RECLAMATION DISTRICT NO. 1000
BOARD OF TRUSTEES
REGULAR BOARD MEETING

FRIDAY, SEPTEMBER 11, 2020
8:00 A.M.

WEB & TELEPHONE MEETING ONLY

MODIFIED BROWN ACT REQUIREMENTS IN LIGHT OF COVID-19

In Compliance with CA Executive Orders N-25-20 and N-29-20 members of the Board of Trustees and members of the public will participate in this meeting by teleconference. The call-in information for the Board of Trustees and the public is as follows:

Please join the meeting from your computer, tablet or smartphone.
https://global.gotomeeting.com/join/233980621

You can also dial in using your phone.
United States (Toll Free): 1 866 899 4679
United States: +1 (571) 317-3116

Access Code: 233-980-621

If you do not have the gotomeeting application downloaded, please allow yourself additional time prior to the meeting to install the free application on your computer, tablet or smartphone. The application is not required to participate via phone.

Any member of the public on the telephone may speak during Public Comment or may email public comments to kking@rd1000.org and comments will be read from each member of the public. During this period of modified Brown Act Requirements, the District will use best efforts to swiftly resolve requests for reasonable modifications or accommodations with individuals with disabilities, consistent with the Americans with Disabilities Act, and resolving any doubt whatsoever in favor of accessibility. Requests for reasonable modifications under the ADA may be submitted to the email address noted above, or by phone directly to the District.

All items requiring a vote of the Board of Trustees will be performed as a roll call vote to ensure votes are heard and recorded correctly. In addition, the meeting will be recorded and participation in the meeting via gotomeeting and/or phone will serve as the participants acknowledgment and consent of recordation.

AGENDA

1. PRELIMINARY

1.1. Call Meeting to Order
1.2. Roll Call
1.3. Approval of Agenda
1.4. Pledge of Allegiance
1.5. Conflict of Interest
(Any Agenda items that might be a conflict of interest to any Trustee should be identified at this time by the Trustee involved)

2. PRESENTATIONS

2.1. No Scheduled Presentations

3. PUBLIC COMMENT (NON-AGENDA ITEMS)

Any person desiring to speak on a matter which is not scheduled on this agenda may do so under the Public Comments section. Speaker times are limited to three (3) minutes per person on any matter within RD 1000's jurisdiction, not on the Agenda.

Public comments on agenda or non-agenda items during the Board of Trustees meeting are for the purpose of informing the Board to assist Trustees in making decisions. Please address your comments to the President of the Board. The Board President will request responses from staff, if appropriate. Please be aware the California Government Code prohibits the Board from taking any immediate action on an item which does not appear on the agenda unless the item meets stringent statutory requirements (see California Government Code Section 54954.2 (a)).

Public comments during Board meetings are not for question and answers. Should you have questions, please do not ask them as part of your public comments to the Board. Answers will not be provided during Board meetings. Please present your questions to any member of RD 1000 staff via e-mail, telephone, letter, or in-person at a time other than during a Board meeting.

4. INFORMATIONAL ITEMS

4.1. GENERAL MANAGER'S REPORT: Update on activities since the August 2020 Board Meeting.

4.2. SUPERINTENDENT'S REPORT: Update on activities since the August 2020 Board Meeting.

4.3. DISTRICT COUNSEL'S REPORT: Update on activities since the August 2020 Board Meeting.

5. CONSENT CALENDAR

The Board considers all Consent Calendar items to be routine and will adopt them in one motion. There will be no discussion on these items before the Board votes on the motion, unless Trustees, staff or the public request specific items be discussed and/or removed from the Consent Calendar.

5.1. APPROVAL OF MINUTES: Approval of Minutes from August 14, 2020 Regular Board Meeting.

5.2. TREASURER'S REPORT: Approve Treasurer's Report for August 2020.

5.3. EXPENDITURE REPORT: Review and Accept Report for August 2020.

5.4. BUDGET TO ACTUAL REPORT: Review and Accept Report for August 2020.

5.5. INSURANCE RENEWAL: Review and Consider Authorizing General Manager to Execute Annual Insurance Renewal.

6. SCHEDULED ITEMS

6.1. FISCAL YEAR 2020/2021 BUDGET AMENDMENT: Review and Consider Budget Amendment for Fiscal Year 2020/2021 – Operations Manager Position.

6.2. REVIEW AND CONSIDER ADOPTION OF OFFICIAL PAY RATE SCHEDULE FOR FISCAL YEAR 2020/2021: Review and Consider Adoption of Resolution No. 2020-09-01 Approving Official Pay Rate Schedule for Fiscal Year 2020/2021.

7. BOARD OF TRUSTEE'S COMMENTS/REPORTS

7.1. BOARD ACTIVITY UPDATES:

7.1.1. RD 1000 Committee Meetings Since Last Board Meeting

- Personnel Committee (Christophel, Avdis, & Burns) August 31, 2020
- Executive Committee Meeting (Smith & Burns) September 2, 2020

8. CLOSED SESSION

No Closed Session Items

9. ADJOURN

RECLAMATION DISTRICT 1000

DATE: SEPTEMBER 11, 2020 **AGENDA ITEM NO. 4.1**

TITLE: **General Manager's Report – September 2020**

SUBJECT: **Update on activities since the August 2020 Board of Trustees Meeting**

EXECUTIVE SUMMARY:

This Staff Report is intended to report the noteworthy activities and events of the District. Noteworthy activity from August included continued coordination on Natomas Levee Improvement Project with the United States Army Corps of Engineers, SAFCA and others, finalization of the District's Capital Improvement Plan Update and receipt of a proposals for the Request for Qualifications for the Natomas Basin Hydraulic Model Project and the FMAP Vegetation Removal Project. In summary, the District had a productive and successful month. Our key activities and achievements are presented below:

BACKGROUND:

1. **Administration Services**
    a. Comprehensive Financial Plan
        i. Working with NBS to prepare draft Comprehensive Financial Plan for review by Finance Committee. Draft report is anticipated in Fall 2020. The adopted Capital Improvement Plan was provided to NBS on September 4, 2020, for expenditures to be included into the Financial Plan.
2. **District Operations**
    a. Routine Operations & Maintenance:
        i. District Crews continue to perform routine maintenance and operations of the District's infrastructure. See Agenda Item 4.2 (Superintendent's Report) for more information regarding activities performed in August 2020.
3. **Development Projects**
    a. Greenbriar
        i. Working with Developer to consider operations and maintenance of Lone Tree Canal post development.
    b. Grand Park
        i. Working with Developer to update Project Review Processing and Funding Agreement.
4. **Capital Improvement Projects**
    a. CIP Update

i. District entered into Professional Services Agreement with KSN, Inc. on November 12, 2019. A kickoff meeting with held on December 2, 2019.

ii. Condition Assessment and Facility Inventory finalized in December 2019.

iii. KSN prepared Draft Final Report and presented the aforementioned report to the Board of Trustees on June 12, 2020.

iv. On August 14, 2020, the Board of Trustees adopted the Capital Improvement Plan Update with minor revisions to the draft presented. The Final adopted CIP is provided in Attachment No. 1 to this report.

5. Natomas Levee Improvement Projects

a. Reach A

i. The Corps issued its 95% plans for this reach early in August. One of the key components of this planning and design process was the analysis of the existing concrete tunnel discharge conduits from Pumping Plant 1A (Pp 1A). The testing and analysis which was performed determined that the 100-year-old plus tunnels are structurally and hydraulically adequate to continue to perform their function, with minor repair. The tunnel outlet will be replaced. The 95% plans were reviewed, and comments are being prepared by the Districts consultants, Mead and Hunt (M&H) as well as the District's representative to the project, Steve Yaeger. The focus of the Districts participation in the Project Delivery Team monthly meetings (PDT) has been reaching agreement with the Corps on including construction of a minimum 12 foot wide, all weather toe of levee patrol/ maintenance road in the plans, as well as the details of the cutoff wall closure around the existing PP 1A tunnels. Right of Way acquisition and relocation by SAFCA is progressing on schedule. Target date for construction contract award is September 2021.

b. Reach B

i. This construction project contract was awarded in spring, 2020. Initial clearing and stripping as well as demolition of three houses has commenced. Cutoff wall construction, construction of the adjacent levee and seepage berm will commence next spring. Don Caldwell has been representing the District and working with the Corps' inspectors and resident engineers to provide project support. The District representative to the project will join Don in participating in the weekly construction coordinating meetings in the spring. The plans have been completed for the Reach B, I 5 Window closure project. The bidding on this project is being held, waiting for the result of negotiations with Caltrans on a framework agreement with DWR, SAFCA, and the Corps covering their review and processing of comments on the various NLIP projects where Caltrans permits are required. District project representatives,

consultants, and staff have participated in all PDT meetings and in the plan review and comment process.

c. Reach C

i. The Reach C project was completed by SAFCA several years ago and the Districts' role is now providing annual maintenance activities in this reach.

d. Reach D

i. The relocation of the Vestal Drain was completed in early summer 2020, however the project is still in the final acceptance phase. District staff and consultants maintain constant contact with the Corps' inspectors and Resident Engineers, lobbying for completion of the Districts' punch list of deficiencies prior to the onslaught of winter rains. The plans for reconstruction of Pumping Plant 4 have been repackaged into a separate project – having been deleted from the earlier construction project due to delays resulting from PG&E conflicts. Project construction award is scheduled for end of calendar year 2020. District consultants M & H and staff have conducted a review and have commented on these plans.

e. Reach E

i. Reach E extends along the Pleasant Grove Creek Canal from Sankey Road north to Howsley Road.

ii. The Corps of Engineers completed the 65% plans in July. Comments were due by August 28. The District submitted comments along with SAFCA and State DWR. The proposed project includes limited areas of a 50-foot-deep cut off wall and levee widening with 3:1 back slope and a landside levee patrol road for the entire length.

iii. As part of the project, the existing five drainage culverts through the levee foundation will be replaced with reinforced concrete pipe from beyond the waterside levee toe through the existing levee and the new widened levee section.

iv. Current schedule is for contract award in July 2021 with construction complete by November 2022 (two construction seasons).

f. Reach F

i. Reach F is along the Natomas East Main Drain Canal from Sankey Road to Elverta Road. It is being designed concurrently with Reach G

ii. The Corps of Engineers and non-federal sponsors (NFS) held the 10% design review in August. The Corps preliminary design does not include cut-off walls but does include levee widening—currently on both land and waterside. NFS are recommending no waterside fill and will have our geotechnical consultant review the design which may suggest some

cutoff walls and consistent design with Reach G.

iii. Next milestone is 35% plans in January 2021. Current schedule is for contract award in March 2022.

g. Reach G

i. Reach G is along the Natomas East Main Drain Canal from Elverta Road to south of Elkhorn Blvd. It is being designed concurrently with Reach F.

ii. The Corps of Engineers and NFS held the 10% design review in August. The Corps preliminary design includes some limited cutoff walls and levee widening with landside slope flattening (3:1) and patrol road the entire length similar to Reach E.

iii. Next milestone is 35% plans in January 2021. Current schedule is for contract award in March 2022.

h. Reach H

i. The cutoff wall and levee slope flattening are mainly complete and are scheduled to be finalized by November 1, 2020. Work may continue, subject to weather conditions, on grading of the patrol/ maintenance road and fencing into winter and spring. District staff and representatives participate in weekly construction meetings and assist SAFCA in their project support role, mainly related to fence relocations. A major remaining District issue which requires District staff, project representatives, and consultants revolves around the completion of PP8 discharge piping prior to flood season.

i. Reach I

i. Construction of the cutoff wall and levee slope flattening is essentially complete, requiring only repaving and stripping for contract completion. District staff, consultants, and project representative are winding down their project monitoring and support activities for this construction work. A separate project to construct a patrol/ maintenance road and fencing is scheduled for 2022 and design and right of way (ROW) easement acquisition is nearing completion. District staff, consultants and the project representative continue to support these design and implementation activities.

6. Miscellaneous

a. DWR Flood Maintenance Assistance Program (FMAP)

i. GM King received funding agreement for 2020/2021 FMAP application on December 4, 2019.

ii. As authorized by the Board on August 9, 2019 (RD 1000 Resolution No. 2019-08-05) GM King signed the funding agreement in January and returned to DWR for signatures.

iii. FMAP 2020/2021 Funding Agreement was executed in June 2020. District has requested and received advance payment for the full grant amount from DWR.

iv. Vegetation Removal Solicitation for Proposals was issued in August 2020.

v. The District signed purchase order for the FMAP equipment purchases and anticipates delivery of said vehicles in late September 2020.

vi. District was notified by DWR of approval of FMAP funds for 2021/2022 and anticipates award of contract in early 2021. District anticipates over $825K in award in FY 2021/2022.

vii. District received one response to requests for bids for vegetation removal on September 1, 2020. General Manager King awarded contract to Emerald Services on September 9, 2020 as previously authorized by the Board of Trustees. Emerald Services provided vegetation removal services in 2019 under the 2019 FMAP Grant.

b. Sacramento Area Flood Control Agency (SAFCA)

i. Board Meeting – August 20, 2020 (Attachment No. 2)

c. System Wide Improvement Framework (SWIF)

i. The District submitted a revised SWIF to the Central Valley Flood Protection Board and the United States Army Corps of Engineers on August 31, 2020 (Attachment No. 3).

d. Natomas Basin Hydraulic Model

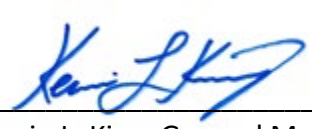
i. The District issued a Request for Qualifications (RFQ) for the Natomas Basin Hydraulic Model Project on July 31, 2020.

ii. District received two responses on August 31, 2020. See Agenda Item 6.1 for more information.

ATTACHMENTS:

1. RD 1000 – Capital Improvement Plan Update: Final Adopted Plan
2. SAFCA Board Meeting – August 20, 2020
3. System Wide Improvement Framework – August 31, 2020

STAFF RESPONSIBLE FOR REPORT:



Kevin L. King, General Manager

Date: 09/03/2020

JOB NO. 2433-0010

2020 CAPITAL IMPROVEMENT PLAN

RECLAMATION DISTRICT 1000

SACRAMENTO, CALIFORNIA

PREPARED FOR:

KEVIN L. KING

GENERAL MANAGER

PREPARED BY:

KJELDSEN, SINNOCK & NEUDECK, INC.
CIVIL ENGINEERS & LAND SURVEYORS

1550 HARBOUR BOULEVARD, SUITE 212
WEST SACRAMENTO, CALIFORNIA 95691
TELEPHONE NUMBER: (916) 403-5900

AUGUST 2020

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20-Year Capital Improvement Program Update

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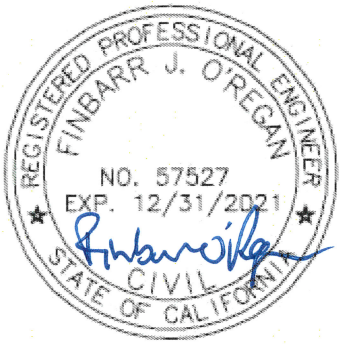
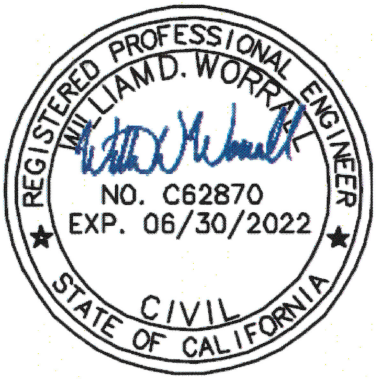
	I hereby certify that this technical submission was prepared by me or under my direct supervision and that I am a duly registered engineer under the laws of the State of California. Finbarr (Barry) O'Regan My license renewal date is December 31, 2021
	I hereby certify that this technical submission was prepared by me or under my direct supervision and that I am a duly registered engineer under the laws of the State of California. William (Bill) D. Worrall My license renewal date is June 30, 2022

Acknowledgements

KSN wishes to thank the following whose efforts were instrumental in creation of this Capital Improvement Plan:

Don Caldwell, RD 1000 Superintendent

Tony Del Castillo, RD 1000 Foreman

Kevin King, RD 1000 General Manager

Stephen Sullivan, RD 1000 District Engineer

Jeff Smith, RD 1000 Operations Committee

David Cristophel, RD 1000 Operations Committee

Elena Lee Reeder, RD 1000 Operations Committee

ES

Executive Summary

Reclamation District 1000 (RD 1000, or District) is located in Sacramento and Sutter Counties, north of the city of Sacramento and provides flood protection to the 55,000 acres in the Natomas Basin (Basin) by maintaining a ring levee system, interior drainage system, and pumping system to discharge stormwater to adjacent rivers and their tributaries. The District is also responsible for maintaining several culverts and drains throughout the Basin. This Capital Improvement Program Update (2020 CIP) identifies and prioritizes capital assets and projects that are necessary to meet the District's mission of continuously providing flood protection to the Natomas. It is anticipated that this 2020 CIP update will form the basis for regular updates and reassessment of CIP needs and priorities in future years.

This 2020 CIP focused on the District's pumping system and was developed to identify short- and long-term improvements necessary for the District to continue to carry out its mission. The CIP was developed by:

- Ranking how critical a pumping plant is by its capacity to remove precipitation from the basin, and the importance of the area it serves – a criticality rating or consequence of failure;
- Determining how likely a pumping plant is to fail to perform as designed, or likelihood of failure; and
- Determining relative risk for each pumping plant, which is a combination of the consequence of failure and likelihood of failure.

Potential projects to address potential deficiencies were identified by the following methods:

- Field condition assessment of each pumping plant;
- Establishing the desired Level of Service each pumping plant would optimally provide, and comparing existing performance against the desired Level of Service; and
- Defining the typical life cycle for the major pumping plant components, including major cost-effective maintenance items to extend the useful life.

The results of the Condition Assessment, Level of Service, and Life Cycle analyses showed that the District's system is overall in good working order, with several of its plants replaced within the last decade. The District's two most critical pumping plants were determined to be Plant 1B and Plant 8. Plant 1B was found to be in very good working order with some needed projects identified to maintain

its condition. Plant 8 and its associated outfall piping has several life cycle replacements coming due concurrently which will require undertaking a major overhaul project for that facility.

CIP recommendations for the District's other pumping plants are mostly life cycle related actions, and upgrades to increase the reliability of the overall system, e.g. providing for backup power generation. Over a 30-year planning horizon, the program of recommended pumping plant upgrades to maintain reliability of the system is estimated to cost $67.4 million (un-escalated dollars):

- $32.4 million (M) in the first decade 2021-2030, with $29.6M planned in the first 6 years.
- $8.1M over years 2031-2040
- $26.9M over years 2041-2050, with several recently replaced critical components reaching the end of their useful lives.

In addition to major pumping plant upgrade costs, the following expenditures are recommended to be budgeted:

- Annual budget of $55,000 to perform cost-effective preventive maintenance for the duration of the CIP, or $1.65M over 30 years.
- Annual budget of $900,000 for life cycle replacement of culverts and drains, or $27M over 30 years.

The above costs, which total $96.05M over the 30-year planning horizon, were left unescalated so implementation can be modified and adjusted into the District's financial plan, which is currently being formulated.

Section 1

Introduction and Background

1.1 DISTRICT BACKGROUND

Reclamation District No. 1000 (District) was formed on April 8, 1911 by special act of the State Legislature to reclaim land in the Natomas Basin for agricultural purposes. The District is governed by the Reclamation District Act (California Water Code Sections 50000 et. seq.) The District is responsible for the flood protection, control, and drainage in a 55,000-acre area directly north of the City of Sacramento.

The District system consists of approximately 42.6 miles of project levee, 30 miles of main drainage canals, 150 miles of sub drainage canals, eight (8) exterior pumping plants, and two (2) interior pumping plants. This system in tandem, collects stormwater runoff and agricultural drainage and discharges it out of the basin, while keeping exterior floodwaters out. The District's interior drainage canals are also used during the summer non-flood season to convey irrigation flows to cultivated lands primarily in the northern area of the basin.

1.1.1 DISTRICT MISSION STATEMENT AND GOALS

The District's mission is flood protection for the Natomas Basin and providing for the public's health and safety by the operation and maintenance of the levees, canals, and pump stations in a safe, efficient, and responsible manner.

In addition to maintaining all components of its system, the District is prepared to respond to flood fight emergency events. The District maintains a stockpile of flood fight material and is prepared to acquire more resources or labor 24/7 as necessary.

1.2 PURPOSE OF CIP UPDATE

This Capital Improvement Program Update (2020 CIP) identifies and prioritizes capital assets and projects that are necessary to meet the District's mission statement and goals of continuously providing protection to the Natomas Basin in a strategic and efficient manner. It is anticipated that this 2020 CIP update will form the basis for regular updates and reassessment of CIP needs and priorities in future years.

This 2020 update focuses on the District's pumping plants as opposed to the District's levee system because: (i) the Natomas Levee Improvement Program (NLIP) continues to be implemented by the Sacramento Area Flood Control Agency (SAFCA) the U.S. Army Corps of Engineers (USACE), and California Department of Water Resources (DWR) and will result in improvement of the District's 42.6-mile exterior levee system to a 200-year level of flood protection by constructing levee improvements and replacing some existing pumping plants, and (ii) the City of Sacramento is currently

undertaking an assessment of the District's interior levee system to determine if it meets Federal Emergency Agency (FEMA) standards. The findings of that assessment will be used to inform and update the CIP in future years.

While the largest component of the CIP is to replace and upgrade existing pumping plants based on a condition and needs assessment, a life cycle and annualized budget to replace culverts and drains for which the District is responsible is also included in the plan. Assessment or prioritization to replace specific culverts is not part of the scope. The major maintenance items associated with life cycle replacement of pumping plants are also identified in the CIP.

The 2020 CIP uses a risk-based approach to identifying and prioritizing projects. Project prioritization was based upon:

- Relative criticality of assets
- Likelihood of asset failure
- Desired Level of Service for assets; and
- Expected asset life cycle.

This 2020 CIP update was created through input and data provided by District staff, and the District Engineer. Meetings, site visits, and workshops were held with District staff and District Engineer to jointly establish the goals and criteria for this 2020 CIP in alignment with the District's mission, and to ensure the accuracy on which decisions are based.

1.3 PREVIOUS CIP REPORT

In 2014, a 30-Year Capital Improvement Program was completed by Domenichelli and Associates. It identified proposed improvements for the District's pumping plants, main canals, and levees. The previous program focused on the effect of the NLIP led by the USACE, identifying projects to be funded by the NLIP, as well as separate improvements on the District's end.

A portion of the SCADA, security, and corporation yard improvements that were identified have been put into place.

Section 2

Description of Facilities

This section describes the District's facilities with a focus on the Pumping Plants, as they are the focus of this 2020 CIP. The identification and description of these facilities are listed below.

2.1 DISTRICT FACILITIES

The District's 55,000-acre service territory and facilities are shown on Figure 2-1, adapted from Mead and Hunt's 2016 report. The exterior Pumping Plants are described by number, followed by the Interior Pumping Plants.

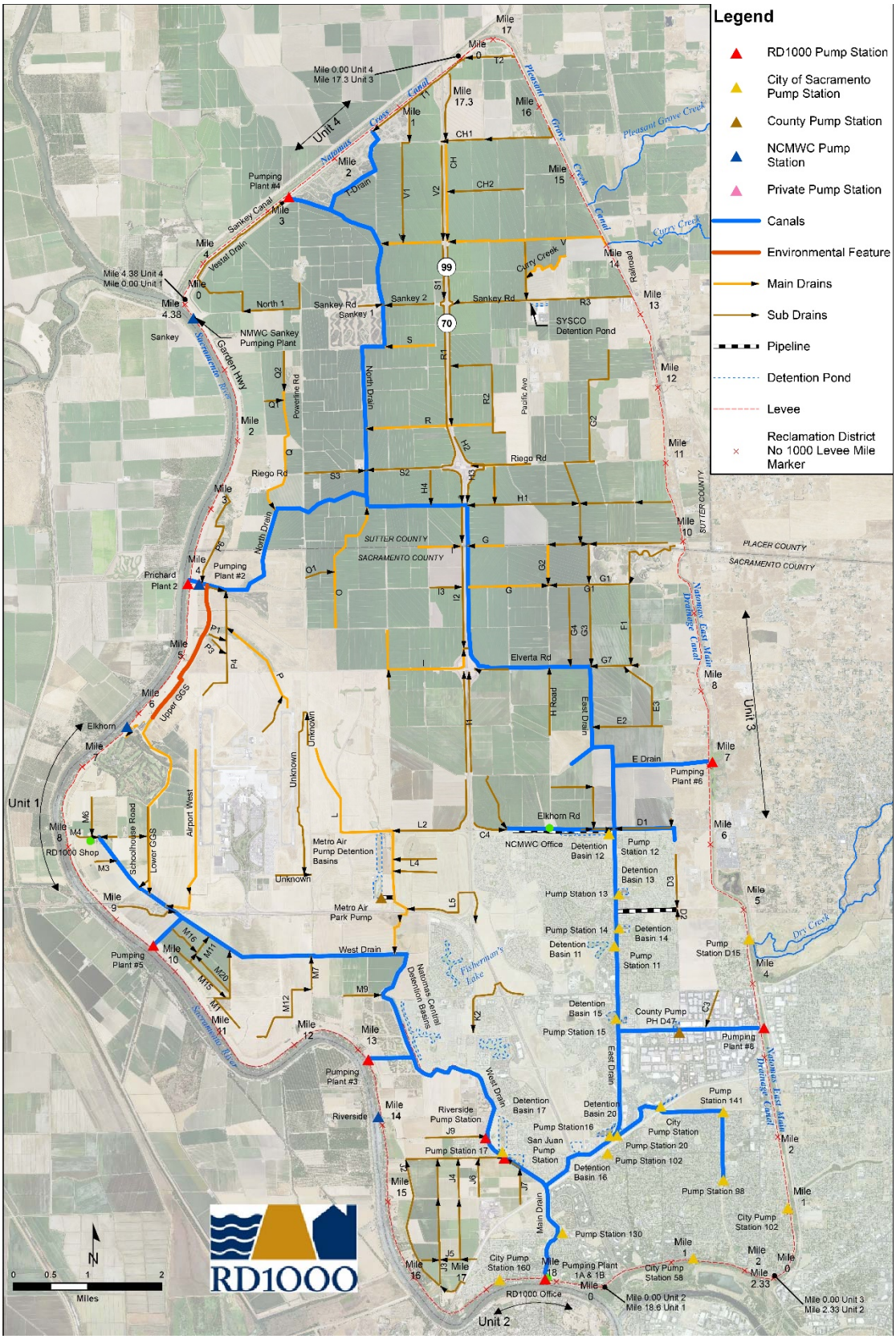


Figure 2-1 - Reclamation District 100 Service Territory and Major Features
Source: Mead and Hunt, 2016

2.1.1 PUMPING PLANT 1A

Pumping Plant 1A was the District's first plant, constructed in 1915, and has the second-greatest pumping capacity measured by cubic feet per second (cfs) in the District. It is co-located with Plant 1B across Garden Highway from District headquarters in the southern portion of the basin. Due to its age and difficulty starting and operating, Plant 1A has not been operated in over 20 years. The intake includes chained automatic bar screens for two (2) pumps and a manual bar screen for the other two (2) pumps. The four (4) pumps, housed inside a two-story concrete masonry unit building, discharge through four (4) manual cast iron slides gates into flows to two (2) concrete tunnels, that then transition into four (4) arch tunnels, each with a steel-framed wooden flap gate. The discharge goes through the levee with minimal elevation difference.

USACE is currently evaluating the four (4) tunnels for potential remediation or modification as part of the NLIP. The report with recommended action is expected within several months. The Plant capacity summary is found in Table 2-1 below.

Table 2-1 - Plant 1A Capacity Summary

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	600	2,400v	136	621
2	650	2,400v	181	
3	600	2,400v	152	
4	650	2,400v	152	

2.1.2 PUMPING PLANT 1B

Pumping Plant 1B has the third-largest pumping capacity and is regularly relied upon to remove significant flows from the District. The plant, originally constructed in 1959 and then reconstructed in 2003, includes six (6) vertically-oriented mixed-flow pumps, located in three (3) bays with two (2) pumps each. An automatic bar screen precedes the pump bays. The pumps lie on a concrete deck with an upper steel deck at motor level. The pumps discharge to steel pipes that cross under Garden Highway to the outfall structure.

The plant building houses the electrical and instrumentation. In 2012, a backup diesel generator was installed and the building expanded along with power system upgrades. With all the pumps running, the generator can support the plant for approximately 8 hours of runtime. The generator is capable of running all Plant 1B pumps plus two (2) Plant 1A pumps if necessary. The Plant 1B capacity summary is found in Table 2-2 below.

Table 2-2 - Plant 1B Capacity Summary

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	400	2,400v	100	600
2	400	2,400v	100	
3	400	2,400v	100	
4	400	2,400v	100	
5	400	2,400v	100	
6	400	2,400v	100	

2.1.3 PUMPING PLANT 2

Plant 2 is located on the western side of the District at the end of the North Drain Canal. The plant was rebuilt and relocated in 2012 under the NLIP.

There are two (2) vertical mixed-flow pumps and in Plant 2 located on a concrete platform with steel grating for access, with the electrical and instrumentation is housed in an adjacent cabinet with an overhang. Plant 2 has automatic bar screens for each pump, and cathodic protection was added to the discharge pipes during reconstruction. Plant 2 also has a connection for a portable generator. The Plant capacity summary is found in Table 2-3 below.

Table 2-3 - Plant 2 Capacity Summary

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	400	2,400v	80	120
2	250	2,400v	40	

2.1.4 PUMPING PLANT 3

Plant 3 is located northwest of Plant 1, connecting the West Drain. It was originally constructed in 1939, and then modified with increased capacity in 2001. There are four (4) drainage pumps, two (2) small irrigation pumps, and one (1) bay for future pump installation in Plant 3, all preceded by an automatic bar screen. The pumps are located outdoors on a concrete deck, with the electrical components housed in an adjacent building. The existing pumps discharge to a manifold structure connecting to a single pipe leading across the levee to the Sacramento River.

Current plant pumping capacity is 196 CFS, but pumping capacity is planned to be expanded by the USACE. Under USACE plans as part of the NLIP, the pumps will be replaced and the manifold will be replaced with separate discharge pipes. The current Plant capacity summary is found in Table 2-4 below.

Table 2-4 - Plant 3 Capacity Summary

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	200	2,400v	38	196
2	200	2,400v	38	
3	300	2,400v	70	
4	200	2,400v	50	

2.1.5 PUMPING PLANT 4

Plant 4 is the northernmost plant in the District, at the end of the North Drain. It is the lone plant in the District that is supplied power by Pacific Gas and Electric (PG&E), as all others receive power from Sacramento Municipal Utility District (SMUD). Originally constructed in 1964 then reconstructed in 1986, Plant 4 is to be replaced under the NLIP. Design has been completed; construction was expected to be complete in 2020, but construction has been delayed and completion is now expected no later than 2022. Currently there are three (3) vertical mixed-flow pumps in Plant 4 that discharge into the Natomas Cross Canal. The new plant will be similar to Plant 2 in layout, which includes replacing the current traveling automated screens with automated bar screens and the modifying voltage to 2.4kV. The current Plant capacity summary is found in Table 2-5 below.

Table 2-5 - Plant 4 Capacity Summary

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	300	480v	76	306
2	400	480v	115	
3	400	480v	115	

2.1.6 PUMPING PLANT 5

Plant 5 is located at the end of the West Drain near the Sacramento Airport. Currently there are three (3) vertical mixed-flow pumps at Plant 5 that discharge into the Sacramento River. Each pump intake includes a manual bar screen.

The plant is planned to be removed and replaced at a setback location because it is currently in the toe of the levee after the NLIP was constructed in its area. While it is included in the NLIP, a firm source of funding from USACE has not been committed. Like Plant 4, this plant will be replaced with similar layout and capacity to Plant 2 with automatic bar screens and voltage will be modified to 2.3 kV. There is also the intent to provide an empty space in the pump deck for an additional pump to handle more rapid runoff that could result from Sacramento Airport expansion activities.

The current Plant capacity summary is found in Table 2-6 below.

Table 2-6- Plant 5 Capacity Summary

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	100	480v	19	57
2	100	480v	19	
3	100	480v	19	

2.1.7 PUMPING PLANT 6

Plant 6 is located on the east side of the District approximately one (1) mile north of Elkhorn Boulevard, in the east central part of the District. It was constructed in 1974, and updated in 1997. This plant is the last utilized for drainage purposes due to complaints of area residents across the Natomas East Main Drainage Canal (NEMDC), to which it discharges. Residents complain that use of the plant causes flooding, despite evidence that this is actually a result of the NEMDC Stormwater Pump Station, also referred to as Pump Station D15, keeping its gates closed and backing water up the NEMDC. This plant has not been operated in at least 15 years.

The motors are housed in a steel building held elevated above the canal by steel sheetpiles and beams. There is a steel deck for manual screens just upstream of the four (4) vertical mixed-flow pumps. The electrical components are housed in a separate building adjacent building. The current Plant capacity summary is found in Table 2-7 below.

Table 2-7 - Plant 6 Capacity Summary

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	125	480v	28	180
2	200	480v	42	
3	300	480v	60	
4	250	480v	50	

2.1.8 PUMPING PLANT 8

Plant 8 is located on the east side of south portion of the District, just north of Interstate 80. The plant was originally constructed in 1983, and modified in 2001 for increased capacity, a new electrical and instrumentation building, and automatic trash racks. Plant 8 has the highest nominal capacity of any plant in the system.

The plant includes a total of nine (9) vertical mixed-flow pumps located outdoors on a concrete deck, with an electrical and instrumentation building located on the slope high above the pump platform. Automatic bar screens are located immediately in front of the pump deck. A steel deck above the platform allows access to the motors. Discharges route under Northgate Boulevard, a heavily travelled road serving both industrial and residential traffic before reach the levee and discharging into the NEMDC. The pipes under the levee and the outfall structure have recently been replaced as part of the

NLIP. Pumps 8 and 9 have significant cavitation problems and are operated only in reserve when water levels are high.

The current Plant capacity summary is found in Table 2-8 below.

Table 2-8 - Plant 8 Capacity Summary

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	700	480v	105	779
2	700	480v	105	
3	300	480v	48	
4	200	480v	33	
5	300	480v	48	
6	700	480v	105	
7	700	480v	105	
8*	500	480v	115*	
9*	500	480v	115*	

*In reserve usage; operated when water levels reach a high elevation only.

Although Pumps 8 and 9 do not operate under normal conditions, they are included in the Plant's reliable capacity because during adverse conditions when flows levels in the canals are elevated, the pumps can be operated effectively.

2.1.9 SAN JUAN PUMPING PLANT

The San Juan Pumping Station is one (1) of two (2) interior plants in the District, located on the right bank of the West Drain Canal, south of San Juan Road. The plant was constructed in 1998 by the City of Sacramento for a development and was turned over to the District for operation. There are two (2) variable-speed hydraulically-driven axial flow pumps housed inside the plant building, each with a capacity of 65 cfs, alongside the electrical and instrumentation, that pump water from the sub drain to the West Drain. The pumps alternate operation because each has sufficient capacity to remove required flows. In addition to pumping operations, a siphon can be used as a backup system to drive flows into the West Drain should the main pump fail. The controls for the plant were replaced in 2015 and the coolers for the hydraulic fluid replaced in 2017.

2.1.10 RIVERSIDE PUMPING PLANT

The Riverside Pumping Station is the District's other interior plant, located approximately 1,800 feet north of the San Juan Pumping Station on the West Drain Canal. This plant was constructed concurrent with and is identical in layout and operation to San Juan Pumping Station, except that each pump has a lower capacity of 30 cfs due to its significantly smaller service area. The controls for the plant were replaced in 2015 and the coolers for the hydraulic fluid replaced in 2017.

Section 3

Program Approach and Development

3.1 APPROACH TO IDENTIFYING PROJECTS

The 2020 CIP consists of projects relating to the District's assets, contributing to the continuing function of the District. The focus of this 2020 CIP is the pumping plants under the District's jurisdiction, due to their criticality in the District's functions. This 2020 CIP uses a risk-based approach to identifying and prioritizing projects. Risk is a combination of the consequence of failure and the likelihood of failure. After identifying potential areas where the performance of assets might be less than optimal, the 2020 CIP identifies a plan to maximize risk reduction given the District's resources. The end objective is to cost-effectively allocate the District's resources to extend the life of and replace critical assets to maximize the reliability of the system. The focus is on reducing risk because the District has limited resources to carry out its mission. The primary steps taken to identify and prioritize projects were to define the:

- **Relative criticality of assets**. Critical assets have a high consequence of failure. For example, a high-capacity pump station in a highly populated area has a much greater consequence if it fails to provide the design service than a low-capacity pump station in a rural part of the District.
- **Likelihood of failure**. Likelihood of failure is primarily a function of the condition of the major asset components and whether sufficient backup systems are in place. Plants and/or components with high probability of failure are strong candidates for improvements.
- Desired **Level of Service** that each pump station would ideally meet, and compare each pump station against the criteria. The Desired Level of Service defines what a plant should have to safely and reliably perform as designed; when plants lack these characteristics or their ability to reliably provide the service is questionable, improvements may be necessary.
- **Asset life cycle** for critical pump station components. Closely related to likelihood of failure, because as assets age they become more likely to fail, the District needs to plan for replacement of assets to maintain reliability and worker safety.

After the above steps identified potential projects, the projects will be prioritized in subsequent sections. Prioritization will be based upon the reduction in risk with the ability to implement in an efficient manner. An example of efficient implementation would be waiting until after a plant is reconstructed under the NLIP to add a component so that it can be connected to the plant once. Whenever possible, assets are bundled into larger projects for more efficient implementation. Bundling primarily occurs when multiple components at a single pump station are near the end their useful life at similar timeframes.

Section 4

Criteria for Developing Program

In the previous section, the process to develop the 2020 CIP was described, which included determining:

- Relative criticality of assets
- Likelihood of failure
- Desired Level of Service for all pumping plants
- Asset life cycle for critical pump station components.

The relative criticality of assets and likelihood of failure scoring and optimal Level of Service criteria were presented and agreed to at an Operations Committee Workshop. The asset life cycle was developed with District personnel.

In this section, the criteria for the above steps are developed and described.

4.1 RELATIVE CRITICALITY OF ASSETS

Because studies that can assign an accurate level of failure with respect to loss of life, injury, property damage, and economic damage, have not been performed and are beyond the scope of this plan, asset criticality is rated on a relative scale. The Asset Criticality Score assigns a relative rating to each District asset, consisting of a combination of an asset's capacity ranking and immediate service area rating. The rating quantifies the relative consequence if a specific asset fails to function during a flood event. The rankings are intended to reflect that the District's most critical pumping plants remove the greatest volume of runoff from the most heavily populated areas and/or critical commercial locations and therefore have high consequences of failure.

The criticality ranking begins by determining the type of service area and assigning an importance ranking. The Natomas Basin can generally be described as urban/densely populated in the southern third and rural (mostly agricultural) in the northern two-thirds, with the Sacramento International Airport located in the west-central part of the basin. In additional, Interstates 5 and 80 each route through the basin, serving as major thoroughfares. Interstate 80 routes east-west through the densely populated southern portion of the basin, while Interstate 5 routes north out of downtown Sacramento before turning west past the airport and out of the basin.

The Immediate Service Area Rating assigns a number to each pumping plant that corresponds to the type of area that the plant immediate serves. As an area is more populated, or is an important part of

infrastructure, a higher rating is given for the protection of health and safety that the plant provides. The area types and their respective rating numbers are shown in Table 4-1 below.

Table 4-1 - Immediate Service Area Ratings

Immediate Service Area Type	Rating
Rural	1
Urban	2
Rural/Airport	2
Urban/Airport	3

The resulting Immediate Service Area criticality scores for plants are shown in Table 4-2 below:

Table 4-2 - Pumping Plant Immediate Service Area Ratings

Pumping Plant	Immediate Service Area Type	Rating
1A	Urban	2
1B	Urban	2
2	Rural	1
3	Urban/Airport	3
4	Rural	1
5	Urban	2
6	Rural	1
8	Urban	2
San Juan	Urban	2
Riverside	Urban	2

Although localized storm events do occur in the basin, because the Natomas Basin is relatively flat, the capacity of a plant to remove water from the basin is generally more important in determining an exterior pumping plant's criticality; if a high-capacity plant fails, the probability and degree of internal

flooding rises significantly more than with low-capacity plants. As a result, the relative scale for capacity scores is greater than the Immediate Service Area. The capacity ranking scales the capacity of the exterior pumping plants, with the highest capacity given the highest rank number of 6, and the lowest capacity given a capacity ranking of 1. Because Plants 1A and 6 have not been operated in several years and their reliabilities are questionable, and the Interior Pump Stations are significantly smaller, their relative capacities are not included in the rankings.

Table 4-3 - Pumping Plant Capacity Ratings

Pumping Plant	Capacity (cfs)	Rating
1A	621	-
1B	600	5
2	120	2
3	196	3
4	306	4
5	57	1
6	180	-
8	779	6

The net criticality ranking is determined by adding the Immediate Service Area and Capacity Ratings together as shown in Tab1e 4-4 below.

Table 4-4 - Pumping Criticality Ratings – Exterior Plants

Pumping Plant	Immediate Service Area Score	Capacity Score	Net Criticality Score
1A	2	-	-
1B	2	5	7
2	1	2	3
3	3	3	6
4	1	4	5
5	2	1	3
6	1	-	-
8	2	6	8

The net criticality rankings indicate that among regularly operated plants, Plants 1B and 8 are the most critical, while Plants 2 and 5 are the least critical. Interior Plants are excluded from the ranking.

4.2 LIKELIHOOD OF FAILURE

The likelihood of failure is primarily a function of the condition of the asset components, which is a result of age of the asset, amount of use, conditions under which operated, and amount of maintenance that has been performed. To state the relative likelihood of failure, a Condition Hazard Rating score is used, which assigns a 1-10 rating for the asset based on its condition. The score of each asset is based on age, physical assessment, and District experience. The higher the score, the more deteriorated the asset and the higher the probability of failure; a score of 1indicates a new asset, whereas a score of 10 indicates the asset is in run-to-failure mode. The definitions use to score each asset are in Table 4-5 below:

Table 4-5 - Condition Hazard Rating Definitions

Rating	Description
1	New or like new asset, no reduced functionality or increase in maintenance
2	Asset performs like new with slight increase in maintenance
3	Asset performs well but critical components showing some wear and increased maintenance
4	Asset still performs but replaceable critical components nearing end of useful life; replacement of components will restore condition to level 1 or 2. Potential for short-term failure but still highly unlikely
5	Notable decrease in performance but still reliable asset; with heavy maintenance load, asset has useful life >= 10 years
6	<50% of useful life remaining; budget for replacement should be firmly committed even if several years out
7	<30% of useful life remaining; replacement considered during annual district budgeting. Hazard level is below level of service for critical assets
8	<20% of useful life remaining, asset performance is significantly deteriorated but functional under normal scenarios
9	<10% of useful life remaining, asset performance is marginal
10	Failure Imminent, operating in run-to-failure mode

The condition assessment report is included as Appendix A. The condition assessment does not identify operational problems unless the observed condition prompted questions to District personnel. The condition hazard rating for each external Plant is listed in Table 4-6 below. Condition hazard ratings were determined cooperatively at an Operations Committee Workshop led by KSN after the field condition assessment was performed. Where plants have been replaced or are expected to be replaced under the NLIP, a Rating of 1 was assigned.

Table 4-6 - External Pumping Plant Condition Hazard Ratings

Pumping Plant	1A	1B	2	3	4	5	6	8
Condition Hazard Rating	9	2	1	1	1	6	7	6

The internal pumping plants, Riverside and San Juan, were each given a rating of 4.

4.3 NET RISK SCORES AND RANKINGS

Risk is a combination of the probability of failure and consequence of failure. The Net Criticality Rating and Condition Hazard Rating for each Plant are added to generate the Level of Risk Score. The Net Criticality Rating is the proxy for relative consequence of failure rating and the Condition Hazard Rating is the proxy for relative likelihood of failure ratings.

Table 4-7 – Level of Risk Scores and Rankings

Risk Criteria						Risk Ranking
Pumping Plant	Capacity Ranking	Immediate Service Area Rating	Net Criticality Rating	Condition Hazard Rating	Level of Risk	
8	6	2	8	6	14	**1**
1A	-	2	2	9	11	**2**
1B	5	2	7	2	9	**3**
5	1	2	3	6	9	**3**
6	-	1	1	7	8	**5**
3	3	3	6	1	7	**6**
4	4	1	5	1	6	**7**
San Juan	-	2	2	4	6	**7**
Riverside	-	2	2	4	6	**7**
2	2	1	3	1	4	**10**

4.4 LEVEL OF SERVICE

The Level of Service is the minimum level of functionality that an asset should provide, otherwise an upgrade or replacement project is generally deemed necessary. There are five (5) categories that describe the aspects of functionality that an asset can have: reliability, redundancy, capacity, operational flexibility, and maintainability. For each category, an asset either meets the minimum level, fails to meet it, or the category is not applicable. Table 4-8 below lists each category and the

question(s) that are asked to determine whether an asset meets the requirements of each category. When the answer is a "no" a remediation project is considered.

Table 4-8 - Level of Service Definitions

Category	Question
Reliability	Can the asset dependably function as designed without committing additional resources during the design event?
Redundancy	Does the asset have sufficient backup systems to ensure its operation commensurate with its criticality?
Capacity	Are the asset's facilities able to provide the required service?
Operational Flexibility	Can the asset operate over a range of conditions? Can the asset be operated remotely?
Maintainability	Can employees safely and efficiently maintain the asset, and does the District have a sufficient supply of spare parts or are they readily available from suppliers?

The analysis of the Level of Service focuses on the District pumping plants due to their importance in the District's daily operations. Each separate component of the plants is given a Level of Service in order to assess each part for necessary improvements. The ten pumping plant components that were evaluated included:

1. Intake screens
2. Power supply
3. Motors
4. Pumps
5. Instrumentation and controls
6. Outfall structure and pipes
7. Cathodic protection system
8. Pump and motor structural
9. Access and security
10. Building

The above criteria result in the following Table 4-9 being used to evaluate and summarize each pumping plant's Level of Service. Where a component does not meet optimal level service, the efficiency and validity of whether a remedial action is needed is also evaluated. In some cases, it may be determined that remediation does not significantly increase pumping plant performance, so no action is taken. A column for remedial action under each Level of Service Indicator for those that do not meet the optimal is not shown for space limitations.

Table 4-9 - Level of Service Assessment Example Table

Pumping Plant:	Level of Service Indicators				
	Reliability	**Redundancy**	**Capacity**	**Operational Flexibility**	**Maintain-ability**
Pumping Plant Component	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)
Intake Screens					
Power Supply					
Motors					
Pumps					
Instrumentation & Controls					
Outfall Pipes					
Cathodic Protection System					
Pump & Motor Structural					
Access & Security					
Building					

4.5 LIFE CYCLE REPLACEMENT

The major components of the pumping plants have typical life cycles that require replacement at regular intervals. This section describes the life cycle of these major components and the major maintenance expenses that should be budgeted to cost-effectively extend their useful life and reduce risk of failure. The typical life cycle for the same components in Level of Service were proposed and determined based on typical industry experience and the District's recent experience. This allows determination of where each major component at each plant is in its life cycle and plan for replacement.

The description of need for replacement with the life cycle for major components is below.

4.5.1 INTAKE SCREENS

The single greatest point of vulnerability at RD 1000 pumping plants is the intake screens. If screens are not able to remove aquatic vegetation and debris that is capable of clogging flow to pumps, pumping plants can be rendered inoperable. RD 1000 is already expending significant effort to control this aquatic vegetation so reduction of the load cannot be expected. The major considerations include:

- Underwater maintenance by divers is regularly required to perform repairs to keep the screens operating, and to remove heavy vegetation and debris loads; large pumping plants require a more frequent service every two (2) years and smaller plants every four (4) years.

- Chains begin to stretch, wear out, and require significant maintenance with a noticeable deterioration in performance after about 10 years, which is their assigned life cycle.

- The assigned life cycle is 40 years as mechanical equipment rarely has a useful life exceeding this duration.

4.5.2 POWER SUPPLY

Several components make up the power supply chain: the transformer drop from the electricity provider; the motor control center; automated transfer switch; and the wiring in conduits that conducts the current to the motors to operate the pumps. In addition, the desired level of service is to have a generator to provide backup power in the event of electrical power outages. While each component may age at different rates, manufacturers often phase out support and manufacture of replacement components within 10 years. Although replacement components may not be available, most equipment can typically be operated for 20-30 years depending upon quality. An evaluation of the power supply systems is scheduled at 10 years to determine the remaining useful life and begin planning replacement. Concurrent replacement of all major power supply components, except for backup generators, is recommended for efficiency. Given that plants must be reliable, a useful life of 20 years is chosen.

Important notes for power supply include:

- The District's desire to move to a standard service medium-voltage service of 2.4 kilovolts (kV) because the components tend to produce less heat and have a longer life cycle. The local power providers do not service medium-voltage transformers so the District will need to increase its reliance on outside service providers to maintain its transformers as plants are converted to 2.3 kV service. In addition, pump motors must be replaced because they cannot be converted to run on medium voltage, and the District will need to implement a larger arcflash injury prevention program.

- Because natural gas service is less likely to be interrupted during a flood event than electric service, natural gas is the preferred source for backup generators where available. In areas without natural gas service, the power source will be diesel or propane.

4.5.3 INSTRUMENTATION AND CONTROLS

Instrumentation and controls are subject to the same limitations as power supply components in that replacement components become unavailable relatively soon after installation. Instrumentation and control components have similar life cycles to electrical components, so the same life cycle is adopted, included a concurrent evaluation after 10 years and concurrent replacement at 20 years.

4.5.4 MOTORS

Motors, like all mechanical equipment, require a heavy maintenance schedule to perform and ensure a full useful life cycle. For the motors, a periodic "clean and bake" is the most cost-effective method. This entails removing the cover, replacement of worn bearings, evaluation of the windings and

whether a rewind is necessary, and epoxy recoating of the cover. Clean and bake will minimize degradation of performance, particularly efficiency, until replacement is necessary. The following life cycle is adopted for motors:

- Highest 50%-use motors – clean and bake every 8 years
- Lowest 50%-use motors – clean and bake every 12 years
- Replacement of motor every 50 years.

Clean and bake has been discontinued for the last several years so an accelerated program to catch up on deferred maintenance for the next 5 years is recommended.

4.5.5 PUMPS

Pumps are typically serviced and replaced concurrently with the motor they are installed with. Pumps will be removed and serviced concurrently with motor clean and bake and replaced on the same schedule as their motors.

- Highest 50%-use pumps – remove and service/evaluate every 8 years
- Lowest 50%-use pumps – remove and service/evaluate every 12 years
- Replacement of pump every 50 years.

4.5.6 OUTFALLS

Outfall structures are located on the water side of levees with flowing water. Outfall pipes all cross under paved roads, with most of the roads atop the external levees, making replacement expensive and disruptive to the public. Both the outfall structures and pipelines are located where they are subject to deterioration, so a comprehensive evaluation will be performed regularly that includes CCTV of the pipelines and operation and service of all valves and gates. The following maintenance and life cycle schedule is adopted:

- Pipeline CCTV evaluation and service/operation of valves and gates: 5 years
- Replacement of valves and gates: 25 years
- Replacement of Pipelines and Outfall structures: 75 years.

4.5.7 CATHODIC PROTECTION SYSTEM

While viewed as a component of the pipeline, nearly all outfall pipes are steel and cathodic protection systems are the most cost-effective method of extending the useful life of steel pipelines. The anode beds must be periodically replaced while the impressed current system and wiring last significantly longer. Anode bed useful life varies significantly depending upon the soil moisture but is typically 3-12 years. The impressed system rectifier is evaluated concurrent with the electrical and instrumentation systems. Useful life of the of components are

- 10 years for anode beds
- 25 years for impressed system, exclusive of wiring
- 75 years for wiring, to be replaced incidental to pipe replacement.

4.5.8 PUMP AND MOTOR STRUCTURAL

The majority of pumps are located on concrete structures suspended above the canals, with steel decks or grating for access to motors. The structures are expected to have a long useful life with minimal maintenance. The following life cycle for each is adopted:

- Steel decking and grating: 75 years
- Pump and motor platform: 75 years.

4.5.9 ACCESS AND SECURITY

Prevention of vandalism to keep plants operating as designed is a priority of the District given that each pump station is located off easily accessible roadways but are unmanned the vast majority of the time. The primary means of securing plants is complete perimeter fencing with anti-climb features and cameras. Each has the following anticipated lifecycle:

- Security Cameras: 10 years
- Fencing: 50 years.

Electrical and instrumentation is usually housed in a locked building providing further security, but its primary purpose is protecting components from the elements with climate control, so it is considered a separate component.

4.5.10 BUILDINGS

Buildings house the power supply electrical and instrumentation components that includes climate-control to prevent overheating. While the buildings are expected to have a long useful life, the ventilation and roof require regular replacement to maintain the necessary dry, cool conditions. The following life cycles are assigned:

- Ventilation: 15 years
- Roof Replacement with external painting: 25 years
- Building: 75 years.

4.5.11 LIFE CYCLE SUMMARY

The above discussion of major components and their assigned life cycles is summarized in Table 4-10 below.

Table 4-10 - Asset Life Cycle

Item	Life Cycle, years	Notes
Intake Screens		
Dive Inspection	2-4	2 for major plant, 4 for minor
Chains	10	
Unit	40	
Power Supply (meter to pump)		
Evaluation	10	Assess remaining life cycle, plan replacement date
Transformer	20	Transformer replacement based on performance
In-building/in-panel ATS, etc.	20	
Backup Generator	30	
Instrumentation & Controls		Typically on same cycle as power supply
Evaluation	10	
Unit	20	
Motors		
Clean & Bake	8-12	High-use motors more frequent, low-use less
Unit	50	
Pumps		
Remove & Inspect	10	Concurrent with Motor Clean & Bake
Unit	50	
Outfalls		
Comprehensive Inspection	5	CCTV for pipes, service valves, operate outfall gates
Valves and Gates	25	
Outfall Structure	75	
Pump and Motor Structural		
Structure and Platform	75	
Steel Access and Grating	75	
Cathodic Protection System		
Anode Beds	5-10	Highly dependent upon soil moisture
Unit	25	Rectifiers may be replaced with electrical
Access & Security		
Fences	50	
Cameras	10	
Building		
Ventilation	15	
Roof and Paint	25	
Unit	75	

The life cycles are used to plan capital replacement and major service in conjunction with the condition assessment and Level of Service.

Section 5

Identification of Projects

5.1 CAPITAL IMPROVEMENT PROJECTS

As described in the previous sections, each pumping plant was evaluated for its likelihood of failure, level of service, and which components are coming due for replacement based on life cycle. This section includes a catalog of prioritized potential projects based upon that analyses. For the major maintenance items, a maintenance budget for each is established.

For each plant, projects at each plant are identified from the

- Condition assessment
- Level of Service evaluation, and
- Major component life cycle.

5.1.1 PUMPING PLANT 1A

5.1.1.1 Pumping Plant 1A Condition Assessment

The condition assessment noted that the plant is in poor condition in several aspects:

- The plant must be manually started and monitored at all times to be operated; the electrical power systems appears old and outdated and may not be up to code;
- The interior of the plant does not have physically safe access and locations for operations and maintenance, furthermore, building dimensions probably restrict the ability to make these safe
- Based upon their age there is a high probability that the pumps are coated in lead-based paint;
- Based upon its age it is assumed that the building interior contains lead-based paint and asbestos-containing insulation;
- The exterior paint is peeling excessively and not providing the level of protection needed; while it was confirmed that the building has been painted twice in the last 25 years, meaning the peeling paint is unlikely to contain lead-based paint, the underlying layers may contain lead-based paint.

Based on the above operational issues, at the workshop KSN held with the District to present the findings of its assessment and provide its approach to developing the 2020 CIP, parties agreed a Condition Hazard Rating Score of 9 was appropriate, defining performance as marginal.

The following potential projects are identified based on the condition assessment:

Table 5-1 - Pumping Plant 1A Assessment Potential Projects

Pump Station Component	Sub-optimal Reason	Proposed Improvement Project
Safety	Potential lead and asbestos Unsafe operation and maintenance areas	Evaluation for remediation and abatement Evaluation by qualified safety professional and install of new facilities
Power Supply	Outdated and potentially unreliable	Upgrade system
Building	Peeling exterior paint	Repaint

5.1.1.2 Pumping Plant 1A Level of Service

Table 5-2 - Pumping Plant 1A Level of Service

Pumping Plant: 1A	Level of Service Indicators				
	Reliability	Redundancy	Capacity	Operational Flexibility	Maintain-ability
Pump Station Component	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)
Intake Screens	Y	N	Y	Y	Y
Power Supply	Y	N	Y	Y	N
Motors	N	N	Y	Y	Y
Pumps	N	N	Y	N	Y
Instrumentation & Controls	N	Y	Y	N	Y
Outfall Pipes	Y	Y	Y	Y	N
Cathodic Protection System	Y	Y	Y	Y	Y
Pump & Motor Structural	N	NA	Y	NA	Y
Access & Security	N	NA	N	Y	N
Building	Y	NA	Y	NA	Y

Table 5-3 - Pumping Plant 1A Level of Service Potential Projects

Pump Station Component	Sub-optimal Reason	Proposed Improvement Project
Intake Screens	Half of pumps have manual bar screens No backup	Install automatic bar screens None
Power Supply	Potential Arc flash hazard Minimal backup capacity	Replace including PLC system Convert existing generator to use natural gas
Motors	Manual control No backup	Install PLC system for automation None
Pumps	Priming system needs automation No backup	Install PLC system for automation None
Instrumentation & Controls	Need for standardization and automation	Replace instrumentation and controls and install SCADA system
Outfall pipes	Lack on inspection access	Install access manholes
Access & Security	Walkway is of old age	Replace access walkway

- It was determined that it was not feasible or efficient to provide backup screens, motors, pumps, or cathodic protection, so no improvement projects are proposed for those potential shortcomings; this is the case for all Pumping Plants.

- Part of the existing screens are manually cleaned, so it is recommended that automatic bar screens be installed to increase operational efficiency and to reduce labor cost.

- District staff expressed concerns about the potential for arc flash hazard in the Plant 1A building, so in the short term, it is recommended that an external PLC system be installed to remove the need for workers to enter the building to start the pumps. The pumps, motors, and instrumentation and controls will all benefit from automation of the system. The walkways inside the building are also old, and do not appear to provide safe access to components; therefore it is recommended that they be replaced.

- The Plant 1B backup generator can power 2 of 4 pumps in Plant 1A when Plant 1B operates at capacity. Conversion to natural gas which would extend the runtime indefinitely and is considered a major and cost-effective upgrade for Plant 1A.

- The outfall pipes do not have access manholes for inspection. In order to routinely maintain and inspect the pipes, manholes should be installed.

5.1.1.3 Pumping Plant 1A Life Cycle State

As the pump station is in poor condition, nearly all components have reached the end of their standard useful lives, except for the roof, which has been replaced within the last year. Currently upgrades to the plant are occurring on an ad-hoc basis to keep the plant potentially viable in case it is needed during a significant storm event. Additionally, the District is awaiting evaluation of the outfall tunnels and

would prefer to wait for the result to consider which replacements make sense. The lone item at Plant 1A identified for potential life cycle replacement are the chains on the automatic bar screen, which are effectively new given the plant has not been operated since their installation. The chains are assumed to require replacement in 2041. No additional life cycle components are included in the 2020 CIP.

5.1.2 PUMPING PLANT 1B

5.1.2.1 Pumping Plant 1B Condition Assessment

Plant 1B shows minimal outward signs of potential failure. The lone item that was identified as a potential shortcoming was the limited capacity of the backup generator diesel tank.

Based on the lack of operational issues, at the workshop parties agreed a Condition Hazard Rating Score of 2 was appropriate, defining performance as nearly like new. The following potential projects are identified based on the condition assessment:

Table 5-4 - Pumping Plant 1B Assessment Potential Projects

Pump Station Component	Sub-optimal Reason	Proposed Improvement Project
Backup Generator	Limited runtime with existing tank	Convert existing generator to use natural gas

5.1.2.2 Pumping Plant 1B Level of Service

Based on the condition assessment and workshop with the District, Table 5-5 summarizes where Plant 1B does or does not meet the optimal level of service indicated by the District.

Table 5-5 - Pumping Plant 1B Level of Service

Pumping Plant: 1B	Level of Service Indicators				
	Reliability	**Redundancy**	**Capacity**	**Operational Flexibility**	**Maintain-ability**
Pump Station Component	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)
Intake Screens	Y	N	Y	Y	Y
Power Supply	Y	N	Y	Y	Y
Motors	Y	N	Y	Y	Y
Pumps	N	N	Y	Y	Y
Instrumentation & Controls	Y	Y	Y	Y	Y
Outfall Pipes	Y	NA	Y	Y	Y
Cathodic Protection System	Y	N	Y	Y	Y
Pump & Motor Structural	Y	NA	Y	NA	Y
Access & Security	Y	NA	Y	Y	Y
Building	Y	NA	Y	NA	Y

Pump station components that do not meet the desired level of service and should be considered for near-term capital improvements are summarized in Table 5-6.

Table 5-6 - Pumping Plant 1B Level of Service Potential Projects

Pump Station Component	Sub-optimal Reason	Proposed Improvement Project
Intake Screens	No backup system	None
Power Supply	Current diesel generator is limited in size	Convert existing generator to use natural gas/diesel mixture
Motors	No backup system	None
Pumps	Cavitation issues at pump suction intakes	Construct baffles to separate each pump in a shared bay. Install anti-cavitation plates at bell of each pump.
Cathodic Protection	No backup system	None

- The current generator fuel tank is only large enough to provide backup for approximately 8 hours at capacity. The District would like at least 72 hours of capacity. Therefore it is recommended that the generator be converted to use a fuel mixture of diesel and natural gas, which can be brought in from the nearby PG&E natural gas line and greatly extend the operational time of the generator.

- The pumps currently suffer from some cavitation due to the proximity as they are paired in bays. The proposed solution would be to construct baffles between each pump suction to prevent the water siphoning from affecting the other pumps. Anti-cavitation plates affixed to the bottom of the intakes are also considered.

5.1.2.3 Pumping Plant 1B Life Cycle State

Pump station components that will require life cycle replacements to maintain level of service standards are listed in Table 5-7.

Table 5-7 - Pumping Plant 1B Life Cycle Replacement Initial Schedule

Item	Component or Service Item	Base Replacement Year	Life Cycle (Years)	Next Replacement or Service
Intake Screens	Dive Inspection	2003	2	2021
	Chain Replacement	2003	10	2021
	Unit Replacement	2003	40	2043
Power Supply	Evaluation	2012	10	2022
	Transformer	2012	20	2032
	In-building/in-panel ATS, etc.	2012	20	2032
	Backup Generator	2012	30	2042
Instrumentation & Controls	Evaluation	2003	10	2021
	Unit Replacement	2003	20	2023
Motors	Clean & Bake	2003	8	2021
	Replace Unit	2003	50	2053
Pumps	Remove & Inspect	2003	8	2021
	Replace Unit	2003	50	2053
Outfalls	Comprehensive Inspection	2003	5	2021
	Valves and Gates	2003	25	2028
	Outfall Structure	2003	75	2078
	Pipes	2003	75	2078
Cathodic Protection	Anode Beds	2003	5-10	2021
	Unit	2003	25	2028
Pump and Motor Structural	Structure and Platform	2003	75	2078
	Steel Access and Grating	2003	75	2078
Access and Security	Fences	2003	50	2053
	Cameras	2003	10	2021
Buildings	Ventilation	2003	15	2021
	Roof and Paint	2003	25	2028
	Building Replacement	2003	75	2078

5.1.3 PUMPING PLANT 2

5.1.3.1 Pumping Plant 2 Condition Assessment

Plant 2 was reconstructed in 2014, and is in excellent condition. The only recommended projects identified in the condition assessment is to either install a permanent backup generator or purchase a portable generator that can power Plant 2 and other similar size plants. Based on the recent reconstruction, at the workshop parties agreed a Condition Hazard Rating Score of 1 was appropriate, defining performance as like new.

The following potential projects are identified based on the condition assessment:

Table 5-8 - Pumping Plant 2 Assessment Potential Projects

Pump Station Component	Sub-optimal Reason	Proposed Improvement Project
Backup Generator	None; hookup for portable at plant	Add permanent backup generator or purchase portable generator that can operate several of the smaller plants

5.1.3.2 Pumping Plant 2 Level of Service

Table 5-9 - Pumping Plant 2 Level of Service

Pumping Plant: 2	Level of Service Indicators				
	Reliability	Redundancy	Capacity	Operational Flexibility	Maintain-ability
Pump Station Component	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)
Intake Screens	Y	N	Y	Y	Y
Power Supply	Y	N	Y	Y	Y
Motors	Y	N	Y	Y	Y
Pumps	Y	N	Y	Y	Y
Instrumentation & Controls	Y	Y	Y	Y	Y
Outfall Pipes	Y	NA	Y	Y	Y
Cathodic Protection System	Y	N	Y	Y	Y
Pump & Motor Structural	Y	NA	Y	NA	Y
Access & Security	N	NA	NA	Y	Y
Building	Y	NA	Y	NA	Y

Pump station components that will require life cycle replacements to maintain level of service standards are listed in Table 5-10.

Table 5-10 - Pumping Plant 2 Level of Service Potential Projects

Pump Station Component	Sub-optimal Reason	Proposed Improvement Project
Intake Screens	No backup system	None
Power Supply	No onsite back up	Install natural gas or diesel backup generator
Motors	No backup system	None
Pumps	No backup system	None
Cathodic Protection	No backup system	None
Access & Security	Fencing does not include anti-climb fabric	Install anti-climb fabric

- It was determined that it was not feasible or efficient to provide backup screens, motors, pumps, or cathodic protection, so no improvement projects are proposed for those potential shortcomings.
- The current plant has a generator hookup, but it is optimal to have an onsite generator to provide backup power without needing available staff or portable generator. It is proposed to install an onsite generator at the Plant 2 site. The type of generator will be determined based upon natural gas availability at the site.
- The plant's security system is up-to-date, but the fencing needs anti-climb fabric to prevent intrusion.

5.1.3.3 Pumping Plant 2 Life Cycle State

Pump station components that will require life cycle replacements to maintain level of service standards are listed in Table 5-11.

Table 5-11 - Pumping Plant 2 Life Cycle Replacement Initial Schedule

Item	Component or Service Item	Base Replacement Year	Life Cycle (Years)	Next Replacement or Service
Intake Screens	Dive Inspection	2014	4	2021
	Chain Replacement	2014	10	2024
	Unit Replacement	2014	40	2043
Power Supply	Evaluation	2014	10	2021
	Transformer	2014	20	2034
	In-building/in-panel ATS, etc.	2014	20	2034
	Backup Generator	-	30	TBD
Instrumentation & Controls	Evaluation	2014	10	2021
	Unit Replacement	2014	20	2023
Motors	Clean & Bake	2014	12	2021
	Replace Unit	2014	50	2053
Pumps	Remove & Inspect	2014	12	2021
	Replace Unit	2014	50	2053
Outfalls	Comprehensive Inspection	2014	5	2021
	Valves and Gates	2014	25	2039
	Outfall Structure	2014	75	2089
	Pipes	2014	75	2089
Cathodic Protection	Anode Beds	2014	5-10	2021
	Unit	2014	25	2028
Pump and Motor Structural	Structure and Platform	2014	75	2089
	Steel Access and Grating	2014	75	2089
Access and Security	Fences	2014	50	2053
	Cameras	2014	10	2024
Buildings	Ventilation	2014	15	2029
	Roof and Paint	2014	25	2039
	Building Replacement	2014	75	2089

5.1.4 PUMPING PLANT 3

5.1.4.1 Pumping Plant 3 Condition Assessment

Plant 3 is in a condition that it is expected to be able to provide the necessary service until it is replaced under the NLIP. Because a new plant will soon be in place, at the workshop parties agreed a Condition Hazard Rating Score of 1 was appropriate. No potential projects are identified that would not be identified under the Level of Service evaluation.

5.1.4.2 Pumping Plant 3 Level of Service

Table 5-12 - Pumping Plant 3 Level of Service

Pumping Plant: 2	Level of Service Indicators				
	Reliability	**Redundancy**	**Capacity**	**Operational Flexibility**	**Maintain-ability**
Pump Station Component	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)
Intake Screens	Y	N	Y	Y	Y
Power Supply	Y	N	Y	Y	Y
Motors	Y	N	Y	Y	Y
Pumps	Y	N	Y	Y	Y
Instrumentation & Controls	Y	Y	Y	Y	Y
Outfall Pipes	Y	NA	Y	Y	Y
Cathodic Protection System	Y	N	Y	Y	Y
Pump & Motor Structural	Y	NA	Y	NA	Y
Access & Security	N	NA	NA	Y	Y
Building	Y	NA	Y	NA	Y

- The new Plant 3 is expected to be very similar to Plant 2, therefore the same Level of Service assumptions have been used. Components not expected to meet the level of service standard and potentially need near term capital improvements are included in Table 5-13.

Table 5-13 - Pumping Plant 3 Level of Service Potential Projects

Pump Station Component	Sub-optimal Reason	Proposed Improvement Project
Intake Screens	No backup system	None
Power Supply	No onsite back up	Install natural gas or diesel backup generator
Motors	No backup system	None
Pumps	No backup system	None
Cathodic Protection	No backup system	None
Access & Security	Fencing does not include anti-climb fabric	Install anti-climb fabric

- It was determined that it was not feasible or efficient to provide backup screens, motors, pumps, or cathodic protection, so no improvement projects are proposed for those potential shortcomings.

- It is proposed to install an onsite generator at the Plant 3 site. Whether natural gas is available at this location must be determined.

- The fencing will need anti-climb fabric to prevent intrusion.

5.1.4.3 Pumping Plant 3 Life Cycle State

Pump station components that will require life cycle replacements to maintain level of service standards are listed in Table 5-14.

Table 5-14 - Pumping Plant 3 Life Cycle Replacement Initial Schedule

Item	Component or Service Item	Base Replacement Year	Life Cycle (Years)	Next Replacement or Service
Intake Screens	Dive Inspection	2022	4	2026
	Chain Replacement	2022	10	2032
	Unit Replacement	2022	40	2062
Power Supply	Evaluation	2022	10	2032
	Transformer	2022	20	2042
	In-building/in-panel ATS, etc.	2022	20	2042
	Backup Generator	-	30	TBD
Instrumentation & Controls	Evaluation	2022	10	2032
	Unit Replacement	2022	20	2042
Motors	Clean & Bake	2022	12	2034
	Replace Unit	2022	50	2072
Pumps	Remove & Inspect	2022	12	2034
	Replace Unit	2022	50	2072
Outfalls	Comprehensive Inspection	2022	5	2027
	Valves and Gates	2022	25	2047
	Outfall Structure	2022	75	2097
	Pipes	2022	75	2097
Cathodic Protection	Anode Beds	2022	5-10	2027
	Unit	2022	25	2047
Pump and Motor Structural	Structure and Platform	2022	75	2097
	Steel Access and Grating	2022	75	2097
Access and Security	Fences	2022	50	2072
	Cameras	2022	10	2032
Buildings	Ventilation	2022	15	2037
	Roof and Paint	2022	25	2047
	Building Replacement	2022	75	2097

5.1.5 PUMPING PLANT 4

5.1.5.1 Pumping Plant 4 Condition Assessment

Plant 4, while showing signs of age, is in a condition that it is expected to be able to provide the necessary service until it is replaced under the NLIP. The new plant replacement has been designed and is expected to be constructed by 2022. Therefore workshop parties agreed a Condition Hazard Rating Score of 1 was appropriate. No potential projects are identified that would not be identified under the Level of Service evaluation.

5.1.5.2 Pumping Plant 4 Level of Service

Table 5-15 - Pumping Plant 4 Level of Service

Pumping Plant: 2	Level of Service Indicators				
	Reliability	Redundancy	Capacity	Operational Flexibility	Maintain-ability
Pump Station Component	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)
Intake Screens	Y	N	Y	Y	Y
Power Supply	Y	N	Y	Y	Y
Motors	Y	N	Y	Y	Y
Pumps	Y	N	Y	Y	Y
Instrumentation & Controls	Y	Y	Y	Y	Y
Outfall Pipes	Y	NA	Y	Y	Y
Cathodic Protection System	Y	N	Y	Y	Y
Pump & Motor Structural	Y	NA	Y	NA	Y
Access & Security	N	NA	NA	Y	Y
Building	Y	NA	Y	NA	Y

- The new Plant 4 is expected to be very similar to Plant 2, therefore the same Level of Service assumptions have been used. Components not expected to meet the level of service standard and may need near term capital improvements are included in Table 5-16.

Table 5-16 - Pumping Plant 4 Level of Service Potential Projects

Pump Station Component	Sub-optimal Reason	Proposed Improvement Project
Intake Screens	No backup system	None
Power Supply	No onsite back up	Install natural gas or diesel backup generator
Motors	No backup system	None
Pumps	No backup system	None
Cathodic Protection	No backup system	None
Access & Security	Fencing does not include anti-climb fabric	Install anti-climb fabric

- It was determined that it was not feasible or efficient to provide backup screens, motors, pumps, or cathodic protection, so no improvement projects are proposed for those potential shortcomings.

- It is proposed to install an onsite generator at the Plant 4 site after construction. Natural gas is not available at Plant 4 so a diesel or propane tank sufficient for 48-72 hours is desired.

- The fencing will need anti-climb fabric to prevent intrusion.

5.1.5.3 Pumping Plant 4 Life Cycle State

Pump station components that will require life cycle replacements to maintain level of service standards are listed in Table 5-17. The same life cycle as Plant 3 is assumed.

Table 5-17 - Pumping Plant 4 Life Cycle Replacement Initial Schedule

Item	Component or Service Item	Base Replacement Year	Life Cycle (Years)	Next Replacement or Service
Intake Screens	Dive Inspection	2022	4	2026
	Chain Replacement	2022	10	2032
	Unit Replacement	2022	40	2062
Power Supply	Evaluation	2022	10	2032
	Transformer	2022	20	2042
	In-building/in-panel ATS, etc.	2022	20	2042
	Backup Generator	-	30	TBD
Instrumentation & Controls	Evaluation	2022	10	2032
	Unit Replacement	2022	20	2042
Motors	Clean & Bake	2022	12	2034
	Replace Unit	2022	50	2072
Pumps	Remove & Inspect	2022	12	2034
	Replace Unit	2022	50	2072
Outfalls	Comprehensive Inspection	2022	5	2027
	Valves and Gates	2022	25	2047
	Outfall Structure	2022	75	2097
	Pipes	2022	75	2097
Cathodic Protection	Anode Beds	2022	5-10	2027
	Unit	2022	25	2047
Pump and Motor Structural	Structure and Platform	2022	75	2097
	Steel Access and Grating	2022	75	2097
Access and Security	Fences	2022	50	2072
	Cameras	2022	10	2032
Buildings	Ventilation	2022	15	2037
	Roof and Paint	2022	25	2047
	Building Replacement	2022	75	2097

5.1.6 PUMPING PLANT 5

5.1.6.1 Pumping Plant 5 Condition Assessment

Plant 5 has been identified by the District for replacement. While showing signs of age, Plant 5's condition is such that it is expected to be able to provide the necessary service until it is replaced, whether under the NLIP or directly by the District. The plan is to begin design of the plant replacement in the upcoming year and begin to look for funds through the NLIP and/or grants. If external funding is not secured, it is assumed that the District will fund construction in 2026. Design is

assumed to include all components necessary to meet all Levels of Service that will be installed at other plants, such as a backup generator. The Condition Hazard Rating of the Plant is 6; it should be monitored in upcoming years and further degradation could accelerate the urgency to replace it.

5.1.6.2 Pumping Plant 5 Level of Service

New Plant 5 will be designed to incorporate all Level of Service improvements, no analysis was performed.

5.1.6.3 Pumping Plant 5 Life Cycle State

Pump station components that will require life cycle replacements to maintain level of service standards are listed in Table 5-18. Construction is assumed in 2026 and it is assumed the plant will include any upgrades necessary to achieve optimal status in all areas, since all items can be incorporated into design.

Table 5-18 - Pumping Plant 5 Life Cycle Replacement Initial Schedule

Item	Component or Service Item	Base Replacement Year	Life Cycle (Years)	Next Replacement or Service
Intake Screens	Dive Inspection	2026	4	2030
	Chain Replacement	2026	10	2036
	Unit Replacement	2026	40	2066
Power Supply	Evaluation	2026	10	2036
	Transformer	2026	20	2046
	In-building/in-panel ATS, etc.	2026	20	2046
	Backup Generator	2026	30	2056
Instrumentation & Controls	Evaluation	2026	10	2036
	Unit Replacement	2026	20	2046
Motors	Clean & Bake	2026	12	2038
	Replace Unit	2026	50	2076
Pumps	Remove & Inspect	2026	12	2038
	Replace Unit	2026	50	2076
Outfalls	Comprehensive Inspection	2026	5	2031
	Valves and Gates	2026	25	2051
	Outfall Structure	2026	75	2101
	Pipes	2026	75	2101
Cathodic Protection	Anode Beds	2026	5-10	2036
	Unit	2026	25	2051
Pump and Motor Structural	Structure and Platform	2026	75	2101
	Steel Access and Grating	2026	75	2101
Access and Security	Fences	2026	50	2076
	Cameras	2026	10	2036
Buildings	Ventilation	2026	15	2041
	Roof and Paint	2026	25	2051
	Building Replacement	2026	75	2101

5.1.7 PUMPING PLANT 6

5.1.7.1 Pumping Plant 6 Condition Assessment

Under existing District operational practices, Pumping Plant 6 is the last plant to be operated during a storm event. It is only used in extreme conditions or when other assets have failed or flows are significant, and has not been operated in several years. The components that could be viewed during the assessment show visual signs of aging but not to the point that the plant could not function. While the District checks the power systems monthly during the flood season, the pumps have not been spun in several years. It is understood that operating the pumps off the local meter would initiate a service charge of $2,000 per month for 12 months. To more cost effectively test the pumps, a method to power the pumps using a portable generator is recommended to confirm the pumps will actually operate if and when needed.

Other potential projects noted during the assessment include:

- Replacement of the manual bar screens with an automatic bar screen
- The pump columns and outfall piping appeared corroded but could not be examined closely enough
- Fencing to prevent access to the bar screen deck.
- The plant has no backup generator or hookup for a portable generator.

Potential project based on the assessment are listed in Table 5-19 below.

Table 5-19 - Pumping Plant 6 Assessment Potential Projects

Pumping Plant 2: Near Term Capital Condition Assessment Improvements		
Pump Station Component	**Sub-optimal Reason**	**Proposed Improvement Project**
Intake Screen	Currently are manually cleaned	Install automatic bar screen
Pump Column and Outfall Piping	Potential corrosion; to be confirmed	Evaluation and potential replacement
Access & Security	Fencing does not prevent access to all facilities	Install new anti-climb fencing around entire plant perimeter
Backup Generator	None; hookup for portable at plant	Add permanent backup generator or install hookup if portable generator(s) to be purchased

5.1.7.2 Pumping Plant 6 Level of Service

Table 5-20 - Pumping Plant 6 Level of Service

Pumping Plant: 6	Level of Service Indicators				
	Reliability	Redundancy	Capacity	Operational Flexibility	Maintain-ability
Pump Station Component	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)
Intake Screens	N	N	Y	Y	N
Power Supply	Y	N	Y	Y	Y
Motors	Y	N	Y	Y	Y
Pumps	Y	N	Y	Y	Y
Instrumentation & Controls	Y	Y	Y	N	Y
Outfall Pipes	N	Y	Y	Y	Y
Cathodic Protection System	Y	Y	Y	Y	Y
Pump & Motor Structural	Y	NA	Y	NA	Y
Access & Security	N	NA	NA	N	Y
Building	N	NA	Y	NA	Y

Table 5-21 - Pumping Plant 6 Level of Service Potential Projects

Pumping Plant 6: Near Term Capital Improvements		
Pump Station Component	**Sub-optimal Reason**	**Proposed Improvement**
Intake Screens	Intake screens are manual bar screens No backup	Install automatic bar screens None
Power Supply	No backup	Install propane or diesel backup generator
Motors	No backup	None
Pumps	No backup	None
Instrumentation & Controls	Need for standardization and automation	Install SCADA system
Outfall pipes	Visible signs of corrosion	Evaluate and potentially rehabilitate or replace outfall pipes
Access & Security	New fencing is required Lack of security Building lock is rusted	Install anti climb fencing Install security cameras and alarm Replace building locks

- It was determined that it was not feasible or efficient to provide backup screens, motors, pumps, or cathodic protection, so no improvement projects are proposed for those specific deficiencies.
- The existing bar screens are manually cleaned, and it is recommended to install automatic bar screens to reduce the need for labor.
- There is no backup power supply, so to increase reliability, it is recommended that an onsite backup generator be installed.
- This plant's instrumentation and controls are recommended to be integrated into the SCADA system.
- The outfall pipes have visible signs of corrosion and need replacing.
- The security fencing and locks at the plant are old and are not effective at keeping the plant secure, so upgrades are needed.

5.1.7.3 Pumping Plant 6 Life Cycle State

Pump station components that will require life cycle replacements to maintain level of service standards are listed in Table 5-22.

Table 5-22 - Pumping Plant 6 Life Cycle Replacement Initial Schedule

Pumping Plant Life Cycle Replacements				
Item	**Component or Service Item**	**Base Replacement Year**	**Life Cycle (Years)**	**Next Replacement or Service**
Intake Screens	Dive Inspection	1997	4	2024
	Chain Replacement	1997	10	NA
	Unit Replacement	1997	40	2021
Power Supply	Evaluation	1997	10	2021
	Transformer	1997	20	2022
	In-building/in-panel ATS, etc.	1997	20	2022
	Backup Generator	1997	30	2022
Instrumentation & Controls	Evaluation	1997	10	2021
	Unit Replacement	1997	20	2022
Motors	Clean & Bake	1997	12	2024
	Replace Unit	1997	50	2047
Pumps	Remove & Inspect	1997	12	2024
	Replace Unit	1997	50	2047
Outfalls	Comprehensive Inspection	1997	5	2022
	Valves and Gates	1997	25	2022
	Outfall Structure	1997	75	2072
	Pipes	1997	75	2072
Cathodic Protection	Anode Beds	1997	5-10	2021
	Unit	1997	25	2022
Pump and Motor Structural	Structure and Platform	1997	75	2072
	Steel Access and Grating	1997	75	2072
Access and Security	Fences	1997	50	2047
	Cameras	1997	10	2022
Buildings	Ventilation	1997	15	2022
	Roof and Paint	1997	25	2022
	Building Replacement	1997	75	2072

5.1.9 PUMPING PLANT 8

5.1.9.1 Pumping Plant 8 Condition Assessment

This plant has the greatest nominal capacity to remove water from the basin but has significant issues that limit its practical capacity under most conditions. The coatings for the discharge pipes were noted to be in poor condition where exposed although obvious pitting could not be visually observed where bare steel was visible. District staff indicated that the pipes are out-of-round beyond manufacturer tolerance at the outfall. The plant has a hookup for a portable generator but no permanent backup generator. District operational staff note that electrical components have been consistently failing and needing replacement. Workshop parties agreed the Condition Hazard Rating Score is 6.

The following potential projects are identified based on the condition assessment:

Table 5-23 - Pumping Plant 8 Assessment Potential Projects

Pumping Plant 2: Near Term Capital Condition Assessment Improvements		
Pump Station Component	**Sub-optimal Reason**	**Proposed Improvement Project**
Outfall Piping	Poor condition of coating	Evaluate whether corrosion requiring remedial action has occurred
Backup Generator	None; hookup for portable at plant	Add permanent backup generator

5.1.9.2 Pumping Plant 8 Level of Service

Table 5-24 - Pumping Plant 8 Level of Service

Pumping Plant: 8	Level of Service Indicators				
	Reliability	Redundancy	Capacity	Operational Flexibility	Maintain-ability
Pump Station Component	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)
Intake Screens	Y	N	Y	Y	Y
Power Supply	N	N	Y	Y	Y
Motors	Y	Y	Y	Y	Y
Pumps	Y	Y	Y	Y	Y
Instrumentation & Controls	N	Y	Y	N	Y
Outfall Pipes	N	N	Y	Y	Y
Cathodic Protection System	Y	N	Y	Y	Y
Pump & Motor Structural	Y	NA	Y	NA	N
Access & Security	N	NA	NA	Y	N
Building	Y	NA	Y	NA	Y

Pump station components that will require life cycle replacements to maintain level of service standards are listed in Table 5-25.

Table 5-25 - Pumping Plant 8 Level of Service Improvements

Pump Station Component	Sub-optimal Reason	Proposed Improvement Project
Intake Screens	No backup	None
Power Supply	No backup	Install natural gas backup generator on property across Northgate Blvd.
	Unreliable low voltage power supply	Replace with to upgraded medium voltage power supply.
Motors	Incompatible with 2.3 kV standard	Replace motors
Pumps	Pair replacement with motor	Replace pumps
Instrumentation & Controls	Old age	Replace instrumentation and controls
Outfall Pipes	Outfall pipes are out of round	Replace pipeline not included in USACE work
Cathodic Protection	No backup	None
Access & Security	Camera system out of date	Replace cameras and hook up to SCADA
	Pump platform access issues	Install walkway for workers

In general, it is recommended that a major replacement project of most Plant 8 components be implemented, driven mostly by the poor condition of the electrical and instrumentation. While much of the electrical and instrumentation is approaching the end of its normal useful life, District experience is that the components have degraded faster than expected. For example, the District has replaced 4 of 9 soft starters which is beyond expectation over the timeframe. It is recommended that the replacement project be bundled to include the following components:

- Transformer and power supply: modified to 2.3 kV to match other plants
- Backup generator: powered by natural gas from PG&E line on Northgate Boulevard
- Motors: Must be replaced to run on 2.3 kV power
- Pumps: Pumps should be replaced when the motors they are paired with are replaced
- Pump platform steel deck: elevated deck should be expanded to the stairs so the pumps and motors can be accessed when water flood the platform due to low elevation of platform
- Cathodic protection system: should be replaced to operate on new voltage
- Ventilation: should be replaced to operate on new voltage and is approaching normal useful life
- Cameras: should be replaced

The outfall pipes have been found to be out of round, and need rehabilitation or replacement, up to where NLIP replacement work stops. While the hydraulics need to be coordinated with the replacement of the pumps in the major replacement, it is recommended as a separate project because separate contractors would be preferred. An evaluation to determine the rehabilitation method or replacement is recommended, with the construction project budgeted for replacement for conservative budgeting.

5.1.9.3 Pumping Plant 8 Life Cycle State

The pump station was originally constructed nearly 40 years ago and a major overhaul was performed nearly 20 years ago. The expected life cycle for Plant 8, not accounting for useful life of components expiring prematurely, is shown in Table 5-26. The electrical and instrumentation and controls have a combination of components that are nearing the end of their useful lives and some in the middle of their projected useful lives. The outfall structure is the sole component being replaced under the NLIP and is shown with an assumed completion year of 2021. For capital components already beyond their expected useful life, a replacement year of 2022 is listed to allow for planning and implementation.

Table 5-26 - Pumping Plant 8 Life Cycle Replacement Current Schedule

Item	Component or Service Item	Base Replacement Year	Life Cycle (Years)	Next Replacement or Service
Intake Screens	Dive Inspection	2019	2	2021
	Chain Replacement	2013	10	2023
	Unit Replacement	2001	40	2043
Power Supply	Evaluation	2001	10	2022
	Transformer	2001	20	2022
	In-building/in-panel ATS, etc.	2001	20	2022
	Backup Generator	(none currently)	30	
Instrumentation & Controls	Evaluation	2001	10	2022
	Unit Replacement	2001	20	2022
Motors	Clean & Bake	1983	8	2022
	Replace Unit	1983[1]	50	2033[1]
Pumps	Remove & Inspect	1983	8	2022
	Replace Unit	1983[1]	50	2033[1]
Outfalls	Comprehensive Inspection	1983	5	2027
	Valves and Gates	1983	25	2008
	Outfall Structure	2021	75	2097
	Pipes	1983	75	2058
Cathodic Protection	Anode Beds	2001	5-10	2022
	Unit	2001	25	2026
Pump and Motor Structural	Structure and Platform	2001	75	2076
	Steel Access and Grating	2001	75	2076
Access and Security	Fences	2003	50	2053
	Cameras	(none currently)	10	
Buildings	Ventilation	2001	15	2022
	Roof and Paint	2001	25	2026
	Building Replacement	2001	75	2076

[1]Pumps 8 and 9 were installed in 2001, all others 1983.

Several components are concurrently reaching the end of their normal useful lives; operations staff have confirmed a corresponding decrease in performance including the existing chains on intake screen and older electrical and instrumentation and controls components.

In addition to several components reaching the end of their useful lives, there is evidence multiple components have prematurely reached the end of their useful lives. For example, the outfall pipelines are known to be out-of-round beyond manufacturer tolerance with the lining delaminating near the

outfall and several of the electrical and instrumentation components such as four (4) of nine (9) soft starters for the pumps have prematurely failed and required replacement.

With Plant 8 being critical and several major components nearing the end of its life cycle, a major replacement effort is recommended. While several of the components have some remaining useful life, a bundled project is recommended for maximum efficiency. The bundled components include:

- Replacing all electrical and instrumentation components to run on medium voltage 2.3 kV power. The District has moved towards a 2.3 kV standard and the remaining regularly used plants on low-voltage power are Plants 5 and 8.

- Replacing the motors, pumps, cathodic protection, and ventilation systems to run on the 2.4kV power. While the pumps and motors have over a decade of expected remaining useful life, the normal preventive maintenance has not been performed so each is likely to wear out prematurely. Because motors and other equipment cannot be modified to run on other voltages, concurrent replacement of the electrical, instrumentation, and mechanical components is recommended as a priority. If the projects were implemented piecemeal, the low-voltage equipment would have to remain in place for the plant to operate.

- Installation of a backup generator in the lot across Northgate Boulevard, adjacent to the cardlock fueling station, is a recommended Level of Service upgrade. This is an upgrade that can be made independently of the other recommended replacements. If not implemented with the other recommended replacements, installation of conduits across Northgate Boulevard is recommended to minimize future impacts.

- Implementing an outfall pipeline investigation and remedial action. A study to determine the best option is recommended. Replacement of the entire pipeline is assumed for budgeting purposes; the plan and expenditures will need to be updated after the study and evaluation is complete.

The number of components to be replaced is sufficient that bundling into a single large project is recommended for efficiency. If the electrical service is to be upgraded to 2.4kV, multiple components will have to be replaced concurrently regardless. If the recommended pumping plant replacements are implemented as recommended, the life cycle replacement schedule will be reset according to the schedule in Table 5-27. The assumed implementation year of 2022 becomes the baseline year for most life cycle replacement components going forward.

Table 5-27 - Pumping Plant 8 Life Cycle Replacement Schedule with Major Upgrades

Item	Component or Service Item	Base Replacement Year	Life Cycle (Years)	Next Replacement or Service
Intake Screens	Dive Inspection	2022	2	2024
	Chain Replacement	2022	10	2032
	Unit Replacement	2001	40	2041
Power Supply	Evaluation	2022	10	2032
	Transformer	2022	20	2052
	In-building/in-panel ATS, etc.	2022	20	2042
	Backup Generator	2022	30	2052
Instrumentation & Controls	Evaluation	2022	10	2032
	Unit Replacement	2022	20	2042
Motors	Clean & Bake	2022	8	2030
	Replace Unit	2022	50	2072
Pumps	Remove & Inspect	2022	8	2030
	Replace Unit	2022	50	2072
Outfalls	Comprehensive Inspection	2022	5	2027
	Valves and Gates	2022	25	2047
	Outfall Structure	2022	75	2097
	Pipes	2022	75	2097
Cathodic Protection	Anode Beds	2022	5-10	2027
	Unit	2022	25	2047
Pump and Motor Structural	Structure and Platform	2001	75	2076
	Steel Access and Grating	2001	75	2076
Access and Security	Fences	2001	50	2051
	Cameras	2022	10	2032
Buildings	Ventilation	2022	15	2037
	Roof and Paint	2022	25	2047
	Building Replacement	2001	75	2076

5.1.10 SAN JUAN PUMPING PLANT

5.1.10.1 San Juan Pumping Plant Level of Service

Table 5-28 - San Juan Pumping Plant Level of Service

Pumping Plant: San Juan	Level of Service Indicators				
	Reliability	Redundancy	Capacity	Operational Flexibility	Maintain-ability
Pump Station Component	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)
Intake Screens	Y	N	Y	Y	N
Power Supply	Y	N	Y	Y	Y
Motors	Y	Y	Y	Y	Y
Pumps	Y	Y	Y	Y	Y
Instrumentation & Controls	Y	Y	Y	Y	Y
Outfall Pipes	Y	Y	Y	N	Y
Cathodic Protection System	Y	Y	Y	Y	Y
Pump & Motor Structural	Y	NA	Y	NA	Y
Access & Security	N	NA	NA	Y	Y
Building	Y	NA	Y	NA	Y

Table 5-29 - San Juan Pumping Plant Level of Service Improvements

Pump Station Component	Sub-optimal Reason	Proposed Improvement
Intake Screens	Intake screens are manual bar screens	Install automatic bar screens
	No backup	None
Power Supply	No backup	Install backup generator
Outfall pipes	Closing the gates is difficult	Install concrete vault with positive closure gates
Access & Security	Fences are climbable	Install anti climb fencing
	Lack of security	Install security cameras and alarm

The intake screens are currently manually cleaned, so installation of automatic bar screens is considered to reduce the need for labor. However, given that the ditches that convey water to the pumping plant are dry during portions of the year, the vegetation load is considerably less than the exterior pumping plants, so automatic screens are not considered cost-effective mitigation.

There is an existing building that used to house a diesel generator, but the generator was removed due to air quality concerns. It is recommended that a new permanent or portable be considered in its place, using the existing infrastructure.

The fencing needs anti-climb fencing installed, and security cameras and alarms also recommended to be installed.

5.1.11 RIVERSIDE PUMPING PLANT

The Riverside Pumping Station is located near the San Juan Pumping Station. This plant is identical in layout to San Juan Pumping Station, albeit smaller due to its smaller service area. The plant is in good condition, and there are no particular signs of excessive aging or damage.

5.1.11.1 Riverside Pumping Plant Level of Service

Table 5-30 - Riverside Pumping Plant Level of Service

Pumping Plant: Riverside	Level of Service Indicators				
	Reliability	Redundancy	Capacity	Operational Flexibility	Maintain-ability
Pump Station Component	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)	Optimal? (Y/N)
Intake Screens	Y	N	Y	Y	N
Power Supply	Y	N	Y	Y	Y
Motors	Y	Y	Y	Y	Y
Pumps	Y	Y	Y	Y	Y
Instrumentation & Controls	Y	Y	Y	Y	Y
Outfall Pipes	Y	Y	Y	N	Y
Cathodic Protection System	Y	Y	Y	Y	Y
Pump & Motor Structural	Y	NA	Y	NA	Y
Access & Security	N	NA	NA	Y	Y
Building	Y	NA	Y	NA	Y

Table 5-31 - Riverside Pumping Plant Level of Service Improvements

Pump Station Component	Sub-optimal Reason	Proposed Improvement
Intake Screens	Intake screens are manual bar screens.	Install automatic bar screens.
Power Supply	Lack of backup generator.	Install natural gas backup generator
Outfall pipes	Lack of outfall structure	Install concrete vault with positive closure gates
Access & Security	New fencing is required	Install anti climb fencing
	Lack of security	Install security cameras and alarm

Riverside Pumping Plant is identical in layout to San Juan, so the same improvements are recommended, except the generator, which would only need to be present at San Juan. The building currently at San Juan is also setup to serve Riverside.

5.1.12 Life Cycle Replacement of Culverts and Drains

The District owns and maintains a significant number of culverts and drains across its territory. Assuming 50-year and 60-year useful lives for culverts and drains, respectively, this plan does not estimate the cost of individual replacements, instead it aggregates the overall number of assets by size and length and determines the annual replacement cost to and number culvert and drains necessary to keep pace with assets reaching the end of their useful life.

5.1.13 Interior Drainage SCADA System

The operation of the District's pumping system is dependent on the water level inside the District's drainage canals. It is proposed to install a SCADA system that can read the elevations of the water at different points in the interior drainage system to enhance the District's ability to respond quickly and efficiently. The intent is that eventually the data will also be available to interested public on a site similar to State Department of Water Resources websites. The project begins by installing water level sensors at 12 locations around the District and aggregating the data for District personnel to be able to view.

5.1.14 Asset Management Program

For efficient long-term management and replacement of the District extensive assets, a formal asset management program is desired. The effort will become a long-term expense on the order of $50,000-100,000 per year once established, but a significant effort is required for program startup, which is the budget presented. The major components to start up an asset management program are: digital cataloging of the entire asset inventory, assigning criticality factors and health scores to each asset, and purchase of a Computer Maintenance Management System (CMMS). A CMMS will allow automated generation of work orders and tracking of asset age to support the life cycle replacement program.

5.2 FUTURE STUDIES

In addition to the projects identified above, there are potential projects that would need to be explored in order to determine their feasibility and benefit to the District.

5.2.1 North to South Conveyance Capacity Improvements Feasibility Study

The District's interior drainage canals are interconnected, allowing each pumping plant to pull from the entire Natomas Basin. The largest plants in particular at the southern end of the District, Plants 1 and 8, are able to act as the District's major points of discharge on a regular basis.

The layout of the major canal conveyance makes flows from the north end heading south route easterly before beginning a clockwise-like route that convey water closer to Plants 8 and 1 before reaching the

physically closer Plants 3 and 5. There is a significant amount of existing ditch infrastructure that is nearly contiguous from the East Drain to Plants 3 and 5 that could potentially be made contiguous with a limited number of culvert additions to connect these ditches, facilitating more efficient routing of flows between the southwest and northern portions of the District. The culverts would generally cross roads including California Route 70/99 so the individual culverts would be expected to have high unit costs if practical to implement.

Section 6

2020 CIP

This section provides the net major costs associated with the Capital Projects identified during the Condition Assessment, Level of Service, and Life Cycle Replacement Program for Pumping Plant capital projects, Life Cycle Regular Maintenance Costs, and Capital Replacement of Culverts and Drains, and other significant near-term Noncapital Expenditures.

This section also provides a prioritization of the capital projects and recommended schedule for implementation.

6.1 PRIORITIZATION

The objective of this section is to identify and implement projects that cost-effectively reduce the risk of flooding within the Natomas Basin. Canal SCADA Monitoring and the Asset Management Program, as related projects that can provide cost-effective data and tools for managing risk, are included with the Pumping Plants. The methods for determining potential projects that should be considered for implementation was established in Sections 3 and 4 and potential projects based on the condition assessment, level of service, and asset life cycle were identified in Section 5. This section takes the potential projects identified in Section 5 and prioritizes them for implementation, with an implementation schedule that aims to balance District needs with financial resources.

As previously discussed, risk is a combination of the probability of failure and consequence of failure. To cost-effectively lower risk, assets or components with high risk would have an improvement or replacement implemented that reduces the risk. Given the District's location and geographical characteristics, the consequence of failure for the pumping plants cannot reasonably be lowered, so the focus is on projects that reduce the likelihood of failure. Table 6-1 below shows the net level of risk for each Pumping Plant that was shown in Table 4-7. From Section 4, the Net Criticality Rating and Condition Hazard Rating for each Plant are added to generate the Risk Score. The Net Criticality Rating is the proxy for relative consequence of failure rating and the Condition Hazard Rating is the proxy for relative likelihood of failure ratings.

Table 6-1 - Risk Ranking for Pumping Plants

Risk Criteria				Risk Ranking
Pumping Plant	Net Criticality Rating	Condition Hazard Rating	Level of Risk	
8	8	6	14	**1**
1A	2	9	11	**2**
1B	7	2	9	**3**
5	3	6	9	**3**
6	1	7	8	**5**
3	6	1	7	**6**
4	5	1	6	**7**
San Juan	2	4	6	**7**
Riverside	2	4	6	**7**
2	3	1	4	**10**

While a plant may rank high in the Risk Ranking Category, projects from plants with low criticality scores may not be as important as projects with high criticality scores. The following are generally considered when prioritizing projects:

- The most critical plants should have low Condition Hazard Ratings. The plants with the highest Net Criticality Ratings are 1B and 8, which have significantly more reliable capacity than other plants. Plant 1B has the low Condition Hazard Rating such a critical asset should have. Plant 1B is the type of asset where cost-effective measures that reduce risk should be implemented, maintenance should not be deferred, and key components should be replaced when they approach the end of their useful lives to keep the risk of failure low. However Plant 8 has a Condition Hazard Rating that is excessive for such a critical asset and should be prioritized for upgrades and replacements to restore it to good health.

- Plants with low Net Criticality Ratings may not be candidates for capital projects even with higher Condition Hazard Ratings than critical plants.

- Plants with uncertain futures are given lower priority. If development or future construction may require relocation of a plant, or the plant may no longer be needed because of facilities associated with development, the District is better served deferring projects until the need can be firmly established. This includes Plants 6, Riverside, and San Juan.

- Because the District has limited resources and may not be able to meet the optimal level of service at all plants, alternative projects that cost-effectively reduce risk may be preferred. The level of service would be increased but still less than optimal. Where an alternative project is recommended, it is described in this section.

- When identified projects at a single site can be bundled together for more efficient implementation, that is the preferred approach. When a component is nearing the end of its life cycle when other projects are scheduled, the aging component may be replaced slightly earlier or later to facilitate bundling with other projects. Bundling could also be done programmatically, where if a single component is needed at multiple pumping plants, it may be cost-effective to replace all components under a single contract.

This section also projects the associated life cycle costs for a 30-year planning horizon. While the implementation schedule 20-30 years out will change significantly, it provides an order of magnitude cost required to maintain the safe and reliable function of the District's Pumping Plants.

6.2 RELATIVE IMPORTANCE RATING

Before assigning an absolute ranking of potential capital projects, a relative importance for each of the projects on the list is given. This rating was done by KSN and the District General Manager. The following relative level of importance were initially assigned to each potential project:

With a comprehensive list of projects from the condition assessment, Level of Service evaluation, and Life Cycle, a relative level of priority was assigned to each project based on how critical the plant, condition of the existing component, and expected life cycle. Priority scores of 1-4 were assigned with the following definitions in a meeting between KSN and the District:

1 = Highest priority project

2 = Priority project

3 = Medium priority project

4 = Low priority project

S = priority 1 for assets to be replaced per the schedule determined by the asset life cycle

The relative importance rating for each is shown by plant in Table 6-2. The timeframe was extended out 30 years using the replacement lifecycle to provide the District with a basis for long-term budgeting, although the accuracy of the actual conditions will decrease the further out the projection is. The "S" rating was used because it provides the year the project is implemented based on the component life cycle.

Table 6-2 - RD 1000 CIP Relative Priority of Projects

Priority	Project	Plant	Criticality	Condition Hazard Rating	Net Cost	Construction/ Implementation	Notes	Plant Total
2	Asset Management Program				1,500,000	2022		
2	Canal SCADA Monitoring				150,000	2023		
2	Paint Exterior of Building	1A	2	11	72,000	2022		
3	Lead & Asbestos Abatement	1A	2	11	180,000	2029		
2	Replace instrumentation and controls; Install PLC and SCADA	1A	2	11	2,600,000	2031		
3	Install Automatic Bar Screens (2)	1A	2	11	650,000	2035		
2	Replace Chains on Existing Screens	1A	2	11	21,000	2041		
4	Install Access Manholes on Outfall Pipes	1A	2	11	45,000	2045		
4	Replace Access walkway	1A	2	11	125,000	2045	30 Year Plant 1A Total	3,700,000
4	Replace Cameras	1B	8	2	19,000	2021		
S	Replace Chains on Screens	1B	8	2	31,000	2021		
1	Install Anti-Cavitation Plates	1B	8	2	60,000	2021		
1	Replace Instrumentation and Controls	1B	8	2	1,300,000	2023		
1	Construct baffles to separate pumps (dewatering)	1B	8	2	760,000	2024		
2	Convert generator to natural gas	1B	8	2	450,000	2026		
2	Replace Roof & Paint Building	1B	8	2	625,000	2028		
S	Replace Valves & Gates	1B	8	2	412,500	2028		
S	Replace Anode Beds	1B	8	2	24,000	2028		
4	Replace Cameras	1B	8	2	19,000	2031		
S	Replace Chains on Screens	1B	8	2	31,000	2031		
1	Replace Power, Cathodic & Ventilation	1B	8	2	1,330,000	2032		
S	Replace Anode Beds	1B	8	2	24,000	2038		
4	Replace Cameras	1B	8	2	19,000	2041		
S	Major Plant Replacements	1B	8	2	2,182,500	2043		
S	Replaced Automated Screen	1B	8	2	1,950,000	2043		
S	Replace Instrumentation and Controls	1B	8	2	1,300,000	2043		
S	Replace Anode Beds	1B	8	2	24,000	2048	30 Year Plant 1B Total	10,600,000
S	Replace Chains on Screens	2	3	1	16,000	2024		
S	Replace Anode Beds	2	3	1	15,000	2024		
2	Install anti-climb fences	2	3	1	70,000	2024		
3	Mobile generator for plants 2,3 & 5	2	3	1	575,000	2022		
4	Replace Cameras	2	3	1	19,000	2034		
S	Replace Power, I&C, Cathodic, & Ventilation	2	3	1	2,180,000	2034		
S	Replace Chains on Screens	2	3	1	16,000	2034		
S	Replace Anode Beds	2	3	1	15,000	2034		
3	Replace Valves & Gates	2	3	1	220,000	2039		
3	Replace Cabinet Roof & Paint	2	3	1	50,000	2044		
4	Replace Cameras	2	3	1	19,000	2044		
S	Replace Chains on Screens	2	3	1	16,000	2044		
S	Replace Anode Beds	2	3	1	15,000	2044	30 Year Plant 2 Total	3,300,000
4	Replace Cameras	3	6	1	19,000	2032		
S	Replace Chains on Screens	3	6	1	21,000	2032		
S	Replace Anode Beds	3	6	1	24,000	2032		
3	Install anti-climb fences	3	6	1	83,000	2035		
4	Replace Cameras	3	6	1	19,000	2042		
S	Replace Power, I&C, Cathodic, & Ventilation	3	6	1	2,190,000	2042		
S	Replace Chains on Screens	3	6	1	21,000	2042		
S	Replace Anode Beds	3	6	1	24,000	2042		
3	Replace Cabinet Roof & Paint	3	6	1	50,000	2047		
S	Replace Valves & Gates	3	6	1	430,000	2047	30 Year Plant 3 Total	2,900,000
2	Install Anti-climb Fence	4	5	1	141,000	2027		
2	Install Diesel Generator (includes generator housing)	4	5	1	1,400,000	2028		
4	Replace Cameras	4	5	1	19,000	2032		
S	Replace Chains on Screens	4	5	1	16,000	2032		
S	Replace Anode Beds	4	5	1	12,000	2032		
4	Replace Cameras	4	5	1	19,000	2042		
S	Replace Power, I&C, Cathodic, & Ventilation	4	5	1	2,180,000	2042		
S	Replace Chains on Screens	4	5	1	16,000	2042		
S	Replace Anode Beds	4	5	1	12,000	2042		
3	Replace Cabinet Roof & Paint	4	5	1	50,000	2047		
S	Replace Valves & Gates	4	5	1	330,000	2047	30 Year Plant 4 Total	4,200,000
2	Relocation	5	3	1	8,900,000	2026		
4	Replace Cameras	5	3	1	19,000	2036		
S	Replace Chains on Screens	5	3	1	16,000	2036		
S	Replace Anode Beds	5	3	1	12,000	2036		
4	Replace Cameras	5	3	1	19,000	2046		
S	Replace Chains on Screens	5	3	1	16,000	2046		
S	Replace Anode Beds	5	3	1	12,000	2046		
S	Replace Power, I&C, Cathodic, & Ventilation	5	3	1	2,190,000	2046	30 Year Plant 5 Total	11,200,000
4	Replace Anode Beds	6	1	7	12,000	2032		
4	Replace Anode Beds	6	1	7	12,000	2042		
4	Replace Anode Beds	6	1	7	12,000	2032		
4	Replace Anode Beds	6	1	7	12,000	2042		
4	Replace Cameras	6	1	7	19,000	2042		
4	Major Plant Replacement - Power, I&C, Ventilation	6	1	7	3,300,000	2045		
4	Install SCADA system	6	1	7	187,500	2045		
4	Replace outfall pipes	6	1	7	1,053,000	2045		
4	Improve site security	6	1	7	112,000	2045		
4	Install Diesel Backup Generator	6	1	7	937,500	2045		
4	Install Automatic Bar Screens	6	1	7	1,300,000	2045	30 Year Plant 6 Total	7,000,000
1	Major Plant replacements	8	7	6	11,400,000	2022		
1	Pipeline Replacement	8	7	6	4,220,000	2022		
3	Replace Cameras	8	7	6	19,000	2032		
S	Replace Chains on Screens	8	7	6	47,000	2032		
S	Replace Anode Beds	8	7	6	24,000	2032		
S	Replace Automatic Screen	8	7	6	2,925,000	2041		
3	Replace Cameras	8	7	6	19,000	2042		
S	Replace Anode Beds	8	7	6	24,000	2042		
S	Replace Power, I&C, Cathodic, & Ventilation	8	7	6	2,200,000	2042		
2	Replace Roof & Paint Building	8	7	6	500,000	2047		
S	Replace Valves and Gates	8	7	6	970,000	2047	30 Year Plant 8 Total	22,400,000
3	Install concrete vault with positive closure gates	Riverside	2	4	94,000	2035		
4	Power, Instrumentation & Controls, Ventilation	Riverside	2	4	250,000	2036		
4	Install Security cameras	Riverside	2	4	19,000	2045	30 Year Riverside Plant Total	370,000
3	Install concrete vault with positive closure gates	San Juan	2	4	94,000	2035		
4	Power, Instrumentation & Controls, Ventilation	San Juan	2	4	250,000	2036		
4	Install Security Cameras	San Juan	2	4	19,000	2045	30 Year San Juan Plant Total	370,000
				30-year Total (unescalated)	$67,400,000			

Table 6-2 also list the unescalated cost to implement each project. Combining the costs for all projects over a 30-year timeframe, the capital costs totals $65.9M, for an average of $2.2M per year.

Table 6-3 shows the top 20 projects proposed for potential implementation. The projects were identified by either having an "S" rating for implementation by 2030 or having an importance rating of 2 or higher as shown in Table 6-2 without a life cycle year.

Table 6-3 - Project Prioritization

Absolute Ranking	Project	Plant	Criticality	Condition Hazard Rating	Net Cost
1	Major Plant Replacements	8	7	6	11,400,000
2	Pipeline Replacement	8	7	6	4,220,000
3	Anti-Cavitation Plates	1B	8	2	60,000
4	Construct Baffles to Separate Pumps	1B	8	2	760,000
5	Replace Instrumentation & Controls	1B	8	2	1,330,000
6	Replace Chains on Screens	1B	8	2	31,000
7	Replace Valves & Gates	1B	8	2	420,000
8	Replace Anode Beds	1B	8	2	19,000
9	Convert Generator to Natural Gas	1B	8	2	450,000
10	Replace Roof & Paint Building	1B	8	2	625,000
11	Relocation	5	3	1	8,900,000
12	Asset Management Program				1,500,000
13	Mobile Backup Generator for Plants 2, 3, & 5	2/3/5	3	1	575,000
14	Replace Chains on Screens	2	3	1	16,000
15	Replace Anode Beds	2	3	1	15,000
16	Canal SCADA Monitoring	4	5	1	1500,000
17	Install Diesel Generator	4	2	9	1,400,000
18	Paint Exterior of Building	1A	2	9	72,000
19	Lead & Asbestos Abatement	1A	2	9	180,000
20	Replace Power, I&C, Cathodic, and Ventilation	2	3	1	2,180,000

The projects with net costs estimated at $250,000 or greater or considered unusually cost-effective are discussed below in the order they appear on the list; some projects are grouped with their respective plants.

6.2.1 Pumping Plant 8 Major Plant Replacements and Pipeline Replacement

Plant 8 is the highest priority to reduce risk, due to its location in a densely populated area, high capacity, and poor condition and thus its two (2) large projects are the highest-ranked for implementation. Were it to fail during a major storm event, the District would be challenged to prevent flooding within the basin. Major components necessitating priority projects include:

- Replacing the electrical and instrumentation system which is approaching the end of its useful life based on age as well as performance
- Replacing the discharge pipes which are out-of-round beyond manufacturer listed tolerance and losing lining at the outfall
- Eliminating Pumps 8 and 9 cavitation issues, which currently effectively preclude their use.

To implement the improvements recommended above, the following projects are recommended:

1. Major Plant Replacements
2. Pipeline Replacement

The Major Plant Replacements is a bundle of the projects identified under the condition assessment, level of service, and life cycle analysis, excluding the pipeline. The above are broken into two (2) projects because different contractors would likely be desired as the Major Plant Replacements are primarily electromechanical and the Pipeline Replacement is a civil project.

The Major Plant Replacements will include the following scope and assumptions:

- Electrical and instrumentation will be replaced. Electrical service will be changed to 2.3 kV service to match standardization at other plants
- Changing electrical to 2.3 kV will require replacement of motors, pumps, ventilation, and cathodic protection. The pumping capacity will match existing. The pumping arrangement will be evaluated and the cavitation issues will be eliminated during design. The pump deck will be evaluated for damage resulting from the cavitation but no rehabilitation is assumed
- As a critical facility, a backup generator will be installed. A pair of 2,500 kW generators will be installed in a new building on District property on the east side of Northgate Boulevard. To reduce the storage requirement, a generator that runs on a combination of diesel and natural gas is recommended. The cost is approximately half that of a natural gas generator while the diesel consumption is one-fourth that of a diesel-powered generator, making long runtimes possible while minimizing the effort to refill a large diesel tank. The existing line on Northgate Boulevard will be the source of natural gas.
- Decking to the motors needs to be extended to the stairway from the building so personnel can avoid walking through flooded areas when canal levels rise above the pump deck, which occurs regularly.

The Pipeline Replacement will include the pipe from the connection to the pumps to the pipe replaced at the outfall under the NLIP. It will begin with an evaluation of the pipelines and determine whether a rehabilitation method or replacement if preferred. Design should be performed concurrently with design for Major Plant Replacements to coordinate hydraulics.

6.2.2 PLANT 1B PROJECTS

The majority of the projects for Plant 1B are lifecycle replacement projects are high priorities to implement because 1B is a critical plant. The three (3) projects that are level of service upgrades are

1. Install Anti-Cavitation Plates on Pumps
2. Construct Baffles to Separate Pumps
3. Convert Generator to Natural Gas.

Each of these are discussed below.

Install Anti-Cavitation Plates: The reported cavitation issues are expected to decrease performance, increase maintenance requirements, and shorten the life of the pumps. Protection of the pumps is considered a priority for this critical asset. Anti-cavitation plates have the potentially to significantly reduce or the level of observed cavitation for minimal cost, therefore a priority is placed on implementing the item. It is assumed that the plates will be installed when the motors and pumps are removed for clean and bake and regular inspection, respectively; these assets should be a priority for clean and bake program. The cost to install the anti-cavitation plates separate from the regular inspection will be approximately double.

Construct Baffles: While the District avoids operating both pumps in a bay when possible, this method cannot be relied upon to protect the pumps at all time. In addition to the anti-cavitation plates, this project is recommended to further protect pumps. The project assumes concrete baffles will be installed between pumps in each of the 3 bays. If the anti-cavitation plates prove effective, the project priority can be lowered.

Generator Natural Gas Conversion: The current backup generator is diesel-powered and has a runtime of approximately 8 hours before the tank must be refilled. This is considered less than optimal reliability as 72 hours would be desired for such a critical facility. To increase the runtime, conversion to natural gas power via a connection to the existing line off Garden Highway is preferred. However, conversion of the existing generator to natural gas would reduce the power input such that it could only run 4 of the 6 pumps. The proposed alternative is to modify the generator such that it can operate on a mix of diesel and natural gas that does not reduce the rated power but reduces the diesel consumption rate by a factor of four. Increasing the backup runtime from eight (8) to 32 hours cost-effectively increases the runtime for significantly less expense than replacing the existing generator and is therefore recommended.

The life cycle replacement projects include

1. Replace Instrumentation and Controls
2. Replace Valves & Gates
3. Replace Roof & Paint Building

The criticality of Plant 1B makes these projects important to implement when needed to maintain reliability and protect this high-value asset. The I&C is near the end of its useful life but does not have reported operational problems like Plant 8. Part of the life cycle major maintenance is an evaluation of the Power and I&C systems every 10 years to assess its performance and actual remaining life; it is

recommended that this be performed and the I&C replacement, as well as the power systems (expected in the early 2030s) scheduled based on the evaluation. Replacement of the valves and gates is evaluated as part of the outfall pipeline; the same type of evaluation is recommended to schedule replacement of these components. Replacement of the roof and painting (sealing) the building is recommended for replacement according to the life cycle replacement.

6.2.3 PLANT 5 RELOCATION

Plant 5's location within the levee toe and its relatively poor condition due to its age makes relocation further away from the levee preferred. The project, while included in the NLIP, currently is not funded by the USACE or another external source. The intent is to begin design of the new plant immediately, modelling it after Plants 2 and 4, which makes obtaining external funds more probable, but deferring construction as long as performance warrants unless or until external funding is secured.

6.2.4 ASSET MANAGEMENT PROGRAM

For efficient long-term management and replacement of the District extensive assets, a formal asset management program is desired. The effort will become a long-term expense once established, however the scope and budget presented is for program startup. The major components to start up an asset management program are: digital cataloging of the entire asset inventory, assigning criticality factors and health scores to each asset, and purchase of a Computer Maintenance Management System (CMMS). A CMMS will allow automated generation of work orders and tracking of asset age to support the life cycle replacement program.

6.2.5 BACKUP GENERATOR FOR PLANTS 2, 3, AND 5 AND PLANT 4

While a backup generator would optimally be installed each plant, generators are expensive and are low-use items. The alternative approach below is proposed:

Plant 4 is the lone plant served by PG&E. It is also the most remote plant in the District and has the third-largest capacity of the regularly-operated plants. Natural gas service is unavailable in this remote location. Therefore a dedicated diesel- or propane-powered generator is considered a priority for this location.

Plants 2, 3, and 5 are all relatively small and located on the western side of the District. Plants 2 and 3 have been designed and/or constructed with a hookup for a mobile generator; this option can also be implemented at Plant 5. A 1,000-kW generator is sufficient to power any of these plants and as concurrent power failure at all three (3) plants is highly unlikely, a trailer-mounted mobile generator with a 48-hour supply of diesel is recommended to serve as the backup for these plants.

Because the 1,000 kW capacity is sufficient to operate two (2) of the three (3) pumps at Plant 4, which will be constructed with a mobile generator hookup, the mobile generator is prioritized above the Plant 4 generator.

6.2.6 PLANT 1A PROJECTS

Plant 1A has the second-highest capacity of all plants in the District but is not a reliable plant. The pumps must be manually started and monitored full-time when in operation, and the inside of the plant does not facilitate safe access for maintenance activities. The age of the plant will make improvements more expensive than equivalent upgrades at other plants. While projects to restore the reliability would greatly increase the flexibility of the District, the District has other higher-priority plants with projects that are recommended for implementation beforehand. Once the major projects that provide reliability to Plants 8, 1B, replacement of 5, and the generators to provide backup power to Plants 2, 3, 4, and 5 are implemented, it is recommended that the District begin increasing the reliability of 1A. Because of the high costs to implement improvements at 1A, it may prove more cost-effective to mitigate performance problems that arise unexpectedly at other plants; the District should monitor the performance of other plants. The first projects recommended for implementation at 1A are repainting the exterior of the building and abatement of potential lead and asbestos, which aim to prolong the life of the building and make upgrades safe to implement.

6.3 CULVERT AND DRAIN REPLACEMENTS

While no specific culverts or drains are specifically identified for cost estimating and replacement, the District needs to budget and plan for replacement of these assets. Evaluation of the condition of culverts and urgency for replacement is not part of the scope of this plan, so a life cycle cost and resulting average per year is the extent of the analysis for culverts and drains. This was done by compiling the total number of culverts, net linear footage, and types from available GIS data. After the raw data was compiled, the number of culverts and drains were totaled at 477 and 491, respectively. The respective linear feet for each pipe size and were totaled for culverts and drains. An average length for culverts and drains was calculated and used as the standard length for each requiring replacement. A cost per linear foot associated with the diameter was applied to estimate the average cost for a culvert or drain of a certain size, assuming no greater than 5 feet of cover. The net costs for culvert and drain replacement is the sum of the cost for each size and type times the number of each size and type.

The estimated total replacement cost for culverts is $38M and drains is $9.8M. Generally culverts sizes tend to be much larger, as the maximum size is 120 inches in diameter, while the maximum drain size is 36 inches.

The more remote location of drains means they are exposed to less wear and tear and are expected to have a useful life of 60 years, whereas culverts being located under travelled roads will have a slightly shorter useful life of 50 years. Table 6-4 below summarizes the replacement needs.

Table 6-4 - Culvert and Drain Replacement Summary

Item	Units	# Replaced per year	Net Life Cycle Cost	Useful Life, Years	Annual Replacement Cost	30-year Replacement Cost
Culverts	477	11	$36,000,000	50	$760,000	$21,600,000
Drains	491	8	$10,400,000	60	$160,000	$5,400,000

The replacement rate over the 30-year timeframe is assumed to be uniform. The net 30-year cost for culvert and drain replacement is estimated at $27M.

6.4 LIFE CYCLE REGULAR MAINTENANCE COSTS

In creating the life cycle for the major pumping plant components, important, cost-effective maintenance activities were identified that should be performed implemented during the summer season. These activities are described in Section 4.4. These activities include:

- Dive inspection of the screens
- Power supply and instrumentation evaluation
- Motor clean and bake plus pump inspection
- Outfall Pipe Inspection.

These activities have either been implemented ad-hoc or irregularly. These activities require outside expertise or would require procuring expensive equipment to self-perform. Other regular maintenance that is currently being performed are not included in this section. Costs for these items included 10% of the vendor cost to oversee and/or administer the contracts. Costs are budgeted on the long-term average; where specific conditions exist that might move an action forward or back several years, it is not accounted for in the budget. The annualized cost for each, rounded to the next $500, along with special considerations, are described below.

6.4.1 DIVE INSPECTION OF SCREENS

As maintenance personnel have noted, the screens are the single most vulnerable component amongst those that could cause a pump station to fail. The District has implemented a vegetation management program and regular replacement of the chains and screen unit is included in this 2020 CIP under the life cycle replacement. The dive inspection facilitates removal of excessive vegetation and debris such as rocks that occasionally accumulate. The dive inspection also allows inspection of the underwater components such as the screen frame, screen moving components, pump, and pump deck.

The critical Pumping Plants 1B and 8 will each have a dive inspection performed every other year. Each also has screens coming due for replacement, so the dive inspection is recommended to be scheduled concurrent with replacement. The inspection frequency for the less critical plants is four (4) years. As the District has 6 plants in this category, the District will do a dive inspection of 1.5 less critical plants per year along with one (1) critical plant.

Recent dive inspections for one (1) critical and one (1) less critical plant performed in a single mobilization totaled just under $10,000, including replacement of worn parts. To budget conservatively, an estimate of $5,000 per plant regardless of capacity is budgeted, meaning the cost will alternate between $10,000 and $15,000, averaging $12,500.

6.4.2 Evaluation of Power and Instrumentation and Controls

The power and I&C systems are critical infrastructure with a life that can vary significantly, and the systems are often relied upon well past when replacement parts are readily available. Plants 1B and 8 are examples, as 1B is at the end of its useful life by years but has no reported problems, while 8 is similar vintage and has several reported problems. To plan for replacement and ensure the systems do not wear out prematurely without replacement being planned, a major evaluation is scheduled every 10 years. While a life cycle of 20 years is anticipated, if systems are found to be performing well, a second inspection should be performed as the age approaches 20 years to determine if the life can be safely extended. A major inspection is scheduled for each plant every 10 years. With 8 plants, at an average cost of $5,500 each, the District can expect to spend $44,000 over a 10-year period. An average annual cost of $4,500 is budgeted.

As Plant 1B is approaching its useful life, it is recommended that its electrical systems be evaluated immediately so replacement can be more accurately planned.

6.4.3 Maintenance of Motors and Pumps

Because motors are typically paired with a pump for their entire life, major maintenance is performed concurrently. District personnel change the oil each year and the motors have a heating element to significantly reduce the effects of condensation, but a more proactive program is recommended to extend the useful lives of motors. High-use or high-risk motors and pumps are scheduled for evaluation at 8-year intervals, with low-use pumps every 12 years, for an average of 10 years between evaluations. With 35 pumps in the District, 3.5 motors and pumps will be serviced per year. The cost for clean and bake is and pump inspection just under $3,000 per unit, bringing the annual budget to $10,500.

Because many of the plants have been recently replaced and Plant 8 has major replacements upcoming that include replacement of pumps and motors, the actual timing needs to be determined based on actual operating conditions. The first pumps to be serviced under this program should be the 1B pumps, and they have cavitation problems reported; the recommendation is to remove a single pump from each bay the first year and the other from each bay the following year, in case problems that might prevent any from being put back in service are discovered.

6.4.4 Inspection of Outfall Systems

The outfall inspection will focus on the state of the pipes and the associated outfall. The cost for this inspection is estimated at $11,000 per plant. With 8 plants and a frequency of 5 years, $18,000 per year is budgeted for this activity.

Because its pipes are known to be out-of-round beyond manufacturer tolerances, it is recommended that Plant 8 have an inspection performed immediately to determine if the pipes can be rehabilitated or should be replaced. Also, the Plant 1A outfall is being evaluated by the USACOE as part of the NLIP, so its inspection will be several years off.

6.4.5 NET LIFE CYCLE MAJOR MAINTENANCE BUDGET

Combining the annual cost of the dive inspection, evaluation of the power and I&C systems, maintenance of motors and pumps, and inspection of outfall systems, the net cost is estimated at $46,500. Adding 20% to account for unexpected contingencies, an annual budget of $55,000 is recommended. Over a 30-year timeframe, the net present value of the maintenance budget is $1,650,000.

6.5 NET PROGRAM COST

The net 30-year cost to implement the efforts in this section without escalation are shown in Table 6-5:

Table 6-5 - Program Cost Summary

Program Item	Net Cost
Pumping Plant Capital Projects	$67,400,000
Culvert and Drain Replacements	$27,000,000
Life Cycle Major Maintenance	$1,650,000
Total Expected 30-year Expenditure	$96,050,000

The unescalated net capital spend over the next 30 years is $96.05M, which equates to an average annual expenditure of $3.2M. The Pumping Plant Capital Projects and Culvert and Drain Replacement account for over 98% of the projected costs.

6.6 PUMPING PLANT IMPLEMENTATION SCHEDULE

This section presents a potential Pumping Plant CIP to be implemented over the 30-year planning horizon, with an emphasis on the first 10 years. As related efforts, the Canal SCADA Monitoring and Asset Management Program are included in this section. The schedule of projects and cumulative spend by year are shown in Table 6-5. Project costs are not escalated so the District can adjust the schedule and appropriately escalate based on available sources of revenue.

The schedule roughly follows the project prioritization shown in Table 6-3 and the major projects are described in Section 6.2. Where lower-priority projects precede higher-priority projects, the higher priority project is not implemented until it comes due based on the component life cycle.

The spend is front-loaded because of the urgency to reduce the likelihood of failure at Pumping Plant 8, accounting for over 20% of the 30-year projected pumping plant spend in the first couple years. The expected need to replace the I&C at Plant 1B and relocation of Plant 5 also contribute to a spend of approximately $29.6M through 2026.

The projects recommended for implementation in the first 10 years (through end of 2030) total $32.4M in estimated cost; meaning the recommended projects for the four (4) years after 2026 total just over $2.8M; the recommended rate of spend decreases after the most critical projects as the urgency to implement the next wave of projects decreases. The major projects recommended for this timeframe are replacement of the 1B roof, conversion of the 1B generator to natural gas, replacement of the 1B valves, and installation of a backup generator at Plant 4.

The recommended projects for years 11-20 (2031-2040) have a net estimated implementation cost of $8.1 M. The major recommended efforts during this timeframe are initial upgrades to make Plant 1A more reliable and safer to operate, life cycle replacement of Plant 1B power systems, and life cycle replacement of the Plant 2 power systems, I&C, cathodic protection, and ventilation.

The recommended Pumping Plant projects for years 21-30 (2041-2050) have a net estimated implementation cost of $26.9M, which is over three (3) times the recommended rate for years 11-20. This increased rate in spend is due to the recent replacement of several plants under the NLIP, Plant 8, and Plant 5 requiring major life cycle replacement work. Accordingly, there is no reason to accelerate most work in the schedule, but the District should be aware of and budget for the increase in replacement costs. Some of the major costs included are major replacements of Pumping Plant 6, which is rarely used and depending upon the development pattern in its vicinity, may be abandoned or require major replacement. The Plant 6 projects are deferred until years 21-30 under this 2020 CIP due to it uncertain future.

Table 6-6 - RD 1000 CIP Project Implementation Schedule

Project	Plant	Criticality	Condition Hazard Rating	Net Cost	Construction/ Implementation	Cumulative Total by year
Replace Cameras	1B	8	2	19,000	2021	
Replace Chains on Screens	1B	8	2	31,000	2021	
Install Anti-Cavitation Plates	1B	8	2	60,000	2021	110,000
Asset Management Program				1,500,000	2022	
Major Plant replacements	8	7	6	11,400,000	2022	
Pipeline Replacement	8	7	6	4,220,000	2022	
Paint Exterior of Building	1A	2	11	72,000	2022	
Mobile generator for plants 2,3 & 5	2	3	1	575,000	2022	17,880,000
Replace Instrumentation and Controls	1B	8	2	1,300,000	2023	
Canal SCADA Monitoring				150,000	2023	19,400,000
Replace Chains on Screens	2	3	1	16,000	2024	
Replace Annode Beds	2	3	1	15,000	2024	
Install anti-climb fences	2	3	1	70,000	2024	
Construct baffles to separate pumps (dewatering)	1B	8	2	760,000	2024	20,200,000
Relocation	5	3	1	8,900,000	2026	
Convert generator to natural gas	1B	8	2	450,000	2026	29,600,000
Install Anti-climb Fence	4	5	1	141,000	2027	29,700,000
Install Diesel Generator (includes generator housing)	4	5	1	1,400,000	2028	
Replace Roof & Paint Building	1B	8	2	625,000	2028	
Replace Valves & Gates	1B	8	2	412,500	2028	
Replace Anode Beds	1B	8	2	24,000	2028	32,200,000
Lead & Asbestos Abatement	1A	2	11	180,000	2029	32,400,000
Replace instrumentation and controls; Install PLC and SCADA	1A	2	11	2,600,000	2031	
Replace Cameras	1B	8	2	19,000	2031	
Replace Chains on Screens	1B	8	2	31,000	2031	35,000,000
Replace Power, Cathodic & Ventilation	1B	8	2	1,330,000	2032	36,310,000
Replace Cameras	3	6	1	19,000	2032	
Replace Chains on Screens	3	6	1	21,000	2032	
Replace Annode Beds	3	6	1	24,000	2032	
Replace Cameras	4	5	1	19,000	2032	
Replace Chains on Screens	4	5	1	16,000	2032	
Replace Cameras	4	5	1	19,000	2032	
Replace Chains on Screens	4	5	1	16,000	2032	
Replace Annode Beds	4	5	1	12,000	2032	
Replace Annode Beds	6	1	7	12,000	2032	
Replace Cameras	8	7	6	19,000	2032	
Replace Chains on Screens	8	7	6	47,000	2032	
Replace Annode Beds	8	7	6	24,000	2032	36,600,000
Replace Cameras	2	3	1	19,000	2034	
Replace Power, I&C, Cathodic, & Ventilation	2	3	1	2,180,000	2034	
Replace Chains on Screens	2	3	1	16,000	2034	
Replace Annode Beds	2	3	1	15,000	2034	38,750,000
Install anti-climb fences	3	6	1	83,000	2035	
Install Automatic Bar Screens (2)	1A	2	11	650,000	2035	
Install concrete vault with positive closure gates	Riverside	2	4	94,000	2035	
Install concrete vault with positive closure gates	San Juan	2	4	94,000	2035	39,670,000
Replace Cameras	5	3	1	19,000	2036	
Replace Chains on Screens	5	3	1	16,000	2036	
Replace Annode Beds	5	3	1	12,000	2036	
Power, Instrumentation & Controls, Ventilation	Riverside	2	4	250,000	2036	
Power, Instrumentation & Controls, Ventilation	San Juan	2	4	250,000	2036	40,300,000
Replace Annode Beds	1B	8	2	24,000	2038	40,240,000
Replace Valves & Gates	2	3	1	220,000	2039	40,500,000
Replace Automatic Screen	8	7	6	2,925,000	2041	
Replace Chains on Existing Screens	1A	2	11	21,000	2041	
Replace Cameras	1B	8	2	19,000	2041	43,500,000
Replace Cameras	3	6	1	19,000	2042	
Replace Power, I&C, Cathodic, & Ventilation	3	6	1	2,190,000	2042	
Replace Chains on Screens	3	6	1	21,000	2042	
Replace Annode Beds	3	6	1	24,000	2042	
Replace Cameras	4	5	1	19,000	2042	
Replace Power, I&C, Cathodic, & Ventilation	4	5	1	2,180,000	2042	
Replace Chains on Screens	4	5	1	16,000	2042	
Replace Annode Beds	4	5	1	12,000	2042	
Replace Annode Beds	6	1	7	12,000	2042	
Replace Cameras	6	1	7	19,000	2042	
Replace Cameras	8	7	6	19,000	2042	
Replace Annode Beds	8	7	6	24,000	2042	
Replace Power, I&C, Cathodic, & Ventilation	8	7	6	2,200,000	2042	50,200,000
Major Plant Replacements	1B	8	2	2,182,500	2043	
Replaced Automated Screen	1B	8	2	1,950,000	2043	
Replace Instrumentation and Controls	1B	8	2	1,300,000	2043	55,700,000
Replace Cabinet Roof & Paint	2	3	1	50,000	2044	
Replace Cameras	2	3	1	19,000	2044	
Replace Chains on Screens	2	3	1	16,000	2044	
Replace Annode Beds	2	3	1	15,000	2044	55,710,000
Major Plant Replacement - Power, I&C, Ventilation	6	1	7	3,300,000	2045	
Install SCADA system	6	1	7	187,500	2045	
Replace outfall pipes	6	1	7	1,053,000	2045	
Improve site security	6	1	7	112,000	2045	
Install Diesel Backup Generator	6	1	7	937,500	2045	
Install Automatic Bar Screens	6	1	7	1,300,000	2045	
Install Access Manholes on Outfall Pipes	1A	2	11	45,000	2045	
Replace Access walkway	1A	2	11	125,000	2045	
Install Security cameras	Riverside	2	4	19,000	2045	
Install Security Cameras	San Juan	2	4	19,000	2045	62,810,000
Replace Cameras	5	3	1	19,000	2046	
Replace Chains on Screens	5	3	1	16,000	2046	
Replace Annode Beds	5	3	1	12,000	2046	
Replace Power, I&C, Cathodic, & Ventilation	5	3	1	2,190,000	2046	65,100,000
Replace Cabinet Roof & Paint	3	6	1	50,000	2047	
Replace Valves & Gates	3	6	1	430,000	2047	
Replace Cabinet Roof & Paint	4	5	1	50,000	2047	
Replace Valves & Gates	4	5	1	330,000	2047	
Replace Roof & Paint Building	8	7	6	500,000	2047	
Replace Valves and Gates	8	7	6	970,000	2047	67,400,000
Replace Annode Beds	1B	8	2	24,000	2048	67,400,000
			30-year Total (unescalated)	$67,400,000		

6.7 2020-2022 CIP PROJECTS AND BUDGET

This section recommends projects to begin planning for implementation immediately. In most cases a significant expenditure is necessary to prepare for construction and the construction cost is excluded from the listed budget. While the CIP budget lists the entire spend for the year of implementation, recommendations in this section are only for major engineering efforts or high-impact small projects. While the majority of the spend is anticipated to occur in the first year (2020-2021), it is likely that large efforts will have significant expenditure in the second year (2021-2022) as well. For major capital projects, one-half of the engineering and administrative costs is assumed to be required to complete design and permitting.

6.7.1 PUMPING PLANT 8 MAJOR PLANT REPLACEMENTS AND PIPELINE REPLACEMENT

Replacement of the poorly-performing components at Plant 8 is considered the District's top priority in this CIP. Design should begin to allow replacement as soon as possible during the next possible dry season. The projects should be designed concurrently so the hydraulic considerations the pump and pipeline replacement have on each other can be coordinated. The anticipated budget to complete design and permitting for both efforts is $1,550,000.

6.7.2 PUMPING PLANT 5 RELOCATION – PRELIMINARY DESIGN

It is anticipated that Plant 5 will be reconstructed in a new location. Significant progress or completion of design will increase the likelihood the District can secure external funding from USACE under the NLIP or other sources. If external funding is not secured, the new plant can be constructed when this aging plant requires replacement. While the anticipated budget to complete design and permitting is $900,000, the recommendation is to perform preliminary design for approximately $400,000 over the first two years.

6.7.3 PUMPING PLANT 1B ANTI-CAVITATION PLATES

While a small project, implementation can significantly reduce the accelerated wear on the pumps, extending the life of these high-value assets. Early implementation will also allow determination of how urgent construction of baffles to reduce cavitation on these pumps is, potentially allowing delay or elimination of the more significant Construct Baffles to Separate Pumps project. To minimize cost, this project is recommended to be implemented concurrent with the Motor Clean and Bake and Pump Inspection under the life cycle maintenance program. It is recommended that the 1B pumps be the first evaluated under this program, with three (3) motors and pumps be removed in consecutive summers and the anti-cavitation plates be welded to the bottom of the pump bowls. The anticipated budget to implement is $60,000.

6.7.4 CULVERT AND DRAIN CONDITION ASSESSMENT AND REPLACEMENT PLAN

A yearly budget for life cycle replacement of culverts and drains is included based on anticipated unit costs. However, no evaluation of the current condition of these assets including which might need urgent replacement has been performed; uniform replacement was assumed. It is recommended that

each of these nearly 1,000 total assets be assessed to determine a replacement schedule and budget based on actual conditions and need. The anticipated budget to complete this plan is $150,000.

6.7.5 ASSET MANAGEMENT PROGRAM

Over the first two years, efforts to kick off the program are recommended. While the estimated budget to initially develop an asset management plan is $1.5M, over the first two years initial steps to start the program are budgeted. An initial budget of $500,000 to develop the asset inventory is recommended.

6.7.6 PUMPING PLANT 1A ENVIRONMENTAL SURVEY

Plant 1A contains several substances that may contain lead, asbestos, or other contaminants that are hazards to personnel and the environment. If the plant remains inactive, the hazard to workers inside the building is minimal. Discussions with operations indicate the paint peeling off the intake pipes or building is unlikely to contain lead or other hazardous chemicals. However, if hazardous substances are contained in the peeling paint, the substances are potentially being released to the surrounding environment and waterways. The approximate cost to prepare an environmental survey, which includes sampling for lead, asbestos, and other substances, results, and an estimate of abatement costs, is estimated at $15,000; this amount is included in the $180,000 Lead and Asbestos Abatement project budget but this portion is recommended for early implementation. The survey is recommended as a risk-mitigation measure which will also provide a more accurate estimate of abatement costs to make Plant 1A upgrades safe to implement.

6.7.7 MOBILE GENERATOR FOR PLANTS 2, 3, AND 5

Availability of backup power sources is a key factor to increase the reliability of plants. A mobile generator able to serve several of the smaller plants would significantly reduce the impacts of local power outages, providing the District the ability to operate an additional pump station. Multiple lightly used generators in the 1 MW range were on the market as of June 2020; evaluation of and potential purchase of the equipment slightly earlier than planned at a reduced cost is included in the initial budget.

6.7.8 NET 2020-2022 RECOMMENDED COST

The total cost to implement the work recommended in for 2020-2022 is shown in Table 6-7 below:

Table 6-7 – CIP 2020-2022 Cost Summary

Program Item	Year 1 Cost
Pumping Plant 8 Major Plant Replacements and Pipeline Replacement Engineering[1]	$1,550,000
Pumping Plant 5 Relocation – Preliminary Engineering	$400,000
Pumping Plant 1B Anti-Cavitation Plates	$60,000
Culvert and Drain Condition Assessment and Replacement Plan	$150,000
Asset Management Plan	$500,000
Plant 1B Environmental Survey	$15,000
Mobile Generator for Plants 2, 3, and 5	$575,000
2020-2022 Expenditure	$3,250,000

Section 7

Funding Plan

In May 2020, the District retained NBS to develop a comprehensive financial plan for the District. The proposed comprehensive financial plan will detail all District revenue sources, expenditures, reserves, capital improvement costs, repair and replacement costs and net revenue requirements. NBS will develop a 20-year financial projection model that will serve as a financial "roadmap" for the District. NBS will incorporate the plans for new facilities, infrastructure improvements, and asset replacement plans identified in this 2020 CIP Update into the comprehensive financial plan. NBS will evaluate the timing, costs, and available reserves needed to fund the proposed CIP and will develop approaches to funding CIP needs, which may include an appropriate balance between debt-funded and cash-funded projects.

Appendix A

CONDITION ASSESSMENT REPORT

KJELDSEN SINNOCK NEUDECK
CIVIL ENGINEERS & LAND SURVEYORS

Stephen K. Sinnock, P.E.
Christopher H. Neudeck, P.E.
Neal T. Colwell, P.E.
Barry O'Regan, P.E.

2433-0010

FILE MEMORANDUM

January 23, 2020

To: Kevin King, General Manager, Reclamation District 1000

Subject: Condition Assessment Report

Project: Reclamation District No. 1000 Capital Improvement Plan Update

From: Kristy Chang, PE
Bill Worrall, PE

Review: Barry O'Regan, PE

1.0 OVERVIEW AND PURPOSE

The purpose of this memorandum is to review the existing characteristics of key assets in the Reclamation District No. 1000 (District) inventory, and assess the general condition of each identified asset. Per District direction, electrical and SCADA assessments have been excluded. This report will form much of the basis of the Capital Improvement Plan (CIP) for the District, for which this assessment is performed.

2.0 ASSESSMENT APPROACH

The condition assessment process comprised of three phases:
1. Initial Preparation and Discussion of Key Assets
2. Field Assessment
3. District Staff Interviews

An initial kickoff meeting was held on December 2, 2019. District staff, KSN staff, and District engineering staff were present to discuss the objectives of the new CIP project, including the District's key assets and concerns with the operation and maintenance. It was identified that there are numerous ongoing projects with modifying and improving District assets as part of the Natomas Levee Improvement Program (NLIP).

A field assessment meeting was then held on December 11, 2019, where Bill Worrall and Kristy Change of KSN were accompanied by Tony Del Castillo of District Operations to visit the District pumping plants, corporation yard, and various key sites in the District.

2.1 GENERAL EVALUATION CRITERIA

The general criteria that were evaluated for each District asset include the following:
1. Physical condition
2. Operational and maintenance deficiencies

3. Relative risk

Physical condition evaluates whether parts of the asset are damaged, the extent of the damage, age, and maintenance needs of the asset.

The operational and maintenance deficiencies category evaluates the ability of operations staff to safely operate and maintain the asset in good working order.

Relative Risk is a judged level of likelihood the Plant will not performed to its design criteria in the next several years based on the initial findings of the assessment.

3.0 SUMMARY OF FINDINGS

The portions of the District system that were evaluated include all of the District's exterior and interior pumping plants, the District exterior and interior levees, and canals. Portions that are excluded from the scope of this report are the electrical and SCADA elements of District assets.

3.1 PUMPING PLANTS

There are eight pumping plants under the jurisdiction of the District that are used to relieve storm and floodwaters from within the District.

3.1.1 Plant 1A

Plant 1A is located near District headquarters, and is part of Pumping Plant 1. It was constructed in 1915 as the first pumping plant in the District. Currently, this plant is used only as a backup if all the other pumps in the District are not enough.

Physical Condition

There are four (4) horizontal pumps in Plant 1A housed inside a two-story building, alongside the necessary electrical components. The pumps are shown in ***Figure 1***.

Figure 1 - Pumping Plant 1A Pumps

The pumps are generally believed to be in good shape, showing no visible abnormal wear. Piping, where visible, appears to be in good condition. However, the station has not been operated in at least 10 years, so its ability to serve as a backup system is not assured.

The intake leading to the pumps is preceded by both manual bar screens and an automatic chain screen. The four pumps lead to two concrete tunnels, that then transition into four arch tunnels where four (4) wooden flap gates and four (4) manual cast iron slide gates are placed. The discharge goes through the levee with minimal elevation difference.

The paint coating the pumps and several pipes and other appurtenances appear to be original or of vintage that likely contained lead-based paint. Some lines may also have insulation that contains asbestos. Because the plant has not been operated in several years, the potential hazard is considered low, but if the plant is to be brought up to standard, testing for lead and asbestos content and subsequent mitigation would be a high priority. In addition, the exterior paint on the building is in poor condition, peeling freely and exposing the paint or primer underneath. Evaluation of the potential hazard posed is considered a high priority because it may release lead to the environment.

The pumps are manual start, and have some difficulties with starting due to low head caused by the lack in elevation difference of the pump and the discharge. The plant must be staffed for startup and then continuously during all operational hours. The instrumentation and control system must be considered substandard given that the plant requires a crew for startup and operation. Additionally, we understand that the existing electrical system can only power a total of 8 pumps at the same time between Plants 1A and 1B.

Capacity, Operations, and Maintenance
The capacities of the Plant 1A pumps are shown in ***Table 1*** below.

Table 1 - Plant 1A Pumping Capacity

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	600	2,400v	136	621
2	650	2,400v	181	
3	600	2,400v	152	
4	650	2,400v	152	

Security
Both plants 1A and 1B are surrounded by a single security fence. Access is adequately controlled to all portions of the plant including the intakes, electrical and instrumentation, and pumps.

Relative Risk
This pumping plant is considered a backup plant, and is not run on a regular basis. It is only run if all the other pumps in the District cannot keep up with draining the canals. While being a backup system reduces its criticality, its reliability is questionable, and the resources to operate the plant may not be available during emergency conditions if the plant is needed; upgrading of the electrical and instrumentation system should be considered.

3.1.2 Plant 1B

Plant 1B is the other part of Plant 1, and is the main plant that is run on a regular basis. Plant 1B is located just north of Plant 1A. It was first constructed in 1959, and then reconstructed in 2003.

Physical Condition
There are six (6) vertically-oriented mixed-flow pumps located outside its electrical building, as shown in ***Figure 2*** below.

Figure 2 - Pumping Plant 1B Pumps

These pumps and visible pipe are in good condition, and are regularly maintained by the District. The intakes to these pumps are screened with automatic bar screens shown in ***Figure 3***.

Figure 3 - Pumping Plant 1B Intake Screens

The pumps discharge over the levee adjacent to Plant 1 into separate welded steel pipes to the Sacramento River through a concrete outfall structure fitted with flap gates. Siphon breaker valves are installed near the top on the water side. We understand that the US Army Corps of Engineers (USACE) is evaluating the existing tunnels as part of the Natomas Levee Improvement Project (NLIP) and will issue a report on their condition in upcoming months. Any improvements to the tunnels are assumed to be funded under the NLIP.

In 2012, a diesel generator was installed inside the plant building. The tankis relatively limited in capacity. With all the pumps running, the generator can support the plant for approximately 8 hours of runtime.

Figure 4 - Pumping Plant 1B Generator

The electrical and instrumentation components appear to be in good condition with no visible damage and are housed in a building protected from the elements.

Security
Both plants 1A and 1B are surrounded by a single security fence. Access is adequately controlled to all portions of the plant including the intakes, electrical and instrumentation, and pumps.

Capacity, Operations, and Maintenance The capacities of the Plant 1B pumps are shown in ***Table 2*** below.

Table 2 - Plant 1B Pumping Capacity

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	400	2,400v	100	600
2	400	2,400v	100	
3	400	2,400v	100	
4	400	2,400v	100	
5	400	2,400v	100	
6	400	2,400v	100	

The intake screens are functioning well, but the chains that rotate the automatic cleaners are needing replacement approximately every 10 years due to wear and tear.

Relative Risk

Plant 1B is one of the most important plants in the District, due to its location at the end of the Main Drain. The plant appears to be in good operating condition. The risk of failure of this plant is considered low since all components are in good working order.

3.1.3 Plant #2

Plant 2 is located on the western side of the District at the end of the North Drain Canal. The plant was originally constructed in 1959, reconstructed in 1976, and then rebuilt and relocated in 2014.

Physical Condition

There are two (2) vertically-oriented mixed-flow pumps and one (1) backup pump in Plant 2 located outdoors, with the electrical and instrumentation components housed in an adjacent building. The pumps are shown in ***Figure 5*** below.

Figure 5 - Pumping Plant 2 Pumps

Like Plant 1, Plant 2 has the same automatic bar screens operating with chains. Plant 2 also has connections for a portable generator, should the need arise. With the latest reconstruction, cathodic protection was added for the pumps' discharge pipes. Due to the recent reconstruction, everything at Plant 2 is still in excellent condition.

The electrical and instrumentation is housed in a cabinet with an overhang and shows no visible signs of unusual wear.

Security
New fencing was installed with wire atop, limiting access to the site, but the fabric installed is not anti-climb.

Capacity, Operations, and Maintenance The capacities of the Plant 2 pumps are shown in ***Table 3*** below.

Table 3 - Plant 2 Pumping Capacity

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	400	2,400v	80	120
2	250	2,400v	40	

Relative Risk
Plant 2 is in fairly new condition and has minimal risk of failing.

3.1.4 Plant #3

Plant 3 is located northwest of Plant 1, connecting the West Drain. It was originally constructed in 1939, and then modified with increased capacity in 2001.

Physical Condition
There are four (4) vertically-oriented mixed-flow drainage pumps, two (2) small irrigation pumps, and one (1) bay for future pump installation in Plant 3 located outdoors, with the electrical components housed in a building adjacent. The pumps are shown in ***Figure 6*** below.

Figure 6 - Pumping Plant 3 Pumps

The pumps discharge to a manifold structure to a single pipe leading across the levee to the Sacramento River.

This plant has no connection for a portable generator at present.

The plant is in fairly good condition, but is currently under plans to be relocated by the USACE as part of the NLIP, replacing the pumps and the manifold with separate discharge pipes. The replacement plant will be similar to Plant 2.

The electrical and instrumentation is housed in a separate building protected from the elements and appears capable of supporting the required service until the pump station is replaced.

Security
The building site is fenced but access to the pump platform is not limited.

Capacity, Operations, and Maintenance The capacities of the Plant 3 pumps are shown in ***Table 4*** below.

Table 4 - Plant 3 Pumping Capacity

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	200	2,400v	38	196
2	200	2,400v	38	
3	300	2,400v	70	
4	200	2,400v	50	

The pump capacity is currently planned to be expanded by the USACE.

Relative Risk
This plant is one of the main drainage points for the Sacramento International Airport. It also serves a sizeable urban area nearby. Therefore, the criticality of this plant is relatively high. Without a generator hookup, the risk of failure exists, but the new upgrades will add a new connection for a portable generator. The Plant appear capable of performing until the replacement plant is in place, at which time the risk will be considered low.

3.1.5 Plant #4

Plant 4 is the northernmost plant in the District, at the end of the North Drain. This plant was originally constructed in 1964, and reconstructed in 1986.

Physical Condition
There are three (3) vertically-oriented mixed-flow pumps in Plant 4 that discharge into the Natomas Cross Canal. This plant is relatively outdated, but due to impacts of the NLIP, it is planned to be entirely replaced. The plant will be removed in 2020 and setback from the new levee.

Of particular note is that the grating inside the pump station may have limited weight bearing capacity between sections of grating. It is recommended that no more than one person enter the pump station at a time for safety reasons unless the grating is upgraded.

The electrical and instrumentation is housed within the pump station building protected from the elements and appears capable of supporting the required service until the pump station is replaced.

Security
Access to the current plant which contains the pumps is currently within a locked building, so existing security is strong.

Capacity, Operations, and Maintenance The current capacities of the Plant 4 pumps are shown in ***Table 5*** below.

Table 5 - Plant 4 Pumping Capacity

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	300	480v	76	306
2	400	480v	115	
3	400	480v	115	

The plant is to be removed and replaced with an entirely new plant with the same layout and capacity as Plant 2. Power will be changed to 2,400 volts consistent with the other new plants and standard the District is moving towards. Ultimately, the capacity may be slightly reduced, but the pumps will have enough power to pump over the new levee 200-year elevation.

Relative Risk
Plant 4 will be replaced in the near future, which puts this plant at a low risk of failure after construction. The plant appears fully capable of providing the necessary service until replaced.

3.1.6 Plant #5

Plant 5 is located at the end of the West Drain near the Sacramento Airport. This plant was originally constructed in 1965 to handle additional runoff from the airport, along with Plant 3.

Physical Condition
There are three (3) vertically-oriented mixed-flow pumps in Plant 5 that discharge into the Sacramento River. The intake screens are manual bars. This plant is older, and shows sign of corrosion on the pipelines, but is slated to be removed and replaced at a setback location as part of the NLIP.

The electrical and instrumentation is housed in a separate building protected from the elements and appears capable of supporting the required service until the pump station is replaced.

Security
The plant is clearly visible from Garden Highway with access to the pump platform, while the are electrical and instrumentation is housed inside the existing building.

Operational and Maintenance
The current capacities of the Plant 5 pumps are shown in ***Table 6*** below.

Table 6 - Plant 5 Pumping Capacity

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	100	480v	19	57
2	100	480v	19	
3	100	480v	19	

Like Plant 4, this plant will be replaced with plans modelled after Plant 2, due to the plant being located too close to the newly upgraded levee. The plan is to provide an empty space in the pump deck for an additional pump to allow additional capacity resulting from more rapid runoff from Sacramento Airport expansion activities. The airport has tentatively agreed to provide funding for the additional capacity if needed. The airport has reportedly greatly increased its stormwater storage capacity which may defer the need for additional capacity at Plant 5 for several years.

Relative Risk
Plant 5 is one of the main pumping plants serving the Sacramento Metro Airport. Plant 5 is a relatively critical facility due to serving major infrastructure. Currently, it appears capable of serving for 5-10 more years until replaced. Once replaced in the near future, the risk of failure will be considered minimal. Due to its age, if the plant is not replaced under the NLIP, the associated risk may rise and will need to be re-evaluated; the primary concerns would be the electrical and instrumentation systems.

3.1.7 Plant #6

Plant 6 is located on the east side of the District approximately one mile north of Elkhorn Boulevard. It was constructed in 1974, and updated in 1997., Due to complaints of residents of the area across the Natomas East Main Drainage Canal (NEMDC) that use of this plant causes flooding, this plant is the last one called upon for drainage purposes, even though the restrictions at downstream Sacramento County Pump Station D15 are the actual cause of flooding. This plant has not been operated in at least 10 years.

Physical Condition
On the site visit, the lock on the pump building was rusted shut, and staff could not safely inspect the condition of the pumps except from a distance. The pumps appeared to show some wear. The electrical components, housed in a separate building, are checked monthly by District staff.

There are manual bar screens at the intake of the plant that appear to be in good condition.

Security
Fencing protects access to the plant electrical and instrumentation, but access restrictions do not prevent public from accessing the pump deck; at the time of the site visit, a person was fishing from the pump deck.

Capacity, Operations, and Maintenance There are four (4) vertically-oriented mixed-flow pumps at Plant 6 that discharge to the NEMDC, and their capacities are shown in ***Table 7*** below.

Table 7 - Plant 6 Pumping Capacity

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	125	480v	28	180
2	200	480v	42	
3	300	480v	60	
4	250	480v	50	

These pumps are unused and untested, so there is a possibility that the pumps would not run if needed.

Relative Risk

This plant is not used, as Plants 2, 4, and 8 are draining the canals in the area in place of Plant 6. Due to the lack of maintenance on the pumps and motors and lack of confirmation that the plant is operational beyond the electrical connections for several years, the reliability of the plant is questionable.

3.1.8 Plant # 8

Plant 8 is located on the east side of the District, west of Northgate Boulevard. The plant was originally constructed in 1983, and modified in 2001 for increased capacity, a new electrical and instrumentation building, and automatic trash racks.

Physical Condition

There are nine (9) vertically-oriented mixed-flow pumps, with two of them being redundant large pumps, located outdoors. These pumps are shown in ***Figure 7*** below.

Figure 7 - Pumping Plant 8 Pumps

The motors, pumps, pipes, and valves outwardly appear in fairly good condition. The fair to poor condition of the pipe coatings was noted, however the pipes, which are most likely to have associated poor performance, did not visually show signs of excessive corrosion. If additional records on the condition are available, it is recommended they be examined later in developing the capital program. Tony Del Castillo noted there is an anode system and the valve boxes marking each location were found the top of the hill just inside the fence. He also noted that cathodic protection is monitored and tested at each location by a consultant.

Trash racks are installed in front of a small forebay before the pumps and appear to be in good condition.

The electrical and instrumentation components are protected inside an alarmed building and appear to be in good condition. The plant has capability for connecting a portable generator.

Security

Access from Northgate Boulevard is limited by fencing. The plant is normally accessed by driving past a locked gate several hundred yards to the west on an access road. The electrical and instrumentation is housed in a locked building with alarm. However, positive physical barriers to the pumps and outlet piping from the west does not exist.

Capacity, Operations, and Maintenance

The capacities of the Plant 8 pumps are shown in ***Table 8*** below.

Table 8 - Plant 8 Pumping Capacity

Pump Unit No.	Horsepower	Service Voltage	Capacity (cfs)	Plant Capacity (cfs)
1	700	480v	105	
2	700	480v	105	
3	300	480v	48	
4	200	480v	33	
5	300	480v	48	779
6	700	480v	105	
7	700	480v	105	
8	500	480v	115	
9	500	480v	115	

This plant has the highest discharge of any plant in the system. In general, pump units 3, 4, and 5 are run the most often, and the larger pumps are only used in high water events, due to the high frequency of on and off cycling when the larger pumps run. There is a hookup for a portable generator in case of power outages; and the District is considering converting two of the large pumps to diesel or natural gas.

Relative Risk

Plant 8 is one of the most important facilities in the District due to its size and location in the urban area of Natomas. The North Natomas development was the trigger for the expansion of Plant 8, and serves one of the most densely populated areas in the District, so it must often handle rapid runoff.

No definitive signs of increased risk were identified during the assessment, but the condition of the coating for the outfall pipe, valves, and motors, combined with the duration since construction, warrant further evaluation of the risk as the CIP is developed. Criticality of this plant also makes reliability/backup power upgrades desirable.

3.2 INTERIOR PUMPING STATIONS AND CANALS

The District operates and maintains two pumping stations in the interior of the District. These pumping plants pump water from urban and irrigation canals into the District's Main canals.

3.2.1 San Juan Pumping Station

The San Juan Pumping Station is located on the right bank of the West Drain Canal south of San Juan Road.

Physical Condition
There are two hydraulic (2) pumps housed inside the plant building alongside the electrical and instrumentation that pump water from the sub drain to the West Drain. The pumps, power supply, and electrical appear to be in good condition.

Security
The pumps, electrical, and instrumentation are housed inside a building, providing adequate protection. Locked gates prevent motorized travel along the top of the canal, but joggers can easily gain access to the site and it is clearly visible from San Juan Road. Despite its relatively accessible location, the security measures protect most critical components.

Capacity, Operations, and Maintenance The two hydraulic pumps cycle between each other, and during the summer months, there is a gate that allows water from the main canal back into the sub drain for irrigation purposes.

There are no operational or maintenance deficiencies identified by the District or inspection of this pump station.

Relative Risk
San Juan Pumping Station serves a relatively large area in the southwestern portion of the District, but has no particular deficiencies that cause a risk of failure. Failure would likely result in localized flooding at the intersection of San Juan and El Centro during rain events. The risk of failure appears low for this pumping station.

3.2.2 Riverside Pumping Station

The Riverside Pumping Station is located just north of the San Juan Pumping Station, and has identical setup.

Physical Condition
This plant is identical to San Juan Pumping Station, albeit smaller due to serving a smaller area. The condition of the plant is similarly good, and there are not particular signs of aging or damage.

The electrical and instrumentation is housed inside the pump station building protected from the elements and appears to be in good condition.

Security
The pumps, electrical, and instrumentation are housed inside a building, providing adequate protection. Locked gates prevent motorized travel along the top of the canal but joggers can easily gain access to the site. Despite its relatively accessible location, the security measures protect most critical components.

Operation and Maintenance
There are no operational or maintenance deficiencies identified by the District for this pump station.

Relative Risk
Riverside Pumping Station serves only a small development nearby, so the relative consequence of failure is low. The pump station appears to be in good condition with low probability of failure.

3.2.3 Interior Drainage Canals

The major interior canals in the District include the Main Drain, North Drain, West Drain, and East Drain.

Physical Condition
The drainage canals have steep vertical walls, which over time have eroded, particularly in the Main Drainage Canal. Access is also limited due to effectively complete development in the most critical areas of the basin.

Operation, Maintenance, and Capacity
One of the main concerns with the canals is vegetation growth, which results in clogging the pump intakes at the trash racks and insufficient flow to pumps. As a result, vegetation maintenance is considered a high priority.

Structurally, due to the erosion issues, the District must continuously mitigate using rock slope protection. The West Drainage Canal through Fisherman's Lake has conveyance issues due to heavy sedimentation and vegetation growth. A continual problem is that the canals are used for irrigation during summer months, and typically the water levels are higher during the irrigation season than the wet season, providing an inadequate window to drain the canals and perform complete repairs.

Relative Risk
The Main Drainage Canal is critical infrastructure, and limits what is conveyed to the pumps if there are issues. Similarly, the West Drainage Canal is the main drainage point for the Sacramento International Airport. Consequence of losing conveyance capacity in the canals and limiting pumping capacity makes canal maintenance a high priority.

3.3 EXTERIOR LEVEES

The Natomas basin is surrounded by project levees that have undergone recent improvements, or are planned to be improved by the NLIP, or the USACE.

Physical Condition

Most of the levee reaches along the Sacramento River have been improved as part of the NLIP. The other portions of the levee are to be improved by the USACE to be at least a 200-year standard. When the NLIP is complete, the levees are assumed to be in excellent condition and therefore no condition assessment is made except as noted below.

In addition to the surrounding levees, there are five (5) culverts that run under the Pleasant Grove Creek Canal (PGCC), which routes north into the Natomas Cross Canal. These culverts are known to have been constructed in a manner that does not meet current standards, in poor condition, and have difficult maintenance access. The culvert may not be replaced as part of the USACE's levee improvement program.

Operations and Maintenance In the northeast portion of the Natomas Basin, there is a significant gap in the levee, named the Sankey Gap, shown in ***Figure 8***. The gap is vulnerable to high waters in the PGCC, and should be considered for closure, either in emergency situations with material staging areas, or a permanent construction solution. Our understanding is that to be closed, capacity in the upper reaches of either the NEMDC or Natomas Cross Canal would have to be significantly augmented to prevent upstream flooding in the PGCC when the water would otherwise flow through the gap. The Sacramento Bypass and Fremont Weir widening may significantly decrease the likelihood of stormwater entering the basin through the Sankey Gap and thus the value of any protection measures.

Figure 8 - Sankey Gap

Relative Risk
The exterior levees are an important part of the District, protecting the Natomas Basin from floodwaters outside of the District. The Natomas area continues to develop, and the importance of flood protection in the District increases as a result. The current plans to improve the levees will reduce the relative risk

of failure for these assets. Maintenance activities that allow effective monitoring should be considered a priority in District budgeting. Until the completion of the NLIP, however, capital improvements to the exterior levees funded by the District are not considered in this report.

3.4 CORPORATION YARD

The District's Corporation Yard is located on the east side of the Basin on Elkhorn Boulevard, holding the District's equipment and shop area. This yard is the intended home for the District's SCADA system.

Physical Condition
The Yard is in good condition, and the District has been making improvements by paving the area and expanding the Yard for the purpose of holding more equipment.

Security
Most of the facilities are located inside of existing structures with locks, and the entire area is secured with a fence and locking gates.

Operational and Maintenance
The Yard is to be expanded another three acres to provide storage space.

Relative Risk
The Corporation Yard is one of the District's centers of operation, but the yard is in good shape and is being improved upon at the moment. The main concern is that the yard or alternative locations be adequately stocked with levee maintenance and flood mitigation/fighting materials, or that the District's supply of these at other locations be adequate. The District's efforts should focus on maintaining an adequate supply of equipment and materials for operations at the site to minimize risks elsewhere in the District.

Appendix B

METHODOLOGY AND OPINION OF PROBABLE COSTS

Appendix B

Cost Estimating Methodology

Opinions of probable cost, generically referred to as cost estimates, were made for three major categories:

- Pumping Plant Capital Upgrades and Replacements
- Major Pumping Plant Component Maintenance
- Culvert and Drain Replacement.

The capital upgrades and replacement is the focus of this CIP and the greatest effort in determining appropriate budgets for capital upgrades and replacement was spent in this category. Major maintenance was a combination of recent District experience, discussion with specialty vendors, and industry experience. Culvert and drains were evaluated as a desktop exercise. The methods are discussed in more detail below.

1.1 PUMPING PLANTS

The opinions of probable cost for pumping plants were derived from multiple sources and compiled with the same methodology for each plant. Opinions were produced to address both one-time and recurring capital improvement costs over a roughly 30-year period. Costs for each component are shown individually and unescalated to allow implementation on varying schedule that still integrates with the financial plan that is being developed. Having estimates for each component also allows efforts that are recommended to be bundled for efficiency to be broken up and implemented on different schedules if District needs change.

1.1.1. COST ESTIMATE UNIT PRICE ITEMS

Two sources of information were heavily utilized in producing cost estimate unit price items to account for near term and recurring capital improvement costs at RD 1000 plants over a roughly 30- year period:

1. Nine (9) Tabulated construction bids from June of 2012 for work done at Pumping Plant 2
2. 2019 bid sheet from the Army Corps of Engineers for upcoming construction at Pumping Plant 4.

The integration of each is discussed below.

For the Plant 2 data, an average unit price from the collection of bids was used to produce each for each major component. Where certain individual bids were unreasonably higher or lower than the average unit price, that specific bid was not included in the cost estimate item. A CCI factor of 1.26 was applied to each bid item to project the unit price from June of 2012 to July of 2020 for the component. All component opinion of probable costs presented assume a CCI value of July 2020.

In general, the unit price items in the Plant 4 bids were larger than other reference sources. In order to address this, pumping plant 2 unit bid price averages were escalated to the June 2019 index using a CCI factor of 1.21, and 12 like bid items were compared to pumping plant 4 unit bid price items. On average, the Pumping Plant 4 unit bid price items were 65% higher than the escalated Pumping Plant 2 unit bid price items. Pumping Plant 4 unit bid price items that were used in producing cost estimate items were escalated to July 2020 CCI, then scaled down by a factor of 1.65 to normalize with the Plant 2 data.

Because Plants 2 and 4 only have hookups for generators, the only District data available is from the Plant 1B generator installation in 2012. The purchase for the generator was escalated to 2020 and confirmed with the supplier, Caterpillar. This unit cost was then applied for Plant 8, where two (2) equivalent-capacity generators are recommended because generators above 3.5 MW are significantly more expensive than multiple generators up to 2.5MW capacity. For the smaller generators at Plants 2, 3, 4, and 5, direct estimates were received from suppliers. For all plants, an installation factor including a protective structure was applied.

Other sources of information for cost estimate items include recent bids from other projects, information gathered from online suppliers, or estimates requested specifically for the purpose of this CIP report.

1.1.1.1. Cost Estimate Presentation

Opinion provided to address near term and recurring capital improvement costs at pumping plants are presented in a simplified manner, with many different components grouped into certain cost estimate items and presented as a single unit cost. Although the same methodology is followed for all pumping plants, specific pumping plants may contain more or less items, depending on the recommendations presented to achieve optimal level of service. Table 1 explains the different components grouped together for each cost estimate item. Cost estimate items not gathered from construction bids are applied an installation cost factor.

An administrative cost factor was also applied. For capital project requiring design, the administrative factor is 25%. For capital projects the District can contract directly with no or minimal design, the administrative factor is 15%. For major maintenance items, the administrative factor is 10%.

In general, all total costs presented are rounded up to reflect no more than three significant digits.

Table 1 - Cost Estimate Item Breakdowns

Cost Estimate Item	Component or Service Item
New outfall structure / New intake structure	Outfall / intake structure
	Cast in place foundation
	Class 2 AB
	3/4" drain rock
	Geotextile
	Railing
	Soil fill
New walkway for workers	Pump catwalk/steel decking
	Access stairway and handrails.
	Structural steel members
Replace instrumentation	Pedestals, panels and controllers
	Replacement of conduits and wires
	Installation of SCADA and PLC
	Replacement of electrical equipment and pads
New electrical building	New building costs
	Cast in place building slab
	Building plumbing
Discharge pipe	Discharge pipe
	Access manholes
	Gates and valves
	Pipe supports
	Pipe adapters
	Meters and vaults
	Soil fill
	Pipe bedding material

Recurring capital improvement costs are based off of initial construction/implementation dates for capital improvement items, and appropriate replacement schedules based on the life cycle of the item. The life cycle of specific items and the construction/implementation date for when life cycles begin was determined through condition assessment site visits conducted by KSN staff and conversations with RD 1000 district representatives. All life cycle costs are presented throughout an estimated 30-year time period looking forward from 2021, the initial year small items can realistically be implemented under this CIP. In each case, the installation year for the component is the year that determined the first life cycle replacement; when a second or third replacement falls under the planning cycle of this document, it is included in the tabulation. There is no readily visible presentation of second or greater life cycle replacements in the spreadsheets All life cycle costs are presented in terms of un-escalated July 2020 prices, with no CCI value applied to future costs.

~~1.2~~2.2 MAJOR MAINTENANCE

Major maintenance item opinions of probable cost were determined using the following methods:

- Recent costs when services were performed for District
- Quotes from vendors to perform the services

- Typical industry unit costs.

The dive inspections are an example where the District recently contracted to have intake screens inspected and debris, mostly vegetation, removed in advance of the upcoming season. For this item, the cost for the Plant was normalized to the average screen size to determine an average cost and frequency.

For items like the motor clean and bake and pump inspection, data on clean and bake costs was taken and compared against current vendor costs that include removal of the pump and motor and transport of the pump to a site for evaluation. Assumptions include that at least three motors and pumps will be concurrently evaluated to spread the cost of mobilization and a crane over the multiple units.

The resulting average frequencies and average service costs were then integrated to develop an average annual budget. It is important to note that the budget will vary from year to year depending on which major items need to be addressed. Some years may have minimal requirements whereas others may have costs approaching double the annual budget.

1.3 CULVERT AND DRAIN REPLACEMENT

The culverts and drains were estimated as a desktop exercise, as the scope did not include collecting data on condition and install years was not available. The effort was done to project a 30-year cost for budgeting with the assumption that replacement costs will be relatively uniform over the 30-year planning horizon, which needs to be determined during future efforts.

- The number of each respective size culvert and drain was tabulated from GIS data. The average length of culverts and drains was then determined. The total cost to replace culverts and drains was then calculated using the following:

- Multiplying the length by unit cost based on diameter. The same unit cost was used for both drains and culverts based on typical industry experience. Where box culverts exist, an equivalent pipe size unit cost was assumed.

- Adding a mobilization cost using expected equipment and crew to both culvert and drain replacement.

- Assuming that all culverts cross roads and highways, a traffic control setup and delay time using expected equipment and crew was added.

The resulting net costs for culverts and drains were then divided by expected useful lives of 50 and 60 years, respectively, resulting in an annualized average replacement cost for each. These annualized costs were then combined into an average annual cost and then to a 30-year program cost.

Pumping Plant 1A Capital Improvement and Replacement Cost Estimate

Item	Quantity	Unit	Cost/unit	Install factor	Construction Subtotal	Administrative Factor	Total	Construction/ Implementation	Life Cycle (Years)
Intake Screens									
Chain Replacement	1500	FT	$ 12	1	$ 18,255	1.15	$ 21,000	2041	10
Unit Replacement	2	EA	$ 260,000	1	$ 520,000	1.25	$ 650,000	2060	40
Install New Automatic Bar Screems	2	EA	$ 260,000	1	$ 520,000	1.25	$ 650,000	2035	40
Replace instrumentation and controls; Install PLC and SCADA	1	LS	$ 1,380,000	1.5	$ 2,070,000	1.25	$ 2,600,000	2031	20
Cathodic Protection Rectifier Unit	2	EA	$ 3,000	1.5	$ 9,000	1.25	$ 11,250	2031	20
Ventilation	1	EA	$ 2,500	1.5	$ 3,750	1.25	$ 5,000	2031	20
Backup Generator Replacement (See Plant 1B)									
Cathoid Protection Pipe Jumper Cables	1600	LF	$ 100	1	$ 160,000	1.25	$ 200,000	2097	75
Pumps and Pump Motors				1	$ -	1	$ -		
Replace Unit	4	EA	$ 650,790	1	$ 2,603,159	1.25	$ 3,260,000	2082	60
Outfalls									
Outfall Structure	1	LS	$ 293,186	1	$ 293,186	1.25	$ 370,000	2097	75
Pipes (48" WSP)	1600	LF	$ 1,400	1	$ 2,240,000	1.25	$ 2,800,000	2097	75
Install Access Maholes	4	EA	$ 9,000	1	$ 36,000	1.25	$ 45,000	2045	75
Access & Security									
Equip Fences with Anti-Climb	1000	LF	$ 46	1	$ 46,132	1.1	$ 51,000	2082	60
Building									
Paint exterior of building	1	LS	$ 60,000	1	$ 60,000	1.2	$ 72,000	2022	30
Lead and Asbestos abatement	1	LS	$ 150,000	1	$ 150,000	1.2	$ 180,000	2029	75
Pump Platform & Access	1	LS	$ 100,000	1	$ 100,000	1.25	$ 125,000	2045	75
Intake Structure	1	LS	$ 2,000,000	1	$ 2,000,000	1.25	$ 2,500,000	2097	75
Control Building Structure	1	LS	$ 216,000	1	$ 216,000	1.25	$ 270,000	2097	75
2025 TOTAL*							$ 80,000		
2030 TOTAL*							$ 260,000		
2040 TOTAL*							$ 3,520,000		
2050 TOTAL*							$ 3,710,000		

*TOTAL Indicates a running total through specified year, with total costs recurring for individual items according to life cycle years specified and construction/implementation date

Pumping Plant 1B Capital Improvement and Replacement Cost Estimate

Item	Quantity	Unit	Cost/unit	Install factor	Construction Subtotal	Administrative Factor	Total	Construction/ Implementation	Life Cycle (Years)
Intake Screens									
Chain Replacement	2200	FT	$ 12	1	$ 26,774	1.15	$ 31,000	2021	10
Unit Replacement	6	EA	$ 260,000	1	$ 1,560,000	1.25	$ 1,950,000	2043	40
Replace Power, Cathodic & Ventilation					$ 1,047,750		$ 1,330,000	2032	30
Replacement of Power	1	LS	$ 690,000	1.5	$ 1,035,000	1.25	$ 1,300,000	2032	30
Ventilation	1	EA	$ 2,500	1.5	$ 3,750	1.25	$ 10,000	2032	30
Cathodic Protection Rectifier Unit	2	EA	$ 3,000	1.5	$ 9,000	1.25	$ 20,000	2032	30
Replace Instrumentation and Controls	1	LS	$ 690,000	1.5	$ 1,035,000	1.25	$ 1,300,000	2023	20
Cathodic Protection Annode Beds	16	EA	$ 800	1.5	$ 19,200	1.25	$ 24,000.00	2028	10
Cathoid Protection Pipe Jumper Cables	700	LF	$ 100	1.5	$ 105,000	1.25	$ 131,250.00	2078	75
Convert Generator to Natural Gas	1	EA	$ 300,000	1.2	$ 360,000	1.25	$ 450,000.00	2026	30
Major Plant Replacements					$ 1,746,000		$ 2,182,500	2043	
Replace Pumps and Pump motors	6	EA	$ 91,000	1	$ 546,000	1.25	$ 682,500	2043	40
Replace Generator	1	EA	$ 1,000,000	1.2	$ 1,200,000	1.25	$ 1,500,000	2043	20
Outfalls									
Replace Valves and Gates	1	LS	$ 330,000	1	$ 330,000	1.25	$ 412,500	2028	25
Outfall Structure	1	LS	$ 518,000	1	$ 518,000	1.25	$ 647,500	2078	75
Pipes (48")	700	LF	$ 1,700	1	$ 1,190,000	1.25	$ 1,487,500	2078	75
Access & Security									
Equip Fence with Anti-Climb	1000	LF	$ 46	1.5	$ 70,000	1.25	$ 87,500	2053	50
Cameras	1	LS	$ 10,000	1.5	$ 15,000	1.25	$ 19,000	2021	10
Building									
Replace Roof and Paint Control Building	1	LS	$ 500,000	1	$ 500,000	1.25	$ 625,000	2028	25
Pump Platform & Access	1	LS	$ 200,000	1.5	$ 300,000	1.25	$ 375,000	2078	75
Intake Structure	1	LS	$ 3,000,000	1	$ 3,000,000	1.25	$ 3,750,000	2078	75
Construct Cast In Place Baffles (Plant Dewatering Included in Total)	3	EA	$ 52,000	1.5	$ 234,000	1.25	$ 760,000	2024	75
Install Anti-Cavitation Plates	6	EA	$ 5,000	1.5	$ 45,000	1.25	$ 60,000	2021	75
Control Building Structure	1	LS	$ 216,000	1	$ 216,000	1.25	$ 270,000	2078	75
2025 TOTAL*							$ 2,170,000		
2030 TOTAL*							$ 3,700,000		
2040 TOTAL*							$ 5,100,000		
2050 TOTAL*							$ 10,600,000		

*TOTAL Indicates a running total through specified year, with total costs recurring for individual items according to life cycle years specified and construction/implementation date

Pumping Plant 2 Capital Improvement and Replacement Cost Estimate

Item	Quantity	Unit	Cost/unit	Install factor	Construction Subtotal	Administrative Factor	Total	Construction/ Implementation	Life Cycle (Years)
Intake Screens									
Chain Replacement	1100	FT	$ 12	1	$ 13,387	1.15	$ 16,000	2024	10
Unit Replacement	3	EA	$ 260,000	1	$ 780,000	1.25	$ 975,000	2054	40
Power, Instrumentation & Controls, Cathodic & Ventilation					$ 1,739,250		$ 2,180,000	2034	20
Replacement of Power, I&C	1	LS	$ 1,440,000	1.2	$ 1,728,000	1.25	$ 2,160,000	2034	20
Cathodic Protection Rectifier Unit	1	EA	$ 5,000	1.5	$ 7,500	1.25	$ 10,000	2034	20
Ventilation	1	EA	$ 2,500	1.5	$ 3,750	1.25	$ 10,000	2034	20
Mobile Generator for Plants 2,3 & 5	1	EA	$ 500,000	1	$ 500,000	1.15	$ 575,000	2022	30
Cathoid Protection Annode Beds	8	EA	$ 1,000	1.5	$ 12,000	1.25	$ 15,000	2034	10
Cathoid Protection Pipe Jumper Cables	600	LF	$ 100	1	$ 60,000	1.25	$ 75,000	2089	75
Pumps and Pump Motors				1	$ -	1	$ -		
Replace Unit	3	EA	$ 228,807	1	$ 686,422	1.25	$ 859,000	2074	60
Outfalls									
Replace Valves and Gates	1	LS	$ 172,000	1	$ 172,000	1.25	$ 220,000	2039	25
Outfall Structure	1	LS	$ 518,000	1	$ 518,000	1.25	$ 647,500	2089	75
Pipes (48" HDPE)	696	LF	$ 1,000	1	$ 696,000	1.25	$ 870,000	2089	75
Pipes (34" HDPE)	440	LF	$ 800	1	$ 352,000	1.25	$ 440,000	2089	75
Pipes (42" WSP)	308	LF	$ 1,600	1	$ 492,800	1.25	$ 616,000	2089	75
Pipes (30" WSP)	296	LF	$ 1,400	1	$ 414,400	1.25	$ 518,000	2089	75
Access & Security									
Equip Fence with Anti-Climb	1000	LF	$ 46	1.2	$ 55,359	1.25	$ 70,000	2024	50
Cameras	1	LS	$ 10,000	1.5	$ 15,000	1.25	$ 19,000	2034	10
Building									
Replace and paint cabinet roof	1	LS	$ 50,000	1	$ 50,000	1	$ 50,000	2044	25
Pump Platform & Access	1	LS	$ 100,000	1	$ 100,000	1.25	$ 125,000	2089	75
Intake Structure	1	LS	$ 1,500,000	1.2	$ 1,800,000	1.25	$ 2,250,000	2089	75
Control Building Structure	1	LS	$ 216,000	1	$ 216,000	1.25	$ 270,000	2089	75
2025 TOTAL*							$ 670,000		
2030 TOTAL*							$ 670,000		
2040 TOTAL*							$ 3,120,000		
2050 TOTAL*							$ 3,300,000		

*TOTAL Indicates a running total through specified year, with total costs recurring for individual items according to life cycle years specified and construction/implementation date

Pumping Plant 3 Capital Improvement and Replacement Cost Estimate

Item	Quantity	Unit	Cost/unit	Install factor	Construction Subtotal	Administrative Factor	Total	Construction/ Implementation	Life Cycle (Years)
Intake Screens									
Chain Replacement	1450	FT	$ 12	1	$ 17,647	1.15	$ 21,000	2032	10
Unit Replacement	4	EA	$ 260,000	1	$ 1,040,000	1.25	$ 1,300,000	2062	40
Power, Instrumentation & Controls, Cathodic & Ventilation					$ 1,746,750		$ 2,190,000	2042	20
Replacement of Power, I&C	1	LS	$ 1,440,000	1.2	$ 1,728,000	1.25	$ 2,160,000	2042	20
Cathodic Protection Rectifier Unit	2	EA	$ 5,000	1.5	$ 15,000	1.25	$ 20,000	2042	20
Ventilation	1	EA	$ 2,500	1.5	$ 3,750	1.25	$ 10,000	2042	20
Mobile Generator (Included in Plant 2 estimate)	1	EA	$ -	1.5	$ -	1.25	$ -	2024	30
Cathoid Protection Annode Beds	16	EA	$ 800	1.5	$ 19,200	1.25	$ 24,000	2032	10
Cathoid Protection Pipe Jumper Cables	2350	LF	$ 100	1	$ 235,000	1.25	$ 293,750	2097	75
Pumps and Pump Motors				1	$ -	1	$ -		
Replace Unit	4	EA	$ 232,953	1	$ 931,812	1.25	$ 1,165,000	2082	60
Outfalls									
Replace Valves and Gates	1	LS	$ 343,195	1	$ 343,195	1.25	$ 430,000	2047	25
Outfall Structure	1	LS	$ 518,000	1	$ 518,000	1.25	$ 647,500	2098	75
Pipes (42" WSP)	450	LF	$ 1,400	1	$ 630,000	1.25	$ 787,500	2098	75
Pipes (48" WSP)	450	LF	$ 1,550	1	$ 697,500	1.25	$ 871,875	2098	75
Pipes (24" WSP)	450	LF	$ 1,050	1	$ 472,500	1.25	$ 590,625	2098	75
Access & Security									
Install Anti-Climb Fences	1000	LF	$ 75	1	$ 75,000	1.1	$ 83,000	2035	50
Cameras	1	LS	$ 10,000	1.5	$ 15,000	1.25	$ 19,000	2032	10
Building									
Replace and Paint Cabinet Roof	1	LS	$ 50,000	1	$ 50,000	1	$ 50,000	2047	30
Pump Platform & Access	1	LS	$ 200,000	1.5	$ 300,000	1.25	$ 375,000	2098	75
Intake Structure	1	LS	$ 3,000,000	1	$ 3,000,000	1.25	$ 3,750,000	2098	75
Control Building Structure	1	LS	$ 1,500,000	1	$ 1,500,000	1.25	$ 1,875,000	2098	75
2025 TOTAL*							$ -		
2030 TOTAL*							$ -		
2040 TOTAL*							$ 150,000		
2050 TOTAL*							$ 2,900,000		

*TOTAL Indicates a running total through specified year, with total costs recurring for individual items according to life cycle years specified and construction/implementation date

Pumping Plant 4 Capital Improvement and Replacement Cost Estimate

Item	Quantity	Unit	Cost/unit	Install factor	Construction Subtotal	Administrative Factor	Total	Construction/ Implementation	Life Cycle (Years)
Intake Screens									
Chain Replacement	1100	FT	$ 12	1	$ 13,387	1.15	$ 16,000	2032	10
Unit Replacement	3	EA	$ 260,000	1	$ 780,000	1.25	$ 975,000	2082	40
Power, Instrumentation & Controls, Cathodic & Ventilation					$ 1,739,250		$ 2,180,000	2042	20
Replacement of Power, I&C	1	LS	$ 1,440,000	1.2	$ 1,728,000	1.25	$ 2,160,000	2042	20
Cathodic Protection Rectifier Unit	1	EA	$ 5,000	1.5	$ 7,500	1.25	$ 10,000	2042	20
Ventilation	1	EA	$ 2,500	1.5	$ 3,750	1.25	$ 10,000	2042	20
Install Diesel Generator	1	EA	$ 600,000	1.5	$ 900,000	1.25	$ 1,125,000	2028	30
Cathoid Protection Pipe Jumper Cables	1200	LF	$ 100	1	$ 120,000	1.25	$ 150,000	2097	75
Cathoid Protection Annode Beds	8	EA	$ 800	1.5	$ 9,600	1.25	$ 12,000	2032	10
Pumps and Pump Motors				1	$ -	1	$ -		
Replace Unit	3	EA	$ 428,262	1	$ 1,284,785	1.25	$ 1,606,000	2082	60
Outfalls									
Replace Valves and Gates	1	LS	$ 172,000	1.5	$ 258,000	1.25	$ 330,000	2047	25
Outfall Structure	1	LS	$ 630,000	1	$ 630,000	1.25	$ 787,500	2097	75
Pipes (48" WSP)	1200	LF	$ 1,600	1	$ 1,920,000	1.25	$ 2,400,000	2097	75
Access & Security									
Install Anti-Climb Fences	1000	LF	$ 75	1.5	$ 112,500	1.25	$ 141,000	2027	50
Cameras	1	LS	$ 10,000	1.5	$ 15,000	1.25	$ 19,000	2032	10
Building									
Replace and Paint Cabinet Roof	1	LS	$ 50,000	1	$ 50,000	1	$ 50,000	2047	25
Pump Platform & Access	1	LS	$ 100,000	1	$ 100,000	1.25	$ 125,000	2097	75
Intake Structure	1	LS	$ 1,500,000	1	$ 1,500,000	1.25	$ 1,875,000	2097	75
Generator Housing Structure	1	LS	$ 216,000	1	$ 216,000	1.25	$ 270,000	2028	75
2025 TOTAL*							$ -		
2030 TOTAL*							$ 1,540,000		
2040 TOTAL*							$ 1,590,000		
2050 TOTAL*							$ 4,200,000		

*TOTAL Indicates a running total through specified year, with total costs recurring for individual items according to life cycle years specified and construction/implementation date

Pumping Plant 6 Capital Improvement and Replacement Cost Estimate

Item	Quantity	Unit	Cost/unit	Install factor	Construction Subtotal	Administrative Factor	Total	Construction/ Implementation	Life Cycle (Years)
Intake Screens									
Chain Replacement	1500	FT	$ 12	1	$ 19,000	1.15	$ 22,000	2055	10
Install New Automatic Bar Screens	4	EA	$ 260,000	1	$ 1,040,000	1.25	$ 1,300,000	2045	40
Power, Instrumentation & Controls, Cathodic, Ventilation, Valves & Gates, Pumps & Motors					$ 2,618,750		$ 3,300,000	2045	
Replacement of Power, I&C	1	LS	$ 1,280,000	1.2	$ 1,536,000	1.25	$ 1,920,000	2045	30
Cathodic Protection Rectifier Unit	2	EA	$ 3,000	1.5	$ 9,000	1.25	$ 20,000	2045	25
Cathoid Protection Pipe Jumper Cables	760	LF	$ 100	1	$ 76,000	1.25	$ 100,000	2045	75
Ventilation	1	EA	$ 2,500	1.5	$ 3,750	1.25	$ 10,000	2045	20
Valves and Gates	1	LS	$ 230,000	1	$ 230,000	1.25	$ 290,000	2045	25
Pumps and Pump Motors	4	EA	$ 191,000	1	$ 764,000	1.25	$ 960,000	2045	60
Install SCADA	1	LS	$ 100,000	1.5	$ 150,000	1.25	$ 187,500	2045	20
Cathoid Protection Annode Beds	8	EA	$ 800	1.5	$ 9,600	1.25	$ 12,000	2032	10
Install Diesel Generator	1	EA	$ 500,000	1.5	$ 750,000	1.25	$ 937,500	2045	30
Outfalls									
Outfall Structure	1	LS	$ 1,000,000	1	$ 1,000,000	1.25	$ 1,250,000	2095	75
Pipes (42" WSP)	190	LF	$ 1,750	1	$ 332,500	1.25	$ 319,000	2045	75
Pipes (30" WSP)	190	LF	$ 1,500	1	$ 285,000	1.25	$ 260,000	2045	75
Pipes (36" WSP)	380	LF	$ 1,200	1	$ 456,000	1.25	$ 474,000	2045	75
Access & Security									
Install Anti-Climb Fences	1000	LF	$ 74	1.5	$ 111,273	1	$ 112,000	2045	50
Cameras	1	LS	$ 10,000	1.5	$ 15,000	1.25	$ 19,000	2042	10
Building									
Pump Platform & Access	1	LS	$ 100,000	1.5	$ 150,000	1.25	$ 187,500	2095	75
Intake Structure	1	LS	$ 2,000,000	1	$ 2,000,000	1.25	$ 2,500,000	2095	75
Control Building Structure	1	LS	$ 216,000	1	$ 216,000	1.25	$ 270,000	2095	75
2025 TOTAL*							$ -		
2030 TOTAL*							$ -		
2040 TOTAL*							$ 20,000		
2050 TOTAL*							$ 7,000,000		

*TOTAL Indicates a running total through specified year, with total costs recurring for individual items according to life cycle years specified and construction/implementation date

Pumping Plant 5 Capital Improvement and Replacement Cost Estimate

Item	Quantity	Unit	Cost/unit	Install factor	Construction Subtotal	Administrative Factor	Total	Construction/ Implementation	Life Cycle (Years)
Plant Relocation									
All Plant Relocation Costs	1	LS	$ 8,900,000	1	$ 8,900,000	1	$ 8,900,000	2026	75
Intake Screens									
Chain Replacement	1100	FT	$ 12	1	$ 13,387	1.15	$ 16,000	2036	10
Unit Replacement	3	EA	$ 260,000	1	$ 780,000	1.25	$ 975,000	2064	40
Power, Instrumentation & Controls, Cathodic & Ventilation					$ 1,746,750		$ 2,190,000	2046	20
Replacement of Power, I&C	1	LS	$ 1,440,000	1.2	$ 1,728,000	1.25	$ 2,160,000	2046	20
Cathodic Protection Rectifier Unit	2	EA	$ 5,000	1.5	$ 15,000	1.25	$ 20,000	2046	20
Ventilation	1	EA	$ 2,500	1.5	$ 3,750	1.25	$ 10,000	2046	20
Mobile Generator for Plants 2,3 & 5 (Included in Plant 2 estimate)	1	EA	$ -	1.5	$ -	1.25	$ -	2022	30
Cathoid Protection Annode Beds	8	EA	$ 800	1.5	$ 9,600	1.25	$ 12,000	2036	10
Outfalls									
Replace Valves and Gates	1	LS	$ 235,000	1	$ 235,000	1.25	$ 300,000	2051	25
Access & Security									
Fences	1000	LF	$ 73	1.5	$ 109,000	1	$ 109,000	2084	60
Cameras	1	LS	$ 10,000	1.5	$ 15,000	1.25	$ 19,000	2036	10
2025 TOTAL*							$ -		
2030 TOTAL*							$ 8,900,000		
2040 TOTAL*							$ 9,000,000		
2050 TOTAL*							$ 11,200,000		

*TOTAL Indicates a running total through specified year, with total costs recurring for individual items according to life cycle years specified and construction/implementation date

Pumping Plant 5 Relocation Cost Estimate

Item	Quantity	Unit	Cost/unit	Install factor	Administrative Factor	Total Cost
Mobilization and Demobilization @ 5%						$ 420,000
Traffic Control	1	LS	$ 32,000	1	1.25	$ 40,000
Storm Water Pollution Control	1	LS	$ 82,000	1	1.25	$ 102,500
Exclusionary Silt Fencing	2000	LF	$ 9	1	1.25	$ 22,500
Temporary Protective Fencing	500	LF	$ 10	1	1.25	$ 6,250
Site Clearing and Grubbing	1	AC	$ 30,000	1	1.25	$ 37,500
Demolition	1	LS	$ 170,000	1	1.25	$ 210,000
Dewatering	1	LS	$ 450,000	1	1.25	$ 562,500
Structure Excavation	3000	CY	$ 13	1	1.25	$ 50,000
New Intake Structure	1	LS	$ 1,840,000	1	1.25	$ 2,300,000
New Outfall Structure	1	LS	$ 224,000	1	1.25	$ 280,000
New walkway for Workers	1	LS	$ 70,000	1.5	1.25	$ 130,000
Pumps and Pump Motors	3	EA	$ 100,000	1	1.25	$ 340,000
Automatic Bar Screens	3	EA	$ 260,000	1	1.25	$ 975,000
Power, Instrumentation and Control	1	LS	$ 1,440,000	1	1.25	$ 1,800,000
New Electrical Control Building	1	LS	$ 216,000	1	1.25	$ 270,000
24" discharge pipe	1200	LF	$ 10,000	1	1.25	$ 1,100,000
Cathodic Protection	1200	LF	$ 121	1	1.25	$ 181,000
Mobile Generator for Plants 2,3 & 5	1	LS	$ 125,000	1.5	1.25	$ 240,000
Install Alarms and Cameras	1	LS	$ 10,000	1.5	1.25	$ 18,750
Install Anti-Climb Fences	800	LF	$ 73	1.5	1.25	$ 109,000
TOTAL						$ 8,900,000.00

Pumping Plant 8 Capital Improvement and Replacement Cost Estimate

Item	Quantity	Unit	Cost/unit	Install factor	Construction Subtotal	Administrative Factor	Total	Construction/ Implementation	Life Cycle (Years)
Major Plant Replacements									
All Major Plant Replacement Costs	1	LS	$ 11,400,000	1	$ 11,400,000	1	$ 11,400,000	2022	75
Intake Screens									
Chain Replacement	3300	FT	$ 12	1	$ 40,161	1.15	$ 47,000	2032	10
Unit Replacement	9	EA	$ 260,000	1	$ 2,340,000	1.25	$ 2,925,000	2041	40
Power, Instrumentation & Controls, Cathodic & Ventilation					$ 1,754,250		$ 2,200,000	2042	20
Replacement of Power, I&C	1	LS	$ 1,440,000	1.2	$ 1,728,000	1.25	$ 2,160,000	2042	20
Cathodic Protection Rectifier Unit	3	EA	$ 5,000	1.5	$ 22,500	1.25	$ 30,000	2042	20
Ventilation	1	EA	$ 2,500	1.5	$ 3,750	1.25	$ 10,000	2042	20
Cathoid Protection Pipe Jumper Cables	2250	LF	$ 100	1.5	$ 337,500	1.25	$ 421,875	2097	75
Cathoid Protection Annode Beds	16	EA	$ 800	1.5	$ 19,200	1.25	$ 24,000	2032	10
Pumps and Pump Motors				1	$ -	1	$ -		
Replace Unit	9	EA	$ 370,000	1	$ 3,330,000	1.25	$ 4,170,000	2072	50
Outfalls									
Replace Valves and Gates	1	LS	$ 516,000	1.5	$ 774,000	1.25	$ 970,000	2047	25
Outfall Structure	1	LS	$ 1,000,000	1	$ 1,000,000	1.25	$ 1,250,000	2062	75
Pipes (54" WSP)	1250	LF	$ 1,500	1	$ 1,875,000	1.25	$ 2,343,750	2022	75
Pipes (60" WSP)	250	LF	$ 2,100	1	$ 525,000	1.25	$ 656,250	2022	75
Pipes (36" WSP)	750	LF	$ 1,300	1	$ 975,000	1.25	$ 1,218,750	2022	75
Access & Security									
Retrofit Fences for Anti-Climb	1000	LF	$ 46	1	$ 46,132	1.1	$ 51,000	2022	50
Cameras	1	LS	$ 10,000	1.5	$ 15,000	1.25	$ 19,000	2032	10
Building									
Replace Roof and Paint Control Building	1	LS	$ 500,000	1	$ 500,000	1	$ 500,000	2047	25
Pump Platform & Access	1	LS	$ 300,000	1.5	$ 450,000	1.25	$ 562,500	2097	75
Intake Structure	1	LS	$ 5,000,000	1	$ 5,000,000	1.25	$ 6,250,000	2097	75
Control Building Structure	1	LS	$ 350,000	1	$ 350,000	1.25	$ 437,500	2097	75
2025 TOTAL*							$ 15,700,000		
2030 TOTAL*							$ 15,700,000		
2040 TOTAL*							$ 15,800,000		
2050 TOTAL*							$ 22,400,000		

*TOTAL Indicates a running total through specified year, with total costs recurring for individual items according to life cycle years specified and construction/implementation date

Pumping Plant 8 Major Plant Replacement and Pipeline Cost Estimate

Item	Quantity	Unit	Cost/unit	Install factor	Administrative Factor	Total Cost
Mobilization and Demobilization @ 5%						$ 700,000
Traffic control	1	LS	$ 32,000	1	1.25	$ 40,000
Storm Water Pollution Control	1	LS	$ 82,000	1	1.25	$ 102,500
Exclusionary Silt Fencing	4000	LF	$ 9	1	1.25	$ 45,000
Temporary Protective Fencing	1000	LF	$ 10	1	1.25	$ 12,500
Demolition	1	LS	$ 50,000	1	1.25	$ 320,000
Site Clearing and Grubbing	1	AC	$ 30,000	1	1.25	$ 37,500
Structure Excavation (pipeline)	3889	CY	$ 13	1	1.25	$ 60,800
New Walkway for Workers	1	LS	$ 137,000	1.5	1.25	$ 238,000
New Pumps and Pump Motors	9	EA	$ 370,000	1	1.25	$ 4,157,000
Replace Instrumentation	1	EA	$ 1,440,000	1	1.25	$ 1,800,000
54" Discharge Pipe	1250	LF	$ 1,400	1	1.25	$ 2,100,000
60" Discharge Pipe	250	LF	$ 2,000	1	1.25	$ 600,000
36" Discharge Pipe	750	LF	$ 1,200	1	1.25	$ 1,100,000
Cathodic protection	2250	LF	$ 120	1	1.25	$ 334,000
Backup generator	2	LS	$ 1,000,000	1.5	1.25	$ 3,750,000
New Generator Housing	1	LS	$ 350,000	1	1.25	$ 437,500
Replace cameras and hookup to SCADA	1	LS	$ 10,000	1.5	1.25	$ 18,750
TOTAL						$ 15,600,000

Riverside Pumping Plant Capital Improvement and Replacement Cost Estimate

Item	Quantity	Unit	Cost/unit	Install factor	Construction Subtotal	Administrative Factor	Total	Construction/ Implementation	Life Cycle (Years)
Power, Instrumentation & Controls, Ventilation	1	LS	$ 130,000	1.5	$ 195,000	1.25	$ 250,000	2036	40
Outfalls									
Concrete Vault with Positive Closure	1	LS	$ 50,000	1.5	$ 75,000	1.25	$ 94,000	2035	60
Access & Security									
Cameras	1	LS	$ 10,000	1.5	$ 15,000	1.25	$ 19,000	2045	10
2025 TOTAL*							$ -		
2030 TOTAL*							$ -		
2040 TOTAL*							$ 350,000		
2050 TOTAL*							$ 370,000		

*TOTAL Indicates a running total through specified year, with total costs recurring for individual items according to life cycle years specified and construction/implementation date

San Juan Pumping Plant Capital Improvement and Replacement Cost Estimate

Item	Quantity	Unit	Cost/unit	Install factor	Construction Subtotal	Administrative Factor	Total	Construction/ Implementation	Life Cycle (Years)
Power, Instrumentation & Controls, Ventilation	1	LS	$ 130,000	1.5	$ 195,000	1.25	$ 250,000	2036	40
Outfalls									
Concrete Vault with Positive Closure	1	LS	$ 50,000	1.5	$ 75,000	1.25	$ 94,000	2035	60
Access & Security									
Cameras	1	LS	$ 10,000	1.5	$ 15,000	1.25	$ 19,000	2045	10
2025 TOTAL*							$ -		
2030 TOTAL*							$ -		
2040 TOTAL*							$ 350,000		
2050 TOTAL*							$ 370,000		

*TOTAL Indicates a running total through specified year, with total costs recurring for individual items according to life cycle years specified and construction/implementation date

Drain Inventory Replacement Opinion of Probable Cost
Reclamation District 1000 2020 CIP

Raw Data		
Total Linear Feet of Drains	17276	
Total Number of Drains	491	
Average Length of Drains	35	
Net Length Drains up to 18"	11837	LF
# of Drains up to 18"	336	
Net Length Drains 20-24"	4629	LF
# of Drains 20-24"	132	
Net Length Drains 30-36"	810	LF
# of Drains 30-36"	23	
Assumptions		
Traffic Control	No	
Lost Productivity for Travel and Mobilization	2	hours per Drain
Base Cost of Pipe, $/in	$ 20	

Culvert Size	LF Price	Drain Length	Pipe Subtotal	Mobilization	Unit Cost	# of Drains	Extended Cost
Up to 18"	$ 360	35	$ 12,600	$1,646	$ 14,246	336	$ 4,786,543
20-24"	$ 480	35	$ 16,800	$1,646	$ 18,446	132	$ 2,434,828
30-36"	$ 720	35	$ 25,200	$1,646	$ 26,846	23	$ 617,450
						Drain Replacement Total	$ 7,838,822

Mobilization & Lost Productivity Equipment Cost	Rate	Hrs	Extended	
Cat 320 Track Excavator	$96.87	2	$194	Hourly rate per Caltrans Equipment Rates
Cat 446 backhoe loader	$60.13	2	$120	Hourly rate per Caltrans Equipment Rates
3-axle end dump	$71.55	2	$143	Hourly rate per Caltrans Equipment Rates
		Subtotal	$457	
	15% Surcharge per Caltrans Equipment Rates		$69	
		Equipment Total	$526	

Mobilization & Lost Productivity Labor Cost	Rate	Hrs	Extended
4-man crew & truck driver for 2 hours	$100.00	10	$1,000
		12% Surcharge	$120
		Labor Total	$1,120
	Net Mobilization and Lost Productivity Cost per Drain		$1,646

Culvert Inventory Opinion of Probable Cost
Reclamation District 2020 CIP

Culvert Inventory Replacement Estimate
Raw Data

Total Linear Feet of Culverts	20589	
Total Number of Culverts	477	
Average Length of Culverts	44	
Net Length Culverts up to 18"	1968	LF
# of Culverts up to 18"	45	
Net Length Culverts 20-24"	6053	
# of Culvertss 20-24"	138	
Net Length Culverts 30-36"	6571	
# of Culverts 30-36"	149	
Net Length Culverts 42-48"	3848	
# of Culverts 42-48"	87	
Net Length Culverts 54-60"	1103	
# of Culverts 54-60"	25	
Net Length Culverts 66-72"	360	
# of Culverts 66-72"	8	
Net Length Culverts 96"	299	
# of Culverts 96"	7	
Net Length Culverts 120"	150	
# of Culverts 120"	3	
Length of Culverts 2x4'x5'	115	
# Culverts 2x4'x5'	3	Equivalent to 96"

Base Cost of Pipe, $/in of diam	
Up to 24"	$ 20
Up to 36"	$ 30
48"	$ 35
60"	$ 50
72"	$ 60
96"	$ 75
120"	$ 100

Pipe Size	LF Price	Culvert Length	Pipe Subtotal	Mobilization	Unit Cost	# of Culverts	Extended Cost
Up to 18"	$ 360	44	$ 15,840	$3,140	$ 18,980	46	$ 873,103
20 & 24"	$ 480	44	$ 21,120	$3,140	$ 24,260	140	$ 3,396,470
30 & 36"	$ 1,080	44	$ 47,520	$3,140	$ 50,660	152	$ 7,700,396
42 & 48"	$ 1,680	44	$ 73,920	$3,140	$ 77,060	89	$ 6,858,384
54 & 60"	$ 3,000	44	$ 132,000	$4,958	$136,958	26	$ 3,560,915
66 & 72"	$ 4,320	44	$ 190,080	$4,958	$195,038	8	$ 1,560,306
96"	$ 7,200	44	$ 316,800	$9,456	$326,256	10	$ 3,262,565
120"	$ 12,000	44	$ 528,000	$9,456	$537,456	3	$ 1,612,369
						Culvert Replacement Total	$ 28,824,507
						Total with 25% Administrative Cost	$ 36,030,634

Mob, Traffic Control Equip Cost - up to 48"	Rate	Hrs	Extended	
Cat 320 Track Excavator	$96.87	3	$291	Hourly rate per Caltrans Equipment Rates
Cat 446 backhoe loader	$60.13	3	$180	Hourly rate per Caltrans Equipment Rates
3-axle end dump	$71.55	3	$215	Hourly rate per Caltrans Equipment Rates
		Subtotal	$686	
		15% Surcharge	$103	
		Equipment Total	$788	
Mobilization Labor Cost per Culvert	Rate	Hrs	Extended	
6-man crew + truck driver for 3 hours	$100.00	21	$2,100	
		12% Surcharge	$252	
		Labor Total	$2,352	
Net Mobilization and Traffic Control Cost per Culvert			$3,140	

Mobilization Equipment Cost - up to 72"	Rate	Hrs	Extended	
Cat 235 Track Excavator	$131.74	4	$527	Hourly rate per Caltrans Equipment Rates
Cat 950B loader	$95.46	4	$382	Hourly rate per Caltrans Equipment Rates
3-axle end dump	$71.55	4	$286	Hourly rate per Caltrans Equipment Rates
		Subtotal	$1,195	
		15% Surcharge	$179	
		Equipment Total	$1,374	
Mobilization Labor Cost per culvert	Rate	Hrs	Extended	
7-man crew & truck driver for 4 hours	$100.00	32	$3,200	
		12% Surcharge	$384	
		Labor Total	$3,584	
Net Mobilization and Traffic Control Cost per Culvert			$4,958	

Mobilization Equipment Cost - up to 120"	Rate	Hrs	Extended	
Grove RT990 Crane	$195.23	6	$1,171	Hourly rate per Caltrans Equipment Rates
Cat 235 Track Excavator	$131.74	6	$790	Hourly rate per Caltrans Equipment Rates

Culvert Inventory Opinion of Probable Cost
Reclamation District 2020 CIP

Cat 950B loader	$95.46	6	$573	Hourly rate per Caltrans Equipment Rates
3-axle end dump	$71.55	6	$429	Hourly rate per Caltrans Equipment Rates
		Subtotal	$2,964	
		15% Surcharge	$445	
		Equipment Total	$3,408	
Mobilization Labor Cost per culvert	Rate	Hrs	Extended	
8-man crew & truck driver for 6 hours	$100.00	54	$5,400	
		12% Surcharge	$648	
		Labor Total	$6,048	
	Net Mobilization and Traffic Control Cost per Culvert		$9,456	

Count of Drains
Compiled from GIS Data

Row Labels	Count of Pipe_Size
0	1
6	1
8	1
10	1
12	37
15	137
16	5
18	220
20	2
24	75
30	1
36	10
Grand Total	**491**

Count of Culverts
Compiled from GIS Data

Row Labels	Count of Pipe_Size
0	21
6	1
12	6
15	1
18	29
20	5
23	2
24	133
28	1
30	50
36	76
42	25
48	40
54	5
60	7
66	1
72	5
84	2
90	2
96	1
120	1
2-10'x10'	2
2-4'x5'	2
2-5'x10'	2
2-6'x10'	2
2-6'x8'	2
2-7'x7'	3
2-8'x10'	3
3-10'x10'	2
3-5'x8'	2
3'x4'	3
3'x5'	2
4-10'x10'	2
4'x5'	2
6'x10'	2
6'x6'	17
6'x8'	15
Grand Total	**477**

Drains Inventory
Compiled from GIS Data

Sum of Pipe_Lengt	Column Labels							
Row Labels		**CMP**	**HCP**	**HDPE**	**Other**	**RCP**	**WSP**	**Grand Total**
0	0							0
6					20			20
8		20						20
10			20					20
12		450	366		256	110	20	1202
15		144	3123			138		3405
16		45		78		45		168
18		1319	5244	86		337	16	7002
20			80	32				112
24		1987	2068			462		4517
30						50		50
36		380				380		760
Grand Total	**0**	**4345**	**10901**	**196**	**276**	**1522**	**36**	**17276**

RD 1000 Culvert Inventory
Compiled from GIS Data

Sum of Pipe_Lengt	Column Labels							
Pipe Size		CMP	HCP	HDPE	Other	RCP	WSP	Grand Total
0	103				385	0		488
6							50	50
12		67			76	57		200
15			40					40
18		474	340	0	160	126	90	1190
20					285	180		465
23							62	62
24		2192	1697	322	210	1045	60	5526
28					35			35
30		734	449	0	20	1649	60	2912
36	116	1750	855		350	488	65	3624
42		65	424			696		1185
48		868	144	90		1375		2477
54		110				0		110
60	18	125	60			0		203
66		40						40
72		320						320
84		0						0
90						0		0
96	0							0
120		50						50
2-10'x10'	0				0			0
2-4'x5'					115			115
2-5'x10'	0							0
2-6'x10'	100							100
2-6'x8'	0							0
2-7'x7'	0							0
2-8'x10'	0							0
3-10'x10'	0							0
3-5'x8'	0							0
3'x4'	56				30			86
3'x5'						186		186
4-10'x10'	0				0			0
4'x5'					790			790
6'x10'	0							0
6'x6'	0				36			36
6'x8'	259					40		299
Grand Total	**652**	**6795**	**4009**	**412**	**2492**	**5842**	**387**	**20589**

1968

6053

6571

3662

313

360

50

115 Equivalent to twin 60"

100 Equivalent to 120"

272 Equivalent to 48"

790 Equivalent to 60"

335 Equivalent to 96"

SAFCA
Sacramento Area Flood Control Agency

Board of Directors Action Summary of August 20, 2020 - 3:00 PM

WEBEX MEETING

Directors/Alternates Present: Avdis, Burns, Conant, Frost, Harris, Holloway, Jennings, Kennedy, Nottoli, Peters, Serna

Directors Absent: Ashby and Shah

ROLL CALL

PUBLIC COMMENTS

EXECUTIVE DIRECTOR'S REPORT

1 Information - Executive Director's Report for August 20, 2020 (Johnson)

CONSENT MATTERS

Motion by Director Harris and seconded by Director Nottoli to approve Resolution Nos: 2020-085; 2020-086; 2020-087; 2020-088; 2020-089; 2020-090; and 2020-091of Consent Matters.

AYES: Avdis, Burns, Conant, Frost, Harris, Holloway, Jennings, Kennedy, Nottoli, Peters, Serna
NOES: (None)
ABSTAIN: (None)
ABSENT: Ashby and Shah

RECUSAL: (None)

2 Approving the Action Summary for July 16, 2020 (Russell)

3 Resolution No. 2020-085 - Approving Contract Documents and Authorizing the Executive Director to Advertise Contract No. 4496 for Bid - Lower Elkhorn Basin Levee Setback Project, Pump Station Project, Yolo County, California (Jawanda)

4 Resolutions - Authorizing the Executive Director to Amend Consulting Services Contracts for Flood Risk Management Planning Services on an As-Needed Basis to Support Execution of SAFCA's Programs and Projects (Tibbitts)

A. Resolution No. 2020-086 - cbec, Inc., Eco-Engineering, Amendment No 4 to Contract 1452

B. Resolution No. 2020-087 - HDR Engineering, Inc., Amendment No. 4 to Contract No. 1454

5 Resolution No. 2020-088 - Approving Final Quantities for the Dry Creek Fence Rehabilitation and Replacement Project, Phase 2, Sacramento County, California - Contract No. 4454, with GW Demolition, Inc., Accepting the Contract as Complete, and Authorizing the Executive to File a Notice of Completion (Sorgen)

6 Resolution No. 2020-089 - Approving Contact Documents and Authorizing the Executive Director to Advertise for Bids for Two Job Order Contracts, Contract Nos. SAFCA JOC-003 and SAFCA JOC-004 (Campbell)

7 Resolution No. 2020-090 - Authorizing the Executive Director to Execute Amendment No. 1 to Contract No. 1419 with HDR Engineering, Inc. for Civil Engineering Design and Associated Services related to the Natomas Basin Project (Bassett)

8 Resolution No. 2020-091 - Authorizing the Executive Director to Execute Amendment No. 2 to Contract No.1481 with Geosyntec Consultants, Inc., for Construction Oversight and Project Closeout Support for the Brtye Landfill Remediation Project (Tibbitts)

SEPARATE MATTERS

9 Resolution No. 2020-092 - Recognizing M. Holly Gilchrist for Her Contributions to the Sacramento Area Flood Control Agency Upon the Occasion of Her Retirement (Johnson)

Motion by Director Holloway and seconded by Director Harris to approve Resolution No. 2020-092.

AYES: Avdis, Burns, Conant, Frost, Harris, Holloway, Jennings, Kennedy, Nottoli, Peters, Serna
NOES: (None)
ABSTAIN: (None)
ABSENT: Ashby and Shah
RECUSAL: (None)

10 Resolution No. 2020-093 - Authorizing the Executive Director to Execute Contract No. 1523 with Sacramento Valley Conservancy to Hold Conservation Easements at the Beach Lake and Stone Lakes Mitigation Sites (Saucier)

Motion by Director Conant and seconded by Director Burns to approve Resolution No. 2020-093.

AYES: Burns, Conant, Frost, Harris, Holloway, Jennings, Kennedy, Nottoli, Peters, Serna
NOES: (None)
ABSTAIN: (None)
ABSENT: Ashby, Avdis and Shah
RECUSAL: (None)

11 Resolution No. 2020-094 - Awarding Construction Contract No. 4495 for the Lower Elkhorn Basin Levee Setback Project Interior Drainage Project, Yolo County, California to the Lowest Responsive and Responsible Bidder and Authorizing the Executive Director to Execute the Contract (Jawanda)

Motion by Director Harris and seconded by Director Avdis to approve Resolution No. 2020-094.

AYES: Avdis, Burns, Conant, Frost, Harris, Holloway, Jennings, Kennedy, Peters, Serna
NOES: (None)
ABSTAIN: (None)
ABSENT: Ashby, Nottoli, and Shah
RECUSAL: (None)

12 Resolution of Necessity No. 2020-095 - Authorizing an Eminent Domain Action to Acquire Certain Real Property Interests in Sacramento County Assessor's Parcel Number 274-0260-042 for the Natomas Basin Project - Property Owner: Loren N. Moore (Bassett) Pursuant to Section 1245.240 of the Cal Code of Civil Procedure this Item requires a 2/3 or 9 Member Approval Vote to pass

Chairman Kennedy opened the Public Hearing. The Clerk stated she had not received any written comments from the public via email or postal service prior to the meeting. Chairman Kennedy asked whether any members of the public were attending the meeting that would like to comment during the Public Hearing. No comments were received. Chairman Kennedy closed the Public Hearing. Motion by Director Serna and seconded by Director Harris to approve Resolution No. 2020-095.

Motion by Director Serna and seconded by Director Harris to approve Resolution No. 2020-095.

AYES: Avdis, Burns, Conant, Frost, Harris, Holloway, Jennings, Kennedy, Nottoli, Peters, Serna
NOES: (None)
ABSTAIN: (None)
ABSENT: Ashby, and Shah
RECUSAL: (None)

ADJOURN

Respectfully submitted,
Lyndee Russell

RECLAMATION DISTRICT NO. 1000

SYSTEM-WIDE IMPROVEMENT FRAMEWORK

Submitted by

RECLAMATION DISTRICT NO. 1000

AUGUST 2020

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INTRODUCTION

Reclamation District No. 1000 (RD 1000; District) has prepared this System-Wide Improvement Framework (SWIF) to support continued eligibility in the Public Law (PL) 84-99 Rehabilitation and Inspection Program (RIP) for the RD 1000–Natomas levee system (Natomas levee system).

The U.S. Army Corps of Engineers (USACE) Sacramento District issued a Periodic Inspection Report (PIR) in September 2010. Of significant relevance to this SWIF, is the active construction on the Natomas levee system that began in 2007 and continues today. More information about this construction is provided in later chapters, but it is important to understand that since the inspection was performed, nearly 23 miles of levee have been substantially improved to address design deficiencies. As a result of these improvements, many of the items identified in the PIR were and continue to be addressed. Additionally, the majority of the levee system is now subject to an approved vegetation variance (2010), as a result vegetation listed in the PIR is no longer unacceptable.

The Natomas levee system is currently active in the RIP (Letter of Intent (LOI) approved May 2013); however, there are a number of unacceptable items that need to be addressed over a longer period as part of a "worst-first" plan. These items are the subject of this SWIF. A draft SWIF was submitted to the Central Valley Flood Protection Board (CVFPB) and USACE Sacramento District in 2016. This revised SWIF was prepared at the request of the USACE Sacramento District and includes updates to the resolution of unacceptable items and schedule milestones.

1. LEVEE SYSTEM AND SEGMENT IDENTIFICATION AND DESCRIPTION

This SWIF applies to the Natomas levee system (National Levee Database [NLD] System ID: 5205000923). This system is comprised of five segments as described in Table 1 below. The CVFPB is the non-Federal sponsor for this system; RD 1000 is the local maintaining agency (LMA). Figure 1.1 presents the location of the segments and the system.

Table 1. Levee System and Segment Identification

Levee System Name and ID Number	National Levee Database (NLD) Segment Name	NLD Segment ID Number
RD 1000–Natomas NLD System ID: 5205000923	RD 1000–Natomas – Unit 1, Sacramento River	5204000911
	RD 1000–Natomas – Unit 2, American River	5204000912
	RD 1000–Natomas – Unit 3 South, Natomas East Main Drainage Canal	5204000913
	RD 1000–Natomas – Unit 3 North, Cross Canal Inflow*	5204000914
	RD 1000–Natomas – Unit 4, Natomas Cross Canal	5204000915

*The Cross Canal Inflow is commonly and herein referred to as the Pleasant Grove Creek Canal.

The Natomas levee system is located within Sacramento and Sutter counties, and partly within the City of Sacramento, California. Table 2 presents a basic description of the individual segments comprising the Natomas levee system.

Table 2. Description of Segments in the RD 1000–Natomas Levee System

O&M Unit	River/Channel	Location	Levee Miles
Unit 1	Sacramento River	Located on the east (left) bank of the Sacramento River, beginning at the Natomas Cross Canal and extending south to the confluence of the American River	0.00 to 18.49
Unit 2	American River	Located on the north (right) bank of the American River	0.00 to 1.90
Unit 3, South	Natomas East Main Drainage Canal (NEMDC)	Located on the west (right) bank of NEMDC	0.00 to 12.62
Unit 3, North	Pleasant Grove Creek Canal (PGCC)	Located on the west (left) bank of PGCC	0.00 to 4.35
Unit 4	Natomas Cross Canal	Located on the south (left) bank of the Natomas Cross Canal	0.00 to 4.34

The overall segment ratings are provided in Table 3 by inspection item. Items not applicable have not been included (e.g., Item 4, closure structures).

Table 3. Periodic Inspection Segment Ratings by Levee Embankment Item

Item	Affects PL 84-99 Eligibility	Unit 1. SREL	Unit 2. ARNL	Unit 3 South. NEMDC	Unit 3 North. PGCC	Unit 4. NCC
Item 1, Vegetation Growth	No	U	U	U	U	U
Item 2, Sod Cover	Yes	A	A	A	A	A
Item 3, Encroachments	Yes	U	U	U	U	U
Item 5, Slope Stability	Yes	M	A	M	A	M
Item 6, Erosion/Bank Caving	Yes	M	M	M	M	M
Item 7, Settlement	No	M	A	A	A	A
Item 8, Depressions/Rutting	No	A	A	M	M	A
Item 9, Cracking	No	M	A	M	A	A

Item	Affects PL 84-99 Eligibility	Unit 1. SREL	Unit 2. ARNL	Unit 3 South. NEMDC	Unit 3 North. PGCC	Unit 4. NCC
Item 10, Animal Control	Yes	M	A	M	M	M
Item 12, Riprap Revetments and Bank Protection	No	M	NA	M	M	A
Item 15, Seepage	Yes	A	A	A	A	A

Note: A = Acceptable; M = Minimally Acceptable; U = Unacceptable; N/A = Not Applicable;

1.1 Historical and Regional Context

The Sacramento River Flood Control Project (SRFCP) is one of the oldest federally authorized flood control projects in the nation. Its long history and location in the Central Valley present unique and complex challenges for those responsible for operation and maintenance (O&M) of the SRFCP.

In response to the frequent and damaging floods that occurred in the Sacramento River watershed, Congress authorized the SRFCP in 1917. Many of the SRFCP levees were constructed in the 1800s or early 1900s by local reclamation districts to protect their lands from flooding. The project was designed to self-scour, thus flushing hydraulic mining debris through the system while providing modest flood protection to adjacent lands. The primary river levees, set close together, were constructed with material dredged from the channel and nearby lands. While the design and construction of the system served the needs at the time, the levees have since proven problematic during rare flood events, particularly in regard to seepage.

Starting in the 1940s, several years after congressional authorization, the USACE and the State began to undertake significant levee improvement efforts. Despite these efforts, the 1986 and 1997 flood events demonstrated that the methods and technologies employed at the time of the SRFCP design and construction resulted in significant residual risk of flooding.

The current requirements for LMAs to operate and maintain a project have increasingly become more stringent and far-reaching in comparison to the system's original intent. State and federal environmental regulations that did not exist at the time of authorization, and subsequent transfer to the non-Federal sponsor in the 1950s, are significantly affecting the ability of the LMAs to carry out their responsibilities. This has been compounded by passage of the Endangered Species Act, which often conflicts with the operation and maintenance needs for the system.

The Central Valley provides habitat for more than 500 species of native plants and wildlife, some of which are threatened or endangered. However, with settlement of the Central Valley, the geographic extent, quality, and connectivity of native habitat along Central Valley rivers and streams has drastically declined. Only a very small percentage of the historical riparian forest that once lined these watercourses continues to exist, and much of these remaining forests exist on or near the levees. In addition, other non-riparian forests and native grasslands existing on or near levees provide habitat for other listed species. Because

these forests and grasslands provide habitat for State and federally protected species, activities along levees are subject to environmental laws and regulations which significantly affect the timing and manner in which LMAs are able to operate and maintain levee systems. In essence, LMAs are now responsible not only for operating and maintaining levees, but also for acting as conservators of the natural habitat and species found along the levees.

2. DESCRIPTION OF UNACCEPTABLE ITEMS, DESIGN DEFICIENCIES, & CORRECTIVE ACTION

The USACE identified over 1,000 items in its January 2010 inspection. RD 1000 corrected all "unacceptable items that could adversely affect levee performance in the next flood event", i.e., "critical items", following the PIR publication.

Additionally, as described above, substantial construction has and is occurring to the Natomas levee system and improvements have significantly affected the condition of the levee system. SAFCA, of which RD 1000 is a member agency, in cooperation with the State of California improved the Natomas Cross Canal levee (Unit 4) from 2007 to 2009. From 2009 to 2012, SAFCA improved 12 miles of the Sacramento River east levee (Unit 1). This work was completed under the Natomas Levee Improvement Project (NLIP). Concurrent with this construction effort, SAFCA, the State, and USACE were planning and designing the Natomas Basin Common Features project (Natomas Project). This project broke ground in 2019 and as of August 2020, 23 of 42 miles of the Natomas Basin levee system have been improved.

Despite correction of critical items, and more than half a billion dollars of capital expenditures, there remains unacceptable items that are of a lower risk to levee performance and/or impede operation, maintenance, and the ability to flood fight. The overwhelming majority of these items are located along the Sacramento River where waterside urban development is present. Table 4 provides a description of the outstanding items.

Table 4. Outstanding Unacceptable Items

Item Type	Quantity	Description
Encroachment – Dwelling	131	Garden Hwy is a county road located on the levee crown in portions of the SREL (Unit 1) and ARNL (Unit 2). There are many residences located on the waterside of the levee along Garden Hwy.
Encroachments – Above Ground Utilities	35	Several utility and communication lines are strung along poles parallel and across the levees. Due to the significant levee construction efforts, these items have either been modified, relocated, or removed.
Encroachments – Underground Utilities	33	Several pump stations and associated facilities (pipe penetrations) associated with water supply and interior drainage are present within the levee system. There are also a few underground utilities (conduit) present.
Encroachment - Other	58	Other encroachments include drainage inlet/outlets, fences, residential features, driveways and roads, etc.
Total	**257**	

SWIFs are intended to provide for a "worst-first" approach in addressing flood risk reduction system deficiencies. SAFCA and RD 1000 have established three categories of risk for the purposes of this SWIF: the levee design standard deficiencies that threaten the performance of the levee (highest risk); encroachments presenting an unacceptable threat to levee integrity and operation and maintenance (high, moderate, and low risk); and administrative deficiencies (lowest risk) for encroachments lacking proper documentation, or where the encroachment is otherwise not in conformance with the permit conditions, but there is no threat to levee integrity or operation and maintenance.

2.1 Levee Design Standard Deficiencies

USACE, DWR, and SAFCA have undertaken significant efforts to compare the existing condition and design of the levee to current standards for levee systems. These efforts have identified several deficiencies in meeting current levee design standards, including through-seepage, underseepage, embankment instability, and susceptibility to erosion and scour. These deficiencies present the highest risk to the levee system and are described in the 2010 USACE *American River Common Features Project, Natomas Post-Authorization Change Report*.

From 2007 to 2012, SAFCA and the State began addressing these deficiencies under the NLIP. Despite significant expenditure made by SAFCA and the State as part of the NLIP, the Natomas Basin remains severely vulnerable to flood threats. These threats continue to be reduced through the USACE Natomas Project. A description and status of the measures proposed as part of the Natomas Project are provided in Table 5.

Table 5. Levee Standard Deficiency Remediation by the Natomas Project

Reach & Length	Reach Description	Proposed Improvements	Status
Unit 1, Sacramento River			
A 3.8 miles	Sacramento River east levee from Interstate Highway 5 of the American River to San Juan Road	Widening existing levee through construction of an adjacent levee and remediation of geotechnical deficiencies (e.g., landside berms and cutoff walls).	Construction scheduled for 2022.
B 9.5 miles	Sacramento River east levee from San Juan Road to Elverta Road	Widening existing levee through construction of an adjacent levee and remediation of geotechnical deficiencies (e.g., landside berms and cutoff walls).	A significant portion of this work was completed as part of the NLIP. USACE construction began in 2020 with anticipated completion in 2021.
C 5 miles	Sacramento River east levee from Elverta Road to Sankey Road at the	Widening existing levee through construction of an adjacent levee and remediation of geotechnical	Most of this work was completed as part of the NLIP. Pumping plant work

Reach & Length	Reach Description	Proposed Improvements	Status
Unit 1, Sacramento River			
	west end of the south levee of the NCC	deficiencies (e.g., landside berms and cutoff walls).	outstanding and currently unscheduled.
Unit 2, American River			
I 1.8 miles	American River north levee from Northgate Boulevard down to Interstate Highway 5	Fix-in-place construction and remediation of geotechnical deficiencies (e.g., landside flattening and cutoff walls).	Construction began in 2019 with anticipated completion in 2020.
Unit 3 South, NEMDC			
H 4.5 miles	NEMDC west levee from the pumping station just upstream of Dry Creek to Northgate Boulevard	Fix-in-place construction and remediation of geotechnical deficiencies (e.g., landside flattening and cutoff walls).	USACE construction began in 2019 with anticipated completion in 2020.
G 3.6 miles	NEMDC west levee from Elverta Road to the pumping station just upstream of Dry Creek	Fix-in-place construction and remediation of geotechnical deficiencies (e.g., landside flattening and cutoff walls).	Construction scheduled for 2022.
F 4.7 miles	NEMDC west levee from Sankey Road to Elverta Road	Widening the existing levee by fix-in-place construction and remediation of geotechnical deficiencies (e.g., landside flattening and cutoff walls).	Construction scheduled for 2022.
Unit 3 North, Cross Canal Inflow (PGCC)			
E 3.3 miles	PGCC west levee from Howsley Road (at PGCC) to Sankey Road (at PGCC)	Widening the existing levee by fix-in-place construction and remediation of geotechnical deficiencies (e.g., landside flattening and cutoff walls).	Construction scheduled for 2022.
Unit 4, Natomas Cross Canal			
D 5.5 miles	NCC south levee from Sankey Road (at SREL) to Howsley Road (at PGCC)	Widening the existing levee by fix-in-place construction and remediation of geotechnical deficiencies (e.g., landside flattening and cutoff walls).	Levee work completed as part of the NLIP. USACE construction in 2019. Completion of pump plant 4 anticipated in 2021.

2.2 Encroachments

Upon completion of the Natomas Project, the greatest risk to levee integrity and functionality is presented by encroachments. Encroachments can present varying threats to levee integrity and operation and maintenance (e.g., levee inspection and monitoring and flood response). Levee integrity concerns associated with encroachments have been reduced over the past several years due to the improvements constructed as part of the NLIP and increased coordination by the RD with residents. However, encroachments can not only have an adverse impact on levee integrity, but can significantly impede the ability of levee personnel to safely and adequately conduct inspection, operation, maintenance, and flood fighting activities along the levee. One of the main impediments to levee inspection and flood fighting is safe and adequate access. Adequate visual inspections cannot always be accomplished from the levee crown and access is needed to the levee slopes. Access impediments typically include fences, gates, inadequate walking paths due to landscaping or hardscaping, and inadequate and/or infrequent parking alcoves. The second type of impediment to levee inspections is visual obstructions. Inspectors must be able to view the levee slope from the crown to properly inspect, monitor and assess the levee condition, particularly during high-water events. Because encroachments significantly affect access and visibility and thus the ability of levee personnel to perform necessary operation and maintenance activities, their modification or removal may be necessary.

As described previously, SAFCA, RD 1000, and/or USACE are addressing landside encroachments through construction of the Natomas Project; therefore, these topics are not discussed further except in generalities. However, unique to this area is the significant waterside development present along the Sacramento River east levee. Typical structures and features that are common to private residences and commercial buildings (e.g., homes, offices, restaurants, sheds, hardscaping, retaining walls, landscaping) are present on the waterside slope. In some cases, these encroachments are located waterward of the theoretical levee prism, due to construction of an adjacent levee as part of NLIP, or future adjacent levee as part of the Natomas Project, and in some cases, this is the waterside levee slope. For both new and existing encroachments, existing rules, standards, and regulations are being applied; however, due to the presence of an adjacent levee in some locations, there may be some flexibility provided to the landowners as long as the encroachments are not presenting an unacceptable threat to levee integrity, or operation, through restriction or impediment of access and visibility.

In 2019, RD 1000 conducted a property-by-property survey along the Garden Highway (i.e. SREL) to identify the severity of encroachments that could impact inspections, operations and maintenance. Existing encroachments presenting an unacceptable threat to levee integrity and/or operation and maintenance, primarily access and/or visibility, were assessed for each property. RD 1000 is using the assessments to develop a plan to facilitate the necessary corrective actions that each affected landowner shall undertake in the remediation and/or removal process for the non-compliant encroachments . RD 1000 will prioritize the correction of unacceptable items and develop a schedule for correction for each identified property. Properties with high-risk items will be prioritized for correction. Moderate and low risk items will be addressed over time. In all cases, correction timelines will be subject to the cooperation of property owners. If a landowner refuses to remove or modify their non-compliant encroachment, RD 1000 will request enforcement assistance from the CVFPB. Enforcement proceedings, which are subject to

mandated notifications and notification periods, require a significant amount of time and resources to execute.

Additionally, RD 1000 in cooperation with CVFPB, Sacramento and Sutter Counties and the City of Sacramento, will reestablish access to both the waterside levee slope within the scope of RD 1000's easements, and the easement area and city and counties road rights-of-way under the control of the state and/or RD 1000. These areas currently have physical obstructions needing to be modified or removed to allow access for visual inspection. Obstructions include, but are not limited to, walls, fences, and gates that restrict the ability to conduct inspections of the waterside slope and adjacent areas of the Garden Highway levee from the roadway.

2.3 Administrative Deficiencies Associated with Encroachments

Following the property-by-property survey and identification of the items presenting an unacceptable threat to levee integrity and/or access and visibility, there are anticipated to be several hundred additional encroachments, that are identified as lacking proper permit documentation and not presenting an unacceptable threat to levee integrity or operation and maintenance. RD 1000 and the CVFPB will conduct an exhaustive research effort to locate the documentation required for these items and where documentation cannot be located, affected encroachment owners will be required to apply for all necessary permits from the USACE, RD 1000, CVFPB, and/or the City of Sacramento, County of Sacramento or County of Sutter, or remove the encroachment. These items present the lowest risk to the system.

Per 33 *Code of Federal Regulations* (CFR) 208.10, any action over, under, or through a flood control work requires review and concurrence that the action meets USACE levee standards prior to that action being taken. In the California Central Valley, issuance of a permit under section 208.10 is the responsibility of the CVFPB as the non-Federal sponsor, but still requires review and permitting (letter of permission) under 33 *United States Code* (USC) 408 by the Sacramento District. Therefore, for each encroachment there should be an encroachment permit from the CVFPB and a letter of permission (previously called a "no objection letter") from the USACE. In some cases, the encroachments predated 33 CFR 208.10 so documentation is typically limited to a note in the project's as-built drawings. There are hundreds of levee encroachments in the Natomas levee system, and they fall into one of the following categories:

- Permitted by the CVFPB, accompanied by a no-objection letter from the USACE, and in compliance with the conditions of the permit (results in an acceptable rating).
- Permitted by the CVFPB, accompanied by a no-objection letter from the USACE, and not in compliance with the conditions of the permit (results in an unacceptable rating).
- Permitted by the CVFPB, lacking a no-objection letter from the USACE, and in compliance with the conditions of the permit (results in an unacceptable rating).
- Permitted by the CVFPB but lacking documentation of the permit, either lacking or accompanied by a no-objection letter from the USACE, and in or out of compliance with the conditions of the permit (results in an unacceptable rating).

- Not permitted by the CVFPB, lacking a no-objection letter from the USACE, and documented in the project as-builts (typically results in an acceptable rating).
- Not permitted by the CVFPB, lacking a no-objection letter from the USACE, and not documented in the project as-builts (results in an unacceptable rating).

Irrespective of any threat assessment towards levee safety, all encroachments, fall into one or more of the above categories. Therefore, an encroachment that does not present an unacceptable threat to levee integrity or operation and maintenance is still rated as unacceptable if there is no permit, the encroachment is not in compliance with the permit, or the encroachment does not meet current design standards. To this end, proper documentation is required to demonstrate that each encroachment has been reviewed and approved by USACE and CVFPB.

RD 1000 and the CVFPB will conduct an exhaustive research effort to locate the documentation required for these items and where documentation cannot be located, affected encroachment owners will be required to apply for all necessary permits from the USACE, RD 1000, CVFPB, and/or the City of Sacramento, County of Sacramento or County of Sutter, or remove the encroachment.

3. INTERAGENCY COORDINATION & CONSULTATION

3.1 USACE Natomas Project

Efforts related to the Natomas PACR have been based on the coordinated, collaborative efforts of the SAFCA, RD 1000, CVFPB, DWR, USACE, U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Environmental Protection Agency (EPA), State Historic Preservation Officer (SHPO), California Department of Fish and Wildlife (CDFW), and Central Valley Regional Water Quality Control Board (CVRWQCB). The primary purpose of this coordination has been in the form of consultation to obtain the necessary permits to construction the project. Continued coordination with these agencies will occur until completion of the Natomas Basin Project.

3.2 Encroachments

The Natomas levee system protects a highly urbanized area, and development along the waterside of the SREL (Unit 1) and ARNL (Unit 2) is present. These facts present unique challenges to RD 1000.

Modification, removal, and/or permitting of encroachments will require significant coordination between RD 1000, CVFPB, and USACE Sacramento District. Extensive research and documentation and outreach to landowners and encroachment owners will be required to resolve unacceptable items. In cases where the property owners are uncooperative, collaboration will be required to enforce compliance.

The City of Sacramento and Sutter and Sacramento counties are the land use and floodplain management agencies in the Natomas Basin. Specific to the Garden Highway, coordination with the counties regarding their right-of-way will be critical to providing access and visibility to the uppermost waterside slope.

The Central Valley is home to hundreds of species of wildlife and plant life, including several State and federally threatened and endangered species. Removal or modification of encroachments may impact

one or more of these species. although, significant consultation is not expected. Encroachment removal or modification may also involve actions such as alterations in the streambed or disturbance to Waters of the United States, and as such could require consultation with CDFW and USACE. It is expected that the landowner would implement most encroachment removals or modifications.

3.3 Administrative Actions

Encroachment permitting, including development of the administrative record, will require significant coordination among RD 1000, CVFPB, USACE Sacramento District, individual encroachment owners, and landowners. The files of all three agencies will need to be researched to determine what the permitting needs are for each individual encroachment. This will require research into actual permits as well as as-builts because in many cases, encroachments predate the establishment of the SRFCP. In cases where there are no objections to the encroachment but there is no record, RD 1000 will work with the CVFPB and USACE to retroactively processing permits. In cases where there are objections, RD 1000 will work with landowners to modify or remove the encroachments. In cases where the landowner or encroachment owner is uncooperative, enforcement proceeding will be required. The CVFPB is responsible for enforcing encroachment permit terms and conditions and has a process in place for such enforcement. The process includes research of permit and as-built records, informal coordination with easement owners and landowners, noticing, and potentially public hearings. This process can take significant time and can become litigious.

4. AGREEMENTS

There are no specific agreements required to support implementation of this SWIF. O&M requirements are documented in relevant O&M Manuals published by USACE, including the forthcoming revision to the Unit 124 O&M Manual which incorporates specific access and visibility standards for the SREL. In addition, RD 1000 has and continues to seek supplemental funding from the State under its Flood Maintenance Assistance Program ("FMAP") which could expedite resolution of some items.

5. INTERIM RISK REDUCTION MEASURES PLAN

Implementation of the Natomas Project, restoration of access and visibility, and development of the administrative record are long-term solutions that will not be complete for several years. Therefore, an Interim Risk Reduction Measures (IRRM) plan has been developed to reduce the likelihood and consequences associated with inundation risk to the levee area while these long-term solutions are being implemented. This IRRM plan includes both structural and non-structural measures to reduce risk.

5.1 Potential Levee Failure Scenarios

USACE requires that the IRRM consider four potential levee failure modes:

- levee breach prior to overtopping

A levee breach prior to overtopping would provide less warning time than an overtopping scenario. Levee breaches may provide warning signs, such as sand boils and surface erosion, but failure can also occur without warning in the form of foundation failure. Reduced warning times provides less time for mitigating responses to potential levee failure. A breach prior to overtopping would initially provide a smaller initial inundation due to breaching when compared to a levee overtopping with breach scenario, however the ultimate inundation is directly proportional to external (waterside of levee) water elevations and by the minimum levee crest elevation.

- levee overtopping with breach

The overtopping with levee breach scenario starts as an overtopping event and followed by a breach caused by the overtopping. A levee overtopping event with a subsequent breach would produce the maximum initial flood wave, however, it also provides the greatest warning time, prior to breach, when compared to the breach prior to overtopping scenario. The locations of anticipated levee overtopping, based on the minimum levee crest elevation, could be monitored for warning signs and preventative measures would be implemented in the event of an impending overtopping scenario. The ultimate maximum water elevation is directly proportional to the external water elevation and the minimum levee crest elevation.

- malfunction of the levee system components

Malfunctioning of the levee system components, assuming no levee overtopping, would likely result in the least severe consequences of the four potential failure modes. Within the levee system, the components likely to fail/malfunction are flap gates or other closure devices on through pipes, gravity pipes, and other pipes; railroad or road crossing closure gates; relief wells; flood walls; and pump stations designed to pump interior drainage to the external water sources.

Generally, malfunction of levee system components results in localized flooding and provides opportunity for immediate mitigating actions, such as pumping, and additional levee armoring on the landside to prevent an escalation of consequences. In the event of a flap gate failure, flooding would be localized and mitigating actions, such as pumping and additional levee armoring on the landside, could prevent escalating consequences. However, the localized flooding on the landside toe could weaken the levee and increase the likelihood of failure. A failure of railroad, road crossing, or manual closure gates could result in more severe localized flooding and lower the minimum levee crest elevation significantly resulting in overtopping. Depending on the type of gate, the severity of the gate failure, and the invert elevation of the gate, the failure could result in minor consequences similar to a failed flap gate to a full levee breach.

- levee overtopping without breach.

Generally, the interior inundation levels due to a levee overtopping scenario without a breach, are lower than both an overtopping scenario with a subsequent breach and a breach prior to overtopping, and the amount of flooding is related to the amount of time of the overtopped levee flow. The locations of overtopping can be anticipated based on the lowest levee crest elevations and preparations for

reinforcement can be planned beforehand and rapidly mobilized. The overtopping will also produce relatively localized inundations and therefore provide more opportunity for mitigating actions during a flood event.

5.2 Interim Maintenance Standards & Risk Reduction Measures

No additional or new maintenance standards are being proposed during implementation of this SWIF, although interim risk reduction measures will be implemented. Implementation of the below measures will continue to reduce risk to the Natomas Basin:

- Sacramento County, Sutter County and the State of California provide annual pre-season flood awareness information to the public through mailers, ads, and social media.
- RD 1000 has a comprehensive public outreach campaign to make the community aware of its flood control responsibility and authorities. This includes an active website and facebook page to increase and improve communications with residents in the basin, particularly during flood season.
- RD 1000 participates in community meetings and informational events hosted by the City and Counties to provide information to the public about emergency planning and evacuation procedures.
- RD 1000 has also been coordinating with City and County emergency managers to improve communication, flood event response and evacuation planning.
- RD 1000 is a signatory to the Sacramento County Public Works Mutual Aid Agreement, and has executed a similar agreement with the City of Sacramento to ensure adequate resources are available to monitor the system and respond to a flood emergency.
- When river waters are forecast to rise to above trigger levels, RD 1000 provides increased patrols and monitoring. Areas of known seepage or geotechnical concerns are closely monitored for any signs of distress.
- RD 1000 works closely with DWR and USACE to flood fight any signs of distress.

5.3 Risk Communication

There is always a residual risk that flooding could occur; therefore, SAFCA, RD 1000, and the State have a multi-pronged public outreach campaign aimed at informing residents of their flood risk. These include the annual flood risk notification to residents by the State; annual noticing to waterside residents by RD 1000, annual assessment notifications, informal and formal outreach functions with and among the agencies. Additionally, RD 1000 has targeted outreach, primarily through face-to-face interactions with landowner's associations, public meetings, and website/social media, to make the community aware of the district's flood control responsibilities, and to provide contact information and locations for the public to get pertinent information before and during a flood event. Further, RD 1000 has focused communication with property owners adjacent to the levees, particularly the waterside property owners

along the Sacramento River, which is the area of greatest concern for encroachments. In recent years, there has been significant improvement in this area in response to the notices and communications.

Check out our website at www.rd1000.org and our facebook page at https://www.facebook.com/ReclamationDistrict1000/.

6. MILESTONE SCHEDULE

Table 6 below presents the major milestones being implemented as part of this SWIF. As stated previously, work towards meeting milestones will occur concurrently despite a difference in risk level, especially as some tasks will support multiple milestones and objectives.

Table 6. SWIF Milestone Implementation Schedule

Action	Start	Completion
USACE Natomas Project		
Execute PPA		2016
Construction	Ongoing	2024
Encroachments – Highest Risk		
Garden Highway Property-by-Property Access and Visibility Survey	2019	2020
Owner Outreach for Access and Visibility Action (Highest Risk first)	2020	2021
Owner Modifications and Removal	2020	2024
Enforcement Actions (as needed) and Subsequent Owner Modification and Removal	2020	2030
Encroachments – Moderate to Low Risk		
Owner Outreach for Access and Visibility Action	2021	2023
Owner Modifications and Removal	2022	2025
Enforcement Actions (as needed) and Subsequent Owner Modification and Removal	2025	2030
Administrative Actions		
Encroachment Documentation Research and Compliance Determination	2023	2027
Owner Outreach for Encroachment Modification or Permitting	2024	2028
Owner Modifications, Removal, and/or Permitting	2025	2030
Enforcement Actions (as needed) and Subsequent Owner Modification and Removal	2026	2035

6.1 Progress Reporting

The most significant reduction in risk will come from implementation of the Natomas Project. This project is federally led by the USACE Sacramento District. To this end, RD1000 may not report on its progress.

Progress reporting for correction of unacceptable encroachments will primarily include a status of the number of parcels surveyed, number of parcels undergoing active, voluntary compliance, number of parcels referred to the CVFPB for enforcement, and number of parcels in compliance (resolved).

Progress for the restoration and creation of the administrative record will occur, in part, inherently with correction of unacceptable encroachments as it is RD 1000's intent to address unacceptable items by property thereby identifying all access, visibility, and administrative deficiencies at once. The remainder will occur independent and following correction of higher risk items. Progress for these activities will be reported through the number of items/parcels for which permits have been located, number of items /parcels for which permits have been determined to not exist or require amendment; number of items'/parcels referred to the CVFPB for enforcement, and number of items/parcels in compliance.

Finally, RD 1000 is utilizing an excel table to track correction of the unacceptable items and will provide this table as part of its annual progress report.

7. COORDINATION WITH FEMA

RD 1000, SAFCA, the City, and counties, continue close coordination with FEMA. This has been especially true in recent years as actions taken by RD 1000, SAFCA, and the State have resulted in a new FEMA mapping designation for the Natomas Basin. In June 2015, the Natomas Basin was mapped as an A99 Zone, which recognizes the improvements made to date but still requires residents and businesses with federally-backed mortgages and loans to carry flood insurance. This coordination is expected to continue during construction of the Natomas Project.

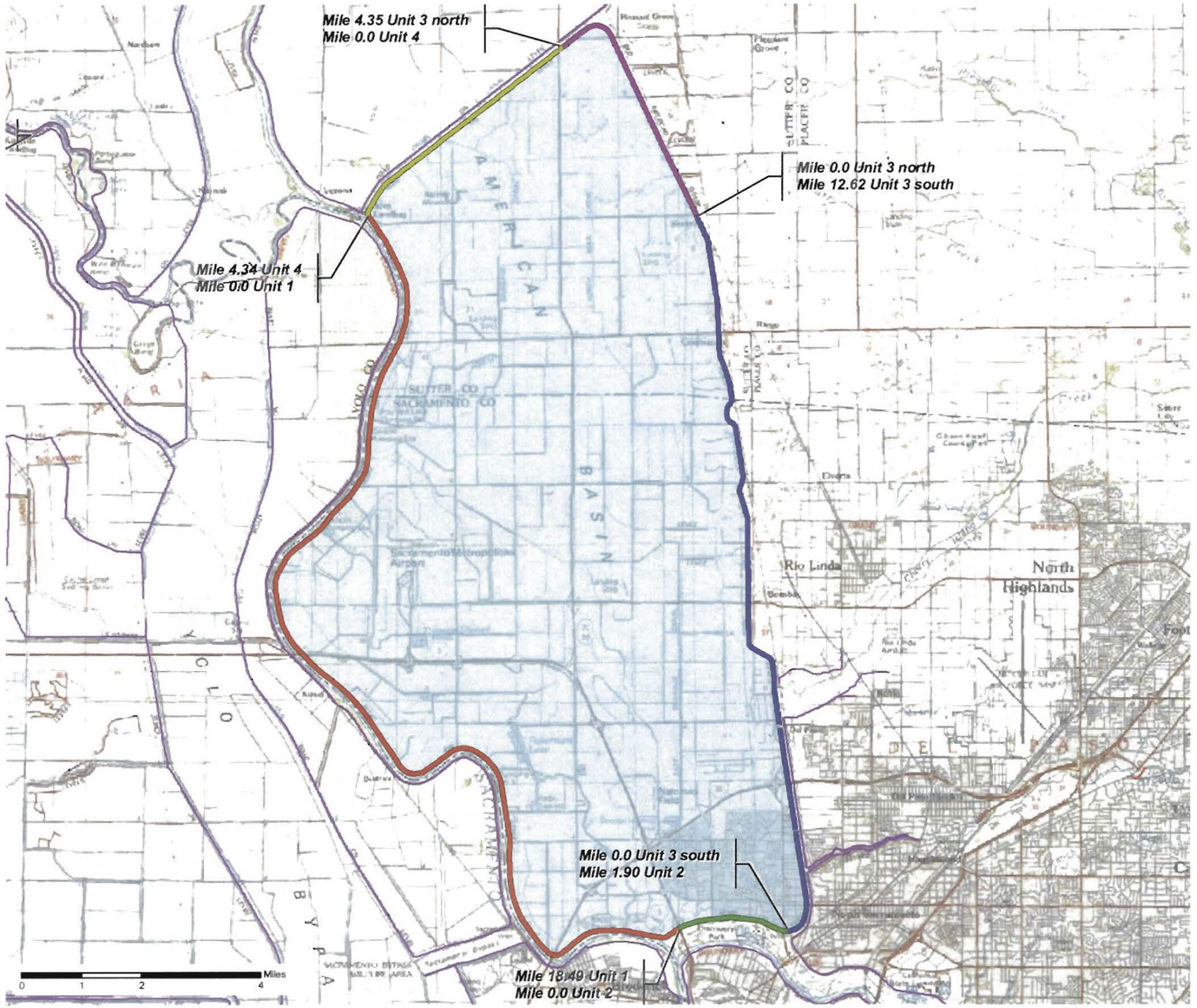
8. CONCLUSION

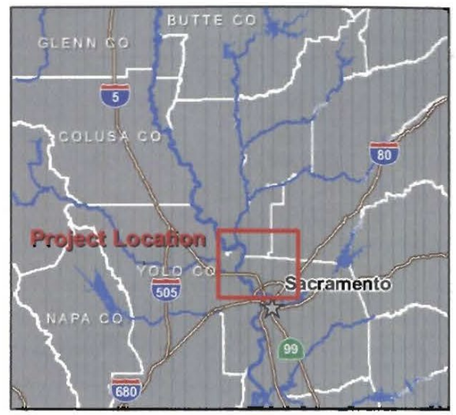
Implementation of this SWIF will address unacceptable items identified by USACE in 2010, levee design standard deficiencies, unacceptable threats to levee integrity and operation and maintenance, and rebuild the administrative record over several decades. Correction of levee design standard deficiencies through implementation of the Natomas Project is well underway and completion is expected within five years. Identification of threats to levee safety presented by encroachments and notification to their owners is also expected to be completed within five years, as is correction of many of these items. RD 1000 is committed to engaging landowners in a respectful, professional, and patient manner appropriately scaled to the threat presented by unacceptable items. However, some landowners may be reluctant and/or resistant to cooperation with RD 1000. As a result, RD 1000 anticipates enforcement action will be necessary. Enforcement proceeding are subject to legal timelines and court orders and take several years to complete. As required by the SWIF policy, RD 1000 will provide annual updates on its status in implementing this SWIF.

REFERENCES

Several documents support this SWIF:

- USACE, 2013. Letter Accompanying Revised Levee Inspection Report Card and Revised Unacceptable Deficiency List for RD 1000- Natomas Levee System. July 1, 2013.
- USACE, 2010. RD 1000 Natomas/California Periodic Inspection. Sacramento and Sutter Counties, California. September 2010.
- USACE, 2010. American River Common Features Project, Natomas Post-Authorization Change Report. July 2010.
- SAFCA and CVFPB, 2010. Vegetation Variance Request, Natomas Levee Improvement Program (Additional Information Provided May 27). April 2, 2010.
- USACE, 2010. Memorandum CVFPB Vegetation Variance Request for the American River Watershed, California, Common Features (Natomas Basin) Project, Post-Authorization Change Report.
- USACE. Unit No. 124 North Levee of American River from Natomas East Canal to the Sacramento River and East Levee of the Sacramento River from Natomas Cross Canal to American River. Supplement to Standard Operation and Maintenance Manual Sacramento River Flood Control Project.
- USACE. Unit No. 125 Back Levee of Reclamation District No. 1000Supplement to Standard Operation and Maintenance Manual Sacramento River Flood Control Project.





Map Legend

Project Levees NLD SYSTEM and SEGMENTS
(LIS Code and Segment Length Miles)

- Unit 1, Sacramento River (NAT1 - 18 49)
- Unit 2, American River (NAT2 - 1 90)
- Unit 3 north, Cross Canal inflow (NAT3 - 4 35)
- Unit 3 south, NMDEC (NATC - 12 62)
- Unit 4, Natomas Cross Canal (NAT4 - 4 34)
- Federal Levee
- Non-Federal Levee (PL84-99)
- Protection Area

USGS Quadrangles (100k)
SACRAMENTO, 1982

FEDERAL LEVEE PROJECTS
SYSTEMS MAP

RD 1000 - NATOMAS

U.S ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT

RECLAMATION DISTRICT 1000

DATE: SEPTEMBER 11, 2020 **AGENDA ITEM NO. 4.2**

TITLE: **Superintendent's Report – September 2020**

SUBJECT: **Update on Activities Since the August 2020 Board of Trustees Meeting**

EXECUTIVE SUMMARY:

This Staff Report is intended to inform the Board and serve as the official record of the activities the District's field staff engaged in for the month of August 2020. As well as provide information regarding District facility use and local weather impacts on District facilities and river levels.

The Superintendent report was created to provide monthly updates to the Board of Trustees on field related activities within the District boundaries, as well as provide a historical record. This allows for the District and the public the opportunity to refer back to data trends over time regarding the weather impact on District facilities, crew activities, and local river and canal conditions as well as general District activities from month to month.

RECOMMENDATION:

There are no staff recommendations, the information provided is strictly informational.

ATTACHMENTS:

1. Superintendent's Report Data Sheet

STAFF RESPONSIBLE FOR REPORT:

_____ Date: 09/01/2020
Donald Caldwell, Superintendent

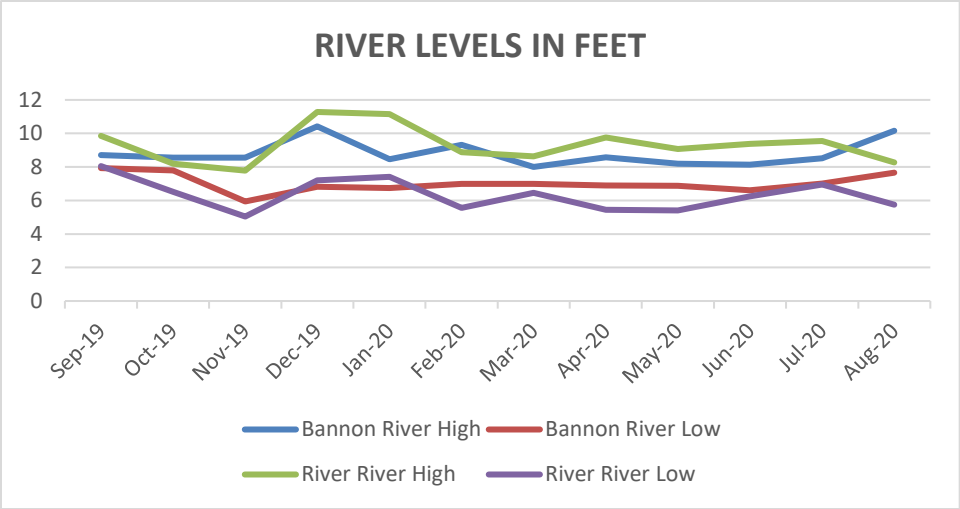
_____ Date: 09/03/2020
Kevin L. King, General Manager

Superintendent's Report
August 2020

River Levels:

Bannon H: 10.15'
L: 7.66'

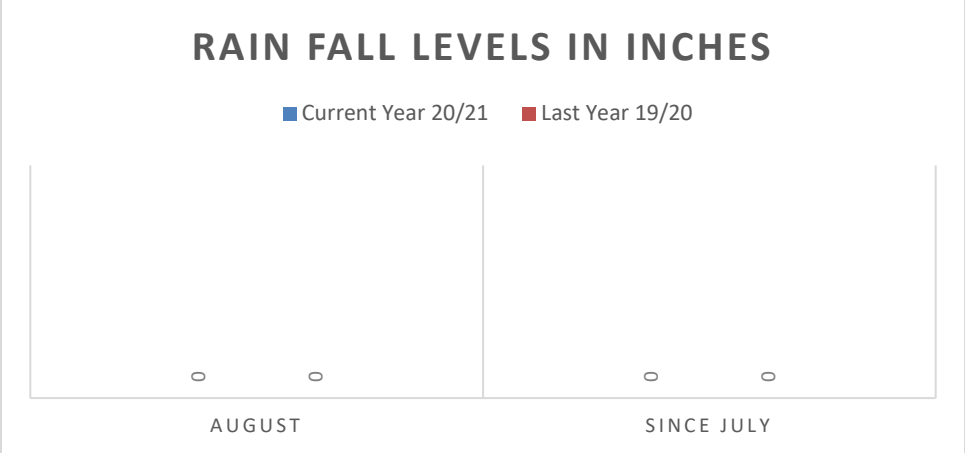
River H: 8.26'
L: 5.74'



Rain Fall Totals:

August rain totals were 0"

Rain totals since July 1st were 0"



Safety Topics for the Month of August
Pumping Plant Safety and Operation – Observe your surroundings for hazards including slippery surfaces, moving parts and plant condition.

District Complaints
The District received one complaint since the August 14th Board Meeting. A resident reported high weeds in the area of Garden Highway and Northgate. The area was identified as being near/within the current Army Corps project. Superintendent Caldwell intends to coordinate with the Army Corps a time in which District crews can go in and clear out the weeds.

The chart below represents various activities the field crew spent their time working on during the month of August 2020.

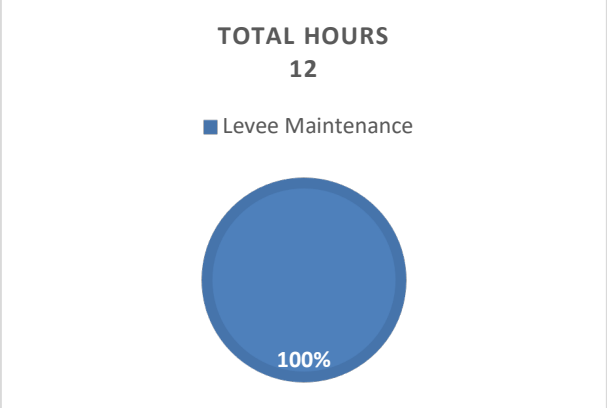
RD 1000 Field Crew	*Field Hours Worked	Activity
	110	Grounds
	156	Pump Plant Maintenance
	58	Pump Rounds
	52	Ditch Maintenance
	44.5	Levee Maintenance
	96	Garbage
	272	Weed Control
	128	Mowing
	212	Equipment Repair
	8	Equipment Hauling

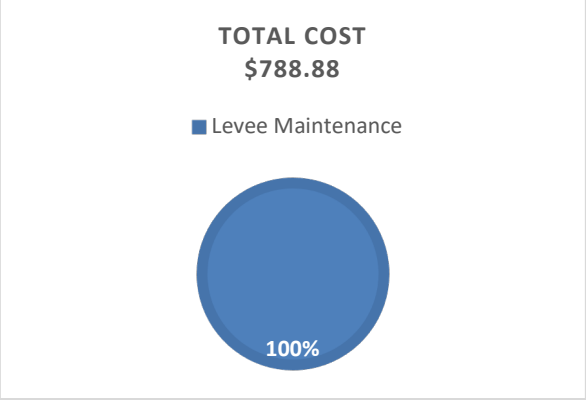
**Hours worked do not include the Superintendent's time.*

Pumping
The District did some pumping in the month of August due to rice water releases.

Pumping Plant	Pump	Hours and A/F
Plant 1-B	Pump # 1	92.2 hours and 903.56 A/F
	Pump # 2	18.6 hours and 182.28 A/F
	Pump # 4	24.8 hours and 243.04 A/F
	Pump # 6	94.4 hours and 925.12 A/F
Plant 2	Pump # 1	3 hours and 19.8 A/F
	Pump # 2	69.5 hours and 201.95 A/F
Plant 3	Pump # 1	65.2 hours and 241.24 A/F
	Pump # 3	4.8 hours and 32.16 A/F
	Pump # 4	4.4 hours and 18.04 A/F

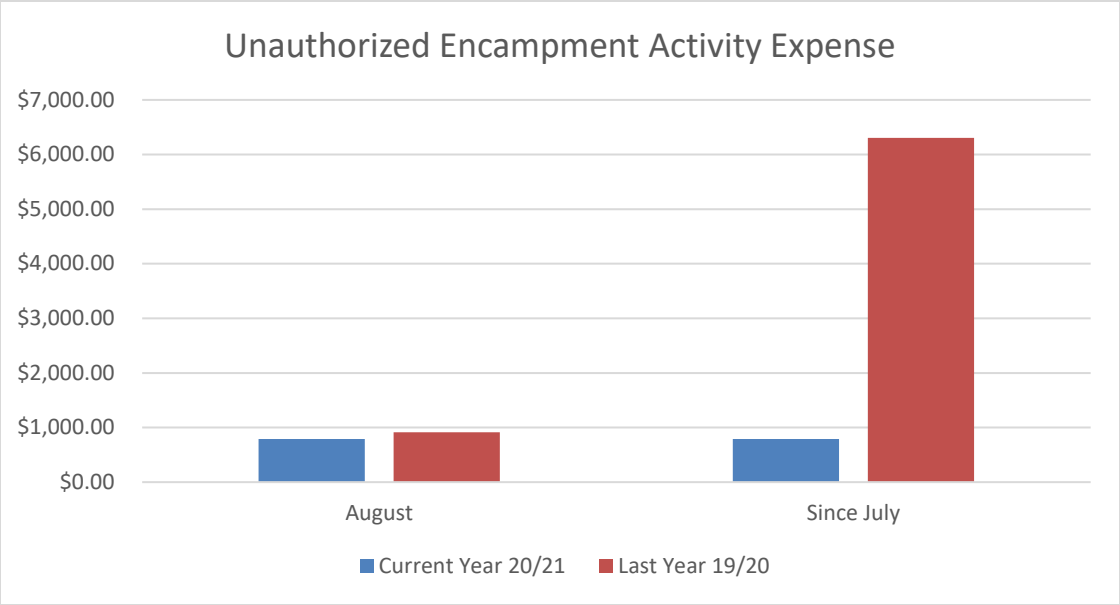
Unauthorized Encampment Activity During the month of August, the District spent a total of 12 hours on unauthorized encampment related work for a total cost to the District of $788.88. This total includes labor,* equipment costs, materials and dump fees.





Unauthorized Encampment Activity – Year to Date

This fiscal year to date the District spent a total of 12 crew hours on unauthorized encampments for a total cost to the district of $788.88 This total includes labor,* equipment costs, materials and dump fees.



RECLAMATION DISTRICT 1000

DATE: SEPTEMBER 11, 2020 **AGENDA ITEM NO. 4.3**

TITLE: **District Counsel's Report – September 2020**

SUBJECT: **Update on Activities Since the August 2020 Board of Trustees Meeting**

EXECUTIVE SUMMARY:

Reclamation District 1000's (RD 1000; District) General Counsel, Rebecca Smith and/or Scott Shapiro to provide verbal report of work performed during the month of August 2020.

ATTACHMENTS:

None

STAFF RESPONSIBLE FOR REPORT:

Kevin L. King, General Manager

Date: 09/04/2020

RECLAMATION DISTRICT 1000

DATE: **SEPTEMBER 11, 2020** **AGENDA ITEM NO. 5.1**

TITLE: **Approval of Minutes**

SUBJECT: **Approval of Minutes from August 14, 2020 Regular Board Meeting**

EXECUTIVE SUMMARY:

This staff report is intended to serve as the official record of monthly meetings of the Board of Trustees. This document details meeting participants, proof of items discussed, summaries of board meeting discussion, and actions taken by the Board. Staff recommends Board approval of meeting minutes (Attachment 1) from the August 14, 2020, Regular Board Meeting.

BACKGROUND:

The Ralph M. Brown Act (Gov. Code §54950 et seq.) governs meetings by public commissions, boards and councils, and public agencies in California. The Act facilitates public transparency and public participation in local government decisions. The Act also contains specific exemptions from the open meeting requirements where governmental agencies have a demonstrated need for confidentiality. To further comply with transparency, Reclamation District No. 1000 documents meetings of the Board of Trustees through Board Minutes.

RECOMMENDATION:

Staff recommends the Board approve the Minutes from the August 14, 2020, Regular Board Meeting.

ATTACHMENTS:

1. August 14, 2020, Board Meeting Minutes

STAFF RESPONSIBLE FOR REPORT:

_____ Date: 09/01/2020
Joleen Gutierrez, Administrative Service Manager

_____ Date: 09/03/2020
Kevin L. King, General Manager

RECLAMATION DISTRICT NO. 1000
BOARD OF TRUSTEES MEETING

AUGUST 14, 2020
MEETING MINUTES

In light of COVID-19 and in Compliance with CA Executive Orders N-25-20 and N-29-20, members of the Board of Trustees and members of the public participated in this meeting by teleconference. This meeting was recorded without objection. Present were: Board President Jeff Smith; Vice President Chris Burns; Trustee David Christophel; Trustee Elena Lee Reeder; Trustee Jag Bains; Trustee Thom Gilbert; Nick Avdis; General Manager Kevin King; Co-General Counsel Rebecca Smith; General Counsel Scott Shapiro; Administrative Services Manager Joleen Gutierrez, Superintendent Don Caldwell, and Administrative Assistant Christina Forehand. District Engineering Consultant Scott Brown from Larsen Wurzel and Bill Worrall from Kjeldsen, Sinnock, and Neudeck, also attended the meeting.

1. PRELIMINARY

1.1. Call Meeting to Order
President Smith called the meeting to order.

1.2. Roll Call
Administrative Services Manager Gutierrez called the roll.

1.3. Approval of Agenda
MOVED/SECONDED: Trustee Christophel/Trustee Gilbert
AYES: Trustee Christophel, Trustee Bains, Trustee Lee Reeder, Trustee Smith, Trustee Avdis, Trustee Burns, Trustee Gilbert
NOES: None
ACTION: A motion to approve the August 14, 2020 Board meeting agenda is approved.

1.4. Pledge of Allegiance
All recite the Pledge of Allegiance.

1.5. Conflict of Interest
No conflicts of interest were identified.

2. PRESENTATIONS

No presentations were scheduled.

3. PUBLIC COMMENT (NON-AGENDA ITEMS)

There were no public comments.

4. INFORMATIONAL ITEMS

4.1. GENERAL MANAGER'S REPORT: Update on activities since the July 2020 Board Meeting.
General Manager Kevin King provided a verbal overview of key items from the General Manager's Report.

Natomas Levee Improvement Project

General Manager King reported significant progress on the NLIP project with the Corps. The Corps anticipates a 95% design in early September, which is a big step for Reach A. Soon after that, the Corps will go out to bid.

Hydraulic Model

General Manager King made known he released our Natomas Basin Hydraulic Model RFQ. The City and County of Sacramento are working to determine how they might proceed with updates in their hydraulic model and use it for their interior levee recertification and FEMA Letter of Map Revision. RD1000 is taking the lead on this project and expects to receive RFQ responses by the end of August. A review panel will be set up and will consist of staff members from the City and County. This panel will review proposals, recommend a consultant to RD1000's Board, and execute the Agreement. RD1000 will receive reimbursement for line items that are specific to the City and County. The City has indicated a budgeted 100k toward this project, and the County is working toward funding approval. The selected consultant will break down all tasks by City, County, and RD1000. GM King anticipates the model to be a useful tool for RD1000 and will fulfill needs for the rest of the basin.

Trustee Jeff Smith asked about cost-sharing for the Hydraulic Model and whether there has been a discussion about an agreement. GM King is confident that the City and County will share in costs because their updates cannot be completed without the use of model updates. If for any reason, the District is not able to recover expenses, RD1000 can implement a fee for reimbursement for the use of our updated model.

Trustee David Christophel inquired whether the hydraulic model could be updated quickly and frequently. GM King stated the model would be open for updates by RD1000, the City, and County with the intent is to have it active and updated as change occurs.

FMAP Funding

Trustee Jeff Smith inquired when the District expects to receive the FMAP funding. GM King replied the District recently received payment. He added the District had signed the sales orders for the three pieces of equipment that were included in the FMAP Agreement. He said that due to a slight delay in funding and equipment order, the price increased by 40k. The District plans to work with DWR on an amendment to cover this increase. This funding would shift from FMAP vegetation management removal and reduce funds toward vegetation removal. Delivery of the ordered heavy equipment is expected in early September.

On August 17, 2020, GM King expects to release the bid package for vegetation removal. He is working with MBK to finalize the scope and bid package. In September he plans to award the contract for vegetation removal and begin removal October with an end date of December 31, 2020, according to the grant.

GM King reports that FMAP funding is available in the State's 2021-2022 Budget. The dollar amount for the District's grant application is 850k. The District plans to purchase additional equipment and focus on a larger vegetation removal project.

Legislation

Trustee Elena Lee Reeder asked about updates on legislative moves for next year. GM King stated the bill did not move forward, and he would like to get in touch with Assemblymember Cooper's office and possibly get the Legal Committee back together to discuss the District's legislative direction.

4.2. SUPERINTENDENT'S REPORT: Update on activities since the July 2020 Board Meeting.

Trustee Elena Lee Reeder requested that the Superintendent's Report include the YTD of how much the District spends on homeless encampments. GM King explained that the end of the District's fiscal year was June 30, 2020 and that the District's current fiscal year, which began on July 1, does not include the prior fiscal year expenses. Since the beginning of the current fiscal year 2020-2021, the District has not incurred homeless encampment related expenses, and to date, there are no costs to report.

Trustee Lee Reeder requested to have a running dialogue at the bottom of the Superintendent's report to reflect the previous fiscal year's costs so that cumulative encampment cost information can be located and shared. GM King will work with staff to fulfill this request beginning September 2020.

4.3. DISTRICT COUNSEL'S REPORT: Update on activities since the July 2020 Board Meeting.

Co-Counsel Rebecca Smith gave a verbal report of her District related activities during July 2020. Counsel Smith and Counsel clarified Brown Act provisions relating to notice for Special Board Meetings.

Counsel Smith reminded Board members that AB 1234 and Sexual Harassment Prevention training is available online through the Flood Association/Downey Brand.

5. CONSENT CALENDAR

The Board considers all Consent Calendar items to be routine and will adopt them in one motion. There will be no discussion on these items before the Board votes on the motion, unless Trustees, staff, or the public request specific items be discussed and/or removed from the Consent Calendar.

Trustee Chris Burns requested two corrections to the July 10, 2020 Board meeting Minutes. Section 6 should reference the Governor's Executive Order. Trustee Burns asked for a listen back to the meeting to ensure Scott Brown's comments were recorded correctly. ASM Gutierrez will review the recording and make corrections.

Motion to approve 5.1, 5.2, 5.3, 5.4, with a modification to item 5.1.

MOVED/SECONDED: Trustee Gilbert/Trustee Lee Reeder
NOES: None.
ACTION: A motion to approve Consent Calendar Items 5.1 (with modification) 5.2, 5.3, and 5.4 is approved.

5.1. APPROVAL OF MINUTES: Approval of Minutes from August 14, 2020 Regular Board Meeting.

5.2. TREASURER'S REPORT: Approve Treasurer's Report for July 2020.

5.3. EXPENDITURE REPORT: Review and Accept Report for July 2020.

5.4. BUDGET TO ACTUAL REPORT: Review and Accept Report for July 2020.

6. SCHEDULED ITEMS

6.1. REVIEW AND CONSIDER APPROVAL OF CAPITAL IMPROVEMENT PLAN UPDATE: Review and Consider Adoption of Resolution No. 2020-08-01 Adopting the Capital Improvement Plan Update.

General Manager Kevin King stated Bill Worrall from KSN was available to answer any questions on the CIP. GM King said there were minor revisions since the packet went out. The CIP plan did not include a plan for asset management and engineering. He stated Plant 5 pre-engineering would be in flux, so the budget was reduced to 400k. GM King also included 500k for asset management. Section 6 will be replaced with the asset management change; hence this will change the Executive Summary. Also, two pages of Section 5 are reflective of the changes in asset management.

Trustee Jeff Smith added the CIP Plan is just a roadmap to help the Board understand how much we might need to put into our budgets.

Trustee Thom Gilbert inquired about pumping, maintenance, and replacement of culverts and whether we already budget for these items.

Trustee Chris Burns inquired about current Plant 8 conditions and future projections for replacement. Knowing current plant conditions will lead to a better understanding of facility lifespans. Bill Worrall from KSN stated Plant 8 has a high criticality rating, and it is not in the condition that he would like it to be.

Trustee Nick Avdis inquired about the need for complete replacement and what goes into that. Bill Worrall stated that replacement is based on multiple things -- reliability, redundancy, capacity, operational flexibility, and maintainability that operations can work safely on it. General Manager Kevin King replied that the Plant 8 rating is also based on physical inspection. He said that Superintendent Don Caldwell spent considerable time with Mr. Worrall discussing plant conditions and reviewing maintenance records. GM King stated at Plant 8, we know the pipe

epoxy coating is gone, and the pipes are out of round. These are two primary components that lead to failure eventually, and that is why the plant is not optimally reliable.

Trustee Jag Bains inquired whether it would be possible to add a Table 5-27 to compare Table 5-26. Trustee Bains also requested to know more about the process once the CIP is approved. GM King explained that if the Board adopts the CIP, revisions from this meeting discussion will be finalized, and information will be fed into our Financial Plan so we can finish the work on our financial model and Comprehensive Financial Plan. Once we have that, on an annual basis, GM King would come back to the Board with a CIP Plan as part of the District's Budget approval process. The CIP projects that we anticipate doing in the fiscal year would be listed in the Budget. GM King clarified that Budget approval doesn't equal project approval. It would only approve the funding to start work on the projects. Engineering work on those projects would begin. We would get our scope together, issue RFQ's or RFP's and GM King would return to the Board for contract funding awards.

Trustee Jag Bains inquired about culvert replacement and whether we know what the District has spent historically. GM King replied that since 2019, 40k annually had been spent on replacing failed culverts. Some culverts have been replaced at the developer's cost, but we cannot rely on someone else to replace our culverts.

Trustee Nick Avdis inquired about a legal question of Pumping Plant 8. What does it mean that we are discussing Plant 8, and the potential to fail? Co-Counsel Smith made known that an agency can behave reasonably, have a reasonable plan for improvement, and reasonably use the funds it has to make improvements. Disclosure of potential issues is acting reasonably.

Trustee Elena Lee Reeder requested amendments on Page 142, Table 6-7, Pumping Plant 8, Page 14 of the KSN report, and page 159 to reflect the actual condition of the pipes. GM King agreed to rewrite the sentence to convey what has been discussed about Plant 8 at the August Board Meeting and how we feel about its risk of failure. GM King will add that Plant 8 is: 50% through its useful life, criticality wise it is our most relied upon plant, and based on the conditions of the outfall pipes being out of round and the lack of coating, there is significant concern that it will not meet its full lifecycle replacement.

Trustee David Christophel requested a restatement of amendments to be made. GM King stated he would add a table for Plant 8 that talks about its current condition and lifecycle with the base year of 2001 and leave the existing table in. If we are planning on resetting the base year to 2022, we will make the modification to Page 158 and update the sentence to talk about while the risk of failure appears to be moderate, we do know the criticality makes this important. The outfall pipes will not meet their 75-year current lifecycle replacement based on their current condition of being out of round, and the coating being non-existent; it will not meet its full lifecycle.

Trustee David Christophel moved approval of Resolution No. 2020-08-01, adopting the Capital Improvement Plan Update with stated changes.

MOVED/SECONDED: Trustee Christophel/Trustee Burns
AYES: Trustee Christophel, Trustee Bains, Trustee Lee Reeder, Trustee Smith, Trustee Avdis, Trustee Burns, Trustee Gilbert
NOES: None.
ACTION: A motion to adopt Resolution No. 2020-08-01 with stated changes is approved.

7. BOARD OF TRUSTEE'S COMMENTS/REPORTS

7.1. BOARD ACTIVITY UPDATES:

7.1.1. RD 1000 Committee Meetings Since Last Board Meeting

- Personnel Committee (Christophel, Avdis, & Burns) July 22, 2020
- Executive Committee Meeting (Smith & Burns) August 5, 2020

Trustee David Christophel commented about Special Meetings and Committee Meetings. At a Special Meeting, the Committee can take action. He cautions about the potential for a subset of the Board making decisions on behalf of the entire Board. Co-Counsel Smith reiterated the need for advance notice if there is going to be a quorum.

GM King added Committee agenda items are usually listed as review and discuss and not necessarily take action. Still, the potential to take action is there because there is a quorum of the Board. The Committee's action generally results in a recommendation to the Board.

With the clarification above, Trustee Christophel is comfortable moving forward.

8. CLOSED SESSION

There were no closed session items.

9. ADJOURN

MOVED/SECONDED: Christophel/Bains
AYES: Trustee Christophel, Bains, Lee Reeder, Smith, Avdis, Burns, Gilbert
NOES: None.
ACTION: The meeting is adjourned.

RECLAMATION DISTRICT 1000

DATE: **SEPTEMBER 11, 2020** **AGENDA ITEM NO. 5.2**

TITLE: **Treasurer's Report**

SUBJECT: **Approve Treasurer's Report for August 2020**

EXECUTIVE SUMMARY:

This Staff Report is intended to inform the Board of the current total funds in the District's checking and money market accounts, Sacramento County Treasurer Fund, State Treasurer Local Agency Investment Fund (LAIF), and the City of Sacramento Pooled Investment Fund.

The Staff Report attachment provides the monthly beginning and ending balances of its Operations and Maintenance cash flow. The report considers the current month's receipts, fund to fund transfers, accounts payable, and payroll.

Noteworthy fund and cash flow items during August 2020 are featured in the attached Treasurer's Report.

BACKGROUND:

Income and Cash

The District maintains funds in the California State Controller Local Agency Investment Fund (LAIF), the Sacramento County Treasurer, and Bank of the West.

The District's primary source of income is property assessments. Assessments are collected through respective Sacramento and Sutter County tax bills.

Annually, the Board of Trustees approves a Resolution designating officers and signatories to the Operations and Maintenance Fund held by the Sacramento County Treasurer. The District's Financial Reserve Policy guides current, future, and unexpected funding requirements. The District's Investment Policy guides investments made by the District of any surplus or reserve funds it may have.

RECOMMENDATION:

Staff recommends the Board approve the information in the August 2020 Treasurer's Report.

FINANCIAL IMPACT:

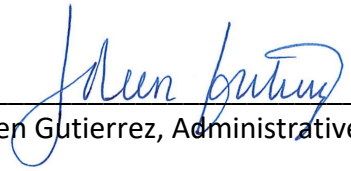
None.

TITLE: Treasurer's Report – August 2020

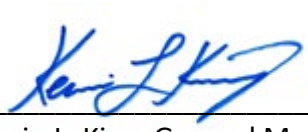
ATTACHMENTS:

1. Treasurer's Report August 2020

STAFF RESPONSIBLE FOR REPORT:



Joleen Gutierrez, Administrative Services Manager — Date: 09/01/2020



Kevin L. King, General Manager — Date: 09/03/2020

Reclamation District 1000
Treasurer's Report
August 2020

Treasurer's Report for August 2020

August 2020		Ending Balance @8/31/20	
Total Funds at 8/31/20		9,766,997.78	
Bank of the West - Checking		182,918.46	Included in O&M cash flow below
Bank of the West - Money Market		50,669.45	Included in O&M cash flow below
Bank of the West FMAP		636,536.62	
Sacramento County Treasurer		4,326,925.89	
State Treasurer - Local Agency Investment Fund		2,433,841.93	
City of Sacramento - Pool A		2,136,105.43	

August 2020 - Operations and Maintenance Cash Flow	Money Market	Operating Checking	Combined O&M
Beginning Balance at 8/1/20	200,669.45	126,116.19	326,785.64
Current months receipts		18,940.00	18,940.00
Transfers from money market to operating account	-300,000.00	300,000.00	0.00
Transfers from LAIF to money market account	150,000.00		150,000.00
Transfer from County Treasury to operatng account		413,000.00	413,000.00
Transfer from operating account to LAIF		-413,000.00	-413,000.00
Accounts Payable*		-174,800.58	-174,800.58
Payroll		-87,337.15	-87,337.15
Ending Balance at 8/31/20	50,669.45	182,918.46	233,587.91

*See Attached Check Register

Current months receipts are made up of the following:

Refund of bank fee from Bank of the West	40.00
Collection of security patrolling from Natomas Central Mutual Water Company	18,900.00
	18,940.00

The district received $26,008.56 into City Pool during June 2020.
Because of the timing of receipt of the City Pool statement,
these amounts were not previously reported.

RECLAMATION DISTRICT 1000

DATE: **SEPTEMBER 11, 2020** **AGENDA ITEM NO. 5.3**

TITLE: **Expenditure Report**

SUBJECT: **Review and Accept Report for August 2020**

EXECUTIVE SUMMARY:

This Staff Report is intended to advise the Board of monthly expenditures and provide an explanation of any expenses outside of the usual course of business. Staff recommends the Board review and accept the Expenditure Report for August 2020.

Expenses

The Administrative Services Manager reviews and the General Manager approves expenditures. This activity is disclosed monthly as an attachment to this staff report. The Expenditure Report (Attachment 1) reveals typical District spending for the month. One item of note is a $12,859 payment to the Central Valley Flood Control Association. This is the District's annual membership fee, which is a budgeted expense.

During the month of August, several employee reimbursements were made. The District's General Manager reviewed and approved all employee reimbursements.

RECOMMENDATION:

Staff recommends the Board review and accept the Expenditure Report for August 2020.

FINANCIAL IMPACT:

None.

ATTACHMENTS:

1. August 2020 Expenditure Report
2. Financial Expense Comparison Summary

STAFF RESPONSIBLE FOR REPORT:

_____ Date: 09/02/2020
Joleen Gutierrez, Administrative Services Manager

_____ Date: 09/03/2020
Kevin L. King, General Manager

August 2020 Expenditure Report

Type	Date	Num	Name	Memo	Amount	Balance
Cash and Investments						**126,116.19**
1010.00 · Bank of the West Checking Acct						**126,116.19**
Bill Pmt - Check	08/03/2020	1001622482	Cal Pers	457 Gutierrez	-914.09	125,202.10
Bill Pmt - Check	08/03/2020	8515987591	Comcast	8155600381146169	-270.01	124,932.09
Bill Pmt - Check	08/03/2020	21603978348	PG&E	Power	-16.26	124,915.83
Bill Pmt - Check	08/03/2020	50101	Airgas NCN	2140381	-379.58	124,536.25
Bill Pmt - Check	08/03/2020	50102	Big Valley Divers, Inc.	Inv 071720	-5,385.75	119,150.50
Bill Pmt - Check	08/03/2020	50103	DFS Flooring	Bid 7/31/2020	-449.00	118,701.50
Bill Pmt - Check	08/03/2020	50104	Neat Freak Clean, LLC	2020-07-29	-350.00	118,351.50
Bill Pmt - Check	08/03/2020	50105	Occupational Health Centers of CA	Inv 68580919	-142.50	118,209.00
Bill Pmt - Check	08/03/2020	50106	SGS Colusa	herbicides	-7,942.61	110,266.39
Bill Pmt - Check	08/03/2020	50107	Smile Business Products	103404	-268.80	109,997.59
Bill Pmt - Check	08/03/2020	50108	Steve Yaeger Consulting	Inv 2020-7	-3,610.00	106,387.59
Bill Pmt - Check	08/03/2020	50109	Valley Tire Center, Inc.	218041	-1,879.81	104,507.78
Bill Pmt - Check	08/03/2020	50110	Valley Truck & Tractor Company	51458	-283.65	104,224.13
Bill Pmt - Check	08/03/2020	50111	Yolo County Public Works	000051	-512.80	103,711.33
General Journal	08/03/2020		Bank of the West	Bank fee refund	40.00	103,751.33
Check	08/03/2020	EFT	Bank of the West		-40.00	103,711.33
General Journal	08/04/2020			8/4/20 payroll taxes	-14,268.45	89,442.88
General Journal	08/04/2020			8/4/20 payroll	-34,254.55	55,188.33
Bill Pmt - Check	08/05/2020	50112	Bryan Hall	Water Bottle Reimbursement	-50.00	55,138.33
Bill Pmt - Check	08/05/2020	50113	Mark Jenkins	water bottle reimbursement	-50.00	55,088.33
Bill Pmt - Check	08/05/2020	50114	Michael Rhoads	Water Bottle Reimbursement	-50.00	55,038.33
Bill Pmt - Check	08/05/2020	50115	Ray Lewis	Water Bottle Reimbursement	-50.00	54,988.33
Bill Pmt - Check	08/05/2020	50116	Taylor Tikalsky	water bottle reimbursement	-50.00	54,938.33
Bill Pmt - Check	08/05/2020	50117	Tony Del Castillo	water bottle reimbursement	-50.00	54,888.33
Bill Pmt - Check	08/05/2020	50118	Umberto Gutierrez	water bottle reimbursement	-50.00	54,838.33
Transfer	08/11/2020			Funds Transfer	150,000.00	204,838.33
Bill Pmt - Check	08/13/2020	276431	Berkshire Hathaway Homestate Companies	REWC122900	-2,114.42	202,723.91
Bill Pmt - Check	08/13/2020	1001630243	Cal Pers	Pension	-13,970.92	188,752.99
Bill Pmt - Check	08/13/2020	22640651464	City of Sacramento	Street Sweeping	-4.65	188,748.34
Bill Pmt - Check	08/13/2020	2441094	Napa Auto Parts	20906137	-861.03	187,887.31
Bill Pmt - Check	08/13/2020	22648060800	PG&E	Stmt Date 08/06/2020	-408.99	187,478.32
Bill Pmt - Check	08/13/2020	80017193829	Waste Management of Sacramento		-502.97	186,975.35
Bill Pmt - Check	08/13/2020	1001630250	Cal Pers	457	-350.00	186,625.35
Bill Pmt - Check	08/13/2020	50119	95814 Digital	Inv 68210	-319.34	186,306.01
Bill Pmt - Check	08/13/2020	50120	AT&T	9391052144	-294.42	186,011.59

Bill Pmt - Check	08/13/2020	50121	California Service Tool, Inc.	parts	-2,186.03	183,825.56
Bill Pmt - Check	08/13/2020	50122	Carson Landscape Industries	1080	-730.00	183,095.56
Bill Pmt - Check	08/13/2020	50123	Chavez Accountancy Corporation	R11125	-1,147.50	181,948.06
Bill Pmt - Check	08/13/2020	50124	Folsom Chevrolet	Deal 99801	-2,930.81	179,017.25
Bill Pmt - Check	08/13/2020	50125	Great America Financial Services	Inv 27531257	-332.29	178,684.96
Bill Pmt - Check	08/13/2020	50126	Green Light Termite and Pest	000212000	-75.00	178,609.96
Bill Pmt - Check	08/13/2020	50127	Grow West	105860	-1,109.50	177,500.46
Bill Pmt - Check	08/13/2020	50128	Mead & Hunt	Inv 305434	-9,092.25	168,408.21
Bill Pmt - Check	08/13/2020	50129	NBS	Financial Plan	-4,336.25	164,071.96
Bill Pmt - Check	08/13/2020	50130	Ronald Peterson	Water Bottle Reimbursement	-50.00	164,021.96
Bill Pmt - Check	08/13/2020	50131	Terrapin Technology Group	Inv 20-1092	-401.15	163,620.81
Bill Pmt - Check	08/13/2020	50132	The Sacramento Bee	Acct 339553	-517.77	163,103.04
Bill Pmt - Check	08/13/2020	50133	Valley Hydraulics & Machine, Inc.	Inv 107318	-28.92	163,074.12
Bill Pmt - Check	08/13/2020	50134	Valley Tire Center, Inc.	218041	-4,025.94	159,048.18
Check	08/14/2020	EFT	ADP		-97.22	158,950.96
General Journal	08/17/2020			8/19/20 payroll taxes	-12,068.86	146,882.10
General Journal	08/17/2020			8/19/20 payroll	-26,745.29	120,136.81
Bill Pmt - Check	08/19/2020	08192020	Alhambra & Sierra Springs	33167566169212	-87.15	120,049.66
Bill Pmt - Check	08/19/2020	1001634009	Cal Pers	September Health	-17,859.25	102,190.41
Bill Pmt - Check	08/19/2020	15020017787	The Home Depot	Inv 3015154	-448.64	101,741.77
Bill Pmt - Check	08/19/2020	AOGZZG5T	Streamline	Inv 106508	-200.00	101,541.77
Bill Pmt - Check	08/19/2020	50135	95814 Digital	Inv 68231	-570.94	100,970.83
Bill Pmt - Check	08/19/2020	50136	Brookman Protection Services, Inc.	Inv 20-101	-7,800.00	93,170.83
Bill Pmt - Check	08/19/2020	50137	CCH Prosystem Fx	Inv 5411120779	-1,346.00	91,824.83
Bill Pmt - Check	08/19/2020	50138	Downey Brand LLP	legal	-6,867.92	84,956.91
Bill Pmt - Check	08/19/2020	50139	Interstate Oil Company	41-0068266	-2,728.85	82,228.06
Bill Pmt - Check	08/19/2020	50140	JCG Technologies	Inv 7635	-495.00	81,733.06
Bill Pmt - Check	08/19/2020	50141	Joleen Gutierrez	Adobe Reimbursement	-356.79	81,376.27
Bill Pmt - Check	08/19/2020	50142	Larsen Wurzel & Associates	Inv 1707000-0720	-687.00	80,689.27
Bill Pmt - Check	08/19/2020	50143	Smile Business Products	103404	-145.68	80,543.59
Payment	08/19/2020		N.C.M.W.C.		18,900.00	99,443.59
Transfer	08/19/2020			Funds Transfer	413,000.00	512,443.59
Transfer	08/24/2020			Funds Transfer	150,000.00	662,443.59
Transfer	08/25/2020			Funds Transfer	-413,000.00	249,443.59
Check	08/25/2020	EFT	Bank of the West		-35.00	249,408.59
Bill Pmt - Check	08/26/2020	23953208791	City of Sacramento	Acct 2007944000	-163.06	249,245.53
Bill Pmt - Check	08/26/2020	1032600946	Verizon	972466087-00001	-469.89	248,775.64
Bill Pmt - Check	08/26/2020	23953300350	City of Sacramento	Acct 5450844000	-62.65	248,712.99
Bill Pmt - Check	08/26/2020	50151	ACWA JPIA	204	-1,829.14	246,883.85

Bill Pmt - Check	08/26/2020	50152	Boutin Jones, Inc.	020773	-3,023.00	243,860.85
Bill Pmt - Check	08/26/2020	50153	CA Central Valley Flood Control Assoc.	Annual Membership	-12,859.00	231,001.85
Bill Pmt - Check	08/26/2020	50154	MBK Engineers		-642.00	230,359.85
Bill Pmt - Check	08/26/2020	50155	SCI Consulting Group	Assessment Services	-10,010.37	220,349.48
Bill Pmt - Check	08/26/2020	50156	SMUD	Power	-27,481.42	192,868.06
Bill Pmt - Check	08/26/2020	50157	Tesco Controls, Inc.	SCADA	-7,742.50	185,125.56
Bill Pmt - Check	08/26/2020	50158	Security & Asset Management, LP	4REC0003	-2,207.10	182,918.46
Total 1010.00 · Bank of the West Checking Acct					56,802.27	182,918.46
Total Cash and Investments					56,802.27	182,918.46
					56,802.27	**182,918.46**

Activity Summary

Transfers from money market account	300,000.00
Transfer from County Treasury	413,000.00
Transfer to LAIF	-413,000.00
Refund of bank fee	40.00
Natomas Central Mutual Water Company	18,900.00
Payroll disbursements	-87,337.15
Accounts payable disbursements	-174,800.58
Net activity	**56,802.27**

RD1000

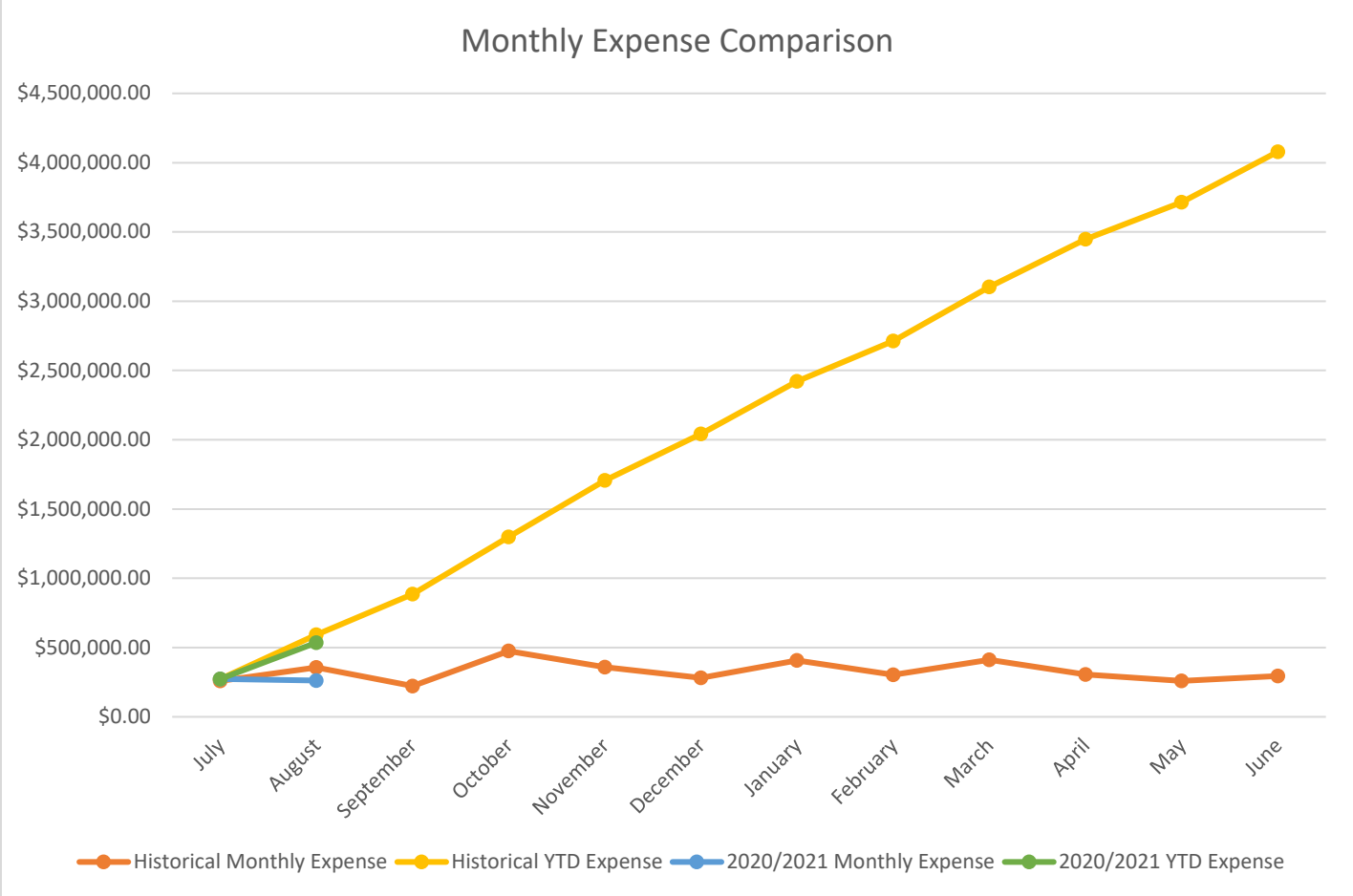
Monthly Historical Expense Comparison

The graph below compares current fiscal year monthly expenses as of August 2020 to historical monthly expense trends for the last four fiscal years. With August being the second month of the fiscal year, a trend line is not yet evident.

The graph also compares the cumulative year to date costs as well as historical year to date expense trends for fiscal year 2016/2017 through fiscal year 2019/2020. A trend line is not yet evident for the current fiscal year to date expenses as July is the first month of the fiscal year.

Variations in the month to month expense compared to the historical month to month expenses are due to single expense budgeted items. This includes large equipment purchases and the District's annual insurance liability renewal in which remittance of payment can vary slightly each year.

When comparing year to date expenses to historical expenses, the District is on par with typical spending for the month of August.



RECLAMATION DISTRICT 1000

DATE: SEPTEMBER 11, 2020 **AGENDA ITEM NO. 5.4**

TITLE: **Budget to Actual Report**

SUBJECT: **Review and Accept Report for August 2020**

EXECUTIVE SUMMARY:

This Staff Report is intended to provide a monthly budgetary snapshot of how well the District is meeting its set budget goals for the fiscal year. The monthly Budget to Actual Report contains a three-column presentation of actual expenditures, budgeted expenditures, and percentage of the Budget. Each line item compares budgeted amounts against actual to date expenses. Significant budgeted line item variances (if any) will be explained in the Executive Summary of this report.

Attachment 1 provides a year to date report for the month ending August 31, 2020. The report reveals the District is at 95% for Temporary Administrative help. This is a one-time expense paid upfront at the beginning of the Fiscal Year. We do not expect to see any additional activity in this line item for the remainder of the Fiscal Year.

BACKGROUND:

The Board of Trustees adopts a budget annually in June. District staff prepares the Budget, which shows the current year budget versus expenditures and a proposed budget for the next fiscal year.

Three Board committees review the draft budget before being presented to the full Board for adoption in June. The Personnel Committee reviews the wage and benefits portion of the Budget. The Operations Committee reviews the Capital expenditures Budget. After the two committees review and make recommendations to the Budget, the final draft is prepared for the Finance Committee to consider. After review by the Finance Committee, the final Budget is presented to the Board for adoption at a regular Board meeting.

RECOMMENDATION:

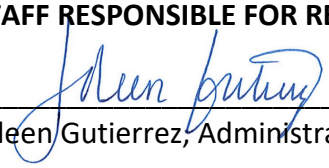
Staff recommends the Board review and accept the Budget to Actual Report for August 2020.

ATTACHMENTS:

1. Budget to Actual Report August 2020

TITLE: Budget to Actual Report

STAFF RESPONSIBLE FOR REPORT:



Joleen Gutierrez, Administrative Services Manager — Date: 09/02/2020

Kevin L. King, General Manager — Date: 09/03/2020

Reclamation District No. 1000
Budget to Actual Comparison
July 1, 2020 to August 31, 2020 (Two Months Ending of Fiscal 2021)

	Year to Date July 1, 2020 to August 31, 2020	Budget	Percent of Budget
Operation & Maintenance Income			
Property Assessments	-	2,250,000	0.00%
Rents	5,326	30,000	17.75%
Interest Income	2,863	95,000	3.01%
SAFCA - O/M Assessment	-	1,400,000	0.00%
Misc Income	-	-	Not Budgeted
FMAP Grant	636,400	601,337	105.83%
Annuitant Trust Reimbursement	-	70,000	0.00%
Security Patrol Reimbursement	-	45,000	0.00%
Development Impact Fees	-	1,400,000	0.00%
Total	**644,589**	**5,891,337**	10.94%
Restricted Fund			
Metro Airpark Groundwater Pumping	-	25,000	0.00%
Total Combined Income	**644,589**	**5,916,337**	**10.90%**
Administration, Operations and Maintenance - Expenses			
Administration			
Government Fees/Permits	-	12,500	0.00%
Legal	7,350	97,000	7.58%
Liability/Auto Insurance	29,948	150,000	19.97%
Office Supplies	(199)	5,500	-3.62%
Computer Costs	2,921	24,000	12.17%
Accounting/Audit	1,148	47,050	2.44%
Admin. Services	5,299	17,000	31.17%
Utilities (Phone/Water/Sewer)	3,066	23,700	12.94%
Mit. Land Expenses	-	6,200	0.00%
Administrative Consultants	14,347	128,000	11.21%
Assessment/Property Taxes (SAFCA - CAD)	-	8,000	0.00%
Admin - Misc./Other Expenses	34	8,250	0.41%
Memberships	22,785	40,800	55.85%
Office Maintenance & Repair	2,045	27,000	7.57%
Payroll Service	287	6,000	4.78%
Public Relations	824	45,000	1.83%
Small Office & Computer Equipment	(141)	12,000	-1.18%
Election	2,541	39,000	6.52%
Conference/Travel/Professional Development	-	20,500	0.00%
Sub Total	**92,255**	**717,500**	**12.86%**
Personnel/Labor			
Wages	143,468	1,214,658	11.81%
Group Insurance	32,681	130,000	25.14%
Worker's Compensation Insurance	6,239	30,000	20.80%
OPEB - ARC	-	-	Not Budgeted
Dental/Vision/Life	5,487	25,887	21.20%
Payroll Taxes	10,931	91,000	12.01%
Pension	94,056	201,148	46.76%
Continuing Education	-	5,000	0.00%
Trustee Fees	3,375	40,000	8.44%
Annuitant Health Care	17,899	91,032	19.66%
Sub Total	**314,136**	**1,828,725**	**17.18%**

Operations			
Power	27,907	500,000	5.58%
Supplies/Materials	2,951	25,000	11.80%
Herbicide	7,992	120,000	6.66%
Fuel	5,090	50,000	10.18%
Field Services	1,479	63,100	2.34%
Field Operations Consultants	-	20,000	0.00%
Equipment Rental	-	5,000	0.00%
Refuse Collection	1,519	30,000	5.06%
Equipment Repair/Service	-	16,000	0.00%
Equipment Parts/Supplies	12,561	60,000	20.94%
Facility Repairs	5,386	211,000	2.55%
Shop Equipment (not vehicles)	-	5,000	0.00%
Field Equipment	-	14,000	0.00%
Misc/Other 2	-	500	0.00%
Utilities - Field	1,491	11,500	12.97%
Government Fees/Permits - Field	-	12,000	0.00%
FEMA Permits	-	1,500	0.00%
Sub Total	**66,376**	**1,144,600**	**5.80%**
Equipment			
Equipment	-	-	Not Budgeted
Sub Total	**-**	**-**	
Consulting/Contracts/Memberships			
Engineering/Technical Consultants	3,510	375,000	0.94%
Security Patrol	7,800	80,000	9.75%
Temporary Admin	14,250	15,000	95.00%
Sub Total	**25,560**	**470,000**	**5.44%**
FMAP Expenditures			
LOI/SWIF (Consultants)	642	-	Not Budgeted
Equipment	-	381,337	0.00%
Operations & Maintenance (Field)	-	220,000	0.00%
Administrative	-	-	Not Budgeted
Sub Total	642	**601,337**	**0.11%**
Total A, O & M Expenses	**498,969**	**4,762,162**	**10.48%**
Capital Expenses			
Capital Office Upgrades	-	20,000	0.00%
Capital RE Acquisition	-	50,000	0.00%
Capital Office Facility Repair	-	30,000	0.00%
Document Management	-	-	Not Budgeted
Capital - District Server	-	-	Not Budgeted
Capital Facilities (including SCADA)	687	2,700,000	0.03%
Sub Total	**687**	**2,800,000**	**0.02%**
Total All Expenditures	**499,656**	**7,562,162**	**6.61%**

RECLAMATION DISTRICT 1000

DATE: **September 11, 2020** **AGENDA ITEM NO. 5.5**

TITLE: **Insurance Renewal**

SUBJECT: **Review and Consider Authorizing General Manager to Execute Annual Insurance Renewal.**

EXECUTIVE SUMMARY:

Reclamation District No. 1000 (RD 1000; District) is required to annually renew their property, auto, and liability insurance. The District previously selected Allied Community Services, LLC., for insurance services and it is recommended to renew with Allied for 2020/2021 coverage.

The rate increase for the 2020 renewal comes with an across the board increase at a minimum of 10%. However, after the carrier applied the 10% rate increase and updated the exposures, the total increase over the expiring policy is 13.5%.

Below is a summary of the more impactful exposure changes to the 2020-2021 policy renewal:

- The vehicle count is down from 18 to 17, the total new cost for all units is up from $744,156 to $806,562.
- 8 vehicles were removed from the vehicle fleet effective 7/30/2020.
- 7 newer units were added per the renewal submission.
- Total IM Value increased from $2,098,403.71 to $2,363,639.95
- Total budget increased from $4,917,938 to $7,402,067

RECOMMENDATION:

Staff recommends the Board review and consider authorizing the General Manager to execute the District's annual insurance renewal for liability and property insurance services with Allied Community Insurance Services, LLC.

FINANCIAL IMPACT:

$136,963

ATTACHMENTS:

1. Water Plus Insurance Proposal (Allied Community Insurance Services, LLC)

STAFF RESPONSIBLE FOR REPORT:

Joleen Gutierrez, Administrative Services Manager

Date: 09/02/2020

INSURANCE PROPOSAL
Reclamation District 1000

EFFECTIVE DATE
10/15/2020

PRESENTED BY:
PCF Insurance Services of the West LLC

ALLIED PUBLIC RISK

PROGRAM MANAGER
www.alliedpublicrisk.com
Allied Community Insurance Services, LLC
Agency License No. 733176
CA License No. 0L01269

PREMIUM SUMMARY

NOTE: This proposal is prepared from information supplied to us on the application submitted by your insurance broker. It may or may not contain all terms requested on the application. Proposed coverages are provided by the Allied Public Risk WaterPlus policy forms and are subject to the terms, exclusions, conditions and limitations of those policy forms. Actual policies should be reviewed for specific details. Specimen policies are available from your insurance broker.

PAGE	COVERAGE SECTION		PREMIUM
3-7	**SECTION 1. PROPERTY** (Property, Equipment Breakdown & Mobile Equipment)	$	38,872.00
8	**SECTION 2. COMMERCIAL CRIME**	$	938.00
9-10	**SECTION 3. COMMERCIAL GENERAL LIABILITY**	$	30,614.00
11	**SECTION 4. PUBLIC OFFICIALS & MANAGEMENT LIABILITY (POML)** (Wrongful Acts, Employment Practices, Employee Benefits, Privacy & Network Risk)	$	5,292.00
12	**SECTION 5. BUSINESS AUTO**	$	34,934.00
13	**SECTION 6. COMMERCIAL EXCESS LIABILITY**	$	25,318.00

TOTAL ANNUAL PREMIUM (excludes state-imposed taxes, surcharges, and fees)	$	135,968.00
TERRORISM PREMIUM	$	695.00
FULLY EARNED POLICY FEE	$	300.00
STATE-IMPOSED TAXES, SURCHARGES, AND FEES	$	N/A
TOTAL AMOUNT DUE* *Payment is due in accordance with the producer agreement.	$	136,963.00

NOTES:

SECTION 1. PROPERTY*

***IS THIS SECTION INCLUDED IN THE PROPOSAL? Yes**

CARRIER:

- Allied World Assurance Company or affiliate
- A XV (Excellent) A.M. Best Rating

FORM:

- Special Causes of Loss
- Proprietary
- Integrated

LIMITS:

Blanket Property: (Real Property & Business Personal Property)	**$20,785,164**
Blanket Coverage Extension: A separate blanket limit that applies to the following coverages: Business Income, Extended Business Income, Commandeered Property, Civil Authority, Extra Expense, Tenant Leasehold Interest, Electronic Data, Preservation of Property.	**$2,000,000**
Equipment Breakdown / Boiler & Machinery:	**Included**
Mobile Equipment (Scheduled):	**$2,250,990**
Mobile Equipment (unscheduled, maximum $10,000 any one item):	**$12,650**
Mobile Equipment (borrowed, rented & leased):	**$100,000**
Earthquake (earth movement excluded):	**N/A**
Flood Zone AE:	**N/A**
Flood Zone X (unshaded):	**N/A**

DEDUCTIBLES:

$1,000	Property
$1,000	Mobile Equipment
$1,000	Equipment Breakdown (aboveground & less than 50 feet belowground)
$2,500	Equipment Breakdown (greater than 50 feet belowground)
N/A	Earthquake (earth movement excluded)
N/A	Flood Zone X (per occurrence)
N/A	Flood Zone AE[1] (per occurrence)
N/A	Flood Zone AE[1] (per damaged structure / per occurrence)
	[1]the greater of the deductibles will be applied
N/A	Wind/Hail[2] (per occurrence)
N/A	Wind/Hail[2] (per damaged structure / per occurrence)
	[2]the greater of the deductibles will be applied

POLICY HIGHLIGHTS:

- Blanket Policy Limits
- Blanket Coverage Extension Limits
- No Coinsurance Penalty
- Equipment Breakdown
- Broad Definition of Covered Property
- Proprietary Coverage Extensions

VALUATION:

- Replacement Cost: Real Property & Business Personal Property
- Actual Cash Value: Mobile Equipment
- Actual Loss Sustained: Loss of Income & Expenses
- Market Price: Fine Arts

SPECIAL COVERAGES:

- **New Locations Or Newly Constructed Property:**
  Pays up to $1,000,000 for your new real property while being built on or off described premises as well as real property you acquire, lease or operate at locations other than the described premises; and business personal property located at new premises.

- **Utility Services – Direct Damage, Business Income & Expense:**
  Pays up to $250,000 for covered property damaged by an interruption in utility service to the described premises. The interruption in utility service must result from direct physical loss or damage by a Covered Cause of Loss and does not apply to loss or damage to electronic data, including destruction or corruption of electronic data. Separate limits apply to Direct Damage and Business Income/Expense Expense.

- **Pollution Remediation Expenses:**
  Pays up to $100,000 or $250,000 for remediation expenses resulting from a Covered Causes of Loss or Specified Cause of Loss occurring during the policy period and reported within 180 days. Covered Causes of Loss means risks of direct physical loss unless the loss is excluded or limited by the Property Coverage Form. Specified Cause of Loss means the following: fire; lightning; explosion; windstorm or hail; smoke; aircraft or vehicles; riot or civil commotion; vandalism; leakage from fire extinguishing equipment; sinkhole collapse; volcanic action; falling objects; weight of snow; ice or sleet; water damage; and equipment breakdown.

- **SCADA Upgrades:**
  Pays up to $100,000 to upgrade your scheduled SCADA system after direct physical loss from a Covered Cause of Loss. The upgrade is in addition to its replacement cost. SCADA means the Supervisory Control and Data Acquisition system used in water and wastewater treatment and distribution to monitor leaks, waterflow, water analysis, and other measurable items necessary to maintain operations.

- **Contract Penalties:**
  Pays up to $100,000 for contract penalties you are required to pay due to your failure to deliver your product according to contract terms solely as a result of direct physical loss or damage by a Covered Cause of Loss to Covered Property.

- **Contamination:**
  Pays up to $100,000 for loss or damage to covered property because of contamination as a result of a Covered Cause of Loss. Contamination means direct damage to real property and business personal property caused by contact or mixture with ammonia, chlorine, or any chemical used in the water and / or wastewater treatment process.

- **Property In Transit:**
  Pays up to $100,000 for direct physical loss or damage to covered property while in transit more than 1000 feet from the described premises. Shipments by mail must be registered for covered to apply. Electronic data processing property and fine arts are excluded.

- **Unintentional Errors:**
  Pays up to $100,000 for any unintentional error or omission you make in determining or reporting values or in describing the covered property or covered locations.

KEY DEFINITIONS

- **Real Property:**
  The buildings, items or structures described in the Declarations that you own or that you have leased or rented from others in which you have an insurable interest. This includes:
  - Aboveground piping;
  - Aboveground and belowground penstock;
  - Additions under construction;
  - Alterations and repairs to the buildings or structures;
  - Buildings;
  - Business personal property owned by you that is used to maintain or service the real property or structure or its premises, including fire-extinguishing equipment; outdoor furniture, floor coverings and appliances used for refrigerating, ventilating, cooking, dishwashing or laundering;
  - Completed additions;
  - Exterior signs, meaning neon, automatic, mechanical, electric or other signs either attached to the outside of a building or structure, or standing free in the open;
  - Fixtures, including outdoor fixtures;
  - Glass which is part of a building or structure;
  - Light standards;
  - Materials, equipment, supplies and temporary structures you own or for which you are responsible, on the premises or in the open (including property inside vehicles) within 1000 feet of the premises, used for making additions, alterations or repairs to buildings or structures at the premises;
  - Paved surfaces such as sidewalks, patios or parking lots;
  - Permanently installed machinery and equipment;
  - Permanent storage tanks;
  - Solar panels;
  - Submersible pumps, pump motors and engines;
  - Underground piping located on or within 1000 feet of premises described in the Declarations;
  - Underground vaults and machinery.

- **Business Personal Property:**
  The property you own that is used in your business including:
  - Furniture and fixtures;
  - Machinery and equipment;
  - Computer equipment;
  - Communication equipment;
  - Labor materials or services furnished or arranged by you on personal property of others;
  - Stock;
  - Your use interest as tenant in improvements and betterments.
  - Leased personal property for which you have a contractual responsibility to insure.

- **Pollution Conditions:**
  The discharge, dispersal, release, seepage, migration, or escape of any solid, liquid, gaseous or thermal irritant or contaminant, including smoke, vapor, soot, fumes, acids, alkalis, chemicals, minerals, chemical elements and waste. Waste includes materials to be recycled, reconditioned or reclaimed.

KEY DEFINITIONS *(continued)*

- **Remediation Expenses:**
  Expenses incurred for or in connection with the investigation, monitoring, removal, disposal, treatment, or neutralization of pollution conditions to the extent required by: (1) Federal, state or local laws, regulations or statutes, or any subsequent amendments thereof enacted to address pollution conditions; and (2) a legally executed state voluntary program governing the cleanup of "pollution conditions.

- **Outdoor Property:**
  Fixed or permanent structures that are outside covered real property including but not limited to:
  - Historical markers or flagpoles;
  - Sirens, antennas, towers, satellite dishes, or similar structures and their associated equipment;
  - Exterior signs not located at a premises;
  - Fences or retaining walls;
  - Storage sheds, garages, pavilions or other similar buildings or structures not located at a premises;
  - Dumpsters, concrete trash containers, or permanent recycling bins;
  - Hydrants; or
  - Electric utility power transmission and distribution lines and related equipment owned by the insured.

- **Equipment Breakdown:**
  Direct damage to mechanical, electrical or pressure systems as follows:
  - Mechanical breakdown including rupture or bursting caused by centrifugal force;
  - Artificially generated electrical current, including electrical arcing, that disturbs electrical devices, appliances or wires;
  - Explosion of steam boilers, steam piping, steam engines or steam turbines owned or leased by you, or operated under your control;
  - Loss or damage to steam boilers, steam pipes, steam engines or steam turbines; or
  - Loss or damage to hot water boilers or other water heating equipment;
  - If covered electrical equipment requires drying out as a result of a flood, we will pay for the direct expenses for such drying out.
  - None of the following are covered objects as respects to equipment breakdown:
    a. Insulating or refractory material;
    b. Buried vessel or piping;
    c. Sewer piping, piping forming a part of a fire protection system or water piping other than:
       (1) Feed water piping between any boiler and its feed pump or injector;
       (2) Boiler condensate return piping; or
       (3) Water piping forming a part of refrigerating and air conditioning vessels and piping used for cooling, humidifying or space heating purposes;
    d. Structure, foundation, cabinet or compartment containing the object;
    e. Power shovel, dragline, excavator, vehicle, aircraft, floating vessel or structure, penstock, draft tube or well-casing;
    f. Conveyor, crane, elevator, escalator or hoist, but not excluding any electrical machine or electrical apparatus mounted on or used with this equipment; and
    g. Felt, wire, screen, die, extrusion, late, swing hammer, grinding disc, cutting blade, cable chain, belt, rope, clutch late, brake pad, non-metallic part or any part or tool subject to frequent, periodic replacement.

PROPERTY SUBLIMITS:

Coverage	Limit
Accounts Receivable	$500,000
Valuable Papers and Records	$500,000
Contamination	$100,000
Tools and Equipment Owned by Your Employees	$5,000
Personal Effects and Property of Others	$5,000
Outdoor Property (unscheduled)	$25,000
New Locations or Newly Constructed Property	$1,000,000
Business Personal Property at New Locations	$1,000,000
Utility Services - Direct Damage	$250,000
Utility Services – Business Income and Extra Expense	$250,000
Dependent Business Premises	$250,000
Property at Other Locations	$250,000
Pollution Remediation Expense (specified cause of loss)	$250,000
Pollution Remediation Expense (covered cause of loss)	$100,000
Contract Penalties	$100,000
SCADA Upgrades	$100,000
Property in Transit	$100,000
Backup/Overflow of Water from Sewer, Drain, Sump	$100,000
Fine Arts	$25,000
Limited Coverage for “Fungus”, Wet Rot or Dry Rot	$25,000
Trees, Shrubs & Plants (maximum $1,000 any one item)	$25,000
Indoor and Outdoor Signs (unscheduled)	$25,000
Arson Reward	$10,000
Fire Department Service Charge	$5,000
Non-Owned Detached Trailers	$5,000
Cost of Inventory or Adjustment	$5,000
Patterns, Dies, Molds, Forms	$2,500
Fire Protection Devices	$2,500
Debris Removal	25% of scheduled limit
Ordinance or Law Provision	25% of scheduled limit

NOTES:
Premium is calculated from attached property schedule; review property schedule for coverage and limit adequacy.
Earthquake and Flood coverages are excluded.

SECTION 2. COMMERCIAL CRIME*

***IS THIS SECTION INCLUDED IN THE PROPOSAL? Yes**

CARRIER:
- Allied World Assurance Company or affiliate
- A XV (Excellent) A.M. Best Rating

FORM:
- Proprietary
- Integrated

RATING BASIS:
- On file with underwriter
- Non auditable

LIMITS:

EMPLOYEE THEFT	FORGERY OR ALTERATION	INSIDE THE PREMISES Theft of Money and Securities	INSIDE THE PREMISES Robbery or Safe Burglary or Other Property	OUTSIDE THE PREMISES	COMPUTER FRAUD	FUNDS TRANSFER FRAUD	MONEY ORDERS & COUNTERFEIT PAPER CURRENCY
$250,000	$250,000	$250,000	$5,000	$250,000	$100,000	$100,000	$100,000

DEDUCTIBLE:
$1,000 each claim

DESIGNATED EMPLOYEE BENEFIT PLAN(S):

POLICY HIGHLIGHTS:
- Separate Limits Apply to Each Coverage
- Coverage Extended to Directors and Authorized Volunteers
- Faithful Performance

NOTES:

SECTION 3. COMMERCIAL GENERAL LIABILITY*

***IS SECTION INCLUDED IN THE PROPOSAL? Yes**

CARRIER:
- Allied World Assurance Company or affiliate
- A XV (Excellent) A.M. Best Rating

FORM:
- Occurrence
- Proprietary

RATING BASIS:
- On file with underwriter
- Non auditable

LIMITS:

Per Occurrence	$1,000,000
General Aggregate	$3,000,000
Products & Completed Operations Aggregate	$3,000,000
Personal & Advertising Injury Limit	$1,000,000
Damage to Premises Rented to You	$1,000,000
Medical Payments	$10,000

DEDUCTIBLE:

N/A

POLICY HIGHLIGHTS:
- Duty to Defend
- Broad Definition of Insured
- Fellow Employee
- Per Location Aggregate
- Blanket Additional Insured Endorsement

OPTIONAL COVERAGES INCLUDED IN QUOTE:

Dam, Levee & Dike Structural Failure

SPECIAL COVERAGES:

- **Water & Wastewater Testing Errors & Omissions:**
  Coverage is provided for damages arising out of an act, error or omission which arises from your water or wastewater testing.

- **Failure To Supply:**
  Coverage is provided for bodily injury or property damage arising out of the failure of any insured to adequately supply water.

- **Waterborne Asbestos:**
  Coverage is provided for bodily injury or property damage from waterborne asbestos arising out of potable water which is provided by you to others.

- **Contractual Liability - Railroads:**
  Coverage is provided for any contract or agreement that indemnifies a railroad for bodily injury or property damage arising out of construction or demolition operations, within 50 feet of any railroad property and affecting any railroad bridge or trestle, tracks, road-beds, tunnel, underpass or crossing.

- **Pollution:**
  Coverage is provided for bodily injury or property damage which occurs or takes place as a result of your operations and arises out of the following:
  - Potable water which you supply to others;
  - Chemicals you use in your water or wastewater treatment process;
  - Natural gas or propane gas you use in your water or wastewater treatment process;
  - Urgent response for the protection of property, human life, health or safety conducted away from premises owned by or rented to or regularly occupied by you;
  - Your application of pesticide or herbicide chemicals if such application meets all standards of any statute, ordinance, regulation or license requirement of any federal, state or local government;
  - Smoke drift from controlled or prescribed burning that has been authorized and permitted by an appropriate regulatory agency.
  - Fuels, lubricants or other operating fluids needed to perform the normal electrical, hydraulic or mechanical functions necessary for the operation of mobile equipment or its parts
  - Escape or back-up of sewage or waste water from any sewage treatment facility or fixed conduit or piping that you own, operate, lease, control or for which you have the right of way, but only if property damage occurs away from land you own or lease.
  - Sudden and accidental events that are neither expected nor intended by an Insured. However, no coverage is provided under this exception for petroleum underground storage tanks.

NOTES:

Coverage for Dam Failure is subject to confirmation of maintenance plan/program in place to address items with a "U" rating in the latest Levee Inspection Report.

SECTION 4. PUBLIC OFFICIALS & MANAGEMENT LIABILITY*

***IS THIS SECTION INCLUDED IN THE PROPOSAL? Yes**

CARRIER:
- Allied World Assurance Company or affiliate
- A XV (Excellent) A.M. Best Rating

FORM:
- Occurrence

DEFENSE COSTS:
- Outside the Limits of Liability

LIMITS:

	Wrongful Acts	$1,000,000	per act
	Employment Practices *(including third party discrimination)*	$1,000,000	per offense
	Employee Benefit Plans	$1,000,000	per offense
	Injunctive Relief	$5,000	per act
		$3,000,000	aggregate limit

PRIVACY LIABILITY AND NETWORK RISK[1]:

	Privacy & Network Security Wrongful Acts	$1,000,000	per act
	Breach Consultation Services	$50,000	per act
	Breach Response Services	$50,000	per act
	Public Relations & Data Forensics	$50,000	per act

[1]Coverage provided for Privacy Liability & Network Risk Coverage is issued on a claims made basis with defense inside the limit of liability. Privacy Retroactive Date: 10/15/2018. Privacy Deductible: $1,000.

SPECIAL COVERAGES:
- Inverse Condemnation: Yes

DEDUCTIBLE

$1,000 each claim including expenses

RETROACTIVE DATE:

POLICY HIGHLIGHTS:
- Duty To Defend
- Broad Definition of Named Insured including Past and Future Employees
- Outside Directorship
- Punitive Damages are Covered Where Insurable by Law
- No Intentional Acts, Assault & Battery or Bodily Injury Exclusions

NOTES:

SECTION 5. BUSINESS AUTO*

***IS THIS SECTION IS INCLUDED IN THE PROPOSAL? Yes**

CARRIER:

- Allied World Assurance Company or affiliate
- A XV (Excellent) A.M. Best Rating

FORM:

- ISO Business Auto

PORTFOLIO:

	Symbol	Limit
Combined Single Limit for Bodily Injury & Property Damage (each accident)	1	$1,000,000
Hired Auto Liability	8	$1,000,000
Non-Owned Auto Liability	9	$1,000,000
“No-Fault” or Statutory Personal Injury Protection (each person)	No Coverage	N/A
Medical Payments	2	$5,000
Uninsured / Underinsured Motorists	2	$1,000,000
Hired Physical Damage	8	$50,000
Owned Physical Damage – Comprehensive	2	ACV
Owned Physical Damage – Collision	2	ACV

DEDUCTIBLE:

Liability: None
Comprehensive: $500
Collision: $500

NOTES:

Please refer to Auto terms provided for per unit coverage.

SECTION 6. COMMERCIAL EXCESS LIABILITY*

***IS THIS SECTION IS INCLUDED IN THE PROPOSAL? Yes**

CARRIER:
- Allied World Assurance Company or affiliate
- A XV (Excellent) A.M. Best Rating

FORM:
- Proprietary
- Following Form

LIMITS:

$10,000,000 / $10,000,000

RATING BASIS:
- On file with underwriter
- Non auditable

SCHEDULED UNDERLYING POLICIES:
Commercial General Liability - Yes
Hired and Non-Owned Auto Liability - Yes
Public Officials & Management Liability - Yes
Wrongful Acts - Yes
Employment Practices - Yes
Employee Benefit Plans - Yes
Owned Auto Liability - Yes
Employer's Liability (minimum underlying limit requirement of $500,000 / $500,000 / $500,000) - Yes
Other:

NOTABLE EXCLUSION:
- Workers' Compensation

NOTES:
Employers' Liability subject to Allied World security requirements.
Excess Coverage for Inverse Condemnation is limited to the first $5M of Excess.

POLICYHOLDER DISCLOSURE
NOTICE OF TERRORISM
INSURANCE COVERAGE

You are hereby notified that under the Terrorism Risk Insurance Act, as amended via the Program Reauthorization Act of 2015, that you have a right to purchase insurance coverage for losses resulting from acts of terrorism, as defined in Section 102(1) of the Act: The term "act of terrorism" means any act that is certified by the Secretary of the Treasury – in consultation with the Secretary of Homeland Security, and the United States Attorney General—to be an act of terrorism; to be a violent act or an act that is dangerous to human life, property or infrastructure; to have resulted in dam-age within the United States, or outside the United States in the case of certain air carriers or vessels or the premises of a United States mission; and to have been committed by an individual or individuals as part of an effort to coerce the civilian population of the United States or to influence the policy or affect the conduct of the United States Government by coercion.

YOU SHOULD KNOW THAT WHERE COVERAGE IS PROVIDED BY THIS POLICY FOR LOSSES RESULTING FROM CERTIFIED ACTS OF TERRORISM SUCH LOSSES MAY BE PARTIALLY REIMBURSED BY THE UNITED STATES GOVERNMENT UNDER A FORMULA ESTABLISHED BY FEDERAL LAW. HOWEVER, YOUR POLICY MAY CONTAIN OTHER EXCLUSIONS WHICH MIGHT AFFECT YOUR COVERAGE, SUCH AS EXCLUSION FOR NUCLEAR EVENTS. UNDER THIS FORMULA, THE UNITED STATES GOVERNMENT GENERALLY REIMBURSES [85%THROUGH 2015; 84% BEGINNING ON JANUARY 1, 2016; 83% BEGINNING ON JANUARY 1, 2017; 82% BEGINNING ON JANUARY 1, 2018; 81% BEGINNING ON JANUARY 1, 2019 AND 80% BEGINNING ON JANUARY 1, 2020] OF COVERED TERRORISM LOSSES EXCEEDING THE STATUTORILY ESTABLISHED DEDUCTIBLE PAID BY THE INSURANCE COMPANY PROVIDING THE COVERAGE. THE PREMIUM CHARGED FOR THIS COVERAGE IS PROVIDED BELOW AND DOES NOT INCLUDE ANY CHARGES FOR THE PORTION OF LOSS COVERED BY THE FEDERAL GOVERNMENT UNDER THE ACT.

YOU SHOULD ALSO KNOW THAT THE TERRORISM RISK INSURANCE ACT, AS AMENDED, CONTAINS A $100 BILLION CAP THAT LIMITS U.S. GOVERNMENT REIMBURSEMENT AS WELL AS INSURERS' LIABILITY FOR LOSSES RESULTING FROM CERTIFIED ACTS OF TERRORISM WHEN THE AMOUNT OF SUCH LOSSES IN ANY ONE CALENDAR YEAR EXCEEDS $100 BILLION. IF THE AGGREGATE INSURED LOSSES FOR ALL INSURERS EXCEED $100 BILLION, YOUR COVERAGE MAY BE REDUCED.

Acceptance or Rejection of Terrorism Insurance Coverage

	I hereby elect to purchase terrorism coverage for a prospective premium of $695.00
	I hereby decline to purchase terrorism coverage for certified acts of terrorism. I understand that I will have no coverage for losses resulting from certified acts of terrorism.

Policyholder/Applicant's Signature **Reclamation District 1000**	Insurance Company **Allied World Specialty Insurance Company**
Print Name	Policy Number
Date	

CALIFORNIA UNINSURED MOTORISTS COVERAGE SELECTION/REJECTION

Applicant/Named Insured: Reclamation District 1000
Company: Allied World Specialty Insurance Company

California law permits you to make certain decisions regarding Uninsured Motorists Coverage. This document describes this coverage and the options available.

You should read this document carefully and contact us or your agent if you have any questions regarding Uninsured Motorists Coverage and your options with respect to this coverage.

This document includes general descriptions of coverage. However, no coverage is provided by this document. You should read your policy and review your Declarations Page(s) and/or Schedule(s) for complete information on the coverages you are provided.

A. Mandatory Offer Of Bodily Injury Uninsured Motorists Coverage

Please indicate your choices by initialing next to the appropriate item(s) below.

1. Selection Of Bodily Injury Uninsured Motorists Coverage

(Initials)	
_____	**I select Bodily Injury Uninsured Motorists Coverage at limits equal to the limits of my Bodily Injury Liability Coverage (split limits) or Combined Single Limit for Liability Coverage.**

2. Rejection Of Bodily Injury Uninsured Motorists Coverage

The California Insurance Code requires that we provide you with the following information:

"The California Insurance Code requires an insurer to provide uninsured motorists coverage in each bodily injury liability insurance policy it issues covering liability arising out of the ownership, maintenance, or use of a motor vehicle. Those provisions also permit the insurer and the applicant to delete the coverage completely or to delete the coverage when a motor vehicle is operated by a natural person or persons designated by name. Uninsured motorists coverage insures the insured, his or her heirs, or legal representatives for all sums within the limits established by law, which the person or persons are legally entitled to recover as damages for bodily injury, including any resulting sickness, disease, or death, to the insured from the owner or operator of an uninsured motor vehicle not owned or operated by the insured or a resident of the same household. An uninsured motor vehicle includes an underinsured motor vehicle as defined in subdivision (p) of Section 11580.2 of the Insurance Code".

(Initials)	
_____	**I reject Bodily Injury Uninsured Motorists Coverage entirely.**
_____	**I delete Bodily Injury Uninsured Motorists Coverage only with respect to the following individuals:**
	(Name of Excluded Driver(s))
	_____
	_____

3. Lower Limit(s) For Bodily Injury Uninsured Motorists Coverage

The California Insurance Code requires that we provide you with the following information:

"The California Insurance Code requires an insurer to provide uninsured motorists coverage in each bodily injury liability insurance policy it issues covering liability arising out of the ownership, maintenance, or use of a motor vehicle. Those provisions also permit the insurer and the applicant to agree to provide the coverage in an amount less than that required by subdivision (m) of Section 11580.2 of the Insurance Code but not less than the financial responsibility requirements. Uninsured motorists coverage insures the insured, his or her heirs, or legal representatives for all sums within the limits established by law, which the person or persons are legally entitled to recover as damages for bodily injury, including any resulting sickness, disease, or death, to the insured from the owner or operator of an uninsured motor vehicle not owned or operated by the insured or a resident of the same household. An uninsured motor vehicle includes an underinsured motor vehicle as defined in subdivision (p) of Section 11580.2 of the Insurance Code".

(Initials)

_____ **I reject Bodily Injury Uninsured Motorists Coverage at limits equal to my Bodily Injury Liability Coverage (split limits) or Combined Single Limit for Liability Coverage and I select the following lower limits.**

(Choose one):

(Initials)	Split Limits	OR	(Initials)	Combined Single Limit
_____	$ 15,000/30,000		_____	$ 30,000
_____	20,000/40,000		_____	40,000
_____	25,000/50,000		_____	50,000
_____	30,000/60,000		_____	60,000
_____	50,000/100,000		_____	100,000
_____	100,000/300,000		_____	250,000
_____	250,000/500,000		_____	300,000
_____	500,000/1,000,000		_____	500,000
_____	$ _____ (Other)		_____	1,000,000
			_____	$ _____ (Other)

B. Mandatory Offer Of Property Damage Uninsured Motorists Coverage

Uninsured Motorists Coverage may also include Property Damage Uninsured Motorists Coverage. Property Damage Uninsured Motorists Coverage provides insurance protection to an insured for compensatory damages for injury to or destruction of a covered auto caused by an automobile accident which an insured is legally entitled to recover from the owner or operator of certain types of uninsured motor vehicles. However, Property Damage Uninsured Motorists Coverage is available only:

1. If you have not rejected Bodily Injury Uninsured Motorists Coverage; and
2. For autos for which you have not purchased Collision Coverage.

Please indicate your choices by initialing next to the appropriate item(s) below.

(Initials)	
_____	**I select Property Damage Uninsured Motorists Coverage at a limit of $3,500 for each accident for the following vehicle(s):** **(Specify Year/Make/Model)** _____ _____ _____
(Initials)	
_____	**I reject Property Damage Uninsured Motorists Coverage entirely.**
_____	**I delete Property Damage Uninsured Motorists Coverage only with respect to the following individuals:** **(Name of Excluded Driver(s))** _____ _____

_____ _____

Applicant's/Named Insured's Signature **Date**

RECLAMATION DISTRICT 1000

DATE: SEPTEMBER 11, 2020 **AGENDA ITEM NO. 6.1**

TITLE: **Fiscal Year 2020/2021 Budget Amendment**

SUBJECT: **Review and Consider Budget Amendment for Fiscal Year 2020/2021 – Operations Manager Position**

EXECUTIVE SUMMARY:

Reclamation District No. 1000 (RD 1000; District) has identified the need to add a position to the organization. The proposed position is a management level position titled Operations Manager, the job description for the position is provided in Attachment No. 1.

The position was discussed previously with the District's Personnel Committee during the Fiscal Year 2020/2021 Budget Development Process, in May 2020 at the Board of Trustees Meeting when the draft FY 2020/2021 Budget was presented, in June 2020 during Final Budget adoption, in July 2020 at a Personnel Committee Meeting, and again at a Personnel Committee Meeting on August 31, 2020.

The Operations Manager position is essential to meeting the goals and objectives of the District. With the recent adoption of the Capital Improvement Plan Update, pending approval of the System Wide Improvement Framework, current and anticipated project demands of the Natomas Basin Improvement Project, and identified maintenance deficiencies, the District is in desperate need of additional human resources. Hiring a full-time position is advantageous to accomplishing the aforementioned projects, as well as providing the District with succession planning, which consequently cannot be achieved if the District used contract/consultant services.

RECOMMENDATION:

Staff recommends the Board review and consider approving FY 2020/2021 Budget Amendment for the addition of an Operations Manager Position.

FINANCIAL IMPACT:

Budget Amendment of $95,000 in Fiscal Year 2020/2021.

ATTACHMENTS:

1. Operations Manager – Job Description

STAFF RESPONSIBLE FOR REPORT:

Kevin L. King, General Manager

Date: 09/04/2020

Operations Manager

Salary

$122,000 - $168,454 Annually

Definition

Under general direction, has overall management responsibility over a staff of personnel engaged in the maintenance, repair, construction, and operation of the District's infrastructure within the boundaries of the District. These facilities include: channels, creeks, ditches, and other waterways; underground pipelines; levees, retention and detention basins; pump stations; and drainage facility appurtenances and drainage facility access roads.

Distinguishing Characteristics

The Operations Manager is a management level position, distinguished from the Superintendent position by the former's overall breadth and range of management and its greater decision-making authority on policies affecting maintenance, construction, and operation of the drainage assets.

Supervision Received and Exercised

Incumbents receive general direction from the District's General Manager and exercises direct and indirect supervision over supervisory, technical, field, and clerical staff.

Examples of Duties, Knowledge, and Abilities

Duties include, but are not limited to, the following:

- Plans, directs, and reviews the work of staff engaged in the operation, repair, construction, and maintenance functions of the Operations Department to minimize flood risk; and maintain, operate, repair, and construct a reliable drainage system.

- Exercises managerial authorities such as planning, directing, coordinating, and overseeing the work of the Department through subordinate staff and consultants/contractors.

- Performs supervisory duties to direct reports and to others such as: evaluating performance; interviewing applicants and making selections; providing career

development mentoring; ensuring that employees are properly trained; reviewing and approving the selection and assignment of personnel; hearing and resolving complex or contentious employee complaints; reviewing and approving disciplinary actions; making recommendations for non-routine, costly, or controversial expenditures for training, workplace improvements, computer software and hardware, etc.

- Performs on-site reviews of facilities to ensure compliance with all permits, conditions and restrictions mandated by the Regional Water Quality Control Board, Department of Fish and Game, and United States Army Corps of Engineers as they relate to the maintenance and operation of the District's infrastructure.

- Evaluates maintenance and operations activities, develops work production goals and performance requirements, monitors performance, and initiates corrective measures to improve efficiency and reduce costs.

- Determines the priority of the inspection, repair, and cleaning of underground, open channel, detention basin and pump station facilities.

- Manages external service agreements for construction, maintenance and operations work.

- Supports and ensures staff compliance with District policies.

- Manages the preparation of Department budgets, including the Capital Project Budget and the Operations Department Operations and Maintenance Budget on an annual basis.

- Evaluates and prepares recommendations on bid proposals for the purchase of new equipment; makes determinations for repair and replacement of equipment.

- Investigates and resolves complaints from the public or regulatory agencies regarding the operation and maintenance of District facilities.

- Prepares and/or directs the preparation of reports and correspondence.

- Assists in the development of department policies.

- Reviews and implements Federal, State, and local rules and regulations governing the operation and maintenance of District facilities.

- Makes and implements long range plans in connection with prospective changes in functions and programs.

- Determines the appropriate resources to devote to particular programs and the appropriate mix of in-service and contracted work.

- Proposes restructuring of work and/or changes in the organizational structure.

Knowledge of:

- Principles and practices of management necessary to plan, organize, implement, analyze, and evaluate the activities of a stormwater utility system
- Principles of personnel administration and staff development including selection, training, and supervision of staff
- Methods, materials, and equipment used in the operation, maintenance, repair and construction of District facilities
- Federal, state, and local laws, codes and regulations governing drainage systems including but not limited to regulations from State Water Resource Control Board, Environmental Protection Agency (EPA), US Fish and Wildlife, and State Air Quality Control Board
- National Pollutant Discharge Elimination Systems requirements and regulations as they relate to the repair, maintenance, construction, and operation of a drainage system
- Methods and techniques involved in conducting analytical studies of administrative and management practices, methods, and procedures
- Public administration and personnel policies of the District, state, and federal governments
- Principles and practices of purchasing in government
- Procedures and processes of public sector budget preparation and maintenance
- Budgeting principles and practices
- Safety precautions and safety regulations particularly those pertaining to the repair and cleaning of underground, open channel, detention basin and pump station drainage facilities
- Methods and procedures to evaluate program results
- Databases, spreadsheets, word processing, and other common computer software applications

Ability to:

- Manage, lead, direct and coordinate the work of supervisory, administrative, and field staff of a complex drainage system
- Develop, manage, lead, train and organize staff to work effectively together
- Recommend policies, identify needs, and establish priorities and plans for District programs/projects
- Communicate in a clear, concise manner, both orally and in writing
- Delegate responsibility and prioritize work
- Work effectively and courteously with the public
- Develop short term and long-term goals and objectives
- Utilize maintenance management software system to evaluate and track maintenance and operations performance
- Interpret District, Department, and State policies, procedures, rules, and regulations
- Plan and direct the maintenance and construction activities of drainage systems
- Prepare budgets and monitor expenditures
- Prepare clear and concise reports
- Read and interpret construction plans, specifications, and maps
- Conduct investigations
- Maintain effective working relationships with employees and other District personnel.

Minimum Qualifications

Five years of full-time supervisory experience in the public or private sector managing an organization engaged in infrastructure maintenance, construction, and repair of utility facilities.

Note: The following education may be substituted for one year of experience: Possession of an Associate's degree or higher from an accredited college or university in engineering technology/civil, environmental or mechanical engineering, management/business or public administration, or construction management technology/construction management.

General Qualifications

License Requirements:

A valid California Driver's License, Class A is required prior to appointment to this position. Failure to maintain the appropriate California Driver's License and/or endorsement(s) may constitute cause for personnel action in accordance with District Policy. Individuals who do not meet this requirement due to disability will be reviewed on a case-by-case basis.

Criminal History and Background Check:

The District may access criminal history information on candidates who have accepted a conditional offer of appointment for this class consistent with District Policies and Procedures, and applicable federal and state laws. The District shall not consider for employment any candidate who has been convicted of a felony or misdemeanor that relates to, or impacts, the candidate's ability to perform the job duties of this position unless it is determined that mitigating circumstances exist. For purposes of accessing criminal history information, the candidate will be fingerprinted. A subsequent arrest notification may be obtained.

The District may also conduct a background check on the candidate prior to appointment to this position. The background check may include personal and professional reference checks, credit history checks with express consent, Social Security Number verification, professional license/registration verifications, military service information and driving history.

Information obtained during the background check will be considered during the selection process. In obtaining such information, the District will comply with applicable consent and disclosure practices in the Fair Credit Reporting Act and the California Investigative Consumer Reporting Agencies Act.

Physical Requirements:

- Sit for periods up to one hour while driving to work sites
- Occasionally be required to:
    - Bend, stoop, squat, kneel, and crouch
    - Reach above the shoulder
    - Walk on uneven surfaces

- Climb into and out of ditches and excavations

Note: Individuals who do not meet these physical requirements due to physical disability will be reviewed on a case-by-case basis.

Working Conditions:

While some work will be in an office setting or in a vehicle, incumbent will frequently be required to work outside in all types of climatic conditions including inclement and hot/cold weather and work around dust, dirt, noise, contaminated and non-contaminated water, chemicals, machinery and equipment with moving parts, moving repair and maintenance vehicles, traffic, fumes, and/or odors.

Work Schedule:

During periods of heavy rain and/or flood conditions, the repair and maintenance of drainage facilities is a 24 hour per day operation. Incumbent in this position will be subject to working night shifts, weekends, and holidays and will be required to work more than 40 hours a week and/or work irregular hours.

Probationary Period

Six (6) months

RECLAMATION DISTRICT 1000

DATE: SEPTEMBER 11, 2020 **AGENDA ITEM NO. 6.2**

TITLE: **Review and Consider Adoption of Official Pay Rate Schedule for Fiscal Year 2020/2021**

SUBJECT: **Review and Consider Adoption of Resolution No. 2020-09-01 Adopting Official Pay Rate Schedule for Fiscal Year 2020/2021.**

EXECUTIVE SUMMARY:

The Board of Trustees of Reclamation District No. 1000 (RD 1000; District) annually adopt an official pay rate schedule. Staff has prepared a revised Official Pay Rate Schedule for Fiscal Year 2020/2021 to include the Operations Manager Position. (Exhibit "A" in Resolution 2020-09-01).

RECOMMENDATION:

Staff recommends the Board review and consider adoption of Resolution No. 2020-09-01 adopting an official pay rate schedule for Fiscal Year 2020/2021.

ATTACHMENTS:

1. Resolution No. 2020-09-01

STAFF RESPONSIBLE FOR REPORT:

Kevin L. King, General Manager

Date: 09/04/2020

RECLAMATION DISTRICT NO. 1000

RESOLUTION NO. 2020-09-01

A RESOLUTION OF THE BOARD OF TRUSTEES OF RECLAMATION DISTRICT NO. 1000 ADOPTING THE OFFICIAL PAY RATE SCHEDULE FOR FISCAL YEAR 2020/2021

At a regular meeting of the Board of Trustees of Reclamation District No. 1000 held at the District Office on the 11th day of September 2020, the following resolution was approved and adopted:

WHEREAS, the Reclamation District No. 1000's (District) mission is flood protection for the Natomas Basin providing for the public's health and safety by operating and maintaining the levees, and the District's canals and pump stations; and

WHEREAS, the Board of Trustees (Board) of the District recognizes the importance of providing flood protection in a safe, efficient and responsible manner; and

WHEREAS, it is appropriate and necessary to employ staff to achieve the goals and objectives of the District; and

WHEREAS, the establishment and adoption of an official pay rate schedule is necessary; and

WHEREAS, the Board has been presented with, reviewed, and considered the official pay rate schedule for Fiscal Year 2020/2021 and considers the proposed schedule as necessary and appropriate for Fiscal Year 2020/2021.

NOW, THEREFORE BE IT RESOLVED THAT:

1. The facts contained in the recitals above are true and correct, and the Board so finds and determines.
2. The Reclamation District No. 1000 Official Pay Rate Schedule for Fiscal Year 2020/2021 is hereby adopted as presented, and as attached hereto as Exhibit "A".
3. The Official Pay Rate Schedule will become effective on October 1, 2020.

BE IT FURTHER RESOLVED THAT: The General Manager and Administrative Services Manager are responsible for adherence to this resolution.

ON A MOTION BY Trustee _____, seconded by Trustee _____, the foregoing resolution was passed and adopted by the Board of Trustees of Reclamation District No. 1000, this 11th day of September 2020, by the following vote, to wit:

AYES: Trustees:

NOES: Trustees:

ABSTAIN: Trustees:

RECUSE: Trustees:

ABSENT: Trustees:

_____

Jeff Smith

President, Board of Trustees

Reclamation District No. 1000

CERTIFICATION:

I, Joleen Gutierrez, Secretary of Reclamation District No. 1000, hereby certify that the foregoing Resolution 2020-09-01 was duly adopted by the Board of Trustees of Reclamation District No. 1000 at the regular meeting held on the 11th of September 2020 and made a part of the minutes thereof.

_____

Joleen Gutierrez, District Secretary

EXHIBIT "A"

RECLAMATION DISTRICT NO. 1000

OFFICAL PAY RATE SCHEDULE

2020-2021

(Adopted 9/11/2020)

(Effective 10/1/2020)

Position	Minimum	Maximum
General Manager	$11,572/Mo.	$16,216.20/Mo.
Project Manager/Engineer (Temporary)	$10,571/Mo.	$14,595/Mo.
Operations Manager	$10,167/Mo.	$14,038/Mo.
Superintendent	$7,235/Mo.	$9,990/Mo.
Administrative Services Manager	$6,128/Mo.	$8,461/Mo.
Foreman	$31.91/Hr.	$44.06/Hr.
Equipment Maintenance Specialist	$25.88/Hr.	$35.72/Hr.
Flood Operations Specialist II	$25.88/Hr.	$35.72/Hr.
Flood Operations Specialist I	$21.50/Hr.	$29.69/Hr.
Administrative Assistant	$18.21/Hr.	$25.14/Hr.

RECLAMATION DISTRICT 1000

DATE: SEPTEMBER 11, 2020 **AGENDA ITEM NO. 7.1.1**

TITLE: **Committee Meeting/Special Board Meeting Minutes**

SUBJECT: **Meeting Minutes from Committee Meetings Since the August Board Meeting**

EXECUTIVE SUMMARY:

Personnel Committee Meeting – August 31, 2020

A meeting of the Reclamation District No. 1000 Personnel Committee was held on Monday, August 31, 2020 at 8:00 a.m. via GoToMeeting and Conference Call. In attendance were Trustees Christophel, Avdis, and Burns. Trustees Gilbert and Lee Reeder participated in the meeting, thereby creating a Special Board Meeting. Staff in attendance were General Manager King, and District Counsel Smith. No members of the public were present and therefore no public comments were made.

GM King presented and discussed the proposed Operations Manager position. GM King presented a financial impact analysis of the added position, which the Committee asked to be performed after the last personnel committee meeting in July. GM King answered additional questions from the Committee.

The Personnel Committee did not take a position on a recommendation for the full Board; however, they did ask GM King to bring the item forward to the September 11, 2020 Board of Trustees meeting for discussion and potential action. With no further business on the Personnel Committee Agenda, the meeting adjourned at 8:45 a.m.

Executive Committee Meeting – September 2, 2020

A meeting of the Reclamation District No. 1000 Executive Committee was held on Wednesday, September 2, 2020 at 8:00 a.m. via GoToMeeting and Conference Call. In attendance were Trustees Smith, Burns and Gilbert. Staff in attendance were General Manager King and District Counsel Smith. No members of the public were present and therefore no public comments were made.

General Manager King presented the proposed agenda for the September 11, 2020 Board of Trustees meeting. The Committee reviewed the agenda and approved as presented.

With no further business on the Executive Committee Agenda, meeting adjourned at 8:40 a.m.

STAFF RESPONSIBLE FOR REPORT:

_____ Date: 09/08/2020

Kevin L. King, General Manager