LIVERMORE-AMADOR VALLEY
19 ZONE 7 57
WATER SUPPLY • FLOOD PROTECTION

Fiscal Year 2018/2019 Ten-Year Water System Capital Improvement Plan

October 2017

ZONE 7
ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
BOARD OF DIRECTORS

RESOLUTION NO 17-81

INTRODUCED BY DIRECTOR PALMER
SECONDED BY DIRECTOR QUIGLEY

2017 Asset Management Plan Long-Term Funding Forecast Update and FY 2018/19 Ten-Year Water System Capital Improvement Plan

WHEREAS, HDR, Inc., prepared the 2017 Asset Management Plan Long-Term Funding Forecast Update (2017 AMP Update) to update renewal/replacement and system-wide improvement project costs and schedules over a forty-year horizon and to recommend the appropriate level of annual AMP funding; and

WHEREAS, staff has developed the Fiscal Year (FY) 2018-19 Ten-Year Water System Capital Improvement Plan, identifying the capital projects and programs needed to carry out the water system goals and policy objectives of the agency from FY 2018-19 through FY 2027-28, and incorporating the recommendations from the 2017 AMP Update.

NOW, THEREFORE BE IT RESOLVED that the Board of Directors of Zone 7 of the Alameda County Flood Control and Water Conservation District accepts the 2017 AMP Update with the revised annual AMP funding recommendations incorporated; and

BE IT FURTHER RESOLVED that the Board of Directors of Zone 7 of the Alameda County Flood Control and Water Conservation District approves the AMP funding transfer from the Water Enterprise Operations Fund (Fund 100) to the Water Enterprise Renewal/Replacement & System-Wide Improvements Fund (Fund 120) as follows: $12,300,000 in 2017 dollars beginning in FY 2018-19 with inflationary adjustments every year based on the Engineering News Record Construction Cost Index.

BE IT FURTHER RESOLVED that the the Board of Directors of Zone 7 of the Alameda County Flood Control and Water Conservation District adopt the FY 2018-19 Ten-Year Water System Capital Improvement Plan.

ADOPTED BY THE FOLLOWING VOTE:

AYES: DIRECTORS FIGUERS, GRECI, PALMER, QUIGLEY, RAMIREZ HOLMES, STEVENS

NOES: NONE

ABSENT: DIRECTOR McGRAIL

ABSTAIN: NONE

I certify that the foregoing is a correct copy of a Resolution adopted by the Board of Directors of Zone 7 of the Alameda County Flood Control and Water Conservation District on October 18, 2017.

By: _____
President, Board of Directors

Fiscal Year 2018/2019
Ten-Year Water System
Capital Improvement Plan

Adopted by the Zone 7 Board of Directors
on October 18, 2017

Prepared by:

ZONE 7 WATER AGENCY

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LIST OF ACRONYMS AND ABBREVIATIONS

af or AF	acre-feet
afa or AFA	acre-feet annually or acre-feet per year
Agency	Zone 7 Water Agency
AMP	Asset Management Plan
BBID	Byron Bethany irrigation District
Board	Zone 7 Board of Directors
COL	Chain of Lakes
CCI	Construction Cost Index
CWS	California Water Service
cfs	cubic feet per second
CIP	Capital Improvement Program
CUWA	California Urban Water Agencies
Delta	Sacramento-San Joaquin Delta
DIF	Development Impact Fee
DWSRF	Drinking Water State Revolving Loan Fund
DSRSD	Dublin San Ramon Services District
DUE	Dwelling Unit Equivalent
DV	Dougherty Valley
DVWTP	Del Valle Water Treatment Plant
DWR	California Department of Water Resources
ENR	Engineering New Record
FY	Fiscal Year (July 1-June 30)
gpd	Gallons per day
gpcd	Gallons per capita per day
GMP	Groundwater Management Plan
LAVWMA	Livermore Amador Valley Water Management Authority
LDV	Lake Del Valle
MDD	Maximum Day demand
MCL	Maximum Contaminant Level
MGD or mgd	Million Gallons per Day
MOU	Memorandum of Understanding
M&I	Municipal & Industrial
MWQI	Municipal Water Quality Investigation

O&M	Operations and Maintenance
OUL	Original Useful Life
PPWTP	Patterson Pass Water Treatment Plant
R/R	Renewal/Replacement
SBA	South Bay Aqueduct
SDA	Special Drainage Area
SGMA	Sustainable Groundwater Management Act
SMMP	Stream Management Master Plan
SNMP	Salt Nutrient Management Plan
SWI	System-Wide Improvements
SWP	State Water Project
SWRU	Stored Water Recovery Unit
UWMP	Urban Water Management Plan
Valley	Livermore-Amador Valley
WSE	Water Supply Evaluation
WTP	Water Treatment Plant
Zone 7	Zone 7 Water Agency

1 EXECUTIVE SUMMARY

1.1 INTRODUCTION

Zone 7 Water Agency (Zone 7) prepares a Capital Improvement Plan (CIP) document that outlines the plans for capital projects and programs needed to carry out the goals and policy objectives of the agency. Formerly, the CIP was based on a number of planning documents such as the Urban Water Management Plan (UWMP) and the Asset Management Plan (AMP), incorporating the projects, costs, schedules, and priorities for the Water System and Flood Protection System. The last comprehensive CIP update was completed in October 2014[1], and an update would have normally been completed in 2016[2]. However, the recent drought required acceleration of certain capital projects (e.g., construction of Chain of Lakes Well No. 5), deferral of others (e.g. Booster Pump Station) and prompted the addition of new projects (e.g., Stoneridge Cross Valley Isolation Valve). An AMP update was also needed. Consequently, the Water System CIP update was deferred by one year to 2017. This document, the Fiscal Year 2018/2019 (FY 18/19) Water System CIP Update, presents the ten-year plan for the Water System.

The Ten-Year Flood System CIP will be developed separately after key supporting documents, such as the Stream Management Master Plan Update, have been completed and flood operations have stabilized after the major flood damage from early 2017.

This Executive Summary provides an overview of the proposed Water System capital improvement plan, key projects, and the financial condition of the Water System capital funds.

1.2 ASSET MANAGEMENT PLAN UPDATE

Zone 7's AMP documents how Zone 7 will fund and implement Renewal and Replacement projects for existing or planned assets. As part of the CIP update process, Zone 7 engaged HDR, Inc., to complete the 2017 Asset Management Plan Long-Term Funding Forecast Update (2017 AMP Update) (Appendix A). The 2017 AMP Update incorporated CIP projects that have been completed, assets that have been renewed since the last AMP update in 2011, future projects, and the long-term renewal of assets. It also identified additional Renewal and Replacement projects. Findings from the 2017 AMP update have been incorporated into the CIP.

1.3 CIP STRUCTURE

Zone 7's CIP planning covers both the Water System and Flood Protection facilities, although this document is only focused on the Water System at this time. Projects are funded from the following four sources ('Funding Strategy') depending on the system/s affected and the project's beneficiaries (existing versus new customers):

- *Water System*
  - Renewal/Replacement – Fund 120 (Transfer from Fund 100, Water Rates)
  - System-Wide Improvements – Fund 120 (Transfer from Fund 100, Water Rates)

[1] Fiscal Year 2015/16 Capital Improvement Program: Ten-Year Water System Plan and Five-Year Flood Protection Plan (October 2014). http://www.zone7water.com/images/pdf_docs/cip/fy_15-16_cip.pdf

[2] Zone 7 normally updates the CIP every two years. With the adoption of Resolution No. 10-3349, the Board approved updating and adopting the CIP on a biennial basis.

    - Expansion – Fund 130 (Connection Fees from developers)

- *Flood Protection*
    - General Flood Protection – Fund 200 (Property Taxes)
    - Flood Protection and Stormwater Drainage – Fund 210 (Development Impact Fees)

Funding for multi-benefit projects may be split between the Water System and the Flood System, and between existing and new customers (i.e., all four funds). Under each Funding Strategy, projects are grouped into programs (e.g., Transmission and Distribution, Water Supply & Conveyance), representing the major components of the Water System. A detailed description of all proposed projects is included in Appendix B.

1.4 CIP PREPARATION AND ADOPTION

The FY 18/19 Water System CIP Update was prepared starting at the project level. Existing ongoing and planned projects were reviewed, projects no longer needed were eliminated, and necessary new projects were identified. The projects' scopes of work, costs, and schedules were reviewed in detail and modified based on new or updated information related to regulations, actual facility conditions, industry costs, water supply conditions, demand projections, lessons learned from the drought, external developments (e.g., timing of mining activities), new water supply opportunities, and other factors. As noted above, the 2017 AMP Update, done in parallel with the CIP update process, also generated a list of projects to be added to the CIP based on scheduled asset renewals and replacements. At Retailer Workshops on June 5 and June 7, 2017, retailer staff provided input on the development of the project list, including any requests for new projects, and input on the next step, the project prioritization process.

Zone 7's Executive Management subsequently undertook a prioritization of the proposed project list. A preliminary CIP implementation schedule, reflecting Zone 7's goals and priorities—was developed for the preliminary 2017 AMP Update funding analysis. Zone 7 staff met with the retailers on August 8, 2017 to present the preliminary results from the 2017 AMP Update's funding forecast, considering various financing options for large projects based on the preliminary CIP schedule. Zone 7 then developed draft recommendations for the CIP. These draft recommendations were presented to the retailers at a final workshop on September 19, 2017 for their review and input. Based on retailers' feedback, no revisions were required.

A Board workshop was held on October 3, 2017 to present the Draft 2017 AMP Update and the Draft FY 18/19 Water System CIP Update. The draft reports were revised to incorporate Board input and minor project and formatting adjustments, and the 2017 AMP Update and the FY 18/19 Water System CIP Update were adopted by the Board on October 18, 2017.

1.5 OVERVIEW OF THE WATER SYSTEM CIP

Key studies and planning documents have been completed since the FY 15/16 CIP Update was completed in October 2014, including the Water Supply Evaluation Update (2016)[3], the 2015 Urban Water Management Plan[4] adopted by the Board in March 2016, the Transmission System Planning Update (2016)[5], the FY 16/17 Municipal & Industrial Connection Fee Program Update (2017)[6]

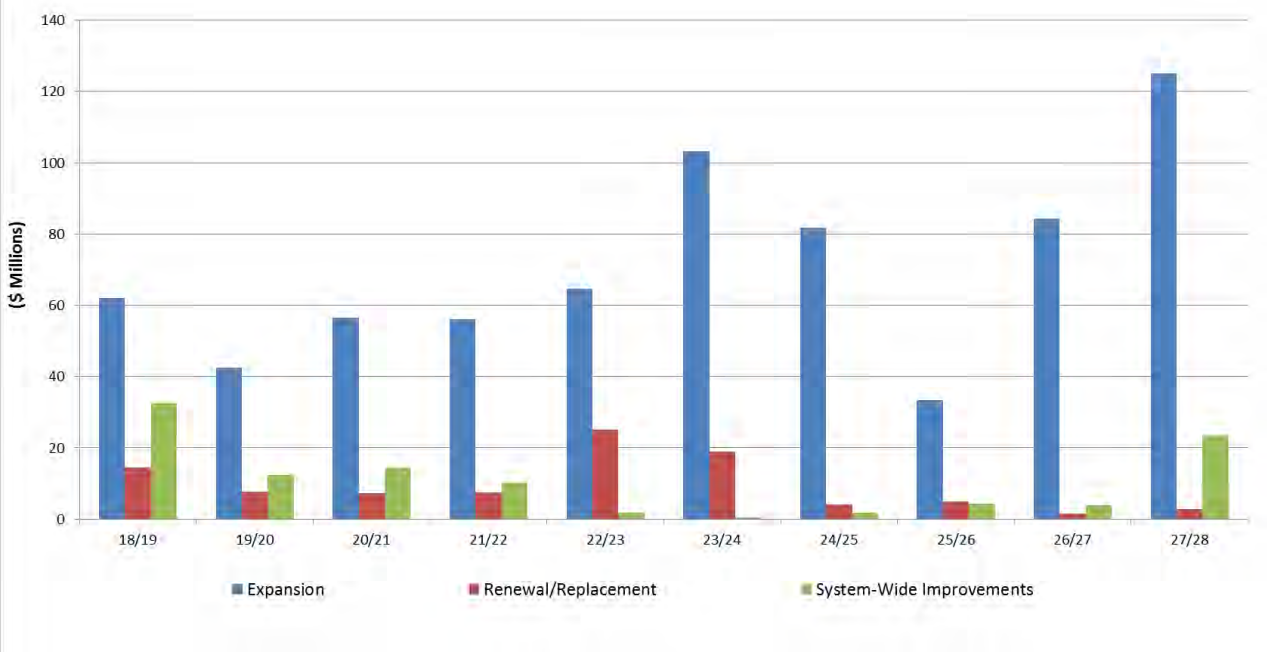
[3] http://www.zone7water.com/images/pdf_docs/water_supply/wse-update_2-16.2.pdf
[4] http://www.zone7water.com/images/pdf_docs/water_supply/urban_water_mgmt_plan_2015.pdf
[5] 2016, West Yost & Associates. Transmission System Planning Update.
[6] http://www.zone7water.com/images/pdf_docs/permits/connection_fee_update_report.pdf

adopted by the Board in February 2017, and the 2017 AMP Update (2017)[7] adopted by the Board on October 18, 2017. The findings from these studies and planning documents have been incorporated in the CIP where applicable.

The recent drought underscored the need to bolster water system reliability to deal with extreme hydrologic conditions and highly variable conditions; it also identified some vulnerabilities of existing supplies and infrastructure. Recurring taste and odor issues, other source water quality challenges, poor performance and obsolescence of the Patterson Pass Ultrafiltration Plant membranes, and unexpected well pump failures have decreased Zone 7's ability to meet peak demands in the near- and long-term; modification of previously-identified projects and the addition of new projects were therefore needed to address these issues. Zone 7 had planned to address the regulation of chromium-6, but a May 2017 court ruling set aside the new regulations. Finally, Zone 7 performed a rigorous update of unit cost estimates to reflect actual costs expended in completed projects.

In total, the FY 18/19 Water System CIP Update plans for 76 Water System projects over the ten-year FY 18/19-FY 27/28 period, totaling $909.1 million ($94.5M Renewal/Replacement, $105M in System-Wide Improvements, and $709.6M in Expansion). Figure 1-1 and Table 1-1 summarize project costs by funding strategy and fiscal year. Note that these costs are presented in future dollars with an assumed inflation rate of 4% annually. Funding for some projects is split between the two water capital funds (Fund 120 and Fund 130) to reflect benefits to both existing and future customers, respectively.

Figure 1-1. Ten-Year Water System CIP (FY 18/19 – FY 27/28) Breakdown by Funding Strategy and Fiscal Year ($ Millions)



[7] 2017, HDR Inc. 2017 Asset Management Plan Long-Term Funding Forecast Update.

Table 1-1. Ten-Year Water System CIP (FY 18/19 – FY 27/28) Breakdown by Funding Strategy and Fiscal Year ($ Millions)

Strategy (FY)	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	Total
Expansion	62.09	42.51	56.51	56.13	64.63	103.22	81.70	33.40	84.35	125.03	709.6
Renewal/Replacement	14.38	7.65	7.34	7.50	25.04	18.98	4.16	4.89	1.64	2.90	94.5
System-Wide Improvements	32.55	12.30	14.37	10.26	1.81	0.39	1.76	4.29	3.91	23.35	105.0
Total	**109.02**	**62.46**	**78.22**	**73.90**	**91.48**	**122.59**	**87.63**	**42.58**	**89.90**	**151.28**	**909.06**

1.6 MAIN DEVELOPMENTS DRIVING THE FY 18/19 WATER SYSTEM CIP

- **Drought Response -** On January 29, 2014 at a special meeting of the Board, a local Drought Emergency was declared and a Drought Emergency Response Plan was accepted. The Board approved three emergency projects at that time to bolster system reliability. This CIP includes projects that increase resiliency against future droughts.
- **Investing in Long-Term Reliability -** Zone 7 continues to implement a multi-pronged strategy for securing the long-term reliability of the water supply system to meet the needs of both existing and future customers. This strategy includes conservation, maximizing surface and groundwater storage, using the Chain of Lakes to increase yield from the Arroyo Valle local water right, pursuing alternative water supplies (e.g., Sites Reservoir, Bay Area Regional Desalination Project, and potable reuse) and storage options, the California WaterFix, and access to emergency water supply via the Chain of Lakes as well as an intertie with another water agency.
- **DVWTP and PPWTP Improvements -** Zone 7's water production capacity has declined over the years, and this problem was exacerbated by the poor raw water quality during the drought. As a result, ozonation at both DVWTP and PPWTP was accelerated to an in-service year of 2019 and 2020; however, this provides less time to build up financial reserves to fund the projects on a "pay-as-you-go" basis. Assuming ozonation proceeds at the schedule identified in this CIP, debt financing through the Drinking Water State Revolving Fund or bond issuance is planned for addressing this cash deficit.
- **Well Rehabilitation -** To improve the reliable production capacity of the wells—which are critical for meeting peak day demands and drought demands in years with low SWP allocations of surface water—and to respond to unexpected well pump failures, Zone 7 undertook several well rehabilitation projects starting in 2014. In this CIP, the inspection and rehabilitation of remaining wells have been included, with work at different wells planned between 2017 and 2022.
- **2017 AMP Update -** The 2017 AMP Update provides funding for a well-defined schedule of projects for the renewal or replacement of existing facilities over the next forty years, based on sustainable infrastructure factors such as asset condition and estimated useful life. Funding for system-wide improvements in the 2017 AMP Update was estimated based on the project list and associated costs in Zone 7's long-term CIP planning.
- **Chromium-6 Treatment -** On May 31, 2017, the Superior Court of Sacramento County issued a judgment invalidating the latest chromium-6 standard proposed for drinking water. Therefore, Zone 7 has not included chromium-6 treatment facilities in this CIP nor in the AMP funding level calculations. If and when new regulations for chromium-6 are promulgated, the need for such facilities will be re-evaluated. Note that Zone 7 will maintain its operational procedures to keep chromium-6 below the previous standard despite the court decision.

- **New Projects -** This CIP includes a number of newly-proposed projects dealing with required renewals/replacements as recommended in the 2017 AMP Update, production capacity restoration, and other system-wide improvements. It also includes previously planned projects that are now in the current CIP period (FY 18/19-FY 27/28) based on the original schedule or projects that have been accelerated.

1.7 WATER SYSTEM CIP BY FUNDING STRATEGY

Funding allocations reflect the proportional benefits to existing and new customers. The specific projects that comprise each Funding Strategy and their annual expenditures are presented in Table 1-2, Table 1-3, and Table 1-4. While some projects exclusively benefit existing customers (Fund 120) or exclusively new customers (Fund 130), some projects benefit both; in this case their costs are split between Fund 120 and 130, with splits reflecting proportional benefits.

Table 1-2. Renewal/Replacement (Fund 120) Funding Strategy Breakdown by Project ($ Millions)

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Buildings & Grounds											
North Canyons Renewal/Replacement and Improvements	$0.05					$0.25					**$0.30**
Buildings & Grounds Subtotal	***$0.05***					***$0.25***					***$0.30***
Groundwater Basin Management											
Monitoring Well Replacements & Abandonments	$0.25	$0.23	$0.17			$0.21		$0.12		$0.13	**$1.11**
Stream Gauge Replacement		$0.28					$0.34				**$0.62**
Groundwater Basin Management Subtotal	$0.25	$0.51	$0.17	$0.00	$0.00	$0.21	$0.34	$0.12	$0.00	$0.13	$1.73
Program Management											
Asset Management Program Management	$0.06	$0.06	$0.07	$0.07	$0.36	$0.09	$0.09	$0.10	$0.10	$0.52	**$1.52**
Capital Improvement Program Management	$0.01	$0.03	$0.02	$0.04	$0.02	$0.05	$0.02	$0.05	$0.03	$0.06	**$0.33**
Program Management Subtotal	***$0.07***	***$0.09***	***$0.09***	***$0.11***	***$0.38***	***$0.14***	***$0.11***	***$0.15***	***$0.13***	***$0.58***	***$1.85***
Regulatory Compliance Monitoring											
Laboratory Equipment Replacement	$0.14	$0.14	$0.15	$0.15	$0.16	$0.16	$0.17	$0.18	$0.19	$0.19	**$1.63**
Regulatory Compliance Subtotal	***$0.14***	***$0.14***	***$0.15***	***$0.15***	***$0.16***	***$0.16***	***$0.17***	***$0.18***	***$0.19***	***$0.19***	***$1.63***
Transmission & Distribution											
Corrosion Protection - Implementation of CP Survey Recommendations	$0.27					$0.56					**$0.83**
Distribution System Assets Renewal/Replacement	$0.28	$0.29					$0.40				**$0.97**
Distribution System Control Station Replacement				$1.01							**$1.01**
Kitty Hawk Pump Station Asset Renewal/Replacement							$0.57				**$0.57**
Patterson Pass Pipeline Enlargement and Replacement				$1.19	$6.50	$0.32					**$8.02**

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Silver Oaks Pump Station Replacement		$0.32	$1.80								**$2.12**
Vasco Pipeline Enlargement and Replacement										$0.59	**$0.59**
Transmission & Distribution Subtotal	***$0.55***	***$0.61***	***$1.80***	***$2.20***	***$6.50***	***$0.88***	***$0.97***			***$0.59***	***$14.10***
Water Treatment Facilities											
Dougherty Reservoir Recoating		$2.20									**$2.20**
DVWTP Ammonia System Replacement				$0.35	$2.68						**$3.03**
DVWTP Assets Renewal/Replacement					$0.69						**$0.69**
DVWTP Chemical Ferric Chloride and Caustic System Replacements				$0.26	$1.22						**$1.48**
DVWTP Chemical Roadway and Parking Lot Improvements			$0.26	$0.73							**$0.99**
DVWTP Drying Beds 1-4 Rehabilitation Project				$0.78	$4.49						**$5.27**
DVWTP HVAC Replacement	$0.10	$0.57									**$0.67**
DVWTP Polymer Mixing System Replacement	$0.05										**$0.05**
DVWTP PWRPA Service	$0.50										**$0.50**
DVWTP Sewer Line Connection	$0.65										**$0.65**
DVWTP Underdrain Pump Station Replacement				$0.33	$1.79						**$2.12**
DVWTP Washwater Recovery Ponds Rehabilitation				$0.03	$0.38	$7.96	$0.07				**$8.44**
Maintenance Yard and Building		$0.42	$1.98								**$2.40**
Minor Renewal/Replacement Projects	$0.42	$0.47	$0.50	$0.55	$0.58	$0.62	$0.69	$0.72	$0.80	$0.86	**$6.21**
PPWTP 2 MG Clearwell Seismic Retrofit				$0.24	$0.63						**$0.87**
PPWTP Ammonia System Replacement				$0.41	$2.21	$0.32					**$2.94**
PPWTP Asset Renewal/Replacement						$0.30	$0.32				**$0.62**
PPWTP Chemical Systems Replacement				$0.18	$0.73						**$0.91**
PPWTP Clarifiers Concrete Coating					$0.28	$1.73					**$2.01**
PPWTP Conventional Clarifier Corrosion Control Repairs				$0.02	$0.31						**$0.33**

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
PPWTP HVAC Replacement				$0.09	$0.43						**$0.52**
PPWTP Upgrades	$9.11	$0.18	$0.19	$0.11							**$9.58**
SCADA Upgrades and Replacements	$0.47	$0.49	$0.84	$0.35	$0.37	$0.41	$0.43	$1.99	$0.52	$0.55	**$6.42**
Water Treatment Facilities Subtotal	***$11.30***	***$4.33***	***$3.76***	***$4.43***	***$16.79***	***$11.34***	***$1.51***	***$2.71***	***$1.32***	***$1.41***	***$58.90***
Wells											
COL 1 Yard and Slope Stabilization	$2.00										**$2.00**
Groundwater Wells Asset Renewal/Replacement						$0.08		$1.73			**$1.81**
Hopyard Well No. 6 Inspect & Rehabilitate Pump, Motor, and Well Casing				$0.26							**$0.26**
Hopyard Well No. 9 Inspect & Rehabilitate Pump, Motor, and Well Casing			$0.24								**$0.24**
MGDP Asset Renewal/Replacement						$4.27					**$4.27**
MGDP Concentrate Discharge Pipeline Inspection and Cleaning		$0.08	$1.13								**$1.21**
MGDP RO Membrane Replacement	$0.01	$0.78				$0.01	$1.06				**$1.86**
MGDP Water Softening System		$0.58									**$0.58**
Mocho 2 Building and Electrical Systems Replacement				$0.36	$1.21						**$1.57**
Mocho Well No. 3 OSG R/R		$0.53									**$0.53**
Wellfield Switchboard Replacement Project						$1.64					**$1.64**
Wells Subtotal	***$2.01***	***$1.97***	***$1.37***	***$0.62***	***$1.21***	***$6.00***	***$1.06***	***$1.73***	***$0.00***	***$0.00***	***$15.97***
Total (Fund 120 -Renewal/Replacement)	***$14.38***	***$7.65***	***$7.34***	***$7.50***	***$25.04***	***$18.98***	***$4.16***	***$4.89***	***$1.64***	***$2.90***	***$94.48***

Table 1-3. System-Wide Improvements (Fund 120) Funding Strategy Breakdown by Project ($ Millions)

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Transmission & Distribution											
Booster Pump Station			$5.50								**$5.50**
Chain of Lakes - Cope Lake to DVWTP Pipeline	$1.39	$1.44	$7.77	$8.08	$0.72						**$19.40**
Cross Valley Line Valve at Stanley/Murrieta Blvd	$0.16	$0.59									**$0.75**
System-Wide Installation of Line Valves		$0.06		$0.08			$0.09		$0.11		**$0.34**
Transmission & Distribution Subtotal	***$1.55***	***$2.09***	***$13.27***	***$8.16***	***$0.72***		***$0.09***		***$0.11***		***$25.99***
Water Supply & Conveyance											
Chain of Lakes Facilities and Improvements - Water Supply	$0.28		$0.80	$2.10	$1.08	$0.38	$1.67	$0.63		$2.66	**$9.59**
Chain of Lakes Master Planning	$0.01	$0.08	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	**$0.15**
Reliability Intertie								$3.65	$3.79	$20.67	**$28.11**
Water Supply & Conveyance Subtotal	***$0.29***	***$0.08***	***$0.80***	***$2.10***	***$1.08***	***$0.39***	***$1.67***	***$4.29***	***$3.80***	***$23.35***	***$37.86***
Water Treatment Facilities											
DVWTP Ozonation Project	$17.80	$9.73									**$27.53**
PPWTP Ozonation Project	$12.92	$0.30	$0.31								**$13.52**
PPWTP Solar Panels Installation		$0.10									**$0.10**
Water Treatment Facilities Subtotal	*$30.72*	*$10.13*	*$0.31*								***$41.15***
Total (Fund 120 – System-Wide Improvements)	**$32.55**	**$12.30**	**$14.37**	**$10.26**	**$1.81**	**$0.39**	**$1.76**	**$4.29**	**$3.91**	**$23.35**	**$104.99**

Table 1-4. Expansion (Fund 130) Strategy Breakdown by Project ($ Millions)

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Groundwater Basin Management											
Second Groundwater Demineralization Facility									$4.98	$22.20	**$27.18**
Groundwater Basin Management Subtotal									***$4.98***	***$22.20***	***$27.18***
Program Management											
Capital Improvement Program Management	$0.04	$0.10	$0.06	$0.11	$0.06	$0.14	$0.06	$0.15	$0.08	$0.18	**$0.98**
Program Management Subtotal	***$0.04***	***$0.10***	***$0.06***	***$0.11***	***$0.06***	***$0.14***	***$0.06***	***$0.15***	***$0.08***	***$0.18***	***$0.98***
Transmission & Distribution											
Chain of Lakes - Cope Lake to DVWTP Pipeline	$3.23	$3.36	$18.12	$18.85	$1.69						**$45.26**
Patterson Pass Pipeline Enlargement and Replacement				$2.42	$13.20	$0.66					**$16.27**
Vasco Pipeline Enlargement and Replacement										$1.19	**$1.19**
Westside Transmission System Improvements										$2.71	**$2.71**
Transmission & Distribution Subtotal	***$3.23***	***$3.36***	***$18.12***	***$21.27***	***$14.89***	***$0.66***				***$3.90***	***$65.43***
Water Supply & Conveyance											
Arroyo Mocho Diversion Facility Coordination & Implementation		$0.53	$3.28								**$3.81**
Arroyo Mocho Low Flow Crossings	$0.52	$2.97									**$3.49**
Cawelo Groundwater Banking Program	$1.25	$1.25	$1.25	$1.25	$1.25	$1.25	$1.25	$1.25	$1.26	$1.25	**$12.51**
Chain of Lakes Facilities and Improvements - Water Supply	$0.66		$1.86	$4.89	$2.51	$0.89	$3.89	$1.48		$6.22	**$22.39**
Chain of Lakes Master Planning	$0.01	$0.19	$0.01	$0.01	$0.01	$0.02	$0.02	$0.02	$0.02	$0.02	**$0.35**
Fourth Contractor's Share of the SBA - Capital Costs	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	**$30.00**
Fourth Contractor's Share of the SBA - Sinking Fund	$0.59	$0.62	$0.64	$0.67	$0.69	$0.72	$0.75	$0.78	$0.81	$0.84	**$7.11**
Reliability Intertie								$0.91	$0.95	$5.17	**$7.03**

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Semitropic Stored Water Recovery Unit	$0.05	$0.05	$0.06	$0.06	$0.06	$0.06	$0.07	$0.07	$0.07	$0.07	**$0.62**
South Bay Aqueduct Enlargement Project	$15.08	$14.99	$14.95	$14.95	$15.13	$15.13	$14.98	$15.93	$16.44	$17.35	**$154.92**
South Bay Aqueduct Enlargement Project - Sinking Fund	$1.21	$1.26	$1.31	$1.36	$1.41	$1.47	$1.53	$1.59	$1.65	$1.72	**$14.51**
SWP Peaking Payment (Lost Hills & Belridge Water Districts)	$0.05	$0.04	$0.03	$0.04	$0.02	$0.03	$0.01	$0.01	$0.01	$0.01	**$0.25**
Water Supply Planning and Projects	$0.54	$4.65	$4.83								**$10.02**
Water Supply Replacement			$4.98	$5.17	$5.38	$47.80	$45.19				**$108.52**
Water Supply & Conveyance Subtotal	***$22.96***	***$29.55***	***$36.20***	***$31.40***	***$29.46***	***$70.37***	***$70.69***	***$25.04***	***$24.21***	***$35.64***	***$375.52***
Water Treatment Facilities											
Increased Treatment Plant Capacity							$7.90	$8.21	$55.09	$57.29	**$128.49**
Maintenance Yard and Building		$0.11	$0.49								**$0.60**
PPWTP Ozonation Project	$12.92	$0.30	$0.31								**$13.52**
PPWTP Solids Handling Expansion				$1.04	$3.32	$2.13					**$6.49**
PPWTP Upgrades	$21.26	$0.41	$0.43	$0.25							**$22.35**
Water Treatment Facilities Subtotal	***$34.18***	***$0.81***	***$1.23***	***$1.29***	***$3.32***	***$2.13***	***$7.90***	***$8.21***	***$55.09***	***$57.29***	***$171.45***
Wells											
Bernal Wells 1 & 2					$5.65	$29.37	$3.05				**$38.07**
Busch-Valley Well 1	$1.67	$8.69	$0.90								**$11.26**
Chain of Lakes Wells 3 & 4										$5.82	**$5.82**
El Charro Pipeline Phase 2				$2.06	$11.25	$0.56					**$13.87**
Wells Subtotal	***$1.67***	***$8.69***	***$0.90***	***$2.06***	***$16.90***	***$29.93***	***$3.05***			***$5.82***	***$69.02***
Total (Fund 130 – Expansion)	**$62.09**	**$42.51**	**$56.51**	**$56.13**	**$64.63**	**$103.23**	**$81.70**	**$33.40**	**$84.35**	**$125.04**	**$709.59**

1.8 FUNDING ANALYSIS

The Water System CIP is funded by Fund 120 – Renewal/Replacement and System-Wide Improvements and Fund 130 – Expansion. The following sections discuss near-term funding over FY 18/19-FY 27/28 for both funds.

1.8.1 Fund 120 - Renewal/Replacements and System-Wide Improvements

Fund 120 funds projects, or portions thereof, to maintain, replace or improve water system infrastructure for the existing water system. The purpose of the Asset Management Plan (AMP) is to proactively plan for and implement such projects so that Zone 7 can continue to provide high-quality water services to the Valley. This section discusses how the AMP is incorporated into the CIP's funding analysis.

In the 2017 AMP Update, the funding analysis incorporated Zone 7's plans to debt- finance the Fund 120 portion of the construction phase of both the *DVWTP Ozonation* and *PPWTP Ozonation* projects in the amounts of $36M and $13M, respectively. The *DVWTP Ozonation* project is funded 100% by Fund 120, and *PPWTP Ozonation* project is split 50/50 between Fund 120 and Fund 130. The Fund 130 share of the *PPWTP Ozonation* project will be funded from reserves. The analysis evaluated the necessary annual funding levels for two scenarios: 1) pay-as-you-go financing for all projects; and 2) debt-financing for the ozone projects and pay-as-you-go for the others.

The pay-as-you-go analysis resulted in a funding level of $13.3M (in 2017 dollars) annually, to be adjusted annually for inflation, starting in FY 18/19. In comparison, the transfer amount in FY 17/18 is $13.4M, and would have been $14M in FY 18/19, based on the 2011 AMP funding analysis. However, this scenario presents cash flow challenges due to the lack of reserves in the near-term to fund needed major projects in the next five years (i.e. *DVWTP Ozonation and PPWTP Ozonation*, *Chain of Lakes – Cope Lake to DVWTP Pipeline*). The Board had previously approved debt-financing of the ozone projects to address such cash flow issues.

The second scenario reflects Zone 7's plans to debt-finance the ozone projects, and results in an annual Fund 120 funding level of $12.3M for pay-as-you-go projects, starting in FY 18/19 (annually adjusted for inflation). In addition, there would be $2.9M per year planned for debt service payments for the ozone projects that would also be funded by water rates. Note that the actual debt service amount charged to water rates will depend on the type of financing received, interest rates, and duration of the borrowing. This scenario is the recommended AMP funding scenario, and has been incorporated into the CIP.

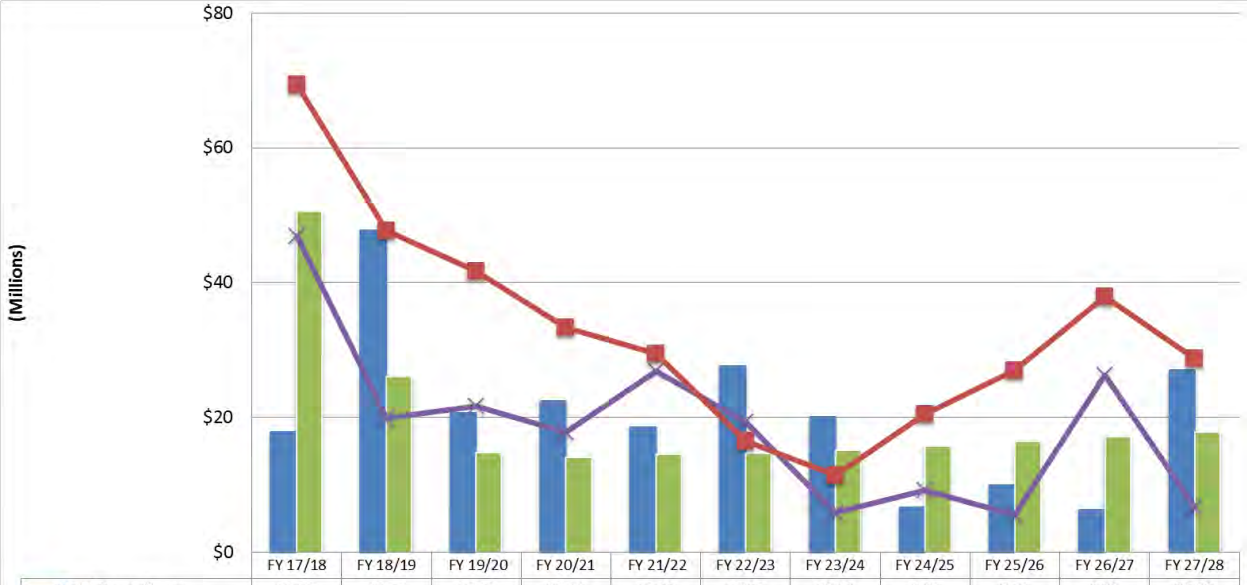
Staff are currently evaluating funding options for debt-financing the ozone projects. One funding option is the Drinking Water State Revolving Fund (DWSRF). The DWSRF is a financial assistance program to help water systems achieve health protection objectives of the Safe Drinking Water Act. Financial assistance is provided for improving drinking water treatment, fixing leaky or old pipes, and other infrastructure projects needed to protect public health. California's program is administered by the State Water Resources Control Board Division of Financial Assistance. The loan has a term of up to thirty years and the current interest rate is around 1.7%. As of August 2017, an application has been submitted for the *DVWTP Ozonation* project based on 60% design in the amount of $36M. A separate application will be submitted for the *PPWTP Ozonation* project in Spring 2018. The second alternative is to issue bonds to finance the ozone projects. Zone 7 has hired a financial advisor and bond counsel to assist Zone 7 with pursuing Joint Powers Authority (JPA) revenue bonds and on October 18, 2017 the Board approved creation of a Zone 7 joint powers

authority with California Statewide Communities Development Authority to issue JPA revenue bonds.

Figure 1-2 below shows the projected funding outlook for Fund 120 through FY 27/28, incorporating the newly-proposed AMP funding level with debt-financing. The debt financing example assumes bond financing for $53M, financed in two phases. The first phase in this example includes a debt issuance of $39M with net proceeds of $36M for ozone at DVWTP and $3M in one-time debt issuance costs (1.5% of loan amount) and required reserves. The $39M will be paid over thirty years at 3.5% interest ($2.1M annually, with full payments starting in FY 18/19). The second phase in this example includes a debt issuance of $14M with net proceeds of $13M for the *PPWTP Ozonation* project also at 3.5% interest and 1.5% for debt issuance cost ($0.76M annually, with full payments starting in FY 19/20). Total debt service payments of $2.9M are similar to the amounts assumed in the 2015 Cost of Service Study, and its 2016 update. The FY 2017-18 Budget Amendment approved in June 2017 included an assumed debt service payment of $1.2M to cover half a year of the estimated debt service for the *DVWTP Ozonation* project.

Note that the Zone 7 Reserve Policy recommends a minimum Capital Reserve (or Net Available Fund Balance) of 100% of the following year's planned expenditures for Fund 120. Figure 1-2 presents the annual target Reserve Policy Minimum amounts, and compares them against projected Net Available Fund Balance. This example provides adequate funding for the planned ten-year CIP, but shows the Net Available Fund Balance falling below the target Reserve Policy Minimum in FY 22/23. While the Reserve Policy is difficult to achieve completely under this funding outlook, the budget and CIP are reviewed and updated every two years by Zone 7; any necessary project cash flow adjustments to improve reserve levels can be incorporated at that time.

Figure 1-2. Fund 120 (Renewal/Replacements and System-Wide Improvements) Preliminary Funding Outlook ($ Millions)



	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28
Total Expenditures	17.77	47.68	20.70	22.46	18.52	27.60	20.12	6.68	9.93	6.30	26.99
Total Revenue	50.6	26.0	14.8	14.1	14.6	14.7	15.1	15.7	16.4	17.2	17.8
Reserve Policy Minimum	$46.93	$19.95	$21.71	$17.77	$26.85	$19.37	$5.93	$9.18	$5.55	$26.24	$6.77
Net Available Fund Balance	$69.33	$47.69	$41.74	$33.38	$29.43	$16.50	$11.49	$20.54	$27.03	$37.89	$28.74

Key Assumptions

- FY 2017-18 Beginning Net Available Fund Balance is based on prior year unaudited revenue and expenses.
- Total Revenue is comprised of annual AMP funding from Fund 100 to Fund 120, facility use fees, interest income and debt proceeds. AMP funding in FY 2017-18 is $13.4M, reducing to $12.3M in FY 2018-19, based on the 2017 AMP Update recommendations. Ongoing amounts are adjusted for inflation.
- Total Expenditures are shown in future dollars (current dollars adjusted by a 4% annual inflation factor).
- Net Available Fund Balance - the Zone 7 Reserve Policy recommends a minimum Capital Reserve of 100% of the following year's planned expenditures.

1.8.2 Fund 130 - Expansion

Fund 130 funds projects, or portions thereof, that are needed because of additional demands on the Water System from new development. This includes water purchases, conveyance facilities (e.g., SBA Enlargement Project), treatment, and transmission facilities.

The Municipal and Industrial (M&I) Treated Water Connection Fee Program was established to ensure that Zone 7 is able to fund the necessary projects necessary to serve the demands of new growth through build-out. In 2017, the Board adopted the FY 16/17 Municipal & Industrial Connection Fee Program Update (FY 16/17 M&I Connection Fee Program Update)[6]. The update undertook a comprehensive re-evaluation of projected demands, and new connections in the Zone 7 service area, and the necessary Water System expansion projects to meet the needs of future customers. The study resulted in a 7.3% increase in the Zone 7 Service Area Connection Fee and an 11.3% increase in the Dougherty Valley Service Area Connection Fee, which became effective May 1, 2017. The study recommended annual adjustments to the fee to keep pace with inflation. The findings from the study, including projects and their respective schedules, and projected connections and resulting revenues form the basis of the Fund 130 ten-year CIP. Details about the Water System Expansion Program and connection fees can be found in the FY 16/17 M&I Connection Fee Program Update[6].

Development within the service area has recovered since the Great Recession, with development growing at a rapid pace, particularly within the Dublin San Ramon Services District service area. For the purposes of projecting cash flows, Zone used a concept of growth cycling to account for the uncertainty in the rate of new connections. This growth cycling concept assumes that 80% of the first five years' connection projections will occur during that period and the remaining will occur at a later period between FY 31/32 and FY 39/40. These projections form the basis for the funding analysis discussed in this section.

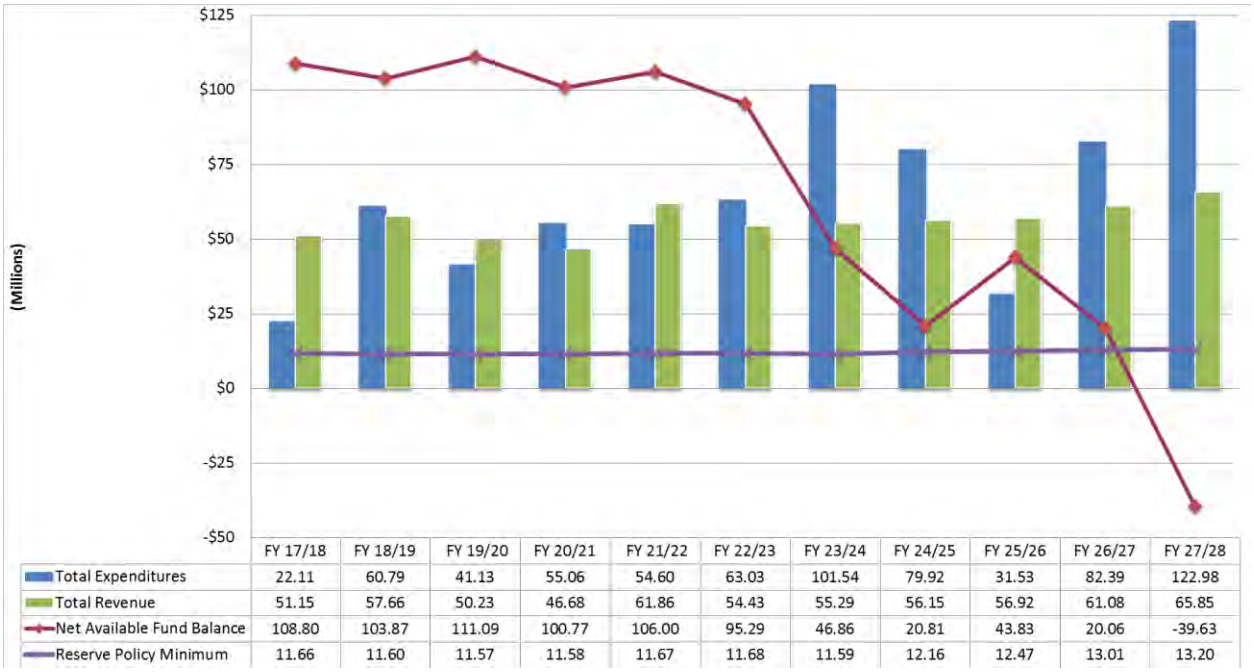
The recent increase in connection fee revenues arising from increased development starting in FY 12/13 has allowed Zone 7 to shift from funding primarily non-discretionary obligations (i.e. contractual commitments) to funding capital construction projects, including the expansion of the PPWTP as part of the *PPWTP Upgrades* project and the *PPWTP Ozonation* project. Staff will continue to closely monitor connection fee revenues to assure funding availability before construction projects are commenced.

This CIP plans for a total expenditure of $710 million in Expansion projects starting in FY 18/19 through FY 27/28. Of this amount, non-discretionary obligations for the ten-year CIP total close to $198M. Non-discretionary obligations are contractually-required payments to other agencies, such as the Department of Water Resources (DWR), for debt incurred on Zone 7's behalf. A large percentage of the non-discretionary expenses are for DWR's capitalization of the SBA Improvement and Enlargement Project with annual payments of about $15M charged to Fund 130 for the expansion portion of the project. Fund 110, State Water Project—which is funded by property taxes—covers another $2.5M annually to cover the SBA Improvements portion of the project. In the scheduling and prioritization of Expansion projects, the first priority was to ensure that there were adequate funds to pay for non-discretionary obligations. Per the Zone 7 Capital Reserve Policy for the Water Expansion Fund, the minimum fund balance should be maintained at 60% of the following year's non-discretionary obligations (~$12 million annually).

Current projections anticipate continued recovery of residential and commercial developments, so several capital projects have been scheduled in the near-term. Figure 1-3 shows projected available funding in Fund 130 through FY 27/28. Based on staff's assumption for connection fee revenues, sufficient funding is projected to fund expansion projects as planned in the CIP for the duration of the program. However, in FY 27/28, the reserve balance falls below the target due to the construction of the *Increased Treatment Plant Capacity* and *Second Groundwater Demineralization* projects. Staff will continue to monitor connection fee revenue to assure funding availability before construction of these major projects commence and to reprioritize projects as needed to meet actuals level of growth, as well as cash flow requirements.

Projected connections over the next five years average 1,585 connections in Dwelling Unit Equivalents annually. This rate is 26% higher than the last five years' average of 1,249 connections annually. Staff analyzes connection fee revenue on an ongoing basis and makes adjustments to financial forecasts and annual budgets based on recent trends, economic conditions, and updated information from retailers, cities, etc. Furthermore, additional analysis was performed to determine the impact on the capital reserve if connection fee revenue does not materialize as projected at this rate. If connection fee revenue does not increase as projected, it is recommended that capital construction projects are delayed. Construction projects are planned to meet demand growth, so if development is slow to recover and/or if conservation is greater than expected, construction schedules can be adjusted and deferred as necessary. If deferring projects is not a feasible alternative, debt-financing for this fund could be explored.

Figure 1-3. Fund 130 (Expansion) Preliminary Funding Outlook ($ Millions)



	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28
Total Expenditures	22.11	60.79	41.13	55.06	54.60	63.03	101.54	79.92	31.53	82.39	122.98
Total Revenue	51.15	57.66	50.23	46.68	61.86	54.43	55.29	56.15	56.92	61.08	65.85
Net Available Fund Balance	108.80	103.87	111.09	100.77	106.00	95.29	46.86	20.81	43.83	20.06	-39.63
Reserve Policy Minimum	11.66	11.60	11.57	11.58	11.67	11.68	11.59	12.16	12.47	13.01	13.20

Key Assumptions

- FY 2017-18 Beginning Net Available Fund Balance is based on prior year unaudited revenue and expenses.
- Total Revenue is comprised of connection fee revenue, interest income and DWR refunds. FY 2017-18 through FY 2027-28 projected connection fee revenue is based on the 2017 Connection Fee Update.
- Total Expenditures are shown in future dollars (current dollars adjusted by a 4% annual inflation factor).
- Net Available Fund Balance - the Zone 7 reserve policy recommends a minimum Capital Reserve of 60% of the following year's non-discretionary expenses.

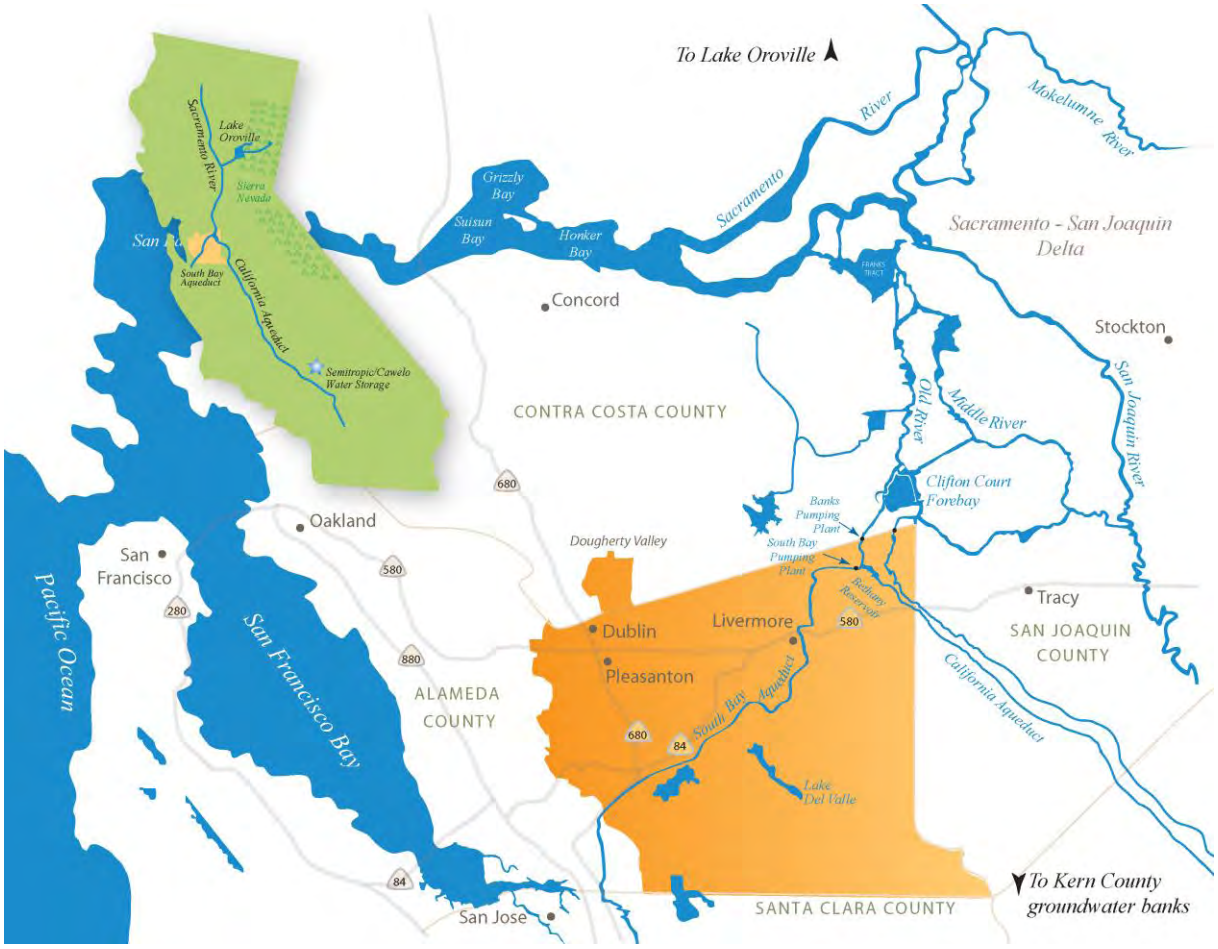
2 INTRODUCTION

2.1 ZONE 7 WATER AGENCY

2.1.1 Agency Overview

Zone 7 Water Agency ("Zone 7" or "Agency") is a dependent special district established under the Alameda County Flood Control and Water Conservation District Act. The Act (Act 20 of the Uncodified Acts of the California Water Code) was passed by the state Legislature in 1949. Zone 7 was established by a vote of the residents of the Livermore-Amador Valley area in 1957, with its own independently-elected Board of Directors (Board) to provide local control of integrated water resources. Zone 7 provides flood protection services to eastern Alameda County and supplies treated drinking water to retailers serving 240,000 people in Pleasanton, Livermore, Dublin and—through special agreement with the Dublin San Ramon Services District—to the Dougherty Valley portion of San Ramon. Zone 7 also supplies untreated water to about 3,500 acres, primarily South Livermore Valley farms and vineyards. Figure 2-1 below shows the Zone 7 Service Area.

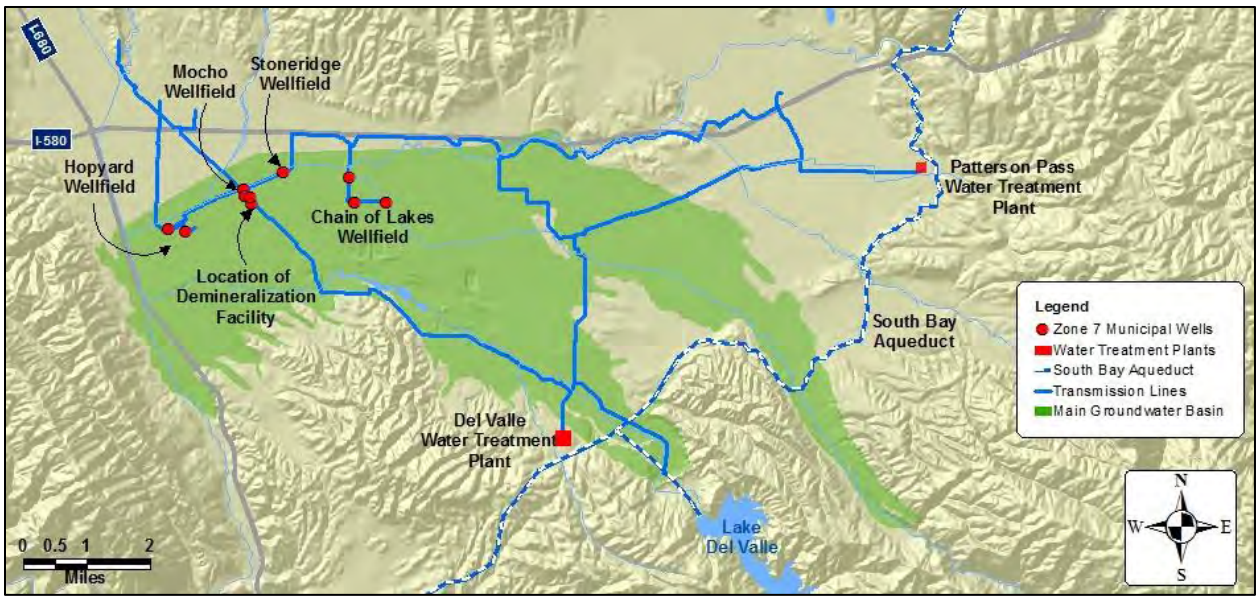
Figure 2-1. Zone 7 Water Service Area



2.1.2 Water System

The majority of Zone 7's water supply originates as snowmelt in the Sierra Nevada, and makes its way to the Zone 7 service area using the Sacramento-San Joaquin Delta (Delta) as a conveyance system. The water is then transported from the Delta to the Livermore-Amador Valley (Valley) through the State Water Project's South Bay Aqueduct. Approximately 80 percent of the water supply used in the Zone 7 service area is imported through the Delta and the remaining 20 percent comes from local rain runoff captured in Lake Del Valle and from groundwater pumped from the Livermore Valley Groundwater Basin ("Main Basin"). Note that the groundwater supplied by Zone 7 originated as surface water that Zone 7 has previously stored in the Main Basin. Surface water is treated at the Patterson Pass Water Treatment Plant, with an average current capacity of 12 million gallons per day (MGD) to be upgraded to 24 MGD in the next few years, and the Del Valle Water Treatment Plant, with an average capacity of 36 MGD. Groundwater production wells located in the Hopyard, Mocho, Stoneridge, and Chain of Lakes wellfields have a total rated capacity of 42 MGD. The Mocho Groundwater Demineralization Plant helps to reduce salt and other mineral content of groundwater supplies. Figure 2-2 shows Zone 7's major treated water system facilities.

Figure 2-2. Major Facilities of the Treated Water System



2.1.3 Flood Protection System

In addition to providing water to the Valley, Zone 7 owns and maintains 37 miles of local flood-protection channels, which represent about a third of all of the Valley's channels and creeks. The remaining channels are owned either privately or by other public agencies, which are responsible for their repair and maintenance. The Valley's storm drainage system begins at city-managed storm drains on local streets. Storm water flows through underground pipelines into creeks or engineered channels feeding into Arroyo Mocho, Arroyo las Positas, and Arroyo Valle. These larger creeks converge with Arroyo de la Laguna, which ultimately drains into San Francisco Bay through Alameda Creek. Zone 7's flood protection system serves a vital role in the Agency's integrated water resource management program, serving multiple benefits including water supply, water quality

protection, erosion and sedimentation management, habitat, environment and watershed stewardship, recreation, and public education.

2.2 CAPITAL IMPROVEMENT PROGRAM

2.2.1 Document Overview

The Capital Improvement Program (CIP) encompasses the implementation plan for the capital projects and programs needed to carry out the mission and goals and policy objectives of Zone 7. This document is the formal documentation of the CIP, and was adopted by the Board on October 18, 2017.

The last comprehensive CIP update, the *Fiscal Year 2015/16 Capital Improvement Program: Ten-Year Water System Plan and Five-Year Flood Protection Plan* (FY 15/16 CIP Update)[8], was adopted in October 2014. Note that the Fiscal Year starts on July 1 and ends on June 30. Normally, Zone 7 updates this document every two years[9]. However, the recent drought—for which the Board declared a Local Drought Emergency from January 29, 2014 to June 16, 2016—required emergency actions such as the acceleration of capital projects (e.g., construction of Chain of Lakes Well No. 5) and the addition of new projects (e.g., Stoneridge Cross Valley Isolation Valve). Furthermore, the combination of reduced revenues from water sales and the increased costs of water supplies and treated water production negatively affected Zone 7's budget, requiring the deferral of a number of planned projects. Consequently, Zone 7 decided to defer the update of the CIP until water operations stabilized.

Previous CIP updates have included both the Water System and the Flood System. This update, the Fiscal Year 2018/2019 Capital Improvement Program: Ten-Year Water System Plan (FY 18/19 Water System CIP Update), is being performed in two phases: 1) the CIP for the Water System over the ten-year period starting in FY 18/19 and ending in FY 27/28 is included in this update and 2) the Flood Protection System CIP update will subsequently be prepared and adopted after key supporting documents have been completed and flood operations have stabilized after the major flood damages from early 2017.

The FY 18/19 Water System CIP Update presents:

- the Water System policies and goals underlying the CIP;
- main developments driving the CIP Update;
- descriptions of the Water System capital improvement projects and programs, including their goals, justification, priority, operational impacts, responsible section, in-service date, costs, source/s of funds, and cash flow; and
- funding analysis including cash flow projections for the various capital funds based on anticipated revenues and planned expenditures.

[8] http://www.zone7water.com/images/pdf_docs/cip/fy_15-16_cip.pdf
[9] With the adoption of Resolution No. 10-3349, the Board approved updating and adopting the CIP on a biannual basis.

2.2.2 Nexus to the 2017 Asset Management Plan Update

The purpose of an Asset Management Plan (AMP) is to proactively plan for and implement asset renewal projects. Zone 7 initiated its formal AMP in 2004 (2004 AMP Study)[10], including the development of an asset registry and proposed methodology for forecasting long-term renewals. As part of the 2011 Asset Management Plan Update[11] (2011 AMP Update), some of the definitions and methodologies were improved and updated along with significant changes to the long-term funding forecast methodology and the creation of asset classes to facilitate future data collection and decision-making. Zone 7 engaged HDR Inc. to complete the 2017 Asset Management Plan Long-Term Funding Forecast Update (2017 AMP Update) to update the long-term funding forecast to incorporate CIP projects that have been completed, assets that have been renewed since 2011, future projects, and the long-term renewal of assets. The 2017 AMP Update is included as Appendix A. All of the assumptions used during the 2011 AMP Update for the near-term and long-term asset renewals and funding forecast were also applied to the 2017 AMP Update. The 2017 AMP Update identified additional renewal and replacement projects that were incorporated into the CIP, and the funding forecast was updated based on the list of projects presented in this CIP Update. The findings from the 2017 AMP Update are discussed in Section 3.5.3.

2.2.3 CIP Structure

The CIP is organized into four primary levels. In descending order, these levels are: System, Funding Strategy, Program, and Project.

2.2.3.1 SYSTEM

The highest level of capital improvement activities is "System." A System is identified as a primary service that Zone 7 is responsible for providing to the Livermore-Amador Valley, in keeping with Zone 7's Mission. The CIP has identified the following two Systems:

- ***Water System*** – This encompasses the capital investments in the acquisition, storage, and conveyance of raw water supplies; and the planning, design, construction, and maintenance of water supply facilities, including treatment plants, wells, and the transmission system. This system also includes the management of the groundwater basin and the Chain of Lakes for water supply purposes.
- ***Flood Protection System*** – This encompasses the planning, design, construction, and maintenance of flood protection facilities, as well as the protection of waterways, watersheds, public highways, life, and property from damage or destruction from flooding. It also covers environmental and community (e.g., recreational and educational) uses of the Valley's waterways. The Flood Protection System CIP update will be covered in a separate document.

2.2.3.2 FUNDING STRATEGY

The second level in the CIP structure is "Funding Strategy." Funding Strategy is a grouping of several programs with a common source of funding. There are three capital program funding strategies, which are common to both Systems.

[10] Carollo Engineers, 2004. Asset Management Program Report.
[11] http://www.zone7water.com/images/pdf_docs/cip/amp-final_6-11.pdf

- ***Renewal/Replacement*** focuses on existing facilities that through normal wear-and-tear have deteriorated or are in need of rehabilitation to maintain the established level of service to existing Zone 7 customers. The Water System projects are funded by water rates (Fund 120), while Flood Protection Projects are funded by property taxes (Fund 200).
- ***System-Wide Improvements*** addresses new regulatory requirements and enhancements to existing facilities that will improve their operation and maintenance, safety, flexibility, and cost-effectiveness as necessary for existing Zone 7 customers. The Water System projects are also funded by water rates (Fund 120) while Flood Protection Projects are funded by property taxes (Fund 200).
- ***Expansion*** identifies the capital projects needed to meet the needs of future customers within Zone 7's service area. The Water System expansion projects are funded by water connection fees (Fund 130), while Flood Protection expansion projects are funded by Development Impact Fees (Fund 210), both of which are collected from developers.

The various sources of funding are discussed further in Section 2.2.5.

2.2.3.3 PROGRAM

The third level in the CIP structure is "Program." Programs represent a group of related projects combined to support major components of the Water System. There are currently ten capital programs:

- ***Buildings & Grounds*** addresses structures and support facilities that are not directly involved in flood protection or the supply, treatment, transmission or storage of water.
- ***Emergency Preparedness*** addresses Zone 7's objectives to minimize risk of emergencies and increase reliability during seismic or similar events.
- ***Flood Protection*** facilities are capital projects that focus on the rehabilitation, improvement or annual major maintenance of the existing flood protection facilities that are planned and funded by Zone 7. These facilities will be covered in a separate CIP document.
- ***Groundwater Basin Management*** focuses on Zone 7's responsibility to manage the local groundwater basin, which includes conjunctive use of imported water (storing surplus supplies in the groundwater basin in wet years), stabilizing and reducing the buildup of minerals, minimizing pollution, and delivering high-quality water and a reliable supply to its customers.
- ***Program Management*** accounts for staff time and related costs associated with managing capital programs.
- ***Regulatory Compliance Monitoring*** ensures compliance with a range of existing and future regulatory and/or permitting requirements.
- ***Transmission & Distribution*** consists of projects that are required for the transmission of treated water to Zone 7 retailers.
- ***Water Supply & Conveyance*** focuses on the planning and purchase of new water supplies and implementation of improvements required to convey raw water to Zone 7's surface water treatment plants, to local streams for recharge, and to Zone 7's agricultural customers for their irrigation needs.
- ***Water Treatment Facilities*** addresses existing and proposed surface water treatment facilities, and associated improvements.

- ***Wells*** identifies facilities required to reliably maintain the production of groundwater deliveries during drought periods, peak demand periods, and planned and unplanned outages of surface water treatment plants; also identifies facilities required to optimize conjunctive use and facilitate groundwater basin management.

2.2.3.4 PROJECT

The fourth level in the CIP structure is "Project." A Project is a discrete set of capital improvement tasks with a dedicated Project Manager assigned to it. Prioritization, appropriation requests, and projected spending (cash flow) are authorized at this level. The FY 18/19 Water System CIP Update plans for 76 Water System projects over the FY 18/19-FY 27/28 period. Detailed descriptions of these projects can be found in Appendix B.

2.2.4 Strategic Planning Priorities

The Board has identified five general strategic planning priorities. These priorities were developed to ensure all Zone 7 efforts are focused on fulfilling the mission of the agency, and to further ensure that the most immediate needs are addressed in an efficient and cost-effective manner. The Board most recently updated the Strategic Planning Priorities in August 2017 (Appendix C). The five general priorities listed below include a number of specific strategic planning sub-priorities, which are presented in Appendix C.

1. Provide customers with a reliable, cost-effective and safe water supply.
2. Provide Eastern Alameda County with an effective system of flood protection.
3. Provide the Agency with effective organization, administration and governance.
4. Operate the Agency in a fiscally-responsible manner.
5. Increase public understanding of the Agency and its functions.

These specific priorities assist Zone 7 staff in focusing its capital improvement project efforts while ensuring that each project pursued is aligned with the mission of the agency. To this end, each CIP Water System project summary (see Appendix B) includes the strategic planning sub-priorities fulfilled by that project.

2.2.5 Sources of CIP Funding

Funding for Zone 7's Water System CIP is primarily from Water Rates and Municipal & Industrial (M&I) Connection Fees. Revenues derived from these rates and fees are deposited into the funds listed below. The rates and fees are reviewed and adjusted periodically as necessary. When determining the funding source for each project, the relative benefits to each system, and to existing and future customers, are evaluated carefully. For general reference, a description of each Zone 7 fund—including for the Flood Protection System—is provided in Table 2-1.

Table 2-1. Zone 7 CIP Funding Sources

Fund 120 – Renewal/ Replacement & System-Wide Improvements	Funds a project, or portion thereof, that relates to the replacement or improvement of existing water facilities, and which benefits existing customers. Funds are generated through water rates charged for the sale of water to current or existing Zone 7 customers. Water rates are established based on the revenue required to operate and maintain the existing Water System including an allowance for Fund 120. Another source of revenue for Fund 120 is the Dougherty Valley Facility Use Fees, which are charged to Dougherty Valley development. Per Amendment No. 1 of the Zone 7 and Dublin San Ramon Services District (DSRSD) Water Supply Contract, facility use fees are charged to the Dougherty Valley service area to compensate Zone 7 for the use of Zone 7's existing facilities to provide water to this area. The facility use fee is $3,300 per new dwelling unit equivalent (DUE) connection, based on a 5/8" meter.
Fund 130 – Expansion	Funds a project, or portion thereof, that relates to additional demands placed on the existing Water System due to new development, which includes all water purchases; conveyance, treatment and transmission facilities; and associated costs (such as planning, design, construction, legal, administration, property acquisition, permitting). Revenue is generated from the collection of water connection fees for new water services. Connection fees are developed and adjusted with respect to the capital improvements required to meet future demands on the water system. Connection fees are paid when securing meters for a development. As of May 2017, the Zone 7 connection fee is $27,180 per DUE, based on a 5/8" meter. A separate connection fee of $26,080 per DUE is assessed to the Dougherty Valley area in San Ramon, which DSRSD serves per Amendment No. 1 of the Zone 7 and DSRSD Water Supply Contract. The revenue generated from connection fees provides funding for the implementation of all expansion projects.

Table 2-2. Zone 7 CIP Funding Sources (continued)

Fund 200 – Flood Protection/ General Fund	Funds a project, or portion thereof, that relates to the replacement or improvement of existing flood protection facilities, and which benefits existing customers. Revenue is generated from a portion of the ad valorem taxes levied based on one percent (1%) of the assessed value of all properties within Zone 7.
Fund 210 – Flood Protection and Storm Water Drainage Development Impact Fee	On March 18, 2009, the Zone 7 Board of Directors adopted Ordinance 2009-01, which replaced the Special Drainage Area (SDA) 7-1 development impact fee previously adopted by Zone 7.[12] The new ordinance also established the Flood Protection and Storm Water Drainage Development Impact Fee Fund (Fund 76); consequently, all funds from SDA Operations (Fund 71) and the SDA 7-1 Trust Fund (Fund 90) were transferred to Fund 76 (now Fund 200), while all of the outstanding SDA 7-1 exemption credits were liquidated.[13] This fee is currently set at $1 per square foot of impervious surface area created. Fund 210 holds all fees collected from development in support of Zone 7's flood protection and storm water drainage activities.

Other Zone 7 budgeted funds, which are not included in the CIP, but may fund a small portion of existing users share of a CIP project include Fund 100 – Water Enterprise Operations and Fund 110 – State Water Project. Fund 100 funds the operations and maintenance costs of delivering of high quality drinking and irrigation water to the Livermore-Amador Valley. Fund 110 finances the "fixed cost" payment to the State Department of Water Resources (DWR) to import water to Zone 7 through the State Water Project (SWP) South Bay Aqueduct (SBA). The purpose is to pay the costs for use of the State water delivery system, which includes repayment of voter approved, State incurred, long-term debt.

2.3 CIP PREPARATION AND ADOPTION

The CIP document is the product of Zone 7's overall capital planning and budgeting process. The FY 18/19 Water System CIP Update was prepared starting at the project level. Project Managers and Section Heads from Facilities Engineering, Integrated Planning, Operations, Maintenance, Groundwater, and Finance worked closely together to review the existing ongoing and planned projects, to eliminate unnecessary projects, and to develop new projects, as needed. The projects' scopes of work, costs, and schedules were reviewed in detail and modified based on new or updated information related to regulations, actual facility conditions, industry costs, water supply conditions, demand projections, lessons learned from the drought, external developments (e.g., timing of mining activities), new water supply opportunities, and other factors. The 2017 AMP Update, done in parallel with the CIP update process, also generated a list of projects to be added to the CIP based on scheduled renewals and replacements.

[12] Ordinance No. 00-2004-42 was repealed on March 18, 2009, the effective date of Ordinance 2009-01.
[13] Per Ordinance 2009-01, the funds were transferred and existing exemption credits were liquidated on May 18, 2009.

The first step generated an initial list of projects from Zone 7 staff. At Retailer Workshops on June 5 and June 7, 2017, retailer staff provided input on the development of the project list, including any requests for new projects, and input on the next step, the project prioritization process.

Zone 7's Executive Management (General Manager, Assistant General Manager of Finance/Treasurer, Engineering Manager, Integrated Water Resources Manager, and Production Manager) subsequently undertook a prioritization of the proposed project list. Projects that are in progress with Board approval (e.g., DVWTP Ozonation), non-discretionary projects (those requiring debt service payments, e.g., South Bay Aqueduct Enlargement Project), and program management and planning projects were maintained in the CIP. Other projects—projects included in the FY 15/16 CIP Update and newly proposed projects—were then qualitatively evaluated based on the following factors: directly increases reliability, increases system capacity, increases water supply, addresses water quality regulatory compliance, addresses health and safety and other regulatory compliance, prevents failure of critical facilities, and results in cost savings. While most projects in the proposed project list were found to be necessary and appropriate for inclusion in the CIP, project criticality was reflected in the project scheduling. This allowed staff to adjust the timing of various projects so that a preliminary CIP implementation schedule—reflecting Zone 7's goals and priorities—could be developed for the 2017 Asset Management Plan Update funding analysis.

Zone 7 staff met with the retailers on August 8, 2017 to present the preliminary results from the 2017 Asset Management Plan Update's funding forecast, considering various financing options for large projects based on the preliminary CIP schedule. Based on retailer staff's input and further consideration of project timing needs and implementation feasibility, Zone 7 then developed draft recommendations for the CIP. These draft recommendations were presented to the retailers at a workshop on September 19, 2017 for their review and input.

A Board workshop was held on October 3, 2017 to present the Draft 2017 AMP Update and the Draft FY 18/19 Water System CIP Update. The draft reports were revised to incorporate Board input and the Draft Final 2017 AMP Update and the Draft Final FY 18/19 Water System CIP Update were adopted by the Board at the October 18, 2017 Board meeting.

3 WATER SYSTEM CIP

3.1 INTRODUCTION

This chapter presents the specific policies and goals set by the Board for the Water System, which serve as the foundation for the development of the CIP. It presents an overview of the FY 18/19 Water System CIP Update, compares it to the FY 15/16 CIP Update, and discusses the main developments driving the CIP update process. Details of the Water System CIP are then presented by Funding Strategy, followed by the funding analysis. Finally, it presents the capital expenditure summary by Program.

3.2 WATER SYSTEM POLICIES AND GOALS

To ensure that the needs of Zone 7 customers are met, Zone 7 has set goals related to water supply and reliability, groundwater management and delivered water quality. These Water System goals, as defined by adopted Board policies, are outlined in the following pages. The current policies can be found in Appendix D. Policies are subject to review and adjustment by the Zone 7 Board to ensure that they continue to meet the needs of Zone 7's customers.

3.2.1 Water Supply Reliability

Two water policy goals related to water supply and infrastructure help guide Zone 7's capital and resource planning efforts. Adherence to these goals results in Zone 7 maintaining a highly reliable water supply system for existing and future customers under varying hydrologic conditions.

In October 2012, the Zone 7 Board adopted a revised Water Supply Reliability Policy. The revised level of service goals within the policy provide Zone 7 with the flexibility to manage uncertainties associated with the State Water Project—Zone 7's main source of water supply—and to reasonably respond to prolonged facility outages and drought conditions, and also provides consistency with industry standards. A summary of the policy is presented in Table 3-1.

Table 3-1. Goals of the Water Supply Reliability Policy

	WATER SUPPLY RELIABILITY POLICY (RESOLUTION NO. 13-4230)	
WATER SUPPLY AND RELIABILITY	Goal 1:	Zone 7 will meet its treated water customers' water supply needs, in accordance with Zone 7's most current Contracts for M&I Water Supply, including existing and projected demands as specified in Zone 7's most recent Urban Water Management Plan (UWMP), during normal, average, and drought conditions, as follows: • At least 85% of M&I water demands 99% of the time • 100% of M&I water demands 90% of the time
	Goal 2:	Provide sufficient treated water production capacity and infrastructure to meet at least 80% of the maximum month M&I contractual demands should any one of Zone 7's major supply, production, or transmission facilities experience an extended unplanned outage of at least one week.

3.2.2 Groundwater Basin Management

Zone 7's service area overlies the majority of the Livermore Valley Groundwater Basin, the entire Sunol Groundwater Basin, and a small portion of the Tracy Subbasin. The most productive and highest-quality portion of the Livermore Valley Groundwater Basin is referred to as the "Main Basin", and is a key component of Zone 7's water system. The Main Basin has an estimated storage capacity of 250,000 acre-feet. Approximately half of that storage is considered operational storage, while the other half is considered emergency storage. Using the groundwater basin as a storage reservoir is critical for long-term water supply reliability in the Valley. Zone 7 stores excess surface water in the groundwater basin for use during peak demands, dry years, and emergencies. Under normal conditions, the groundwater basin supplies about 20% of Valley-wide water demands annually, including groundwater pumped by the retailers directly.

The 2005 Groundwater Management Plan (GMP)[14] documented all of Zone 7's then-current groundwater management policies and programs, including the Salt Management Plan (SMP)[15] developed in 2004. In 2015, Zone 7 completed a Nutrient Management Plan (NMP), which was prepared as a supplement to the SMP; the updated Salt and Nutrient Management Plan (SNMP) has been incorporated into the GMP. The goals of the Groundwater Management Plan and the Nutrient Management Plan are listed in Table 3-2.

Table 3-2. Goals of the Groundwater Management Plan

	GROUNDWATER MANAGEMENT PLAN (RESOLUTION NO. 06-2796)	
GROUNDWATER BASIN MANAGEMENT	Purpose	The Groundwater Management Plan (GMP) integrates various Zone 7 groundwater management policies and programs. One of these is the May 2004 Salt Management Plan (SMP), which was incorporated by reference into the GMP and was approved by the California Regional Water Quality Control Board – San Francisco Bay Area Region on September 24, 2004 as satisfying the requirements of Provision D.1.c.ii of the regional "Master Water Recycling Permit" order No. 93-159. This permit was issued to the Dublin San Ramon Services District (DSRSD), the City of Livermore and Zone 7, and authorizes the production and distribution of recycled water. The SMP sets forth a plan to facilitate recycling without degrading local water quality. In addition, the SMP goals are to maintain or improve groundwater mineral quality and delivered water quality through the following:
	Goal 1:	Protect and enhance the quality of groundwater.
	Goal 2:	Offset current and future salt loading, while facilitating reasonable regional recycled water use.
	Goal 3:	Maintain or improve groundwater mineral quality.
	Goal 4:	Provide more comparable delivered water quality to Retailers.
	Goal 5:	Utilize annual operations planning to achieve these goals.

[14] Jones & Stokes, 2005. Groundwater Management Plan for Livermore-Amador Valley Groundwater Basin.
[15] Zone 7 Water Agency, 2004. Salt Management Plan.

	NUTRIENT MANAGEMENT PLAN (RESOLUTION No. 15-71)	
	Goal 1:	Obtain additional information in shallow aquifer zones of the Areas of Concern.
	Goal 2:	Minimize nitrogen loading from fertilizer application using BMPs.
	Goal 3:	Minimize nitrogen loading from recycled water irrigation projects.
	Goal 4:	Minimize nitrogen loading from concentrated livestock facilities such as horse boarding, training, and breeding facilities.
	Goal 5:	Minimize nitrogen loading from onsite disposal of winery process wastewater.
	Goal 6:	Minimize nitrogen loading from new onsite wastewater treatment systems (OWTS), e.g., septic tank systems.
	Goal 7:	Reduce nitrogen loading from OWTS in Areas of Concern.
	Goal 8:	Increase capture and infiltration of stormwater recharge to dilute and attenuate nitrate concentrations in groundwater.

In 2014, the Sustainable Groundwater Management Act (SGMA) was enacted, creating a framework for sustainable local groundwater management. SGMA designates Zone 7 as the exclusive Groundwater Sustainability Agency (GSA) for the groundwater basins (or portions thereof) located within the Zone 7 service area. In December 2016, Zone 7 submitted an Alternative Groundwater Sustainability Plan for consideration by the Department of Water Resources in which Zone 7 demonstrates the sustainable management specifically of the Livermore Valley Groundwater Basin. In January 2017, Zone 7 submitted its Decision to Become the Exclusive Groundwater Sustainability Agency for the Livermore Valley Groundwater Basin.

3.2.3 Water Quality

All of the water Zone 7 delivers to the retailers meets State and Federal health standards, and in most cases is far better than the mandated water quality. However, delivered water taste, odor and/or appearance can often vary depending on the source/s, season, and/or customer's location. To continue meeting health standards and address aesthetic concerns, Zone 7: 1) established self-imposed water quality targets that are more stringent than State and Federal regulations and 2) completed a Water Quality Management Plan as the basis for policies addressing drinking and agricultural water quality issues, to guide operational decisions, and to support the development of capital projects and design standards. In 2003, the Zone 7 Board adopted the *Water Quality Policy for Potable and Non-potable Water (Resolution No. 03-2494)*, which was updated in 2014. The goals of the *Revised Water Quality Policy for Potable and Non-potable Water (Resolution No.14-4365)* are listed in Table 3-3.

Table 3-3. Goals of the Water Quality Policy

	REVISED WATER QUALITY POLICY FOR POTABLE AND NON-POTABLE WATER (RESOLUTION NO. 14-4365)	
WATER QUALITY	Goal 1:	Zone 7 shall continue to meet all State and Federal primary Maximum Contaminant Levels (MCLs)[16] for potable water delivered to the M&I Contractors' turnouts. In addition, Zone 7 shall deliver potable water of a quality that is as close as technically feasible and fiscally responsible to the Public Health Goals (PHGs)[17] and/or Maximum Contaminant Level Goals (MCLGs)[18]. To ensure a margin of safety, the delivered water shall generally be of a quality that contains no greater than 80 percent of the applicable State or Federal primary MCLs.
	Goal 2:	Zone 7 shall meet all State and federal secondary MCLs in the potable water delivered to its M&I Contractors' turnouts. In addition, Zone 7 shall, within technical and fiscal constraints, proactively mitigate earthy-musty taste and odor events[19] from surface water supplies and reduce hardness levels to "moderately hard", defined as 75 to 150 mg/L. Also, Zone 7 shall optimize its treatment processes to minimize chlorinous odors by maintaining consistent disinfectant dosage and residual.
	Goal 3:	Zone 7 shall endeavor to deliver to its untreated water turnouts, from a variety of sources, water of a quality that meets the irrigation needs and does not negatively impact vegetation, crops, or soils.
	Goal 4:	In order to achieve Goals 1 through 3, Zone 7 shall continue to work to improve the quality of its source waters. This may be achieved through Zone 7's Salt and Nutrient Management Plan, which will maintain or improve the water quality in the groundwater basin, and through advocacy of improvements in the State Water Project, its facilities and their operations, which may improve the source water of Zone 7's surface water supplies.
	Goal 5:	Zone 7 will partner with M&I Contractors to assist them in taking similar steps as those outlined in this policy to maintain or improve the quality of water delivered to the M&I Contractor's retail customers.

3.3 OVERVIEW OF THE WATER SYSTEM CIP

A number of major developments has occurred since the FY 15/16 CIP Update was completed in October 2014. Key studies and planning documents have been completed, including the Water

[16] Primary MCLs are set as close to the Public Health Goals (PHGs) or Maximum Contaminant Level Goal (MCLGs) as is economically and technically feasible. Secondary MCLs are not health-related but regulate the odor, taste, and appearance of drinking water.
[17] Public Health Goal (PHG): The level of a primary contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the Office of Environmental Health Hazard Assessment.
[18] Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the United States Environmental Protection Agency.
[19] An event is defined as when three or more similar complaints are received in a 7-day period.

Supply Evaluation Update (2016)[20], the 2015 Urban Water Management Plan[21] adopted by the Board in March 2016, the Transmission System Planning Update (2016)[22], the FY 16/17 Municipal & Industrial Connection Fee Program Update (2017)[23] adopted by the Board in February 2017, and the 2017 AMP Update (2017)[24] adopted by the Board in October 2017 (Appendix A). The findings from these studies and planning documents have been incorporated in the CIP where applicable.

Furthermore, the recent drought underscored the need to bolster water system reliability to deal with extreme hydrologic conditions and highly variable conditions; it also identified some vulnerabilities of existing supplies and infrastructure. Recurring taste and odor issues, other source water quality challenges, poor performance and obsolescence of the Patterson Pass Ultrafiltration Plant membranes, and unexpected well pump failures have decreased Zone 7's ability to meet peak demands in the near- and long-term; modification of previously-identified projects and the addition of new projects were therefore needed to address these issues. Zone 7 had planned to address the regulation of chromium-6, but a May 2017 court ruling ordered the new regulations to be withdrawn. Finally, Zone 7 performed a rigorous update of unit cost estimates to reflect actual costs expended in completed projects.

The major developments—which guided the selection, scope definition, cost estimation, prioritization, and timing of projects in this CIP—are described in more detail in the following section.

For the FY 18/19 Water System CIP Update, 76 projects have been identified totaling $910 million over ten years ($95M Renewal/Replacement, $105M in System-Wide Improvements, and $710M in Expansion). Note that these costs are presented in future dollars with an assumed inflation rate of 4% annually. Projects are categorized into the eight Programs as shown on Figure 3-1 and in

Table 3-4. Seventy-five percent of planned expenditures are related to Water Supply and Conveyance and Water Treatment Facilities. Note that funding for some projects is split between the two water capital funds (Fund 120 and Fund 130) to reflect benefits to both existing and future customers. Figure 3-2 and Table 3-5 show the overall breakdown by Funding Strategy. Figure 3-3 and Table 3-6 present the CIP by Funding Strategy and Fiscal Year.

[20] http://www.zone7water.com/images/pdf_docs/water_supply/wse-update_2-16.2.pdf
[21] http://www.zone7water.com/images/pdf_docs/water_supply/urban_water_mgmt_plan_2015.pdf
[22] 2016, West Yost & Associates. Transmission System Planning Update.
[23] http://www.zone7water.com/images/pdf_docs/permits/connection_fee_update_report.pdf
[24] 2017, HDR Inc. 2017 Asset Management Plan Long-Term Funding Forecast Update.

Figure 3-1. Ten-Year Water System CIP (FY 18/19 – FY 27/28) Breakdown by Program ($ Millions)

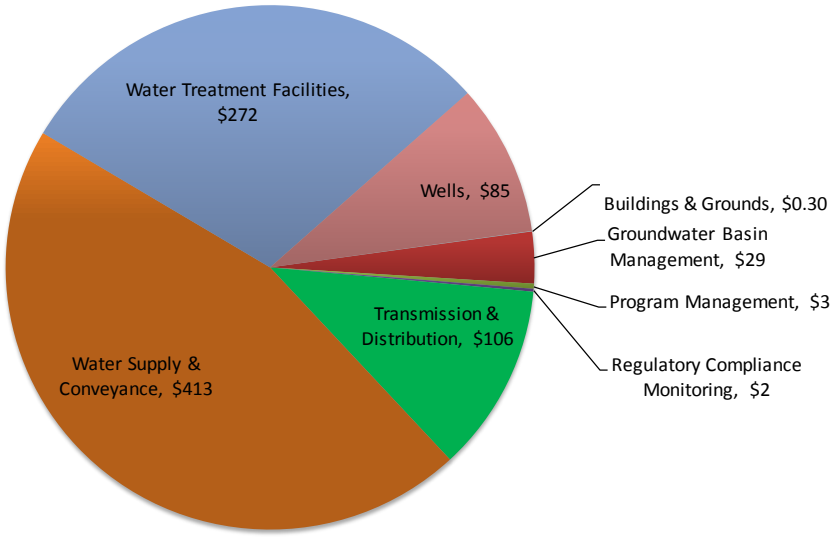


Table 3-4. Ten-Year Water System CIP (FY 18/19 – FY 27/28) Breakdown by Program ($ Millions)

Program / Fiscal Year	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	Total
Buildings & Grounds	0.05	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.30
Groundwater Basin Management	0.25	0.51	0.17	0.00	0.00	0.21	0.34	0.12	4.98	22.33	28.91
Program Management	0.12	0.19	0.15	0.22	0.45	0.27	0.18	0.30	0.20	0.76	2.83
Regulatory Compliance Monitoring	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.18	0.19	0.19	1.63
Transmission & Distribution	5.33	6.06	33.19	31.63	22.11	1.54	1.06	0.00	0.11	4.49	105.52
Water Supply & Conveyance	23.25	29.63	37.00	33.51	30.55	70.76	72.36	29.33	28.01	58.99	413.38
Water Treatment Facilities	76.20	15.27	5.30	5.71	20.11	13.47	9.41	10.92	56.41	58.70	271.50
Wells	3.68	10.66	2.27	2.68	18.11	35.93	4.11	1.73	0.00	5.82	84.99
Total	**109.0**	**62.5**	**78.2**	**73.9**	**91.5**	**122.6**	**87.6**	**42.6**	**89.9**	**151.3**	**909.1**

Figure 3-2. Ten-Year Water System CIP (FY 18/19–FY 27/28) Breakdown by Funding Strategy ($ Millions)

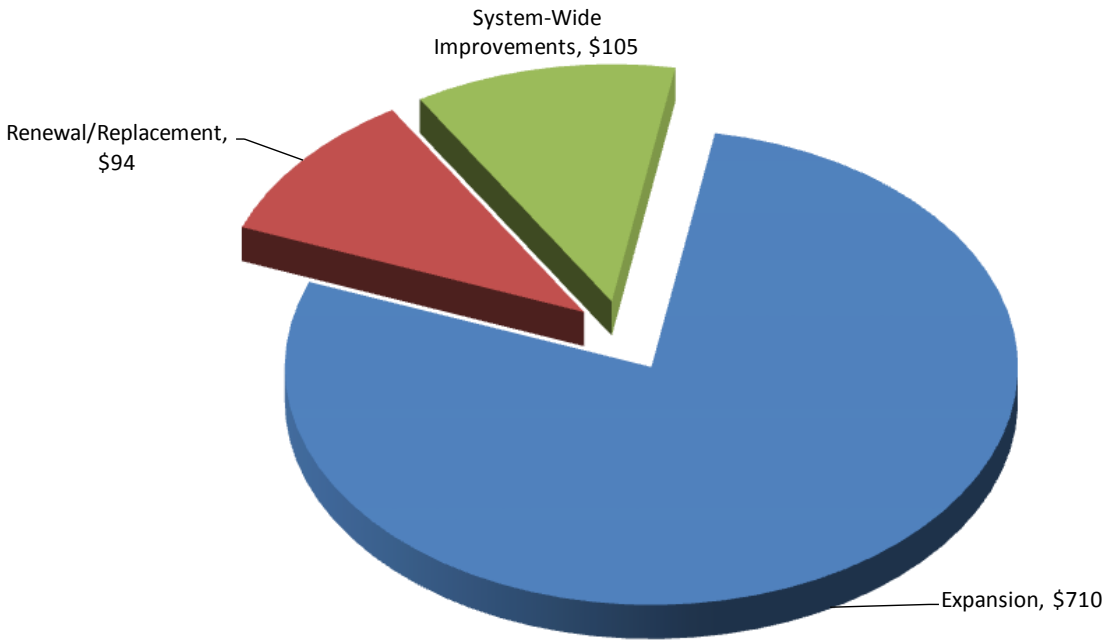


Table 3-5. Ten-Year Water System CIP (FY 18/19 – FY 27/28) Breakdown by Funding Strategy ($ Millions)

Strategy	Ten-Year Total ($ Millions)	Percentage
Expansion	$710	78%
Renewal/Replacement	$94	10%
System-Wide Improvements	$105	12%
Total	**$909**	**100%**

Figure 3-3. Ten-Year Water System CIP (FY 18/19 – FY 27/28) Breakdown by Funding Strategy and Fiscal Year ($ Millions)

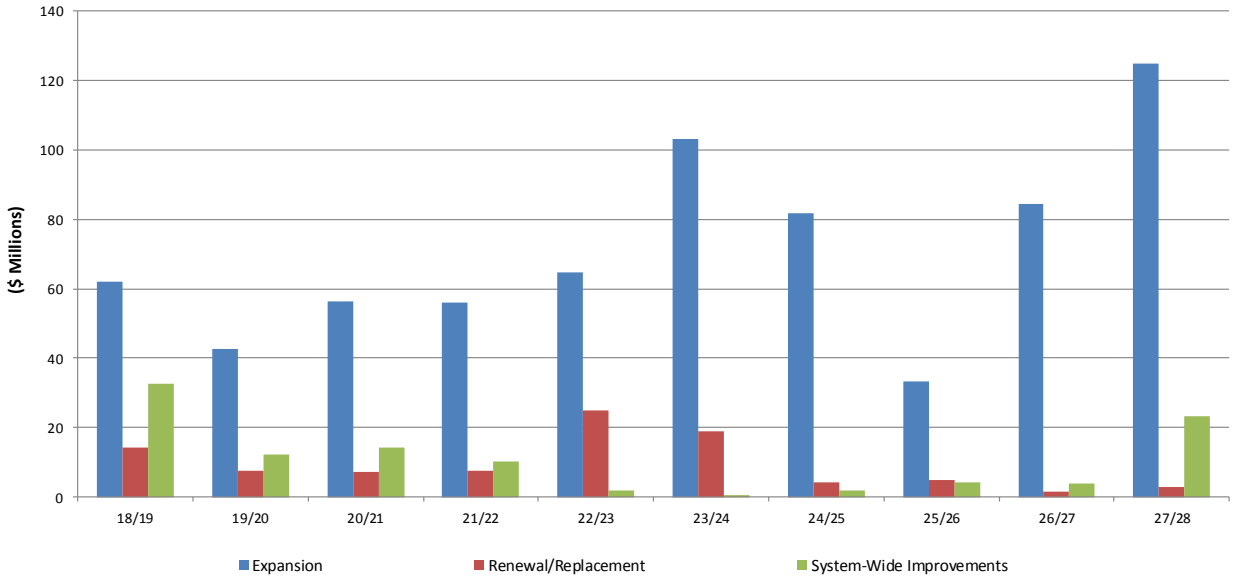


Table 3-6. Ten-Year Water System CIP (FY 18/19 – FY 27/28) Breakdown by Funding Strategy and Fiscal Year ($ Millions)

Strategy (FY)	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	Total
Expansion	62.09	42.51	56.51	56.13	64.63	103.22	81.70	33.40	84.35	125.03	709.6
Renewal/Replacement	14.38	7.65	7.34	7.50	25.04	18.98	4.16	4.89	1.64	2.90	94.5
System-Wide Improvements	32.55	12.30	14.37	10.26	1.81	0.39	1.76	4.29	3.91	23.35	105.0
Total	**109.02**	**62.46**	**78.22**	**73.90**	**91.48**	**122.59**	**87.63**	**42.58**	**89.90**	**151.28**	**909.06**

3.4 COMPARISON TO THE FY 15/16 CIP UPDATE

A standard part of the CIP Update process is the refinement of project scope, cost, and schedule as more information is gathered about facility conditions, facility use, timing of other related projects, timing of related external activities, criticality/urgency of the project, demand trends, technological developments, construction market conditions, regulations, environmental permitting requirements, and other factors.

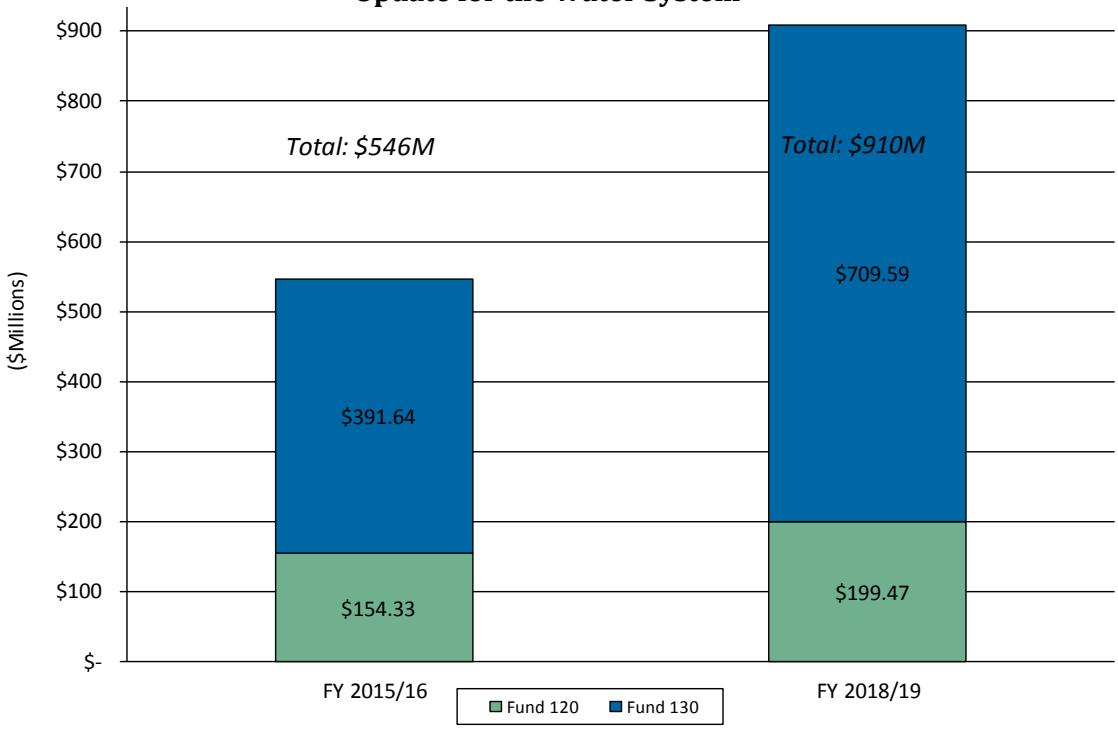
Unit costs were updated (e.g., pipelines, pump stations, etc.) based on the most current data and applied more consistently across projects. Recent actual construction costs were also used where available. Project costs were also adjusted where the scope has been modified. Finally, project schedules have been adjusted to reflect the timing need; feasibility of implementation from financial, technical, and institutional perspectives; and coordination with other internal and external activities.

As part of the FY 16/17 Municipal & Industrial Connection Fee Program Update[23], funding allocations between existing and new customers (Funds 120 and 130, respectively) were also re-evaluated and updated based on current projections of water demands, project scope, and benefits.

Overall, the FY 18/19 CIP Update expenditures total $910 million, which is $364 million or about 67% more than the FY 15/16 CIP Update total of $546 million for the water system. Figure 3-4 presents a comparison of this CIP with the FY 15/16 Ten-Year Water System CIP; as shown, $46 million of the increase is in Fund 120 while the remaining $319 million is in Fund 130. The increase is due to the deferral of projects from previous years into this CIP period, addition of new projects, acceleration of existing projects, and updated scope and cost estimates (e.g., *Increased Water Treatment Plant Capacity*, *Bernal Wells 1 & 2*, *Second Groundwater Demineralization Plant*, *Chain of Lakes – Cope Lake to DVWTP Pipeline*).

The main developments driving the FY 18/19 Water System CIP Update are discussed in more detail in the following section.

Figure 3-4. Ten-Year Cost Comparison of the FY 15/16 CIP Update and the FY 18/19 CIP Update for the Water System



3.5 MAIN DEVELOPMENTS DRIVING THE FY 18/19 WATER SYSTEM CIP

This section describes the main factors that drove the development of the FY 18/19 Water System CIP Update. The major projects affected are discussed below with project names in *italics*. Some projects have been renamed or consolidated with other projects; this has been noted where relevant. Total project costs for major projects are included below in future dollars; unless noted otherwise, all costs presented are expended in the FY 18/19-FY 27/28 period. Note that some costs are split between Funds 120 and 130 to reflect benefits shared between existing and new customers. Section 3.6.1 presents projects that are shared between the two funds.

3.5.1 Water Supply Reliability

3.5.1.1 DROUGHT RESPONSE

On January 17, 2014, Governor Brown declared a State of Emergency in California due to drought conditions and asked all residents to cut back water use by 20%. On January 29, 2014 at a special meeting of the Board, a local Drought Emergency was declared and a Drought Emergency Response Plan was accepted. The Board approved three emergency projects at that time to bolster system reliability: 1) *Lake I - Cope Lake Pipeline* – allows captured groundwater from mining activities to be recharged back into the Main Basin, 2) *Chain of Lakes Well No. 5* - increases groundwater production capacity during droughts and facility outages, and 3) design of *Busch Valley Well No. 1*– prepare for construction of a new well to increase in groundwater production capacity.

The *Lake I - Cope Lake Pipeline* was completed in May 2014 and Zone 7 has subsequently been able to re-capture over 15,000 acre-feet of groundwater that would have been lost otherwise. The *Chain of Lakes Well No. 5* was completed in December 2014, increasing Zone 7's groundwater production capacity by 2.1 million gallons per day. The work on *Busch Valley Well No. 1* was modified to focus on the development of a Basis of Design for the well and the connection to Zone 7's transmission system. The connection was completed in February 2016, which allows Zone 7 to quickly install a temporary booster pump station that could improve Zone 7's ability to convey groundwater from the west side to the east side of the Zone 7 transmission system, if needed, during future droughts and other surface-water limited conditions (e.g., South Bay Aqueduct or Delta outage). The *Booster Pump Station* ($5.5M) CIP project is the installation of a permanent pump station.

3.5.1.2 INVESTING IN LONG-TERM RELIABILITY

While the recent drought accelerated the projects described above, Zone 7 continues to implement a multi-pronged strategy for securing the long-term reliability of the water supply system to meet the needs of both existing and future customers. This strategy includes:

- conservation to manage long-term demands;
- increased yield from the Arroyo Valle local water right using the Chain of Lakes;
- maximized groundwater storage locally and in Kern County groundwater banks;
- access to emergency water supply in the Chain of Lakes;
- California Water Fix (CA WaterFix) to secure the Valley's major source of water, the State Water Project (SWP);
- pursuit of alternative water supply (e.g., Sites Reservoir, potable reuse) and storage (e.g., Los Vaqueros Expansion) options; and
- construction of an emergency intertie with another water agency.

Zone 7 will continue to work closely with the retailers on the Valley-wide conservation program, offering rebates and public education, and securing grants to support the program. Zone 7 regularly updates the program to focus on the most cost-effective elements and to implement the latest regulations. This program is funded under Funds 100 and 130.

Local water is a key component of Zone 7's water supply portfolio. Zone 7 continues to work on a petition to extend Zone 7's water permit for diverting from the Arroyo Valle. Under the existing water right permit, the average yield from the Arroyo Valle is 7,300 acre-feet with the use of existing facilities. A new diversion structure and pipeline (*Chain of Lakes – Cope Lake to DVWTP*

Pipeline) in the Chain of Lakes (COL) will facilitate capture of stormwater released from Lake Del Valle, potentially increasing Zone 7's average yield by about 3,000 acre-feet.

Using the groundwater basin as a storage reservoir is critical for long-term reliability in the Valley. Through conjunctive use of the local groundwater basin, excess water imported in wet years is banked in the groundwater basin via artificial recharge and subsequently recovered in dry years to augment low SWP allocations, as well as during emergencies and facility outages. The *Arroyo Mocho Diversion Facility Coordination and Implementation* and the *Chain of Lakes – Cope Lake to DVWTP Pipeline* support increased groundwater recharge; furthermore, the COLs pipeline will also allow Zone 7 to access stored water in the COL during emergencies and droughts. New wells (*Busch-Valley Well 1*, *Chain of Lakes Wells 3 and 4, Bernal Wells 1 and 2*) increase Zone 7's ability to access groundwater during emergencies and droughts. Past investments in groundwater banks in Kern County (*Cawelo Groundwater Banking Program* and *Semitropic Stored Water Recovery Unit*) augment water supplies during times of low SWP allocations (e.g., the recent drought).

In a normal year, over eighty percent of Zone 7's supply is derived from the SWP. The SWP reliability has been declining over the years due to increasingly stringent regulations, declining infrastructure and Delta conditions, and climate change. To protect the Valley's major water supply, Zone 7 has been supporting the CA WaterFix, the State of California's proposed project to upgrade the SWP system infrastructure and operations and improve its long-term reliability while protecting the Sacramento-San Joaquin Delta (Delta) ecosystem. If the project proceeds, and construction begins in 2019, it is currently expected to be substantially complete by 2033. CA WaterFix would be implemented by the Department of Water Resources (DWR) and ultimately financed through the issuance of multiple revenue bonds. SWP contractors[25] will be billed for their share of the project's capital costs through DWR's Statement of Charges, which is planned to be funded through Zone 7's future water rates (Fund 100) and is therefore not included in this CIP. Capital payments are expected to be spread over about fifty years through 2071, to be paid by all (i.e., existing and future) Zone 7 customers.

While Zone 7's current plan includes participation in the CA WaterFix, the findings from the 2016 Water Supply Evaluation Update[20] (WSE Update) indicated Zone 7's need to pursue additional water supply options to bolster interim reliability until CA WaterFix is in place, to address the uncertainties of future regulatory requirements and impacts on Delta water supply, to potentially replace a water transfer agreement with Byron Bethany Irrigation District (BBID) that would ultimately sunset as growth occurs in the BBID service area, and to meet the demands of future customers. To that end, Zone 7 continues to evaluate alternative water supply and storage options such as the Bay Area Regional Desalination Project, potable reuse, Los Vaqueros Expansion, Sites Reservoir, and water transfers. Ultimately, Zone 7 may choose to implement one or a portfolio of these options depending on the results of the studies and planning efforts, the amounts and timing of development and conservation, and the determination of costs and benefits to the Valley.

The costs of these studies and planning efforts are included under *Water Supply and Bay Area Regional Projects*. Construction of the selected water supply option/s is captured under *Water Supply Replacement Projects.* For planning purposes, the combined costs of these two CIP projects have been based on a desalination or potable reuse project yielding about 5,500 acre-feet; however, as noted above, no decision has been made on which options to implement at this time. The project budget could ultimately be used towards a portfolio of options. Cost estimates will be refined as decisions are made on which option/s to implement.

[25] Central Valley Project contractors are also expected to participate and pay their proportional share.

Finally, Zone 7 has been evaluating the feasibility of an intertie with another major water agency (e.g., EBMUD or SFPUC). Approximately 90% of Zone 7's long-term average water supplies are conveyed to the Valley via the Delta and the South Bay Aqueduct (SBA); moreover, access to Zone 7's non-local storage in Kern County during droughts is also dependent on the Delta and the SBA. Consequently, an outage of the SBA or major disruptions in the Delta would prevent Zone 7 access to most of its water supplies, leaving only groundwater and water in Lake Del Valle available. This is one of the main reasons why Zone 7 has been supporting CA WaterFix, which will provide critical upgrades to the aging SWP infrastructure in the Delta. An intertie with another agency could also provide another source of water during an emergency or drought, and could also facilitate water transfers. For planning purposes, the *Reliability Intertie* cost estimate is based on a seven-mile pipeline connecting the west side of Zone 7's transmission system to EBMUD.

Table 3-7 lists the major water supply reliability investments planned by Zone 7 in the FY 18/19-FY 27/28 period. Costs in the ten-year CIP window are presented, as well as the total project costs; these costs are presented in future dollars. The scheduled in-service years are also included in the table. Detailed descriptions of these projects can be found in Appendix B.

Table 3-7. Major Water Supply Reliability Projects* in the FY 18/19 Water System CIP Update

PROJECT	COST IN FY 18/19-FY 27/28 ($ millions)	TOTAL COST ($ millions)	IN-SERVICE BY
Booster Pump Station	5.5	5.5	2021
Arroyo Mocho Diversion Facility Coordination and Implementation	3.8	3.8	2021
Chain of Lakes – Cope Lake to DVWTP Pipeline	64.6	64.6	2022
Busch-Valley Well 1	11.3	11.3	2020
Chain of Lakes Wells 3 & 4	5.8	40.2	2030
Bernal Wells 1 & 2	38	38	2025
Water Supply Planning and Projects	10	10	2021
Water Supply Replacement	108	108	2025
Reliability Intertie	35	64.6	2029

* CA WaterFix, which is key to water supply reliability for the Valley, would be implemented and financed by DWR through bonds. CA WaterFix is not planned to be funded out of Fund 120 nor 130 and is therefore not included in the CIP budget. Completion of CA WaterFix is anticipated by 2033.

3.5.2 Enhancing Production Capacity and Water Quality

3.5.2.1 DVWTP AND PPWTP IMPROVEMENTS

Zone 7's water production capacity has declined over the years, and this problem was exacerbated by the poor raw water quality during the drought. This has prompted a re-evaluation of Zone 7's surface water treatment facilities (Del Valle Water Treatment Plant [DVWTP] and Patterson Pass Water Treatment Plant [PPWTP]), and their ability to respond to variable water quality conditions. The primary causes for reduced production capacity are: 1) variations/degradation of source water quality, 2) poor-performing and soon-to-be obsolete ultrafiltration membrane filters at PPWTP, and

3) unexpected well pump failures. The staff analysis recommended a number of studies, operational improvements, and capital projects to meet current and future water supply reliability goals. These recommendations were incorporated in the FY 15/16 CIP Update, and have been refined in this CIP Update.

The addition of ozone facilities to the DVWTP and the PPWTP has been included in previous long-term CIP planning efforts with the primary goal of improving delivered water quality. Ozone is very effective at mitigating seasonal earthy-musty taste and odor caused by algal byproducts, as well as cyanotoxins produced by some blue-green algae. Ozone treatment will also have the significant added benefit of improving the plants' abilities to meet current and future regulations for trihalomethanes (THMs), haloacetic acids (HAAs), and contaminants of emerging concern (CECs). Furthermore, staff and consultant analysis has identified ozonation as the best technical option for bolstering the DVWTP's and PPWTP's ability to handle source water quality variations while maintaining high production rates.

Under the *Ozonation at DVWTP and PPWTP* project in the FY 15/16 CIP Update, the DVWTP ozone facility was scheduled for completion in 2018; as a result of the drought and associated project deferrals, this project was extended by one year, with currently planned completion in 2019. The Board authorized a contract for planning and design services in May 2016, and the 60% design was completed in July 2017. Based on the 60% design and the highly competitive current bidding environment, the consultant has adjusted the total project cost to $40M, with a portion of the cost expended before FY 18/19. The *DVWTP Ozonation* project will serve existing users and is therefore funded under Fund 120.

In April 2016, the Board authorized the contract for planning and design engineering services for the PPWTP New Media Filters (previously *PPWTP Expansion/New Media Filters* in the FY 15/16 CIP Update) and Clearwell Project (previously *Additional Treated Water Storage*). These two projects will plan, design, and construct three new media filters with a combined capacity of 12 MGD to replace and enhance the capacity of the existing ultrafiltration membrane 7-MGD plant and construct a new clearwell with 5 MG of usable capacity to help meet peak hourly and maximum day demands.

The FY 15/16 CIP Update planned for an ozone facility at the PPWTP in 2029 at a cost of $26.9M. With the design for the DVWTP ozone facility and the PPWTP new filters and clearwell in progress, accelerating the design and construction of the PPWTP ozone facility provides a potential cost saving of approximately $3M due to economies of scale. It also provides more comparable water quality to all of Zone 7's treated water customers and more quickly addresses the growing number of incidents of cyanotoxins in the source water. In December 2016, the Board authorized planning and design services for the PPWTP ozone facility, which is now planned to be in-service in 2020. A number of other upgrades at PPWTP (*PPWTP Upgrades)* will also be taking place, including rehabilitation and enhancement of the existing 12-MGD conventional filter train and appurtenances and rehabilitation of one of two clarifiers. These upgrades will result in a major upgrade and enlargement (from 19 to 24 MGD) of the PPWTP, making it more reliable and consistently producing high-quality treated water. The new 12-MGD conventional filters will serve new customers and are therefore fully funded by Fund 130; the cost of ozone facilities to treat the full 24-MGD plant capacity will be shared equally between existing and new customers (50% Fund 120 and 50% Fund 130).

Plant-scale testing with carbon dioxide alone (without ozone) was conducted at the DVWTP, and was found to be ineffective in improving the treatment process or lowering ferric dose. However, other studies show that carbon dioxide in combination with ozone showed significant benefits.

Installation of permanent carbon dioxide facilities at both plants has been included in the CIP and is being implemented as part of the ozonation projects.

The 2011 AMP Update included funding for ozonation at both plants assuming an in-service date of 2021 based on the FY 2010/11 CIP Update. The annual AMP contribution assumes that a portion of the funding would be set aside to build up reserves to fund the projects with cash. However, with ozonation at DVWTP and PPWTP accelerated to an in-service year of 2019 and 2020, respectively, there is less time to build up reserves to fund the projects with cash. Assuming ozonation proceeds at the schedule identified in this CIP, debt financing through the Drinking Water State Revolving Fund or bond issuance is planned for addressing this cash deficit. This is discussed further in Section 3.7.1.

3.5.2.2 WELL REHABILITATION

To improve the reliable production capacity of the wells—which are critical for meeting peak day demands and drought demands in years with low SWP allocations of surface water—and to respond to unexpected well pump failures, Zone 7 undertook several well rehabilitation projects starting in 2014. The pumps at Mocho 3, 4, and Stoneridge were replaced. The Mocho 1 well casing was checked and rehabilitated in 2016, and a similar inspection is planned for Mocho 2 in late 2017. In this CIP, the inspection and rehabilitation of the remaining wells have been included, with work at different wells planned between 2017 and 2022.

3.5.3 2017 AMP Update

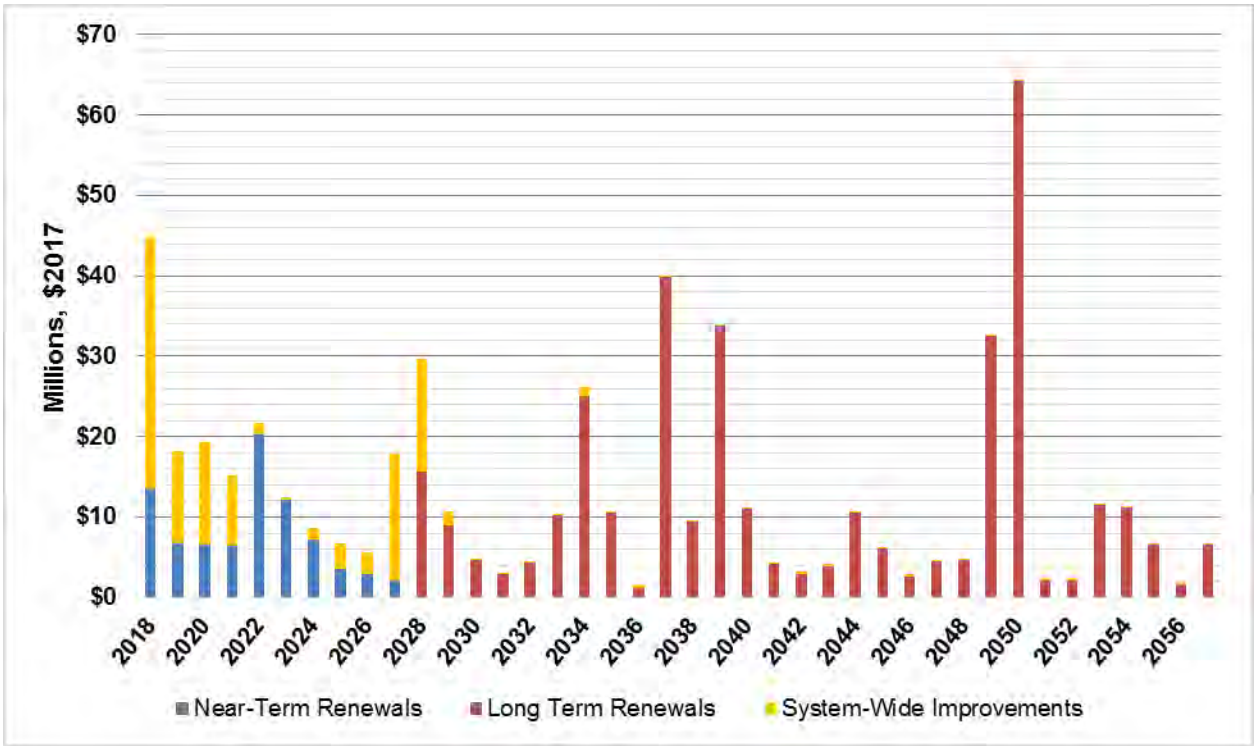
In September 2017, staff and HDR, Inc. completed the update to the long-term funding forecast for the AMP and, on October 18, 2017, the Zone 7 Board adopted Resolution No. 17-81 accepting the 2017 AMP Update (both included in Appendix A). The purpose of the AMP is to proactively plan for and implement asset renewal projects such that Zone 7 can continue to provide high quality, reliable water delivery to the residents of the Valley. The 2017 AMP Update identified short and long-term renewal/replacement and improvement project needs and the associated annual funding level necessary to implement these projects.

The initial annual funding level was determined to be $13.3M (in 2017 dollars) based on pay-as-you-go financing of project needs through FY 57/58 (Figure 3-5). However, this funding level will not be sufficient to meet the capital funding need for the immediate ten-year CIP period due to major system-wide improvements such as the PPWTP and DVWTP ozone projects. Therefore, various alternatives such as debt financing, or extending the schedule, of large system-wide improvement projects to improve cash flow were considered and discussed with staff and the retailers.

Based on further discussion with the retailers and at the October 3, 2017 Board workshop, the annual funding level of $12.3M (in 2017 dollars) for all pay-as-you-go projects with an annual debt repayment of approximately $2.9M for the construction phase of the ozone projects was recommended and accepted, as this alternative provides positive cash flow over the immediate ten-year CIP period. While the reserve policy will be difficult to achieve under this scenario for some of the years during the ten-year period, the budget and CIP are reviewed and updated every two years by Zone 7, which will adjust and update projected revenues, expenditures and capital projects which could improve reserve levels. The recommended pay-as-you-go funding level of $12.3M per year (2017 $) will be adjusted annually for inflation based upon the Engineering News Record San Francisco Construction Cost Index. The actual debt service amount will depend on the type of financing received, interest rates, and the duration of the borrowing.

The 2017 AMP Update provides funding for a well-defined schedule of projects for the renewal or replacement of existing facilities, based on sustainable infrastructure factors such as asset condition and estimated useful life. Funding for system-wide improvements was estimated based on the project list and associated costs in Zone 7's long-term CIP planning up to FY 40/41. For the rest of the AMP planning period from FY 41/42 through FY 57/58, the annual costs were projected for the system-wide improvement projects that have recurring costs. It is anticipated that adjustments to the annual funding level will be made periodically, as the AMP is updated approximately every five years.

Figure 3-5. Total Forecasted Renewal and System-Wide Improvements Funding Requirements ($ millions), FY 18/19-57/58



Source: Zone 7 Asset Management Plan Long-Term Funding Forecast 2017 Update

3.5.4 Chromium-6 Treatment

In 2014, the State of California adopted a new maximum contaminant level (MCL) of 10 µg/L for hexavalent chromium (or chromium-6) in drinking water, with compliance required by 2020. In response, Zone 7 included chromium-6 treatment facilities for the Stoneridge and COL wells in the FY 15/16 CIP Update. However, on May 31, 2017, the Superior Court of Sacramento County issued a judgment invalidating the current chromium-6 MCL for drinking water. While the State Water Resources Control Board has stated its intent to adopt a new MCL for chromium-6, it is unknown at this time whether Zone 7 will require treatment facilities. Therefore, Zone 7 has not included chromium-6 treatment facilities in this CIP nor in the AMP funding level calculations. If and when new regulations for chromium-6 are promulgated, the need for such facilities will be re-evaluated. Note that Zone 7 will maintain its operational procedures to keep chromium-6 below the previous standard despite the court decision.

3.5.5 New Projects

This CIP includes a number of newly-proposed projects dealing with required renewals/replacements as recommended in the 2017 AMP Update, production capacity restoration, and other system-wide improvements. It also includes previously planned projects that are now in the current CIP period (FY 18/19-FY 27/28) based on the original schedule or projects that have been accelerated. These new projects and their respective costs are listed in Table 3-8.

Table 3-8. New Projects in the FY 18/19 CIP Update

PROJECT	PROJECT COST OVER FY 18/19-FY 27/28 ($ millions)
Fund 120 - Renewal/Replacement and System-Wide Improvements	
MGDP Asset Renewal/Replacement	$4.27
COL 1 Yard and Slope Stabilization	$2.00
Groundwater Wells Asset Renewal/Replacement	$1.81
DVWTP Assets Renewal/Replacement	$0.69
PPWTP Asset Renewal/Replacement	$0.62
Kitty Hawk Pump Station Asset Renewal/Replacement	$0.57
Distribution System Assets Renewal/Replacement	$0.55
PPWTP Conventional Clarifier Corrosion Control Repairs	$0.33
DVWTP Polymer Mixing System Replacement	$0.05
Silver Oaks Pump Station Replacement	$2.12
Cross Valley Line Valve at Stanley/Murrieta Blvd	$0.75
DVWTP PWRPA Service	$0.50
DVWTP Sewer Line Connection	$0.65
North Canyons Renewal/Replacement and Improvements	$0.30
PPWTP Solar Panels Installation	$0.10
Subtotal	**$15.31**
Fund 130	
Bernal Wells 1 & 2*	$38.07
Second Groundwater Demineralization Facility*	$27.18
Subtotal	**$65.25**
TOTAL	**$80.56**

*Previously planned projects that are now in the ten-year CIP window.

3.6 WATER SYSTEM CIP BY FUNDING STRATEGY

3.6.1 Projects Shared between Fund 120 and 130

As mentioned previously, funding allocations reflect the proportional benefits to existing and new customers. While some projects exclusively benefit existing customers (Fund 120) or exclusively

new customers (Fund 130), some projects benefit both. Table 3-9 presents projects that are split between Fund 120 and 130, with splits reflecting proportional benefits.

Table 3-9. Projects Shared Between Fund 120 and 130: Costs and Fund Allocations

PROJECT	FUNDING SOURCES AND COSTS (million $)				FUND ALLOCATIONS (%)		
	120 RR	120 SWI	130 EXP	Grand Total	120 RR	120 SWI	130 EXP
Chain of Lakes - Cope Lake to DVWTP Pipeline		$19.40	$45.26	$64.66	0%	30%	70%
Reliability Intertie		$28.11	$7.03	$35.14	0%	80%	20%
Chain of Lakes Facilities and Improvements - Water Supply		$9.59	$22.39	$31.98	0%	30%	70%
PPWTP Upgrades	$9.58		$22.35	$31.93	30%	0%	70%
PPWTP Ozonation Project		$13.52	$13.52	$27.04	0%	50%	50%
Patterson Pass Pipeline Replacement and Enlargement	$8.02		$16.27	$24.29	33%	0%	67%
Maintenance Yard and Building	$2.40		$0.60	$3.00	80%	0%	20%
Vasco Pipeline Enlargement and Replacement	$0.59		$1.19	$1.78	33%	0%	67%
Capital Improvement Program Management	$0.33		$0.98	$1.31	25%	0%	75%
Chain of Lakes Master Planning		$0.15	$0.35	$0.50	0%	30%	70%
Grand Total	**$21**	**$71**	**$130**	**$222**			

3.6.2 Fund 120 - Renewal/Replacement

This funding strategy includes the projects needed for the renewal and replacement of the existing capital assets of Zone 7's Water System. An overview of the renewal/replacement funding strategy is shown on Figure 3-6 and Table 3-10 classified by Program. The first- year expenditure requirement for this funding strategy is $15 million, and the ten-year total is $95 million. The specific projects that comprise the Renewal/Replacement Funding Strategy and their annual expenditures are presented in Table 3-11.

Figure 3-6. Ten-Year Renewal/Replacement Strategy: Summary by Program ($ Millions)

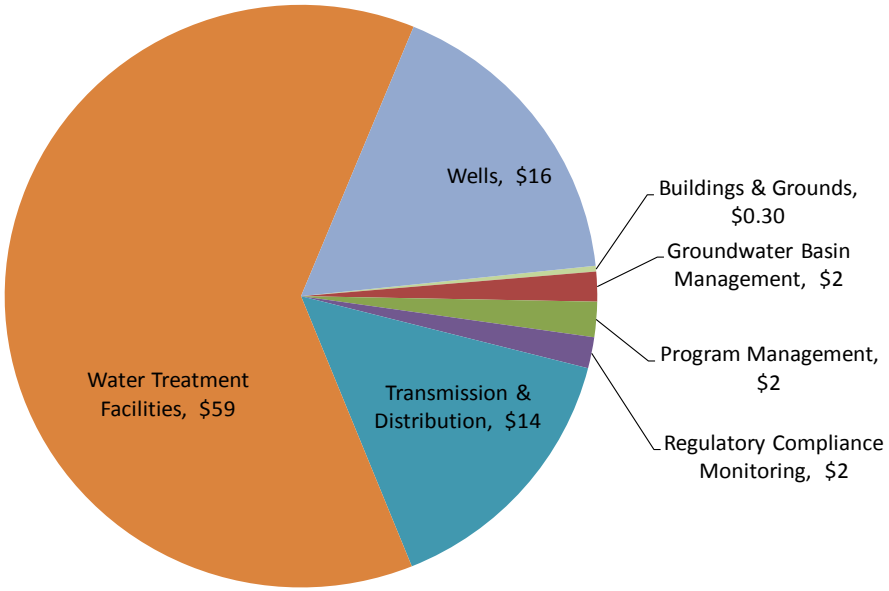


Table 3-10. Ten-Year Renewal/Replacement Strategy: Summary by Program

Program	Ten-Year Total ($ Millions)	Percentage
Buildings & Grounds	0.30	0.3%
Groundwater Basin Management	1.56	2%
Program Management	1.85	2%
Regulatory Compliance Monitoring	1.63	2%
Transmission & Distribution	14.10	15%
Water Treatment Facilities	58.90	62%
Wells	16.19	17%
Total	**94.53**	**100%**

Table 3-11. Renewal/Replacement (Fund 120) Funding Strategy Breakdown by Project ($ Millions)

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Buildings & Grounds											
North Canyons Renewal/Replacement and Improvements	$0.05					$0.25					**$0.30**
Buildings & Grounds Subtotal	***$0.05***					***$0.25***					***$0.30***
Groundwater Basin Management											
Monitoring Well Replacements & Abandonments	$0.25	$0.23	$0.17			$0.21		$0.12		$0.13	**$1.11**
Stream Gauge Replacement		$0.28					$0.34				**$0.62**
Groundwater Basin Management Subtotal	$0.25	$0.51	$0.17	$0.00	$0.00	$0.21	$0.34	$0.12	$0.00	$0.13	$1.73
Program Management											
Asset Management Program Management	$0.06	$0.06	$0.07	$0.07	$0.36	$0.09	$0.09	$0.10	$0.10	$0.52	**$1.52**
Capital Improvement Program Management	$0.01	$0.03	$0.02	$0.04	$0.02	$0.05	$0.02	$0.05	$0.03	$0.06	**$0.33**
Program Management Subtotal	***$0.07***	***$0.09***	***$0.09***	***$0.11***	***$0.38***	***$0.14***	***$0.11***	***$0.15***	***$0.13***	***$0.58***	***$1.85***
Regulatory Compliance Monitoring											
Laboratory Equipment Replacement	$0.14	$0.14	$0.15	$0.15	$0.16	$0.16	$0.17	$0.18	$0.19	$0.19	**$1.63**
Regulatory Compliance Subtotal	***$0.14***	***$0.14***	***$0.15***	***$0.15***	***$0.16***	***$0.16***	***$0.17***	***$0.18***	***$0.19***	***$0.19***	***$1.63***
Transmission & Distribution											
Corrosion Protection - Implementation of CP Survey Recommendations	$0.27					$0.56					**$0.83**
Distribution System Assets Renewal/Replacement	$0.28	$0.29					$0.40				**$0.97**
Distribution System Control Station Replacement				$1.01							**$1.01**
Kitty Hawk Pump Station Asset Renewal/Replacement							$0.57				**$0.57**
Patterson Pass Pipeline Enlargement and Replacement				$1.19	$6.50	$0.32					**$8.02**

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Silver Oaks Pump Station Replacement		$0.32	$1.80								**$2.12**
Vasco Pipeline Enlargement and Replacement										$0.59	**$0.59**
Transmission & Distribution Subtotal	***$0.55***	***$0.61***	***$1.80***	***$2.20***	***$6.50***	***$0.88***	***$0.97***			***$0.59***	***$14.10***
Water Treatment Facilities											
Dougherty Reservoir Recoating		$2.20									**$2.20**
DVWTP Ammonia System Replacement				$0.35	$2.68						**$3.03**
DVWTP Assets Renewal/Replacement					$0.69						**$0.69**
DVWTP Chemical Ferric Chloride and Caustic System Replacements				$0.26	$1.22						**$1.48**
DVWTP Chemical Roadway and Parking Lot Improvements			$0.26	$0.73							**$0.99**
DVWTP Drying Beds 1-4 Rehabilitation Project				$0.78	$4.49						**$5.27**
DVWTP HVAC Replacement	$0.10	$0.57									**$0.67**
DVWTP Polymer Mixing System Replacement	$0.05										**$0.05**
DVWTP PWRPA Service	$0.50										**$0.50**
DVWTP Sewer Line Connection	$0.65										**$0.65**
DVWTP Underdrain Pump Station Replacement				$0.33	$1.79						**$2.12**
DVWTP Washwater Recovery Ponds Rehabilitation				$0.03	$0.38	$7.96	$0.07				**$8.44**
Maintenance Yard and Building		$0.42	$1.98								**$2.40**
Minor Renewal/Replacement Projects	$0.42	$0.47	$0.50	$0.55	$0.58	$0.62	$0.69	$0.72	$0.80	$0.86	**$6.21**
PPWTP 2 MG Clearwell Seismic Retrofit				$0.24	$0.63						**$0.87**
PPWTP Ammonia System Replacement				$0.41	$2.21	$0.32					**$2.94**
PPWTP Asset Renewal/Replacement						$0.30	$0.32				**$0.62**
PPWTP Chemical Systems Replacement				$0.18	$0.73						**$0.91**
PPWTP Clarifiers Concrete Coating					$0.28	$1.73					**$2.01**
PPWTP Conventional Clarifier Corrosion Control Repairs				$0.02	$0.31						**$0.33**

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
PPWTP HVAC Replacement				$0.09	$0.43						**$0.52**
PPWTP Upgrades	$9.11	$0.18	$0.19	$0.11							**$9.58**
SCADA Upgrades and Replacements	$0.47	$0.49	$0.84	$0.35	$0.37	$0.41	$0.43	$1.99	$0.52	$0.55	**$6.42**
Water Treatment Facilities Subtotal	***$11.30***	***$4.33***	***$3.76***	***$4.43***	***$16.79***	***$11.34***	***$1.51***	***$2.71***	***$1.32***	***$1.41***	***$58.90***
Wells											
COL 1 Yard and Slope Stabilization	$2.00										**$2.00**
Groundwater Wells Asset Renewal/Replacement						$0.08		$1.73			**$1.81**
Hopyard Well No. 6 Inspect & Rehabilitate Pump, Motor, and Well Casing				$0.26							**$0.26**
Hopyard Well No. 9 Inspect & Rehabilitate Pump, Motor, and Well Casing			$0.24								**$0.24**
MGDP Asset Renewal/Replacement						$4.27					**$4.27**
MGDP Concentrate Discharge Pipeline Inspection and Cleaning		$0.08	$1.13								**$1.21**
MGDP RO Membrane Replacement	$0.01	$0.78				$0.01	$1.06				**$1.86**
MGDP Water Softening System		$0.58									**$0.58**
Mocho 2 Building and Electrical Systems Replacement				$0.36	$1.21						**$1.57**
Mocho Well No. 3 OSG R/R		$0.53									**$0.53**
Wellfield Switchboard Replacement Project						$1.64					**$1.64**
Wells Subtotal	***$2.01***	***$1.97***	***$1.37***	***$0.62***	***$1.21***	***$6.00***	***$1.06***	***$1.73***	***$0.00***	***$0.00***	***$15.97***
Total (Fund 120 -Renewal/Replacement)	***$14.38***	***$7.65***	***$7.34***	***$7.50***	***$25.04***	***$18.98***	***$4.16***	***$4.89***	***$1.64***	***$2.90***	***$94.48***

3.6.3 Fund 120 - System-Wide Improvements

This funding strategy addresses enhancements to existing facilities that will improve water quality, safety, reliability, efficiency, operational flexibility, and/or cost-effectiveness. An overview of the System-Wide Improvement Funding Strategy is shown on Figure 3-7 and in Table 3-12 classified by Program. The first year expenditure requirement is $32.5 million, and the ten-year total for this strategy is $105 million. The specific projects that comprise the System-Wide Improvement Funding Strategy and their annual expenditures are presented in Table 3-13.

Figure 3-7. Ten-Year System-Wide Improvements Funding Strategy: Summary by Program ($ Millions)

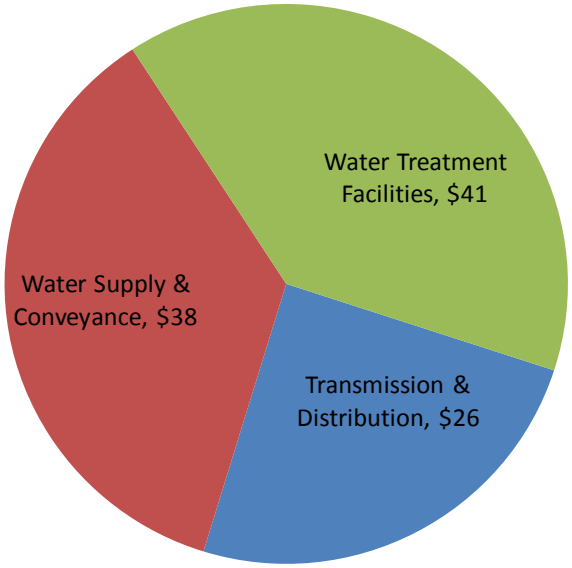


Table 3-12. Ten-Year System-Wide Improvements Strategy: Summary by Program

Program	Ten-Year Total ($ Millions)	Percentage
Transmission & Distribution	25.99	24.7%
Water Supply & Conveyance	37.86	36.1%
Water Treatment Facilities	41.15	39.2%
Total	**104.99**	**100%**

Table 3-13. System-Wide Improvements (Fund 120) Funding Strategy Breakdown by Project ($ Millions)

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Transmission & Distribution											
Booster Pump Station			$5.50								**$5.50**
Chain of Lakes - Cope Lake to DVWTP Pipeline	$1.39	$1.44	$7.77	$8.08	$0.72						**$19.40**
Cross Valley Line Valve at Stanley/Murrieta Blvd	$0.16	$0.59									**$0.75**
System-Wide Installation of Line Valves		$0.06		$0.08			$0.09		$0.11		**$0.34**
Transmission & Distribution Subtotal	***$1.55***	***$2.09***	***$13.27***	***$8.16***	***$0.72***		***$0.09***		***$0.11***		***$25.99***
Water Supply & Conveyance											
Chain of Lakes Facilities and Improvements - Water Supply	$0.28		$0.80	$2.10	$1.08	$0.38	$1.67	$0.63		$2.66	**$9.59**
Chain of Lakes Master Planning	$0.01	$0.08	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	**$0.15**
Reliability Intertie								$3.65	$3.79	$20.67	**$28.11**
Water Supply & Conveyance Subtotal	***$0.29***	***$0.08***	***$0.80***	***$2.10***	***$1.08***	***$0.39***	***$1.67***	***$4.29***	***$3.80***	***$23.35***	***$37.86***
Water Treatment Facilities											
DVWTP Ozonation Project	$17.80	$9.73									**$27.53**
PPWTP Ozonation Project	$12.92	$0.30	$0.31								**$13.52**
PPWTP Solar Panels Installation		$0.10									**$0.10**
Water Treatment Facilities Subtotal	*$30.72*	*$10.13*	*$0.31*								***$41.15***
Total (Fund 120 – System-Wide Improvements)	**$32.55**	**$12.30**	**$14.37**	**$10.26**	**$1.81**	**$0.39**	**$1.76**	**$4.29**	**$3.91**	**$23.35**	**$104.99**

3.6.4 Fund 130 – Expansion

This funding strategy addresses system expansion to serve future customers. An overview of the Expansion Funding Strategy is shown on Figure 3-8 and in Table 3-14 classified by Program. The first year expenditure requirement is $62 million while the ten-year total for this strategy is $710 million. The specific projects that comprise the Expansion Funding Strategy and their annual expenditures are presented in Table 3-15.

Figure 3-8. Ten-Year Expansion Strategy: Summary by Program ($ Millions)

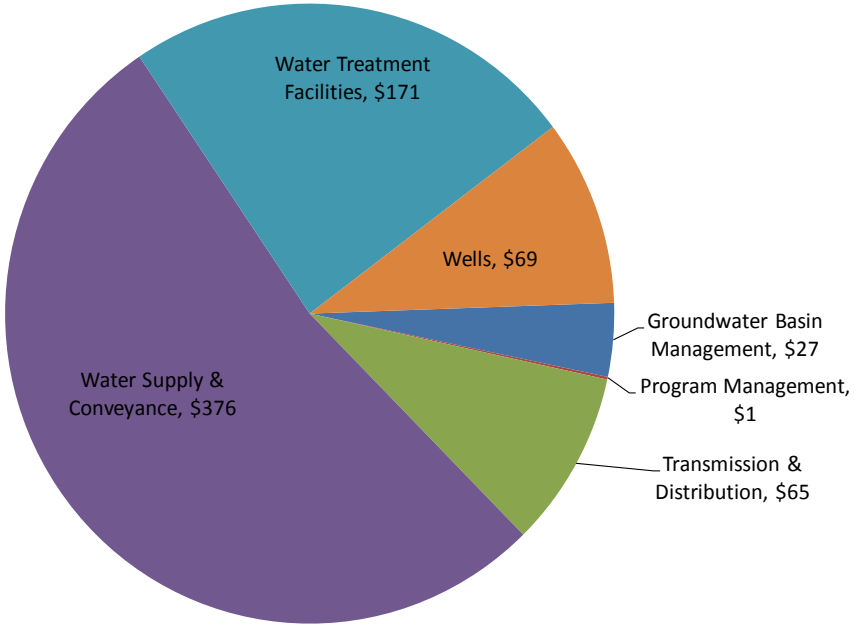


Table 3-14. Ten-Year Expansion Strategy: Summary by Program

Program	Ten-Year Total ($ Millions)	Percentage
Groundwater Basin Managemen	27.18	4%
Program Management	0.98	0.1%
Transmission & Distribution	65.43	9.2%
Water Supply & Conveyance	375.52	53%
Water Treatment Facilities	171.45	24%
Wells	69.02	10%
Total	**709.59**	**100%**

Table 3-15. Expansion (Fund 130) Strategy Breakdown by Project ($ Millions)

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Groundwater Basin Management											
Second Groundwater Demineralization Facility									$4.98	$22.20	**$27.18**
Groundwater Basin Management Subtotal									***$4.98***	***$22.20***	***$27.18***
Program Management											
Capital Improvement Program Management	$0.04	$0.10	$0.06	$0.11	$0.06	$0.14	$0.06	$0.15	$0.08	$0.18	**$0.98**
Program Management Subtotal	***$0.04***	***$0.10***	***$0.06***	***$0.11***	***$0.06***	***$0.14***	***$0.06***	***$0.15***	***$0.08***	***$0.18***	***$0.98***
Transmission & Distribution											
Chain of Lakes - Cope Lake to DVWTP Pipeline	$3.23	$3.36	$18.12	$18.85	$1.69						**$45.26**
Patterson Pass Pipeline Enlargement and Replacement				$2.42	$13.20	$0.66					**$16.27**
Vasco Pipeline Enlargement and Replacement										$1.19	**$1.19**
Westside Transmission System Improvements										$2.71	**$2.71**
Transmission & Distribution Subtotal	***$3.23***	***$3.36***	***$18.12***	***$21.27***	***$14.89***	***$0.66***				***$3.90***	***$65.43***
Water Supply & Conveyance											
Arroyo Mocho Diversion Facility Coordination & Implementation		$0.53	$3.28								**$3.81**
Arroyo Mocho Low Flow Crossings	$0.52	$2.97									**$3.49**
Cawelo Groundwater Banking Program	$1.25	$1.25	$1.25	$1.25	$1.25	$1.25	$1.25	$1.25	$1.26	$1.25	**$12.51**
Chain of Lakes Facilities and Improvements - Water Supply	$0.66		$1.86	$4.89	$2.51	$0.89	$3.89	$1.48		$6.22	**$22.39**
Chain of Lakes Master Planning	$0.01	$0.19	$0.01	$0.01	$0.01	$0.02	$0.02	$0.02	$0.02	$0.02	**$0.35**
Fourth Contractor's Share of the SBA - Capital Costs	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	**$30.00**
Fourth Contractor's Share of the SBA - Sinking Fund	$0.59	$0.62	$0.64	$0.67	$0.69	$0.72	$0.75	$0.78	$0.81	$0.84	**$7.11**
Reliability Intertie								$0.91	$0.95	$5.17	**$7.03**

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Semitropic Stored Water Recovery Unit	$0.05	$0.05	$0.06	$0.06	$0.06	$0.06	$0.07	$0.07	$0.07	$0.07	**$0.62**
South Bay Aqueduct Enlargement Project	$15.08	$14.99	$14.95	$14.95	$15.13	$15.13	$14.98	$15.93	$16.44	$17.35	**$154.92**
South Bay Aqueduct Enlargement Project - Sinking Fund	$1.21	$1.26	$1.31	$1.36	$1.41	$1.47	$1.53	$1.59	$1.65	$1.72	**$14.51**
SWP Peaking Payment (Lost Hills & Belridge Water Districts)	$0.05	$0.04	$0.03	$0.04	$0.02	$0.03	$0.01	$0.01	$0.01	$0.01	**$0.25**
Water Supply Planning and Projects	$0.54	$4.65	$4.83								**$10.02**
Water Supply Replacement			$4.98	$5.17	$5.38	$47.80	$45.19				**$108.52**
Water Supply & Conveyance Subtotal	***$22.96***	***$29.55***	***$36.20***	***$31.40***	***$29.46***	***$70.37***	***$70.69***	***$25.04***	***$24.21***	***$35.64***	***$375.52***
Water Treatment Facilities											
Increased Treatment Plant Capacity							$7.90	$8.21	$55.09	$57.29	**$128.49**
Maintenance Yard and Building		$0.11	$0.49								**$0.60**
PPWTP Ozonation Project	$12.92	$0.30	$0.31								**$13.52**
PPWTP Solids Handling Expansion				$1.04	$3.32	$2.13					**$6.49**
PPWTP Upgrades	$21.26	$0.41	$0.43	$0.25							**$22.35**
Water Treatment Facilities Subtotal	***$34.18***	***$0.81***	***$1.23***	***$1.29***	***$3.32***	***$2.13***	***$7.90***	***$8.21***	***$55.09***	***$57.29***	***$171.45***
Wells											
Bernal Wells 1 & 2					$5.65	$29.37	$3.05				**$38.07**
Busch-Valley Well 1	$1.67	$8.69	$0.90								**$11.26**
Chain of Lakes Wells 3 & 4										$5.82	**$5.82**
El Charro Pipeline Phase 2				$2.06	$11.25	$0.56					**$13.87**
Wells Subtotal	***$1.67***	***$8.69***	***$0.90***	***$2.06***	***$16.90***	***$29.93***	***$3.05***			***$5.82***	***$69.02***
Total (Fund 130 – Expansion)	**$62.09**	**$42.51**	**$56.51**	**$56.13**	**$64.63**	**$103.23**	**$81.70**	**$33.40**	**$84.35**	**$125.04**	**$709.59**

3.7 FUNDING ANALYSIS

The Water System CIP is funded by Fund 120 – Renewal/Replacement and System-Wide Improvements and Fund 130 – Expansion. The following sections discuss near-term funding over the next ten years for both funds.

3.7.1 Fund 120

Fund 120 funds projects, or portions thereof, to maintain, replace or improve water system infrastructure for the existing water system. The purpose of the Asset Management Plan (AMP) is to proactively plan for and implement such projects so that Zone 7 can continue to provide high-quality water services to the Valley. The following section discusses how the AMP is incorporated into the CIP's funding analysis; note that more information on the AMP and its updates can be found in Section 2.2.2 and Section 3.5.3.

In the 2004 AMP Study, it was determined that the then-current $4 million annual water rate contribution to capital projects would no longer be adequate to fund the program. That study included an evaluation of Zone 7's inventory of capital assets, asset service life as determined through condition assessments, economic life of the asset, asset risk, criticality, and vulnerability, true replacement costs under current conditions, and the annual allowance necessary to adequately fund Renewal/Replacement projects over the long term. In the 2004 AMP Study, Zone 7 obtained a current asset valuation of its existing facilities and recommended an annual funding allowance of $10 million (2004 dollars), to adequately fund the program.

Beginning in 2010, staff re-evaluated the AMP and on June 15, 2011, the Zone 7 Board adopted Resolution 11-4092 accepting the 2011 AMP Update[11]. The major objectives were to 1) identify near and long-term renewal needs and a 15-year renewal CIP and 2) develop a long-term renewal forecast and associated annual funding level necessary to implement future renewal and improvement needs through FY 49/50.

However, after discussions with the retailers and the Board's Finance Committee, a level of $11.4 million (in 2011 dollars) was accepted, with this amount adjusted for inflation annually through FY 16/17. In FY 16/17, the funding level had increased to $12.6 million. In the 2017 AMP Update (Appendix A), the funding analysis incorporated Zone 7's plans to debt-finance the Fund 120 portion of the construction phase of both the *DVWTP Ozonation* and *PPWTP Ozonation* projects in the amounts of $36M and $14M, respectively. The *PPWTP Ozonation* project is split 50/50 between Fund 120 and Fund 130. The Fund 130 share (also $14M) will be funded from reserves. The analysis evaluated the necessary annual funding levels for two scenarios: 1) pay-as-you-go financing for all projects; and 2) debt-financing for ozone projects and pay-as-you-go for the others.

The pay-as-you-go analysis recommends a funding level of $13.3M (in 2017 dollars) annually to fund all of the projects on a pay-as-you-go basis, adjusted annually for inflation, starting in FY 17/18. In comparison, the transfer amount in FY 2017-18 is $13.4M, and would have been $14M in FY 18/19. However, this scenario presents cash flow challenges due to the lack of reserves in the near-term to fund needed major projects in the next five years (i.e. *DVWTP Ozonation and PPWTP Ozonation*, *Chain of Lakes – Cope Lake to DVWTP Pipeline*). The Board had previously approved debt-financing of the ozone projects to address such cash flow issues.

The second scenario reflects Zone 7's plans to debt-finance the ozone projects, and results in an annual Fund 120 funding level of $12.3M for pay-as-you-go projects, starting in FY 2018/19. In addition, there would be $2.9M planned for debt service payments for the ozone projects that would be funded by water rates. Note that the actual debt service amount charged to water rates will depend on the type of financing received, interest rates, and duration of the borrowing.

Staff are currently evaluating funding options for debt financing the ozone projects. One funding option is the Drinking Water State Revolving Fund (DWSRF). The DWSRF is a financial assistance program to help water systems achieve health protection objectives of the Safe Drinking Water Act. Financial assistance is provided for improving drinking water treatment, fixing leaky or old pipes, and other infrastructure projects needed to protect public health. California's program is administered by the State Water Resources Control Board Division of Financial Assistance. The loan has a term of up to thirty years and the current interest rate is around 1.7%. As of August 2017, an application has been submitted for the *DVWTP Ozonation* project based on 60% design in the amount of $36M. A separate application will be submitted for the *PPWTP Ozonation* project in Spring 2018. The second alternative is to issue bonds to finance the ozone projects. Zone 7 has hired a financial advisor and bond counsel to assist Zone 7 with pursuing Joint Powers Authority (JPA) revenue bonds and on October 18, 2017 the Board approved creation of a Zone 7 joint powers authority with California Statewide Communities Development Authority to issue JPA revenue bonds.

Table 3-16 and Figure 3-9 below show the projected funding outlook for Fund 120 through FY 27/28, incorporating the newly-proposed AMP funding level and debt-financing. The debt financing example assumes bond financing for $53M, financed in two phases. The first phase in this example includes a debt issuance of $39M with net proceeds of $36M for ozone at DVWTP and $3M in one-time debt issuance costs (1.5% of loan amount) and required reserves. The $39M will be paid over thirty years at 3.5% interest ($2.1M annually, with full payments starting in FY 18/19). The second phase in this example includes a debt issuance of $14M with net proceeds of $13M for the *PPWTP Ozonation* project also at 3.5% interest and 1.5% for debt issuance cost ($0.76M annually, with full payments starting in FY 19/20). Total debt service payments of $2.9M are similar to the amounts assumed in the 2015 Cost of Service Study, and its 2016 update. The FY 2017-18 Budget Amendment approved in June 2017 included an assumed debt service payment of $1.2M to cover half a year of the estimated debt service for the *DVWTP Ozonation* project.

Note that the Zone 7 Reserve Policy recommends a minimum Capital Reserve (or Net Available Fund Balance) of 100% of the following year's planned expenditures. Table 3-16 and Figure 3-9 present the annual target Reserve Policy Minimum amounts, and compare them against projected Net Available Fund Balance. This example provides adequate funding for the planned ten-year CIP, but shows the Net Available Fund Balance falling below the target Reserve Policy Minimum in FY 22/23. While the Reserve Policy is difficult to achieve completely under this funding outlook, the budget and CIP are reviewed and updated every two years by Zone 7; any necessary project cash flow adjustments to improve reserve levels can be incorporated at that time.

Table 3-16. Fund 120 (Water Rates) Preliminary Funding Outlook ($ Millions)

	Fiscal year (FY)	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28
2	**Beginning Available Fund Balance**	**$36.52**	**$69.33**	**$ 47.7**	**$ 41.7**	**$ 33.4**	**$ 29.4**	**$ 16.5**	**$ 11.5**	**$ 20.5**	**$ 27.0**	**$ 37.9**
3	**Revenue**											
4	**AMP Transfer from Fund 100**	13.40	12.30	12.79	13.30	13.84	14.39	14.96	15.56	16.19	16.83	17.51
5	**Facility Use Fees**	0.60	0.42	0.42	0.42	0.42	-	-	-	-	-	-
6	**Interest Income**	0.26	0.29	0.45	0.37	0.31	0.28	0.14	0.16	0.24	0.33	0.33
7	**Bond/Loan Proceeds**	36.29	13.03	-	-	-	-	-	-	-	-	-
8	**Other Income**	0.03	-	1.10	-	-	-	-	-	-	-	-
9	**Total Revenue**	50.6	26.0	14.8	14.1	14.6	14.7	15.1	15.7	16.4	17.2	17.8
10	**Expenditures**											
11	**R&R Expenditures**	4.90	14.38	7.65	7.34	7.50	25.04	18.98	4.16	4.89	1.64	2.90
12	**SWI Expenditures**	12.12	32.55	12.30	14.37	10.26	1.81	0.39	1.76	4.29	3.91	23.35
14	**Contingency**	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
15	**Total Expenditures**	17.77	47.68	20.70	22.46	18.52	27.60	20.12	6.68	9.93	6.30	26.99
16	***Net Available Fund Balance***	***$69.33***	***$47.69***	***$41.74***	***$33.38***	***$29.43***	***$16.50***	***$11.49***	***$20.54***	***$27.03***	***$37.89***	***$28.74***
17	Reserve Policy Minimum	$46.93	$19.95	$21.71	$17.77	$26.85	$19.37	$5.93	$9.18	$5.55	$26.24	$6.77
18	Above/Below Policy Minimum	$22.40	$27.74	$20.03	$15.61	$2.58	-$2.86	$5.57	$11.36	$21.49	$11.65	$21.97

Key Assumptions

Line 2 FY 2017/18 estimated Beginning Available Capital Reserve is based on projected prior year unaudited revenue and expenses.

Line 4 The annual AMP funding from Fund 100 to Fund 120 of $12.3M starting in FY 2018/19 is based on the 2017 AMP Update. Ongoing amounts are adjusted for inflation. The FY 2017/18 funding level would remain as budgeted.

Line 5 Additional transfer from Fund 100 for debt service, bond/loan proceeds and estimated debt service are shown for illustrative purposes only. Actual amount may reside in a separate fund.

Line 6 Facility use fees are charged to the Dougherty Valley Service Area to compensate Zone 7 for the use of Zone 7's existing facilities to provide water to this area.

Line 7 Assumes 0.5% interest in FY 17/18 , increasing to 1% by FY 2020/21.

Line 8 Bond/loan proceeds are shown for illustrative purposes only. Actual amount may reside in a separate fund.

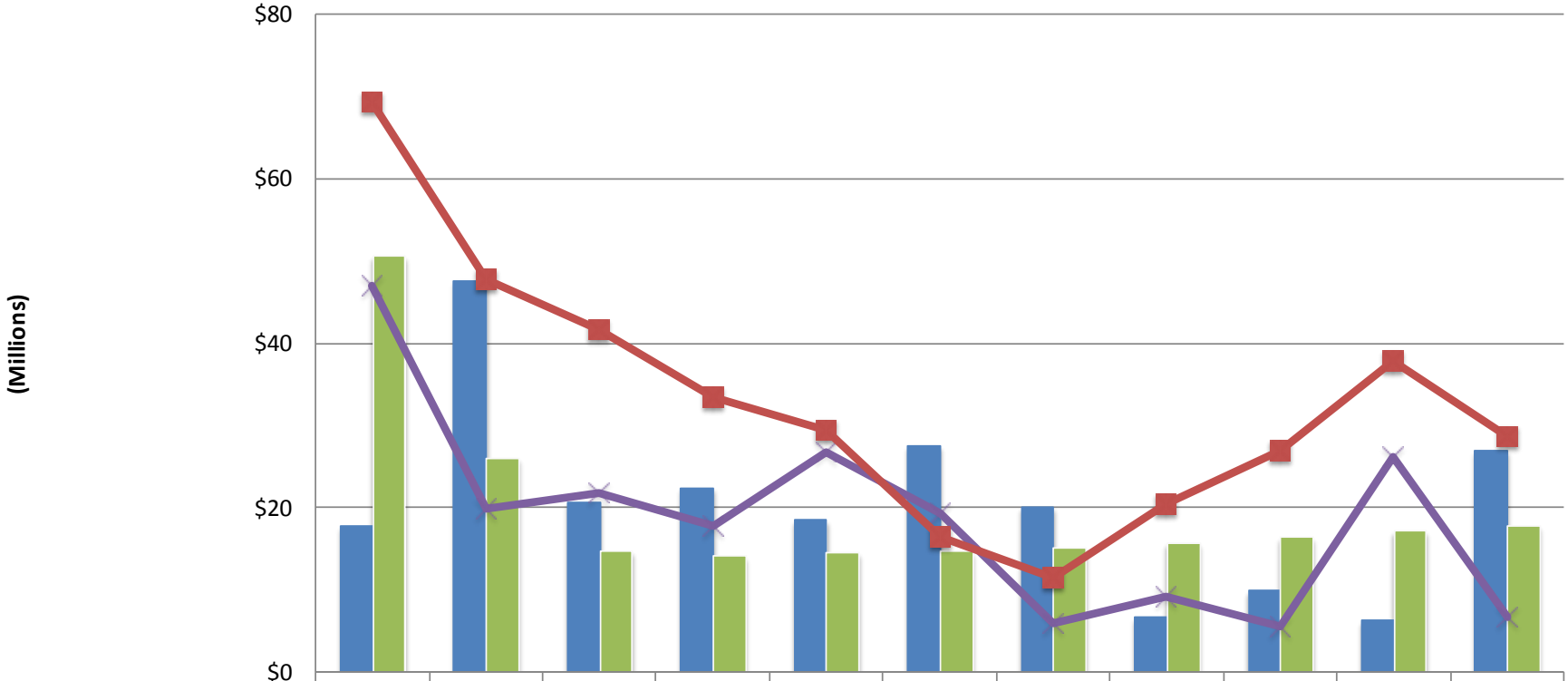
Line 9 Other income includes a reimbursement from DSRSD for the Dougherty Reservoir Recoating Project.

Line 11 Expenditures are shown in future or actual dollars (current dollars adjusted by a 4% annual inflation factor).

Line 14 Estimated debt service based on 3.5% interest and 1.5% issuance costs are shown for illustrative purposes only. Actual amount may reside in a separate fund and interest rate may vary.

Line 18 The Zone 7 Reserve Policy recommends a minimum Capital Reserve of 100% of the following year's planned expenditures.

Figure 3-9. Fund 120 (Renewal/Replacements/System-Wide Improvements) Preliminary Funding Outlook ($ Millions)



	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28
Total Expenditures	17.77	47.68	20.70	22.46	18.52	27.60	20.12	6.68	9.93	6.30	26.99
Total Revenue	50.6	26.0	14.8	14.1	14.6	14.7	15.1	15.7	16.4	17.2	17.8
Reserve Policy Minimum	$46.93	$19.95	$21.71	$17.77	$26.85	$19.37	$5.93	$9.18	$5.55	$26.24	$6.77
Net Available Fund Balance	$69.33	$47.69	$41.74	$33.38	$29.43	$16.50	$11.49	$20.54	$27.03	$37.89	$28.74

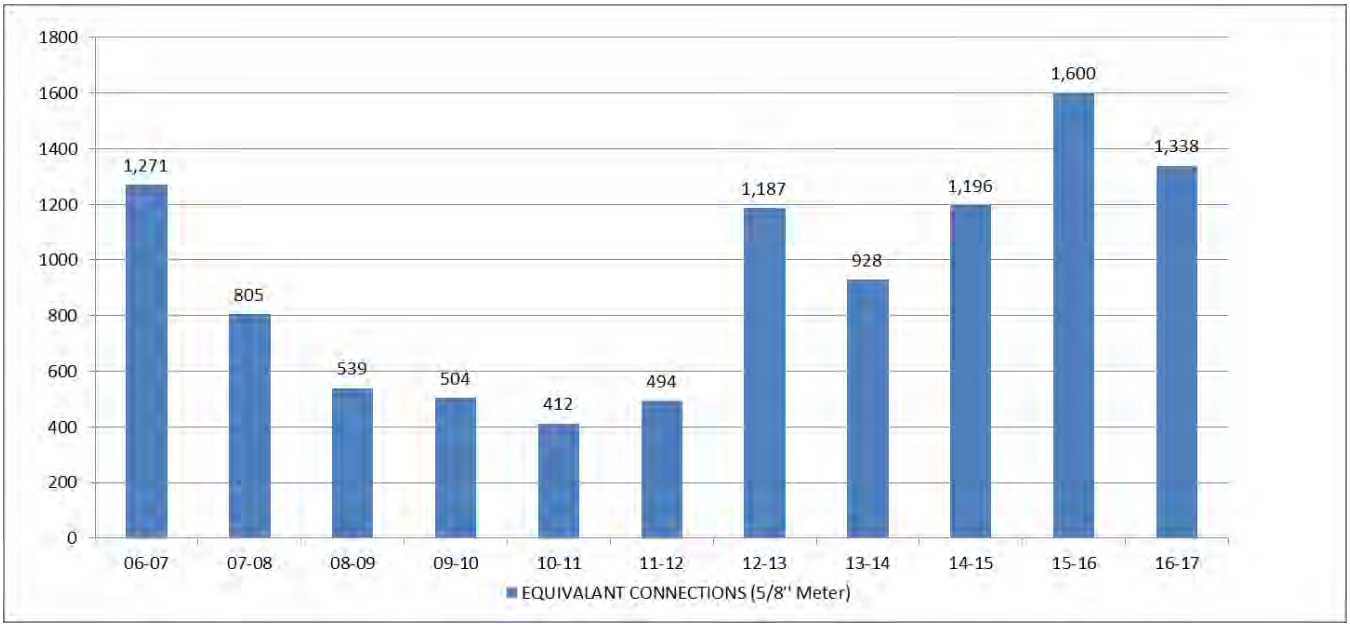
3.7.2 Fund 130

Fund 130 funds projects, or portions thereof, that are needed because of additional demands on the Water System from new development. This includes water purchases, conveyance facilities (e.g., SBA Enlargement Project), treatment, and transmission facilities.

The Municipal and Industrial (M&I) Treated Water Connection Fee Program was established to ensure that Zone 7 is able to fund the necessary projects necessary to serve the demands of new growth through build-out. In 2017, the Board adopted the FY 16/17 Municipal & Industrial Connection Fee Program Update (FY 16/17 M&I Connection Fee Program Update)[23]. The update undertook a comprehensive re-evaluation of projected demands, and new connections in the Zone 7 service area, and the necessary Water System expansion projects to meet the needs of future customers. The study resulted in a 7.3% increase in the Zone 7 Service Area Connection Fee and an 11.3% increase in the Dougherty Valley Service Area Connection Fee, which became effective May 1, 2017. The study recommended annual inflationary adjustments to the fee to keep pace with inflation. The findings from the study, including projects and their respective schedules, and projected connections and resulting revenues form the basis of this Fund 130 Ten-Year CIP. Details about the Water System Expansion Program and connection fees can be found in the FY 16/17 M&I Connection Fee Program Update[23].

Development within the service area has recovered since the Great Recession, with development growing at a rapid pace, particularly within the DSRSD service area. Figure 3-10 presents actual connections (Dwelling Unit Equivalents [DUES]) recorded for FY 06/07 to FY 16/17.

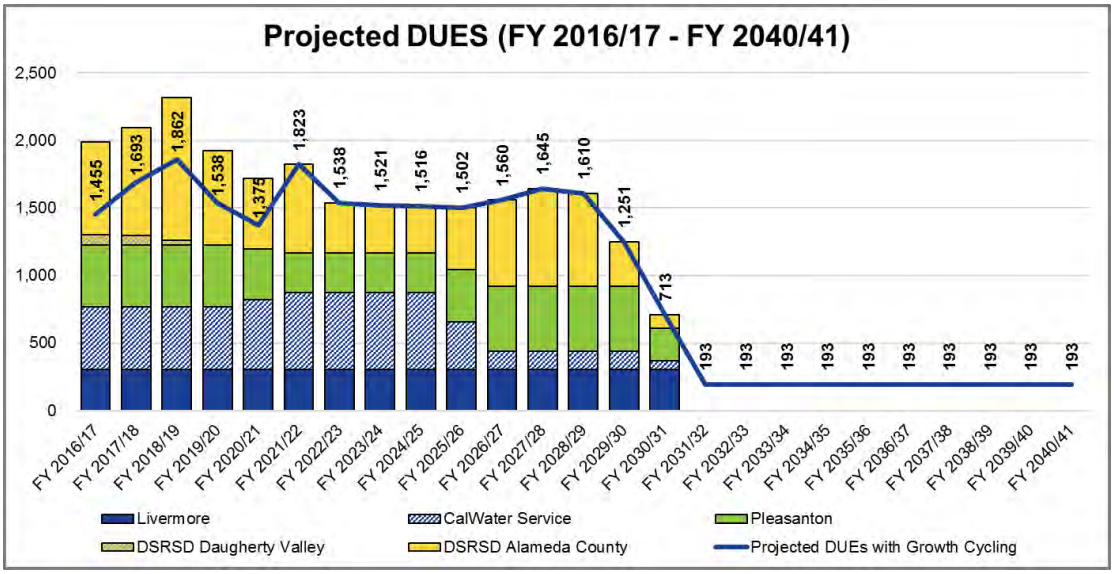
Figure 3-10. Actual Connections (Dwelling Unit Equivalents, 5/8" Meter) for FY 06/07-FY 16/17



For the purposes of projecting cash flows, Zone used a concept of growth cycling to account for the uncertainty in the rate of new connections. This growth cycling concept assumes that 80% of the first five years' projections will occur during that period and the remaining will occur at a later period between FY 31/32 and FY 39/40. Figure 3-11 shows connections as projected in the FY

16/17 M&I Connection Fee Program Update through FY 2040/41. These projections form the basis for the funding analysis discussed in this section.

Figure 3-11. Projected Connections (Dwelling Unit Equivalents [DUES]) with Growth Cycling



Source: FY 16/17 M&I Connection Fee Program Update

The recent increase in connection fee revenues arising from increased development starting in FY 12/13 has allowed Zone 7 to shift from funding primarily non-discretionary obligations (i.e. contractual commitments) to funding capital construction projects, including the expansion of the PPWTP as part of the *PPWTP Upgrades* project and the *PPWTP Ozonation* project. Staff will continue to closely monitor connection fee revenues to assure funding availability before construction projects are commenced.

This CIP plans for a total expenditure of $710 million in Expansion projects starting in FY 18/19 through FY 27/28. Of this amount, non-discretionary obligations for the ten-year CIP total close to $200M. Non-discretionary obligations are contractually-required payments to other agencies, such as the Department of Water Resources (DWR), for debt incurred on Zone 7's behalf. A large percentage of the non-discretionary expenses are for DWR's capitalization of the SBA Improvement and Enlargement Project with annual payments of about $15M for the charged to Fund 130 for the expansion portion of the project. Fund 110, State Water Project, covers another $2.5M annually to cover the SBA Improvements portion of the project. In the scheduling and prioritization of Expansion projects, the first priority was to ensure that there were adequate funds to pay for non-discretionary obligations. Per the Zone 7 Capital Reserve Policy for the Water Expansion Fund, the minimum fund balance should be maintained at 60% of the following year's non-discretionary obligations (~$12.6 million annually).

Current projections anticipate continued recovery of residential and commercial developments, so several capital projects have been scheduled in the near-term. Table 3-17 and Figure **3-12** show projected available funding in Fund 130 through FY 27/28. Based on staff's assumption for connection fee revenues as shown in Table 3-17, sufficient funding is projected to fund expansion projects as planned in the CIP for the duration of the program. However, in FY 27/28, the reserve balance falls below the target due to the construction of both the *Increased Treatment Plant*

Capacity and *Second Groundwater Demineralization* projects. Staff will continue to monitor connection fee revenue to assure funding availability before construction of these major projects commence and to reprioritize projects as needed to meet actuals level of growth, as well as cash flow requirements.

Projected connections over the next five years average 1,585 connections annually. This rate is 26% higher than the last five year's average of 1,249 connections annually. Staff analyzes connection fee revenue on an ongoing basis and makes adjustments to financial forecast and annual budgets based on recent trends, economic conditions, and updated information from retailers, cities, etc. Furthermore, additional analysis was performed to determine the impact on the capital reserve if connection fee revenue does not materialize as projected at this rate. If connection fee revenue does not increase as projected, it is recommended that capital construction projects are delayed. Construction projects are planned to meet demand growth, so if development is slow to recover and/or if conservation is greater than expected, construction schedules can be adjusted and deferred as necessary. If deferring projects is not a feasible alternative, debt-financing for this fund could be explored.

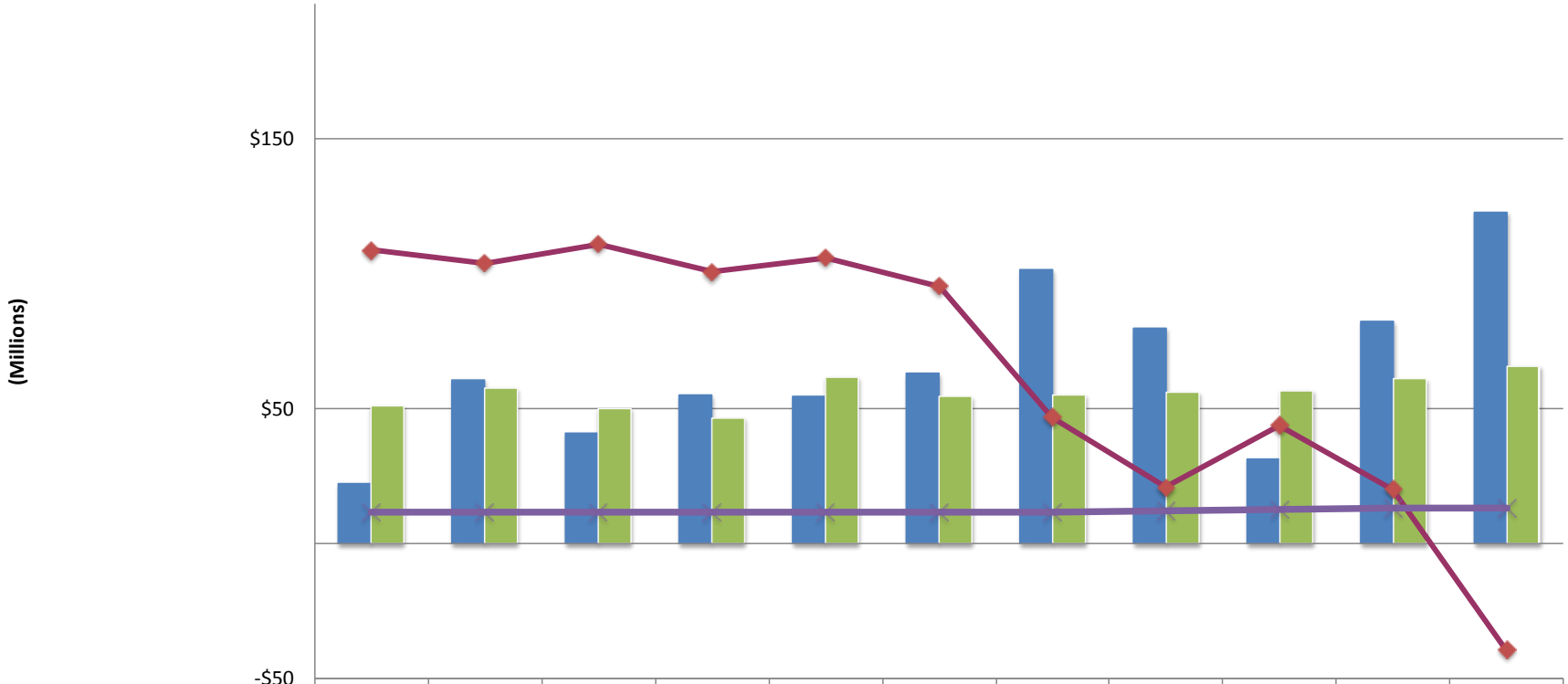
Table 3-17. Fund 130 (Expansion) Preliminary Funding Outlook ($ Millions)

	Fiscal year (FY)	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28
1	**Beginning Available Fund Balance**	**81.55**	**108.80**	**103.87**	**111.09**	**100.77**	**106.00**	**95.29**	**46.86**	**20.81**	**43.83**	**20.06**
2	**Revenue**											
3	**Connection Fees**	46.93	53.34	45.42	41.83	57.12	49.63	50.55	51.90	52.97	56.66	61.54
4	**DWR Refunds**	3.82	3.78	3.77	3.75	3.74	3.74	3.78	3.78	3.75	3.982258	4.109340
5	**Interest/Other Revenue**	0.41	0.54	1.04	1.11	1.01	1.06	0.95	0.47	0.21	0.44	0.20
6	**Total Revenue**	51.15	57.66	50.23	46.68	61.86	54.43	55.29	56.15	56.92	61.08	65.85
7	**Expenditures**											
8	**Expenditures**	21.61	60.29	40.63	54.56	54.10	62.53	101.04	79.42	31.03	81.89	122.48
9	**Contigency**	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
10	**Total Expenditures**	22.11	60.79	41.13	55.06	54.60	63.03	101.54	79.92	31.53	82.39	122.98
11	**Annual Sinking Fund Contributions**	1.80	1.80	1.88	1.95	2.03	2.10	2.19	2.28	2.37	2.46	2.56
12	**Net Available Fund Balance**	108.80	103.87	111.09	100.77	106.00	95.29	46.86	20.81	43.83	20.06	-39.63
13	**Designated Reserves (Sinking Funds)**	14.79	16.59	18.47	20.42	22.45	24.55	26.74	29.02	31.39	33.85	36.41
14												
15	***Capital Reserve Total***	***108.80***	***103.87***	***111.09***	***100.77***	***106.00***	***95.29***	***46.86***	***20.81***	***43.83***	***20.06***	***-39.63***
16	***Reserve Policy Minimum***	***11.66***	***11.60***	***11.57***	***11.58***	***11.67***	***11.68***	***11.59***	***12.16***	***12.47***	***13.01***	***13.20***

Key Assumptions

Line 1 FY 2017-18 estimated Beginning Available Fund Balance is based on projected prior year unaudited revenue and expenses.
Line 3 FY 2017-18 - FY 2027-28 projected connection fee revenue is based on the 2017 Connection Fee Update.
Line 5 Assumes 0.5% interest in FY 17/18, increasing to 1% by FY 2020/21.
Line 8 Expenditures are shown in actual dollars (current dollars adjusted by a 4% annual inflation factor).
Line 11 Sinking fund contributions include the South Bay Aqueduct and Future Contractor's Share of the SBA sinking funds
Line 16 The Zone 7 reserve policy recommends a minimum Capital Reserve of 60% of the following year's non-discretionary expenses.

Figure 3-12. Fund 130 (Expansion) Preliminary Funding Outlook ($ Millions)



	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28
Total Expenditures	22.11	60.79	41.13	55.06	54.60	63.03	101.54	79.92	31.53	82.39	122.98
Total Revenue	51.15	57.66	50.23	46.68	61.86	54.43	55.29	56.15	56.92	61.08	65.85
Net Available Fund Balance	108.80	103.87	111.09	100.77	106.00	95.29	46.86	20.81	43.83	20.06	-39.63
Reserve Policy Minimum	11.66	11.60	11.57	11.58	11.67	11.68	11.59	12.16	12.47	13.01	13.20

3.8 CAPITAL PROJECTS EXPENDITURE SUMMARY BY PROGRAM

Table 3-18 contains a ten-year estimated expenditure summary for the Water System capital projects included in the CIP period from FY 18/19 through FY 27/28.

Table 3-18. Capital Improvement Program: Project Appropriation Summary by Program ($ Millions)

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Buildings & Grounds											
North Canyons Renewal/Replacement and Improvements	$0.05					$0.25					**$0.30**
Buildings & Grounds Subtotal	***$0.05***					***$0.25***					***$0.30***
Groundwater Basin Management											
Monitoring Well Replacements & Abandonments	$0.25	$0.23	$0.17			$0.21		$0.12		$0.13	**$1.11**
Second Groundwater Demineralization Facility									$4.98	$22.20	**$27.18**
Stream Gauge Replacement		$0.28					$0.34				**$0.62**
Groundwater Basin Management Subtotal	***$0.25***	***$0.51***	***$0.17***			***$0.21***	***$0.34***	***$0.12***	***$4.98***	***$22.33***	***$28.91***
Program Management											
Asset Management Program Management	$0.06	$0.06	$0.07	$0.07	$0.36	$0.09	$0.09	$0.10	$0.10	$0.52	**$1.52**
Capital Improvement Program Management	$0.05	$0.13	$0.08	$0.15	$0.08	$0.19	$0.08	$0.20	$0.11	$0.24	**$1.31**
Program Management Subtotal	***$0.11***	***$0.19***	***$0.15***	***$0.22***	***$0.44***	***$0.28***	***$0.17***	***$0.30***	***$0.21***	***$0.76***	***$2.83***
Regulatory Compliance Monitoring											
Laboratory Equipment Replacement	$0.14	$0.14	$0.15	$0.15	$0.16	$0.16	$0.17	$0.18	$0.19	$0.19	**$1.63**
Regulatory Compliance Subtotal	***$0.14***	***$0.14***	***$0.15***	***$0.15***	***$0.16***	***$0.16***	***$0.17***	***$0.18***	***$0.19***	***$0.19***	***$1.63***
Transmission & Distribution											
Booster Pump Station			$5.50								**$5.50**
Chain of Lakes - Cope Lake to DVWTP Pipeline	$4.62	$4.80	$25.89	$26.93	$2.41						**$64.65**
Corrosion Protection - Implementation of CP Survey Recommendations	$0.27					$0.56					**$0.83**
Cross Valley Line Valve at Stanley/Murrieta Blvd	$0.16	$0.59									**$0.75**

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Distribution System Assets Renewal/Replacement	$0.28	$0.29					$0.40				**$0.97**
Distribution System Control Station Replacement				$1.01							**$1.01**
Kitty Hawk Pump Station Replacement							$0.57				**$0.57**
Patterson Pass Pipeline Enlargement and Replacement				$3.61	$19.70	$0.98					**$24.29**
Silver Oaks Pump Station Replacement		$0.32	$1.80								**$2.12**
System-Wide Installation of Line Valves		$0.06		$0.08			$0.09		$0.11		**$0.34**
Vasco Pipeline Enlargement and Replacement										$1.78	**$1.78**
Westside Transmission System Improvements										$2.71	**$2.71**
Transmission & Distribution Subtotal	***$5.33***	***$6.06***	***$33.19***	***$31.63***	***$22.11***	***$1.54***	***$1.06***		***$0.11***	***$4.49***	***$105.52***
Water Supply & Conveyance											
Arroyo Mocho Diversion Facility Coordination & Implementation		$0.53	$3.28								**$3.81**
Arroyo Mocho Low Flow Crossings	$0.52	$2.97									**$3.49**
Cawelo Groundwater Banking Program	$1.25	$1.25	$1.25	$1.25	$1.25	$1.25	$1.25	$1.25	$1.26	$1.25	**$12.51**
Chain of Lakes Facilities and Improvements - Water Supply	$0.94	$0.00	$2.66	$6.99	$3.59	$1.27	$5.56	$2.11	$0.00	$8.88	**$31.98**
Chain of Lakes Master Planning	$0.02	$0.27	$0.02	$0.02	$0.02	$0.03	$0.03	$0.03	$0.03	$0.03	**$0.50**
Fourth Contractor's Share of the SBA - Capital Costs	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	$3.00	**$30.00**
Fourth Contractor's Share of the SBA - Sinking Fund	$0.59	$0.62	$0.64	$0.67	$0.69	$0.72	$0.75	$0.78	$0.81	$0.84	**$7.11**
Reliability Intertie								4.56	4.74	25.84	**$35.14**
Semitropic Stored Water Recovery Unit	$0.05	$0.05	$0.06	$0.06	$0.06	$0.06	$0.07	$0.07	$0.07	$0.07	**$0.62**
South Bay Aqueduct Enlargement Project	$15.08	$14.99	$14.95	$14.95	$15.13	$15.13	$14.98	$15.93	$16.44	$17.35	**$154.92**
South Bay Aqueduct Enlargement Project - Sinking Fund	$1.21	$1.26	$1.31	$1.36	$1.41	$1.47	$1.53	$1.59	$1.65	$1.72	**$14.51**

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
SWP Peaking Payment (Lost Hills & Belridge Water Districts)	$0.05	$0.04	$0.03	$0.04	$0.02	$0.03	$0.01	$0.01	$0.01	$0.01	**$0.25**
Water Supply Planning and Projects	$0.54	$4.65	$4.83								**$10.02**
Water Supply Replacement			$4.98	$5.17	$5.38	$47.80	$45.19				**$108.52**
Water Supply & Conveyance Subtotal	***$23.25***	***$29.63***	***$36.99***	***$33.51***	***$30.55***	***$70.76***	***$72.36***	***$29.33***	***$28.01***	***$58.99***	***$413.38***
Water Treatment Facilities											
Dougherty Reservoir Recoating		$2.20									**$2.20**
DVWTP Ammonia System Replacement				$0.35	$2.68						**$3.03**
DVWTP Assets Renewal/Replacement					$0.69						**$0.69**
DVWTP Chemical Ferric Chloride and Caustic System Replacements				$0.26	$1.22						**$1.48**
DVWTP Chemical Roadway and Parking Lot Improvements			$0.26	$0.73							**$0.99**
DVWTP Drying Beds 1-4 Rehabilitation Project				$0.78	$4.49						**$5.27**
DVWTP HVAC Replacement	$0.10	$0.57									**$0.67**
DVWTP Ozonation Project	$17.80	$9.73									**$27.53**
DVWTP Polymer Mixing System Replacement	$0.05										**$0.05**
DVWTP PWRPA Service	$0.50										**$0.50**
DVWTP Sewer Line Connection	$0.65										**$0.65**
DVWTP Underdrain Pump Station Replacement				$0.33	$1.79						**$2.12**
DVWTP Washwater Recovery Ponds Rehabilitation				$0.03	$0.38	$7.96	$0.07				**$8.44**
Increased Treatment Plant Capacity							$7.90	$8.21	$55.09	$57.29	**$128.49**
Maintenance Yard and Building		$0.53	$2.47								**$3.00**
Minor Renewal/Replacement Projects	$0.42	$0.47	$0.50	$0.55	$0.58	$0.62	$0.69	$0.72	$0.80	$0.86	**$6.21**
PPWTP 2 MG Clearwell Seismic Retrofit				$0.24	$0.63						**$0.87**
PPWTP Ammonia System Replacement				$0.41	$2.21	$0.32					**$2.94**
PPWTP Assets Renewal/Replacement						$0.30	$0.32				**$0.62**

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
PPWTP Chemical Systems Replacement				$0.18	$0.73						**$0.91**
PPWTP Clarifiers Concrete Coating					$0.28	$1.73					**$2.01**
PPWTP Conventional Clarifier Corrosion Control Repairs				$0.02	$0.31						**$0.33**
PPWTP HVAC Replacement				$0.09	$0.43						**$0.52**
PPWTP Ozonation Project	$25.84	$0.59	$0.61								**$27.04**
PPWTP Solar Panels Installation		$0.10									**$0.10**
PPWTP Solids Handling Expansion				$1.04	$3.32	$2.13					**$6.49**
PPWTP Upgrades	$30.37	$0.59	$0.62	$0.35							**$31.93**
SCADA Upgrades and Replacements	$0.47	$0.49	$0.84	$0.35	$0.37	$0.41	$0.43	$1.99	$0.52	$0.55	**$6.42**
Water Treatment Facilities Subtotal	***$76.20***	***$15.27***	***$5.30***	***$5.71***	***$20.11***	***$13.47***	***$9.41***	***$10.92***	***$56.41***	***$58.70***	***$271.50***
Wells											
Bernal Wells 1 & 2					$5.65	$29.37	$3.05				**$38.07**
Busch-Valley Well 1	$1.67	$8.69	$0.90								**$11.26**
Chain of Lakes Wells 3 & 4										$5.82	**$5.82**
COL 1 Yard and Slope Stabilization	$2.00										**$2.00**
El Charro Pipeline Phase 2				$2.06	$11.25	$0.56					**$13.87**
Groundwater Wells Assets Renewal/Replacement						$0.08		$1.73			**$1.81**
Hopyard Well No. 6 Inspect & Rehabilitate Pump, Motor, and Well Casing				$0.26							**$0.26**
Hopyard Well No. 9 Inspect & Rehabilitate Pump, Motor, and Well Casing			$0.24								**$0.24**
MGDP Asset Renewal/Replacement						$4.27					**$4.27**
MGDP Concentrate Discharge Pipeline Inspection and Cleaning		$0.08	$1.13								**$1.21**
MGDP RO Membrane Replacement	$0.01	$0.78				$0.01	$1.06				**$1.86**
MGDP Water Softening System		$0.58									**$0.58**

PROGRAM	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	FY 26/27	FY 27/28	TOTAL
Mocho 2 Building and Electrical Systems Replacement				$0.36	$1.21						**$1.57**
Mocho Well No. 3 OSG R/R		$0.53									**$0.53**
Wellfield Switchboard Replacement Project						$1.64					**$1.64**
Wells Subtotal	***$3.68***	***$10.66***	***$2.27***	***$2.68***	***$18.11***	***$35.93***	***$4.11***	***$1.73***	***$0.00***	***$5.82***	***$84.99***
Grand Total	***$109.02***	***$62.46***	***$78.22***	***$73.90***	***$91.48***	***$122.59***	***$87.63***	***$42.58***	***$89.90***	***$151.28***	***$909.06***

Appendix A

2017 ASSET MANAGEMENT PLAN UPDATE

2017 Asset Management Plan Long-Term Funding Forecast Update

Zone 7 Water Agency

October 2017

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1 Introduction and Background

This Asset Management Plan Funding Update (2017 Update) provides a summary of the findings and recommendations of the work done to update the long-term funding forecast and related renewal funding needs for Zone 7 Water Agency's (Zone 7) Asset Management Program (AMP).

1.1 Background

Zone 7 provides water to retailers serving approximately 240,000 residents in Pleasanton, Livermore, Dublin, and through a special agreement with the Dublin San Ramon Services District, to the Dougherty Valley area of San Ramon. Zone 7 also supplies untreated water for irrigation of 3,500 acres, primarily South Livermore Valley vineyards. Zone 7 has an ongoing commitment to plan for existing and future needs, maintain a high quality, reliable water delivery system and provide a quality product and service to the community.

The purpose of the AMP is to proactively plan for and implement asset renewal projects such that Zone 7 can continue to provide high quality, reliable water delivery to the residents of the Livermore-Amador Valley.

Zone 7 initiated its first formal AMP in 2004, including the development of an asset registry and proposed methodology for forecasting long-term renewals, as described in the 2004 *Asset Management Program Phase II Summary Report*. As part of a *2011 Asset Management Plan Update* (*2011 Update*) some of the definitions and methodologies were improved and updated along with significant changes to the long-term funding forecast methodology and the creation of asset classes to facilitate future data collection and decision-making.

As part of the current update, the long-term funding forecast has been updated to reflect Capital Improvement Projects (CIP) that were completed and assets that were renewed since 2011, incorporate new and future projects, and the long-term renewal of assets. All the assumptions used during the *2011 Update* for the near-term and long-term asset renewals and funding forecast were utilized for the current update as well.

1.2 Objectives

The primary objectives of the 2017 Update include the following:

- Forecast long-term funding requirements based on anticipated renewal/replacement CIP projects, long-term renewal of existing assets through fiscal year (FY) 2057/58, and other system-wide improvements (SWI) projects.

- Forecast near-term renewal needs to aid Zone 7 in identifying assets that need condition assessment to better define future CIP projects.

- Identify funding gaps using current funding rates.
- Provide a 10-year plan to incorporate into the Zone 7 FY 2018/19 CIP.

1.3 Stakeholder Involvement

During the development of this 2017 Update, two workshops were held with representatives from Zone 7's Retailers, including California Water Service Company, the Cities of Livermore and Pleasanton, and Dublin San Ramon Services District. The purpose of the workshops was to share the results and recommendations of the project and provide opportunities for the Retailers to understand the process and provide input on key aspects.

The first workshop focused on providing a recap of the Zone 7 CIP projects, reviewing the findings of the near-term and long-term asset renewals and associated costs, and presenting the various alternatives that were analyzed for long-term project funding. The second workshop was to present and obtain input on staff recommendations.

1.4 Report Organization

The 2017 Update is divided into three sections. The first section presents general background information. The second section, Near-Term Renewal, provides a review of the near-term asset renewal forecast methodology, the existing asset database, discussion on draft renewal/replacement CIP projects, and a list of CIP projects pending condition assessment that were developed based on near-term renewal needs. The third section, Long-Term Funding Forecast, presents the long-term asset renewal forecast methodology, System-Wide Improvement (SWI) projects, and recommended long-term AMP funding forecast through FY 2057/58, and provides a discussion on funding analysis and recommended funding levels.

There are also three appendices to this 2017 Update, which present detailed information supporting the results discussed in the main report. These appendices are presented in the order they appear in the main report and include:

- Appendix A – List of AMP-Identified CIP Projects
- Appendix B – List of System-Wide Improvement (SWI) Projects
- Appendix C – Total Funding Forecast

2 Near-Term Renewal

This section presents the recommended near-term renewal CIP plan. The near-term renewal plan is based on CIP project information provided by Zone 7 and an analysis of the remaining useful lives of the assets in the asset management database. These results are described in the following subsections.

2.1 Near-Term Asset Renewal Methodology

Near-term renewals are those which will be implemented during the 10-year period through FY 2027/28. Zone 7 developed a list of CIP projects based on condition assessments conducted since the *2011 Update* as well as a review of the remaining useful lives of the assets in the asset database. These CIP projects were directly incorporated in the near-term renewal plan.

The entire asset database was then analyzed to identify other assets that reached the end of their useful life or will reach the end of their useful life within the next ten years. The original useful life (OUL) information was developed as part of the *2011 Update* and was updated as Zone 7 obtained additional information on its assets, and is provided in Table 2.1. Those assets that reached or are nearing the end of their OUL and were not included in the CIP project list provided by Zone 7 were identified for condition assessment. The results of this assessment are described in the following subsections.

2.2 Renewal/Replacement CIP Projects

As described in Section 2.1, Zone 7 has several draft renewal/replacement CIP projects that were incorporated into the near-term renewal plan. Some of these CIP projects were recommended in the *2011 Update*, but have not been completed yet. The total estimated draft renewal/replacement CIP project cost is approximately $72.4 million. 69 assets are included for renewal in these projects. Table 2.2 provides a list of these projects with their estimated cost and timing. This list includes annually-recurring renewal costs for projects that are not associated with specific assets in the database, costs associated with program management, and renewal projects for assets before they reach their OUL due to safety, as well as improvements to assets not associated with capacity expansion. The costs of annually-recurring and renewal projects beyond FY 2027/28 have been included in the long-term renewal costs described in Section 3.

Table 2-1: Asset Classes and OUL

Asset Type (Discipline)	Asset Class	OUL (Years)	Useful Life Source
Mechanical	Filtration Media - Membranes	5	Owner's Judgment
	Filtration Media - Conventional	25	Engineer's Judgment
	Filter Underdrains[b]	50	Owner's Judgment
	Hypochlorite System[b]	15	Owner's Judgment
	HVAC	15	Chartered Institute of Building Services.
	Mechanical/Electrical/Instrumentation/Piping	Varies	Owner's Judgment
	Motor	30	Engineer's Judgment
	Pumps	30	Engineer's Judgment
	Pumps - Chemical	15	Engineer's Judgment
	Pumps - Well[b]	12	Owner's Judgment
	Rotating Equipment	25	Engineer's Judgment
	Specified Equipment	25	Owner's Judgment
	Valves	25	Engineer's Judgment
	Well Casing[b]	50	Owner's Judgment
	Well - Arch Mud Rot Combo	50	Owner's Judgment
	Well - Hollow Stem Auger	50	Owner's Judgment
	Well - Nested	50	Owner's Judgment
	Well - Sonic	50	Owner's Judgment
Structural	Civil / Sitework	75	Owner's Judgment
	Coatingb	20	Owner's Judgment
	Cathodic Protection System[b]	10	Owner's Judgment
	Electrolysis Test Stations	75	Owner's Judgment
	Roof[b]	30	Owner's Judgment
	Structural / Architectural	75	Owner's Judgment
	Tank - Ammonia[b]	30	Owner's Judgment
	Tank – Chemical	15	Engineer's Judgment
	Tank – HDPE Chemical[b]	10	Owner's Judgment
	Tanks	50	Engineer's Judgment
	Turnout	50	Owner's Judgment
Electrical	Power Distribution	30	Engineer's Judgment
	Power Distribution - Generator Systems	30	Engineer's Judgment
	Power Distribution - Variable Frequency Drives	20	Manufacturer's Estimate
Instrumentation	Instrumentation - Radios	5	Engineer's Judgment
	Instrumentation - Turbidimeters	10	Engineer's Judgment
	Instrumentation - Analyzers	15	Engineer's Judgment
	Instrumentation - General Instrumentation	30	Engineer's Judgment
Pipeline	Piping - Above Ground	40	Owner's Judgment
	Piping - Buried	75	Engineer's Judgment
	Valves w/ Actuator	25	Engineer's Judgment

a. OULs were developed during the *2011 Update.*

b. Additional asset classes were added by Zone 7 Staff after the *2011 Update*.

The following is a brief description of the major CIP projects included in Table 2.2.

- **DVWTP Washwater Recovery Ponds Rehabilitation –** This project involves the redesign of the washwater recovery ponds at the Del Valle Water Treatment Plant (DVWTP) as new concrete basins since the original recovery ponds were not designed to handle the full 40 million gallon per day (MGD) plant capacity or the current Filter/Backwash Recycle Rules. The ponds would be designed to be narrow and deep to allow for better decanting as well as better sludge concentration at the bottom of the ponds. New valves and actuators, electrical appurtenances, and SCADA would also be a part of the project to allow for automated decanting and sludge discharge to the equalization basin.
- **DVWTP Drying Beds 1 – 4 Rehabilitation Project –** This project consists of rebuilding and rehabilitation of drying beds 1 to 4 at DVWTP. Due to their proximity, these beds have a history of affecting adjacent properties as their poor underdrain system does not properly contain percolated flows. This project will pave the beds and make modifications to the underdrain system to minimize percolation while still providing underdrain use for other drying beds thereby improving system reliability and reducing maintenance costs.
- **DVWTP and PPWTP Ammonia System Replacement -** This project will replace or upgrade the last pure gaseous chemical systems at DVWTP and Patterson Pass Water Treatment Plant (PPWTP) with an aqueous ammonia storage and feed system. Aqueous ammonia bulk storage will be approximately 19% ammonia and will be safer to handle and less of a hazardous threat. The proposed replacement project improves safety for operations and maintenance personnel and other on-site plant personnel.
- **PPWTP Upgrades –** This projects consists of the design and construction of an additional treated water storage clearwell reservoir at PPWTP with 5 MG of usable storage, a new 12 MGD conventional media filtration system, concrete repair and coatings, and improvements to the existing filtration system including the filter valves, pumps, piping systems, backwash system, filter air system, media, underdrains. This will increase treated water storage in the system to help meet near-term peak hourly and maximum day demands. The new conventional media filtration system is necessary to provide additional capacity and to replace the 7 MGD ultrafiltration (UF) membrane system, which has become obsolete.
- **Patterson Pass Pipeline Enlargement and Rehabilitation –** This project is a transmission pipeline from the PPWTP site to the Liv1/Vasco pipeline connection. The existing pipeline from PPWTP does not have the capacity to handle the full range of production when the water treatment plant is expanded to 24 MGD.

Table 2-2: List of Draft Renewal/Replacement CIP Projects

Existing CIP Projects[b]	Fiscal Year (Dollars are in Millions, $2017)[a]										Total
	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	
Asset Management Program Management	$0.06	$0.06	$0.06	$0.06	$0.30	$0.07	$0.07	$0.07	$0.07	$0.35	**$1.17**
Capital Improvement Program Management	$0.01	$0.03	$0.01	$0.03	$0.01	$0.03	$0.01	$0.03	$0.02	$0.03	**$0.22**
COL 1 Yard and Slope Stabilization	$1.92										**$1.92**
Corrosion Protection – Implementation of CP Survey Recommendations	$0.26					$0.45					**$0.71**
Distribution System Control Station Replacement				$0.86							**$0.86**
Dougherty Reservoir Recoating		$2.04									**$2.04**
DVWTP Ammonia System Replacement				$0.30	$2.20						**$2.50**
DVWTP Chemical Ferric Chloride and Caustic System Replacements				$0.23	$1.00						**$1.23**
DVWTP Chemical Roadway and Parking Lot Improvements			$0.24	$0.62							**$0.86**
DVWTP Drying Beds 1-4 Rehabilitation Project				$0.67	$3.69						**$4.36**
DVWTP HVAC Replacement	$0.10	$0.53									**$0.63**
DVWTP Polymer Mixing System Replacement	$0.05										**$0.05**
DVWTP PWRPA Service	$0.48										**$0.48**
DVWTP Sewer Line Connection	$0.63										**$0.63**
DVWTP Underdrain Pump Station Replacement				$0.28	$1.47						**$1.75**
DVWTP Washwater Recovery Ponds Rehabilitation				$0.03	$0.31	$6.29	$0.05				**$6.67**
Hopyard Well No. 6 Inspect & Rehabilitate Pump, Motor, and Well Casing				$0.22							**$0.22**
Hopyard Well No. 9 Inspect & Rehabilitate Pump, Motor, and Well Casing			$0.22								**$0.22**
Laboratory Equipment Replacement	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	$0.13	**$1.30**
Maintenance Yard and Building Improvements		$0.39	$1.76								**$2.15**
MGDP Concentrate Discharge Pipeline Cleaning		$0.08	$1.00								**$1.08**
MGDP RO Membrane Replacement	$0.01	$0.72				$0.01	$0.81				**$1.55**
MGDP Water Softening System		$0.53									**$0.53**
Minor Renewal/Replacement Projects	$0.41	$0.43	$0.45	$0.47	$0.48	$0.49	$0.52	$0.53	$0.56	$0.58	**$4.92**
Mocho 2 Building and Electrical Systems Replacement				$0.30	$0.99						**$1.29**
Mocho Well No. 3 OSG R/R		$0.49									**$0.49**

Existing CIP Projects[b]	Fiscal Year (Dollars are in Millions, $2017)[a]										Total
	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	
Monitoring Well Replacements & Abandonments	$0.24	$0.22	$0.15			$0.17		$0.09		$0.10	**$0.96**
North Canyons Renewal Replacement/Improvements	$0.05				$0.20					$0.20	**$0.45**
Patterson Pass Pipeline Enlargement and Replacement				$1.02	$5.34	$0.26					**$6.62**
PPWTP 2 MG Clearwell Seismic Retrofit				$0.20	$0.52						**$0.72**
PPWTP Ammonia System Replacement				$0.35	$1.82	$0.25					**$2.42**
PPWTP Chemical Systems Replacement				$0.16	$0.60						**$0.76**
PPWTP Clarifiers Concrete Coating					$0.23	$1.37					**$1.60**
PPWTP Conventional Clarifier Corrosion Control Repairs				$0.02	$0.26						**$0.28**
PPWTP HVAC Improvements				$0.08	$0.35						**$0.43**
PPWTP Upgrades	$8.76	$0.17	$0.17	$0.09							**$9.18**
SCADA Upgrades and Replacements	$0.45	$0.45	$0.75	$0.30	$0.30	$0.33	$0.33	$1.46	$0.37	$0.37	**$5.11**
Silver Oaks Pump Station Replacement		$0.29	$1.60								**$1.89**
Stream Gauge Replacement		$0.26					$0.26				**$0.52**
Vasco Pipeline Enlargement and Replacement										$0.40	**$0.40**
Wellfield Switchboard Replacement Project						$1.30					**$1.30**
Total CIP Projects ($2017)	**$13.48**	**$6.33**	**$6.56**	**$6.41**	**$20.20**	**$11.40**	**$2.12**	**$2.36**	**$1.15**	**$2.21**	**$72.44**

a. All costs are presented in 2017 dollars and do not include inflation.
b. Projects are based on Zone 7's FY 2018/19 Capital Improvements Program.
c. Some of the projects have recurring costs annually through FY 57/58. Annual costs for these projects beyond FY 2027/28 are included in long-term renewal costs.

- **SCADA Upgrades and Replacements –** This project consists of reprogramming, installation of additional devices and upgrading of the existing devices to improve the use of the supervisory control and data acquisition (SCADA) system to accommodate the changes in the plant and transmission system operations. The SCADA system will also require major software and hardware replacements about every five years. This project will continue maintaining a reliable SCADA system to enable operators to maintain control and monitoring capability of the treatment and transmission facilities using SCADA.

Detailed descriptions of all existing CIP projects can be found in Zone 7's *Fiscal Year 2018/19 Capital Improvement Program*.

2.3 Review of Asset Database

The asset management database includes 1,071 assets. The asset database was reviewed to identify those assets which are already past 100% OUL based on age and condition assessment, or those that will reach 100% of OUL before 2027. These assets were considered for the near-term renewal plan. Figure 2.1 illustrates the number of assets that will reach 100% OUL in each decade through 2059. Only first-time renewals are included in the figure to indicate the portion of assets that need to be renewed out of the entire asset database during the planning horizon.

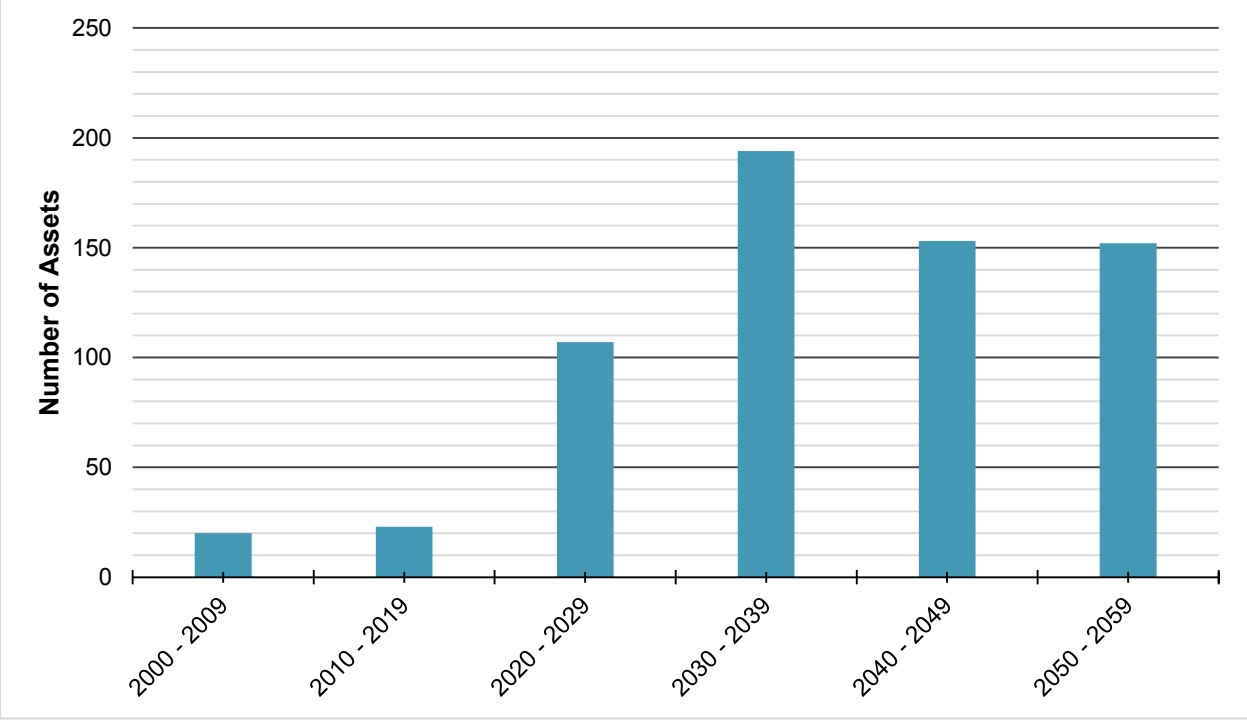

Figure 2-1: Number of Assets Reaching 100% of OUL per Decade

Of the 1,071 assets recorded in the asset database, there are approximately 33 assets that reached 100% OUL before 2017 and an additional 62 that will reach

100% of OUL before 2027, totaling 95 assets that need to be renewed in the near-term. These assets were reviewed to determine if they would be addressed by a project in Zone 7's draft renewal/replacement CIP projects described in Section 2.2. 69 out of the 95 assets will be addressed by the draft renewal/replacement CIP projects and other annual maintenance projects. These included all the assets that reached the end of their useful life before 2017. Table 2.3 provides a summary of these results.

The 26 assets that are not addressed by a draft renewal/replacement CIP project were identified for future condition assessment. For planning purposes, these assets were grouped together as future renewal/replacement CIP projects which will serve as placeholders in the CIP and near-term renewal plan for funding forecasts, and are discussed in Section 2.4. Following the condition assessment of these assets, the conceptual projects, including their respective schedules and budgets, should be refined.

Table 2-3: Summary of Near-Term Assets by Category

Asset Type	Number of Assets
Total Assets Reaching 100% of OUL by 2027	95
Addressed in Existing CIP Projects	69
Recommended for Condition Assessment	26

2.4 AMP-Identified CIP Projects

The near-term assets not included in the renewal/replacement CIP projects described above have been categorized into six (6) future renewal CIP projects that consist of rehabilitation or replacement of the assets based on condition assessment in the future to further define the scope of these projects. These assets were identified based on the analysis described in Section 2.1. The assets have been grouped together into projects based on their location for planning purposes. The total estimated replacement value for these assets is approximately $9.1 million.

The following is a brief summary of the projects:

- **DVWTP Assets Renewal –** This project involves the rehabilitation or replacement of mechanical systems such as the DAF building HVAC system, recycle pumps, chemical pump systems and a backwash rate control valve.
- **PPWTP Assets Renewal –** This project involves the rehabilitation or renewal of the sodium hypochlorite tanks, the cathodic protection system and the plant backup generators. Note that PPWTP HVAC Improvements is a separate project identified in the previous CIP.
- **MGDP Assets Renewal –** This project involves the rehabilitation or renewal of bulk storage tanks, chemical feed pumps, piping, valves and the plant HVAC system at the Mocho Groundwater Demineralization Plant (MGDP).

Note that MGDP RO Membrane Replacement is a separate project identified in the previous CIP.

- **Distribution System Assets Renewal –** The Turnouts CWS-5, CWS-6, and VA-2 will be replaced as part of this project.
- **Groundwater Wells Assets Renewal –** This project involves the rehabilitation or renewal of pumps, motors and piping at several groundwater production wells. Note that well casing for Zone 7's production wells is in the long-term AMP as this asset class has an original useful life of 50 years.
- **Kitty Hawk Pump Station Assets Renewal –** This project involves the rehabilitation or renewal of the pumps, motors, piping, appurtenances and associated electrical systems at the pump station.

A project cost and schedule, shown in Table 2.4, was developed for each of the projects described above. The project costs are based on projected replacement cost provided in the asset database. To allow time for Zone 7 to complete the recommended condition assessments, the conceptual projects, and their associated costs, were scheduled beginning in FY 2023/24 and extending through FY 2026/27.

Table 2-4: AMP-Identified CIP Projects

Conceptual Project Name	Fiscal Year (Dollars are in Millions, $2017)				
	22/23	23/24	24/25	25/26	Total
DVWTP Assets Renewal	$0.72				**$0.72**
Distribution System Assets Renewal	$0.27	$0.27	$0.30		**$0.84**
Groundwater Wells Assets Renewal		$0.08		$1.80	**$1.87**
MGDP Assets Renewal		$4.43			**$4.43**
PPWTP Assets Renewal		$0.31	$0.34		**$0.66**
Kitty Hawk Pump Station Assets Renewal			$0.59		**$0.59**
Total Conceptual Projects	**$0.99**	**$5.09**	**$1.23**	**$1.80**	**$9.12**

Note: All costs are presented in 2017 dollars and do not include inflation.

The complete list of assets included in each of the conceptual projects is included in Appendix A. As previously described, the scope, schedule and cost of the conceptual projects should be refined based on the results of future condition assessments. The recommended conceptual projects for assets that need condition assessment, combined with the recommended CIP projects described in the previous subsection, were included in developing the recommended funding level, described in section 3.

It is important to note that the costs presented above are based on asset replacement costs included in the asset database. For assets included in the database prior to 2006, these costs were developed as part of Zone 7's original AMP efforts, and include an estimated contingency, general conditions and contractor adjustments (including overhead and profit), and a contingency for engineering, legal, administrative and construction management costs. For new assets

constructed since 2006, replacement costs were provided by Zone 7 staff and reflect the actual cost of construction or installation. All costs were updated using the Engineering News Record Construction Cost Index to escalate the original replacement cost to current 2017 dollars.

3 Long-Term Funding Forecast

This section presents the long-term funding requirements to support future renewal needs. The long-term funding analysis includes a discussion of SWI projects that involve the creation of new assets, long-term renewal of existing assets, and total funding needed during the planning period, and then presents a recommended annual funding level to address both renewal programs and SWI projects through FY2057/58. These are described in the following sections.

3.1 Long-Term Asset Renewal Methodology

Similar to the near-term renewal methodology described in Section 2.1, asset renewal forecasts and the subsequent long-term funding plan was based on asset replacement at 100% of the asset's OUL through FY 2057/58 for existing assets.

3.2 System-Wide Improvements (SWI)

CIP projects described in Section 2 focus on existing facilities that have deteriorated or are in need of rehabilitation or replacement to maintain the established level of service to existing Zone 7 customers. SWI projects address enhancements to existing facilities that will improve water quality, environmental compliance, reliability, efficiency, and operational flexibility. Since both renewal/replacement and SWI projects in the CIP are funded by water rates through Zone 7's Fund 120, SWI costs were included in the long-term funding forecast.

The SWI ten-year project list and associated costs are included in Zone 7's FY 2018/19 CIP. The SWI costs up to FY 2040/41 are included in Zone 7's long-term CIP planning. The total cost of all SWI projects until FY 2040/41 is approximately $107 million (2017 dollars, see Figure 3.1 and Appendix B), with about $66 million for projects between FY 2018/19 and 2022/23. This includes large projects such as the DVWTP and PPWTP Ozonation projects.

It is reasonable to anticipate that Zone 7 will continue with system-wide improvements related to future regulatory requirements or security improvements beyond 2040. For the rest of the planning period from FY 2041/42 until FY 2057/58, an average yearly funding level of $200,000 is assumed based on the annual costs for the projects that have recurring costs.

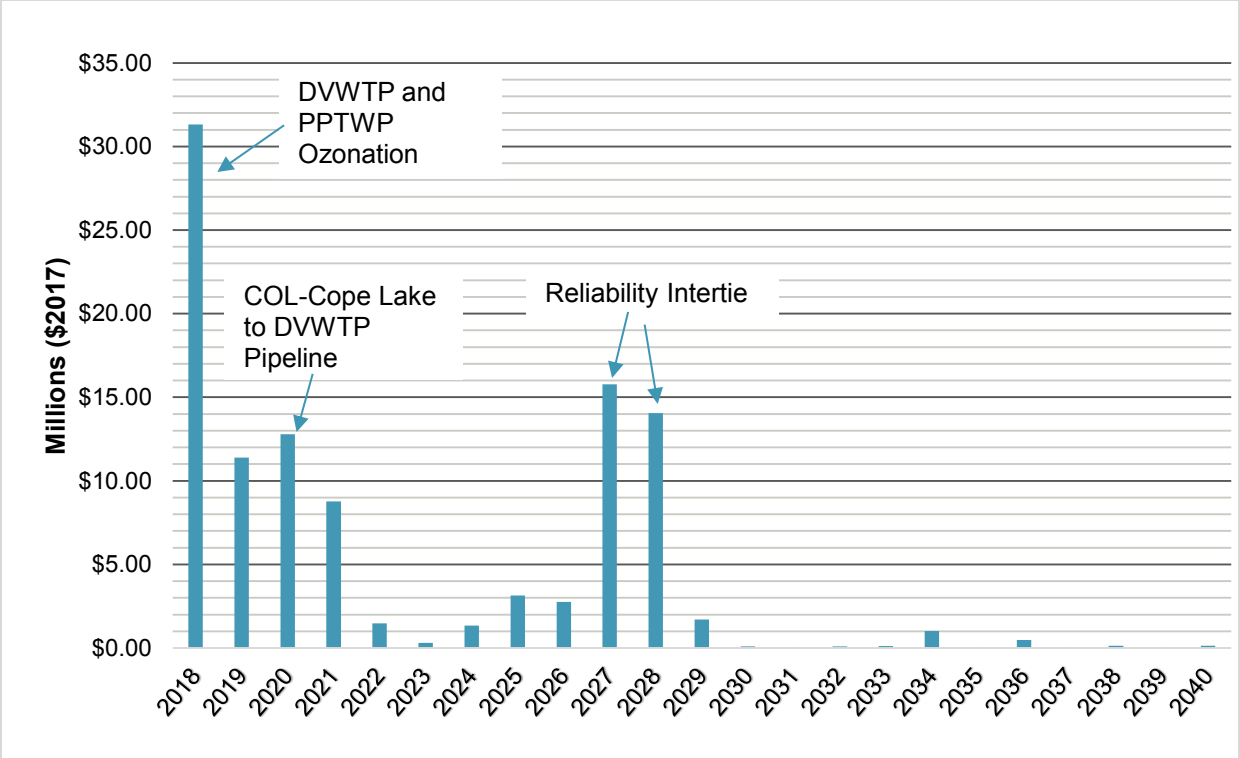

Figure 3-1: System-Wide Improvements Projects

3.3 Long-Term Renewal Forecast

As previously described, the recommended method to forecast long-term renewal budgets is to assume asset replacement at approximately 100% of estimated original useful life (OUL). The long-term renewal forecast includes the following components:

- First and subsequent replacements of assets that will reach 100% of OUL between FY 2027/28 and FY 2057/58.
- Subsequent replacements of assets between FY 2027/28 and FY 2057/58 whose first time replacements were included in the near-term analysis described in Section 2.
- The recurring annual costs of the draft renewal/replacement CIP projects from FY 2027/28 to FY 2057/58 previously described in Section 2.2.

The projected long-term renewal needs, and associated timing through FY 2057/58, are illustrated in Figure 3.2 and Appendix C. The total projected long-term renewal funding requirement, from FY 2027/28 through FY 2057/58 is estimated to be approximately $355.7 million (2017 dollars). The annual replacement amounts range from $1.1 million in 2036 to approximately $64.2 million in 2050. The largest annual funding requirements occur in 2037, 2039, 2049 and 2050 due in large part to the projects highlighted in Figure 3.2. There is a large forecasted renewal requirement of about $39.8 million in 2037. During this year, a number of existing pipelines will

reach 100 % of OUL (75 years), including the Livermore No. 1 and No.2 pipelines and the Santa Rita–Dougherty pipeline. In 2039, the largest contributing factors to the projected funding need are instrumentation and various pump assets at MGDP as it reaches 30 years of service and structural rehabilitations to the Steel Clearwell at DVWTP. In 2049, there is another spike in projected funding needs due to the structural/architectural rehabilitations required at the DVWTP Control Building. In 2050, the spike in projected funding needs is a result of the Cross Valley and the Del Valle-Livermore pipelines reaching 100% OUL.

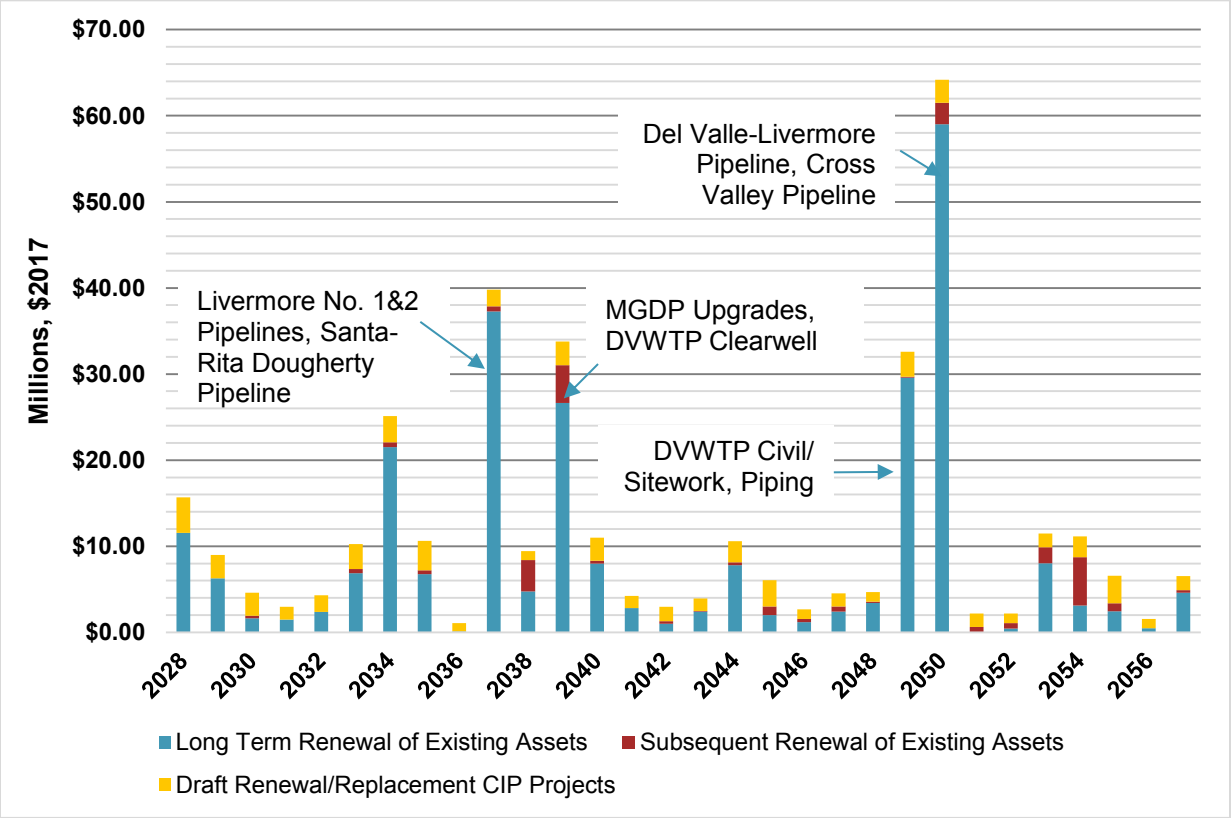

Figure 3-2: Long-Term Renewal Forecast

To provide additional insight into the data presented in this section, the ten highest value asset classes are listed in Table 3.1.

Table 3-1: Highest Value Asset Classes

Asset Class	Estimated Replacement Cost, FY 2027/28 – FY 2057/58 ($2017 Millions)	Percent of Total Long-Term Funding Renewal Cost
Piping - Buried	$101.6	34%
Structural / Architectural	$37.0	12%
Instrumentation	$34.8	12%
Civil / Sitework	$16.0	5%
Piping - Above Ground	$12.1	4%
Valves	$10.3	3%
Coating	$9.6	3%
Power Distribution	$9.1	3%
Tank - Chemical	$7.9	3%
Pumps	$7.2	2%

Note: All Costs are provided in 2017 dollars and do not include inflation.

3.4 Funding Analysis

The recommended funding level described in this section is based on the forecasted capital expenditures for total renewal costs, including near- and long-term renewal costs, as well as SWI costs. The basis and assumptions for near-term, long-term and SWI costs were previously described in this report.

The total renewal and SWI funding needs are illustrated in Figure 3.3 and included in detail in Appendix C. The total estimated capital cost for renewal and SWI projects between FY 2018/19 and FY 2057/58 is approximately $547.6 million. The total cost for each component of the funding forecast is presented in Table 3.2.

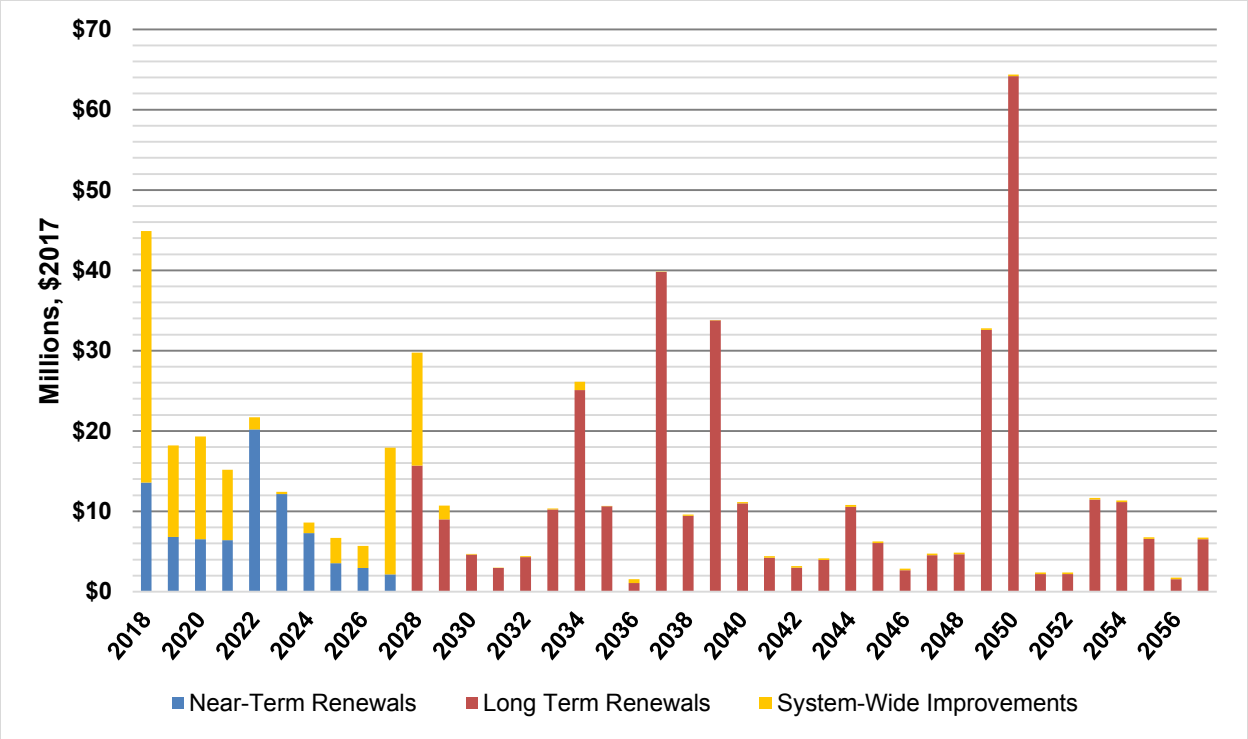

Figure 3-3: Total Forecasted Renewal and SWI Funding Requirements

Table 3-2: Total Forecasted Renewal and SWI Funding Requirements

Funding Forecast Component	Total Capital Cost, FY 18/19 – FY 57/58[a] ($2017 Millions)
Near-Term Renewal	
Draft Renewal/Replacement CIP Projects[b]	$72.4
AMP-Identified CIP Project[c]	$9.1
Long-Term Renewal Projects	
Subsequent Renewals of Existing Assets[d]	$26.2
Long-Term Renewals of Existing Assets[d]	$329.5
System-Wide Improvement Projects[e]	$110.3
Total Forecasted Capital Cost	**$547.5**

a. Refer to Appendix C for a complete listing of annual costs for each component of the funding forecast.
b. Refer to Table 2.2.
c. Refer to Table 2.4 and Appendix A.
d. Based on replacement of assets at 100% of OUL; Refer Appendix C.
e. Refer to Appendix B

To determine the appropriate recommended annual funding level, Zone 7's Fund 120 balance at the beginning of the planning period (May 2018), $28.8 million, was considered. Zone 7's reserve policy requires maintenance of 100% of the next year's annual costs as a reserve at the end of a fiscal year. Hence, it was assumed that 100% of FY 2057/58 capital cost should remain at the end of the planning period, since FY 5058/59 costs were not forecast to be included in this analysis.

Based on these adjustments, the total funding needed was reduced from $547.5 million as described in Table 3.2 to $527.5 million as shown in Table 3.3.

Table 3-3: Net Forecasted Capital Funding Need

	($2017 Millions)
Total Forecasted Capital Funding Need	**$547.5**
Less: Current Fund 120 Balance[a]	$28.8
Plus: Required Remaining Fund 120 Balance at end of Planning Period[b]	$8.8
Net Forecasted Capital Funding Need, FY 18/19 through FY 57/58	**$527.5**

a. Fund balance provided by Zone 7. Deducted from total forecasted funding need.
b. Per Zone 7's reserve policy, it is assumed that approximately 100% of the next year's annual costs should be held in reserve. Added to forecasted funding need.

3.5 Recommended Annual Funding Level

Due to the presence of major SWI projects such as the PPWTP and DVWTP Ozone projects and a portion of the PPWTP Upgrades Project described in Sections 3.2 and 2.2 respectively and illustrated in Figure 3.3, an approximately $132 million funding need is forecasted between FY 2018/19 and 2023/24. This five-year need equates to about 25% of the overall forecasted funding need for the 40-year planning period. Thus, a flat annual funding level of $13.2 million derived by spreading the forecasted capital funding need of $527.5 million over the planning period of 40 years will not be sufficient to meet the capital funding need for the first few years. Therefore, various alternatives such as debt financing of large SWI projects and altering the schedule of large projects to improve cash flow were considered and discussed with Zone 7 staff and other stakeholders.

The recommended funding alternative includes debt financing of the construction phase of the DVWTP and PPWTP Ozonation Projects. This alternative provides positive cash flow over the immediate 10-year CIP period. While the reserve policy is difficult to achieve under this scenario for some of the years during the 10-year period, the budget and CIP are reviewed and updated every two years by Zone 7, which allows adjustment and updating of projected revenues, expenditures and capital projects which could improve reserve levels.

The DVWTP and PPWTP Ozonation Projects are SWI projects in Zone 7's draft FY 2018/19 CIP, scheduled for completion in FY 2019/20 and FY 2020/21, respectively. These projects consist of the construction of an ozonation facility at each plant that would improve water quality and increase production reliability. The DVWTP Ozonation Project is funded by Fund 120 (CIP project fund), and construction phase costs are anticipated to be debt-financed. The PPWTP Ozonation Project is partially funded (50%) by Fund 120 and Fund 130 (Expansion Fund). The Fund 120 portion of the construction phase costs is anticipated to be debt-financed.

As shown in Table 3.4, the recommended funding alternative lowers the recommended funding level for all pay-as-you-go projects to $12.3 million per year and adds a debt repayment cost of $2.9 million per year for 30 years beginning in FY 2017/18 that includes debt service payment of $2.12 million per year for the DVWTP Ozonation Project and $0.76 million per year for the PPWTP Ozonation Project. These costs are

based on a 3.5% interest rate and 1.5% cost of issuance. Actual costs will depend on the type of financing received, interest rates, and the duration of the borrowing.

It is important to note that the costs presented in this 2017 Update, including the recommended funding level of $12.3 million per year, have been presented in 2017 dollars. The recommended pay-as-you-go funding level will be adjusted annually for inflation based upon the Engineering News Record San Francisco Construction Cost Index.

Table 3-4: Forecasted Capital Funding Need for Recommended Alternative

	($2017 Millions)
Total Forecasted Capital Funding Need	**$547.5**
Less: Current Fund 120 Balance[a]	$28.8
Less: Construction Capital Cost of DVWTP and PPWTP Ozone Projects (to be debt-funded)[b]	$38.5
Plus: Required Remaining Fund 120 Balance at end of Planning Period[c]	$8.8
Net Forecasted Capital Funding Need Adjusted for Debt Funding, FY 18/19 through FY 57/58	**$489**
Planning Period (FY 2018/19 – 2057/58)	40 Years
Recommended Annual Funding Level[d]	**$12.3/Year**
Annual Debt Repayment[e]	**$2.9/Year**

a. Fund balance provided by Zone 7, projected to July 1, 2018. Deducted from total forecasted funding need.
b. As the AMP planning period begins in FY 2018/19, the FY 2017/18 construction capital cost is not included. However, the debt service payment is included in the FY 2017/18 Budget Amendment.
c. Per Zone 7's reserve policy, it is assumed that approximately 100% of the next year's annual costs should be held in reserve. Added to forecasted funding need.
d. Recommended pay-as-you-go funding level does not include inflation and will be adjusted annually for inflation based upon the Engineering News Record San Francisco Construction Cost Index.
e. Assumes debt service payment of $2.12 million per year (beginning in 2017) plus another $0.76 million per year (beginning in 2018) for the DVWTP and PPWTP Ozonation Projects, respectively, over 30 years based on a 3.5% interest rate and 1.5% cost of issuance. Actual costs will depend on the type of financing received, interest rates, and the duration of the borrowing.

Based on the recommended annual funding level and forecasted renewal and SWI funding needs, Figure 3.4 shows the end of year Fund 120 balances through FY 2057/58. The figure indicates that the recommended annual funding level and current available Fund 120 balance provides sufficient revenue to fund the forecasted capital requirements through the immediate 10-year CIP period through FY 2027/28.

As Zone 7 updates the budget and CIP every two years, additional analysis of funding alternatives for future CIP projects should be considered to meet project funding requirements and maintain reserve levels. It is recommended that Zone 7 view funding of its renewal and SWI needs as an on-going process. Studies such as this lead to identification of both immediate renewal needs and needed condition assessments. The results of those efforts should be used to reexamine and adjust projected costs and actual renewal needs. Remaining useful lives should also be

adjusted to reflect the condition of Zone 7's assets. These adjustments will enable Zone 7 to better define, schedule, and prioritize both its renewal and SWI projects.

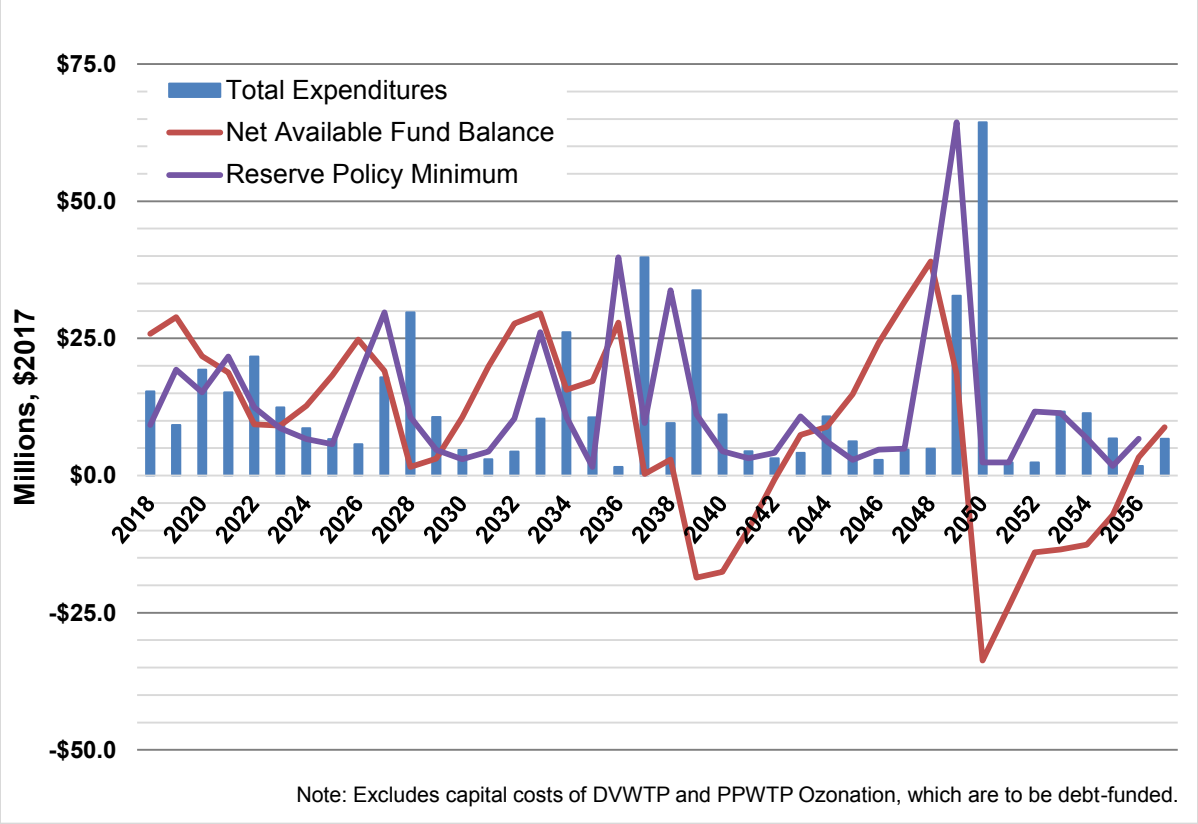

Figure 3-4: Forecasted Funding Needs and Fund 120 Balance

In addition, ongoing maintenance programs will provide further input regarding the needed renewals and condition assessments. Zone 7 should monitor its annual expenditures for minor, unplanned replacements and increase the Minor Renewal/Replacement Project CIP line item to appropriately fund additional maintenance costs associated with keeping its assets in service longer. Furthermore, as future regulations and system improvement needs are better understood, Zone 7 should update its SWI projects.

Appendix A

Conceptual Project	Asset Name	Location Path	Class Name	Replacement Year	Fiscal Year Replacement Cost (in Millions, $2017)				
					23/24	24/25	25/26	26/27	Total
Del Valle Water Treatment Plant Assets Renewal	Backwash Rate Control Valve for Pump #1	Del Valle Water Treatment Plant\Backwash Supply\	Valves w/ Actuator	2023	$0.07				$0.07
	Chemical Pump System (excluding 2010 PEC replacement)	Del Valle Water Treatment Plant\Chemical System\Filter Aid\	Pumps - Chemical	2023	$0.20				$0.20
	HVAC	Del Valle Water Treatment Plant\Clarification - Dissolved Air Flotation\DAF Basin\	HVAC	2023	$0.19				$0.19
	Plant Recycle Pumps (3)	Del Valle Water Treatment Plant\Waste Stream\	Pumps	2023	$0.26				$0.26
Distribution System Assets Renewal	CWS-5	Distribution System\Cross Valley Pipeline\Cross Valley Pipeline\	Turnout	2023	$0.27				$0.27
	CWS-6	Distribution System\Del Valle - Livermore Pipeline\Del Valle - Livermore Pipeline\	Turnout	2024		$0.27			$0.27
	VA-2 Turnout	Distribution System\DVWTP Transmission Pipeline\DVWTP Transmission Pipeline\	Turnout	2025			$0.30		$0.30
Groundwater Wells Assets Renewal	Sodium Hypochlorite Tanks	Groundwater Wells\Production Wells\Chain of Lakes Well #1 Chemical System\Sodium Hypochlorite System\	Tank - Chemical	2024		$0.08			$0.08
	Pump and Motor	Groundwater Wells\Production Wells\Chain of Lakes Well #1\	Pumps - Well	2026				$0.29	$0.29
	Pump and Motor	Groundwater Wells\Production Wells\Chain of Lakes Well #2\	Pumps - Well	2026				$0.39	$0.39
	Pump/Rehab Downhole/Motor	Groundwater Wells\Production Wells\Chain of Lakes Well #5\	Pumps - Well	2026				$0.27	$0.27
	Pump and Piping	Groundwater Wells\Production Wells\Mocho #3\	Pumps - Well	2026				$0.27	$0.27
	Pump and Piping	Groundwater Wells\Production Wells\Mocho #4\	Pumps - Well	2026				$0.27	$0.27
	Pump and Piping	Groundwater Wells\Production Wells\Stoneridge\	Pumps - Well	2026				$0.31	$0.31
Mocho Groundwater Demineralization Plant Assets Renewal	Polyethylene Tanks	Mocho Groundwater Demineralization Plant\Chemical Equipment\	Tank - HDPE Chemical	2024		$0.14			$0.14
	Chemical Piping and Valves	Mocho Groundwater Demineralization Plant\Chemical Equipment\	Pumps - Chemical	2024		$1.10			$1.10
	Chemical Feed Pumps	Mocho Groundwater Demineralization Plant\Chemical Equipment\	Pumps - Chemical	2024		$0.23			$0.23
	FRP Above Ground Tanks	Mocho Groundwater Demineralization Plant\Chemical Equipment\	Tank - Chemical	2024		$0.36			$0.36
	Rotary Screw Compressor, Aqueous Ammonia, Caustic Soda Tanks	Mocho Groundwater Demineralization Plant\Chemical Equipment\	Tank - Chemical	2024		$0.83			$0.83
	HVAC	Mocho Groundwater Demineralization Plant\Support System\	HVAC	2024		$1.78			$1.78
Patterson Pass Water Treatment Plant Assets Renewal (Includes UF Assets)	Sodium Hypochlorite Tanks	Patterson Pass Conventional Water Treatment Plant\Chemical System\	Tank - Chemical	2025			$0.34		$0.34
	Generator	Patterson Pass Conventional Water Treatment Plant\Electrical\	Power Distribution - Generator Systems	2024		$0.12			$0.12
	Cathodic Protection System	Patterson Pass Ultrafiltration Water Treatment Plant\Clarification\	Cathodic Protection System	2024		$0.16			$0.16
	Bird Control Netting	Patterson Pass Ultrafiltration Water Treatment Plant\Clarification\	Specified Equipment	2024		$0.03			$0.03
Kitty Hawk Pump Station Assets Renewal	Pump and Piping	Pump Stations\Kitty Hawk/Airport\	Pumps	2025			$0.28		$0.28
	Electrical	Pump Stations\Kitty Hawk/Airport\	Power Distribution	2025			$0.31		$0.31
Total Cost					**$0.99**	**$5.09**	**$1.23**	**$1.80**	**$9.12**

1. All project costs are presented in 2017 dollars.
2. List includes near-term renewal of assets that are not included in draft renewal/replacement CIP projects that was provided by Zone 7.

Appendix B

Project	Fiscal Year Cost ($2017 Millions)																							Total
	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40	40/41	
Booster Pump Station			$4.89																					**$4.89**
Chain of Lakes - Cope Lake to DVWTP Pipeline	$1.33	$1.33	$6.91	$6.91	$0.59																			**$17.07**
Chain of Lakes Facilities and Improvements - Water Supply	$0.27		$0.71	$1.79	$0.89	$0.30	$1.26	$0.46		$1.80		$0.30				$0.11	$0.90		$0.36					**$9.15**
Chain of Lakes Master Planning	$0.01	$0.08	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.08	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	**$0.28**
Cross Valley Line Valve at Stanley/Murrieta Blvd	$0.16	$0.55																						**$0.71**
DVWTP Ozonation	$17.12	$9.00																						**$26.12**
PPWTP Ozonation	$12.42	$0.27	$0.27																					**$12.97**
PPWTP Solar Panels Installation		$0.10																						**$0.10**
Reliability Intertie								$2.66	$2.66	$13.96	$13.96	$1.33												**$34.58**
System-Wide Installation of Line Valves		$0.06		$0.07			$0.07		$0.08		$0.09		$0.09		$0.10		$0.11		$0.12		$0.13		$0.14	**$1.06**
Total	**$31.31**	**$11.39**	**$12.78**	**$8.77**	**$1.49**	**$0.31**	**$1.34**	**$3.13**	**$2.75**	**$15.77**	**$14.06**	**$1.70**	**$0.10**	**$0.01**	**$0.11**	**$0.11**	**$1.02**	**$0.01**	**$0.49**	**$0.01**	**$0.14**	**$0.01**	**$0.15**	**$106.93**

1. All project costs are presented in 2017 dollars.
2.Projects are based on Zone 7's FY 2018/19 Capital Improvements Program
3. Project costs were provided till FY 2040/41 by Zone 7. Annual costs for the projects that have recurring costs have been projected till FY 2057/58 as part of Total Funding Forecast (Appendix C).

Appendix C

Year	Renewal Costs (Millions, $2017)						System-Wide Improvements ($2017 Millions)[4]	Total Project Costs (Millions, $2017)
	Draft R/R CIP Projects	AMP-Identified CIP Projects	Long-Term Annual Cost of Draft R/R CIP Projects	Long-Term Renewal of Existing Assets[2]	Subsequent Renewal of Existing Assets[3]	Subtotal Renewal Costs		
2018	$13.56			$0.00	$0.00	$13.56	$31.31	$44.87
2019	$6.81			$0.00	$0.00	$6.81	$11.39	$18.20
2020	$6.54			$0.00	$0.00	$6.54	$12.78	$19.32
2021	$6.41			$0.00	$0.00	$6.41	$8.77	$15.18
2022	$20.20			$0.00	$0.00	$20.20	$1.49	$21.69
2023	$11.14	$0.99		$0.00	$0.00	$12.14	$0.31	$12.44
2024	$2.18	$5.09		$0.00	$0.00	$7.28	$1.34	$8.62
2025	$2.31	$1.23		$0.00	$0.00	$3.54	$3.13	$6.67
2026	$1.15	$1.80		$0.00	$0.00	$2.94	$2.75	$5.69
2027	$2.16			$0.00	$0.00	$2.16	$15.77	$17.93
2028			$4.13	$11.55	$0.00	$15.68	$14.06	$29.74
2029			$2.72	$6.29	$0.00	$9.00	$1.70	$10.70
2030			$2.68	$1.61	$0.31	$4.60	$0.10	$4.70
2031			$1.47	$1.49	$0.00	$2.96	$0.01	$2.96
2032			$1.91	$2.39	$0.00	$4.30	$0.11	$4.40
2033			$2.92	$6.87	$0.46	$10.25	$0.11	$10.36
2034			$3.04	$21.51	$0.56	$25.11	$1.02	$26.13
2035			$3.42	$6.76	$0.45	$10.63	$0.01	$10.63
2036			$0.97	$0.11	$0.00	$1.08	$0.49	$1.57
2037			$1.91	$37.26	$0.62	$39.79	$0.01	$39.80
2038			$1.05	$4.76	$3.64	$9.45	$0.14	$9.58
2039			$2.76	$26.65	$4.37	$33.79	$0.01	$33.79
2040			$2.67	$7.98	$0.34	$10.99	$0.15	$11.14
2041			$1.38	$2.84	$0.00	$4.22	$0.20	$4.42
2042			$1.66	$1.00	$0.31	$2.97	$0.20	$3.17
2043			$1.46	$2.41	$0.07	$3.94	$0.20	$4.14
2044			$2.44	$7.81	$0.33	$10.57	$0.20	$10.77
2045			$3.07	$2.00	$0.99	$6.06	$0.20	$6.26
2046			$1.10	$1.20	$0.37	$2.66	$0.20	$2.86
2047			$1.51	$2.40	$0.61	$4.53	$0.20	$4.73
2048			$1.12	$3.41	$0.15	$4.68	$0.20	$4.88
2049			$2.88	$29.56	$0.14	$32.57	$0.20	$32.77
2050			$2.68	$59.01	$2.48	$64.18	$0.20	$64.38
2051			$1.55	$0.00	$0.64	$2.19	$0.20	$2.39
2052			$1.10	$0.46	$0.62	$2.18	$0.20	$2.38
2053			$1.60	$8.02	$1.85	$11.47	$0.20	$11.67
2054			$2.45	$3.11	$5.60	$11.16	$0.20	$11.36
2055			$3.20	$2.44	$0.93	$6.57	$0.20	$6.77
2056			$1.10	$0.46	$0.00	$1.56	$0.20	$1.76
2057			$1.64	$4.59	$0.31	$6.54	$0.20	$6.74
	$72.45	**$9.12**	**$63.55**	**$265.97**	**$26.16**	**$437.24**	**$110.33**	**$547.57**

1. All project costs are presented in 2017 dollars and do not include inflation
2. Renewal of assets that are not anticipated to be renewed in the next 10 years, when they reach 100% OUL through FY 2057/58 .
3. Subsequent renewals of assests that will be renewed during the next 10 years if they reach 100% of OUL before FY 57/58
4. Project costs for SWI projects were provided through FY 40/41 by Zone 7. Annual costs for the projects that have recurring costs have been projected through FY 57/5

Appendix B

WATER SYSTEM PROJECT SUMMARY REPORTS

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The following table shows the project title and page number for each Water System capital project in this Ten-Year CIP.

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Capital Improvement Project Summary Report

Strategy Expansion

Program Water Supply & Conveyance

Project **Arroyo Mocho Diversion Facility Coordination & Implementation**

Project ID: COL9

Strategic Plan Priority **1.1, 1.3, 1.5, 1.6**

Project Description This project is located along Arroyo Mocho near Cope Lake and Lake H. The diversion structure would consist of a concrete foundation within Arroyo Mocho equipped with a diversion facility along with other appurtenances necessary to accomplish water management in an environmentally sensitive way. The project would also include pipelines and other equipment necessary to control the diversion facility and move water into the Chain of Lakes. Hansen Aggregates is responsible for designing, permitting, and constructing the diversion facility at no cost to Zone 7. Additional costs in future years are a placeholder for upgrading the facility to meet potential future operating permit regulations.

Justification Completion of this project is necessary to allow Zone 7 to manage water as described in the Specific Plan for Livermore-Amador Valley Quarry Area Reclamation (LAVQAR)

Origin Livermore-Amador Valley Quarry Area Reclamation Specific Plan, 2006 Stream Management Master Plan

Responsible Section IP Integrated Planning

Operating Impact Adds new O&M, repair and replacement expenses for Zone 7.

In Service Date **Month**: June **Year**: 2021

Total Project Cost $4,270,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$460	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$460
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$530	$3,280	$0	$0	$0	$0	$0	$0	$0	$0	$3,810
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$460**	**$0**	**$530**	**$3,280**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$4,270**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Water Supply & Conveyance

Project **Arroyo Mocho Low Flow Crossings**

Project ID: COL8

Strategic Plan Priority **1.1, 1.3, 1.5, 1.6**

Project Description This project provides stream channel improvements at two existing driveway crossings on the Arroyo Mocho off Mines Road to facilitate future artificial flow increases associated with the filling of the Chain of Lakes. The actual implementation for this project should follow constructionof the AM Diversion Project being constructed by Hansen.

Justification Zone 7 plans to use Lakes H and I for artificial groundwater recharge. This initial Chain of Lakes operation requires Zone 7 to increase its typical releases from 20 cubic feet per second (cfs) to up to 50 cfs on a more frequent basis; however the higher flows will impair access to two residences located across the stream from their Mines Road driveway entrances. Modifications are to route water downstream of the residences through a pipeline along Mines Road that reconnects to Arroyo Mocho or raise the crossings above the potential water levels to facilitate vehicular access to the residences.

Origin Arroyo Mocho Diversion Project

Responsible Section FE Facilities Engineering

Operating Impact Increases water supply reliability. Increases channel maintenance costs.

In Service Date **Month**: June **Year**: 2020

Total Project Cost $3,490,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$520	$2,970	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,490
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$520**	**$2,970**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,490**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Program Management

Project **Asset Management Program Management**

Project ID: SP18

Strategic Plan Priority **1.1, 1.4**

Project Description Ongoing program management of the Asset Management Program (AMP). Activities include facilitating condition assessments, maintaining the asset database, regular updates of the AMP, and other ongoing implementation tasks.

Justification Assures that assets in need of repair or replacement are identified and corrected.

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Increased operational effectiveness and reliability.

In Service Date **Month**: **Year**: Ongoing

Total Project Cost $7,730,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$60	$60	$70	$70	$360	$90	$90	$100	$100	$520	$6,210	$7,730
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$60**	**$60**	**$70**	**$70**	**$360**	**$90**	**$90**	**$100**	**$100**	**$520**	**$6,210**	**$7,730**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Wells

Project **Bernal Wells 1 & 2**

Project ID: W50

Strategic Plan Priority **1.1, 1.3, 1.5, 1.12**

Project Description This project is part of the Well Master Plan, and consists of two new municipal water supply well facilities. The estimated project cost includes planning, land acquisition, permitting, well design and drilling, facility design and construction which includes treatment facilities for chloramination of the well water, pipeline additions, and miscellaneous site work. The project also includes a pipeline connection along Valley Avenue to the Zone 7 water transmission system at the Hopyard Pipeline near Parkside Drive.

Justification Additional municipal water supply wells could maximize access to existing local storage in the Livermore-Amador Valley Groundwater Basin during droughts and facility outages. Maximizing access to local storage improves water supply reliability, as established in Zone 7 Resolutions 04-2662 and 06-2786. These wells will also provide Zone 7 more control over groundwater levels, groundwater flow, and dissolved salt build-up/removal.

Origin 2003 Well Master Plan and 2016 Water Supply Evaluation Update

Responsible Section FE Facilities Engineering

Operating Impact Improves system reliability.

In Service Date **Month**: June **Year**: 2025

Total Project Cost $38,070,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$5,650	$0	$0	$0	$0	$0	$0	$5,650
Construction	$0	$0	$0	$0	$0	$0	$29,370	$3,050	$0	$0	$0	$0	$32,420
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$5,650**	**$29,370**	**$3,050**	**$0**	**$0**	**$0**	**$0**	**$38,070**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy System-Wide Improvements

Program Transmission & Distribution

Project **Booster Pump Station**

Project ID: DS55

Strategic Plan Priority **1.1, 1.2, 1.3, 1.12**

Project Description Construction of a new pump station that could increase production capacity of existing wells, by lowering operating pressures on the wells on the west side of the distribution system and improve Zone 7's ability to deliver more well water to the east side of the distribution system.

Justification During conditions of limited surface water, the wellfield capacities are constrained by having to pump up to the Del Valle WTP clearwell. Construction of an in-line pump station should reduce the pressures that the wellfields have to pump against thereby increasing their capacities. Additionally, a constructed pump station will improve operational flexibility, which is particularly necessary during limited surface water availability.

Origin Proposed Intermediate Pump Station Memorandum, AHE June 11, 2014

Responsible Section FE Facilities Engineering

Operating Impact Potentially increase wellfield capacity and improve reliability during periods of limited surface water availability.

In Service Date **Month**: June **Year**: 2021

Total Project Cost $5,500,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$5,500	$0	$0	$0	$0	$0	$0	$0	$0	$5,500
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$5,500**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$5,500**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Wells

Project **Busch-Valley Well 1**

Project ID: W38

Strategic Plan Priority **1.1, 1.3, 1.5, 1.12**

Project Description This project is part of the Well Master Plan, and consists of a new municipal water supply well facility. The estimated project cost includes planning, permitting, well design and drilling, facility design and construction which includes treatment facilities for chloramination of the well water, pipeline additions, and miscellaneous site work.

Justification Additional municipal water supply wells could maximize access to existing local storage in the Livermore-Amador Valley Groundwater Basin during droughts and facility outages. Maximizing access to local storage improves water supply reliability, as established in Zone 7 Resolutions 04-2662 and 06-2786.

Origin 2003 Well Master Plan and 2016 Water Supply Evaluation Update

Responsible Section FE Facilities Engineering

Operating Impact Improves system reliability.

In Service Date **Month**: July **Year**: 2020

Total Project Cost $14,260,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$200	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$200
Design	$1,700	$1,670	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,370
Construction	$1,100	$0	$8,690	$900	$0	$0	$0	$0	$0	$0	$0	$0	$10,690
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$3,000**	**$1,670**	**$8,690**	**$900**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$14,260**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion
Renewal/Replacement

Program Program Management

Project **Capital Improvement Program Management**

Project ID: SP13

Strategic Plan Priority **1.1, 1.2, 1.3, 1.4, 2.7**

Project Description Ongoing program management of the Capital Improvement Program (CIP) including annual report preparation, Zone 7 labor and other CIP related efforts.

Justification Provides for better tracking and control of program management costs.

Origin Capital Improvement Program

Responsible Section ASD Administrative Services Division
IP Integrated Planning

Operating Impact None

In Service Date **Month**: **Year**: Ongoing

Total Project Cost $5,280,000

Source of Funds

Fund 120	Improvement, Renewal & Replacement	20%
Fund 130	Expansion	75%
Fund 200	Flood Protection Operations	3%
Fund 210	Flood Protection Development Impact Fees	2%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$57	$133	$76	$152	$86	$181	$86	$200	$105	$238	$3,705	$5,016
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$57**	**$133**	**$76**	**$152**	**$86**	**$181**	**$86**	**$200**	**$105**	**$238**	**$3,705**	**$5,016**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Water Supply & Conveyance

Project **Cawelo Groundwater Banking Program**

Project ID: WP11

Strategic Plan Priority **1.1, 1.3**

Project Description On June 21, 2006, the Zone 7 Board of Directors approved an agreement with the Cawelo Water District (a member unit of Kern County Water Agency) for a water banking and exchange program. The banking program increased Zone 7's dry-year water supply by up to 10,000 acre-feet per year. Zone 7 is able to store up to 120,000 acre-feet of water within the Cawelo Water District area. Cawelo financed this program by a $21.055 million sale of Certificates of Participation (COP) on August 15, 2006. The COPs run through 2035 with an interest rate of 4% that increases to 4.67% by 2035. By agreement, Zone 7 reimburses Cawelo for the COP annual debt service of about $1.3 million per year. While the project is complete, the financial commitment is ongoing.

Justification Increases reliability by providing additional water supplies during drought years.

Origin 1999 Water Supply Plan

Responsible Section IP Integrated Planning

Operating Impact Increased operational reliability.

In Service Date **Month**: June **Year**: 2035

Total Project Cost $37,447,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$14,867	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,260	$1,250	$10,070	$37,447
Total	**$14,867**	**$1,250**	**$1,250**	**$1,250**	**$1,250**	**$1,250**	**$1,250**	**$1,250**	**$1,250**	**$1,260**	**$1,250**	**$10,070**	**$37,447**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy System-Wide Improvements
Expansion

Program Transmission & Distribution

Project **Chain of Lakes - Cope Lake to DVWTP Pipeline**

Project ID: COL16

Strategic Plan Priority **1.1, 1.3, 1.4, 1.5, 1.6, 1.12**

Project Description This project consists of a new multi-purpose 36-in conveyance pipeline and 12-MGD pump station connecting DVWTP/SBA with Lakes H/I/Cope. Active gravel mining operations may continue until 2060, delaying completion of the Chain of Lakes (COLs) by 30 years beyond the previous planning horizon. This means that previously planned groundwater recharge, local water right perfection, and other key water management strategies (e.g., to reduce salt loading) are also potentially delayed because they are tied to the COLs. Zone 7 is therefore planning to construct this project to allow Zone 7 to proceed with planned and potential uses of the COLs regardless of when the remaining projects are turned over to Zone 7.

Justification Even with the delay of the turnover of Lakes A to G to Zone 7, this project will improve recharge of the local groundwater basin, help perfect local water rights, allow Zone 7 to meet demands with stored water in the COLs during catastrophic events (e.g., loss of the Delta), and increase options for new water supplies (e.g., potential potable reuse implementation).

Origin 2006 Stream Management Master Plan, 2016 Water Supply Evaluation Update

Responsible Section FE Facilities Engineering

Operating Impact Increased water supply reliability and operational flexibility. Increased O&M costs.

In Service Date **Month**: June **Year**: 2022

Total Project Cost $64,650,000

Source of Funds

Fund 120	Improvement, Renewal & Replacement	30%
Fund 130	Expansion	70%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$4,620	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,620
Design	$0	$0	$4,800	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,800
Construction	$0	$0	$0	$25,890	$26,930	$2,410	$0	$0	$0	$0	$0	$0	$55,230
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$4,620**	**$4,800**	**$25,890**	**$26,930**	**$2,410**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$64,650**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy System-Wide Improvements
Expansion

Program Water Supply & Conveyance

Project **Chain of Lakes Facilities and Improvements - Water Supply**

Project ID: COL10

Strategic Plan Priority **1.1, 1.2, 1.3, 1.4, 1.6, 2.2**

Project Description This project consists of the design and construction of elements of the Chain of Lakes facilities needed for water supply as identified in near-term and long-term planning efforts. Project components include, but are not limited to, pipelines, fencing, access roads and ramps, slope re-grading and landscaping. The costs included under this project represent only the water supply portion; the flood control-related costs are included in the CIP as a separate project.

Justification The COLs is a series of gravel mining pits that will be dedicated to Zone 7 over the next 40 years or more for water management purposes. More specifically, the COLs will allow Zone 7 to implement mitigative measures for salt loading in the Livermore Valley Groundwater Basin, enhance artificial recharge, provide surface water storage, and support flood protection activities. This project will allow Zone 7 to design and implement the projects necessary for Zone 7 to use the COLs for water management after dedication.

Origin 2006 Stream Management Master Plan, 2016 Water Supply Evaluation Update

Responsible Section FE Facilities Engineering

Operating Impact Increases water supply reliability. Increased O&M costs.

In Service Date **Month**: June **Year**: 2037

Total Project Cost $42,620,000

Source of Funds

Fund 120	Improvement, Renewal & Replacement	30%
Fund 130	Expansion	70%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$940	$0	$2,650	$6,990	$3,590	$1,270	$5,550	$2,110	$0	$8,880	$10,640	$42,620
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$940**	**$0**	**$2,650**	**$6,990**	**$3,590**	**$1,270**	**$5,550**	**$2,110**	**$0**	**$8,880**	**$10,640**	**$42,620**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion
System-Wide Improvements

Program Water Supply & Conveyance

Project **Chain of Lakes Master Planning**

Project ID: COL6

Strategic Plan Priority **1.1, 1.3, 1.5, 1.6, 2.1**

Project Description This project consists of the near-term and long-term program management and planning necessary to integrate the Chain of Lakes (COLs) into Zone 7's water supply and flood protection system, and into various general plans, specific plans, on-going construction, or other activities in the Livermore-Amador Valley. Program elements may include coordinating with the mining companies/quarry operators, developers, and government agencies (e.g., City of Pleasanton, Alameda County, East Bay Regional Parks District). Planning for the COLs will incorporate the recommendations from other Zone 7 planning efforts, including the Stream Management Master Plan and the 2016 Water Supply Evaluation Update.

Justification The COLs are a series of gravel mining pits that will be dedicated to Zone 7 for water management purposes. More specifically, the COLs will allow Zone 7 to reduce evaporative losses, implement mitigative measures for salt loading in the Livermore Valley Groundwater Basin, enhance artificial recharge, provide surface water storage, and support flood protection activities. All of these activites are necessary to provide a reliable supply of high-quality water and an effective flood control system to the Livermore-Amador Valley. This project will allow Zone 7 to design and implement the projects necessary for Zone 7 to use the COLs for water resource management after dedication.

Origin 2006 Stream Management Master Plan, 2014 Preliminary Lake Use Evaluation for the Chain of Lakes, 2016 Water Supply Evaluation Update

Responsible Section IP Integrated Planning

Operating Impact Enhances Zone 7's ability to manage water and increase water supply reliability.

In Service Date **Month**: **Year**: Ongoing

Total Project Cost $1,380,000

Source of Funds

Fund 120	Improvement, Renewal & Replacement	30%
Fund 130	Expansion	70%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$20	$270	$20	$20	$20	$30	$30	$30	$30	$30	$880	$1,380
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$20**	**$270**	**$20**	**$20**	**$20**	**$30**	**$30**	**$30**	**$30**	**$30**	**$880**	**$1,380**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Wells

Project **Chain of Lakes Wells 3 & 4**

Project ID: W36

Strategic Plan Priority **1.1, 1.3, 1.5, 1.12**

Project Description This project is part of the Well Master Plan and consists of two new municipal water supply well facilities and additional connecting pipelines. The estimated project cost includes planning, land acquisition, well design and drilling, facility design and construction, pipeline additions, and miscellaneous site work.

Justification Additional municipal water supply wells could maximize access to existing local storage in the Livermore Valley Groundwater Basin for use during droughts and facility outages. Maximizing access to local storage improves water supply reliability, as established in Zone 7 Resolutions 04-2662 and 06-2786. These wells will also provide Zone 7 more control over groundwater levels, groundwater flow, dissolved salt build-up/removal.

Origin 2003 Well Master Plan and 2016 Water Supply Evaluation Update

Responsible Section FE Facilities Engineering

Operating Impact Improves system reliability.

In Service Date **Month**: June **Year**: 2030

Total Project Cost $40,230,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,820	$0	$5,820
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$34,410	$34,410
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$5,820**	**$34,410**	**$40,230**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Wells

Project **COL 1 Yard and Slope Stabilization**

Project ID: COL17

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project for additional support of the COL 1 building foundation and/oradditional repairs and/or support needed to stabilize the COL 1 facility ground and adjacent Cope Lake slope. Repair to be determined based on geotechnical report and subsequent review of alternatives for best course of action.

Justification COL 1 Well facility has experienced noticeable settlement and movement towards Cope Lake. The adjacent Cope Lake slope has also shown some movement. Additional rip rap was placed near the toe of the slope for additional support and the entire site continues to be monitored. Additional geotechnical analysis in September 2017 concluded there is also potential for further settlement/movement of up to 13-inches on the south side of the COL 1 Well facility that should be addressed.

Origin Ground Monitoring of Site, 2016 CE&G Preliminary Distress Evaluation and Emergency Stabilization Measures – Cope Lake Well House (Chain of Lakes Well 1), 2017 CE&G Task Order Follow-up Report - Cope Lake Wells (Chain of Lakes 1 and 2)

Responsible Section FE Facilities Engineering

Operating Impact Increased reliability of well facility

In Service Date **Month**: June **Year**: 2019

Total Project Cost $2,000,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$120	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$120
Design	$0	$160	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$160
Construction	$0	$1,720	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,720
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$2,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,000**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Transmission & Distribution

Project **Corrosion Protection - Implementation of CP Survey Recommendations**

Project ID: DS31

Strategic Plan Priority **1.4**

Project Description This project sets aside funding to periodically update current conditions of Zone 7's facilities with respect to corrosion and cathodic protection. It will recommend future studies and implement projects to repair and upgrade cathodic protection to ensure that the service lives of facilities are in compliance with industry standards. As Zone 7 does undertake annual surveys and maintenance of some cathodic protection systems, this project may also be used to implement maintenance recommendations within the available funding.

Justification This program is required to protect existing facilities from corrosion. In addition, the use of cathodic protection will lengthen facilities' service lives and help to minimize water rate increases.

Origin Corrosion Master Plan

Responsible Section FE Facilities Engineering

Operating Impact Lengthen service life and improve reliability.

In Service Date **Month**: **Year**: Ongoing

Total Project Cost $4,510,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$80	$0	$0	$0	$0	$160	$0	$0	$0	$0	$910	$1,150
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$190	$0	$0	$0	$0	$400	$0	$0	$0	$0	$2,770	$3,360
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$270**	**$0**	**$0**	**$0**	**$0**	**$560**	**$0**	**$0**	**$0**	**$0**	**$3,680**	**$4,510**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy System-Wide Improvements

Program Transmission & Distribution

Project **Cross Valley Line Valve at Stanley/Murrieta Blvd**

Project ID: DS58

Strategic Plan Priority **1.1, 1.4**

Project Description Installation of a 36-inch line valve in the transmission system near the intersection of Murrieta and Stanley Blvd , including an access vault.

Justification Currently, there is over a mile distance in the Cross Valley pipeline between isolation valves in an area delivering water to CalWater turnouts. This proposed valve would be at a critical junction in the system that increases operational flexibility to route the flow of water in the distribution system and reduce the number of turnouts that would be disrupted. The proposed valve location will also be off the street to provide safer access and ease of operation.

Origin Capital Improvement Program

Responsible Section FE Facilities Engineering

Operating Impact Improve operational flexibility and reduce service interruptions.

In Service Date **Month**: May **Year**: 2020

Total Project Cost $750,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$80	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$80
Design	$0	$80	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$80
Construction	$0	$0	$590	$0	$0	$0	$0	$0	$0	$0	$0	$0	$590
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$160**	**$590**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$750**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Transmission & Distribution

Project **Distribution System Asset Renewal/Replacement**

Project ID: DS60

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project based on facilities nearing the end of their original useful life (OUL) in the Asset Management Program.. The project will include planning, design, and construction to renew/replace the following existing assets in the distribution system: turnouts CWS-5, CWS-6 and VA-2.

Justification These assets are reaching the end of their useful life and are critical to water delivery to Zone 7's customers.

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Maintains operational functionality and reliability.

In Service Date **Month**: June **Year**: 2025

Total Project Cost $970,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$10	$10	$0	$0	$0	$0	$20	$0	$0	$0	$0	$40
Design	$0	$50	$50	$0	$0	$0	$0	$60	$0	$0	$0	$0	$160
Construction	$0	$220	$230	$0	$0	$0	$0	$320	$0	$0	$0	$0	$770
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$280**	**$290**	**$0**	**$0**	**$0**	**$0**	**$400**	**$0**	**$0**	**$0**	**$0**	**$970**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Transmission & Distribution

Project **Distribution System Control Station Replacement**

Project ID: DS48

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project based on facilities nearing the end of their original useful life (OUL) in the Asset Management Program. This project consists of the replacement of valves and ancillary equipment at the Cross Valley, Livermore (Station 220), and Vineyard Rate Control Stations.

Justification According to the AMP report, the valves at these rate control stations are reaching the end of their useful life. Zone 7's rate control stations are critical to delivering an adequate water supply to Retailer turnouts.

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Maintains operational functionality and reliability.

In Service Date **Month**: June **Year**: 2022

Total Project Cost $1,010,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$50	$0	$0	$0	$0	$0	$0	$0	$50
Design	$0	$0	$0	$0	$120	$0	$0	$0	$0	$0	$0	$0	$120
Construction	$0	$0	$0	$0	$840	$0	$0	$0	$0	$0	$0	$0	$840
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$1,010**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,010**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **Dougherty Reservoir Recoating**

Project ID: DV150

Strategic Plan Priority **1.1, 1.4**

Project Description This project involves the recoating of the exterior and interior of the 4 MG steel tank, including all submerged metals and piping appurtenances, such as the interior ladder, manways, inlet/outlet and overflow pipes. A new, more-efficient cathodic protection system will be installed as well as power system upgrade . Scope includes a coating consultant to provide a coating system design. A heavy metals analysis for both the interior and exterior coatings should also be completed. The next inspection will help determine if the interior tank re-coating can be further deferred. As this facility is jointly owned with the Dublin San Ramon Services District, each agency is responsible for 50 percent of the total project cost shown (DSRSD would reimburse Zone 7, 50% of the actual cost of the project. Based on the project estimate, each agency's share of the cost would be $1.1 million.

Justification The steel tank was constructed in 1984 and the original coating systems are nearing the end of their useful life. Previous diver inspections found pockets of small blistering throughout the floor area, of which 10% are broken, which can lead to rusted nodules and steel damage. The walls and structural columns were reported to be in good condition. The roof panels and steel supports show some rust bleeding.

Origin 2007 DVWTP Access Road and Parking Lot/Dougherty Reservoir Access Road Pavement Rehabilitation Report, 2011 and 2014 Dougherty Reservoir Diver Inspection Report

Responsible Section FE Facilities Engineering

Operating Impact A new coating will provide better corrosion protection of the steel substrate and prolong the useful life of the storage reservoir.

In Service Date **Month**: June **Year**: 2020

Total Project Cost $2,200,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$20	$0	$0	$0	$0	$0	$0	$0	$0	$0	$20
Design	$0	$0	$60	$0	$0	$0	$0	$0	$0	$0	$0	$0	$60
Construction	$0	$0	$2,020	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,020
Other	$0	$0	$100	$0	$0	$0	$0	$0	$0	$0	$0	$0	$100
Total	**$0**	**$0**	**$2,200**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,200**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **DVWTP Ammonia System Replacement**

Project ID: DV125

Strategic Plan Priority **1.1, 1.4**

Project Description Replacement of the existing anhydrous ammonia system with an aqueous ammonia system.

Justification This project will replace or upgrade the last pure gaseous chemical system at DVWTP. Aqueous ammonia bulk storage will be approximately 19% ammonia and will be safer to handle and less of a hazardous threat.

Origin Capital Improvement Program

Responsible Section FE Facilities Engineering

Operating Impact Increase safety.

In Service Date **Month**: June **Year**: 2023

Total Project Cost $3,030,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$120	$0	$0	$0	$0	$0	$0	$0	$120
Design	$0	$0	$0	$0	$230	$0	$0	$0	$0	$0	$0	$0	$230
Construction	$0	$0	$0	$0	$0	$2,680	$0	$0	$0	$0	$0	$0	$2,680
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$350**	**$2,680**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,030**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **DVWTP Assets Renewal/Replacement**

Project ID: DV164

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project based on facilities nearing the end of their original useful life (OUL) in the Asset Management Program. The project will include planning, design, and construction to renew/replace the following existing assets at Del Valle Water Treatment Plant: backwash rate control valve for pump #1; filter aid pump system; HVAC system for DAF building; and washwater recycle pumps

Justification These assets are reaching the end of their useful life. These assets are critical to the reliable operation of the DVWTP.

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Maintains operational functionality and reliability.

In Service Date **Month**: June **Year**: 2023

Total Project Cost $690,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$40	$0	$0	$0	$0	$0	$0	$40
Design	$0	$0	$0	$0	$0	$100	$0	$0	$0	$0	$0	$0	$100
Construction	$0	$0	$0	$0	$0	$550	$0	$0	$0	$0	$0	$0	$550
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$690**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$690**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **DVWTP Chemical Ferric Chloride and Caustic System Replacements**

Project ID: DV145

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project based on facilities nearing the end of their original useful life (OUL) in the Asset Management Program. Key systems to be replaced include, but are not limited to:

1. Coagulant metering pumps for conventional plant and DAF along with Ferric storage tanks and roof replacement
2. Ancillary support for each chemical feed system
3. Caustic feed pumps; upsized

Justification According to the AMP Update, the above-listed systems have either reached or are nearing the end of their original useful life. These systems are critical to operation of the treatment plant.

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Increases ability to comply with regulatory requirements, increases operational effectiveness and reliability, and decreases maintenance.

In Service Date **Month**: April **Year**: 2023

Total Project Cost $1,480,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$30	$0	$0	$0	$0	$0	$0	$0	$30
Design	$0	$0	$0	$0	$230	$0	$0	$0	$0	$0	$0	$0	$230
Construction	$0	$0	$0	$0	$0	$1,220	$0	$0	$0	$0	$0	$0	$1,220
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$260**	**$1,220**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,480**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **DVWTP Chemical Roadway and Parking Lot Improvements**

Project ID: DV159

Strategic Plan Priority **1.1, 1.4**

Project Description This project includes widening the fill alleyway using a retaining wall along the hillside and a widened paved roadway along with full depth asphalt concrete patches for damaged asphalt pavement followed by a leveling asphalt concrete layer.

Justification The fill alleyway widening improves efficiency and safety at the plant as it enables chemical fill trucks to stop and reload the on-site chemical storage tanks without blocking access for other plant vehicles. The east parking lot also has failed or damaged asphalt pavement mainly around the travel way used by heavy vehicles. These areas need to be reconstructed with asphalt concrete patches then leveled with an asphalt concrete layer.

Origin Capital Improvement Program

Responsible Section FE Facilities Engineering

Operating Impact Increase safety and decrease maintenance.

In Service Date **Month**: June **Year**: 2022

Total Project Cost $990,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$40	$0	$0	$0	$0	$0	$0	$0	$0	$40
Design	$0	$0	$0	$220	$0	$0	$0	$0	$0	$0	$0	$0	$220
Construction	$0	$0	$0	$0	$730	$0	$0	$0	$0	$0	$0	$0	$730
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$260**	**$730**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$990**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **DVWTP Drying Beds 1-4 Rehabilitation Project**

Project ID: DV157

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project that would rebuild/rehab drying beds 1-4. Due to their proximity, these beds have a history of affecting adjacent properties as their poor underdrain system does not properly contain percolated flows. This project will pave the beds and make modifications to the underdrain system to minimize percolation while still providing underdrain use for other drying beds.

Justification Sludge beds are still frequently used in conjunction with the centrifuge mostly during times when minimal operations staff (swing shift, graveyard shift, and weekends) is on-site and the consistency of solids is difficult to maintain for centrifuge processing. Sludge beds also provide redundancy for handling sludge if the centrifuge becomes inoperable as well as provide needed temporary storage for draining of other treatment facilities (clearwells, superpulsators, gravity thickener, etc.) during periodic maintenance events so the plant can be managed for compliance with state discharge permits.

Origin 2014 Condition Assessment

Responsible Section FE Facilities Engineering

Operating Impact Improved operational reliability and lower maintenance cost

In Service Date **Month**: April **Year**: 2023

Total Project Cost $5,270,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$390	$0	$0	$0	$0	$0	$0	$0	$390
Design	$0	$0	$0	$0	$390	$0	$0	$0	$0	$0	$0	$0	$390
Construction	$0	$0	$0	$0	$0	$4,490	$0	$0	$0	$0	$0	$0	$4,490
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$780**	**$4,490**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$5,270**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **DVWTP HVAC Replacement**

Project ID: DV146

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project based on facilities nearing the end of their original useful life (OUL) in the Asset Management Program. Key equipment to be replaced include, but are not limited to the following: boilers and appurtenances; air handling units and exhaust fans; air cooled chiller for the Laboratory Building; associated system control and pressure valves, switches, appurtenances; etc., and digital control systems for the HVAC.

Justification The heating, ventilation, and air conditioning system is near the end of its useful life and needs to be replaced . It is expected that more state-of-art technology and more efficient compressors and boilers, etc., will replace the equipment installed in the 2003 HVAC project. The project will continue to provide comfortable, safe and energy efficient operations and protect plant and laboratory personnel, equipment and instrumentation, SCADA system and servers against higher heating and colder temperatures throughout the year

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Increases operational reliability.

In Service Date **Month**: June **Year**: 2020

Total Project Cost $670,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$10	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$10
Design	$0	$80	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$80
Construction	$0	$0	$540	$0	$0	$0	$0	$0	$0	$0	$0	$0	$540
Other	$0	$10	$30	$0	$0	$0	$0	$0	$0	$0	$0	$0	$40
Total	**$0**	**$100**	**$570**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$670**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy System-Wide Improvements

Program Water Treatment Facilities

Project **DVWTP Ozonation Project**

Project ID: DV110

Strategic Plan Priority **1.1, 1.2, 1.13**

Project Description This project consists of the design and construction of an ozonation process at DVWTP. The facility includes an ozone contactor basin, ozone generation and feed system housed in a building, liquid oxygen storage and feed system, chlorine contactor for CT compliance, supporting chemical feed systems for raw water pH control and bromate control, significant yard piping and modifications to existing facilities, electrical, instrumentation, and control. The project also includes the installation of a carbon dioxide facility to provide pH control prior to ozonation.

Justification This project provides multiple benefits related to public health, aesthetics, and production capacity. Ozonation is expected to result in the reduction of trihalomethanes (THMs) and contaminants of emerging concern (CECs). It will mitigate seasonal earthy-musty taste and odor from algae as well as being the best available treatment for algal toxins. Furthermore, the ozonation process has the potential to improve DVWTP treatment capacity by allowing the plant to better handle varying raw water quality conditions while maintaining high production rates

Origin 2003 Water Quality Management Program, 2009 Ozone and Peroxone Evaluation Report, 2015 Bench-Scale Evaluation of the Potential Destruction of Cyanotoxins with Treatment Technologies Applied to Southbay Aqueduct Water

Responsible Section FE Facilities Engineering

Operating Impact Increase operations and maintenance costs, including the addition of one new operator, mechanic, electrician, and instrument technician to cover both sites. Operational impacts include improved water quality, increased production reliability, lower primary coagulant dosage, and less sludge production and handling.

In Service Date **Month**: June **Year**: 2020

Total Project Cost $40,520,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$1,100	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,100
Design	$11,890	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$11,890
Construction	$0	$17,800	$9,730	$0	$0	$0	$0	$0	$0	$0	$0	$0	$27,530
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$12,990**	**$17,800**	**$9,730**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$40,520**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **DVWTP Polymer Mixing System Replacement**

Project ID: DV162

Strategic Plan Priority **1.1, 1.4**

Project Description This project replaces the existing polymer mixing system currently in use at Del Valle. The project includes a dry hopper system with automatic feed into the existing mixing tank, piping and a new larger motor for appropriate mixing. Existing rapid mix pumps and 1500 gallon mixing tank can be reused. Project also includes ancillary equipment to make a complete and automatic feed system as well as improved drainage system, and mechanical systems relocations for ease of maintenance

Justification The current polymer mixing system was retrofitted into a downstairs room near the filter gallery. It includes a conical tank with a mixing motor and impeller mounted over top of it. Operators are required to carry 55lb bags of dry polymer up several stairs where they can then dump the polymer into the tank at roughly chest level. This can be a dangerous task given the weight of the bag and the elevation at which the bag is poured into the tank. Bags must also be poured into the tank at the right increments and at the right times. An automated feed system would allow the operators to pour several bags into a hopper at waist height whereby the hopper system would automatically feed the correct amount of polymer into the mixing tank for proper formulation. Moreover, the room does not have adequate space for easy maintenance of the pumps and piping. The equipment used to set up the batch mixing is outdated and subject to failure. When spills occur, polymer would have to be removed essentially by hand as the localized drains are too small and constricting to flush the polymer. This project will provide a better layout of equipment and improve drainage for maintenance.

Origin Engineering Services Request DC-15-01

Responsible Section FE Facilities Engineering

Operating Impact Increased safety and polymer mixing efficiency

In Service Date **Month**: June **Year**: 2019

Total Project Cost $550,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$35	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$35
Design	$35	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$35
Construction	$430	$50	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$480
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$500**	**$50**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$550**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **DVWTP PWRPA Service**

Project ID: DV163

Strategic Plan Priority **1.12**

Project Description This project will transfer one of the electrical services at DVWTP from PG&E to the Power and Water Resources Pooling Authority (PWRPA). This includes transformer replacement and associated re-wiring and conduit work

Justification With the planned upgrade to add use of ozone at DVWTP, energy usage will increase. The ozone system will be connected up to one of the two electrical services at DVWTP. The higher energy output from the ozone system at a lower energy cost for PWRPA than PG&E is expected recover capital costs within a few years.

Origin Operations and Facilities Engineering

Responsible Section FE Facilities Engineering

Operating Impact Expected long term savings in energy costs.

In Service Date **Month**: June **Year**: 2019

Total Project Cost $500,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$30	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$30
Design	$0	$50	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$50
Construction	$0	$420	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$420
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$500**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$500**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **DVWTP Sewer Line Connection**

Project ID: DV161

Strategic Plan Priority **1.1, 1.4**

Project Description A private development has proposed a sewer extension across Arroyo Valle then along Foley Road to Kalthoff Commons. The scope of this work is to connect and extend the proposed sewer line to DVWTP. The scope may also include working with the developer and the City for upsizing the proposed sewer line and capacity of the proposed sewer lift station. The project implementation schedule will be dependent on the private development schedule.

Justification This project will allow DVWTP to connect to a sanitary sewer and eliminate the septic system. Connecting to a sanitary sewer also helps provide additional disposal options to improve efficiency of operations and maintenance work at DVWTP.

Origin Operations and Facilities Engineering

Responsible Section FE Facilities Engineering

Operating Impact Improves plant operations and maintenance efficiencies.

In Service Date **Month**: June **Year**: 2019

Total Project Cost $650,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$50	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$50
Design	$0	$50	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$50
Construction	$0	$550	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$550
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$650**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$650**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **DVWTP Underdrain Pump Station Replacement**

Project ID: DV147

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project based on facilities nearing the end of their original useful life (OUL) in the Asset Management Program. It consolidates a number of asset replacements or rehabilitations for residuals handling facilities and related equipment at DVWTP including, but not limited to:

1. Upgrade underdrain pump station capacity and power supply capacity, including communications and controls
2. Upgrade electrical and controls for french drain and Well Point pumps
3. Ancillary support system, including mechanical, electrical, and instrumentation, system piping for above items

Justification According to the AMP database, the above listed systems are near the end of their original useful life. Also, the control gates at drain valves on the washwater recovery system have been high maintenance, characterized by frequent replacements.

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Improve system reliability and enable Zone 7 to take advantage of the maximum treated water production capacity at DVWTP.

In Service Date **Month**: April **Year**: 2023

Total Project Cost $2,120,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$50	$0	$0	$0	$0	$0	$0	$0	$50
Design	$0	$0	$0	$0	$280	$0	$0	$0	$0	$0	$0	$0	$280
Construction	$0	$0	$0	$0	$0	$1,610	$0	$0	$0	$0	$0	$0	$1,610
Other	$0	$0	$0	$0	$0	$180	$0	$0	$0	$0	$0	$0	$180
Total	**$0**	**$0**	**$0**	**$0**	**$330**	**$1,790**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,120**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **DVWTP Washwater Recovery Ponds Rehabilitation**

Project ID: DV156

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project that would redesign the washwater recovery ponds to allow for better decanting as well as better sludge concentration at the bottom of the ponds. New valves and actuators, electrical, and SCADA would also be a part of the project to allow for automated decanting and sludge discharge to the equalization basin.

Justification The original recovery ponds were not designed to handle filter backwashes for the full 40MGD plant capacity. Without adequate time in the washwater recovery ponds for removal of solids from the filter backwashes, plant production is reduced and/or additional efforts from Operations staff is needed to manage filter backwash recycled flows back to the headworks.

Origin 2014 Condition Assessment

Responsible Section FE Facilities Engineering

Operating Impact Improve system reliability and enable Zone 7 to take advantage of the maximum water production capacity, also reduce maintenance costs.

In Service Date **Month**: April **Year**: 2025

Total Project Cost $8,440,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$30	$40	$0	$0	$0	$0	$0	$0	$70
Design	$0	$0	$0	$0	$0	$0	$0	$70	$0	$0	$0	$0	$70
Construction	$0	$0	$0	$0	$0	$250	$7,870	$0	$0	$0	$0	$0	$8,120
Other	$0	$0	$0	$0	$0	$90	$90	$0	$0	$0	$0	$0	$180
Total	**$0**	**$0**	**$0**	**$0**	**$30**	**$380**	**$7,960**	**$70**	**$0**	**$0**	**$0**	**$0**	**$8,440**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Wells

Project **El Charro Pipeline Phase 2**

Project ID: W42

Strategic Plan Priority **1.1, 1.12**

Project Description This project includes planning, land/easement acquisition, design, and construction of a pipeline that loops the transmission system in the vicinity of the Chain of Lakes wells.

Justification Phase 2 of the El Charro Pipeline is part of the Well Master Plan (WMP). This project has a different timeline than the associated wells planned as part of the WMP because it adds additional looping to Zone 7's transmission system and improves system water quality by helping to minimize stagnant water issues created by Phase 1 of the El Charro Pipeline, while reducing the frequency of flushing activities.

Origin 2003 Well Master Plan, 2016 Transmission System Planning Update

Responsible Section FE Facilities Engineering

Operating Impact No operational cost impact.

In Service Date **Month**: June **Year**: 2024

Total Project Cost $13,870,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$2,060	$0	$0	$0	$0	$0	$0	$0	$2,060
Construction	$0	$0	$0	$0	$0	$11,250	$560	$0	$0	$0	$0	$0	$11,810
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$2,060**	**$11,250**	**$560**	**$0**	**$0**	**$0**	**$0**	**$0**	**$13,870**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Water Supply & Conveyance

Project **Fourth Contractor's Share of the SBA - Capital Costs**

Project ID: WP7

Strategic Plan Priority **1.1, 1.3**

Project Description Zone 7 contracted to purchase 22,000 AFA of previously-unallocated capacity in the South Bay Aqueduct under Amendments 19 and 20 to its water supply contract with DWR. This project reflects Fund 130's share of the Water System Revenue Bond and Transportation Capital Cost Component charges associated with this capacity per Amendments 19 and 20. A separate fund (Fund 110) pays for the Transportation Minimum (OMPR) Cost Component of this capacity.

Justification Purchase of this unallocated share of the SBA was to allow Zone 7 to meet the water supply and peaking needs of new customers.

Origin Amendments 19 and 20 to Zone 7's water supply contract with DWR.

Responsible Section ASD Administrative Services Division

Operating Impact The purchases were required to meet Zone 7's long-term water supply needs, and thus allow Zone 7 to continue to meet its treated and untreated water customer demands, while preserving system reliability.

In Service Date **Month**: June **Year**: 2035

Total Project Cost $54,000,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$24,000	$54,000
Total	**$0**	**$3,000**	**$3,000**	**$3,000**	**$3,000**	**$3,000**	**$3,000**	**$3,000**	**$3,000**	**$3,000**	**$3,000**	**$24,000**	**$54,000**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Water Supply & Conveyance

Project **Fourth Contractor's Share of the SBA - Sinking Fund**

Project ID: WP14

Strategic Plan Priority **1.1, 1.3**

Project Description Zone 7 contracted to purchase 22,000 AFA of previously-unallocated capacity in the South Bay Aqueduct under Amendments 19 and 20 to its contract with the Department of Water Resources. In addition to the scheduled payments for the 22,000 AFA which will carry through 2035, Zone 7 contributes annually into this sinking fund (beginning FY 2004/05 until FY 29/30), in order to cover contractual costs from the year 2030 to 2035 when connection fee revenue is projected to decline with the approach of buildout. The annual contributions to the sinking fund are funded by connection fees.

Justification This sinking fund is to cover contractual costs from the year 2030 to 2035.

Origin Amendments 19, 20, 21, 23, and 25 to Zone 7's water supply contract with DWR

Responsible Section ASD Administrative Services Division

Operating Impact None.

In Service Date **Month**: **Year**: 2030

Total Project Cost $8,900,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$590	$620	$640	$670	$690	$720	$750	$780	$810	$840	$1,790	$8,900
Total	**$0**	**$590**	**$620**	**$640**	**$670**	**$690**	**$720**	**$750**	**$780**	**$810**	**$840**	**$1,790**	**$8,900**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Wells

Project **Groundwater Wells Asset Renewal/Replacement**

Project ID: W60

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project based on facilities nearing the end of their original useful life (OUL) in the Asset Management Program.. The project will include planning, design, and construction to renew/replace the following existing assets at the groundwater production wells: sodium hypochlorite storage tanks at Chain of Lakes Well #1; and pump, motor, and piping at Chain of Lakes Wells #1, 2, and 5, Mocho Wells #3 and 4, and Stoneridge

Justification According to the 2017 draft AMP update, these assets are reaching the end of their useful life. These assets are critical to the reliable operation of the groundwater production wells. .

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Increases system reliability.

In Service Date **Month**: June **Year**: 2026

Total Project Cost $1,810,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$10	$0	$90	$0	$0	$0	$100
Design	$0	$0	$0	$0	$0	$0	$10	$0	$260	$0	$0	$0	$270
Construction	$0	$0	$0	$0	$0	$0	$60	$0	$1,380	$0	$0	$0	$1,440
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$80**	**$0**	**$1,730**	**$0**	**$0**	**$0**	**$1,810**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Wells

Project **Hopyard Well No. 6 Inspect & Rehabilitate Pump, Motor, and Well Casing**

Project ID: W55

Strategic Plan Priority **1.4**

Project Description Pull production pump, clean and inspect well, rehabilitate well screen and filter pack, install water level monitoring equipment, and test well performance. Replace well pump, if needed.

Justification This project will: re-inspect the condition of the casing for signs of corrosion and estimation of remaining useful life for the Asset Management Program; remove bacterial encrustation on the well screen; attempt to restore the well productivity to a level that is practically and economically feasible; replace the water level measuring equipment with a new system that is more reliable; and test the well's post-rehab specific capacity to use as a baseline for future performance monitoring. Additionally, it will replace the well pump, if needed.

Origin Capital Improvement Program

Responsible Section FE Facilities Engineering

Operating Impact Increases operational service life of the facility, and postpones the need for replacement.

In Service Date **Month**: December **Year**: 2022

Total Project Cost $260,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$10	$0	$0	$0	$0	$0	$0	$0	$10
Design	$0	$0	$0	$0	$40	$0	$0	$0	$0	$0	$0	$0	$40
Construction	$0	$0	$0	$0	$210	$0	$0	$0	$0	$0	$0	$0	$210
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$260**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$260**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Wells

Project **Hopyard Well No. 9 Inspect & Rehabilitate Pump, Motor, and Well Casing**

Project ID: W56

Strategic Plan Priority **1.4**

Project Description Pull production pump, clean and inspect well, rehabilitate well screen and filter pack, install water level monitoring equipment, and test well performance. Replace well pump, if needed.

Justification This project will: re-inspect the condition of the casing for signs of corrosion and estimation of remaining useful life for the Asset Management Program; remove bacterial encrustation on the well screen; attempt to restore the well productivity to a level that is practically and economically feasible; replace the water level measuring equipment with a new system that is more reliable; and test the well's post-rehab specific capacity to use as a baseline for future performance monitoring. Additionally, it will replace the well pump, if needed.

Origin Capital Improvement Program

Responsible Section FE Facilities Engineering

Operating Impact Increases operational service life of the facility, and postpones the need for replacement.

In Service Date **Month**: December **Year**: 2021

Total Project Cost $240,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$10	$0	$0	$0	$0	$0	$0	$0	$0	$10
Design	$0	$0	$0	$30	$0	$0	$0	$0	$0	$0	$0	$0	$30
Construction	$0	$0	$0	$200	$0	$0	$0	$0	$0	$0	$0	$0	$200
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$240**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$240**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Water Treatment Facilities

Project **Increased Treatment Plant Capacity**

Project ID: WTP106

Strategic Plan Priority **1.1, 1.12**

Project Description This project is a water treatment plant expansion of up to 12 million gallon per day (MGD) at the Patterson Pass WTP for a total of 36 MGD production capacity. Project timing is tied to demand needs at PPWTP beyond the 24 MGD capacity. Expansion includes new chemical facilities, flocculation/sedimentation/clarification facilities, filters, control building, clearwell, and ancillary treatement plant facilities.

Justification Increased surface water treatment capacity improves water supply reliability for additional demands on Zone 7's system.

Origin 2009 Peer Review of the Altamont Water Treatment Plant Site and Treatment Process Study, 2015 PPWTP Expansion Feasibility Evaluation, 2011 Water Supply Evaluation (WSE) and 2016 WSE Update

Responsible Section FE Facilities Engineering

Operating Impact Increases production and delivery capacity and improves operational flexibility.

In Service Date **Month**: June **Year**: 2028

Total Project Cost $128,490,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$7,900	$0	$0	$0	$0	$7,900
Design	$0	$0	$0	$0	$0	$0	$0	$0	$8,210	$0	$0	$0	$8,210
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$55,090	$57,290	$0	$112,380
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$7,900**	**$8,210**	**$55,090**	**$57,290**	**$0**	**$128,490**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Transmission & Distribution

Project **Kitty Hawk Pump Station Asset Renewal/Replacement**

Project ID: DS59

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project based on facilities nearing the end of their original useful life (OUL) in the Asset Management Program. The project will include planning, design, and construction to renew/replace the following existing assets at the Kitty Hawk Pump Station: pump and piping; and electrical.

Justification According to the 2017 draft AMP update, these assets are reaching the end of their useful life. These assets are critical to the reliable operation of the Kitty Hawk Pump Station

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Increases system reliability.

In Service Date **Month**: June **Year**: 2025

Total Project Cost $570,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$30	$0	$0	$0	$0	$30
Design	$0	$0	$0	$0	$0	$0	$0	$90	$0	$0	$0	$0	$90
Construction	$0	$0	$0	$0	$0	$0	$0	$450	$0	$0	$0	$0	$450
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$570**	**$0**	**$0**	**$0**	**$0**	**$570**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Regulatory Compliance Monitoring

Project **Laboratory Equipment Replacement**

Project ID: LAB2

Strategic Plan Priority **1.1, 1.2**

Project Description Replacement of various monitoring and analytical laboratory equipment and components. Examples of major equipment to be replaced include, but are not limited to: HP 5890 GC systems with different detectors, ICPMS system ,Varian GCMS system, and IC system. All instruments include dedicated autosampler and data acquisition system. This program allows replacements to be staggered thus flattening expenditures.

Justification This program replaces existing laboratory equipment that has an average service life of ten years. This equipment is required for regulatory compliance monitoring and groundwater water quality management.

Origin Capital Improvement Program

Responsible Section LAB Laboratory

Operating Impact Procures equipment required to meet regulatory compliance.

In Service Date **Month**: **Year**: Ongoing

Total Project Cost $4,630,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$140	$140	$150	$150	$160	$160	$170	$180	$190	$190	$3,000	$4,630
Total	**$0**	**$140**	**$140**	**$150**	**$150**	**$160**	**$160**	**$170**	**$180**	**$190**	**$190**	**$3,000**	**$4,630**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion
Renewal/Replacement

Program Water Treatment Facilities

Project **Maintenance Yard and Building**

Project ID: PP67

Strategic Plan Priority **1.1, 1.4**

Project Description This project provides space for a maintenance yard and building that includes: 1) additional outdoor material storage and stockpile areas, 2) office building including amenities such as lunch area, showers/restrooms, locker room, and file storage, 3) storage area for equipment that needs to be stored in a climate controlled area, 4) warehouse storage and work areas for various maintenance disciplines such as electrical, SCADA/instrumentation, mechanical, general/carpentry, and mechanics, and, 5) covered areas for maintenance vehicles and various equipment.

Justification This project provides space for a maintenance yard and building that includes: 1) additional outdoor material storage and stockpile areas, 2) office building including amenities such as lunch area, showers/restrooms, locker room, and file storage, 3) storage area for equipment that needs to be stored in a climate controlled area, 4) warehouse storage and work areas for various maintenance disciplines such as electrical, SCADA/instrumentation, mechanical, general/carpentry, and mechanics, and, 5) covered areas for various equipment.

Origin ESR No. Z7-11-01

Responsible Section FE Facilities Engineering

Operating Impact Provides operational and maintenance efficiency.

In Service Date **Month**: June **Year**: 2021

Total Project Cost $3,000,000

Source of Funds

Fund 120	Improvement, Renewal & Replacement	80%
Fund 130	Expansion	20%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$260	$0	$0	$0	$0	$0	$0	$0	$0	$0	$260
Design	$0	$0	$270	$0	$0	$0	$0	$0	$0	$0	$0	$0	$270
Construction	$0	$0	$0	$2,470	$0	$0	$0	$0	$0	$0	$0	$0	$2,470
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$530**	**$2,470**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,000**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Wells

Project **MGDP Asset Renewal/Replacement**

Project ID: W59

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project recommended in the 2017 draft AMP study for condition assessment to better define the project scope, schedule, and cost. The project will include planning, design, and construction to renew/replace the following existing assets at Mocho Groundwater Demineralization Plant: polyethylene tanks; chemical piping and valves; chemical feed pumps; FRP above ground tanks; aqueous ammonia and caustic soda tanks; and HVAC.

Justification According to the 2017 draft AMP update, these assets are reaching the end of their useful life. These assets are critical to the reliable operation of the MGDP.

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Maintains operational functionality and reliability

In Service Date **Month**: June **Year**: 2024

Total Project Cost $4,270,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$220	$0	$0	$0	$0	$0	$220
Design	$0	$0	$0	$0	$0	$0	$650	$0	$0	$0	$0	$0	$650
Construction	$0	$0	$0	$0	$0	$0	$3,400	$0	$0	$0	$0	$0	$3,400
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$4,270**	**$0**	**$0**	**$0**	**$0**	**$0**	**$4,270**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Wells

Project **MGDP Concentrate Discharge Pipeline Inspection and Cleaning**

Project ID: W54

Strategic Plan Priority **1.4**

Project Description Visual inspection of the pipeline indicated a substantial build-up of minerals on the inside of the pipeline. A new connection for flushing the concentrate line with distribution system water enables Zone 7 to fill the concentrate line with distribution system water instead of concentrate water during MGDP shutdowns to alleviate additional mineral build-up. If mineral buildup still continues and becomes a problem, this project is a placeholder for a more costly cleaning operation to remove the scaling.

Justification During recent investigation of the discharge lines off of the concentrate sump it was discovered that the valves and appurtenances had become coated in a heavy scaling. If this scaling has occurred along the length of the concentrate disposal pipeline it could affect the efficiency of moving the brine through the pipeline and the pumps used to move the brine through the pipeline.

Origin 2011 Asset Management Program Update Report, 2013 Condition Assessment, 2016 Investigation, 2016 Carollo Brine Pipeline Scaling Mitigation Study

Responsible Section FE Facilities Engineering

Operating Impact Increase operating reliability and effectiveness.

In Service Date **Month**: June **Year**: 2021

Total Project Cost $1,210,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$30	$0	$0	$0	$0	$0	$0	$0	$0	$0	$30
Design	$0	$0	$50	$30	$0	$0	$0	$0	$0	$0	$0	$0	$80
Construction	$0	$0	$0	$1,100	$0	$0	$0	$0	$0	$0	$0	$0	$1,100
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$80**	**$1,130**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,210**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Wells

Project **MGDP RO Membrane Replacement**

Project ID: W43

Strategic Plan Priority **1.1, 1.4**

Project Description This project consists of the replacement of the reverse osmosis membranes (RO) at the Mocho Groundwater Demineralization Plant. Membranes reach their useful lives and need to be replaced.

Justification The replacement of these membranes scheduled every five years, based on the useful life estimate, in order to maintain effective plant operation. Timing of membrane replacements would be adjusted based on actual performance. In the case of the original membranes, a 2016 condition assessment shows them to be in good shape such that their replacement has been extended. The membrane condition is partly attributed to lack of MGDP use to avoid water loss during the prolonged drought period.

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Increase operating reliability and effectiveness.

In Service Date **Month**: **Year**: Ongoing

Total Project Cost $13,250,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$10	$10	$0	$0	$0	$10	$10	$0	$0	$0	$250	$290
Construction	$0	$0	$770	$0	$0	$0	$0	$1,050	$0	$0	$0	$11,140	$12,960
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$10**	**$780**	**$0**	**$0**	**$0**	**$10**	**$1,060**	**$0**	**$0**	**$0**	**$11,390**	**$13,250**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Wells

Project **MGDP Water Softening System**

Project ID: W52

Strategic Plan Priority **1.4**

Project Description This project consists of investigating alternatives for modification of the existing chemical injection water softening system to increase operational reliability and the design and implementation of the chosen alternative.

Justification The water softening system is an integral component of the chemical injection system at the plant. Periodic failures of the softening system limit the ability to treat water run through the plant as well as water from the Mocho wellfield.

Origin MGDP Project Needs Assessment

Responsible Section FE Facilities Engineering

Operating Impact Increase operating reliability and effectiveness.

In Service Date **Month**: June **Year**: 2020

Total Project Cost $580,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$10	$0	$0	$0	$0	$0	$0	$0	$0	$0	$10
Design	$0	$0	$100	$0	$0	$0	$0	$0	$0	$0	$0	$0	$100
Construction	$0	$0	$470	$0	$0	$0	$0	$0	$0	$0	$0	$0	$470
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$580**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$580**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **Minor Renewal/Replacement Projects**

Project ID: DS36

Strategic Plan Priority **1.4**

Project Description Replacement of assets, which individually, typically cost less than $50K and require some engineering support.

Justification Ongoing maintenance associated with the reliable supply of high-quality water.

Origin Capital Improvement Program

Responsible Section OPS Operations & Maintenance

Operating Impact System operational reliability.

In Service Date **Month**: **Year**: Ongoing

Total Project Cost $18,620,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$90	$110	$110	$130	$130	$140	$160	$160	$190	$190	$4,650	$6,060
Other	$0	$330	$360	$390	$420	$450	$480	$530	$560	$610	$670	$7,760	$12,560
Total	**$0**	**$420**	**$470**	**$500**	**$550**	**$580**	**$620**	**$690**	**$720**	**$800**	**$860**	**$12,410**	**$18,620**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Wells

Project **Mocho 2 Building and Electrical Systems Replacement**

Project ID: W58

Strategic Plan Priority **1.1, 1.4**

Project Description Replace existing wooden structure with standard block building and relocate external electrical equipment indoors. Increase footprint to include existing external electrical equipment, future VFD, and a new HVAC system.

Justification Mocho 2 was constructed in 1964 with a modest wooden structure covering the well/discharge head only and external electrical equipment. Current temperature control is done by a portable fan. A new building would extend the life of electrical equipment by bringing it within the building's footprint.

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Increases operational service life of the facility, and postpones the need for replacement

In Service Date **Month**: May **Year**: 2023

Total Project Cost $1,570,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$180	$0	$0	$0	$0	$0	$0	$0	$180
Design	$0	$0	$0	$0	$180	$0	$0	$0	$0	$0	$0	$0	$180
Construction	$0	$0	$0	$0	$0	$1,210	$0	$0	$0	$0	$0	$0	$1,210
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$360**	**$1,210**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,570**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Wells

Project **Mocho Well No. 3 OSG R/R**

Project ID: W57

Strategic Plan Priority **1.1, 1.4**

Project Description Remove and replace existing On-Site Generation (OSG) system for sodium hypochlorite including salt tank, brine tank, chemical feed pumps, piping and appertenances with appropriate chlorination storage and feed system.

Justification Mocho Well 3 has an OSG system that was installed with the original well construction in 2002. The system is becoming obsolete and parts are more difficult to obtain. The system has been in-service beyond its expected useful life.

Origin 2014 Condition Assessment

Responsible Section FE Facilities Engineering

Operating Impact System reliability

In Service Date **Month**: June **Year**: 2020

Total Project Cost $530,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$10	$0	$0	$0	$0	$0	$0	$0	$0	$0	$10
Design	$0	$0	$10	$0	$0	$0	$0	$0	$0	$0	$0	$0	$10
Construction	$0	$0	$510	$0	$0	$0	$0	$0	$0	$0	$0	$0	$510
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$530**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$530**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Groundwater Basin Management

Project **Monitoring Well Replacements & Abandonments**

Project ID: GW4

Strategic Plan Priority **1.4, 1.5**

Project Description This project provides for, on an as-needed basis, the replacement of old and damaged monitoring wells which are currently in Zone 7's monitoring network. In addition, it provides for the relocation of other Zone 7-monitored wells which need to be destroyed to allow for future development of land. The replacement wells will have various completion depths depending on their location. In some cases, nested monitoring wells having multiple completion intervals may be desirable. It is estimated that up to one multi-zone monitoring well will need to be replaced and/or destroyed year.

Justification Zone 7 operates an extensive monitoring well network for the monitoring of basin-wide groundwater levels and groundwater quality as part of the Groundwater Management Program. In order for Zone 7 to continue to protect and manage the groundwater basin as a viable water supply, somemonitoring wells weill need to be added and others will need to be replaced.

Origin Capital Improvement Program

Responsible Section GP Groundwater Protection

Operating Impact Facilitate better monitoring of Zone 7's underlying groundwater basins consistent with SGMA.

In Service Date **Month**: **Year**: Ongoing

Total Project Cost $2,020,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$30	$10	$10	$0	$0	$20	$0	$10	$0	$10	$180	$270
Design	$0	$10	$10	$10	$0	$0	$10	$0	$10	$0	$20	$180	$250
Construction	$0	$210	$210	$150	$0	$0	$180	$0	$100	$0	$100	$550	$1,500
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$250**	**$230**	**$170**	**$0**	**$0**	**$210**	**$0**	**$120**	**$0**	**$130**	**$910**	**$2,020**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Buildings & Grounds

Project **North Canyons Renewal/Replacement and Improvements**

Project ID: SP50

Strategic Plan Priority **1.4**

Project Description On April 28, 2017, Zone 7 closed escrow on the purchase of the North Canyons Administrative Building for $9M. The purchase was paid out of sinking funds in Funds 120,130,200, and 210 previously set aside for this purpose. Zone 7 is solely responsible for the operations, maintenance, repair and improvement of the building. This project include small repairs/improvement projects, including but not limited to HVAC improvements, phone system replacements, audio-visual system improvements, carpet replacement, roof repairs and other building elements as needed.

Justification As the owners of the building, Zone 7 is responsible for repairs and maintenance.

Origin Zone 7 Board Resolution No. 17-01

Responsible Section ASD Administrative Services Division

Operating Impact Provides for more efficient and effective operations of administrative and engineering functions because staff is located at one building. Cost savings of $1M annually on lease payments.

In Service Date **Month**: **Year**: Ongoing

Total Project Cost $1,990,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$50	$0	$0	$0	$0	$250	$0	$0	$0	$0	$1,690	$1,990
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$50**	**$0**	**$0**	**$0**	**$0**	**$250**	**$0**	**$0**	**$0**	**$0**	**$1,690**	**$1,990**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement
Expansion

Program Transmission & Distribution

Project **Patterson Pass Pipeline Enlargement and Replacement**

Project ID: DS54

Strategic Plan Priority **1.4, 1.12**

Project Description This project is an upgrade of the transmission pipeline from the Patterson Pass Water Treatment Plant (PPWTP) site to Zone 7's existing transmission system (PPWTP to the Livermore 1 Pipeline (PL)/Vasco 1 PL connection). Project implementation would occur after expanding PPWTP to 24 MGD, and would be timed to accommodate demand growth. This project involves upsizing and replacing the existing section of the undersized Livermore 1 PL constructed in 1962.

Justification The existing pipeline from PPWTP does not have the capacity to handle additional capacity from the PPWTP beyond 24 MGD.

Origin 2009 Peer Review of the Altamont Water Treatment Plant Site and Treatment Process Study, Asset Management Program, 2015 PPWTP Expansion Feasibility Evaluation

Responsible Section FE Facilities Engineering

Operating Impact Provides needed water system transmission capacity and operational flexibility.

In Service Date **Month**: June **Year**: 2024

Total Project Cost $24,290,000

Source of Funds

Fund 120	Improvement, Renewal & Replacement	33%
Fund 130	Expansion	67%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$1,270	$0	$0	$0	$0	$0	$0	$0	$1,270
Design	$0	$0	$0	$0	$2,340	$0	$0	$0	$0	$0	$0	$0	$2,340
Construction	$0	$0	$0	$0	$0	$19,700	$980	$0	$0	$0	$0	$0	$20,680
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$3,610**	**$19,700**	**$980**	**$0**	**$0**	**$0**	**$0**	**$0**	**$24,290**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **PPWTP 2 MG Clearwell Seismic Retrofit**

Project ID: PP84

Strategic Plan Priority **1.1, 1.4**

Project Description A reliability assessment of the clearwell determined that structural modifications were needed to secure the roof from potential damage during seismic event. This project will follow the startup of the new clearwell.

Justification A reliability assessment of the clearwell determined that structural modifications were needed to secure the roof from potential damage during seismic event.

Origin ESR No. PC-08-01, 1994 Water System Reliability Assessment

Responsible Section FE Facilities Engineering

Operating Impact Increased operational reliability and safety.

In Service Date **Month**: May **Year**: 2023

Total Project Cost $870,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$120	$0	$0	$0	$0	$0	$0	$0	$120
Design	$0	$0	$0	$0	$120	$0	$0	$0	$0	$0	$0	$0	$120
Construction	$0	$0	$0	$0	$0	$630	$0	$0	$0	$0	$0	$0	$630
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$240**	**$630**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$870**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **PPWTP Ammonia System Replacement**

Project ID: PP76

Strategic Plan Priority **1.1, 1.4**

Project Description Replacement of existing anhydrous ammonia system with an aqueous ammonia storage and feed system for both the conventional and membrane plants. Storage tank, feed pumps and controls, and motor control center will be housed in a concrete masonry block building.

Justification This project will replace the last pure gaseous chemical system at PPWTP. Aqueous ammonia bulk storage will be approximately 19% ammonia and will be safer to handle and less of a hazardous threat.

The proposed replacement project improves safety for operations and maintanence personnel and other on-site plant personnel because the concentration levels from any off-gassing from leaks, spills, or a storage tank rupture would be significantly less than from the current system. Also, the use of aqueous ammonia is consistent with Zone 7's wellfields.

Origin Capital Improvement Program

Responsible Section FE Facilities Engineering

Operating Impact Increase safety and decrease maintenance.

In Service Date **Month**: June **Year**: 2021

Total Project Cost $2,940,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$140	$0	$0	$0	$0	$0	$0	$0	$140
Design	$0	$0	$0	$0	$270	$0	$0	$0	$0	$0	$0	$0	$270
Construction	$0	$0	$0	$0	$0	$2,210	$320	$0	$0	$0	$0	$0	$2,530
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$410**	**$2,210**	**$320**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,940**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **PPWTP Asset Renewal/Replacement**

Project ID: PP87

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project based on facilities nearing the end of their original useful life (OUL) in the Asset Management Program. The project will include planning, design, and construction to renew/replace the following existing assets at Patterson Pass Water Treatment Plant: sodium hypochlorite bulk storage tanks; generator; and cathodic protection system and bird control netting on Clarifier No. 1 (formerly UF clarifier).

Justification According to the 2017 draft AMP update, these assets are reaching the end of their useful life. These assets are critical to the reliable operation of the PPWTP.

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Increases system reliability.

In Service Date **Month**: June **Year**: 2025

Total Project Cost $620,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$10	$10	$0	$0	$0	$0	$20
Design	$0	$0	$0	$0	$0	$0	$50	$50	$0	$0	$0	$0	$100
Construction	$0	$0	$0	$0	$0	$0	$240	$260	$0	$0	$0	$0	$500
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$300**	**$320**	**$0**	**$0**	**$0**	**$0**	**$620**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **PPWTP Chemical Systems Replacement**

Project ID: PP56

Strategic Plan Priority **1.1, 1.4**

Project Description This project consists of the replacement of chemical tanks, chemical feed pumps, and chemical feed piping in the PPWTP conventional plant. This is a project based on facilities nearing the end of their original useful life (OUL) in the Asset Management Program. These assets include, but are not limited to: the storage tanks for ferric chloride, caustic soda, anionic polymer, cationic polymer, and spare chemical and the metering pumps for ferric chloride, caustic soda, and cationic polymer.

Justification The AMP recommendeds replacement of these chemical tanks and chemical feed pumps because they are approaching the end of their useful lives. The chemical storage and feed systems are critical for ensuring water quality of the water delivered. Based on condition assessment the existing assets still have useful life such that the project is still needed but can be scheduled after the PPWTP Upgrades and Ozonation Project when the layout of other major facilities are certain.

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact Increases plant reliability and decreases maintenance.

In Service Date **Month**: June **Year**: 2023

Total Project Cost $910,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$90	$0	$0	$0	$0	$0	$0	$0	$90
Design	$0	$0	$0	$0	$90	$0	$0	$0	$0	$0	$0	$0	$90
Construction	$0	$0	$0	$0	$0	$730	$0	$0	$0	$0	$0	$0	$730
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$180**	**$730**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$910**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **PPWTP Clarifiers Concrete Coating**

Project ID: PP75

Strategic Plan Priority **1.1, 1.4**

Project Description This project consists of installation of an elastomeric lining system on the interior concrete wall surfacesof both the conventional and UF clarifiers at PPWTP. The steel components of the conventional clarifier werer replaced in 2012 and the steel components of the UF clarifier were recoated in 2014. In addition anodes on the UF clarifier for protection of the steel components were also replaced in 2014.

Justification A condition assessment of the PPWTP conventional and UF clarifiers performed in 2009 and 2012, respectively, recommended complete coating of the interior concrete wall surfaces for preventive maintenance in order to increase the expected life of the clarifier structures. The clarifiers are critical to the reliability of PPWTP operations.

Origin 2009 V&A condition assessment, 2012 JDH condition assessment

Responsible Section FE Facilities Engineering

Operating Impact Improve plant reliability.

In Service Date **Month**: May **Year**: 2024

Total Project Cost $2,010,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$100	$0	$0	$0	$0	$0	$0	$100
Design	$0	$0	$0	$0	$0	$180	$0	$0	$0	$0	$0	$0	$180
Construction	$0	$0	$0	$0	$0	$0	$1,730	$0	$0	$0	$0	$0	$1,730
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$280**	**$1,730**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,010**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **PPWTP Conventional Clarifier Corrosion Control Repairs**

Project ID: PP83

Strategic Plan Priority **1.1, 1.4**

Project Description Replace existing sacrificial anodes in the launders, install additional sacrificial anodes on the impeller and the draft tube, perform spot coating repair on the launders and appurtenances, and install bird control netting.

Justification The cathodic protection system for the solids contact clarifier consists of a combination of sacrificial anodes and an impressed current system. Some of the sacrificial anodes are at the end of their useful life and are in need of replacement. In order to maintain protection of the clarifier steel from corrosion, the replacement of some anodes, installation of additional anodes in certain areas, and spot coating repair are needed. The project will also include the installation of bird control netting.

Origin 2017 Condition Assessment

Responsible Section FE Facilities Engineering

Operating Impact Maintain operational reliability.

In Service Date **Month**: May **Year**: 2023

Total Project Cost $330,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$20	$0	$0	$0	$0	$0	$0	$0	$20
Design	$0	$0	$0	$0	$0	$20	$0	$0	$0	$0	$0	$0	$20
Construction	$0	$0	$0	$0	$0	$290	$0	$0	$0	$0	$0	$0	$290
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$20**	**$310**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$330**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **PPWTP HVAC Replacement**

Project ID: PP85

Strategic Plan Priority **1.4**

Project Description Key equipment of the heating, ventilation, and air conditioning (HVAC) system at PPWTP that needs to be replaced includes, but is not limited to, the following: boiler and appurtenances; air handling units and exhaust fans; associated system control and pressure valves, switches, appurtenances; and digital control systems.

Justification The HVAC system at PPWTP is aging and has undergone repeated in-house repairs over the years. According to the Asset Management Program, the HVAC system will have reached the end of its original useful life by FY 22/23. The project will continue to provide comfortable, safe and energy efficient operations and protect plant and laboratory personnel, equipment and instrumentation, SCADA system and servers against higher heating and colder temperatures throughout the year.

Origin 2014 Condition Assessment

Responsible Section FE Facilities Engineering

Operating Impact Improve plant reliability and decreased mainteinace cost.

In Service Date **Month**: June **Year**: 2023

Total Project Cost $520,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$20	$0	$0	$0	$0	$0	$0	$0	$20
Design	$0	$0	$0	$0	$70	$0	$0	$0	$0	$0	$0	$0	$70
Construction	$0	$0	$0	$0	$0	$430	$0	$0	$0	$0	$0	$0	$430
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$90**	**$430**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$520**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy System-Wide Improvements
Expansion

Program Water Treatment Facilities

Project **PPWTP Ozonation Project**

Project ID: PP82

Strategic Plan Priority **1.1, 1.2, 1.13**

Project Description This project consists of the design and construction of an ozonation process at PPWTP. The facility includes an ozone contactor basin, ozone generation and feed system housed in a building, liquid oxygen storage and feed system, chlorine contactor for CT compliance, supporting chemical feed systems for raw water pH control and bromate control, significant yard piping and modifications to existing facilities, electrical, instrumentation, and control. The project also includes the installation of a carbon dioxide facility to provide pH control prior to ozonation.

Justification This project provides multiple benefits related to public health, aesthetics, and production capacity. Ozonation is expected to result in the reduction of trihalomethanes (THMs) and contaminants of emerging concern (CECs). It will mitigate seasonal earthy-musty taste and odor algae as well as being the best available treatment for algal toxins from treated surface water at PPWTP. Furthermore, the ozonation process has the potential to improve PPWTP treatment capacity by allowing the plant to better handle varying raw water quality conditions while maintaining high production rates.

The main reasons to move up the schedule for the PPWTP Ozonation and implementing it as part of the PPWTP Upgrades are to provide potential cost savings and more comparable water quality to all Zone 7 treated water customers.

Origin 2003 Water Quality Management Program, 2009 Ozone and Peroxone Evaluation Report, 2015 Bench-Scale Evaluation of the Potential Destruction of Cyanotoxins with Treatment Technologies Applied to Southbay Aqueduct Water

Responsible Section FE Facilities Engineering

Operating Impact Increases operations and maintenance costs. Operational impacts include improved water quality, increased production reliability, lower primary coagulant dosage, and less sludge production and handling.

In Service Date **Month**: October **Year**: 2021

Total Project Cost $29,440,000

Source of Funds

Fund 120	Improvement, Renewal & Replacement	50%
Fund 130	Expansion	50%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$2,400	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,400
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$25,840	$590	$610	$0	$0	$0	$0	$0	$0	$0	$0	$27,040
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$2,400**	**$25,840**	**$590**	**$610**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$29,440**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy System-Wide Improvements

Program Water Treatment Facilities

Project **PPWTP Solar Panels Installation**

Project ID: PP86

Strategic Plan Priority **1.1, 1.4, 4.4**

Project Description This project is to cover efforts to secure a Power Purchase Agreement with a solar panel installer for solar panels along the eastern side of PPWTP.

Justification Energy costs are expected to increase substantially with the use of ozone. This system would help offset cost of energy use.

Origin Capital Improvement Program

Responsible Section FE Facilities Engineering

Operating Impact Improved reliability and future cost savings from a lower cost energy source.

In Service Date **Month**: June **Year**: 2020

Total Project Cost $100,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$60	$0	$0	$0	$0	$0	$0	$0	$0	$0	$60
Design	$0	$0	$10	$0	$0	$0	$0	$0	$0	$0	$0	$0	$10
Construction	$0	$0	$30	$0	$0	$0	$0	$0	$0	$0	$0	$0	$30
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$100**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$100**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Water Treatment Facilities

Project **PPWTP Solids Handling Expansion**

Project ID: PP43

Strategic Plan Priority **1.1, 1.4**

Project Description The existing sludge beds lack the capacity needed to keep up with expanded treatment plant production to 24 MGD. This project will provide the additional sludge beds to meet the needed residual management capacity, so that Zone 7 can replace the need for centrifuge rental contract services.

Justification This project will expand existing sludge capacity to handle plant expansion from the existing 12MGD plant capacity to 24 MGD capacity

Origin 2011 Solids Handling at DVWTP and PPWTP Memo

Responsible Section FE Facilities Engineering

Operating Impact Increased operational reliability, flexibility and effectiveness.

In Service Date **Month**: June **Year**: 2024

Total Project Cost $6,490,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$1,040	$0	$0	$0	$0	$0	$0	$0	$1,040
Construction	$0	$0	$0	$0	$0	$3,320	$2,130	$0	$0	$0	$0	$0	$5,450
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$1,040**	**$3,320**	**$2,130**	**$0**	**$0**	**$0**	**$0**	**$0**	**$6,490**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion
Renewal/Replacement

Program Water Treatment Facilities

Project **PPWTP Upgrades**

Project ID: PP81

Strategic Plan Priority **1.1, 1.4, 1.12**

Project Description This project consists of the design and construction of: 1) additional treated water storage clearwell reservoir with 5 MG of usable storage; 2) new 12 MGD conventional media filtration system; 3) filter pipe replacement, including replacement of filter valves, pumps, piping systems, and backwash system and installation of an individual filter aid system; 4) filter rehabilitation, including replacement of filter media and underdrains, installation of an air scour system, and concrete repair and coating; and 5) UF clarifier floor rehabilitation.

Justification The new treated water clearwell reservoir will increase treated water storage in the system to help meet near-term peak hourly and maximum day demands. The new conventional media filtration system is necessary to provide additional capacity and to replace the 8 MGD ultrafiltration (UF) membrane demonstration plant, which has become obsolete. The filter pipe replacement and filter rehabilitation will replace/rehabilitate aging infrastructure to extend the life of the existing filters and prepare the filters to accommodate biological filtration when the ozonation facility is constructed. The mortar layer on the UF clarifier floor has significant cracks and has separated from the concrete slab beneath; its rehabilitation will reduce the risk of delaying project commissioning.

Origin 2000 Treated Water Facilities Master Plan, 2009 Peer Review of the Altamont Water Treatment Plant Site and Treatment Process Study, 2011 Water Supply Evaluation, AMP Database, 2013 Draft Water Production Needs Analysis, 2015 PPWTP Expansion Feasibility Evaluation, ESR No. PC-12-01, 2014-2016 condition assessments; 2016 Water Supply Evaluation

Responsible Section FE Facilities Engineering

Operating Impact Increases operational flexibility, reliability, efficiency, and production capacity; extends service life of the filtration system and UF clarifier.

In Service Date **Month**: October **Year**: 2021

Total Project Cost $31,930,000

Source of Funds

Fund 120	Improvement, Renewal & Replacement	30%
Fund 130	Expansion	70%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$30,370	$590	$620	$350	$0	$0	$0	$0	$0	$0	$0	$31,930
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$30,370**	**$590**	**$620**	**$350**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$31,930**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion
System-Wide Improvements

Program Water Supply & Conveyance

Project **Reliability Intertie**

Project ID: WP24

Strategic Plan Priority **1.1, 1.3, 1.1, 1.12**

Project Description Zone 7 has been evaluating the feasibility of a reliability intertie with another major water agency (e.g., EBMUD or SFPUC). The cost estimates for this project are based on a 6.8-mile, 30-inch diameter pipeline that connects the west side of Zone 7's transmission system with EBMUD.

Justification Approximately 90% of Zone 7's long-term average water supplies are conveyed to its service via the South Bay Aqueduct (SBA); moreover, access to Zone 7's non-local storage in Semitropic and Cawelo during droughts is also dependent on the SBA. Consequently, an outage of the SBA or major disruptions of the Sacramento-San Joaquin Delta (Delta) conveyance would prevent Zone 7 access to most of its water supplies, which could potentially have catastrophic results to Zone 7's service area.

In such an event, Zone 7 would only have access to groundwater and a portion of supplies in Lake Del Valle; these supplies may not be able to meet indoor use depending on hydrologic conditions when such an event occurs. This project will help mitigate these risks by constructing a new intertie with another major water agency that would provide an additional means of acquiring water supplies during such an emergency

Origin 2016 Water Supply Evaluation Update, 2016 Trasnmission System Planning Update

Responsible Section FE Facilities Engineering

Operating Impact Increases reliability. Adds additional renewal/replacement costs.

In Service Date **Month**: June **Year**: 2029

Total Project Cost $64,670,000

Source of Funds

Fund 120	Improvement, Renewal & Replacement	80%
Fund 130	Expansion	20%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$4,560	$4,740	$25,840	$29,530	$64,670
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$4,560**	**$4,740**	**$25,840**	**$29,530**	**$64,670**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Water Treatment Facilities

Project **SCADA Upgrades and Replacements**

Project ID: WTP103

Strategic Plan Priority **1.1, 1.4**

Project Description There is an ongoing need for reprogramming, installation of additional devices and upgrading of the existing devices to continue to provide a reliable SCADA system for the plants and transmission system operation. The SCADA system will also require major software and hardware upgrades about every five years

Justification This project will enable operators to continue providing reliable control and monitoring capability of the treatment and transmission facilities using SCADA.

Origin Capital Improvement Program

Responsible Section FE Facilities Engineering

Operating Impact Improved control, monitoring and reporting through SCADA of process equipment.

In Service Date **Month**: **Year**: Ongoing

Total Project Cost $41,620,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$210	$220	$280	$140	$150	$160	$170	$1,680	$210	$220	$22,630	$26,070
Construction	$0	$260	$270	$560	$210	$220	$250	$260	$310	$310	$330	$12,570	$15,550
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$470**	**$490**	**$840**	**$350**	**$370**	**$410**	**$430**	**$1,990**	**$520**	**$550**	**$35,200**	**$41,620**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Groundwater Basin Management

Project **Second Groundwater Demineralization Facility**

Project ID: W25

Strategic Plan Priority **1.1, 1.2, 1.4, 1.12**

Project Description Design and construction of a second groundwater demineralization facility utilizing reverse osmosis technology. The anticipated capacity for this facility is 6.2 mgd of delivered water with lower total dissolved solids (TDS) and hardness, and will remove up to an additional 3,000 tons of salt per year. The combined salt removal capacity of the first two demineralization facilities will be about 6000 tons per year. The location of this proposed facility is anticipated to be at the Zone 7 Parkside building location. Timing and location of this facility may be revised in the future depending upon additional analysis and study. The cost estimate for this facility has been revised based on the actual cost of the Mocho Groundwater Demineralization Plant and inflationary adjustments

Justification This project supports both the Water Quality Policy and the Sustainable Groundwater Management Programs adopted by the Zone 7 Board of Directors. This project would improve delivered water quality to Zone 7's retailers while mitigating salt build-up in the groundwater basin by exporting the salts out of the basin via the LAVWMA pipeline.

Origin 2003 Water Quality Management Program, Sustainable Groundwater Management Programs

Responsible Section FE Facilities Engineering

Operating Impact Increased operations and maintenance costs.

In Service Date **Month**: June **Year**: 2029

Total Project Cost $55,870,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,980	$22,200	$28,690	$55,870
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$4,980**	**$22,200**	**$28,690**	**$55,870**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Water Supply & Conveyance

Project **Semitropic Stored Water Recovery Unit**

Project ID: WP12

Strategic Plan Priority **1.1, 1.3, 1.1**

Project Description Semitropic Water Storage District and Zone 7 finalized the amendment to the Semitropic Banking Program agreement that will provide for additional recovery capacity. On February 18, 2004, the Zone 7 Board approved Zone 7's participation in its proportional share (6.5%) of the Stored Water Recovery Unit (SWRU) project. Under the amendment, Zone 7's minimum recovery capacity increased by 3,250 AFA (from 5,850 AFA to 9,100 AFA).

Zone 7's cost share of the SWRU project is about $1.04 million (not including interest). The total cost of the SWRU project consists of about $10.5 million for a 120-inch pipeline from Semitropic to the California Aqueduct and about $5.5 million for new wells and conveyance enhancements to the Semitropic water system. The $10.5 million pipeline portion of the SWRU project is financed by 30-year bonds (5.266% bond sale interest rate), and debt service is passed on to Zone 7 as annual payments through 2035.

Justification Increase reliability by providing additional water supplies during drought years.

Origin 2004 Agreement between Zone 7 and Semitropic Water Storage District

Responsible Section IP Integrated Planning

Operating Impact Increased operational reliability.

In Service Date **Month**: **Year**: Ongoing

Total Project Cost $1,330,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$50	$50	$60	$60	$60	$60	$70	$70	$70	$70	$710	$1,330
Total	**$0**	**$50**	**$50**	**$60**	**$60**	**$60**	**$60**	**$70**	**$70**	**$70**	**$70**	**$710**	**$1,330**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Transmission & Distribution

Project **Silver Oaks Pump Station Replacement**

Project ID: DS57

Strategic Plan Priority **1.4, 1.12**

Project Description Replacement of the existing pump station in total, including the addtion of a standard block building structure.

Justification Silver Oaks pump station was constructed in 1991 during emergency drought conditions. Never built as a permanent project, Silver Oaks is skid-mounted without a building canopy of any sort and is well past it's useful life. The Asset Management Program lists this project for renewal/replacement in 2020.; Construction of an in-line pump station is currently critical for supplying water from the West when the Patterson Pass Treatment Plant is out of service..

Responsible Section FE Facilities Engineering

Operating Impact Potentially increase wellfield capacity and improve reliability during periods of limited surface water availability.

Origin Asset Management Program

In Service Date **Month**: April **Year**: 2021

Total Project Cost $2,120,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$160	$0	$0	$0	$0	$0	$0	$0	$0	$0	$160
Design	$0	$0	$160	$0	$0	$0	$0	$0	$0	$0	$0	$0	$160
Construction	$0	$0	$0	$1,800	$0	$0	$0	$0	$0	$0	$0	$0	$1,800
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$320**	**$1,800**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,120**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Water Supply & Conveyance

Project **South Bay Aqueduct Enlargement Project**

Project ID: SP5

Strategic Plan Priority **1.1, 1.3, 1.11, 1.12**

Project Description SBA improvements by the California Department of Water Resources (DWR) can convey an additional 130 cubic feet per second (cfs) through Reach 1 and 80 cfs through Reaches 2 through 4. Improvements included an expanded South Bay Pumping Plant, third (parallel) Brushy Creek Pipeline, raised linings on open channel sections and Patterson Pass Reservior, replacement of 54-inch pipe under I-580 with 78-inch pipe (completed March 2002), application of hydraulically smoother elastomeric polyurethane lining on the Altamont Pipeline (completed March 2002), and new 425 acre-foot (operational storage) raw water reservoir (Dyer Reservoir) located near Dyer Road. The project is in-service with ongoing the payments.

Note that Amendment No. 24 of Zone 7's water supply contract with DWR allows for debt financing of the SBA Improvement & Enlargement Project by DWR. Annual repayment by Zone 7 began in 2006 and ends in 2036. To ensure there is adequate funding available to repay debt after buildout occurs (2025), a sinking fund has also been established (project SP12). This sinking fund will fund the remainder of the debt from 2026 to 2036. The costs shown reflect the actual repayment of the debt plus interest for the enlargement component of the project.

Justification Provides for long-term Zone 7 raw water conveyance capacity through planned service-area build-out.

Origin 1999 Water Supply Master Plan, 2001 Water Conveyance Study

Responsible Section FE Facilities Engineering

Operating Impact Provides for enhanced long-term water supply, reliability and flexibility.

In Service Date **Month**: June **Year**: 2035

Total Project Cost $222,738,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$15,081	$14,986	$14,948	$14,945	$15,127	$15,133	$14,982	$15,929	$16,437	$17,349	$67,821	$222,738
Total	**$0**	**$15,081**	**$14,986**	**$14,948**	**$14,945**	**$15,127**	**$15,133**	**$14,982**	**$15,929**	**$16,437**	**$17,349**	**$67,821**	**$222,738**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Water Supply & Conveyance

Project **South Bay Aqueduct Enlargement Project - Sinking Fund**

Project ID: SP12

Strategic Plan Priority **1.1, 1.4, 1.12**

Project Description SBA improvements by the California Department of Water Resources (DWR) can convey an additional 130 cubic feet per second (cfs) through Reach 1 and 80 cfs through Reaches 2 through 4. Improvements included an expanded South Bay Pumping Plant, third (parallel) Brushy Creek Pipeline, raised linings on open channel sections and Patterson Pass Reservior, replacement of 54-inch pipe under I-580 with 78-inch pipe (completed March 2002), application of hydraulically smoother elastomeric polyurethane lining on the Altamont Pipeline (completed March 2002), enlarged Patterson Reservoir, and new 425 acre-foot (operational storage) raw water reservoir (Dyer Reservoir) located near Dyer Road. Project is in service (reference project SP5).

Note that Amendment No. 24 of Zone 7's water supply contract with DWR allows for debt financing of the SBA Improvement & Enlargement Project by DWR. Annual repayment by Zone 7 began in 2006 and ends in 2036. To ensure there is adequate funding available to repay debt after buildout occurs (2025), this project establishes a sinking fund to fund the remainder of the debt from 2030 to 2036. The costs shown reflect the actual repayment of the debt plus interest for the enlargement component.

Justification This sinking fund is necessary to cover contractual costs from 2030 to 2036, during which time there will essentially be minimal on-going water connection fee revenues available because development buildout within the Valley is expected to be nearly complete by this time.

Origin 1999 Water Supply Master Plan, 2001 Water Conveyance Study

Responsible Section FE Facilities Engineering

Operating Impact None.

In Service Date **Month**: **Year**: 2030

Total Project Cost $18,160,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$1,210	$1,260	$1,310	$1,360	$1,410	$1,470	$1,530	$1,590	$1,650	$1,720	$3,650	$18,160
Total	**$0**	**$1,210**	**$1,260**	**$1,310**	**$1,360**	**$1,410**	**$1,470**	**$1,530**	**$1,590**	**$1,650**	**$1,720**	**$3,650**	**$18,160**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Groundwater Basin Management

Project **Stream Gauge Replacement**

Project ID: GW3

Strategic Plan Priority **1.4, 1.5**

Project Description This project provides for the replacement of damaged or destroyed stream gauges which are currently in Zone 7's monitoring network, on an as-needed basis. Zone 7 currently operates seven recorder stream gauging stations in its surface water monitoring program. Future appropriations reflect the anticipated need to replace existing stations.

Justification Zone 7 operates an extensive stream gauging network for the monitoring of basin-wide surface water flow. The stream flow information is used by flood control and to compute groundwater basin inflow, outflow and recharge. From time to time, these gauging stations are damaged or destroyed by storm events. In other cases, the stream courses may be altered, making it necessary to replace existing stations. Replacement of these stations is necessary for the ongoing monitoring of basin recharge operations.

Origin Capital Improvememt Program

Responsible Section GP Groundwater Protection

Operating Impact Facilitates early warning of flood events, permitting water rights data collection and better monitoring of ongoing basin recharge operations including associated salt loading.

In Service Date **Month**: June **Year**: 2030

Total Project Cost $1,040,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$60	$0	$0	$0	$0	$80	$0	$0	$0	$100	$240
Design	$0	$0	$100	$0	$0	$0	$0	$120	$0	$0	$0	$140	$360
Construction	$0	$0	$120	$0	$0	$0	$0	$140	$0	$0	$0	$180	$440
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$280**	**$0**	**$0**	**$0**	**$0**	**$340**	**$0**	**$0**	**$0**	**$420**	**$1,040**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Water Supply & Conveyance

Project **SWP Peaking Payment (Lost Hills & Belridge Water Districts)**

Project ID: WP10

Strategic Plan Priority **1.1, 1.3**

Project Description Zone 7 agreed to pay Lost Hills & Belridge Water Districts the extra SWP peaking payment when we acquired their SWP Table A amounts based on DWR billings to Kern County Water Agency (and to these 2 member agencies). These costs are paid by existing and future users on a sliding scale. The sliding scale is determined by the percent of new connections remaining out of the total connections projected between 1999 and build-out. Costs shown here are Fund 130's cost only.

Justification Reliability of water supply.

Origin Amendments 20, 21 and 25 to Zone 7's water supply contract with DWR

Responsible Section ASD Administrative Services Division

Operating Impact Extra peaking allows Zone 7 to deliver or store additional water when available in the SWP system.

In Service Date **Month**: **Year**: 2035

Total Project Cost $270,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$50	$40	$30	$40	$20	$30	$10	$10	$10	$10	$20	$270
Total	**$0**	**$50**	**$40**	**$30**	**$40**	**$20**	**$30**	**$10**	**$10**	**$10**	**$10**	**$20**	**$270**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy System-Wide Improvements

Program Transmission & Distribution

Project **System-Wide Installation of Line Valves**

Project ID: DS41

Strategic Plan Priority **1.1, 1.4**

Project Description Periodic installation of new line valves in the transmission system, as needed and given opportunity as part of another project, to provide a maximum of 2,000-2,500 feet separation between valves throughout the transmission system.

Justification The installation of additional line valves will reduce service interruptions due to scheduled maintenance and other activities such as leak repairs.

Origin Capital Improvement Program

Responsible Section FE Facilities Engineering

Operating Impact Improve operation and reduce service interruptions.

In Service Date **Month**: **Year**: Ongoing

Total Project Cost $1,920,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$60	$0	$80	$0	$0	$90	$0	$110	$0	$1,580	$1,920
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$60**	**$0**	**$80**	**$0**	**$0**	**$90**	**$0**	**$110**	**$0**	**$1,580**	**$1,920**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement
Expansion

Program Transmission & Distribution

Project **Vasco Pipeline Enlargement and Replacement**

Project ID: DS56

Strategic Plan Priority **1.1, 1.12**

Project Description This project is a transmission pipeline that extends from the Livermore 1 Pipeline (PL)/Vasco 1 PL connection to the Livermore 6 Turnout at the northwest corner of the Northfront/Vasco Road intersection. Project implementation would occur after expanding PPWTP to 24 MGD, and would be timed to accommodate demand growth. This project involves upsizing and replacing the existing, undersized Vasco 1 PL constructed in 1964 and Vasco 2 PL constructed in 1969.

Justification The existing Vasco pipelines do not have the capacity to handle additional capacity from the PPWTP beyond 24 MGD.

Origin 2009 Peer Review of the Altamont Water Treatment Plant Site and Treatment Process Study, 2011 Asset Management Program Update Report, 2015 PPWTP Expansion Feasibility Evaluation, 2016 Transmission System Planning Update

Responsible Section FE Facilities Engineering

Operating Impact Provides needed water system transmission capacity and operational flexibility.

In Service Date **Month**: June **Year**: 2030

Total Project Cost $11,970,000

Source of Funds

Fund 120	Improvement, Renewal & Replacement	33%
Fund 130	Expansion	67%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$890	$0	$890
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$890	$0	$890
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$10,190	$10,190
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,780**	**$10,190**	**$11,970**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Water Supply & Conveyance

Project **Water Supply Planning and Projects**

Project ID: WP21

Strategic Plan Priority **1.1, 1.3, 1.7**

Project Description This project covers planning efforts associated with water supply reliability improvements. It includes—but is not limited to—the evaluation of water supply options such as 1) the Bay Area Regional Desalination Project (BARDP), a joint effort with the San Francisco Public Utilities Commission (SFPUC), Santa Clara Valley Water District (SCVWD), East Bay Municipal Utility District (EBMUD), and Contra Costa Water District (CCWD), to develop a regional desalination facility and 2) potable reuse, which is jointly being evaluated by the Tri-Valley water agencies. Only planning costs are included under this project; engineering and construction costs for the selected water supply option/s are covered under WP16 (Water Supply Replacement). The planning cost estimate is based on approximately ten percent of the estimated total project cost ($95M) for either BARDP or potable reuse, with either project expected to yield about 5,000 acre-feet per year.

Justification To meet Zone 7's reliability policy, Zone 7 is proactively seeking ways to enhance storage flexibility and to diversify its water supply portfolio. Options such as BARDP and potable reuse could improve long-term water supply reliability by providing a local and drought-proof supply of water.

Origin 2015 Urban Water Management Plan, 2016 Water Supply Evaluation Update

Responsible Section IP Integrated Planning

Operating Impact Increased water reliability.

In Service Date **Month**: June **Year**: 2021

Total Project Cost $10,020,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$540	$4,650	$4,830	$0	$0	$0	$0	$0	$0	$0	$0	$10,020
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$540**	**$4,650**	**$4,830**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$10,020**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Water Supply & Conveyance

Project **Water Supply Replacement**

Project ID: WP16

Strategic Plan Priority **1.1, 1.3, 1.7**

Project Description An extensive list of potential replacement water supplies, including costs, were identified as part of the 2011 Water Supply Evaluation (2011 WSE) to replace the water supply lost due to a projected reduction in the long-term average yield of State Water Project (SWP) Table A Amounts. Pending the completion of additional analysis and studies recommended in the 2011 WSE, this project could include, but is not limited to, any combination of operational improvements, water conservation, recycled water, desalination, or water transfers.

Justification Most of the water transfers acquired by Zone 7 since 1999 for future development were Table A water associated with the SWP. The long-term average yield of Table A water used to be 75%; however, the projected yield is now only 60% (DWR's 2009 Reliability Report) due to legal and environmental constraints in the Sacramento-San Joaquin Delta. This project will pay for the additional supply necessary to replace the lost yield associated with the reduced reliability of the SWP.

Origin 2011 Water Supply Evaluation Report

Responsible Section IP Integrated Planning

Operating Impact Ensures a reliable supply of high quality water.

In Service Date **Month**: June **Year**: 2025

Total Project Cost $108,520,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$4,980	$5,170	$5,380	$0	$0	$0	$0	$0	$0	$15,530
Construction	$0	$0	$0	$0	$0	$0	$47,800	$45,190	$0	$0	$0	$0	$92,990
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$4,980**	**$5,170**	**$5,380**	**$47,800**	**$45,190**	**$0**	**$0**	**$0**	**$0**	**$108,520**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Renewal/Replacement

Program Wells

Project **Wellfield Switchboard Replacement Project**

Project ID: W40

Strategic Plan Priority **1.1, 1.4**

Project Description This is a project based on facilities nearing the end of their original useful life (OUL) in the Asset Management Program. This project will include all planning, design, and construction needed to replace existing switchboards at Hopyard Well 6 and Mocho Well 1.

Justification According to the AMP Database, these electric switchboards are reaching the end of their useful life. The switchboards are critical to the proper operation and function of the production wells.

Origin Asset Management Program

Responsible Section FE Facilities Engineering

Operating Impact System reliability.

In Service Date **Month**: June **Year**: 2024

Total Project Cost $1,640,000

Source of Funds Fund 120 Improvement, Renewal & Replacement 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$40	$0	$0	$0	$0	$0	$40
Design	$0	$0	$0	$0	$0	$0	$300	$0	$0	$0	$0	$0	$300
Construction	$0	$0	$0	$0	$0	$0	$1,300	$0	$0	$0	$0	$0	$1,300
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,640**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,640**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Capital Improvement Project Summary Report

Strategy Expansion

Program Transmission & Distribution

Project **Westside Transmission System Improvements**

Project ID: DS52

Strategic Plan Priority **1.1, 1.12**

Project Description This project involves making improvements to the west side of Zone 7's transmission system to address system limitations in meeting near-term Maximum Day Demand and hourly peaking and to accommodate future growth. The project could involve new pipelines, replacement and upsizing of existing pipelines and/or a pump station. The costs are based on a new 10,000-foot, 30-inch diameter pipeline envisioned as the East Dublin Connector. Construction of this pipeline will be re-evaluated in the fture along with required replacements of Santa Rita and Hopyard pipelines to determine the best option. The amount here represents new development's share of ultimate costs. The timing for this project is matched with planned replacement of the Hopyard Pipeline.

Justification This project is needed to ensure that Zone 7 is able to meet peak demands in the near-term and through buildout. Improvements to the west side of the transmission system will allow more optimized use of Zone 7 production and storage capacities.

Origin 2011 Water Supply Evaluation, 2016 Transmission System Planning Update

Responsible Section FE Facilities Engineering

Operating Impact Improved transmission system operation and reliability. Additional renewal/replacement costs.

In Service Date **Month**: June **Year**: 2030

Total Project Cost $18,280,000

Source of Funds Fund 130 Expansion 100%

($1,000)

Appropriation	Prior	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Future	Total
Planning	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Design	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,710	$15,570	$18,280
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,710**	**$15,570**	**$18,280**

Note: 'Future' means all the project costs from FY 25/26 through FY 39/40, which is the planning horizon.

Appendix C

STRATEGIC PLANNING PRIORITIES

Zone 7 Water Agency

Strategic Planning Priorities

August 2017

Introduction

This document is intended to be a quick reference to Zone 7 Water Agency's *Strategic Planning Priorities* identified by the Board of Directors with input from members of the staff.

Establishing *Strategic Planning Priorities* enables Zone 7 to focus on its most immediate needs in an efficient and cost-effective manner. Participation of employees and the retailers not only improves the process and ultimate work product but it also helps secure their support for what the Agency needs to accomplish to effectively serve the public and comply with its mission statement. Ranking the strategic priorities helps Zone 7 staff know where to focus its attention in a sea of too many priorities to possibly address at the same time. Review by the Board of Directors and Executive Staff of the strategic planning priorities will take place periodically and will help ensure that tasks are finished, continue to be pursued, or adjusted as circumstances may require.

Strategic Planning Priorities

Zone 7 Water Agency's Strategic Planning Priorities are in support of its mission statement that was developed during a Board of Directors workshop several years ago and is considered still very relevant.

> *Zone 7 is committed to providing a reliable supply of high-quality water and an effective flood control system to the Livermore-Amador Valley. In fulfilling our present and future commitments to the community, we will develop and manage the water resources in a fiscally responsible, innovative, proactive, and environmentally responsible way.*

The five general priorities headings under which more specific strategic planning priorities are listed are not placed in any particular order of importance. The strategic planning priorities under each general heading, however, are listed in order of importance as identified by the Board of Directors and the Executive Staff as constituted at the time. Some priorities that were not scored by the Board and Executive Staff as being "given" (meaning they are obviously a priority), have been moved to a higher position on the list.

1 Provide customers with a reliable, cost-effective and safe water supply.

1.1 Provide safe, adequate, reliable, cost effective drinking water to the retailers for their customers and Zone 7's constituency.

1.2 Comply with all water quality regulatory requirements.

1.3 Ensure long-term water supply reliability for the valley.

1.4 Operate and maintain, and upgrade and/or replace when appropriate, existing treatment plants, transmission facilities and other infrastructure.

1.5 Protect and properly manage groundwater supplies.

1.6 Update long-term water supply planning.

1.7 Review water reliability policy.

1.8 Continue to work with other South Bay Aqueduct contractors to explore possible advantages of increased opportunities for local water storage or partnership in regional water supply projects.

1.9 Work with retailers to develop more local water supplies, including the use of more recycled water.

1.10 Participate in Delta discussions to protect the Agency's contractual water supply from the State Water Project.

1.11 Fulfill contractual water supply obligations.

1.12 Plan, design and construct additional water treatment plants and transmission facilities as they become necessary.

1.13 Balance improving water quality with fiscal constraints.

1.14 Develop long-term balanced management of watersheds, including a plan for the future of the Lake Del Valle Property.

1.15 Manage the watershed to maintain and improve source water quality to protect public health and safety.

1.16 Continue implementation and development of planning for the Chain of Lakes.

2 Provide Eastern Alameda County with an effective system of flood protection.

2.1 Continue the stream maintenance program to maintain the effectiveness of flood protection facilities.

2.2 Continue implementation and development of planning for the Chain of Lakes.

2.3 Revisit the SMMP in light of current and long-term fiscal constraints.

2.4 Collaborate with cities and landowners on flood protection improvements.

2.5 Cooperate and collaborate where necessary and beneficial with various state and federal agencies in environmental enhancement efforts.

2.6 Consider alternative funding sources for the SMMP.

2.7 Incorporate any implementation of the SMMP into the CIP.

2.8 Obtain multi-year programmatic permit and engineering report for stream maintenance.

2.9 Increase public awareness of flood preparedness efforts.

3 Provide the Agency with effective organization, administration and governance.

3.1 Evaluate staff organization in light of changing work functions and demands.

3.2 Continue to evaluate and, if beneficial, separate some functions from the County.

3.3 Develop a succession plan to ensure continued effective management and operations of the Agency.

3.4 Improve internal communications.

3.5 Work with community colleges and water agency associations in efforts to attract and retain sufficient staff to offset anticipated retirements.

3.6 Increase staff productivity and effectiveness with greater use of technology.

3.7 Develop a digital-based, integrated, secure and remotely accessible database of engineering plans and drawings, project management data linked to cost factors, and other correspondence and information.

3.8 Assure adequate security and emergency preparedness.

4 Operate the Agency in a fiscally-responsible manner.

4.1 Maintain the Agency's fiscal health

- 4.1.1 Produce a Comprehensive Annual Financial Report (CAFR) annually
- 4.1.2 Complete a credit rating for the agency to enable bond financing for future capital projects
- 4.1.3 Maintain the Agency's reserves to meet the requirements

4.2 Ensure integrity and transparency of the Agency's financial processes and develop internal controls for the following policies and any future related policies:

- 4.2.1 Reserve Policy
- 4.2.2 Purchasing Policy
- 4.2.3 Investment Policy
- 4.2.4 Debt Policy

4.3 Evaluate the cost/benefits of functions traditionally performed by the Zone's consultants and contractors.

4.4 Continue to participate in regional and other efforts to obtain state and federal grant funds to offset the cost of facilities and programs.

4.5 Continue review of procurement, contracting and other practices to see where more cost savings can be obtained.

5 Increase public understanding of the Agency and its functions.

5.1 Improve public outreach efforts and collaboration with retailers.

5.2 Continue water conservation and flood preparedness emphasis in the Agency's public information efforts.

5.3 Improve the effectiveness of communicating Zone's messages to the public.

5.4 Maintain and improve the Agency's media relations program.

5.5 Maintain an effective schools program.

5.6 Evaluate the use of technology to convey the Agency's messages

5.7 Cooperate with other public agencies for recreational access by the public on appropriate agency properties.

Appendix D

WATER SYSTEM POLICIES AND GOALS

ZONE 7
ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

BOARD OF DIRECTORS

RESOLUTION NO. 99-2068

INTRODUCED BY DIRECTOR LAYTON

SECONDED BY DIRECTOR MARCHAND

WHEREAS, Zone 7 serves as the overall water quality management agency for the Alameda Creek watershed above Niles and has primary responsibility for management of the Livermore-Amador Valley's surface and groundwater resources;

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the Zone 7 Water Agency does hereby support the proposed Salt Management Program Implementation Plan and inclusion of the following policy goals in the Zone 7 annual operations plan:

- Offset the current 2200 tons per year of salt loading plus approximately 200 tons per year current projected annual increase;
- Maintain or improve groundwater mineral quality;
- Maintain or improve delivered water quality;
- Provide comparable delivered water quality to all retailers;
- Provide a mechanism for mitigation of all salt loading associated with recycled water use;
- Minimize total operational and maintenance costs through an adaptive management process.

BE IT FURTHER RESOLVED that the Zone 7 General Manager is hereby authorized to proceed with the recommended year 2000-2002 Salt Management Implementation Plan.

ADOPTED BY THE FOLLOWING VOTE:

AYES: DIRECTORS CONCANNON, FIGUERS, LAYTON, MARCHAND, STEVENS

NOES: NONE

ABSENT: DIRECTORS GRECI, KALTHOFF

ABSTAIN: NONE

I certify that the foregoing is a correct copy of a resolution adopted by the Board of Directors of Zone No. 7 of the Alameda County Flood Control and Water Conservation District on AUG 18 1999

ATTEST: _____

BY : Sandy Figuers

ZONE 7
ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

BOARD OF DIRECTORS

RESOLUTION NO 13-4230

INTRODUCED BY DIRECTOR QUIGLEY
SECONDED BY DIRECTOR STEVENS

Water Supply Reliability Policy

WHEREAS, the Zone 7 Board of Directors desires to maintain a highly reliable Municipal and Industrial (M&I) water supply system so that existing and future M&I water demands can be met during varying hydrologic conditions; and

WHEREAS, the Board has an obligation to communicate to its M&I customers and municipalities within its service area the ability of Zone 7's water supply system to meet projected water demands; and

WHEREAS, the Board on August 18, 2004 adopted Resolution No. 04-2662 setting forth its Reliability Policy for Municipal & Industrial Water Supplies; and

WHEREAS, the Board desires to revise the Reliability Policy to reflect recent data, analysis, and studies.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby rescinds Resolution No. 04-2662 adopting the August 18, 2004 Reliability Policy for Municipal & Industrial Water Supplies; and

BE IT FURTHER RESOLVED that the Board hereby adopts the following level of service goals to guide the management of Zone 7's M&I water supplies as well as its Capital Improvement Program (CIP):

Goal 1.Zone 7 will meet its treated water customers' water supply needs, in accordance with Zone 7's most current Contracts for M&I Water Supply, including existing and projected demands as specified in Zone 7's most recent Urban Water Management Plan (UWMP), during normal, average, and drought conditions, as follows:

- At least 85% of M&I water demands 99% of the time
- 100% of M&I water demands 90% of the time

Goal 2:Provide sufficient treated water production capacity and infrastructure to meet at least 80% of the maximum month M&I contractual demands should any one of Zone 7's major supply, production, or transmission facilities experience an extended unplanned outage of at least one week.

BE IT FURTHER RESOLVED that to ensure that this Board policy is carried out effectively, the Zone 7 General Manager will provide a water supply status report to the Board every five years with the Zone 7 Urban Water Management Plan that specifies how these goals will be, or are being, achieved.

If the General Manager finds that the goals cannot be met during the first five years of the Urban Water Management Plan, then the Board will hold a public hearing within two months of the General Manager's finding to consider remedial actions that will bring Zone 7 into substantial compliance with the stated level of service goals. Remedial actions may include, but are not limited to, voluntary conservation or mandatory rationing to reduce water demands, acquisition of additional water supplies, and/or a moratorium on new water connections. After reviewing staff analyses and information gathered at the public hearing, the Board shall, as expeditiously as is feasible, take any additional actions that are necessary to meet the level of service goals during the following five-year period; and

BE IT FURTHER RESOLVED that the Zone 7 General Manager shall prepare an Annual Review of the Sustainable Water Supply Report which includes the following information:

(1) An estimate of the current annual average water demand for M&I water as well as a five-year projection based on the same information used to prepare the UWMP and CIP;
(2) A Summary of available water supplies to Zone 7 at the beginning of the calendar year;
(3) A comparison of current water demand with the available water supplies; and
(4) A discussion of water conservation requirements and other long-term supply programs needed to meet Zone 7 M&I water demands for single-dry and multiple-dry year conditions, as specified in the Zone 7's UWMP.

A summary of this review will be provided to M&I customers.

Definitions

Level of Service for Annual Water Supply Needs—the level of service is the percent of existing or projected water demand that Zone 7's water supply system can meet during two key conditions: (1) during various hydrologic conditions and (2) during unplanned outages of major facilities. *Capital Improvement Program (CIP)*—the CIP is Zone7's formal program for developing surface and ground water supplies, along with associated infrastructure, including import water conveyance facilities, surface water treatment plants, groundwater wells, and M&I water transmission system to meet projected water demands.

Normal conditions—conditions that most closely represent median runoff or allocation from all normally contracted or available water supplies from the historic record.

Average conditions—conditions that most closely represent the average runoff or allocation from all normally contracted or legally available water supplies from the historic record.

Drought conditions—conditions that most closely represent reduced runoff or allocation level from the historic record from all normally contracted or legally available water supplies, including both single-dry and multiple-dry year conditions.

Single-dry year condition—a condition that most closely represents the lowest yield over a one-year period from the historic record from all normally contracted or legally available supplies.

Multiple-dry year condition—a condition that most closely represents three or more consecutive dry years from the historic record that represent the lowest yields from all normally contracted or legally available supplies.

Available water supplies—consist solely of (1) water supplies that Zone 7 has contracted for (e.g., listed under Schedule A of the State Water Contract, dry-year water options, special contracts with other water districts, etc.) and (2) water actually stored in surface and subsurface reservoirs.

Maximum Month—the largest monthly average water use.

ADOPTED BY THE FOLLOWING VOTE:

AYES: DIRECTORS FIGUERS, GRECI, MACHAEVICH, PALMER, QUIGLEY, RAMIREZ HOLMES STEVENS

NOES: NONE

ABSENT: NONE

ABSTAIN: NONE

I certify that the foregoing is a correct copy of a Resolution adopted by the Board of Directors of Zone 7 of the Alameda County Flood Control and Water Conservation District on October 17, 2012.

By _____
President, Board of Directors

ZONE 7
ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
BOARD OF DIRECTORS

RESOLUTION NO 14-4365

INTRODUCED BY DIRECTOR PALMER
SECONDED BY DIRECTOR GRECI

Revised Water Quality Policy for Potable and Non-potable Water

WHEREAS, the Zone 7 Board of Directors is committed to delivering high quality water supplies to its potable (treated drinking water) Municipal and Industrial (M&I) Contractors that meet all public health regulatory requirements; and

WHEREAS, the Board endeavors to, in a manner that is fiscally responsible, proactive, and environmentally sensitive, deliver potable water that is aesthetically acceptable to its M&I Contractors; and

WHEREAS, the Board endeavors to provide potable water of an approximately equal quality within its operational capabilities to each M&I Contractor without diminishing existing water quality at any Contractors' turnouts; and

WHEREAS, the Board endeavors to provide non-potable water of an appropriate quality for its untreated water users from current surface and ground water supplies, and as a blended source of untreated and recycled water, when available; and

WHEREAS, the Board on April 16, 2003 adopted Resolution No. 03-2494 setting forth its Water Quality Policy for Potable and Non-potable Water after extensive discussion with stakeholders, and with the support of its M&I Contractors and untreated water users; and

WHEREAS, the adopted Water Quality Policy called for an Implementation Plan to be prepared as part of the Water Quality Management Program which shall be reviewed and updated every two years, or sooner if required, to reflect any emerging water quality issues and other regulatory and/or technology developments; and

WHEREAS, the Implementation Plan was completed in April 2003 which established internal water quality targets for guiding operations and capital improvements and recommended several capital projects for meeting the water quality targets; and

WHEREAS, the Board on August 17, 2005 adopted Resolution No. 06-2783 setting forth its Joint Water Quality Resolution with two of its M&I Contractors, City of Pleasanton and Dublin San Ramon Services District, for a work plan to update the Implementation Plan which included schedules and several policy principles to be evaluated; and

WHEREAS, the Implementation Plan was updated in December 2006 per the 2005 Joint Water Quality Resolution and every two years after; and

WHEREAS, Zone 7 has incorporated the internal water quality targets into various operations plans, planning documents, and design criteria as appropriate; and

WHEREAS, the capital projects recommended by the 2003 Implementation Plan and its updates have been implemented, completed, or incorporated into Zone 7's ongoing Capital Improvement Program (CIP); and

WHEREAS, the Board desires to revise the 2003 Water Quality Policy and the 2005 Joint Water Quality Resolution to reflect current condition of water quality and project status as well as the expectations of its M&I Contractors and untreated water users.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby rescinds Resolution No. 03-2494 adopting the 2003 Water Quality Policy and Resolution No. 06-2783 adopting the 2005 Joint Water Quality Resolution; and

BE IT FURTHER RESOLVED that the Board hereby adopts the following policy goals regarding water quality to guide the Zone 7 potable and non-potable water operations and its CIP:

GOAL 1 – Zone 7 shall continue to meet all State and federal primary Maximum Contaminant Levels[1] (MCLs) for potable water delivered to the M&I Contractors' turnouts. In addition, Zone 7 shall deliver potable water of a quality that is as close as technically feasible and fiscally responsible to the Public Health Goals[2] (PHGs) and/or Maximum Contaminant Level Goals[3] (MCLGs). To ensure a margin of safety, the delivered water shall generally be of a quality that contains no greater than 80 percent of the applicable State or federal primary MCLs.

GOAL 2 – Zone 7 shall meet all State and federal secondary MCLs[1] in the potable water delivered to its M&I Contractors' turnouts. In addition, Zone 7 shall, within technical and fiscal constraints, proactively mitigate earthy-musty taste and odor events[4] from surface water supplies and reduce hardness levels to "moderately hard", defined as 75 to 150 mg/L. Also, Zone 7 shall optimize its treatment processes to minimize chlorinous odors by maintaining consistent disinfectant dosage and residual.

GOAL 3 – Zone 7 shall endeavor to deliver to its untreated water turnouts, from a variety of sources, water of a quality that meets the irrigation needs and does not negatively impact vegetation, crops, or soils.

GOAL 4 – In order to achieve Goals 1 through 3, Zone 7 shall continue to work to improve the quality of its source waters. This may be achieved through Zone 7's Salt and Nutrient Management Plan, which will maintain or improve the water quality in the groundwater basin, and through advocacy of improvements in the State Water Project, its facilities and their operations, which may improve the source water of Zone 7's surface water supplies.

GOAL 5 – Zone 7 will partner with M&I Contractors to assist them in taking similar steps as those outlined in this policy to maintain or improve the quality of water delivered to the M&I Contractor's retail customers.

BE IT FURTHER RESOLVED that this Board policy be reviewed and updated as needed. Also, to ensure that this Board policy is carried out effectively, the Zone 7 General Manager shall implement the following actions:

- Maintain a regular dialog with the M&I Contractors and untreated water users as appropriate and provide opportunities for meaningful and timely input;

- Conduct a workshop with the M&I Contractors to develop a Water Quality Management Program Report every two years. The workshop will review emerging water quality issues and relevant regulatory and/or technology developments, review status of key parameters of concern in relation to their water quality targets, review water quality policy and need for updates, and review status of relevant water quality improvement projects/activities. The Report shall include any recommended revisions to the water quality targets and/or recommended projects/activities to assist in meeting the water quality targets. Optimization of system operations will be recommended, where possible, prior to the identification of the need for capital improvements. The Report recommended capital improvements shall be incorporated into Zone 7's biennial update of the Ten-Year Water System CIP.

- Work with the M&I Contractors to develop joint educational and notification materials for the public regarding Valley's water supplies, emphasizing all the actions taken and to be taken to improve water quality, including how those actions affect each Contactor.

- Establish and facilitate a joint operations workgroup consisting of operations staff from Zone 7 and the M&I Contractors to coordinate data collection and analysis and to coordinate operating practices to improve and minimize variations in delivered water quality.

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[1] Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

[2] Public Health Goal (PHG): The level of a primary contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

[3] Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the United States Environmental Protection Agency.

[4] An event is defined as when three or more similar complaints are received in a 7-day period.

ADOPTED BY THE FOLLOWING VOTE:

AYES: DIRECTORS GRECI, FIGUERS, PALMER, RAMIREZ HOLMES, STEVENS

NOES: NONE

ABSENT: DIRECTOR MACHAEVICH, QUIGLEY

ABSTAIN: NONE

I certify that the foregoing is a correct copy of a Resolution adopted by the Board of Directors of Zone 7 of the Alameda County Flood Control and Water Conservation District on April 16, 2014.

By _____
President, Board of Directors