RESOLUTION NO. 724

RESOLUTION OF THE GOVERNING BOARD OF THE CACHUMA OPERATION & MAINTENANCE BOARD ADOPTING AN AMENDMENT TO THE COMB 2021-2025 INFRASTRUCTURE IMPROVEMENT PLAN

WHEREAS, the Cachuma Operation & Maintenance Board ("COMB") is a joint powers authority and public entity, organized and existing in the County of Santa Barbara in accordance with Government Code Section 6500 et seq., and operating pursuant to the 1996 Amended and Restated Agreement for the Establishment of a Board of Control to Operate and Maintain the Cachuma Project - Cachuma Operation And Maintenance Board, dated May 23, 1996 ("Amended and Restated Agreement"), as amended by an Amendment to the Amended and Restated Agreement made effective September 16, 2003, and a Second Amendment to the Amended and Restated Agreement made effective November 20, 2018 (collectively the "Joint Powers Agreement"); and

WHEREAS, the Member Agencies of COMB are the Goleta Water District, the City of Santa Barbara, the Montecito Water District, and the Carpinteria Valley Water District; and

WHEREAS, COMB operates and maintains Cachuma Project facilities pursuant to a Transfer of Operation and Maintenance Contract with the United States Bureau of Reclamation, including the North Portal Intake Tower, the Tecolote Tunnel, the South Coast Conduit, the Sheffield Tunnel, four regulating reservoirs, flow control valves, meters, instrumentation at control stations, turnouts and appurtenant structures along the entire system; and

WHEREAS, the Five-Year 2021-2025 Infrastructure Improvement Plan ("IIP") was adopted by the COMB Governing Board in February 2020; and

WHEREAS, each year, in conjunction with preparation of the annual Operating Budget, the Governing Board reviews the upcoming infrastructure needs for COMB based on current conditions and priorities; and

WHEREAS, more detailed cost/benefit information, including potential funding offsets, is now available for certain infrastructure improvement projects; and

WHEREAS, since the initial adoption of the current 2021-2025 Five-Year Infrastructure Improvement Plan, project budgets and scheduling adjustments are necessary primarily due to climate change conditions, shutdown limitations, results of completed engineering evaluations, and potential funding offsets; and

WHEREAS, the amended 2021-2025 Infrastructure Improvement Plan will facilitate the decision-making process for allocation of resources to help ensure the delivery of quality, reliable water to the COMB Member Agencies; and

WHEREAS, the proposed amendment to the COMB 2021-2025 Infrastructure Improvement Plan was reviewed by the COMB Operations Committee on April 22, 2021 and forwarded to the Governing Board with a recommendation to approve and adopt the amendment.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF COMB AS FOLLOWS:

1. The Governing Board finds and determines that the facts set forth in the above recitals and in the documents referenced herein are true and correct.

2. The Governing Board approves the April 2021 amendment to the 2021-2025 Infrastructure Improvement Plan, as set forth in the accompanying staff memorandum and Exhibit 2 of the memorandum.

3. This Resolution shall take effect immediately.

PASSED, APPROVED AND ADOPTED by the Governing Board of the Cachuma Operation and Maintenance Board, this 26th day of April 2021, by the following roll call vote:

Ayes: Sneddon, Hayman, Hanson, Holcombe

Nayes:

Absent/Abstain:

APPROVED:

Lich JJu Polly Holcombe (Apr 27, 2021 13:01 PDT)

President of the Governing Board

ATTEST:

Janet Gingras Janet Gingras (Apr 27, 2021 13:55 PDT)

Secretary of the Governing Board

The following two tables display the originally adopted 2021-2025 IIP planning matrix and the amended 2021-2025 IIP planning matrix.

Adopted IIP (2021-2025)

		Project ID	Project Name	2020-21	2021-22	2022-23	2023-24	2024-25	5-yr Total
	1	2012-1-A	SCC AVAR Valve Replacement/Relocation	\$240,000	\$130,000				\$370,000
		2004-2-I	SCC Blow-Off Nozzle/Valve Replacement	\$200,000	\$160,000				\$360,000
	2	2004-2-В	Rehabilitate SCC Lateral Structures	\$150,000	\$150,000	\$100,000			\$400,000
	2	2014-C-61	SCADA Upgrades	\$150,000	\$150,000	\$100,000			\$400,000
		2019-C-1	Lake Cachuma EPF Pump Station (if required)				\$1,125,000	\$1,125,000	\$2,250,000
		2018-C-1	Lake Cachuma EPF Secured Pipeline Project	\$300,000	\$1,725,000				\$2,025,000
		2019-C-2	Modular Office Building Replacement	\$300,000					\$300,000
rity		2018-C-2	SCC Line Valve in Montecito Section for Repairs	\$190,000					\$190,000
Prio	3	2019-C-3	Lake Cachuma Water Quality and Evaporation Buoy	\$100,000		\$60,000			\$160,000
		2013-C-1	North Portal Jet Flow Control Valve Replacement			\$300,000			\$300,000
		2019-C-4	Critical Control Valve Replacement			\$100,000	\$150,000	\$150,000	\$400,000
		2013-C-1	Meter Replacement Program			\$100,000		\$100,000	\$200,000
		2007-2-В	Sheffield Tunnel Evaluation and Repair			\$200,000	\$200,000		\$400,000
	4	2013-2-C	Lauro Reservoir Intake Assessment and Repair			\$130,000			\$130,000
	4	2016-C-1	North Portal Intake Tower Seismic Assessment			\$100,000			\$100,000
		1999-2-A	Tecolote Tunnel Concrete Deterioration Investigation			\$100,000			\$100,000
			Subtotal	\$1,630,000	\$2,315,000	\$1,290,000	\$1,475,000	\$1,375,000	\$8,085,000
			Grant Funding		(\$750,000)				(\$750,000)
			Proposed CVWD Funding						
			Total	\$1,630,000	\$1,565,000	\$1,290,000	\$1,475,000	\$1,375,000	\$7,335,000

Amended IIP (2021-2025)

		Project ID	Project Name	2020-21	2021-22	2022-23	2023-24	2024-25	5-yr Total
	1	2012-1-A	SCC AVAR Valve Replacement/Relocation	\$90,000	\$190,000	\$0	\$0	\$40,000	\$320,000
		2004-2-1	SCC Blow-Off Nozzle/Valve Replacement	\$90,000	\$200,000	\$0	\$0	\$120,000	\$410,000
	2	2004-2-В	Rehabilitate SCC Lateral Structures	\$85,000	\$300,000	\$300,000	\$0	\$0	\$685,000
	2	2014-C-61	SCADA Upgrades	\$150,000	\$150,000	\$0	\$0	\$0	\$300,000
		2019-C-1	Lake Cachuma EPF Pump Station (if required)	\$0	\$0	\$1,850,000	\$1,225,000	\$0	\$3,075,000
		2018-C-1	Lake Cachuma EPF Secured Pipeline Project	\$152,000	\$352,000	\$2,400,000	\$0	\$0	\$2,904,000
		2019-C-2	Modular Office Building Replacement	\$175,000	\$216,000	\$0	\$0	\$0	\$391,000
rity		2018-C-2	SCC Line Valve in Carpinteria for Repairs	\$0	\$400,000	\$0	\$0	\$450,000	\$850,000
Prio	3	2019-C-3	Lake Cachuma Water Quality and Evaporation Buoy	\$0	\$0	\$0	\$0	\$0	\$0
		2013-C-1	North Portal Jet Flow Control Valve Replacement	\$0	\$0	\$0	\$0	\$0	\$0
		2019-C-4	Critical Control Valve Replacement	\$0	\$0	\$0	\$0	\$0	\$0
		2013-C-1	Meter Replacement Program	\$0	\$0	\$0	\$0	\$0	\$0
		2007-2-В	Sheffield Tunnel Evaluation and Repair	\$0	\$0	\$0	\$0	\$0	\$0
	4	2013-2-C	Lauro Reservoir Intake Assessment and Repair	\$0	\$0	\$0	\$0	\$0	\$0
	4	2016-C-1	North Portal Intake Tower Seismic Assessment	\$0	\$0	\$0	\$0	\$0	\$0
		1999-2-A	Tecolote Tunnel Concrete Deterioration Investigation	\$0	\$0	\$0	\$0	\$0	\$0
			Subtotal	\$742,000	\$1,808,000	\$4,550,000	\$1,225,000	\$610,000	\$8,935,000
			Grant Funding			(\$750,000)			(\$750,000)
			Proposed CVWD Funding		(\$300,000)	(\$300,000)		(\$250,000)	(\$850,000)
			Total	\$742,000	\$1,508,000	\$3,500,000	\$1,225,000	\$360,000	\$7,335,000
			Adopted	\$1,630,000	\$1,565,000	\$1,290,000	\$1,475,000	\$1,375,000	\$7,335,000

Change (\$888,000) (\$57,000) \$2,210,000 (\$250,000) (\$1,015,000)	\$0
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APPENDIX A: IIP PROJECT DESCRIPTIONS Updated April 2021



South Coast Conduit AVAR Valve Replacement / Relocation (2012-1-A)

Background

Combination air vacuum air release valves (AVARs) are located at high points along the pipeline and act to automatically expel air and relieve vacuum accumulation in pipes. If air is not adequately expelled, air pockets can constrict flows. If the vacuum is not relieved, serious damage or collapse of the pipeline can occur. If AVAR vaults become flooded or if a negative pressure is experienced within the pipeline, the AVAR valves could allow contaminated water to enter the pipeline. It is now required to install these valves above grade, where flooding is less likely. COMB has been upgrading the AVAR valves in the system such that all are above grade. The AVAR valve structures consist of a manhole cover, riser pipe, valve, and AVAR valve. Over time, the original valves, riser, and manhole covers have also been corroded and pose an operational risk.



Need

There are twenty-six AVARs on the Lower Reach of the SCC. Most AVAR structures were rehabilitated from 2018 to 2021. There are two remaining AVAR valve structures in Highway 192 that need rehabilitation as they pose an operational risk and/or do not meet Section 64576 of Titles 17 and 22 California Code of Regulations, which requires "each new air-release, air vacuum, or combination valve, and any such valve installed to replace an existing valve shall be: (a) installed such that its vent opening is above grade." In addition, three air vents were partially rehabilitated and require replacement of the valve and riser pipe when a coordinated shutdown can occur. The consequence of not completing this project may be major facility failure in multiple locations and potential water contamination.

Description

Replace and relocate to above ground AVARs, and replace riser pipes in the Lower Reach. Consistent with other AVAR replacements, manhole covers, valves, risers, laterals would be replaced at the same time. The project would require coordination with impacted Member Agencies during the required shutdown of the SCC. For efficiency and to minimize cost, phases of this project will be performed concurrently with similar phases of the South Coast Conduit Blow-Off Nozzle/Valve Replacement. Project implementation will occur over time and during low water demand months to reduce the impact of system shutdown.

PRIORITY CATEGORY 1. Regulatory or Legal Requirement

ESTIMATED COST \$320,000

Fiscal Year	Phase	Cost
2020-21	Toro Cyn to Carp HS	\$90,000
2021-22	Toro Cyn to Carp HS	\$190,000
2024-25	Carp HS to Carp Res	\$40,000



South Coast Conduit Blow-Off Nozzle / Valve Replacement (2004-2-I, 2013-2-L)

Background

Blow-off structures exist on all low points of a water distribution system. The components included in these structures include access-hole covers, blow-off nozzles, a gate valve and blow-off piping. There are a total of sixty-five blow-off structures in South Coast Conduit system.

Need

The existing blow-off components are in need or rehabilitation due to extensive corrosion. The dependability of these components is necessary to allow the system to be dewatered for maintenance and response to an emergency break in the pipe. Blow-off valves and piping have been replaced in the Upper Reach and 21 blow-off nozzles/valves have been replaced in the Lower Reach. Five blow-off nozzles in the Montecito and Carpinteria areas are in need of replacement. The original nozzles and valves are in need of replacement because of corrosion. The consequence of not completing this project could result in a major facility failure in multiple locations and potential risk of water contamination.

Description

The project consists of replacing the man hole covers, blow-off nozzles, gate valves, upper spools, and discharge piping within the Lower Reaches of the SCC. The project would be completed in conjunction with the AVAR valve replacement and relocation project and coordinated with the affected Member Agencies during the required system shutdown. The design for this project is complete. Six scheduled shutdowns remain to be completed to replace 15 remaining blow-off nozzles and valves.



PRIORITY CATEGORY 2. Required to Maintain Level of Service

ESTIMATED COST \$410,000

Fiscal Year	Phase	Cost
2020-21	Toro Cyn to Carp HS	\$90,000
2021-22	Toro Cyn to Carp HS	\$200,000
2024-25	Carp HS to Carp Res	\$120,000



Rehabilitate South Coast Conduit Lateral Structures (2004-2-B)

Background

There are forty-four lateral connections housed in concrete cylinder structures on the Lower Reach of the South Coast Conduit. The function of these connections is to provide water to sections of the Montecito Water District and Carpinteria Valley Water District. Each connection generally contains two gate valves, a meter, and an air vent component. Most laterals have been abandoned and air gapped in the Upper Reach of the South Coast Conduit with the exception of the Goleta West Conduit.

Need

Thirty-five of the existing lateral appurtenances in the lower reach pose an operational risk due to age, corrosion, and unreliable valve operating conditions. The dependability of these valves is necessary to provide reliable water service to customers served in sections of the Montecito and Carpinteria Water District Boundary areas. The consequence of not completing project could result this in lateral failure/inoperability limiting deliveries to customers served by those laterals or complicating operations if leak-by or a major failure occurred. The lateral valves need to be replaced prior to anticipated shutdowns of the South Coast Conduit in the Carpinteria area.

Description

This project would replace corroded pipe and inoperable valves and air vents on lateral connections. The project will require shutdowns for the specified turnout distribution supply areas and would be coordinated with the impacted Member Agencies. The project requires retention of engineering and contractor services. Due to each site's differing conditions, engineering would be required for each individual structure. The initial phase of the project is to perform an engineering assessment and design for all lateral structures.



PRIORITY CATEGORY 2. Required to Maintain Level of Service

ESTIMATED COST \$685,000

Fiscal Year	Phase	Cost
2020-21	Eng/Const	\$85,000
2021-22	Construction	\$300,000*
2022-23	Construction	\$300,000*

*As part of the proposed Cooperative Agreement with CVWD, CVWD would offset in-line isolation valve costs with the costs to rehabilitate the laterals in the Carpinteria Area



Supervisory Control and Data Acquisition (SCADA) Upgrades (2014-C-61)

Background

The "Supervisory Control and Data Acquisition" system (SCADA) serves to collect important monitoring data on flows, reservoir elevations, alarms, communication, turbidity, pH, temperature, and valve positions. The SCADA system increases the efficiency of COMB staff by providing notification alarms for operational staff to investigate, which enhances system reliability. Installation of the COMB Supervisory Control and Data Acquisition (SCADA) system began in 2003. The programmable logic controllers (PLC) COMB owns and operates are in need of upgrade to maintain system functionality.

Need

The programmable logic controllers (PLC) COMB owns are obsolete and no longer available. They are very difficult and time consuming to re-program the existing PLC's in the event of a failure or simple program modification. If a failure occurs and a suitable computer and software cannot be located, then there is no option but to upgrade to get the site back on line.

Description

This project would involve the replacement of all legacy PLC(s) in their existing control panels. New PLC processors, software, and I/O modules. COMB has a total of nine PLCs. As part of the upgrades, additional sensors will be added to monitor to the system for potential leaks or breaks. Several of these PLCs are also locations were data is shared with COMB's Member Agencies. Upgrades at these sharing locations would need to be coordinated with each Member Agency. The project would also involve upgrading the SCADA server hardware and software to support the latest operating system and version of the SCADA software.



PRIORITY CATEGORY 2. Required to Maintain Level of Service

ESTIMATED COST \$300,000

Fiscal Year	Phase	Cost
2020-21	Replace PLCs	\$150,000
2021-22	PLCs/Upgrade Server	\$150,000



Lake Cachuma Emergency Pumping Facility Pump Station (2019-C-1)

Background

The proposed Pump Station Project would be required to be installed when the lake levels are projected to fall below the intake gates. The pumping facility provides a lifeline delivery of Cachuma Project water and imported State Water Project (SWP) water to 200,000 residents on the South Coast of Santa Barbara County during times of drought.

Need

A pump-system has been installed three times in Lake Cachuma in 1957, 1990-91, and 2015-2017. In 1990-91 and 2015-17, the pumps were installed on a floating barge. Key components of the pumping barge from 2015-2017 EPF are currently being stored at a storage facility in Paso Robles. A land-based pump system was installed at Site 1 in 1957.

Description

The floating pump station that is currently in storage consists of seven electrical pumps with fixed drum fish screens set on Flexifloat and Quadrafloat system. The pump station is powered by electricity through a temporary power line connected to PG&E system. A backup generator would be available on shore in case there was a power outage.

Two concepts for a submerged pump system have been considered: (1) a shore-mounted, slant-well facility and (2) a prefabricated submerged facility. The shore-mounted slant-well facility would include placing vertical turbine pumps with submersible motors at the bottom of a slanted steel casing pipe, which draws water from the lake through fish screens. The prefabricated submerged facility is an alternative concept, which would be assembled on shore, floated into position, and then lowered to the lake bottom. The costs are based on the installation and operation of the floating pump system that is currently in storage, under contract.



PRIORITY CATEGORY 2. Required to Maintain Level of Service

ESTIMATED COST \$3,075,000* (If required)

Fiscal Year	Phase	Cost
2022-23	Mobilize/Install/Ops	\$1,850,000
2023-24	Mobilize/Install/Ops	\$1,225,000

*If required, the actual schedule for the Lake Cachuma EPF Pump Station (2019-C-1) may shift depending on drought severity and lake levels

Permits will need to be renewed or applied for redeployment of the EPF with a secured pumping station.



Lake Cachuma Emergency Pumping Facility Secured Pipeline Project (2018-C-1)

Background

The Secured Pipeline Project - Gate 5 Extension is currently in the design phase. The North Portal Intake Tower is normally operated as a gravity flow system. However, when the lake level recedes below the lowest gates, water is unable to be transported to the South Coast. Under these conditions, water must be pumped from deeper parts of the lake to the Intake Tower.

Need

Sedimentation has buried the lowest gate (Gate 5) on the North Portal Intake Tower. A pumping system is needed when lake levels recede below the Gate 4 elevation (678'). Without a pipeline and pumping system, Cachuma Project and State Water Project (SWP) water cannot be transported to the South Coast, causing a widespread immediate threat to public health during drought. This project would consist of a pipeline secured to the lake bottom with a connection at Gate 5, and a gravity intake with fish screen at an alternate drafting location (Site 1). Should water quality become poor at the Intake Tower (temp, algae, turbidity, TOC, etc.), the alternative Site 1 intake could also be utilized.

The Secured Pipeline Project makes available an additional 18,000 AF of water until reservoir levels return. In addition, water quality data collected by COMB over the last 2 years demonstrates that water temp, TOC, boron, and sulfate are consistently lower at depth. Lower water temperatures are associated with decreased THM formation during treatment and lower boron/sulfate levels will help Member Agencies meet aquifer storage and recovery (ASR) injection requirements.

Description

The project would consist of a 36-inch, 3,600' DR-17 HDPE pipeline secured to the lake bottom with concrete pipe weights. A fish screen installed at the drafting end would allow water deliveries from deeper portions of the lake for better management of delivered water quality. In times of drought, the pipeline would be connected to a pumping system to allow deliveries of water to the Tecolote Tunnel. The preferred elevation to install the pipeline is at 710' or less. The project could be installed during the next drought when the appropriate lake level is reached for construction (Makai Ocean Engineering, Inc. 2019).



PRIORITY CATEGORY 3. Addresses Critical Deficiency

ESTIMATED COST \$2,904,000

Fiscal Year	Phase	Cost
2020-21	Eng/Env	\$152,000
2021-22	Env/Const	\$352,000
2022-23	Construction	\$2,400,000

*USBR Drought Resiliency Grant preliminarily awarded to COMB in the amount of \$750,000 for this project

Environmental review will be required and permits will need to be renewed or applied for redeployment of the EPF with a secured pipeline.

Modular Office Building Replacement (2019-C-2)

Background

ACHUMA OPERATION AN MAINTENANCE BOARD

As staff increased, COMB purchased used mobile units and converted them into office spaces to house administrative and fisheries division personnel. In FY 2014-15, after significant rainfall, water had leaked through the administration office roof and into the electrical light system. The Operations staff took immediate and temporary remedial measures to protect the roof by using a foil-type roof blanket application which is still in place today. The Operations Division Manager indicated that the roof was deteriorated and structurally unsafe. Additionally, during a recent walk-thru inspection, a representative from Atlas Performance, Inc. determined that the Fisheries mobile office was in severe dry-rot stages and had an oak tree seedling growing out of the fascia trim board from woodpecker activity. Because the structural integrity of the mobile offices is at risk, it has become necessary to replace the units completely.

Need

The COMB Administration and Fisheries mobile offices are aging and in various stages of deterioration. The Administration office is a 1979 model (41 years old), purchased used in 1993 and the Fisheries office is a 1997 model (23 years old), purchased used in 1999. These offices are deteriorating and have multiple leak points, various unidentifiable smells emanating within the interior of the buildings, and severe rotting discovered on the roof and interior/exterior walls. These buildings have long outlived their life expectancy and have become a personnel safety issue due to the extent of deterioration. These outdated temporary buildings do not contain ADA compliant features and have become obsolete.

Description

Work would include the manufacturing and purchase of two mobile offices totaling 1,680 square feet of office space (1 double wide and 1 single wide), delivery charges, tie downs, skirting, steps and ADA ramp, license and transfer charges, removal and disposal of current buildings, and installation on site. In addition, the deck and patio cover currently connected to the existing mobile units is decayed and will need to be dismantled and rebuilt.



PRIORITY CATEGORY 3. Addresses Critical Deficiency

ESTIMATED COST \$391,000

Fiscal Year	Phase	Cost
2020-21	Design/Build	\$175,000
2021-22	Build/Install	\$216,000

New construction and alterations must be in compliance with the 2010 ADA Standards for Accessible Design. COMB may be required to remove architectural barriers if "readily achievable" for existing facilities.



South Coast Conduit Line Valve in Carpinteria for Repairs (2018-C-2)

Background

To allow for shutdown repairs and continued water delivery in the event of disruption of service in the South Coast Conduit, additional in-line isolation valves are needed in the South Coast Conduit.

Need

Pipeline break due to natural disaster could result in escaping flows. In an emergency scenario such as this, a line valve would divide the conduit, limiting outflow. In addition, several blowoffs and air vacuum air release (AVAR) structures on the South Coast Conduit are in disrepair and need periodic rehabilitation requiring a shutdown of the SCC. A line valve would allow COMB to rehabilitate these important structures without less disruption to customers.

Description

To facilitate shutdowns and repairs of the South Coast Conduit and to minimize service disruption, an in-line isolation valve is required. COMB has proposed installing an in-line isolation valve at La Mirada Drive and Highway 192. The isolation valve would allow a section of the South Coast Conduit, which currently serves eleven laterals to be subdivided to two segments. An in-line isolation valve would also allow three air vents and two blow-off structures to be rehabilitated in the Carpinteria area. This would allow COMB to complete a Category 1 recommendation from the U.S. Bureau of Reclamation to rehabilitate subgrade, air vent structures.

In exchange for this work, CVWD has proposed to contribute financially towards the rehabilitation of the lower reach SCC laterals. A cooperative agreement between COMB and CVWD is in the process of being developed to facilitate this exchange of work.



PRIORITY CATEGORY 3. Addresses Critical Deficiency

ESTIMATED COST \$850,000*

Fiscal Year	Phase	Cost
2021-22	Construction	\$400,000
2024-25	Construction	\$450,000
*		

*CVWD has proposed to offset the line valve costs by performing lateral rehabilitation work.

An environmental/historic preservation review is required for all activities for which FEMA funds are being requested



Lake Cachuma Water Quality and Evaporation Buoy (2019-C-3)

Background

The Lake Cachuma Evaporation and Water Quality Buoy is envisioned to be a buoy-based weather station for improved water quality and environmental monitoring, including an estimation of evaporative losses from the reservoir. Chlorophyll, phycocyanin, and nutrient concentration probes would allow for the advanced indication of Harmful Algal Blooms (HABs) for quick response. In addition to a monitoring buoy, the installation of a land-based weather station could compliment water measurements. The landbased station would serve as a secondary data source and provide a redundant check of reservoir evaporation numbers.

Need

Some species of cyanobacteria are capable of releasing harmful cyanotoxins, which can impact recreation and drinking water if not detected and treated early. This project addresses a critical deficiency for water quality management, specifically, continuous and more granular water quality data is needed from Lake Cachuma to inform critical decision making at member unit treatment facilities, including toxic algal bloom detection monitoring for early warning and proactive treatment and total organic carbon for management of trihalomethane formation. Also, during the most recent drought from 2014 to 2017, the evaporation measurements from the evaporation pan at Lake Cachuma significantly increased (46% higher historical average in 2017), which was not consistent with the surrounding evaporation measuring stations. Historically, pan-based evaporation estimates have been used to track and manage evaporative losses. The Lake Cachuma Evaporation and Water Quality Buoy will increase environmental monitoring accuracy.

Description

Setting up the anchoring system, evaporation buoy and sensors, and safety buoys is expected to take 1-2 weeks. A consultant would initiate the web portal and data relay system approximately 2-3 weeks after buoy installation. The relative ease of installation would allow Reclamation, COMB, and Member Agencies to begin using the buoy system immediately. Specific variables to be monitored could include, water temperature profiles (4 units down to 70 feet), dissolved oxygen, chlorophyll, phycocyanin, nutrients, wind speed, humidity, air temperature, barometric pressure, and incoming solar radiation.



PRIORITY CATEGORY 3. Addresses Critical Deficiency

ESTIMATED COST PROJECT COMPLETED – No Additional Funds Required

The installation of a buoy-station in Lake Cachuma would require environmental review by the Bureau of Reclamation.



North Portal Jet Flow Control Valve Replacement (2013-C-1)

Background

Located at the base of the Tecolote Tunnel, the Jet Flow Control Valve is the primary control for flow from Lake Cachuma into the South Coast Conduit. The valve is located within the red piping component as pictured to the right. The adjacent gate valve (black) is utilized to shutdown flows from Lake Cachuma. The Jet Flow Control valve was replaced in 1990 and has a useful life of approximately thirty years. As part of this project, COMB would purchase new parts and utilize previously acquired internal components to build a new valve to be installed during a planned shutdown. The current valve, after being removed, would be rebuilt using new components and would be kept on site and used as a redundant valve in case of failure.

Need

The consequence of not completing the project includes using a valve beyond the expected useful life, coupled with a lack of redundancy for one of the most critical flow control valves within the system. Because the North Portal Jet Flow Control Valve controls the flow into the Tecolote Tunnel, failure could prevent or impact water deliveries to the cities of Goleta, Santa Barbara, Montecito, Summerland and Carpinteria. This is a proactive replacement based upon the expected service life at purchase, as the valve in its current state is functioning adequately. Because of the important function of the valve, it is critical that it not be used beyond the manufacturer's recommended service life, and that redundancy exists on site.

Description

This project consists of producing designs and specifications to manufacture a new valve body and to rebuild using new and previously purchased internal components. Once the jet flow valve is ready for installation, a coordinated shutdown would occur using the gate valve. The current jet flow valve would be removed from service and the new valve would be lowered by crane into the lower gallery of the North Portal through the elevator shaft for installation.



PRIORITY CATEGORY 3. Addresses Critical Deficiency

ESTIMATED COST \$300,000

Fiscal Year	Phase	Cost
Next IIP Cycle	Installation	\$300,000

This project requires approval from Reclamation.



Critical Control Valve Replacement (2019-C-4)

Background

A majority of the valves located at control stations along the South Coast Conduit are original and were installed in the 1950s. There are over 50 large diameter valves in the system, ranging in size from 24" to 48". Several of these valves are critical for operations, but many of the valves are obsolete and are not utilized for operations. During previous maintenance work and shutdowns, key valves in the system have been characterized as exhibiting excessive leak-by. This program would replace critical valves in the system at key control station locations.

Need

In-line isolation and control valves are needed to properly operate and maintain the system. Valves with excessive leak-by or poor operability impact system operations. The system is operated differently than designed with the installation of Cater Treatment Plant. Many of the system valves are no longer needed for operations. Obsolete valves and piping are potential points of failure and increase maintenance needs. The consequences of not completing this project could include loss of control within control stations and excessive leak-by, which could especially impact operations during repair work requiring pipeline shutdown.

Description

This project would involve the systematic replacement of key control valves in the system with known operational deficiencies. Control station piping would be streamlined to reflect current operations and obsolete valving would be removed from the control stations.



PRIORITY CATEGORY 3. Addresses Critical Deficiency

ESTIMATED COST \$300,000

Fiscal Year	Phase	Cost
Next IIP Cycle	Eng/Construction	\$300,000

Changes to the South Coast Conduit system to remove obsolete valves and piping would require Bureau of Reclamation review and approval.



Meter Replacement Program (2013-C-1)

Background

COMB is responsible for accurate water accounting on behalf of the Cachuma Project Member Agencies to the U.S. Bureau of Reclamation on a monthly basis. The process of water accounting entails recording data from twenty-eight meters located along the conveyance system from the North Portal of Lake Cachuma to the Carpinteria Reservoir. In an effort to identify the accuracy of meters within the system, COMB hired Water System's Optimization (WSO), Inc. to conduct a system meter evaluation and water audit. The results of the water audit indicated that several meters require additional testing and replacement.

Need

COMB's water meters are critical to the water accounting and system operations. Several meters in the system have reached limited-life cycle phase and are likely in need of replacement in the next five years. Not completing the project could impact system operations and water accounting accuracy and jeopardize compliance with Section 64561 of Titles 17 and 22 California Code of Regulations, which states "each water system shall: (b) meter the quantity of water flow from each source, and record the total monthly production each month."

Description

COMB operates several electronic mag-meters that are critical to the water accounting and system operations that have reached limited-life cycle phase and are likely in need of replacement in the next five years. COMB operates electronic magmeters at Glen Anne Turnout Meter, Goleta West Meter, Ortega Inflow meter, Ortega Southflow meter, and the Boundary meter which are utilized to manage system operations on a day to day basis and for monthly accounting of water use.



PRIORITY CATEGORY 3. Addresses Critical Deficiency

ESTIMATED COST \$200,000

Fiscal Year	Phase	Cost
Next IIP Cycle	Construction	\$200,000

No regulatory compliance measures are expected for this project.



Sheffield Tunnel Evaluation and Repair (2007-2-B)

Background

The Sheffield Tunnel is a concrete tunnel housing the 30" South Coast Conduit (SCC) that extends 6,100 feet between the Mission Creek area and Parma Park. Within the tunnel, sections of concrete pipe are connected and joined with steel bands and mortar joints to maintain the integrity of the pipe collar connections.

Need

The USBR inspection report of the Sheffield Tunnel identified and recommended remediation of cracked pipe collars and adjoining deterioration of mortar joints and pipe supports. Deterioration potentially compromises the integrity of the tunnel and poses an operational risk. Heavy seepage appears to be a contributing factor to deterioration.

Description

An engineering firm would conduct a condition assessment to determine the structural integrity and reliability of the connecting and support structures of the Sheffield Tunnel. The engineering evaluation will include recommended repairs and determine how to eliminate areas of heavy seepage. It is possible the engineering evaluation could find a lower cost remedy to that recommended by USBR. Upon completion of the evaluation, COMB would retain a qualified contractor to repair the deteriorated mortar joints and pipe supports at locations identified.



PRIORITY CATEGORY 4. Evaluates Potential Critical Deficiency

ESTIMATED COST \$400,000

Fiscal Year	Phase	Cost
Next IIP Cycle	Engineering	\$50 <i>,</i> 000
Next IIP Cycle	Construction	\$350,000



Lauro Reservoir Intake Assessment and Repair (2013-2-C, 2018-2-A)

Background

The Lauro Reservoir intake structure was modified in 1981 by adding a stainless steel circular intake screen connected to a steel pipe which was inserted in the original concrete intake structure. A 1/2 inch thick steel circular bearing plate was installed on top of the existing concrete intake structure to cover the opening between the intake structure and vertical pipe and provide structural support. The 2018 dive report, prepared by USBR, states the intake structure is in satisfactory condition with the exception of the bearing plate. The bearing plate was observed to be fully covered with corrosion and rust nodules.



Need

The steel bearing plate on the intake structure has deteriorated because of corrosion and poses an operational risk for both the protection against outside intrusion of elements penetrating through the opening or structural support of the intake pipe and screen.

Description

Engineering services will be retained to determine the expected level of performance from the steel bearing plate (protection from outside element intrusion or structural). Engineering will need to be conducted by a structural engineer to determine if the steel bearing plate is necessary for support, and if required, a method to design a repair that will allow for continued structural support of intake structure. The reservoir may need to be lowered to accommodate inspections and repairs.

PRIORITY CATEGORY 4. Evaluates Potential Critical Deficiency

ESTIMATED COST \$130,000

Fiscal Year	Phase	Cost
Next IIP Cycle	Eng/Construction	\$130,000

CACHUMA OPERATION AND MAINTENANCE BOARD

North Portal Intake Tower Seismic Assessment (2016-C-1)

Background

Water diversions from Lake Cachuma occur from the North Portal Intake Tower facility into the Tecolote Tunnel and to the South Coast Conduit for water delivery to the Cachuma Project Member Agencies. The vertical intake tower stands 120 feet tall located approximately mid-reservoir and contains five slide gates, each at varying levels on the pentagonal shaped tower. The slides gates are covered with mesh fish screens to prevent fish and debris from entering the tunnel.

Need

The North Portal Intake Tower was constructed by the Bureau of Reclamation in the 1950's, at which time, the standards for structural design requirements were not as stringent as today's compliance requirements. Structural elements of the intake structure would be examined to determine the general reliability of the tower, and recommendations for upgrades and refurbishments would be provided if needed. The consequence of not completing this project would be uncertainty in structure reliability during a seismic event, which could result in losing ability to deliver water to the South Coast while emergency repairs are made.

Description

This initial phase of the project consists of acquiring the consulting services of a qualified structural engineering firm to perform a Seismic Reliability Analysis and Physical Condition Assessment of the North Portal Intake Tower located at the North Portal of the Tecolote Tunnel. It shall include a report of all findings and propose recommendations for structural rehabilitation to increase and/or ensure continued reliability of the structure in the occurrence of a large seismic event. An assessment of the tower is easier to perform when the lake level is low. This project is scheduled to be performed when the lake level exposes a large portion of the intake tower.



PRIORITY CATEGORY 3. Addresses Critical Deficiency

ESTIMATED COST \$100,000

Fiscal Year	Phase	Cost
Next IIP Cycle	Engineering	\$100,000

*A condition assessment of the North Portal Intake Tower is ideally completed when the lake level is low exposing for examination.

No regulatory compliance measures are expected for this project.



Tecolote Tunnel Concrete Deterioration Investigation (1999-2-A)

Background

The Tecolote Tunnel was completed in 1956 to divert water from Lake Cachuma to the South Coast Conduit. The tunnel provides water delivery through the mountain to the South Portal. The tunnel structure consists of a modified circular horse-shoe shaped cross section constructed of steel encased in 12 inches of concrete, and operates in open channel flow that is approximately 7' inside and is 6.4 miles long with a gradual shallow slope to enable gravity feed. The only ingress and egress are at the North Portal and South Portal. During periodic inspections by the USBR, deteriorations have been observed in the tunnel lining due to long-term exposure to hydrogen sulfide gas.



Hydrogen sulfide has caused some deterioration of the concrete lining of the tunnel. In areas, the interior concrete surface has peeled in sheets approximately 3/8 of an inch thick and fallen into the invert, creating sediment. The majority of the tunnel is in acceptable condition, however, a few locations have small areas where leaching could affect the structural integrity of the concrete. Review is necessary, as the consequence of not completing this project is uncertain in terms of structure reliability. A tunnel failure could interrupt 40 MGD during peak demand time if not addressed, and would be very technically difficult to repair.

Description

The project requires engineer evaluation of concrete deterioration, and recommended remediation. A thorough investigation and monitoring program needs to be implemented to determine if the concrete deterioration presents risk of structural failure. The program should be designed to address the specific questions raised by the 1999 RO&M Reclamation Report, action 2012-2-Q, which recommends COMB "prepare and implement a repair plan to perform all necessary repairs to address all damaged concrete and remediate the widespread concrete deterioration in the Tecolote Tunnel to restore safe and reliable service of the facility."



PRIORITY CATEGORY 4. Evaluates Potential Critical Deficiency

ESTIMATED COST \$100,000

Fiscal Year	Phase	Cost
Next IIP Cycle	Engineering	\$100,000