Within any AO zone on the Flood Insurance Rate maps, this elevation shall be determined by adding one foot to the depth number specified. If no depth is specified, structures shall be elevated a minimum of two feet above adjacent natural grade.*
11. *Non-residential construction shall either be elevated in conformance with Section 23.07.066a(10) above, or together with attendant utility and sanitary facilities, be elevated a minimum of two feet above the highest adjacent grade and be floodproofed to a minimum of one-foot above the 100- year storm flood profile level. Examples of floodproofing include, but are not limited to: (i) Installation of watertight doors, bulkheads, and shutters. (ii) Reinforcement of walls to resist water pressure. (iii) Use of paints, membranes, or mortars to reduce seepage through walls. (iv) Addition of mass or weight to structure to resist flotation. (v) Armor protection of all fill materials from scour and/or erosion.*

12. *All structures subject to inundation shall use flood resistant materials up to one foot above base flood elevation.*

b. ***Storage and processing:*** *The storage or processing of materials that in time of flooding are buoyant, flammable, or explosive; that could be injurious to human, animal, or plant life; or that may unduly affect the capacity of the floodway or unduly increase flood heights is not permitted. Storage of other material or equipment may be allowed if not subject to major damage by floods and if firmly anchored to prevent flotation, or if readily removable from the area within the time available after flood warning.*

c. ***Coastal High Hazard areas.*** *The following requirements shall apply to new structures or any improvement / repair to an existing structure as specified in Section 23.07.066 in areas identified as having special flood hazards extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity waters including coastal and tidal inundation or tsunamis as established on the maps identified in subsection 23.07.060 of this title:*

1. *All buildings or structures shall be elevated on adequately anchored pilings or columns and securely anchored to such pilings or columns so that the lowest horizontal portion of the structural members of the lowest floor (excluding the pilings or columns) is elevated to or above the base flood elevation level. The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable state or local building standards.*
2. *All new construction and other development shall be located on the landward side of the reach of mean high tide.*
3. *All buildings or structures shall have the space below the lowest floor free of obstructions or constructed with breakaway walls. Such enclosed space shall not be used for human habitation and will be usable solely for parking of vehicles, building access or storage.*
4. *Fill shall not be used for structural support of buildings.*
5. *Man-made alteration of sand dunes that would increase potential flood damage is prohibited.*
6. *The Director of Planning and Building and/or the Public Works Director shall obtain and maintain the following records. (i) Certification by a registered engineer or architect that a proposed structure complies with Subsection D.3.a (ii) The elevation (in relation to mean sea level) of the bottom of the lowest structural member of the lowest floor (excluding pilings or columns) of all buildings and structures, and whether such structures contain a basement.*

d. ***Certification of Compliance.*** *The following certifications shall be filed with the Building Official prior to final building inspection:*

1. *Upon completion of any structure within a flood hazard combining designation, compliance with elevation requirements shall be certified by a registered civil engineer or licensed land surveyor. Such certification shall include as a minimum the elevation of the lowest floor. If the structure has been floodproofed in conformance with Section 23.07.066a(11) above, the certification shall include the elevation to which the structure has been floodproofed. Elevations shall be based on the National Geodetic Vertical Datum of 1929.*
2. *Where floodproofing is used, a registered civil engineer or architect shall certify that the floodproofing methods are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces and other factors associated with the 100-year flood.*
3. *Compliance with the structural design requirements within Coastal High Hazard areas stated*

in Section 23.07.066c shall be certified by a registered civil engineer or architect.

e. ***Exceptions to Construction Standards.*** *The standards of this section may be waived or modified by the Board of Supervisors through the variance procedure set forth in Code of Federal Regulations, Title 44, Chapter 1, Section 60.6, instead of through the adjustment process described in Section 23.01.044 of this title. Requests for such waivers or modifications shall be filed with County Public Works for processing. Procedures for the granting of variances under Title 14 are available from the County Public Works Department.*

f. ***Waiver of Rights to Future Armoring.*** *Where applicant's geologic assessment/wave run-up studies determine that the new or improved development is sited such that it will not need a shoreline protective device for the life of the structure, the applicants shall waive their rights to a future shoreline protective device.*

g. ***Tsunami Inundation Zone.*** *Where feasible, development shall be sited outside of potential tsunami inundation zones, even if not currently designated FH. A Registered Civil Engineer with coastal experience shall make a determination, through examination of the most current tsunami inundation and run-up maps or a wave run-up analysis, whether the site is subject to inundation during a tsunami, pursuant to the criteria of Section 23.07.064b. If it is not feasible to site development outside of tsunami inundation zone, new development shall be in conformance with all provisions set forth in Section 23.07.066(c).*

Kennedy/Jenks Consultants

7 September 2016

Technical Memorandum

To: Gerhardt Hubner, South San Luis Obispo County Sanitation District (District)

From: John M. Wyckoff

Subject: Redundancy Project – Flood Risk Mitigation Strategy
K/J 1669009*00

Kennedy/Jenks Consultants scope of work for the subject project includes evaluation and recommendation of strategies to include in the project design to flood-proof certain new and existing facilities at the District's Wastewater Treatment Facility in Oceano, California. In general, the flood risk mitigation measures will likely include flood protection of critical existing and new structures and accommodation of access impacts at the site through 2050. Year 2050 coincides with the anticipated design life of other improvements implemented with the Redundancy Project. The design will address risks from a 100-year or lesser flood event on Arroyo Grande Creek, as well as address risks from nuisance flooding on Meadow Creek that may become more frequent due to sea level rise.

Flood protection will be considered for both new facilities that will be constructed as part of the Redundancy Project and existing facilities at the site. A majority of the existing facilities have flood proofing measures that were installed as part of the 1979 Improvements Project. Additional flood protection was implemented after a 2010 flood event by raising the flood protection wall height around the Headworks and Pumping Plant and installing heavy-duty floodgates. Exhibit A (South San Luis Obispo County Sanitation District Facility Flood Elevations), which is attached contains information on the elevations of the existing flood control measures at the plant. The protection provided by the existing flood protection measures range from elevation 13.81 feet at the Standby Power Building to elevation 17.75 feet at the Centrifuge Building.

It is District's intent that, as part of the Redundancy Project, all critical new and existing facilities will be installed or upgraded to be protected from the 100-year flood event on Arroyo Grande Creek as defined by Flood Insurance Rate Map (FIRM) maps. This would also protect these facilities from floods caused by sea level rise for the design life of the facilities. In the Environmental Science Associates (ESA) Sea Level Rise Analysis dated 20 July 2016, maximum flood elevations for existing and future conditions due to sea level rise are predicted to be as follows:

- Existing: 12.3 feet North American Vertical Datum of 1988 (NAVD)
- 2050: 12.7 to 13.2 feet NAVD (30+ years from present)
- 2100: 13.9 to 15.6 feet NAVD (80+ years from present)

Technical Memorandum

The ranges for the 2050 and 2100 conditions are levels resulting from medium to high scenarios for climate change per State of California planning guidance.

Flood protection for new critical facilities will be provided to protect the facilities from flood levels of up to 15.25 feet. This flood protection will be provided by installing mechanical equipment and electrical devices above this elevation or within areas enclosed by permanent barriers to flood waters (i.e., block/concrete walls).

The flood proofing of existing critical facilities will be modified and raised, as necessary, to accommodate for protection for these facilities from the flood elevations, as indicated on Exhibit A. The exact modifications to be utilized will be determined during the detailed design of the Redundancy Project and may include techniques such as raising the height of existing flood brackets and floodgates, installing walls around openings in structures, or combinations of these methods.

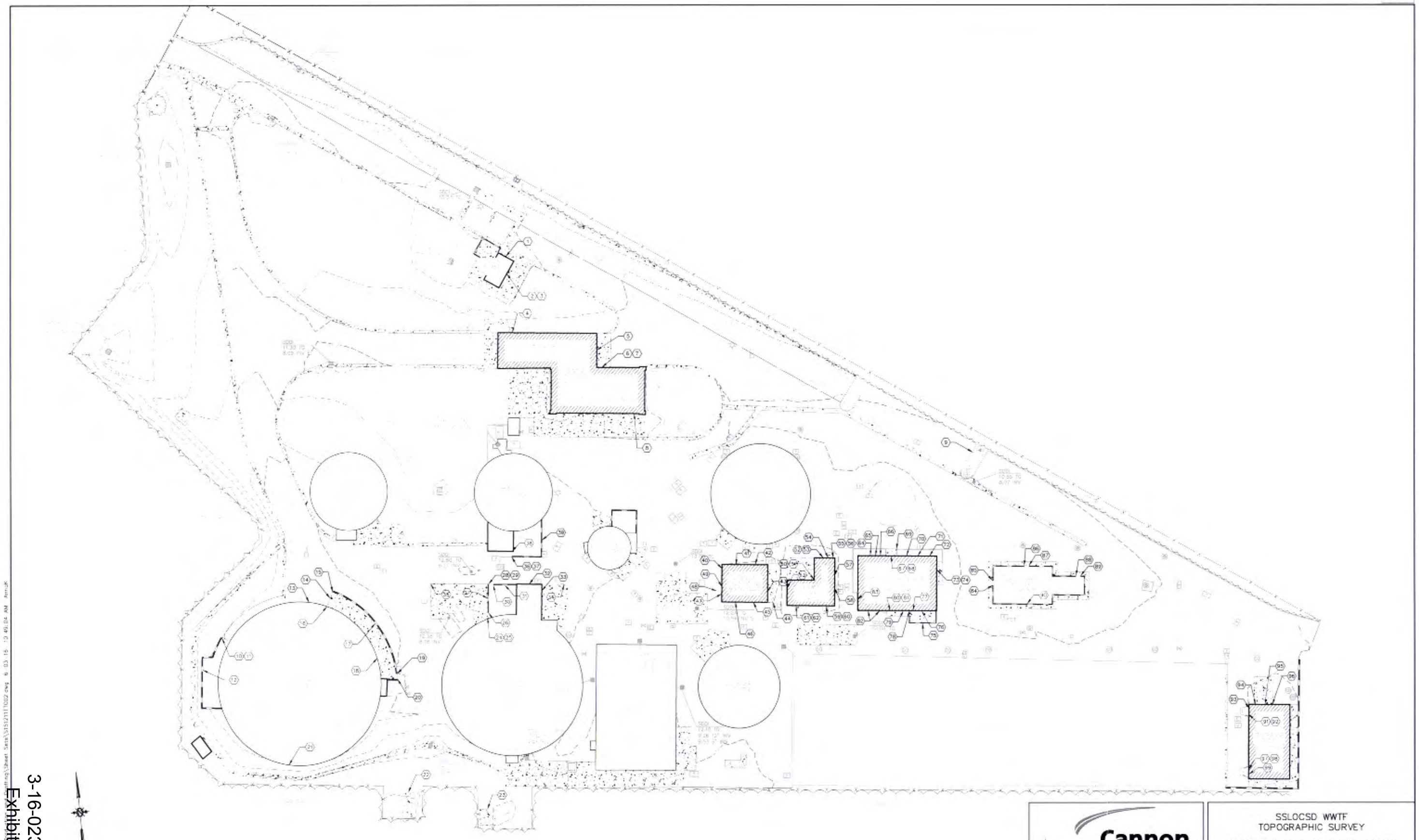
By protecting the new and existing critical facilities to the 100-year FIRM flood elevation, these facilities will also be protected from the estimated maximum level floods through the year 2050 time horizon indicted in the ESA Sea Level Rise Analysis. In the year 2050, when there is an additional 30 years of data on sea level rise, the District will re-evaluate the projected maximum flood levels due to sea level rise. Flood protection at the site will be increased if it is deemed to be prudent and necessary based upon any new information and data available at that time. This additional flood protection may entail the installation of a flood protection wall around the treatment plant site, if warranted and/or feasible.

Access to the treatment plant site through the current main plant entrance at 1600 Aloha Place during flooding events may be a future issue with sea level rise. As stated in the ESA Sea Level Rise Study, the threshold elevation at which site access is impacted is 10.4 feet NAVD. This threshold access elevation is below current maximum flood elevations, and the ESA Sea Level Rise Analysis indicates flooding at this elevation may become more common by year 2050.

Currently, the plant has a second entrance (back entrance) near the existing Centrifuge Building. This back entrance is at elevation 13.0 feet and, therefore, would provide a means of access to the plant during maximum flooding events associated with sea level rise through the year 2050.

Attachment: Exhibit A

Exhibit A



1 INCH = 30 FEET

Cannon

1080 Southwood Drive
San Luis Obispo, CA 93401
P 805.544.7407 F 805.544.3863

SSLOCSD WWTF
TOPOGRAPHIC SURVEY

FACILITY FLOOD ELEVATIONS

OCEANO, CALIFORNIA

DRAWN BY	DATE	CA JOB NO.
AK	06-03-2016	151211
CHECKED BY	SCALE	SHEET
	1" = 30'	1 OF 1

EXHIBIT A

3-16-0233 Exhibit 7 Page 4 of 6

South San Luis Obispo County Sanitation District
Facility Flood Elevations

Notes:
(1) Refer to Facility Flood Elevations exhibit for keynote locations
(2) Existing Elevations based on topographic survey, prepared by Cannon, dated May 2016. Elevations based on NAVD 88 datum
(3) Elevation estimated from FIRM map. Final Flood Elevation will be based on Flood Study.
(4) Preliminary flood proofing elevation (PFPE) = (flood elevation) + (freeboard). Freeboard is preliminarily estimated at 1'. Final freeboard will be determined during detailed design.

Existing Facilities						
Keynote per Plan [1]	Location	Description	Existing Elevation [2]	100-year Flood Elevation [3]	Preliminary Flood Proofing Elevation (PFPE) [4]	Notes
1	Standby Power Building	Finish Floor	10.85	14.75		Critical - can be floodproofed. Raise existing flood brackets by approximately 2 feet and/or install new flood barriers around openings to PFPE (15.75 ft).
2	Standby Power Building	Bottom of Window Sill	11.56	14.75		
3	Standby Power Building	Top of Metal Flood Brackets	13.81	14.75	15.75	
4	Storage Facility	Finish Floor	12.92	15.00		Not critical
5	Storage Facility	Finish Floor	12.99	15.00		
6	Maintenance Building	Finish Floor	13.02	15.00		
7	Maintenance Building	Bottom of Window Sill	13.18	15.00		
8	Maintenance Building	Bottom of Window Sill	19.42	15.00		
9	Transformer	Concrete Pad	12.28	15.25	16.25	Critical - can be floodproofed. Install new flood barrier around transformer to PFPE (16.25 ft - about a 4 foot high barrier) with sufficient access for PG&E.
10	Fixed Film Reactor	Top of Metal Flood Bracket	15.60	14.75		Not critical after Redundancy Project is completed.
11	Fixed Film Reactor	Edge of Pavement	14.02	14.75		
12	Fixed Film Reactor	Top of Wall	15.51	14.75		
13	Fixed Film Reactor	Bottom of Fan	15.24	14.75		
14	Fixed Film Reactor	Edge of Pavement	14.23	14.75		
15	Fixed Film Reactor	Top of Metal Flood Bracket	15.65	14.75		
16	Fixed Film Reactor	Top of Metal Flood Bracket	15.57	14.75		
17	Fixed Film Reactor	Top of Wall	15.56	14.75		
18	Fixed Film Reactor	Finish Floor	8.65	14.75		
19	Fixed Film Reactor	Top of Metal Flood Bracket	15.58	14.75		
20	Fixed Film Reactor	Top of Metal Flood Bracket	15.59	14.75		
21	Fixed Film Reactor	Bottom of Fan	15.36	14.75		
22	Pressure Regulary Station	Concrete Pad	11.85	15.00		Can be flooded.
23	Outfall Manhole	Concrete Pad	12.72	15.00		
24	Secondary Clarifier	Concrete	13.70	15.00		Not critical after Redundancy Project is completed.
25	Secondary Clarifier	Top of Metal Flood Bracket	14.40	15.00		
26	Secondary Clarifier	Top of Metal Flood Bracket	14.41	15.00		
27	Secondary Clarifier	Top of Wall	14.52	15.00		
28	Secondary Clarifier	Concrete	13.70	15.00		
29	Secondary Clarifier	Top of Metal Flood Bracket	14.42	15.00		
30	Secondary Clarifier	Top of Metal Flood Bracket	14.04	15.00		
31	Secondary Clarifier	Top of Wall	14.46	15.00		
32	Secondary Clarifier	Bottom of Window Sill	15.08	15.00		
33	Secondary Clarifier	Bottom of Window Sill	15.12	15.00		
34	Secondary Clarifier	Concrete Pad	13.56	15.00		
35	Secondary Clarifier	Concrete Pad	13.71	15.00		

EXHIBIT A

3-16-0233 Exhibit 7 Page 5 of 6

Existing Facilities						
Keynote per Plan [1]	Location	Description	Existing Elevation [2]	100-year Flood Elevation [3]	Preliminary Flood Proofing Elevation (PFPE) [4]	Notes
36	Primary Clarifier No. 1	Edge of Pavement	13.56	15.00		
37	Primary Clarifier No. 1	Top of Metal Flood Bracket	14.40	15.00		Sludge pumps can be down for up to 2 weeks
38	Primary Clarifier No. 1	Top of Metal Flood Bracket	14.41	15.00		
39	Primary Clarifier No. 1	Top of Wall	14.51	15.00		
40	Digester Heating & Mixing Bldg	Bottom of Window Sill	16.22	15.00		
41	Digester Heating & Mixing Bldg	Bottom of Window Sill	16.24	15.00		
42	Digester Heating & Mixing Bldg	Bottom of Window Sill	16.31	15.00		
43	Digester Heating & Mixing Bldg	Finish Floor	13.20	15.00		
44	Digester Heating & Mixing Bldg	Concrete Pad	13.01	15.00		Not critical - can be down for up to 2 weeks.
45	Digester Heating & Mixing Bldg	Bottom of Window Sill	16.25	15.00		
46	Digester Heating & Mixing Bldg	Bottom of Window Sill	16.25	15.00		
47	Digester Heating & Mixing Bldg	Bottom of Window Sill	16.39	15.00		
48	Digester Heating & Mixing Bldg	Concrete Pad	13.15	15.00		
49	Digester Heating & Mixing Bldg	Finish Floor	13.21	15.00		
50	Power Generation Station	Finish Floor	14.26	15.00		
51	Power Generation Station	Top of Metal Flood Bracket	15.61	15.00		
52	Power Generation Station	Bottom of Window Sill	14.23	15.00		
53	Power Generation Station	Top of Metal Flood Brackets	15.56	15.00	16.00	
54	Power Generation Station	Top of Metal Flood Brackets	15.66	15.00	16.00	
55	Power Generation Station	Finish Floor	14.28	15.00		Backside of Station Motor Control Center is critical. Can be floodproofed. Raise existing flood brackets by approximately 6 inches and/or install new flood barriers around openings to PFPE (16 ft).
56	Power Generation Station	Top of Metal Flood Brackets	15.73	15.00	16.00	
57	Power Generation Station	Bottom of Window Sill	16.47	15.00		
58	Power Generation Station	Bottom of Window Sill	16.33	15.00		
59	Power Generation Station	Finish Floor	14.26	15.00		
60	Power Generation Station	Top of Metal Flood Brackets	15.61	15.00	16.00	
61	Power Generation Station	Finish Floor	14.24	15.00		
62	Power Generation Station	Top of Metal Flood Brackets	15.57	15.00	16.00	
63	Power Generation Station	Bottom of Window Sill	16.39	15.00		

EXHIBIT A

Existing Facilities						
Keynote per Plan [1]	Location	Description	Existing Elevation [2]	100-year Flood Elevation [3]	Preliminary Flood Proofing Elevation (PFPE) [4]	Notes
64	Control Building & Office	Top of Metal Flood Panels	15.49	15.25	16.25	Critical elements can be floodproofed. Raise existing brackets by 0.75 to 2 ft and/or install new flood barriers around openings to PFPE (16.25 ft).
65	Control Building & Office	Top of Metal Flood Panels	15.49	15.25	16.25	
66	Control Building & Office	Top of Metal Flood Panels	15.47	15.25	16.25	
67	Control Building & Office	Finish Floor	12.95	15.25		
68	Control Building & Office	Top of Metal Flood Brackets	14.40	15.25	16.25	
69	Control Building & Office	Concrete Pad	12.81	15.25		
70	Control Building & Office	Top of Metal Flood Panels	15.43	15.25	16.25	
71	Control Building & Office	Top of Metal Flood Panels	15.42	15.25	16.25	
72	Control Building & Office	Top of Metal Flood Panels	15.42	15.25	16.25	
73	Control Building & Office	Finish Floor	12.97	15.25		
74	Control Building & Office	Top of Metal Flood Brackets	14.42	15.25	16.25	
75	Control Building & Office	Top of Wall	18.00	15.25		
76	Control Building & Office	Finish Floor	12.95	15.25		
77	Control Building & Office	Bottom of Window Sill	13.13	15.25		
78	Control Building & Office	Top of Metal Flood Brackets	14.43	15.25	16.25	
79	Control Building & Office	Bottom of Window Sill	15.92	15.25		
80	Control Building & Office	Finish Floor	12.95	15.25		
81	Control Building & Office	Top of Metal Flood Brackets	14.43	15.25	16.25	
82	Control Building & Office	Bottom of Window Sill	17.29	15.25		
83	Control Building & Office	Top of Metal Flood Panels	14.39	15.25	16.25	
84	Headworks/Influent Pumping	Top of Metal Flood Bracket	16.38	15.25		Critical - already floodproofed.
85	Headworks/Influent Pumping	Top of Metal Flood Bracket	16.38	15.25		
86	Headworks/Influent Pumping	Top of Metal Flood Bracket	16.41	15.25		
87	Headworks/Influent Pumping	Top of Metal Flood Bracket	16.39	15.25		
88	Headworks/Influent Pumping	Top of Metal Flood Bracket	16.39	15.25		
89	Headworks/Influent Pumping	Top of Metal Flood Bracket	16.40	15.25		
90	Headworks/Influent Pumping	Top of Wall	16.40	15.25		
91	Centrifuge Bldg	Finish Floor	13.51	15.25		Not critical - can recover/repair after flood subsides.
92	Centrifuge Bldg	Top of Metal Flood Bracket	17.69	15.25		
93	Centrifuge Bldg	Top of Metal Flood Bracket	17.72	15.25		
94	Centrifuge Bldg	Top of Metal Flood Bracket	17.77	15.25		
95	Centrifuge Bldg	Finish Floor	13.51	15.25		
96	Centrifuge Bldg	Top of Metal Flood Bracket	17.75	15.25		
97	Centrifuge Bldg	Finish Floor	13.54	15.25		
98	Centrifuge Bldg	Top of Metal Flood Bracket	17.75	15.25		
99	Centrifuge Bldg	Top of Metal Flood Bracket	17.75	15.25		

3-16-0233
Exhibit 7
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Technical Memorandum

To: Gerhardt Hubner, District Administrator
South San Luis Obispo County Sanitation District

From: Michael Nunley, PE
Eileen Shields, PE
Cris Swain, EIT

Date: September 9, 2016

Re: South San Luis Obispo County Sanitation District – WWTP Redundancy Project
Evaluation of Wastewater Treatment Plant Site Alternatives and Conceptual Costs for Coastal Development Permit Application

INTRODUCTION AND BACKGROUND

South San Luis Obispo County Sanitation District (District) is currently moving forward with planning and design of the Redundancy Project, an upgrade to the existing wastewater treatment plant (WWTP) to address redundancy concerns and meet requirements from Regional Water Quality Control Board (RWQCB). The facility currently requires redundant secondary treatment processes to meet effluent requirements when the existing fixed film reactor (FFR) or secondary clarifier are taken offline for maintenance, repairs, or emergencies. On July 7, 2005, Kennedy/Jenks Consultants (KJ) submitted a comprehensive engineering study titled "Long-Range Plan for Wastewater Treatment Plant Improvements," evaluating potential improvements to the wastewater treatment plant. The 2005 KJ report was followed by a Peer Review Report by Carollo Engineers, which was submitted to the District on January 9, 2010. The purpose of the Carollo Review was to independently study and verify the KJ report and recommendations. Finally, on February 4, 2015, KJ submitted a report titled "Upgrading Existing Wastewater Treatment Plant Documentation Review and Update of Probable Cost" which summarized the 2005 report and the Peer Review, and updated pertinent information.

In 2015, the District developed a work plan, schedule, and budget for the project. They have since hired a design firm to move the preliminary design forward, submitted an application for an SRF Planning/Design Loan, and submitted the Coastal Development Permit application to the California Coastal Commission (CCC). A letter written by the CCC on April 15th, 2016 addressed to John F. Rickenbach in response to a Coastal Development Permit (CDP) application included a request for the District to investigate impacts from sea level rise to flood risk at the existing facility. On August 16th, 2016, the CCC verbally communicated the desire for information on costs to move the District WWTP to another location. The CCC also inquired about regional coordination efforts related to recycled water planning in the surrounding area.

This Technical Memorandum (TM) identifies conceptual costs for a relocated WWTP that meets current effluent requirements and provides a similar level of treatment to the existing facility. It is assumed the relocated facility will have the same treatment capacity and a similar level of redundancy in major unit processes to those at the existing plant with the addition of the WWTP Redundancy Project components. This effort will not address all of the land use, siting, and institutional constraints associated with a relocation of a regional treatment facility of this nature, but is intended to provide a range of likely project costs to inform future regional planning decisions. Relocation of the facility will require significant coordination with the District member agencies, the County of

San Luis Obispo, and many state and federal agencies as well as property owners and other project stakeholders. Those efforts are beyond the scope of this study, but the results of this study will inform those discussions and planning efforts and, more urgently, address the information request from CCC.

EXISTING CONDITIONS

The WWTP is a conventional facility with mechanical screens, 2 primary clarifiers, a fixed film reactor (FFR), a secondary clarifier, and a chlorine disinfection system. Effluent is discharged out of an ocean outfall operated jointly with City of Pismo Beach WWTP. The District's plant operates under Waste Discharge Requirements (WDR) Order Number R3-2009-0046/ NPDES Number CA0048003. It is rated for a dry weather flow of 5.0 MGD. The 2015 KJ report evaluated changes in wastewater flow characteristics since 1965, and provided projections for buildout flows based on revisions to the future population assumptions. Table 1 below summarizes the recommended buildout flows from the 2015 report. Future flows for buildout of the service area are within the current plant rating of 5 MGD. No increase in capacity is proposed as part of the Redundancy Project

Table 1: Projected Future (Buildout) Flows	
Average Annual Daily Flow (AADF)	4.2 MGD
Peak Daily Flow, Dry Weather (PDF)	4.9 MGD
Peak Daily Flow, Wet Weather (PDF)	8.4 MGD
Peak Hour Wet Weather Flow (PHWWF)	10.0 MGD

The existing facility is located within FEMA Flood Zone AE which is defined as areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Attachment 3 provided to the CCC in the CDP application titled "Sea Level Rise Analysis" performed by Environmental Science Associates (ESA) identified three potential flood sources: coastal flooding due to proximity to the ocean, future changes to extreme fluvial flood flows on Arroyo Grande Creek, and the estuarine flood flow from the nearby Meadow Creek Lagoon. According to the ESA study, the existing maximum flood elevation is 12.3 feet as measured from the North American Vertical Datum of 1988 (NAVD). Maximum flood elevation ranges for the years 2050 and 2100 are 12.7 to 13.2 feet NAVD and 13.9 to 15.6 feet NAVD, respectively. Flood protection for new critical facilities at the existing WWTP will be provided to protect facilities from flood levels of up to 15.25 feet.

REVIEW OF REGIONAL EFFORTS

The WWTP Redundancy Project will not result in production of recycled water, but will significantly improve plant effluent quality for future recycling. Multiple recycled water studies have been or are being conducted in south San Luis Obispo County due to the scarcity of water supplies. Protecting the beneficial uses of the ocean, improving flood and sea level rise resiliency, and improving the regional water supply portfolio are common goals shared by these efforts. Currently a Recycled Water Feasibility Planning Study (RWFPS) is being performed for the District and City of Arroyo Grande under a grant agreement from the State Water Resources Control board (SWRCB). The District RWFPS was originally scoped to evaluate potential opportunities for a Satellite Water Resource Recovery Facility (SWRRF) including an Investment Analysis of the SWRRF concept. The Investment Analysis determined that the SWRRF concept was not cost effective and consequently the District and the City of Arroyo Grande requested that the remaining budget for the study be utilized to evaluate alternate recycled water options, including potential sites for a regional advanced water purification facility.

The District RWFPS is currently being conducted with emphasis on the alternatives of upgrades to the existing WWTP to allow for recycled water production or expansion of a proposed City of Pismo Beach Offsite Advanced Treatment Facility to provide additional water for recharge of the Santa Maria River Valley groundwater basin. An initial planning study was completed by the City of Pismo Beach for their own facility in April of 2015 titled "Recycled Water Facilities Planning Study – Final for the City of Pismo Beach". The Pismo Beach RWFPS identified four desirable alternatives for water reuse. The alternatives are restricted irrigation using recycled water treated to Disinfected Secondary-23 standards, unrestricted landscape irrigation using recycled water treated to Disinfected Tertiary standards, and groundwater recharge via injection either as a seawater intrusion barrier or direct injection to the inland aquifer. Recycled water used for groundwater injection must undergo full advanced treatment including reverse osmosis treatment and an advanced oxidation process. The RWFPS recommended that groundwater injection into the inland aquifer be pursued as it could produce the highest volume of water that could be recovered for beneficial use while having an insignificant cost difference from injection for use as a seawater intrusion barrier.

Various groups in the region have coordinated efforts to address water resource issues at a regional scale. Some groups look into broad issues while others have a more specific focus. The District participates in many of these groups. Table 2 shows general descriptions and District staff involvement of each group. The long-term future of the District WWTP (past 2050) will require significant coordination among these regional partners but the framework is in place to move these discussions forward.

Table 2: Regional Collaborative Efforts		
Regional Organization	**Brief Description**	**Recent District Involvement**
Arroyo Grande Watershed Memorandum of Understanding Group	In 2006, the District and other parties entered into a Memorandum of Understanding to develop programs and policies for maintenance, protection, and enhancement of Arroyo Grande Watershed and creeks within the Watershed.	Staff attended latest meeting on 7/14/2016, next meeting scheduled for late September
Zone 1-1A Flood Control Advisory Committee District	Focused on goal of providing input and coordination on proposed improvement and maintenance of Zone 1/1A flood facilities, working with the Coastal San Luis Resource Conservation District	District staff participation approved 6/15/2016, staff attended meeting on 8/21/2016
Integrated Water Resource Management (IRWM)	Collaborative effort with County of San Luis Obispo to manage grant and funding pursuits for water resource projects on a county-wide scale.	Board approved District participation on 7/6/2016 board meeting. Next IRWM meeting scheduled for 9/7/2016
Water Reuse, Central Coast Chapter	Not-for-profit association of utilities, government agencies, and industry that advocates for laws, policies, and funding to promote water reuse.	Staff and elected officials to visit and tour Monterey Regional Water Pollution Control Agency's "Pure Water Demonstration Facility" on 9/14/2016
North Cities Management Area Technical Group (NCMA TG)	Formed as a result of Santa Maria Groundwater Basin Adjudication, representatives from Arroyo Grande, Grover Beach, Pismo Beach, and the Oceano Community Services District are exploring various ways to protect and enhance future water supplies in the basin through groundwater monitoring and the collection and analyzing of data pertinent to water supply and demand.	Meeting attended 8/15/2016 Groundwater Modeling Subcommittee Met 9/6/2016
Regional South SLO County Recycling Meeting (Stakeholder Outreach for RWFPS)	Recently staff have been invited to participate in meetings with the City of Pismo Beach to coordinate efforts regarding regional recycling projects.	Meeting attended 7/19/2016, District staff gave update on recent activities. Next Meeting is 9/23/2016
Countywide Water Action Team	Water managers throughout San Luis Obispo County discuss and collaborate on water supply management solutions	Meeting attended 8/26/2016
Outreach to member Agencies and Customers	District Administrator provided formal presentations on District and its initiatives (including Redundancy Project and RWFPS) to Arroyo Grande City Council, Oceano Community Services District, and Regional Water Quality Control Board	Presentations given between 7/26/2016 - 7/28/2016

SITE ALTERNATIVES

Sites were determined by review of the the 100-year floodplain from the FEMA Flood Insurance Rate Maps (FIRM) and land use mapping from the County of San Luis Obispo, City of Arroyo Grande, and City of Grover Beach. The identified sites were located well outside of the floodplain and were confirmed for zoning as a suitable land use. For the purposes of this study, agriculture, industrial, open space, and public facilities were considered appropriate land uses for potential relocation sites. Individual parcels were not identified since the purpose of this study is to develop conceptual costs, not begin detailed planning for relocation of a regional facility. It should be noted that a designation of agricultural land use may introduce additional complications as individual parcels may be entered in a Land Conservation Contract protected by the California Land Conservation Act of 1965 (Williamson Act) and Government Code Section 51250 via AB 1492 (Laird Bill). Investigation of parcels that were protected by a Land Conservation Contract was outside of the scope for this study but should be performed before a land acquisition process. The District WWTP is located on land designated as public facilities land use category.

Three sites were identified within the District's service area. Each site had at least 12 acres of area. The existing WWTP site is about 10.6 acres, so sites with room to expand or add future treatment processes were considered desirable. The sites identified were labeled Site 1, Site 2, and Site 3 and are located in Grover Beach, Oceano, and Arroyo Grande respectively. Sites can be seen in Figure 1.

PIPELINE ALIGNMENTS

It was assumed that a lift station would be constructed at the location of the existing WWTP to convey raw wastewater to the identified sites. Depending on the location of the new site, the lift station requirements would change significantly as site elevation and pipeline length will drive design of pumps and lift station size.

Preliminary pipeline alignments followed major roads and avoided highway or railroad crossings where possible. It should be noted that each site will require a pipeline that crosses Highway 1 and the railroad to the east of the existing facility. Assuming the pipeline can be directed through the Oceano County Airport adjacent to the existing WWTP, only Site 3 would have an additional creek crossing at the intersection of Halcyon Rd and Highway 1.

Since Site 2 and Site 3 are significantly further from the existing facility than Site 1, larger pumps are required. Each scenario would have 3 submersible pumps at the lift station so that two can be used during PHWWF times and one can always be used as a backup. Site 3 may require an interim lift station to provide adequate conveyance during PHWWF. Preliminary estimates for the pipeline alignment length and pumping are listed in Table 2.

Table 3: Preliminary Estimates for Pipelines and Pumps

Site	Site Elevation (ft)	Pipeline Length (ft)	Approximate Pump TDH (ft)	Approximate Total Pump Horsepower Required (hp)
1	45	4,200	125	330
2	90	11,000	260	650
3	180	21,000	475	1,200

South San Luis Obispo County Sanitation District

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Figure 1:
SSLOCSD WWTP
Site Alternatives

1 inch = 2,500 feet
0 2,500 5,000

N

PERMITTING AND LAND USE

In general, a new facility, if located in the Coastal Zone, would need to be consistent with Coastal Commission policies and the applicable Local Coastal Plan of the jurisdiction in which the site would be located. Even if the facility itself were located outside the Coastal Zone, any discharge from the facility into a creek that could affect coastal resources would likely make the facility subject to Coastal policies. For that reason, it is assumed that Coastal policies could apply to a new facility within the District's boundaries, regardless of location.

The new facility would also need to comply with local land use and zoning requirements, which would differ depending on whether the site would be located in the City of Grover Beach, the City of Arroyo Grande, or the unincorporated community of Oceano. In the case of Oceano, the facility would need to comply with the planning requirements of San Luis Obispo County.

These considerations will be important in the evaluation of potential sites for a new facility:

- **California Coastal Act compliance.** A new site would be potentially inconsistent with Coastal Act policies if it is:
    - located on prime agricultural land;
    - contains environmentally sensitive habitat area (ESHA) such that development outside of the habitat and buffer areas would not be feasible; and/or
    - located entirely within the 100-year flood hazard zone, and cannot be mitigated through design to the satisfaction of the Coastal Commission.

  Projects subject to Coastal Commission regulation must also comply with other key policies related to the following issues:
    - Local Coastal Program (LCP) consistency
    - Coastal Hazards
    - Public Access, Recreation, and Visitor-Serving Uses
    - Visual Resources
    - Sustainable Use of Public Resources
    - Coastal-Dependent Development
    - Cultural Resources

- **Local General Plan and Zoning Consistency.** A new facility must be consistent with land use designations and zoning requirements of the applicable jurisdiction. These provisions typically related to allowed uses, building heights, setbacks, noise, visual appearance, and other considerations that relate to land use compatibility and orderly development.

- **Environmental (CEQA) Considerations.** A new facility would need to be evaluated in accordance with the California Environmental Quality Act (CEQA), in order to determine and disclose potential environmental impacts, and to prescribe possible mitigation measures. Among the key issues to be considered include:

    - Aesthetics (Visual Resources)
    - Agricultural Resources
    - Air Quality
    - Biological Resources
    - Cultural Resources
    - Geology and Soils

- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning (including Land Use Compatibility)
- Mineral Resources
- Noise
- Population/Housing
- Public Services
- Recreation
- Traffic and Transportation
- Utilities

Other permits from state and national resource agencies may be required for pipeline construction across streams or other sensitive habitat areas.

COMPARATIVE COST OPINIONS

Comparative conceptual cost opinions have been prepared for each identified site alternative. Due to the fact that the facility is currently undergoing upgrades to meet full redundancy via the construction of aeration basins and an additional secondary clarifier, it was assumed that if the facility were moved an FFR would not be constructed, as an FFR would not provide supplemental treatment or redundancy that would warrant the cost of its construction. The WWTP Redundancy Project will be designed to allow the facility to have full redundancy with both the FFR and an aeration basin out of service.

Costs such as property acquisition, easement acquisition, and other categories that cannot be estimated are not included in these opinions.

The construction costs are intended only to allow a comparison of potential costs to relocate the existing WWTP to various sites within the service area and vicinity of the WWTP. It should be noted that the entire WWTP Redundancy Project budget is approximately $20,000,000 and includes flood proofing through the year 2050.

To estimate construction costs at the midpoint of construction, the total present day (2016) construction cost was escalated by 2% annually for a total of 10 years. This 10-year period is intended to be a conceptual planning, permitting, and logistics period that would be taken by the District in the event that the WWTP was relocated. Construction costs include a 30% construction contingency allowance and a 30% design, administration and legal, and construction management allowance. Comparative construction costs are displayed in Table 4. A basis of cost evaluation is attached as Appendix A.

Table 4: Preliminary Conceptual Cost Opinions

Site	Estimated Construction Costs (2016 $Million)	Estimated Construction Costs at Midpoint of Construction (2026 $Million)
1	110	130
2	120	150
3	130	160

ANTICIPATED TIMELINE

Given the number of regional partners, the need for extensive public outreach during siting of new wastewater treatment facilities, and the importance of developing goals that meet all the member agencies' needs (such as recycled water production), the timeline for planning, permitting, design, and construction is anticipated to

require seven to 11 years. Considering that floodproofing measures at the existing site will be designed to meet modeled sea rise levels through 2050 or 2070 at a minimum, there is adequate time for the member agencies to develop a long-term plan for future wastewater treatment and recycled water production at the existing site, at a new location, or participate in regional flooding or sea level mitigation planning efforts. Current coordination efforts related to regional planning were cited in Table 2. In order to determine the likely timeline for planning, design, and construction of a new regional treatment facility, MKN and JFR Consulting considered schedules for California Environmental Quality Act compliance, master planning, design, and construction.

It is expected that the CEQA process to prepare the necessary Environmental Impact Report (EIR) would likely take 24 to 36 months. The length of time would be a function of the multi-agency coordination that would need to occur, as well as the potential for public controversy, which often arises as a result of perceived neighborhood incompatibility concerns because of the nature of wastewater treatment facilities.

Detailed master planning and design of a new treatment plant facility, pipelines, and pumping stations is anticipated to require approximately 24 to 36 months based on experience with similar projects. This includes procurement of planning and engineering consultants, detailed design activities, field studies, and agency reviews and approvals.

Construction phase, including new pipelines, treatment plant processes, pumping facilities, recycled water delivery systems, decommissioning of the new facility, startup, and commissioning is anticipated to require an additional 36 to 60 months.

Appendix A

Basis of Cost Evaluation

The Technical Memorandum includes relative construction cost opinions for developing a new WWTP at three different sites. This Appendix discusses the approach for developing the conceptual cost opinions presented in the TM.

This evaluation does not identify the total costs for each alternative, but attempts to establish a comparative framework for analysis of each site under consideration. The construction costs described herein are meant to support a relative construction cost comparison of the potential project sites under consideration. They represent planning level estimates and do not reflect actual project costs. The following table summarizes the project components and estimated unit cost ranges developed for the evaluation. Descriptions of the criteria used to develop these costs are included in the paragraphs below.

Project Component	Unit	Estimated Unit Cost Range[1]	
		Low	High
Sewer force main (18")	mile	$1,360,000	$2,420,000
Raw Wastewater Lift Station[2]	each	$1.920.000	$3,230,000
Headworks and Grit Removal	each	$2,000,000	$2,800,000
Primary Clarifiers	each	$2,140,000	$2,990,000
Aeration Basins	each	$2,010,000	$2,220,000
Secondary Clarifiers	each	$2,850,000	$3,170,000
Dewatering	each	$5,750,000	$6,270,000
Digesters	each	$5,600,000	$7,600,000
Disinfection system	each	$1,570,000	$1,880,000
Treated effluent disposal pump station	each	$1,600,000	$2,100,000
Treated effluent disposal pipeline (18")	mile	$1,360,000	$2,420,000
General Site Work (ops buildings, storage, etc)	%[3]	20	30
Earthwork Allowance	%[3]	5	10
Site Improvements and Piping	%[3]	20	25
Electrical and Instrumentation	%	20	20
Construction Contingency	%	30	30
Administration, Design, and Management	%	30	30

Notes:

1. Estimated unit cost range includes capital construction costs as defined in the paragraphs below.
2. Lift station costs varied between alternatives due to differing pump design criteria. The complete range is shown.
3. Unit cost range for percentages calculated as percentage of construction cost subtotals.
4. Costs for property acquisition, easements, permitting, and advanced treatment are not included.

Cost Index – The Engineering New Record (ENR) Construction Cost Index (CCI) is the industry standard measure of changes in the construction sector. It is commonly used to bring historical costs (bids and estimates) to current estimates. The ENR CCI 20-city average for August 2016 of 10385.65 was used for this report.

Unit cost ranges – Construction costs are estimated based on the order-of-magnitude unit cost ranges established herein. Unit cost estimates include materials, labor, equipment, contractor overhead and profit, and mobilization costs, and represent the median price expected from a responsible bid. These costs represent conceptual level estimates for probable construction costs with ranges reflecting the anticipated accuracy of the estimate based on limited information such as basic design criteria, limited process flow diagram, and list of major project components.

Sewer force main – The sewer force main must be sized to transport the pumped flow, assumed to be the peak hour flow of ten million gallons per day (MGD). Based on a design velocity of five to eight fps, it is estimated that the sewer force main will be 18-inches in diameter. For the purposes of this report, it is assumed the pipeline will be AWWA C900 polyvinyl chloride (PVC) pressure pipe, installed at depths ranging from 3 to 5 feet of cover. A per mile unit cost estimate was established and estimated lengths were rounded to the nearest mile. The unit cost estimate assumes trenching in paved roadways, traffic control, and asphalt paving.

Lift stations – Lift stations must be designed to meet the peak hour flow rate of 10 MGD (approximately 6,950 gpm). The pump size will be chosen based on the pumping head requirements for each site. Pumping head requirements were estimated by projecting a pipeline route for the raw wastewater force main between the existing wastewater treatment plant and the new sites, and summing the resultant elevation head loss, friction head loss and minor losses. Required elevation head was estimated using the maximum elevation along the potential force main route. Friction head loss and minor losses assume an 18-inch diameter force main. The approximate lift station pump horse power was estimated using the peak hour flow rate, estimated pumping head (total dynamic head) and a pump efficiency of 70%. For this report 'ilt is assumed at least three pumps will be required to effectively meet the range of flows and provide redundancy. Some sites may require additional booster pumps to achieve desired head during peak flow events. Construction cost estimates were derived from cost curve data presented in Figure 29-3 of Pumping Station Design by Robert Sanks. Considered to be industry standard, these cost curves were derived from historical construction costs. Cost estimates for this study were adjusted using the ENR CCI. The estimated cost within this range was chosen for each site based on the pumping head requirement.

Treatment Facilities– The construction costs for the primary clarifiers, aeration basins, and secondary clarifiers are based on estimates from the Kennedy Jenks report prepared for the District titled "Upgrading Existing Wastewater Treatment Plant Documentation Review and Update of Probable Cost" (February, 2015). The KJ report did not specify costs for primary clarifiers. Since primary clarifiers are smaller than secondary clarifiers it was assumed that the cost for the primary clarifiers would be roughly 75% of the cost of secondary clarifiers. These costs were adjusted to August 2016 using the ENR CCI.

Dewatering – The construction costs for dewatering equipment included both gravity sludge thickening and centrifuges. A cost range was developed after reviewing comparable project cost estimations for the City of Oxnard and the City of Morro Bay, as documented in the reports "Oxnard Unit Process

References

Capacity Evaluation of the California Men's Colony Wastewater Treatment Plant – Carollo, December 3, 2014

Coastal Development Permit (CDP) Application Number 3-16-0233 (SSLOCSD Wastewater Treatment Facility Redundancy Project) – California Coastal Commission, April 15, 2016

Comparative Site Analysis: Regional CMC Facility vs. Rancho Colina, John F. Rickenbach Consulting, December 9, 2014

Morro Bay WRF Site Report, Appendix A – Basis of Cost Evaluation – MKN and Associates May 6, 2016

Oxnard Unit Process Evaluation and Equipment Optimization – Penfield and Smith and MKN and Associates, June 11, 2014

SSLOCSD Wastewater Treatment Facility Redundancy Project: Sea Level Rise Analysis – ESA, August 3, 2016

State Revolving Fund Planning or Design Financial Assistance Application, WWTP Redundancy Project, South San Luis Obispo County Sanitation District – SSLOCSD and MKN and Associates, June 20, 2016

Upgrading Existing Wastewater Treatment Plant Documentation Review and Update on Probable Cost – Kennedy/Jenks Consultants, February 4, 2015

Wastewater Treatment Plant Expansion, Phase II Bid No. 2008/01 Award of Bid – Director of Public Works/City Engineer for Santa Maria, California, May 20, 2008

Appendix B

Comparative Cost Opinions for Sites 1-3

SSLOCSD WWTP Site Alternatives Comparative Construction Cost Opinion - Site 1

Project Component	Unit	Estimated Unit Cost Range		Quantity	Estimated Cost Range		
		Low	High		Low	High	Midpoint
Sewer force main (18 inch)	mile	$1,360,000	$2,420,000	1	$1,360,000	$2,420,000	$1,890,000
Lift Station (6950 gpm, 125 ft TDH)	each	$1,920,000	$2,270,000	1	$1,920,000	$2,270,000	$2,095,000
Headworks	LS	$1,500,000	$2,000,000	1	$1,500,000	$2,000,000	$1,750,000
Grit removal process	each	$500,000	$800,000	1	$500,000	$800,000	$650,000
Primary Clarifiers	Each	$2,140,000	$2,990,000	2	$4,280,000	$5,980,000	$5,130,000
Aeration Basins	each	$2,010,000	$2,220,000	4	$8,040,000	$8,880,000	$8,460,000
Secondary Clarifier	Each	$2,850,000	$3,170,000	2	$5,700,000	$6,340,000	$6,020,000
Dewatering	Each	$5,750,000	$6,270,000	1	$5,750,000	$6,270,000	$6,010,000
Digesters (2)	LS	$5,600,000	$7,600,000	1	$5,600,000	$7,600,000	$6,600,000
Disinfection	LS	$1,570,000	$1,880,000	1	$1,570,000	$1,880,000	$1,725,000
Treated effluent disposal pump station (6950 gpm)	each	$1,600,000	$2,100,000	1	$1,600,000	$2,100,000	$1,850,000
Treated effluent disposal pipeline (18 inch)	mile	$1,360,000	$2,420,000	1	$1,360,000	$2,420,000	$1,890,000

Estimated Construction Cost Subtotal 1		$39,180,000	$48,960,000	$44,070,000
General Site work (ops building, storage, etc)	20 - 30%	$7,836,000	$14,688,000	$11,017,500
Earthwork Allowance	5 - 10%	$1,959,000	$4,896,000	$3,305,250
Estimated Construction Cost Subtotal 2		$48,975,000	$68,544,000	$58,392,750
Site Improvements and Piping	20 - 25%	$9,795,000	$17,136,000	$11,678,550
Construction Contingency	30%	$14,692,500	$20,563,200	$17,517,825
Admin, Design, Management	30%	$14,692,500	$20,563,200	$17,517,825
Estimated Construction Cost Total		**$90,000,000**	**$130,000,000**	**$110,000,000**

SSLOCSD WWTP Site Alternatives Comparative Construction Cost Opinion - Site 2

Project Component	Unit	Estimated Unit Cost Range		Quantity	Estimated Cost Range		
		Low	High		Low	High	Midpoint
Sewer force main (18 inch)	mile	$1,360,000	$2,420,000	2.1	$2,856,000	$5,082,000	$3,969,000
Lift Station (6950 gpm, 260 ft TDH)	each	$2,120,000	$2,630,000	1	$2,120,000	$2,630,000	$2,375,000
Headworks	LS	$1,500,000	$2,000,000	1	$1,500,000	$2,000,000	$1,750,000
Grit removal process	each	$500,000	$800,000	1	$500,000	$800,000	$650,000
Primary Clarifiers	Each	$2,140,000	$2,990,000	2	$4,280,000	$5,980,000	$5,130,000
Aeration Basins	each	$2,010,000	$2,220,000	4	$8,040,000	$8,880,000	$8,460,000
Secondary Clarifier	Each	$2,850,000	$3,170,000	2	$5,700,000	$6,340,000	$6,020,000
Dewatering	Each	$5,750,000	$6,270,000	1	$5,750,000	$6,270,000	$6,010,000
Digesters (2)	LS	$5,600,000	$7,600,000	1	$5,600,000	$7,600,000	$6,600,000
Disinfection	LS	$1,570,000	$1,880,000	1	$1,570,000	$1,880,000	$1,725,000
Treated effluent disposal pump station (6950 gpm)	each	$1,600,000	$2,100,000	1	$1,600,000	$2,100,000	$1,850,000
Treated effluent disposal pipeline (18 inch)	mile	$1,360,000	$2,420,000	2.1	$2,856,000	$5,082,000	$3,969,000

Estimated Construction Cost Subtotal 1		$42,372,000	$54,644,000	$48,508,000
General Site work (ops building, storage, etc)	20 - 30%	$8,474,400	$16,393,200	$12,127,000
Earthwork Allowance	5 - 10%	$2,118,600	$5,464,400	$3,638,100
Estimated Construction Cost Subtotal 2		$52,965,000	$76,501,600	$64,273,100
Site Improvements and Piping	20 - 25%	$10,593,000	$19,125,400	$12,854,620
Construction Contingency	30%	$15,889,500	$22,950,480	$19,281,930
Admin, Design, Management	30%	$15,889,500	$22,950,480	$19,281,930
Estimated Construction Cost Total		**$100,000,000**	**$140,000,000**	**$120,000,000**

SSLOCSD WWTP Site Alternatives Comparative Construction Cost Opinion - Site 3

Project Component	Unit	Estimated Unit Cost Range		Quantity	Estimated Cost Range		
		Low	High		Low	High	Midpoint
Sewer force main (18 inch)	mile	$1,360,000	$2,420,000	4	$5,440,000	$9,680,000	$7,560,000
Lift Station (6550 gpm, 480 ft TDH)	each	$2,630,000	$3,230,000	1	$2,630,000	$3,230,000	$2,930,000
Headworks	LS	$1,500,000	$2,000,000	1	$1,500,000	$2,000,000	$1,750,000
Grit removal process	each	$500,000	$800,000	1	$500,000	$800,000	$650,000
Primary Clarifiers	Each	$2,140,000	$2,990,000	2	$4,280,000	$5,980,000	$5,130,000
Aeration Basins	each	$2,010,000	$2,220,000	4	$8,040,000	$8,880,000	$8,460,000
Secondary Clarifier	Each	$2,850,000	$3,170,000	2	$5,700,000	$6,340,000	$6,020,000
Dewatering	Each	$5,750,000	$6,270,000	1	$5,750,000	$6,270,000	$6,010,000
Digesters (2)	LS	$5,600,000	$7,600,000	1	$5,600,000	$7,600,000	$6,600,000
Disinfection	LS	$1,570,000	$1,880,000	1	$1,570,000	$1,880,000	$1,725,000
Treated effluent disposal pump station (6550 gpm)	each	$1,600,000	$2,100,000	1	$1,600,000	$2,100,000	$1,850,000
Treated effluent disposal pipeline (18 inch)	mile	$1,360,000	$2,420,000	4	$5,440,000	$9,680,000	$7,560,000

Estimated Construction Cost Subtotal 1		$48,050,000	$64,440,000	$56,245,000
General Site work (ops building, storage, etc)	20 - 30%	$9,610,000	$19,332,000	$14,061,250
Earthwork Allowance	5 - 10%	$2,402,500	$6,444,000	$4,218,375
Estimated Construction Cost Subtotal 2		$60,062,500	$90,216,000	$74,524,625
Site Improvements and Piping	20 - 25%	$12,012,500	$22,554,000	$14,904,925
Construction Contingency	30%	$18,018,750	$27,064,800	$22,357,388
Admin, Design, Management	30%	$18,018,750	$27,064,800	$22,357,388
Estimated Construction Cost Total		**$110,000,000**	**$170,000,000**	**$130,000,000**

View of WWTP from Highway 1 (southbound)

Attachment D
WWTP Life Expectancy Analysis Technical Memorandum
April 23, 2019

MKN & Associates, Inc.
P O Box 1604
Arroyo Grande CA 93421
805 904 6530

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

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1. Introduction

1.1. Objective

The South San Luis Obispo County Sanitation District (SSLOCSD or District) owns and operates the SSLOCSD 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.

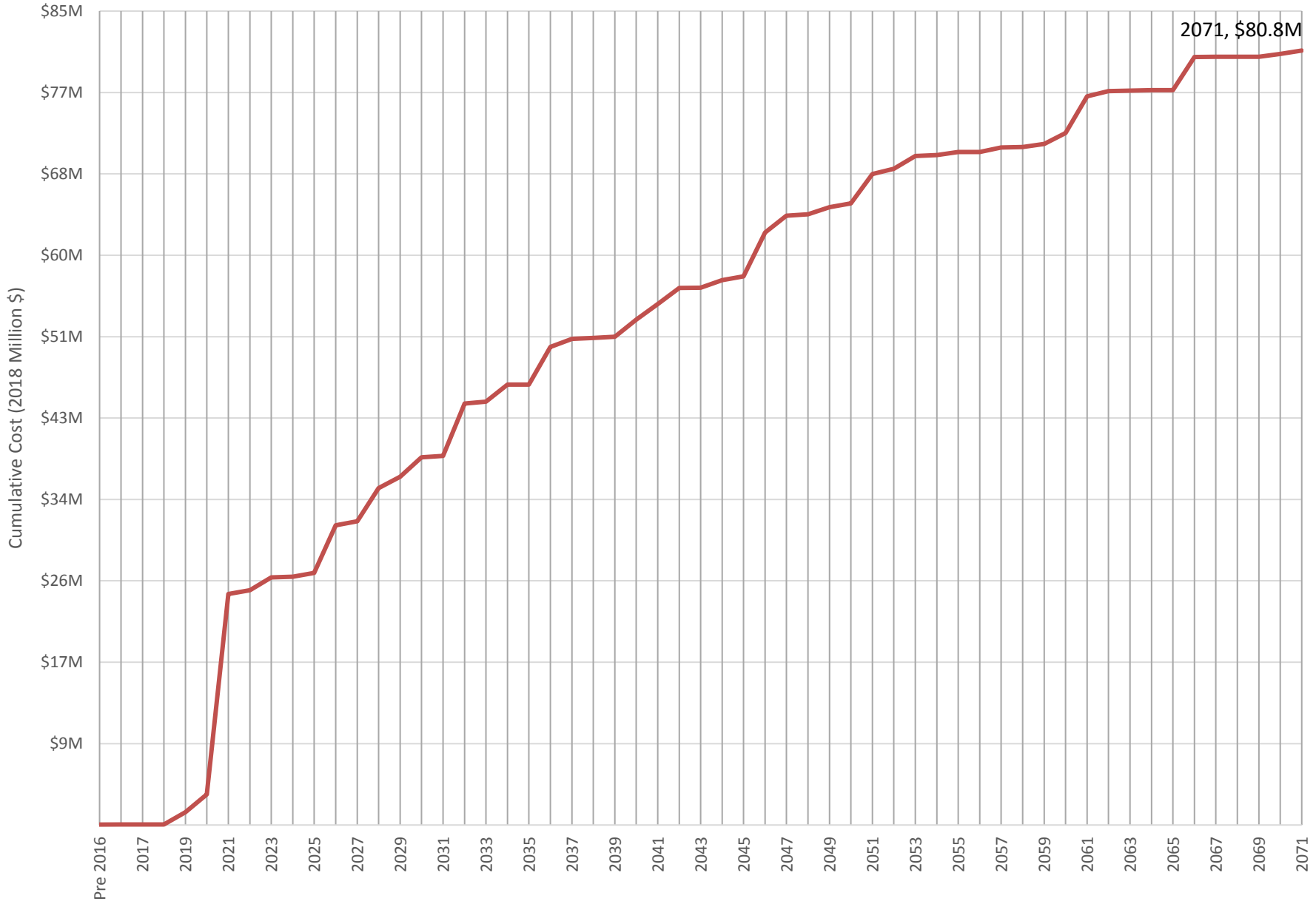
Annual costs were calculated by summing the replacement costs for existing components and costs from the Redundancy Project upgrade, plus the ongoing costs for replacement of the improved WWTP. The analysis was run to 2071, approximately 50 years beyond the Redundancy Project Improvements. A graph summarizing 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 SSLOCSD 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 Projec	30	1990	1990	2018	$25,000	$40,925	2019					$40,925		
	Clarifier #2 Mechanism		Redundancy Projec	25	1990	1990	2018	$250,000	$409,250	2019					$409,250		
	Clarifier #2 Drive		Redundancy Projec	25	1990	1990	2018	$90,500	$148,149	2019					$148,149		
	Clarifier #2 Bridge		Redundancy Projec	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 Projec	60	1986	1986	2020	$30,000	$54,450	2021							$54,450
	Sec Clarifier #1 Mechanism		Redundancy Projec	60	1986	1986	2020	$240,000	$435,600	2021							$435,600
	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							$8,840
	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							$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							
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							
	Vaugn 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	

	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
	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
	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							$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 Projec	30	1990	1990	2018	$25,000	$40,925	2019						
	Clarifier #2 Mechanism		Redundancy Projec	25	1990	1990	2018	$250,000	$409,250	2019						
	Clarifier #2 Drive		Redundancy Projec	25	1990	1990	2018	$90,500	$148,149	2019						
	Clarifier #2 Bridge		Redundancy Projec	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 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						$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						
	Vaugn 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 Projec	30	1990	1990	2018	$25,000	$40,925	2019						
	Clarifier #2 Mechanism		Redundancy Projec	25	1990	1990	2018	$250,000	$409,250	2019						
	Clarifier #2 Drive		Redundancy Projec	25	1990	1990	2018	$90,500	$148,149	2019						
	Clarifier #2 Bridge		Redundancy Projec	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						
	Vaugn 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						$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						
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 Projec	30	1990	1990	2018	$25,000	$40,925	2019						
	Clarifier #2 Mechanism		Redundancy Projec	25	1990	1990	2018	$250,000	$409,250	2019						
	Clarifier #2 Drive		Redundancy Projec	25	1990	1990	2018	$90,500	$148,149	2019						
	Clarifier #2 Bridge		Redundancy Projec	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						
	Vaugn 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 Projec	30	1990	1990	2018	$25,000	$40,925	2019						
	Clarifier #2 Mechanism		Redundancy Projec	25	1990	1990	2018	$250,000	$409,250	2019					$409,250	
	Clarifier #2 Drive		Redundancy Projec	25	1990	1990	2018	$90,500	$148,149	2019					$148,149	
	Clarifier #2 Bridge		Redundancy Projec	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						
	Vaugn 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 Projec	30	1990	1990	2018	$25,000	$40,925	2019				$40,925		
	Clarifier #2 Mechanism		Redundancy Projec	25	1990	1990	2018	$250,000	$409,250	2019						
	Clarifier #2 Drive		Redundancy Projec	25	1990	1990	2018	$90,500	$148,149	2019						
	Clarifier #2 Bridge		Redundancy Projec	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	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				
	Vaugn 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 Projec	30	1990	1990	2018	$25,000	$40,925	2019						
	Clarifier #2 Mechanism		Redundancy Projec	25	1990	1990	2018	$250,000	$409,250	2019						
	Clarifier #2 Drive		Redundancy Projec	25	1990	1990	2018	$90,500	$148,149	2019						
	Clarifier #2 Bridge		Redundancy Projec	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						
	Vaugn 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 Projec	30	1990	1990	2018	$25,000	$40,925	2019						
	Clarifier #2 Mechanism		Redundancy Projec	25	1990	1990	2018	$250,000	$409,250	2019						
	Clarifier #2 Drive		Redundancy Projec	25	1990	1990	2018	$90,500	$148,149	2019						
	Clarifier #2 Bridge		Redundancy Projec	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						
	Vaugn 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 Projec	30	1990	1990	2018	$25,000	$40,925	2019						
	Clarifier #2 Mechanism		Redundancy Projec	25	1990	1990	2018	$250,000	$409,250	2019						
	Clarifier #2 Drive		Redundancy Projec	25	1990	1990	2018	$90,500	$148,149	2019						
	Clarifier #2 Bridge		Redundancy Projec	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						
	Vaugn 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 Projec	30	1990	1990	2018	$25,000	$40,925	2019		
	Clarifier #2 Mechanism		Redundancy Projec	25	1990	1990	2018	$250,000	$409,250	2019		
	Clarifier #2 Drive		Redundancy Projec	25	1990	1990	2018	$90,500	$148,149	2019		
	Clarifier #2 Bridge		Redundancy Projec	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		
	Vaugn 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**