City of Mountain View

RECYCLED WATER FEASIBILITY STUDY

FINAL | March 2022

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Abbreviations

ac-ft	acre-feet
A&E	Architectural & Engineering
AFY	acre-feet per year
AWPS	advanced water purification system
Cal Water	California Water Company
CAP	Climate Action Plan
CCF	one hundred cubic feet of water
CEQA	California Environmental Quality Act
CIMIS	California Irrigation Management Information System
City or Mountain View	City of Mountain View
COLD	Cold Freshwater Habitat
CWAP	California Water Action Plan
CWSRF	Clean Water State Revolving Fund
DDW	California Division of Drinking Water
DIF	development impact fees
DMF	dual media filtration
DWR	Department of Water Resources
ERW	"enhanced" recycled water
ETo	evapotranspiration
FRSH	Freshwater Replenishment
ft	foot (feet)
fps	feet per second
FYE	fiscal year end
GGRP	Greenhouse Gas Reduction Program
GMP	Groundwater Management Plan
GO	general obligation
gpm	gallons per minute
GSA	Groundwater Sustainability Agency
GWR	Groundwater Recharge
HIO/R&D	high intensity office/research and development
hp	horsepower
in	inches
IPS	irrigation pump station
LF	linear foot
MDD	maximum day demand
MG	million gallons
mgd	million gallons per day

mg/L	milligrams per liter
MIGR	Fish Migration
Mountain View	City of Mountain View
MUN	Municipal Supply
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
O&M	operations and maintenance
PAYGO	pay-as-you-go
PHD	peak hour demand
psi	pounds per square inch
REC-1	Water Contact Recreation
REC-2	Noncontact Water Recreation
RWFS	Recycled Water Feasibility Study
RWQCB	Regional Water Quality Control Board
RWQCP	Regional Water Quality Control Plant
SCVWD	Santa Clara Valley Water District
SFPUC	San Francisco Public Utilities Commission
SGMA	Sustainable Groundwater Management Act
SPWN	Fish Spawning
sq ft	square foot(feet)
SRF	State Revolving Fund
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
UWMP	Urban Water Management Plan
VW	Valley Water
WARM	Warm Freshwater Habitat
WILD	Wildlife Habitat
WRCC	Western Regional Climate Center
WRF	Water Recycling Funding

Chapter 1
INTRODUCTION AND BACKGROUND

1.1 Introduction

This Report updates the City of Mountain View's (Mountain View or City) 2014 Recycled Water Feasibility Study (RWFS) due to several recent changes in the community that could affect the overall reuse strategy. The main changes addressed in this 2022 RWFS update include:

- *New dual plumbing ordinance:* In 2016, the City passed a city-wide ordinance for all new commercial building developments larger than 25,000 square-feet (sq-ft) (excluding those that have a residential component such as hotels) to be dual plumbed with potable and recycled water. This assumes recycled water could be made available throughout the city.
- *Preference to focus on two high growth areas:* The 2014 RWFS analyzed reuse at a high level throughout the entire City. This study focuses on reuse in the City's recommended expansion areas – the East Whisman and the North Bayshore areas.
- *Advanced/changed treatment technologies/practices at the regional wastewater treatment facility:* The advanced water purification system (AWPS) and associated system operational changes at the Regional Water Quality Control Plant (RWQCP) are projected to be completed in 2024 and are considered in this 2022 update.
- *Water Reuse Agreement with Valley Water:* A partnership was enacted in late 2019 between the Cities of Mountain View, Palo Alto, and Valley Water to allocate water use throughout Santa Clara County. The supplies for existing and future recycled water users in Mountain View will need to be reviewed and updated to ensure recycled water use is within the Agreement terms.
- *Update the hydraulic model:* The hydraulic model for the recycled water system was developed as part of the 2014 RWFS. The model was updated for the changes that occurred as part of this RWFS update, based on customer and billing data supplied by the City.
- *Recycled water storage analysis:* Storage is an imperative part of any reuse system to help ease the supply versus demand timing.

This RWFS is formatted as follows:

Chapter 1 – Introduction; local area characteristics; water supply, characteristics, and facilities; wastewater characteristics and facilities; and regional recycled water characteristics and facilities

Chapter 2 – City recycled water characteristics and facilities, recycled water use requirements, recycled water market, and previous system recommendations.

Chapter 3 – Recycled water project alternatives analysis.

Chapter 4 – Recommended project, funding, and financing.

The City contracted with Carollo Engineers to provide engineering services to conduct this RWFS.

The reference materials used to develop this study are summarized in Appendix A.

Letters of support for the City's recycled water program are contained in Appendix B.

1.2 Local Study Area Characteristics

1.2.1 Study Area

Mountain View is situated in Santa Clara County in the southwestern portion of the Bay Area in Northern California. Figure 1.1 shows the location of the City of Mountain View in its regional context. The main study area includes the two high growth areas of the City, East Whisman and North Bayshore. Figure 1.2 shows the City boundary, which is also their water service area, and the location of the RWQCP in Palo Alto. The entire City is the study area when considering the new plumbing ordinance and its effects.

1.2.2 Hydrologic Features

Mountain View is located within the Santa Clara Valley Groundwater Basin (Department of Water Resources [DWR] Basin 2-9.02) as defined in the San Francisco (SF) Bay Basin Plan (RWQCB, 2007). Its associated sub basin is the Santa Clara Groundwater Sub-Basin. This Basin and Sub-Basin are also known as Coyote Valley (or Coyote), per the SF Bay Basin Plan.

The main drainage feature of the Santa Clara Valley Groundwater Basin is Coyote Creek, which enters the Coyote Valley from the southeast and flows northwesterly through Santa Clara Valley before entering San Francisco Bay. Other major drainages in the Basin include the Guadalupe River, Los Gatos Creek, San Tomas Creek, Saratoga Creek, Calabazas Creek, Stevens Creek, and Permanente Creek. These drainages originate in the Santa Cruz Mountains (RWQCB, 2003).

Between the early 1900s and the mid-1960s, groundwater levels in the basin declined more than 200 feet due to over-pumping. Since that time, the need for pumping has been reduced by the importation of water through the Hetch Hetchy and South Bay Aqueducts, allowing groundwater levels to rebound (DWR, 2004).

Natural recharge in the basin occurs principally through streambed infiltration and direct percolation of rainfall. Because Mountain View's service area overlies only the confined portions of the aquifer, recharge occurs outside the City's service area, to the west (natural recharge only) and south (natural and artificial recharge).

1.2.3 Climate

Mountain View's climate is semi-arid and temperate, with an average annual temperature of 58 degrees Fahrenheit (ºF), an average low of 47 ºF and an average high of 69 ºF. The average annual precipitation is 15 inches with rainfall generally occurring between November and April (Urban Water Management Plan [UWMP], 2015). Table 1.1 presents climate data in the area, including average values of temperature, precipitation, and evapotranspiration.

1.2.4 Climate Action Plan

Mountain View developed a Climate Action Plan (CAP) to "measure, monitor, and mitigate the effects of climate change in the City". As a precursor to the CAP, in 2012 the City developed a Greenhouse Gas Reduction Program (GGRP) in conjunction with the City's 2030 General Plan. The CAP discusses the potential impacts of climate change (e.g., extreme weather, more frequent flooding, sea level rise) and identifies greenhouse gas reduction strategies the City could implement to address the gap between the reductions likely to be achieved through the GGRP and those needed to meet the City's adopted targets.

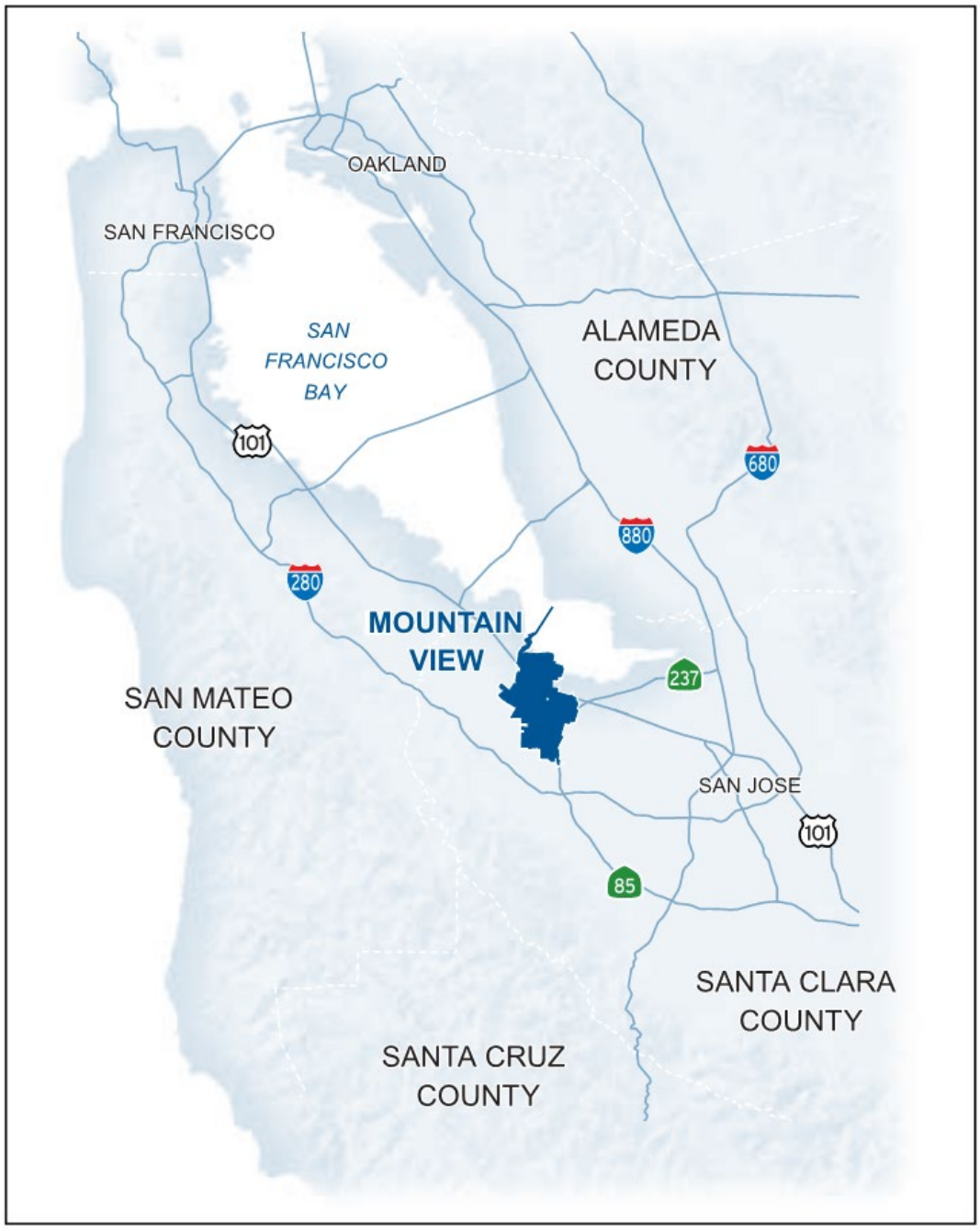

Figure 1.1 City of Mountain View Location

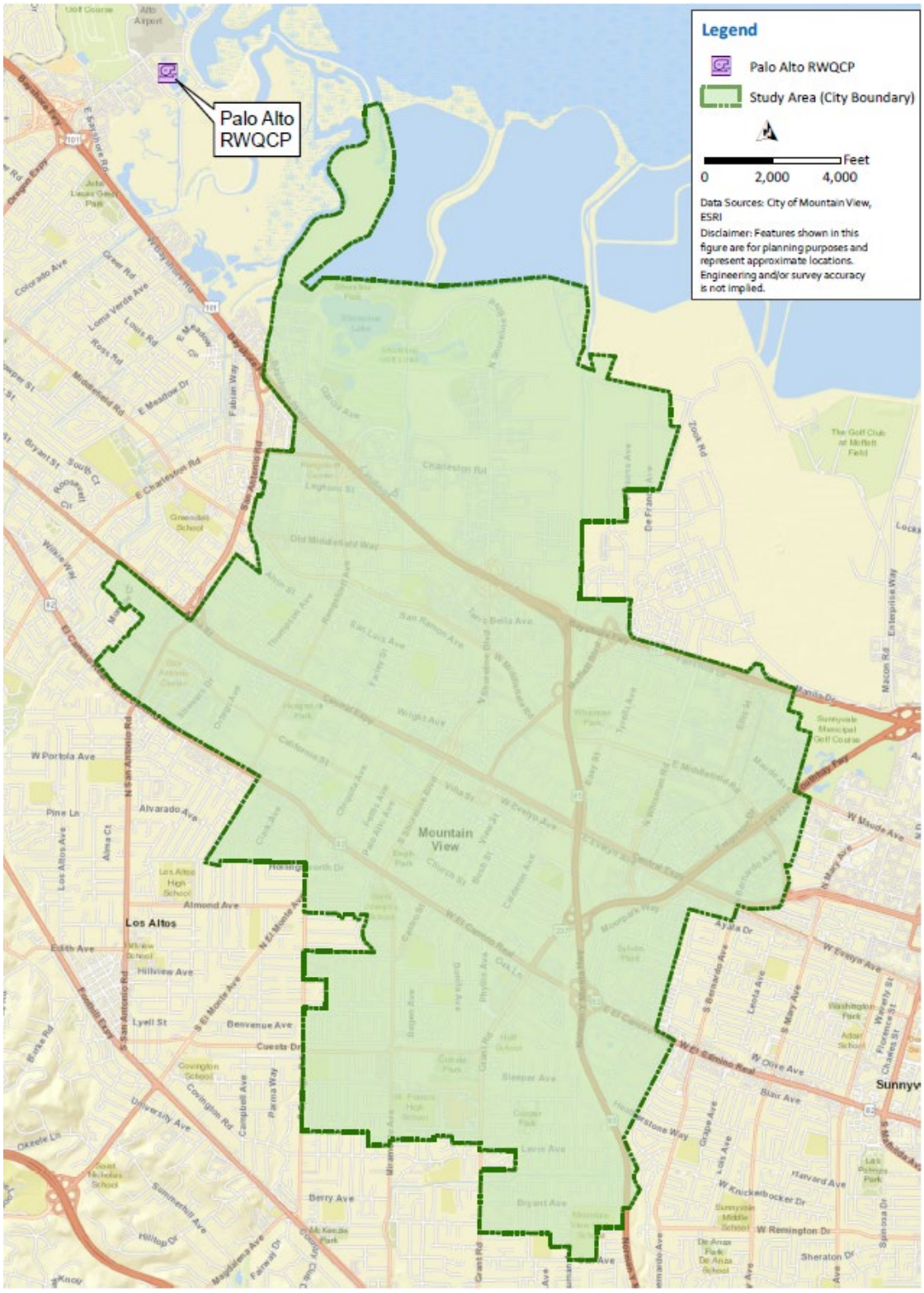

Figure 1.2 Study Area

Table 1.1 Climate Data for the City of Mountain View

Climate Parameter	Month												
	January	February	March	April	May	June	July	August	September	October	November	December	Total
ETo, (inches)[1,2]	1.15	1.62	3.08	4.64	5.58	6.37	6.88	6.47	4.78	3.68	1.66	1.24	47.2
Average Temperature (°F)[3]	49.5	52.5	54.0	57.2	60.4	64.4	65.8	66.2	66.0	62.1	55.4	50.0	58.6
Average Rainfall (inches)[4]	3.22	2.88	2.31	1.00	0.39	0.09	0.02	0.05	0.18	0.70	1.81	2.77	15.4

Notes:
(1) ETo = evapotranspiration based on standard grass as reference.
(2) Data from California Irrigation Management Information System (CIMIS) for San Benito (Station No. 126); San Benito experiences similar weather to Mountain View (Mountain View, 2011a).
(3) Data from Moffett Field National Oceanic and Atmospheric Administration (NOAA) weather station.
(4) Data for Palo Alto from the Western Regional Climate Center (WRCC), monthly averages for the period of record from 9/1/1953 to 12/31/2005; City of Mountain View data was not available from WRCC.

1.2.5 Land Use and Population

The City encompasses approximately 6,500 acres of land area, not including roads and other rights-of-way. Mountain View is a community with a service population estimated at 79,772 as of 2020 (Mountain View, 2021), with a mix of land uses, including single- and multi-family neighborhoods, commercial centers, and industrial districts. By 2040, the water service area is projected to reach 110,630 residents and 120,780 jobs (Mountain View, 2021).

Land use from the City's Approved 2030 General Plan is illustrated on Figure 1.3. The General Plan was adopted by City Council on July 10, 2012.

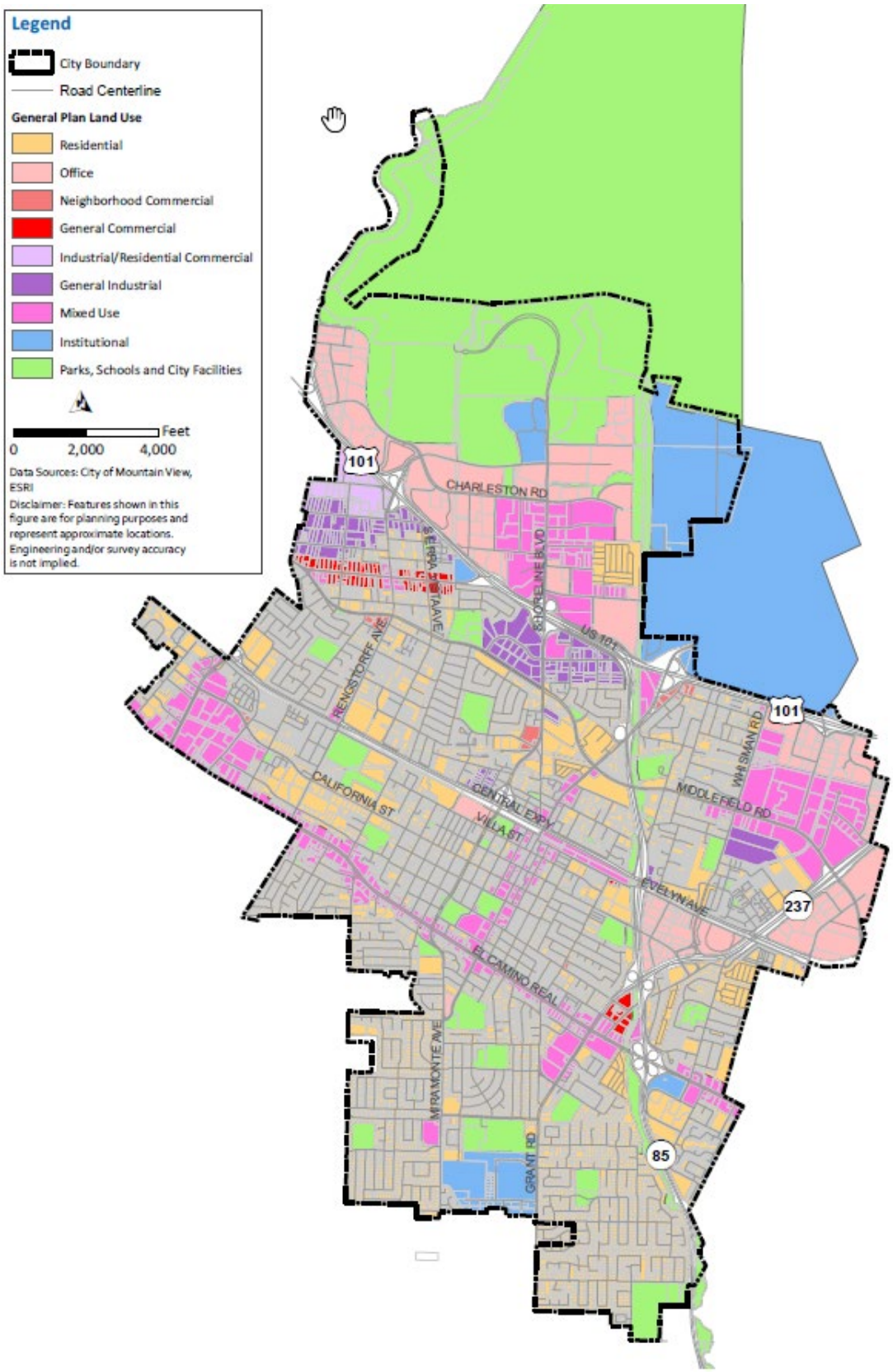

Figure 1.3 City of Mountain View Land Use Map

1.3 Water Supply, Characteristics and Facilities

Mountain View purchases approximately 84 percent of its water from the San Francisco Public Utilities Commission (SFPUC) through the Hetch Hetchy system and approximately 10 percent from Valley Water (VW) (formerly Santa Clara Valley Water District). The remaining supply comes from local groundwater wells and recycled water from the RWQCP (Mountain View, 2021).

Most of the City is served by Mountain View's municipal water system. A small number of customers in the City are served by the neighboring California Water Company (Cal Water). The City also provides water to a Federally-owned housing development located in an unincorporated enclave near the intersection of Moffett Boulevard and Middlefield Road.

1.3.1 Water Sources and Water Quality

1.3.1.1 Surface Water

Most of Mountain View's supply is derived from SFPUC, with less than 10 percent each provided by Valley Water, local groundwater, and recycled water. The SFPUC supply originates predominantly from the Sierra Nevada, but also includes treated water produced by the SFPUC from its local watersheds and facilities in Alameda and San Mateo Counties. The Hetch Hetchy water from the Sierra Nevada does not require filtration prior to introduction into the potable distribution system. The remaining surface water sources are also of high quality. SFPUC water sources are low in total dissolved solids (TDS) and hardness.

VW imports water from the Sierra Nevada through the Sacramento-San Joaquin Delta, captures local surface water in its reservoirs, and recharges local groundwater basins. Local and imported surface water is treated at VW facilities and distributed to retail suppliers or used for groundwater recharge. Water from VW is also of high quality, though with slightly higher TDS and hardness than the SFPUC water.

The City's service area lies mainly within the Permanente Creek Watershed. Beneficial uses for inland streams include Cold Freshwater Habitat (COLD), Warm Freshwater Habitat (WARM), Fish Spawning (SPWN), Wildlife Habitat (WILD), Fish Migration (MIGR), Water Contact Recreation (REC-1), Noncontact Water Recreation (REC-2), Freshwater Replenishment (FRSH), Groundwater Recharge (GWR), and Municipal Supply (MUN). Despite their designation as a potential municipal supply, the local surface waters are not used as sources for potable water supply by the City.

1.3.1.2 Groundwater

The City operates four groundwater wells which help to supplement their surface water supplies. They also own an inactive irrigation well which has been out of commission since 2008. General groundwater quality in the local aquifer is monitored by DWR.

In 2014, the Sustainable Groundwater Management Act (SGMA) was signed into law implementing a framework for sustainable groundwater management. SGMA requires sustainability plans to be implemented for medium and high priority basins. The objective of these plans is to implement balanced levels of pumping and recharge into these basins within a 20-year timeframe.

Valley Water is the manager of the Santa Clara Groundwater Sub-Basin, in accordance with authority granted by the Santa Clara Valley Water District Act (California Water Code Appendix, Chapter 60). In 2016, VW became a groundwater sustainability agency (GSA) for the Santa Clara and Llagas subbasins, the two primary subbasins in Santa Clara County. Under SGMA, DWR has identified the Santa Clara subbasin as medium priority based on criteria that includes population, projected growth, number of wells, irrigation acreage, and groundwater reliance and impacts (Santa Clara Valley Water District [SCVWD], 2016). The subbasin is not considered in overdraft. The Santa Clara Valley area has historically experienced high amounts of land subsidence, and subsequent flooding issues, due to over pumping. Flood control implementations and groundwater recharge strategies have improved basin stability in recent decades.

1.3.2 Water Supplies and Demands

1.3.2.1 Current and Historical

The City's historical water supply is shown in Table 1.2. The City has been tracking supply data since 1975 and has noted changes in customer base, increased plumbing efficiencies, and water conservation due to periodic droughts (Mountain View, 2021).

Table 1.2 Historical Water Supply Production

Supply Source	Historical Water Supply (AFY)				
	2016	2017	2018	2019	2020
SFPUC	7,731	8,196	8,353	8,203	8,747
Valley Water	893	942	1,032	1,012	1,099
Groundwater	117	138	165	249	190
Total Potable	**8,741**	**9,276**	**9,550**	**9,464**	**10,036**
Recycled Water	472	454	380	420	420
Total Supply	**9,213**	**9,730**	**9,931**	**9,884**	**10,456**

The use of recycled water in the City has been important for several years. Recycled water allows the City to save its drinking water for the highest and best uses and also provides a reliable back up supply for non-potable use when potable supplies are limited during drought. The City has built out the Shoreline Golf Course and much of the North Bayshore area with a recycled water system to help strengthen the City's water supply portfolio. Table 1.3 presents the City's water demand by customer sector for 2016 through 2020. As shown in this table, residential customers (single-family and multi-family) represent approximately half of total use, followed by landscape customers and commercial / institutional use.

Table 1.3 Water Demand by Customer Sector for 2016-2020

Customer Sector	Annual Water Use[1] (AFY)				
	2016	2017	2018	2019	2020
Potable Water Use					
Single Family Residential	2,159	2,299	2,414	2,401	2,689
Multi-Family Residential	2,798	2,903	2,913	2,864	3,063
Commercial, Industrial, Institutional	1,754	1,750	1,804	1,773	1,365
Landscape Irrigation	1,494	1,763	2,070	2,050	2,367
Construction	3	3	2	3	7
Recycled Water Use					
Commercial	0	4	4	4	3
Landscape Irrigation	315	391	343	377	363
Construction	2	1	1	1	1
TOTAL	**8,523**	**9,113**	**9,551**	**9,473**	**9,856**

Notes:
(1) Data from the City's 2020 UWMP.

1.3.2.2 Projected Future

Based on the City's 2020 Urban Water Management Plan, future water use projections were developed for three scenarios that considered the base case as well as accounting for the new plumbing code and conservation. The City recognizes the importance of water conservation, and as such has implemented a number of measures, such as metering and education/outreach, in order to continue the sustainable use of their precious water resources. Projected water demands for the three scenarios from 2025 to 2040 are summarized in Table 1.4. Scenario B was selected by the City as the preferred scenario.

Table 1.4 Water Demand Projections (2025-2040)

Customer Sector	Projected Water Demand[1] (AFY)			
	2025	2030	2035	2040
Scenario A (base case)	12,679	13,485	14,288	15,894
Scenario B (plumbing codes)	12,058	12,548	13,064	14,163
Scenario C (plumbing codes and conservation)	11,825	12,164	12,530	12,929

Notes:
(1) Data from the City's 2020 UWMP.

Based on the City's demand projections, the City's projected water supplies, by source, for the years 2025 through 2040 are summarized in Table 1.5. Recycled water use was not projected to increase in the City's 2020 UWMP pending completion of the advanced water purification system and this Feasibility Study addendum. .

Table 1.5 Projected Water Supply Production

Supply Source	Projected Water Supply (AFY)[1]			
	2025	2030	2035	2040
SFPUC	10,154	10,664	11,160	12,259
Valley Water	1,176	1,176	1,176	1,176
Groundwater	280	280	280	280
Total Potable	**11,610**	**12,100**	**12,616**	**13,159**
Recycled Water	448	448	448	448
Total Supply	**12,058**	**12,548**	**13,607**	**14,163**

Notes:
(1) Data from the City's 2020 UWMP.

1.3.3 Water Facilities

The City's water system has three pressure zones - Zones 1 and 2 (lower elevations) are served by SFPUC water, whereas Zone 3 receives treated water from VW. The City has four potable water storage reservoirs with a total operational capacity of 14.3 million gallons (MG) (Mountain View, 2011c). The City also has three wholesale water connections, three pump stations, and four active groundwater supply wells. The City's potable water distribution system currently consists of approximately 172 miles of pipelines, ranging in diameter up to 27 inches.

The RWQCP receives and treats all of Mountain View's wastewater. Recycled water from the RWQCP currently supplies about 5 percent of the City's water needs. Recycled water from the RWQCP is currently conveyed via a purple pipe system to irrigation customers in the North Bayshore portion of Mountain View (i.e., areas north of Highway 101). The current recycled water service area within Mountain View's boundaries is shown on Figure 1.4.

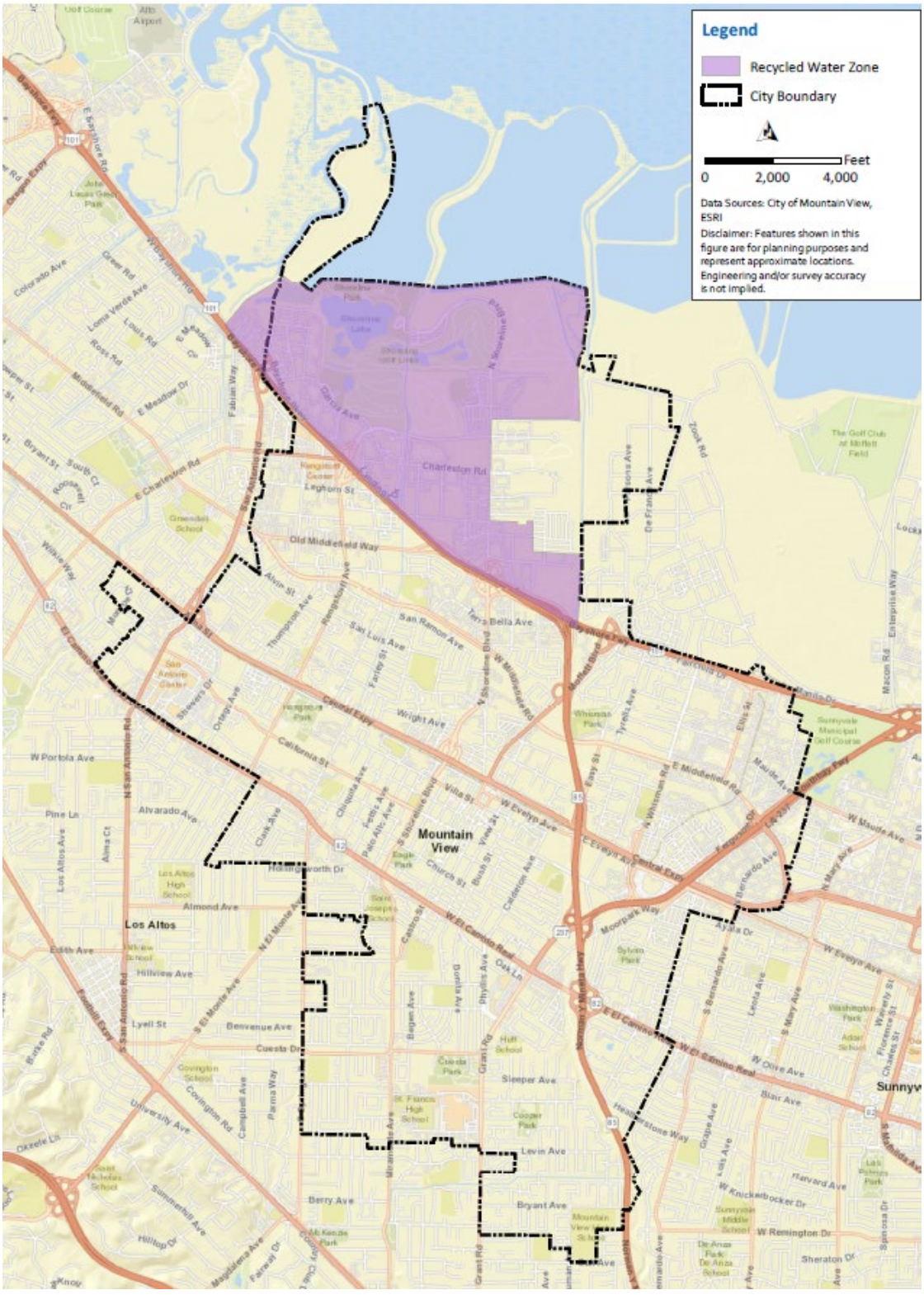

Figure 1.4 Existing Recycled Water Service Area

1.4 Wastewater Characteristics and Facilities

The City of Mountain View's wastewater is collected and conveyed to the RWQCP located in Palo Alto, which serves the cities of Palo Alto, East Palo Alto, Mountain View, Los Altos, the town of Los Altos Hills, and Stanford University. The RWQCP partners agreement states the City of Palo Alto is the owner and operator of the plant, with the City of Mountain View as a major partner. This agreement, and agreements with East Palo Alto Sanitary District, Stanford University, and Los Altos Hills, requires all six agencies to proportionately share in the costs of building and maintaining the facilities. The service area map for the RWQCP is shown in Figure 1.5.

1.4.1 Wastewater Facilities

The RWQCP has been a full secondary treatment facility since 1972 when it became a regional facility. In 1975, limited treatment was added to make the plant a partial Title 22 disinfected tertiary treatment facility. All tertiary recycled water produced by the RWQCP meets California Title 22 disinfected tertiary recycled water standards. A process flow schematic of the current treatment process is shown in Figure 1.6.

The RWQCP has initiated an upgrade to the tertiary plant with an advanced water purification system (AWPS). See Section 1.5.1 for additional information on the RWQCP recycled water system.

The RWQCP discharges to two receiving waters: South San Francisco Bay and Matadero Creek.

Approximately 95 percent of the treated wastewater is discharged to the South San Francisco Bay. The remaining five percent of the treated wastewater is discharged to the Emily Renzel Marsh Pond where it flows through an outfall to Matadero Creek. During dry months, a small portion of the effluent is produced into tertiary recycled water and used by Palo Alto and Mountain View.

1.4.2 Current and Projected Wastewater Generation

Mountain View's actual wastewater flows from 2015 to 2019, as well as actual and projected flow from the entire RWQCP service area from 2015 to 2040, are summarized in Table 1.6. The projected dry weather flows for the entire RWQCP service area are anticipated to increase to 20.5 mgd by 2040. Based on the treatment processes' design criteria and historical performance, it is anticipated that the existing facilities will provide adequate capacity to meet dry weather and maximum month flows into the future (2055) assuming the same level of treatment is required. Higher levels of treatment would require additional facilities.

Table 1.6 Historic and Projected Wastewater Flows

Area	Average Dry Weather Wastewater Flow (mgd)[1][2][3]									
	2015	2016	2017	2018	2019	2020	2025	2030	2035	2040
Mountain View	6.03	6.19	7.06	6.66	7.26	10.2	10.4	10.5	10.7	-
RWQCP Service Area	17.40	18.10	18.50	17.40	18.45	18.50	18.91	19.50	20.00	20.50

Notes:
(1) 2015-2019 data provided by the City of Palo Alto.
(2) Dry weather timeframe is May 1 to October 31.
(3) 2020-2040 data from the Draft Valley Water Master Plan.

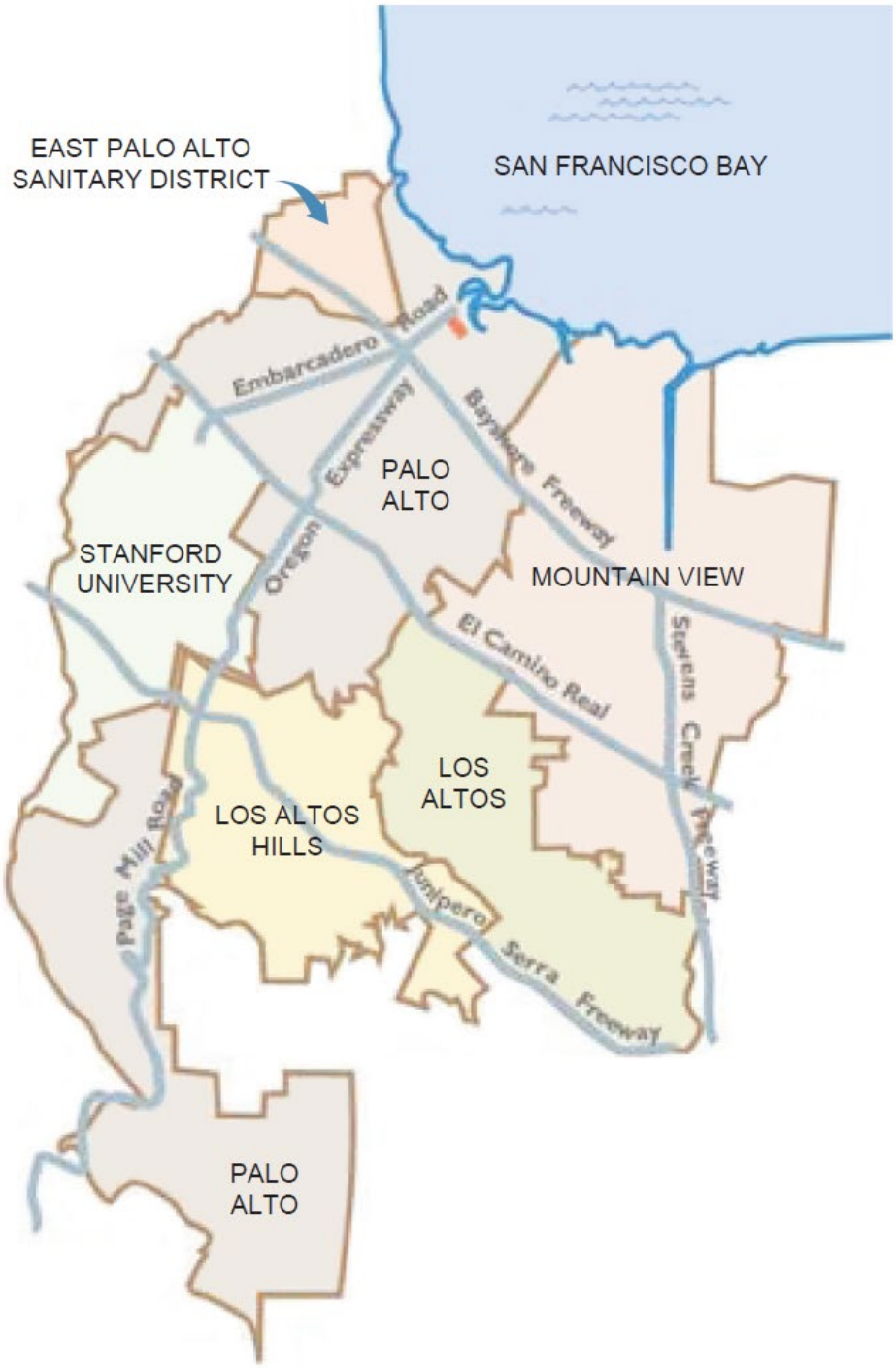

Figure 1.5 Palo Alto RWQCP Service Map

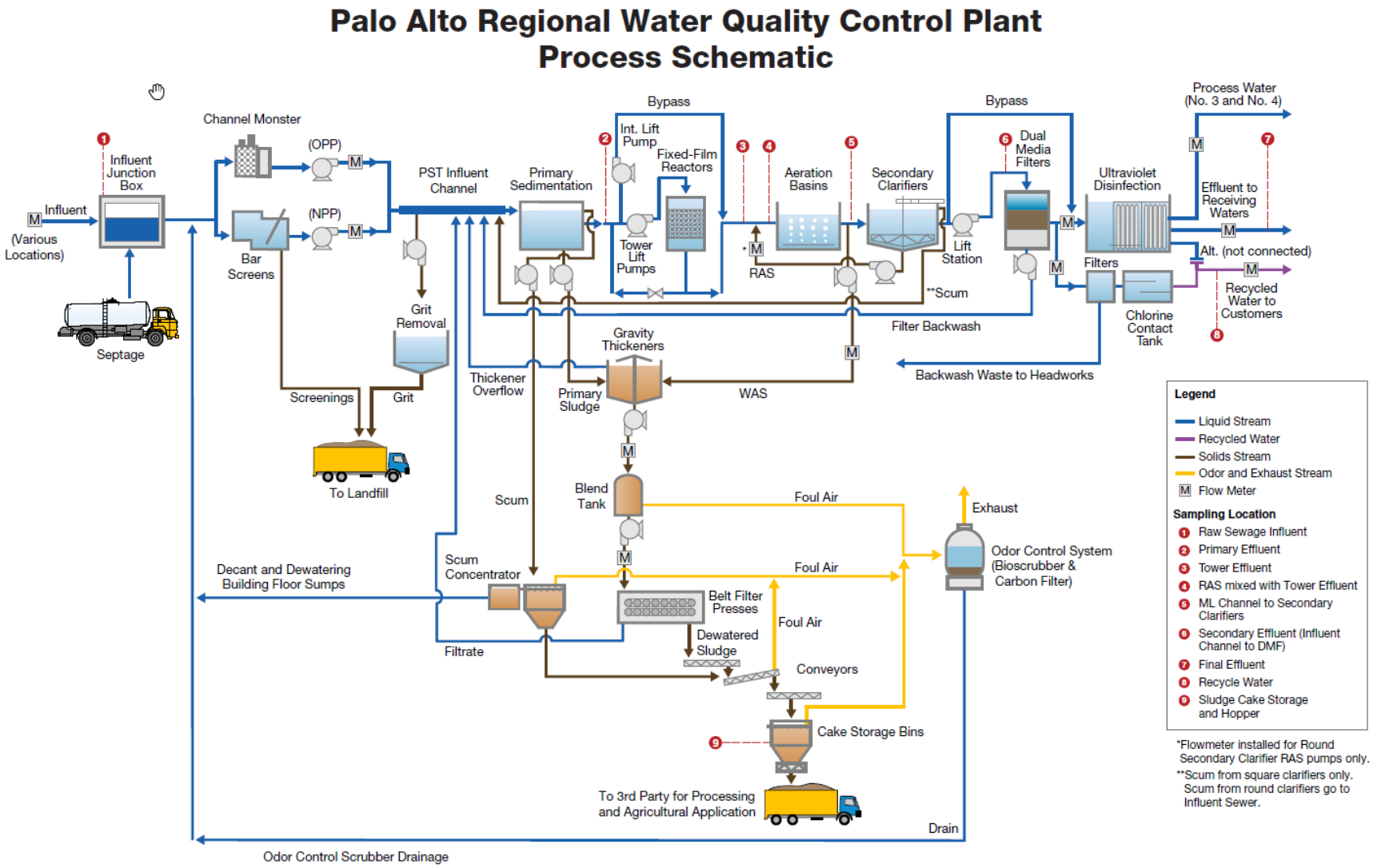

Figure 1.6 Palo Alto RWQCP Flow Schematic

1.5 Recycled Water Facilities

1.5.1 Recycled Water Treatment Facilities

The tertiary facilities at the RWQCP are a side-stream process and recycled water is only produced and stored on an as-needed basis. As shown in Figure 1.6, the RWQCP currently can produce recycled water in two ways. In both cases, tertiary treatment begins with dual media filtration (DMF) and is followed by either:

- Recycled water plant filtration and chlorination at 4.5 mgd capacity (existing production capacity) or
- UV disinfection at 4.3 mgd capacity assuming one bank in service, or 6.45 mgd capacity assuming all three banks in service (one channel of the UV system is dedicated to future recycled water production). Note that UV production is currently offline. A capacity of 4.3 mgd is a potential capacity, requiring a CIP to connect with the storage tank.

In order to increase the recycled water quality and reduce total dissolved solids (TDS) levels, the RWQCP began design to upgrade the tertiary plant with the addition of an advanced water purification system (AWPS). The AWPS includes microfiltration and reverse osmosis and is initially sized at 1.125 mgd capacity. The AWPS water is planned to be blended with the tertiary recycled water to produce 2.25 mgd of enhanced recycled water with an optimal TDS of approximately 400 – 500 ppm. Construction is anticipated to be completed at the end of 2024.

The AWPS is being designed to be expandable to a treatment capacity of 2.25 mgd, and when blended with the tertiary water would produce 4.5 mgd of enhanced recycled water. The City of Palo Alto has indicated that the enhanced recycled water is planned to ultimately replace the tertiary recycled water production.

Water rights for the recycled water are discussed in Chapter 2.

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Chapter 2

CITY RECYCLED WATER SYSTEM

2.1 Introduction

The regional recycled water information and facilities are outlined in Chapter 1. This chapter focuses on recycled water characteristics and facilities specific to the City of Mountain View (City or Mountain View).

2.2 City of Mountain View Recycled Water Facilities

Recycled water has been available from the Regional Water Quality Control Plant (RWQCP) for wetlands enhancement and landscape irrigation since 1975. In 1980, Mountain View's Golf Course (Shoreline Golf Links) began using disinfected secondary recycled water from the RWQCP, conveyed through two 12-inch diameter pipelines near the shore. The pipelines discharged into the golf course's Northwestern Pond. A potable water feed as well as rainwater during the winter also fed the pond, allowing blending of the treated effluent with potable water. The Shoreline Irrigation Pump Station (IPS), constructed at the same time, supplied the irrigation systems of the golf course and Shoreline Regional Park from either the ponds or a nearby potable water pipeline. This original recycled water system was converted to tertiary about 1981 and is referred to as the Shoreline Irrigation System and operates as its own pressure zone in the current recycled water facilities' operation.

In 1987, the tertiary effluent water pipeline from the RWQCP was extended from the Northwestern Pond to the Shoreline IPS, allowing direct supply of recycled water without needing to route the recycled water through the ponds. Use of this system was suspended in 2001 due to failure of the tertiary effluent water pipeline. The failure occurred in sensitive habitat, and therefore, the pipeline from the RWQCP was not repaired.

In 2003, a portion of the City's and the RWQCP's "program to expand" the regional recycled water system, the Mountain View/ Moffett Field Area Reclaimed Water Pipeline Project", was initiated. As part of this project, a new pipeline was completed in 2009 to serve recycled water to the existing Shoreline Irrigation System and new customers in the North Bayshore business area of Mountain View. Since 2009, recycled water has been delivered to multiple users directly from the RWQCP.

In 2010, the golf course removed three ponds and the remaining storage/source of supply is only from Pond E (Pond 4). The Shoreline IPS pumps from Pond E (Pond 4), supplying the golf course with recycled water. The Shoreline irrigation system remains as its own pressure zone and is tied to the IPS. The 2009 pipeline along with the distribution system feeding the North Bayshore area is referred to as the Primary Recycled Water System or primary zone. This network operates as its own pressure zone independent of the Shoreline Irrigation System. Figure 2.1 illustrates the existing recycled water distribution system.

The pipeline constructed in 2009 was sized for future expansion into the Moffett Field Area as well as other feasible locations in the Mountain View service area.

As part of the 2014 Recycled Water Feasibility Study (RWFS), a hydraulic model was developed by Carollo. In 2017, as a part of the Recycled Water System Surge Analysis, also conducted by Carollo, the model was updated to include added customers. The model's database of customers has been further updated to include customers added since 2017 as a part of this study. In addition, a field inspection of the IPS and a desktop evaluation of the existing distribution system were conducted to evaluate the conditions at Shoreline Park. The pump station was identified as nearing the end of its useful life and was estimated at five years remaining life. Also, the golf course distribution system had several joint failures and point repairs from 2003 to the present. A number of recommendations were defined by Carollo and provided to the City for both the pump station and the pipeline, many of which have been completed since 2014 or are in the process of completion.

2.2.1 Existing Recycled Water Users

Title 22 disinfected tertiary Recycled water is distributed from the RWQCP to some of the City's largest water customers in the North Bayshore area. Customers may use recycled water for a variety of uses approved by the CA Division of Drinking Water (DDW) such as landscape and agricultural irrigation, construction water, water for industrial purposes, impoundments (fountains), indoor toilet and urinal flushing, and makeup water for cooling towers and on-site reuse.

As of April 2021 there were a total of 52 existing recycled water users in the City. Figure 2.2 shows these existing users.

For the year of 2019, the total recycled water demand for the City was approximately 393 acre feet (ac-ft) while the recycled water supplied from the RWQCP was estimated at 420 ac-ft. Figure 2.3 shows the average daily use in the City for each month from 2016 through 2019. Based on monthly recycled water reports from the RWQCP, the existing recycled water customers in Mountain View used an average of 1.2 million gallons per day (mgd) under maximum day demand (MDD) conditions during summer months. This falls well below the recycled water agreement peak flow allotment of 3 mgd allocated from the RWQCP. Further discussion on the City's recycled water rights is included in Section 2.2.2. Figure 2.4 shows the maximum daily use in the City for each month from 2016 through 2019.

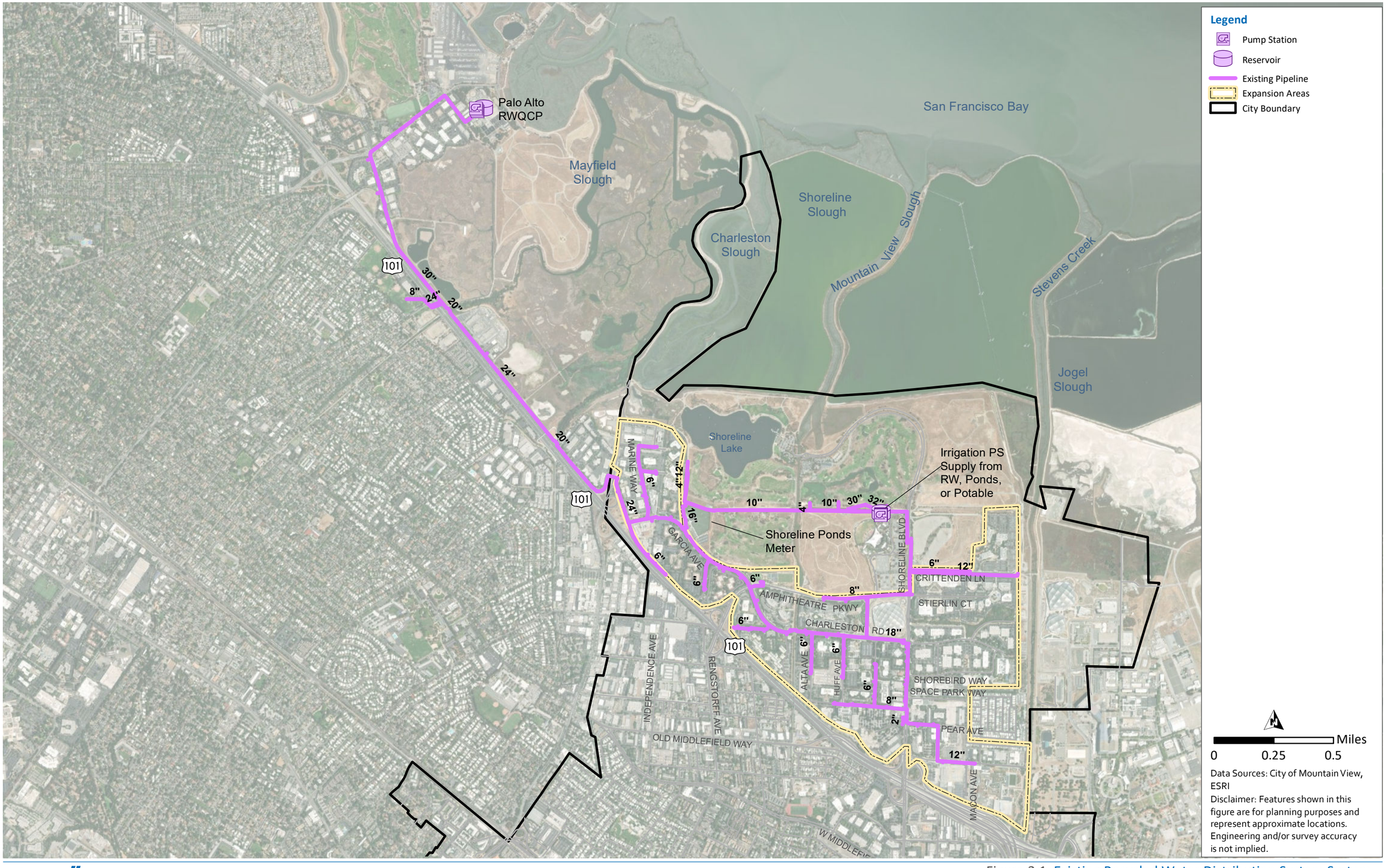

Figure 2.1 Existing Recycled Water Distribution System System

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Figure 2.2 Existing Recycled Water Users

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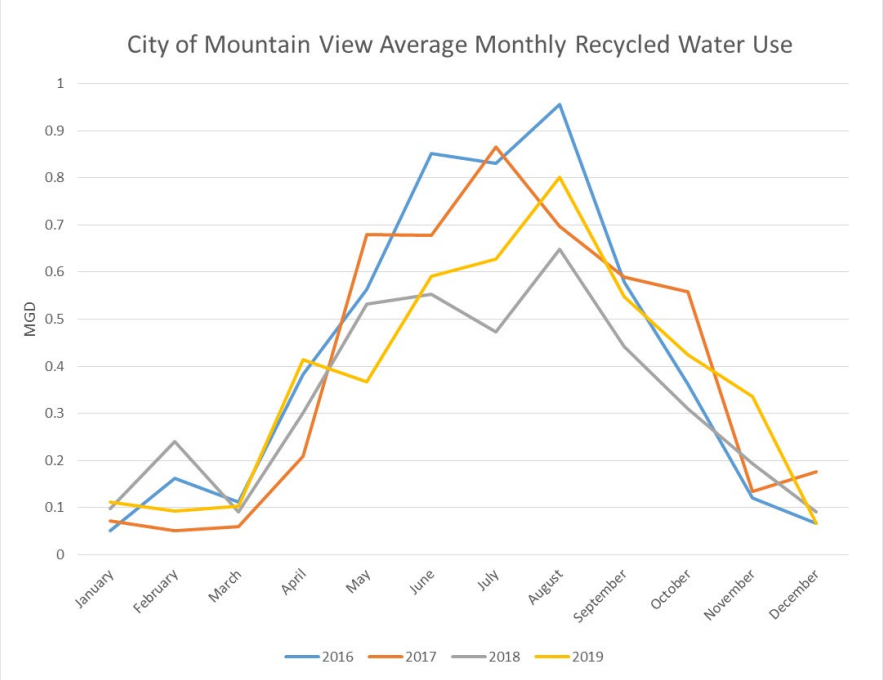

Figure 2.3 Monthly Average Water Use

Data provided from the RWQCP Monthly Reclaimed Water Reports.

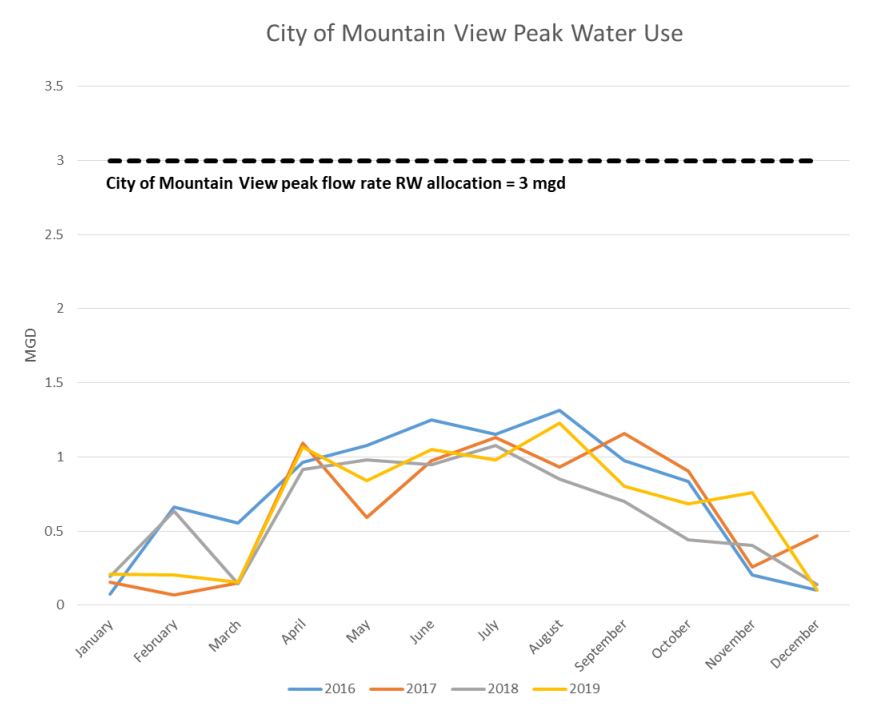

Figure 2.4 Maximum Day Water Use for Each Month Compared to the Current RWQCP Allocation

Data provided from the RWQCP Monthly Reclaimed Water Reports.

2.2.2 Recycled Water Rights

The original driver behind developing a recycled water program served by the RWQCP was to reduce the flow of wastewater effluent to San Francisco Bay and reduce potable water demands. In recent years, interest in expanding recycled water use throughout Santa Clara County has driven up demands in the region. This section discusses the history of recycled water use agreements that impact the amount available to the City of Mountain View. The RWQCP partner agreement was discussed in Chapter 1.

2.2.2.1 Contract between the City of Palo Alto and the City of Mountain View

The *First Amended and Restated Contract No. C059999 between the City of Palo Alto and the City of Mountain View for the MV /Moffett Area Reclaimed Water Pipeline Project* (referred to as 'Agreement') (first instated in 2005, later re-stated in 2007, and amended in 2017) delineates the terms between the two entities related to recycled water use. The Agreement governs the City and the other partners' rights to recycled water produced by the RWQCP and provides that each partner is entitled to "acquire at its expense wastewater for reuse," and that, if demands exceed the available supply, "the supply shall be allocated in proportion to each party's percentage of wastewater input flow to the total plant flow" (Basic Agreement Recitals, section C). In 2017, the Agreement was amended (Amendment No 1) to extend the term of the Agreement to 2060 and add language clarifying the commitments each partner has towards operation and maintenance of the recycled water portion of the system. The Agreement is included in Appendix C. Bullets below outline the major points of the Agreement.

- City of Mountain View recycled water allocation: 3 mgd, peak flow rate.
- Cost: None unless allocation is exceeded.
- Agreement term: Until 2060 (note that this may be terminated earlier in the event grant/SRF funding is not provided at a rate anticipated by either party).
- Additional Agreement Partners: The City of Los Altos.

2.2.2.2 Partnership Agreement to Advance Resilient Water Reuse Programs in Santa Clara County

This partnership agreement was enacted in late 2019 by the Cities of Palo Alto and Mountain View and Valley Water to allocate funds for the AWPS and extend water reuse programs throughout Santa Clara County. Major components of this agreement are outlined in the bullets below:

- Agreement partners: City of Palo Alto, City of Mountain View, Valley Water.
- Valley Water shall have the right to receive a minimum annual average flow of 9 mgd, or minimum daily flow of 5.86 mgd, of effluent from the RWQCP (known as the Effluent Transfer Option). Mountain View a minimum annual average of 2.5 mgd of enhanced recycled water (from approximately 3.25 mgd treated wastewater). Palo Alto a minimum annual average of 1.0 mgd enhanced recycled water (from approximately 1.3 mgd of treated wastewater).
- In the event of insufficient flows, the minimum volumes above are reduced proportionally, up to 30 percent reduction for Mountain View and Palo Alto.
- Valley Water has thirteen years from the enactment of this agreement to exercise the Effluent Transfer Option.

- The agreement does not identify what proportion of Valley Water's 9 mgd comes from Mountain View , Palo Alto, or others, To date, only Los Altos has added onto the agreement, committing 60-100 percent of their wastewater.
- Agreement term:
  - Effective for a maximum of 63 years from startup of the AWPS (not to exceed 76 years from the effective date of this Agreement).
  - If Valley Water elects not to use their Effluent Transfer Option, the Agreement shall expire after thirteen years.

2.2.3 Dual Plumbing Ordinance

In 2016, the City passed a Dual Plumbing Ordinance (Appendix D). Dual plumbing systems allow a building to utilize both potable and recycled water via two separate piping systems. Potable water is used for activities such as drinking and handwashing while recycled water is used for activities such as toilet flushing and irrigating. This ordinance applies to the following commercial developments:

- Commercial developments applying for a building permit after January 1, 2017.
- Commercial developments larger than 25,000 square feet (sq ft).
- Commercial buildings with a residential component (e.g. hotels, motels) are not required to install dual plumbing.

As discussed further in Chapter 3, this Ordinance will be incorporated into future recycled water planning throughout the City.

2.2.4 Recycled Water for Irrigation Ordinance

This article implemented a program that assists the Shoreline Regional Park Community (RPC) in preserving potable water. Customers to be served by recycled water within the Shoreline RPC were initially identified in a 2004 recycled water study. That study has been amended from time to time to add additional customers. These additional customers are notified by mail that a conversion to recycled water for irrigation purposes is required, along with the conditions of use, pricing, and construction schedule. The Irrigation Ordinance is contained in Appendix E.

2.3 Previous System Recommendations

The previous 2014 RWFS and 2017 Surge Analysis provided system improvement recommendations for the City's recycled water system. Table 2.1 summarizes the details of the recommendations, status, and timing for recommendation incorporation (near-term, mid-term or long-term item) for the pump stations and distribution system that was developed as part of the 2014 RWFS.

Table 2.1 Recycled Water System Improvement Recommendations and Status

Category	Improvement Item	Responsible Party	Status	Timing
Shoreline IPS – Pump Station	Install variable frequency drives (VFDs) to replace soft start drives on Pumps 2 and 3.	City	Moving forward	Near-term
	Investigate vertical turbine pumps for evidence of pump stuffing box leakage and repair as needed. Pump packing may need to be repaired or replaced.	City	Staff monitoring (Likely accounted for during pump repair/rebuild, see below for pump maintenance)	N/A
	Perform pump maintenance and inspection program on a routine basis.	City	Performed on a routine basis by staff	Routine basis
	Confirm pump performance with name plated conditions. Perform pump capacity/pressure verification per published data.	City	Performed in general maintenance activities	Routine basis
	Perform multiple-pump operation to verify the maximum pump station capacity.	City	Performed and verified	Complete
	Perform pump and motor vibration analysis for Pump Nos. 5 and 6.	City	Performed in general maintenance activities	Complete
	Repair and rebuild Pump No. 1	City	Pump rebuilt: 5/2019 Motor rebuilt: 5/2019	Complete
	Repair and rebuild Pump No. 2	City	Pump rebuilt: 7/2020 Motor rebuilt: 10/2020	Complete
	Repair and rebuild Pump No. 3	City	Pump rebuilt: 5/2019 Motor rebuilt: 5/2019	Complete
	Repair and rebuild Pump No. 4	City	Pump rebuilt: 5/2019	Complete
	Repair and rebuild Pump No. 5	City	Pump rebuilt: 5/2020 Motor rebuilt: 5/2020	Complete

Category	Improvement Item	Responsible Party	Status	Timing
Shoreline IPS – Pipeline	An 8-in diameter segment of polyethylene pipe mounted on a bridge was noted as "exposed to sunlight" and identified as a reliability concern.	City	Staff to monitor quarterly and address	N/A
	Several high-pressure gas line crossings were identified with potentially limited coverage, insufficient clearance, and high risk.	City	Staff to monitor quarterly and address	N/A
	A prioritized pipe replacement program to address an increasing number of joint failures on larger pipes is recommended.	City	Staff to consider	N/A
	Add a pipe looping system to mitigate low pressure at the dead ends of the distribution system. The 2014 RWFS study recommended approx. 5,000-ft of 6-in piping throughout the distribution system.	City	Some CIP projects have been designed and approved, but not yet financed.	Mid-term Due to high costs and disturbances.
RWQCP RW – Pump Station	Adjust the controls on the large pump startup to more slowly ramp up or down the speed of the pumps	Palo Alto	Staff to consider	N/A

Category	Improvement Item	Responsible Party	Status	Timing
RWQCP Recycled Water – Distribution System	Adjust customer systems and schedules to control the timing of system and demand	City & Palo Alto	Customer changes might be considered if other system-wide changes produce insufficient improvements.	Long-term. To be considered after system-wide projects are implemented
	Add storage to the Mountain View system so a more constant pressure can be maintained in the distribution system.	City	Alternative tank locations being considered in 2020 RWFS.	Long-term When system is expanded, a storage tank will be needed.
	Add a pressure control valve or reservoir to reduce spikes in pressure in the Mountain View system.	City	Determine location of issue needed prior to implementing.	Long-term
	Add a pressure transmitter at the end of the distribution system to send a signal to the pump station to start ramping up the VFD speed before the pressure in the pump station drops.	Palo Alto	Implement if other adjustments do not work.	Long-term
	Add connections between the water mains in North Shoreline Blvd and Amphitheatre Pkwy and the water mains in Marine Way and Terminal Blvd to loop the distribution system. This will not solve the problem at the far end of the system, but may help the pressure in the center section, and will reduce water age.	City	High cost, implement at a later date if all other alternatives have been exhausted.	Long-term Implement if adding customers makes it warranted.
	Install a geared valve at the RWQCP truck fill station that will open and close more slowly to reduce potential for surge events.	Palo Alto	This was installed at the fill station but ultimately removed because it was slowing down the fill process. Palo Alto is instead installing a flowmeter on the fill station that communicates directly with the pump station to proactively respond to the change in flow.	No longer pursuing.

Chapter 3

PROJECT ALTERNATIVES ANALYSIS

3.1 Introduction

This chapter builds on the existing recycled water system and users defined in Chapter 2 into four alternatives and four sub alternatives to best expand recycled water use in the City of Mountain View (City or Mountain View) service area. For each alternative analyzed, a description of the alignment, demands served, and major infrastructure required is presented. This chapter also presents infrastructure sizing, cost development and other non-monetary criteria to evaluate and compare the identified alternatives. These criteria were used to rank the alternatives and identify the one that best meets the City's goals and objectives. The "Base Case" alternative is also discussed in this chapter, which presents the City's existing system primarily serving the North Bayshore area.

3.2 Infrastructure Sizing Assumptions

Elements of the City's future recycled water system were sized based on the projected max day peak hour scenario flows and sizing criteria defined in this chapter. Sizing criteria were developed for recycled water storage capacity, pipe roughness, maximum velocity, acceptable pressure range, and various peaking factors. A summary of criteria used to size elements of the City's future recycled water system is presented in Table 3.1 and discussed briefly below. The criteria were developed based on industry standards, experience with similar systems, and existing City data. Several of the criteria listed in Table 3.1 represent conservative planning assumptions. As the commitment of potential customers becomes more certain, these planning and evaluation criteria should be further refined.

3.2.1 System Sizing

The recycled water system conveyance components (i.e., pumping and piping) was sized to deliver maximum day demand (MDD). For reliability purposes (i.e., in case a pump is out of service), it is desirable to maintain a firm pump station capacity equal to the MDD, minus the capacity of the largest pump. Supply, in excess of MDD, required for peak hour demand (PHD) would be met by operational storage. If, however, there is no operational storage available, then the system must be sized to handle PHDs.

3.2.1.1 Roughness Coefficient

Pipeline roughness coefficients establish the head loss associated with each pipeline segment. Within this hydraulic model, the Hazen-Williams head loss equations were used and roughness coefficients were calibrated as a part of the 2014 Study. Following calibration, roughness coefficients ranged from 110 to 150. New and proposed pipelines in this Study were given roughness coefficients of 120.

3.2.2 Operational Storage

Operational storage is the amount required to provide the difference in quantity between the customer's peak demands and the system's firm supply capacity. Because the various alternatives assume a nighttime 8-hour irrigation diurnal pattern, the required operational storage, in million gallons (MG), is then calculated using the following formula:

$$Operational\ Storage = (PHD - MDD) * (8\ hours) * (\frac{1\ day}{24\ hours})$$

Operational storage equalizes diurnal demand fluctuations by providing supply during peak hours when the demands exceed the peak capacity from supply source(s). An approximate 20- percent increase in volume was assumed to account for headspace and dead volume included in the total storage and offer operational flexibility. The hydraulic model was used to verify the total storage value and ensure proper sizing of the facility to maintain system wide pressure, velocity, and head loss criteria. The total storage size will be used to determine the capital costs for the reservoir.

3.2.3 Peaking Factors

Peaking factors are used to relate the average recycled water demands seen throughout the year to the peak day and peak hourly demand that the recycled water system is evaluated on. Junctions in the hydraulic model are given average day demands and a diurnal curve associated with the demand type. The hourly peaking factors in table 3.1 correspond to the peak hour associated with these diurnal patterns. An hourly irrigation peaking factor of 3.8 was also used in the 2014 study and is typical of irrigation customers in a recycled water system.

The max day peaking factor for the current study was revised from 2.3 to 3.4 based on historical flow data at the Palo Alto Pump Station. No historical hourly data was available so hourly peaking assumptions were kept consistent with the 2014 Study.

Table 3.1 Alternatives Modeling Criteria Summary

Category	Criteria
Storage	
Operational Storage[1]	(PHD_{mgd}-MDD_{mgd}) x (8 hours) x (1 day/24 hours)
Pipelines	
Maximum Velocity	5 fps
Roughness Coefficient	120
Typical Pipeline Sizes	6, 8, 12, 16, 18, 20, 24 inches
Service Pressure[2]	
Minimum Pressure During PHD	40 psi
Maximum Pressure During PHD	90 psi
Maximum Pressure During PHD, (for services downstream of Shoreline IPS)	110 psi

Category	Criteria
Peaking Factors	
Maximum Day Peaking Factors	
Irrigation	3.4
Cooling	3.0
Indoor	1.0
Industrial	1.8
Hourly Peaking Factors	
Irrigation	3.8
Cooling	2.5
Indoor Residential	1.5
Indoor Office	2.4

Notes:
(1) This criterion is used to approximate the storage requirement of various alternatives assuming a nighttime 8-hour irrigation diurnal pattern and that the impacts of non-irrigation demands (i.e., cooling, indoor) on peak nighttime flows are negligible.
(2) As will be discussed later, infrastructure requirements for alternatives developed in this chapter were estimated conceptually; hydraulic sizing of the recommended alternative to provide minimum service pressures is provided in Chapter 4.
(3) Abbreviations: fps = feet per second; psi = pounds per square inch.

3.3 Description of Alternatives

Four alternatives and four sub-alternatives were developed for initial evaluation based on the expected future demands of the City's service area. Demands for the sites were provided by the City. The average day demand, maximum day demand, and peak hour demand served by each alternative are summarized by category and presented in Table 3.2 Furthermore, each alternative is broken down into sub-use categories to show the specific demand needs. Figure 3.1 gives an overview of how all four alternative alignments and sub-alternative alignments relate to one another.

As discussed in Chapter 2, the City has a current agreement with the City of Palo Alto to receive a peak flow rate of up to 3 million gallons per day (mgd). An agreement enacted in 2019 entitles Mountain View to 2.5 mgd of enhanced recycled water from the new Advanced Water Purification System (AWPS). A quantitative comparison of the demands, infrastructure needs, and customers served for each of the four alternatives is presented in Table 3.2. Note that the linear footage to reach tank and booster pump site locations is not included. The preferred alternatives are shaded in yellow. The peak hour demands are expected to occur from 2AM to 6AM, when all demand types except indoor office are being served. Therefore, the storage demand was sized for the irrigation, cooling, and indoor residential peak hour demand, and not indoor office.

Table 3.2 Quantitative Comparison of Alternatives

Alternative	Sub-Use Category	Total Customers	Linear Feet of Pipe (ft)	Sub-Alt Demands (mgd)	Average Day Demand (mgd)	Max. Day Demand (mgd)[4]	Peak Hour Demand (mgd)[2]	Approx. Operational Storage (MG)[6]	Approx. Additional Supply (mgd)[3]
0 – Base Case (Existing System)	North Bayshore Shoreline	52	-	0.34 0.12	0.46	1.2	4.4	1.1	0
1 – Alt. 0 + new North Bayshore users + NASA demands	New North Bayshore New Shoreline NASA Demands	133	12,900	0.56 0.15 0.28	1.45	3.7	8.5	1.6	0.7
2 – Alt. 1 + NASA pipeline expansion + East Whisman	New East Whisman Demands Demands Along Route	226	30,200	0.85 -	2.30	6.2	15.8	3.2	3.2
3 – Alt. 1 + East Whisman (via Middlefield Road)	New East Whisman Demands Demands Along Route	257	37,000	0.85 0.08	2.39	6.4	16.9	3.5	3.4
4 – Alt 1. + East Whisman (via Central Expressway)	New East Whisman Demands Demands Along Route	358	44,100	0.85 0.10	2.40	6.5	17.1	3.5	3.5

Alternative	Sub-Use Category	Total Customers	Linear Feet of Pipe (ft)	Sub-Alt Demands (mgd)	Average Day Demand (mgd)	Max. Day Demand (mgd)(4)	Peak Hour Demand (mgd)(2)	Approx. Operational Storage (MG)(6)	Approx. Additional Supply (mgd)(3)
Sub-Alternatives									
5a(5) – Dual plumbed expansion to Castro	N/A	5 dual plumbed and 71 customers along route	4,000	N/A	0.05	0.1	0.4	0.1	0.1
5b (5) – Dual plumbed expansion to San Antonio Center	N/A	6 dual plumbed and 179 customers along route	11,400	N/A	0.14	0.4	1.5	0.5	0.6
5c (5) – Dual plumbed expansion to St. Francis High School	N/A	6 dual plumbed and 247 customers along route	10,200	N/A	0.13	0.4	1.5	0.5	0.5
5d (5) – Dual plumbed expansion to San Antonio Center	N/A	1 dual plumbed and 14 customers along route	9,600	N/A	0.03	0.1	1	0.3	0.3

Notes:
(1) Abbreviations: MG = million gallons; mgd = million gallons per day.
(2) Peak hour demands are based on irrigation, cooling, and indoor residential types. Indoor office demands peak later in the day.
(3) Additional supply is based on the 3 mgd peak supply flow rate. So additional supply would be the difference between 3 mgd and the Alternatives max day demand.
(4) Alternatives 1, 2, 3, and 4 have max daily demands higher than the pump station can meet with its firm capacity (2 large pump in service and 1 out of service or in standby).
(5) Sub Alts 5a, 5b, 5c, and 5d are additional flow to Alternative 4's routing option. Sub Alts 5a, 5b, 5c, and 5d are all independent from each other and need expansion to East Whisman via Alt 2, 3, or 4.
(6) Total storage is assumed to be 20% larger than operational storage.

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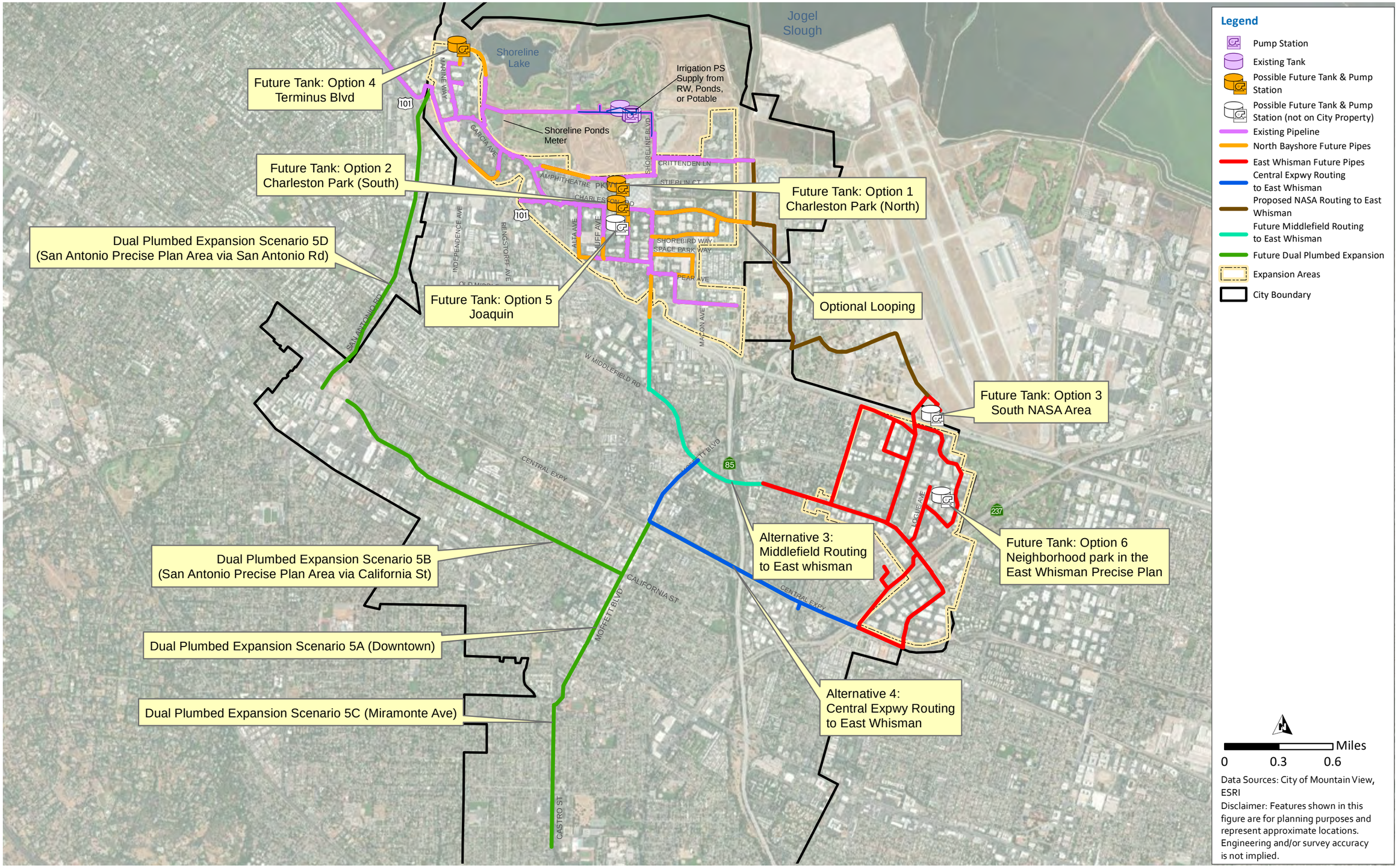

Figure 3.1 Alternative Overview

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3.3.1 Alternatives 0 and 1

Alternative 0 is considered as the base case and serves the existing recycled water users in the North Bayshore. Existing customers were determined from the "9060" account prefix. The pond demands at the Shoreline Golf Links were not considered for the peaking analysis in the model, but are included as existing customers in Appendix F. One dual plumbed user exists in this scenario. For a peak day and peak hour condition in the model, the existing system is already showing a need for additional storage, as shown in Table 3.2.

Alternative 1 serves the existing recycled water users along with additional users in the North Bayshore area as defined above in Table 3.2 and identified by the City. Additional users and flows for this alternative were based on potable water irrigation customers and areas of the system where demands have decreased since the 2014 study. Additional customers at dual plumbed sites, Stierlin Court, and Charleston East were manually added based on feedback from the City. In addition, Alternative 1 serves demands at the NASA airfield via one single master meter. The master meter installation will quantify the recycled water uses on the NASA site. The NASA demands were developed by a separate firm and provided to Carollo as a part of the 2014 Study. The total demand of Alternative 1's North Bayshore demands was scaled to be consistent with the 1.17 mgd determined in the City's Precise Plan.

Additional storage and a 215 hp booster pump station is recommended to serve the future growth of the system and maintain pressures within criteria. This alignment would mainly consist of connections between existing recycled water pipelines or extensions throughout the North Bayshore. All infrastructure sizing is dependent on the finalized number and demand of customers for each alternative.

3.3.2 Alternatives 2, 3, and 4

Alternatives 2, 3, and 4 include the users and piping identified in Alternative 1 and extends recycled water piping into the East Whisman area. Future East Whisman demand methodology was based on the East Whisman Precise Plan with 50 percent of total use assumed for irrigation and 25 percent as indoor recycled use for high intensity office and industrial dual plumbed buildings.. These demands were allocated to all parcels in the East Whisman area and are summarized in Table 3.2.

Additional recycled water supply is needed for any expansion to East Whisman, or Alternatives 2, 3, or 4. At such time, an additional study to finalize pipeline and tank sizing in the East Whisman area is recommended. 550 hp of pumping is needed to expand the system into East Whisman, for Alternative 2, 3, or 4. Note that the exact horsepower of pumping will vary depending on the location of tanks determined in the tank siting study. The City should plan for a pump station attached to each tank and a booster pump station along the Middlefield routing for Alternative 2, 3, or 4.

Alternative 2 includes the users and piping identified in Alternative 1 and extends recycled water piping through the NASA site into the East Whisman area. This Alternative would convey flow via NASA's existing 18-inch RT Jones line. Alternative 2 would require the least amount of new piping but conveying all East Whisman's projected peak flows through the size of the existing lines is a concern. This causes high modeled velocities and head losses outside of the City's criteria, and some upsizing would be needed near the tank.

Alternative 3 includes the users and piping identified in Alternative 1 and extends recycled water piping to East Whisman via Middlefield Road. This Alternative would serve the same customers as Alternative 2 and add 0.08 mgd of service to parcel frontages along the Middlefield Road routing option. The supply along this routing is approximate and based on irrigable land use assumptions consistent with the East Whisman WSA. The routing to East Whisman would be entirely new pipe. To meet velocity performance criteria, a large new transmission pipeline along Middlefield would be needed, assuming a tank in the North Bayshore and a tank in East Whisman. This pipeline would need to be sized as an 18-inch assuming the North Charleston Park tank location.

Alternative 4 includes the users and piping identified in Alternative 1 and extends recycled water piping to East Whisman via Central Expressway. This Alternative would serve the same customers as Alternative 2 and add 0.10 mgd of service to parcel frontages along Central Expressway. Similar to Alternative 3, the routing would be entirely new pipe. To meet velocity performance criteria, a large new transmission pipeline along Central Expressway would be needed. Additional piping would be required to route the pipeline along Central Expressway compared to Middlefield Road (Alternative 3).

Alternative 3 provides the most cost-effective path to extend the system to East Whisman, while still remaining in optimal performance criteria.

3.3.3 Sub-alternatives – Dual Plumbed Expansion Options

Four sub-alternatives were developed to expand the recycled water piping to an area outside of the main commercial areas of the City (North Bayshore and East Whisman) to a future, large dual plumbed demand. The four proposed sub-alternatives would need either Alternative 2, 3, or 4 to be completed in conjunction with, or prior to, these dual plumbed expansions. The storage and demands presented assume Alternative 4 would be completed prior to these sub-alternatives, as the Middlefield routing is the closest to these. Alternative 3 would require approximately 2,200 additional linear feet of piping. These were developed in consideration with the citywide dual plumbing ordinance, previously discussed in Chapter 2. Sub-alternatives 5b and 5d discussed below are different routing options to the same customer.

3.3.3.1 Sub-alternative 5a – Dual Plumbed Expansion to Castro Street

Sub-alternative 5a would extend recycled water piping west on Castro Street and includes 4,000 feet of additional piping. No booster pumping is anticipated. A small amount of additional storage of 0.1 MG is anticipated at this time. Additional analysis should occur prior to the expansion to refine the demands anticipated along the route. This option would serve the five additional dual plumbed sites in the commercial area of Castro Street (sub-alt 5a), within the City's service area.

3.3.3.2 Sub-alternative 5b – Dual Plumbed Expansion to San Antonio Center along California St

Sub-alternative 5b would extend recycled water piping west on a portion of Castro Street and north on California Street and includes 11,700 feet of additional piping. No booster pumping is anticipated. A small amount of additional storage of 0.5 MG is anticipated at this time. Additional analysis should occur prior to the expansion to refine the demands anticipated along the route. This option would serve the additional dual plumbed sites of sub-alt 5a in the commercial area of Castro Street as well as one dual plumbed site at the San Antonio Center, an outdoor shopping mall within the City's service area.

3.3.3.3 Sub-alternative 5c – Dual Plumbed Expansion to St. Francis High School

Sub-alternative 5c would extend recycled water piping west on Castro Street and would include 10,200 feet of additional piping to alternative 5a. A small amount of additional storage of 0.5 MG is anticipated at this time. Additional analysis should occur prior to the expansion to refine the demands anticipated along the route. A small booster pumping station is likely needed to implement this sub-alternative, due to elevation increases. This option would serve the additional dual plumbed sites of sub-alt 5a in the commercial area of Castro Street as well as St. Francis High School, located further southwest on Castro Street.

3.3.3.4 Sub-alternative 5d – Dual Plumbed Expansion to San Antonio Center along San Antonio Rd

Sub-alternative 5bd would extend recycled water piping southbound on San Antonio Rd and includes 9,600 feet of additional piping. No booster pumping is anticipated. A small amount of additional storage of 0.3 MG is anticipated at this time. Additional analysis should occur prior to the expansion to refine the demands anticipated along the route. This option would serve additional dual plumbed sites in the San Antonio Center, an outdoor shopping mall within the City's service area.

3.4 Tank Siting Options

All alternatives are recommended to include storage to maintain adequate system pressures. Estimated storage needs are outlined in Table 3.2. Figure 3.1 shows the locations for a buried concrete storage tank that were considered, Table 3.3 outlines and compares these alternatives to each other. Note that a combination of tanks can be used with centralized storage in both North Bayshore and East Whisman. Tank sites at the North NASA area and San Veron Park were initially considered and modeled but were later deemed infeasible based on preliminary analysis and feedback from the City. Prior to construction of a tank, a tank siting study is recommended to re-evaluate storage options and determine the best location.

Table 3.3 Tank Siting Options

Tank Option No.	Location	Advantages	Disadvantages	Associated Alternative Served
1	Charleston Park (North)	City park property Centralized to North Bayshore demands		1, 2, 3, or 4
2	Charleston Park (South)	City park property Centralized to North Bayshore demands		1, 2, 3, or 4
3	South NASA area	Lower hp pump required	NASA property, not in North Bayhsore Not centralized to demands	1, 2

Tank Option No.	Location	Advantages	Disadvantages	Associated Alternative Served
4	Terminus Boulevard	On City property	Not centralized to North Bayshore demands	1, 2, 3, or 4
5	Joaquin	Centralized to North Bayshore demands	Not on City property	1, 2, 3, or 4
6	Neighborhood park in the East Whisman Precise Plan	Centralized to East Whisman demands	Not on City property	2, 3, or 4

3.5 Basis of Costs

The following basis of costs were used to develop planning level cost estimates and were based on past project work within the City. Tables 3.4, 3.5, and 3.6 detail the information used to develop pipeline, pump station, and storage tank costs, respectively.

Table 3.4 PVC Pipeline Unit Cost Assumptions

Pipeline Diameter (in.)	Unit Costs	Capital Cost ($/LF)(1)
6	$231	$375
8	$262	$425
10	$292	$475
12	$323	$525
14	$354	$575
16	$385	$625
20	$415	$675
24	$446	$725

Notes:
(1) Pipeline capital costs provided by the City in February 2022.
(2) Unit costs estimated from capital markup of 1.625%

Table 3.5 Booster Pump Station Unit Cost Assumptions

Station Size (hp)	Unit Construction Cost ($/hp)(1)	Capital Cost ($/hp)(2)
100 hp and smaller	$12,950	$21,500
100-500 hp	$7,775	$13,000
600-1,000 hp	$6,475	$11,000
1,000 hp and larger	$5,175	$9,000

Notes:
(1) ENR Cost Index for February 2020 is 12043
(2) Capital Markup of 1.625%

Table 3.6 Storage Tank Unit Cost Assumptions

Type (MG)	Unit Construction Cost ($/gallon)[1]	Capital Cost ($/gallon)[2]	Factor of Increase for Buried Tank
<1	$2.75	$4.75	2.5
1 to 3	$2.25	$3.75	2.5
3 to 5	$2.00	$3.50	2.5
5 to 10	$1.75	$3.00	2.5

Notes:
(3) ENR Cost Index for February 2020 is 12043
(4) Capital Markup of 1.625%

3.6 Alternatives Cost Comparison

Planning level cost estimates were prepared based on the unit construction costs for each of the four alternatives. The pipelines, tanks, and pump stations were further refined, but the cost comparison is still relevant for selecting a preferred alternative. Table 3.7 presents preliminary estimates of capital costs for four alignment alternatives described earlier in this chapter. A life cycle cost comparison was also developed to compare the alternatives on a long-term basis. The cost comparison considered capital and operations and maintenance (O&M) costs for a project term of 30 years and a debt rate of 3 percent to determine the alternatives unit costs in dollars per acre-foot (AF). Costs for storage tanks, booster pumping, and pipelines were developed based on the cost assumptions shown in Tables 3.4, 3.5, and 3.6. Table 3.8 presents life cycle and unit costs of the alignment alternatives. Alternatives 1, 3, and 5a are the most cost-effective alternatives for expansion to different areas.

Table 3.7 Estimate of Capital Costs of Project Alternatives

Cost Element	Alternative Cost ($ Million)							
	1	2	3	4	5a[2]	5b[2]	5c	5d[2]
Pipeline Capital Cost[1]	$6.8	$15.9	$19.4	$23.2	$2.1	$6.1	$5.4	$5.0
Storage Tank Capital Cost	$17.8	$18.3	$21.3	$21.8	$1.2	$5.3	$5.3	$0.6
Booster Station Capital Cost	$2.8	$7.2	$7.2	$7.2	$0.0	$0.0	$1.0	$0.0
Total Capital Cost for Single Alternative	$27.4	$41.3	$47.8	$52.1	$3.3	$11.5	$11.6	$5.7
Total Capital Cost for Alternative Plus Necessary Sub-Sequent Alternatives[6]	$27.4	$68.6	$75.2	$79.5	$78.5	$86.6	$86.8	$80.9

Notes:
(1) For the purposes of alternative comparisons presented in this chapter, the pipeline construction costs were developed based on the estimated lengths presented in Table 3.2 and assumed an average pipe diameter of 12-inch for all the alternatives.
(2) These alternatives add no cost associated with booster pump station construction.
(3) Alternatives 2, 3, and 4 would be built in addition to Alternative 1.
(4) Alternatives 5a and 5d would be built in addition to Alternative 1 and one of Alternative 2, 3, or 4.
(5) Alternatives 5b and 5c would be built in addition to Alternative 3.
(6) Cost Assumes Alternative 3 is selected.

Table 3.8 Estimate of Unit Costs of Project Alternatives

Cost Element[1]	Alternative Costs							
	1	2	3	4	5a	5b	5b	5d
Estimated Capital Cost ($M)	$27.4	$41.3	$47.8	$52.1	$3.3	$11.5	$11.6	$5.7
Annualized Unit Cost ($M/year)[2]	$1.8	$2.7	$3.1	$3.4	$0.2	$0.7	$0.8	$0.4
Annual O&M Cost ($M/year)[3]	$0.5	$0.8	$1.0	$1.0	$0.1	$0.2	$0.2	$0.1
Total Annual Costs	$2.3	$3.5	$4.1	$4.4	$0.3	$1.0	$1.0	$0.5
Average Annual Demand (AFY)[5]	1,625	953	1,054	1,065	55	152	146	23
Project Unit Cost ($/AF)	$1,432	$3,685	$3,861	$4,165	$5,040	$6,406	$6,774	$20,751

Notes:
(1) Costs provided are for comparative consideration only and do not include markups (i.e. contingency, engineering, construction, environmental, or legal costs).
(2) Based on a 3 percent annual interest rate and a payback period of 30 years.
(3) Based on 2 percent of total capital cost.
(4) Abbreviations: AF = acre-foot; AFY = acre-foot per year.
(5) Demands represent additive demands of expansion option.

3.7 Alternatives Evaluation

Five evaluation criteria were considered for the qualitative comparison of these alternatives and one quantitative. These include the following:

- **Energy Use:** Considers pumping of recycled water from the Regional Water Quality Control Plant (RWQCP) to the proposed storage site and from the storage tank to the proposed users.
- **Environmental Impact:** Considers alignment factors relative to California Environmental Quality Act (CEQA) requirements such as traffic, utilities, and construction activity duration.
- **Ease of Implementation:** Considers implementation issues identified by the City. Includes acquiring easements and construction difficulty on busy roads.
- **Agency Coordination:** Considers the number of agencies needed to implement the given alternative.
- **Potable Water Offset:** Considers the amount of potable water offset needed to meet the alternatives supply.

Cost Impacts: Considers the relative unit capital cost comparisons between alternatives presented in Section 3.6.Each alternative is scored on a scale of 1 to 3 with respect to each

criterion. A low score for a particular criterion and alternative indicates that the criterion has a negative impact on the alternative and vice versa. Once the impact of all criteria on an alternative was identified, the aggregate score was calculated and compared with the other alternatives. Table 3.9 presents the scores and overall ranking for each alternative.

The following explains the reasoning behind each alternatives ranking:

- Alternative 1:
  - Energy Use (3): Alternative has the smallest demands and therefore will require the least pumping.
  - Environmental Impact (3): Similar environmental impacts are expected for all Alternatives.
  - Ease of Implementation (3): Alternative would require the least new construction and thereby difficulty with implementing projects.
  - Agency Coordination (3): Limited to no coordination is needed for this alternative.
  - Potable Water Offset (1): Least volume of potable water offset supplied.
  - Cost Impacts (3): This is the cheapest and most cost-effective alternative.
- Alternative 2:
  - Energy Use (2): Would require additional pumping to supply East Whisman customers. Similar pumping needs for Alternatives 3 and 4.
  - Environmental Impact (2): Least number of environmental impacts compared to the other alternatives.
  - Ease of Implementation (1): Alternative would require significant new piping, and street is not owned by the City.
  - Agency Coordination (1): Transmission pipeline is entirely through NASA property. This alternative would require coordination between the City, CALTRANS, and NASA.
  - Potable Water Offset (2): Some potable water offset would be provided.
  - Cost Impacts (2): This alternative costs more than 1, and similar to 3 and 4.
- Alternative 3:
  - Energy Use (2): Would require additional pumping to supply East Whisman customers. Similar pumping needs for Alternatives 2 and 4.
  - Environmental Impact (2): Similar pipe length installation as Alternative 2. Higher traffic impacts compared to Alternative 1.
  - Ease of Implementation (2): Alternative would require significant new piping, but street is City owned.
  - Agency Coordination (2): Routing is along City owned land, except for Highway 85 and 101 crossings. Some coordination between the City, CALTRANS, and NASA would be required
  - Potable Water Offset (3): Offers the largest amount of potable water offset in East Whisman and along Middlefield Avenue.
  - Cost Impacts (2): This alternative costs more than 1, and similar to 2 and 4.
- Alternative 4:
  - Energy Use (2): Would require additional pumping to supply East Whisman customers. Similar pumping needs for Alternatives 2 and 3.
  - Environmental Impact (1): Highest traffic impact of all alternatives. Longest length of pipe installation.

- Ease of Implementation (1): Alternative would require significant new piping, with portions of the street owned by the City and Santa Clara County Roads and Airport.
- Agency Coordination (1): Routing is primarily along Central Expressway, which is not City owned. Significant coordination between the City, CALTRANS, and NASA would be required.
- Potable Water Offset (3): Offers the largest amount of potable water offset in East Whisman and along the route.
- Cost Impacts (2): This alternative costs more than 1, and similar to 2 and 3.

Table 3.9 Qualitative Comparison of Alternatives

Alternative	Energy Use	Environmental Impact	Ease of Implementation	Agency Coordination	Potable Water Offset	Costs	Overall Ranking
1 – Alt. 0 + new North Bayshore users + NASA demands	3	3	3	3	1	3	**2.7**
2 – Alt. 1 + NASA pipeline expansion + East Whisman	2	2	1	1	2	2	**1.7**
3 – Alt. 1 + East Whisman (via Middlefield Rd.)	2	2	2	2	3	2	**2.2**
4 – Alt 1. + East Whisman (via Central Expwy.)	2	1	1	1	3	2	**1.7**

Legend:
3 – Most Desirable
2 – Neutral
1 – Least Desirable
Overall Ranking Score: Lowest number is the worst / least desirable.

3.8 Preliminary Recommended Alternative

It should be noted that Alternatives 1 through 4 require additional water supply that exceeds the current contracted amount of 3 mgd. It is possible that additional storage and/or recycled water supply could help the City to provide service to the East Whisman area, dual plumbed locations, and other areas of the City.

For the near future, it was deemed most suitable to focus on Alternative 1 as the recommended alternative to serve additional users in the North Bayshore area to optimize the current recycled water allocation. Due to the uncertainty of the timing for additional recycled water supply, adding a tank in the North Bayshore area should be prioritized. It is recommended to build a tank and booster pump station at or near location 1, Charleston Park (North). Additional information on the recommended tank is provided in Chapter 4. A tank siting study is recommended before the City finalizes a tank location.

A complete list of users served by this alternative and their estimated demands is presented in Appendix F.

Chapter 4 focuses on detailed development of Alternative 1 for the City's near-term expansion project and discusses future expansion to serve future dual plumbed sites and the East Whisman commercial area via Middlefield Road (Alternative 3).

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Chapter 4

RECOMMENDED PROJECT, FUNDING & FINANCING

4.1 Introduction

In Chapter 3, the City of Mountain View (City or Mountain View) identified a preferred near-term and future alternative. The near-term alternative (Alternative 1) includes serving the existing recycled water customers as well as 82 unique additional users in the North Bayshore area. The additional customers are comprised of both seasonal irrigation users as well as year-round dual plumbed uses.

Due to current recycled water availability limitations, future expansion beyond the North Bayshore area was not considered at this time. Should additional water become available to the City, additional customers could be served in the future in the East Whisman area by Alternative 3 (expansion via Middlefield Road), along with NASA, and additional dual plumbed uses throughout the City.

This chapter describes the detailed analysis of the near-term and future expansion including customers served, recommended facilities, and required piping. The funding and financing analysis presented later in this chapter is provided for the Alternative 1 expansion only.

4.2 Model Update and Development

The City's recycled water hydraulic model was developed and calibrated as a part of the 2014 Recycled Water Feasibility Study (RWFS). This project updated the model further and entailed a software conversion from H_2OMap Water to InfoWater Pro. Demands for all customers were allocated based on max billing demands from 2014 and 2017-2020. Shoreline Park was not assigned any max day or peak hour demand to its base average flow. Billing records were spatially joined to the nearest model junction as average daily demands. The average maximum day peaking factor recorded at the Palo Alto Pump Station was 3.4. This was input in the model and results were run for a 72-hour max day period, with diurnal patterns applied as defined in the 2014 RWFS. Modelling criteria for this recommended project remained the same as the criteria presented in Chapter 3 (Table 3.1).

4.2.1 Infrastructure Sizing and Performance Criteria

The hydraulic model was used to create scenarios for all alternatives and refine infrastructure sizing for Alternative 1 and Alternative 3. The model was run so that pipelines did not exceed City criteria, presented in Chapter 3, of velocities of 5 fps and junctions with pressures above 40 pounds per square inch (psi) during Peak Hour Demand conditions and above 65 psi during normal operating conditions. The model also assumed a constant supply of 3,000 gallons per minute (gpm) for Alternative 1 and 6,000 gpm for Alternative 3 would be obtained and supplied at the Palo Alto Pump Station. With two pumps running providing a total of 4,000 gpm,

Palo Alto cannot meet a 6,000 gpm demand while keeping the 3rd pump in standby. Improvements to the supply would be needed prior to expanding towards East Whisman and Alternative 3.

Tanks, pump stations, and pipelines were sized based on meeting these criteria. Figure 4.1 shows the preferred North Bayshore expansion (Alternative 1) and future expansion to East Whisman (Alternative 3) with a tank in the North Bayshore area and a booster pump station along the Middlefield route. Figure 4.2 shows the existing pipelines with elevated velocities and pressures below 40 psi. These are recommended to be upsized to meet performance criteria in the North Bayshore area. There is approximately a 50-foot elevation increase between North Bayshore and East Whisman requiring a booster pump station along the Middlefield route option. The primary feasible City-owned land for locating the booster pump station at this time is San Veron Park. However, model junctions just north of this pump station location dip below criteria even after the pump station is added to the model. Since pressures stay above 30 psi and there are only minor demands along the route, this appears to be an adequate location for the pump station. If the system is expanded into East Whisman a final site analysis on the booster pump station is recommended.

The preferred alternative modeled booster pump stations at the proposed North Bayshore Tank and along the Middlefield route. The station in North Bayshore helps stabilize pressures in the near term. The booster station along the Middlefield route is necessary to reach the high elevations in East Whisman. There is flexibility for the booster pump station location. Adding a booster station along with a tank at the Google Middlefield Master Plan area could be considered as a part of the future recommended Tank Site Study.

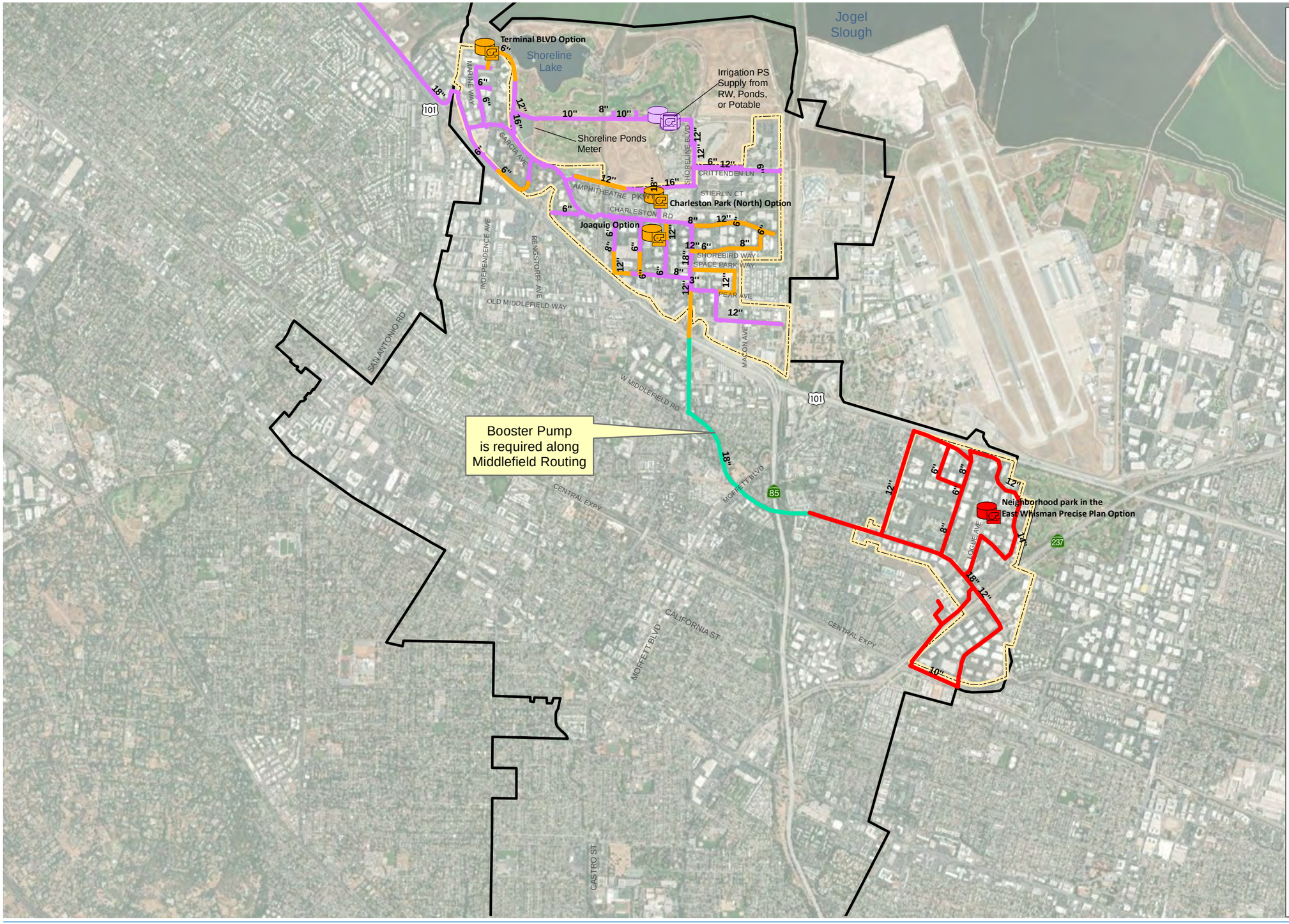

Figure 4.1 Preferred Alternative

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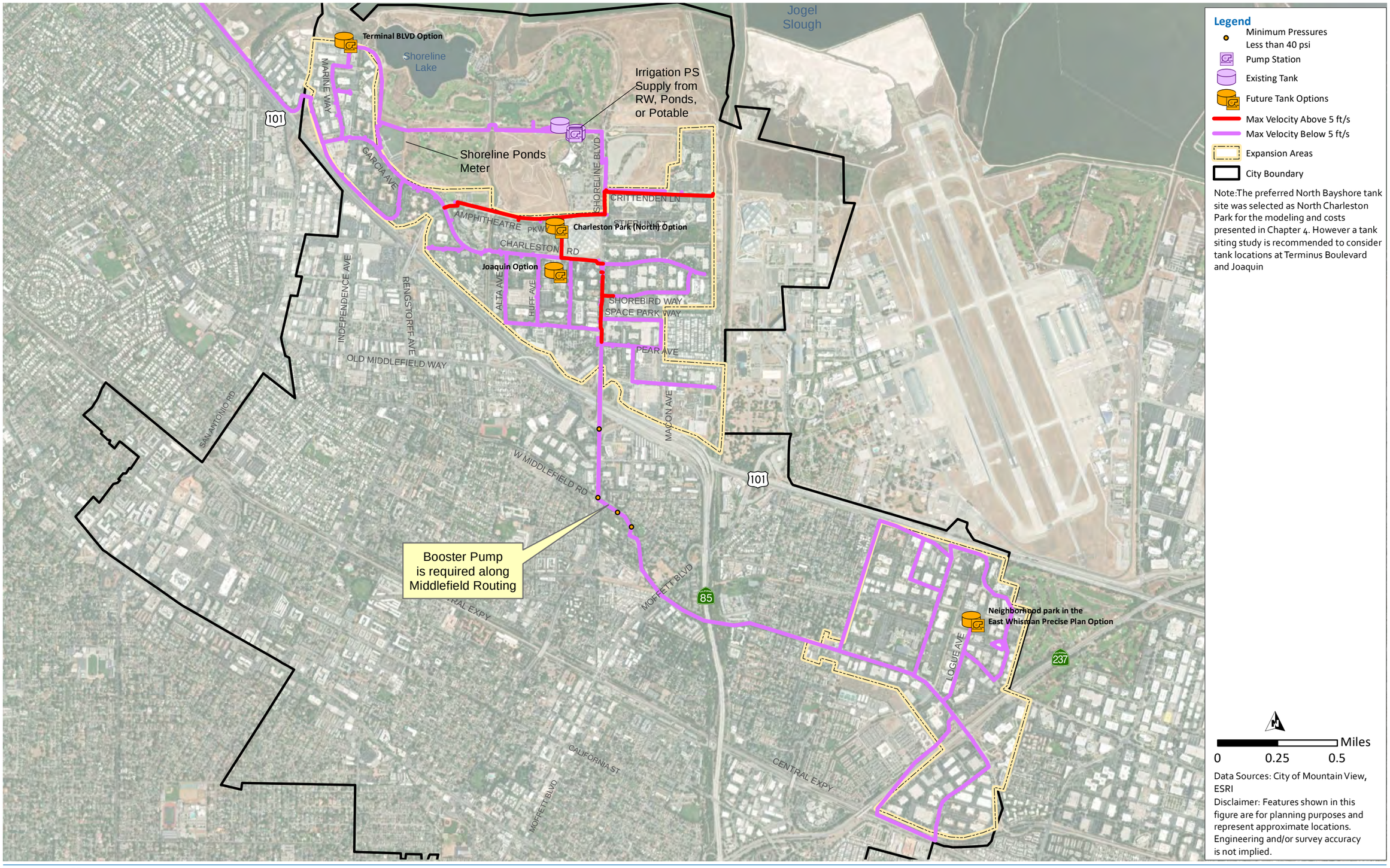

Legend

- Minimum Pressures Less than 40 psi
- Pump Station
- Existing Tank
- Future Tank Options
- Max Velocity Above 5 ft/s
- Max Velocity Below 5 ft/s
- Expansion Areas
- City Boundary

Note:The preferred North Bayshore tank site was selected as North Charleston Park for the modeling and costs presented in Chapter 4. However a tank siting study is recommended to consider tank locations at Terminus Boulevard and Joaquin

Miles

0 0.25 0.5

Data Sources: City of Mountain View, ESRI

Disclaimer: Features shown in this figure are for planning purposes and represent approximate locations. Engineering and/or survey accuracy is not implied.

Figure 4.2 Preferred Alternative – Performance Criteria

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4.3 Recommended Project

The recommended project consists of near-term expansion throughout the North Bayshore area and a future expansion, via Middlefield Road, to serve the East Whisman area. As previously discussed, due to current recycled water production ability, expansion to the East Whisman area and others is not feasible at this time. Once additional recycled water supply is achieved, expansion to East Whisman via Alterative 3 is recommended. Tables 4.1 and 4.2 detail the demands and recommended facilities for the near- term and future expansions.

Alternative 1 would serve 133 unique addresses, and 81 additional to Alt 0. The current existing max day demand is 1.2 million gallons per day (mgd). Expansion to include Alternative 1 would increase the max day demand to 4.2 mgd. Approximately 70 percent of the way through adding all customers in Alternative 1, a 3 mgd max day demand would be reached meaning a need for additional recycled water supply. Hydraulic modeling and City feedback have shown low pressures in the existing system, indicating a current need for a tank. As North Bayshore fully develops the need for a tank will be amplified. A 1.9 MG tank with 1.6 MG of operational storage is recommended in the near-term to facilitate remaining growth in North Bayshore as a part of Alternative 1.

A detailed list of customers is shown in Appendix F and can also be seen in Figure 4.3. The customers for Alternative 1, in the North Bayshore area, are shown in Figure 4.4.

Alternative 3's expansion would serve 124 additional customers in and along the route to East Whisman. To serve all East Whisman a second recycled water tank is recommended.

A tank siting study is recommended to determine the best choice for storage both in North Bayshore and East Whisman. The costs and modeling presented in the rest of this Chapter assume Alternative 1 is enacted with a 1.9 MG tank accompanied with a 215 hp booster pump station in Charleston Park.

Henceforth Alternative 5 will refer to the combination of sub-alts 5a, 5b, and 5c, which are all recommended. These alternatives are all very long term and should not be considered until additional supply is procured, and the system is expanded to East Whisman. It is recommended that following Alternative 3, the City prioritize expansion to Alternative 5a. Alternative 5a is the most cost effective and offers a logical pathway to proceed 5b and 5c due to its proximity to East Whisman. Alternative 5b is deemed more cost effective than 5d. Primarily due to 5b's ability to serve parcel frontages along the route, while Alternative 5d's pipeline is outside of City limits, so the number of parcel frontages along the route is smaller.

Table 4.1 Summary of Average Annual Demands (AFY)

	Irrigation Demands	Indoor Residential Demands	Cooling/ Industrial Demands	Indoor Office Demands	Shoreline Demands	Total Demand	Total Cumulative Demand
Alt 0 -Existing	382	-	-	-	138	520	520
Alt 1- North Bayshore / NASA Expansion	756	43	44	773	165	1,781	2,301
Alt 3- East Whisman Expansion	633			314		947	3,248

Table 4.2 Summary of Proposed Facilities by Phase

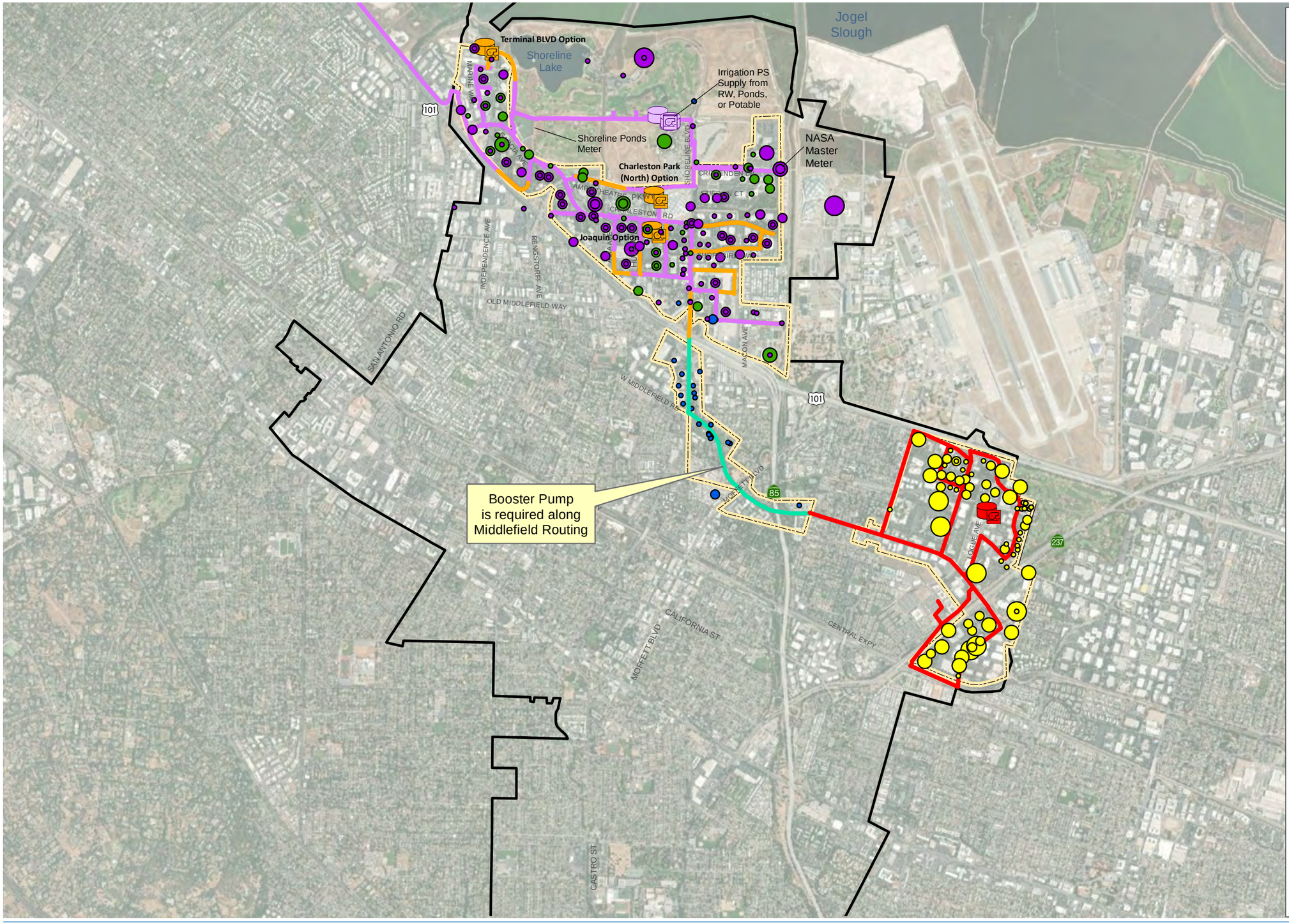
Description	Alternative 1 - North Bayshore Expansion/New Pipelines(1)	Alternative 1 - North Bayshore Pipelines to be Upsized(1)	Alternative 3 - East Whisman Expansion	Alternative 5a/b/c - Dual Plumbed Expansion(3)
Pipelines (LF)				
6-in Pipeline	3,740	88	2,914	
8-in Pipeline	3,219		2,043	17,900
10-in Pipeline	-		7,096	
12-in Pipeline	5,857	7,922	15,593	
16-in Pipeline		943	263	
18-in Pipeline		3,775	10,800	
Storage Tanks (MG)				
Buried Concrete Storge Tank	1.9		2.3	
Booster Pumping (hp)				
Booster Pumping	215		550	

Notes:

(1) Sizing is based on modeling the two tank system and expansion to East Whisman with Tank Option 2 (Charleston Park, North) and a tank in East Whisman. If a different tank location is chosen, high velocity pipelines are subject to change and therefore so would the recommended upsizing. A tank siting study is recommended before the City finalizes the storage tank location.

(2) Abbreviations: LF = linear feet; MG = million gallons; hp = horsepower.

(3) Storage, booster pumping, and exact piping sizing are subject to changed and should be based on finalized prior system expansions into North Bayshore and East Whisman.



Legend

Preferred Alternative Customers
- Existing
- Demands Along Middlefield Route
- Future Customer
- Future East Whisman

Potential Demand
- > 5 afy
- 5 - 15 afy
- 15 - 40 afy
- > 40 afy

- Pump Station
- Existing Tank
- North Bayshore Tank Options
- East Whisman Tank Option
- Existing Pipeline
- North Bayshore Future Pipes
- East Whisman Future Pipes
- Future Middlefield Routing to East Whisman
- Expansion Areas
- City Boundary

Note:The preferred North Bayshore tank site was selected as North Charleston Park for the modeling and costs presented in Chapter 4. However a tank siting study is recommended to consider tank locations at Terminus Boulevard and Joaquin

N

Miles
0 0.3 0.6

Data Sources: City of Mountain View, ESRI

Disclaimer: Features shown in this figure are for planning purposes and represent approximate locations. Engineering and/or survey accuracy is not implied.

Figure 4.3 Preferred Alternative Customers

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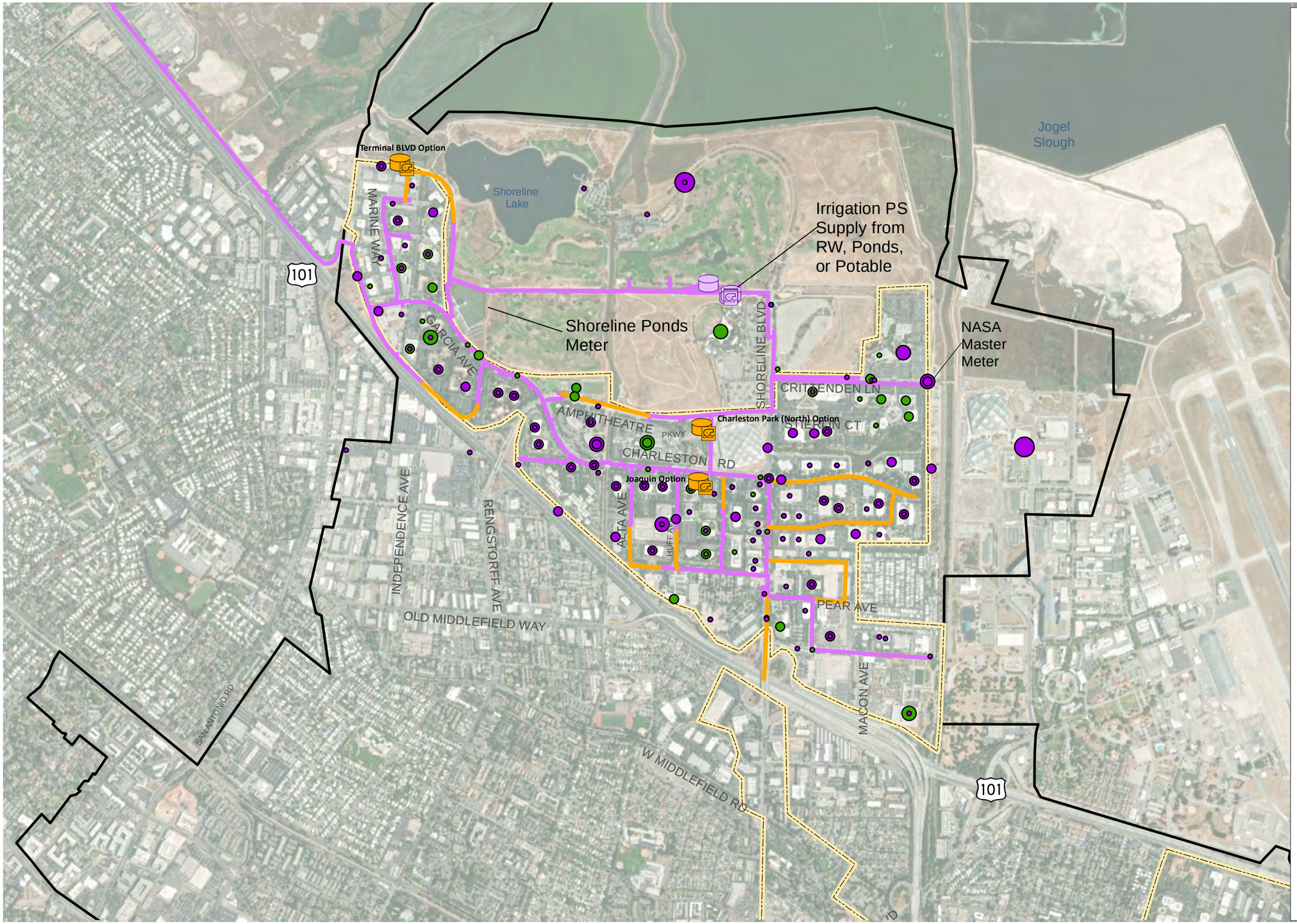

Figure 4.4 North Bayshore Customers

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4.4 Preliminary Cost Estimates for Recommended Project and Preferred Future Expansion Alternatives

A summary of construction and capital cost estimates for the recommended project (Alternative 1) is presented in Table 4.3. Although expansion to East Whisman via Middlefield Road (Alternative 3) has been deemed the preferred future expansion alternative, costs developed herein are only applicable for the Alternative 1 project. Future Upsizing in North Bayshore is not included in these costs. The tank location and timing of the East Whisman expansion will affect these costs. Also note that to reach East Whisman additional booster pumping would be needed. The estimates are organized by facility types – pipeline, pump station, and storage. A total markup of 62.5 percent was applied to construction costs to account for construction contingency (30 percent), engineering (10 percent), construction management (10 percent), and environmental and legal (5 percent) costs. The cost estimates do not include land acquisition or recycled water costs. It was assumed that land acquisition was not needed since the facilities could be located on City-owned property. and the recycled water supply Agreement does not contain a cost for purchasing recycled water from Palo Alto, so this assumption was used for these estimates as well. The unit construction costs used to develop these estimates were previously presented in Chapter 3.

Table 4.3 Estimated Capital Cost for the Recommended Project

Item	Total Cost ($M)
Piping(3)	$3.60
Fittings and Valves(3)	$0.02
Storage Tank(1, 3)	$10.68
Booster Pumping(3)	$1.67
SUBTOTAL – Construction	**$16.0**
Construction Contingency (30 percent)	$4.79
SUBTOTAL – Construction + Construction Contingency	**$20.75**
Engineering (10 percent)	$2.08
Construction Management (10 percent)	$2.08
Environmental and Legal (5 percent)	$1.04
TOTAL PROJECT COST(4)	**$25.94**

Notes:
(1) Storage tank costs are conservative and includes a 2.5 factor increase estimated for a buried tank.
(2) Piping costs are further refined here and do not match costs from Chapter 3.
(3) These are unit costs.
(4) This reflects the total capital cost.

4.5 Funding and Financing Recommendations

The adequate funding of capital and operational costs is a primary consideration when implementing a capital program that would expand facilities and infrastructure. This chapter describes potential funding opportunities and financing mechanisms regarding costs associated with the recommended recycled water program, including an overview of current applicable grants and loan opportunities.

In the course of this discussion, the term "funding" will refer to the method of collecting money to pay for a project or capital program—essentially, any revenue source available to the City, such as user rates and charges, bond proceeds, or unrestricted cash reserve funds. In contrast, the term "financing" will specifically refer to the collection of outside revenue sources, namely grants and/or loans.

4.6 Funding Source Identification

There are two types of costs associated with the recommended project discussed in this chapter: capital costs required to plan, design, and build the facilities/infrastructure; and operational costs required to maintain, operate, and repair those facilities/infrastructure elements.

Capital costs are funded through a variety of sources ranging from traditional funding options such as pay-as-you-go (PAYGO) funding and bond financing, to non-traditional funding sources such as grants, loans, and market-based programs. The following sections outline mechanisms available to recover both capital and operation and maintenance (O&M) costs.

The main instruments available for funding capital costs include:

- **PAYGO financing** — upfront collection of project costs from existing and new users for future capital improvement projects.
- **Debt financing** — acquisition of funds through borrowing mechanisms.
- **Grants and loans** — alternate sources of funds from public agencies at no or minimal interest cost. Examples include federal, state, and local programs that provide funding at low interest rates for those projects meeting select criteria.
- **Market based programs** — refers to financing through funds obtained from tax credits, purchase agreements, voluntary programs, and trading and offset programs.

Operating revenues remaining after operating expenses and debt service obligations have been met can be a significant source of funding, either as PAYGO funding for capital expenses today or placed in reserves for future projects. Financing methods such as grants and loans can be combined with rate revenues and unrestricted cash reserve funding to develop a complete funding plan. Carollo recommends operational costs be fully funded through user rates and other recurring annual sources of revenue, and further recommends they not be funded through debt.

4.6.1 PAYGO Funding

PAYGO financing involves periodic collection of capital charges or assessments from customers within the utility's jurisdiction for funding future capital improvements. These revenues are accumulated in a reserve fund and used for capital projects in future years. PAYGO financing could be used to finance up to 100 percent of a given project or fund only a portion of a given project depending on several factors.

Overall, total costs are typically substantially lower when employing a PAYGO financing approach due to the avoidance of interest payments incurred from bond funding, along with the associated transaction costs (e.g., legal fees, underwriters' discounts, etc.). However, it is often challenging to employ this funding approach for sizable new or replacement projects, due to the significant amount of cash-on-hand capital required through us of unrestricted cash reserves, or user-rate revenues. If the program is funded through unrestricted cash reserves, the agency must already possess adequate cash-on-hand designated for such a project. If the program is entirely user-rate funded, it could significantly increase the agency's rates and fees if the program represents a sizeable increase in capital needs. Due to these challenges associated with rate and/or reserve funding alone, many agencies ultimately opt to fund major capital expansions through one or more other methods, which typically include bond financing.

4.6.2 Financing Options

4.6.2.1 Debt Financing

There are several different options for debt financing reclaimed water projects, ranging from issuance of short- or long-term bonds.

Revenue Bonds

Revenue bonds are historically the principal method of incurring long-term debt. This method of debt obligation requires specific non-tax revenues such as user charges, facility income, and other funds, pledged to guarantee repayment. There is often no legal limitation on the amount of authorized revenue bonds that may be issued, but from a practical standpoint, the size of the issue must be limited to an amount where annual interest and principal payments are well within the revenues available to fund annual debt service of the revenue bonds. Revenue bond covenants generally include annual debt service coverage provisions, which require that annual revenues from fees less annual operating expenses be some multiple (i.e. 1.25x or more) greater than annual debt service (principal and interest) costs.

Certificates of Participation

Certificates of participation provide long-term financing through a lease agreement that does not require voter approval. The legislative body of the issuing agency is required to approve the lease arrangement through a resolution. The lessee (the City) would be required to make payments typically from revenues derived from the operation of the facilities. The amount financed may include reserves and capitalized interest for the period that facilities will be under construction. Within the State of California, most municipal water utility bonds are issued in the form of certificates of participation rather than traditional revenue bonds.

General Obligation Bonds

General obligation (GO) bonds are municipal securities secured by the issuer's pledge of its full faith, credit, and taxing power. GO bonds are backed by the general taxing authority of local governments and are often repaid using utility revenues when issued in support of a sewer or water enterprise fund. In the event that GO bonds are issued for this project, the agency must have the necessary taxing capacity to issue the bonds.

Assessment District Bonds

Financing by this method involves initiating assessment proceedings. Assessment proceedings are documents in "Assessment Acts" and "Bond Acts." An assessment act specifies a procedure for the formation of a district (boundaries), the ordering, and making of an acquisition or improvement, and the levy and confirmation of an assessment secured by liens on land. A bond act provides the procedure for issuance of bonds to represent liens resulting from proceedings taken under an assessment act. Procedural acts include the Municipal Improvements Acts of 1911 and 1913. The commonly used bond acts are the 1911 Act and the Improvement Bond Act of 1915. The most prevalent procedure is a combination of the 1913 Improvement Act with the 1915 Bond Act. Charges for debt service can be included as a special assessment on the annual property tax bill. The procedure necessary to establish an assessment district may vary depending on the acts under which it is established and the District size.

4.6.2.2 State Grants and Loans

Generally, to qualify for one of California's state funding programs, a project must meet the following objectives and requirements:

- Demonstrate consistency with the California Water Action Plan (CWAP).
- Help meet the State Recycled Water Policy objectives.
- Provide environmental documents such as California Environmental Quality Act (CEQA) or CEQA plus.
- Protect groundwater resources.
- Demonstrate regional cooperation and partnerships with partners and stakeholders.
- Remain consistent with the objectives of U.S. Bureau of Reclamation Title XVI program to reclaim and reuse wastewaters and naturally impaired ground and surface water in the 17 Western States and Hawaii.

State budget constraints always bring some degree of uncertainty to the future funding ability of these programs. It is therefore recommended these programs be viewed as a potential supplement to other funding sources, rather than a standalone funding centerpiece.

Water Recycling Funding Program

One state funding option for the recommended recycled water projects is the Water Recycling Funding (WRF) Program administered by the SWRCB. The program offers grants and loans for planning (including research, feasibility studies, environmental review) and construction (treatment facilities, distribution systems, and storage). The program is financed through Propositions 1 (2014 Water Bond), Proposition 13 (2000 Water Bond), Proposition 68 (2018 Water Bond), and the Clean Water State Revolving Fund (CWSRF).

The WRFP has a set of guidelines that capital projects must meet to qualify to apply and receive funds. Because the recommended recycled water program is for the purpose of water reuse, it would qualify as an eligible project.

The recommended recycled water program would be eligible for construction funding including grants and loans from a state bond, CWSRF financing, or combinations of funding sources. Construction grants have been dispersed through Proposition 13 and Proposition 50. Construction loans have been dispersed through Proposition 13 and the CWSRF. Like conventional financing, CWSRF financing can be used to fill any funding gaps between the capital plan and available revenues. Compared with conventional debt financing however, CWSRF loans come with more advantageous borrowing terms, including interest rates set at one-half of the state general obligation bond rate and has historically averaged around 2 percent (currently 1.1 percent in California[1]). The CWSRF offers 30-year financing options and there are no maximum limits on financing. Furthermore, repayment does not begin until one year following completion of the eligible project.

The SWRCB provides one application package for both construction grants and CWSRF recycled water loans. The application package consists of:

- General Application.
- Financial Application with an Authorized Representative Resolution (Legal Authority).
- Technical Application with a Technical Report/Feasibility Study.
- Environmental documents including CEQA documents.

The SWRCB will review the application package and assess eligibility. Once the SWRCB receives and reviews the final plans and specs, it will issue project performance standards. Once performance standards are agreed to and the applicant chooses a contractor, the parties sign a funding agreement. The applicant must also have an approved Urban Water Management Plan filed with the DWR to receive funds.

4.6.2.3 Federal Grants and Loans

In addition to local and State grants and loans, there are several highly competitive federal grant and loan programs that provide financial resources to recycled water projects.

4.6.2.4 Title XVI

The U.S. Bureau of Reclamation administers funds for recycled water feasibility, demonstration, and construction projects through the Water Reclamation and Reuse Program authorized by the Reclamation Wastewater and Groundwater Study and Facilities Act of 1992 (Title XVI) and its amendments. The program provides as much as 25 percent of construction costs with a maximum of $20 million. To meet eligibility requirements a project must have a feasibility study, comply with environmental regulations, and demonstrate the ability to pay the remainder of the construction costs. Projects are authorized by Congress and recommended in the President's annual budget request by the Bureau of Reclamation. Congress then appropriates funds and the Bureau ranks and prioritizes projects and disburses the money on a competitive grant basis each year. Prioritized projects are those that postpone the development of new water supplies, reduce diversions from natural watercourses, and reduce demand on federal water supply facilities, or that have a regional or watershed perspective.

[1] Interest rate as of April 2021.
https://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/docs/trueinterestcost.pdf

Table 4.4 State and Federal Funding Programs

Program	Agency	Type	Description
State			
Clean Water State Revolving Fund (CWSRF)	State Water Resources and Control Board	Loan	The State's CWSRF program provides low interest (50% of the GO bond rate – the current interest rate is 1.1 percent) loans for up to 30 years for the funding of wastewater treatment works, transmission lines, distribution systems, recycled water, and other projects. To be considered for funding, a complete (or as complete as possible) CWSRF Application package (including required technical, environmental, and financial documentation) is due by December 31st for evaluation by the SWRCB based on established scoring criteria. Projects meeting an established priority score (FY 2020 Score was 13 out of 16 points) will be placed on a fundable list for funding in the upcoming fiscal year. As funding for the program is from both Federal and State sources – federal requirements apply including CEQA plus, A&E Procurement, AIS, Davis Bacon, anti-lobbying, and other requirements.
Water Recycling Funding (WRF) Program	State Water Resources and Control Board	Grant/Loan	The WRF Program funds the planning and construction of recycled water treatment facilities such as storage, pumping, groundwater recharge, and distribution systems. The program requires a 50/50 cost share. The program is being run through the CWSRF program (application is same as an SRF application). The Proposition 1 Groundwater Grant funds up to 50 percent of the construction costs with no maximum cap. Application deadline is ongoing and funds are available on a first-come, first serve basis.
Federal			
Title XVI	U.S. Bureau of Reclamation	Grants	Eligible projects include recycled water feasibility, demonstration, and construction projects. The program provides as much as 25 percent of construction costs with a maximum of $20 million. To meet eligibility requirements a project must have a Bureau of Reclamation approved feasibility study, comply with environmental regulations (National Environmental Policy Act [NEPA]), and demonstrate the ability to pay the remainder of the construction costs.

4.7 Funding Sources and Uses

As requested through the report requirements and specifically as part of the sensitivity analysis, Carollo developed long-range cash flow models based on three scenarios to forecast the City's revenues and expenses for the recycled water program. These long-range cash flow models were also developed to assist the City in identifying the need for additional funds to execute and implement the recycled water expansion through the North Bayshore project. As part of the sensitivity analysis, the following three scenarios were considered:

- **Scenario 1 (27-year Timeframe) –** The City commits to converting 3 sites (out of a total of 81 sites) per year for approximate completion in fiscal year end (FYE) 2048 (approximately a 27-year timeframe).
- **Scenario 2 (14-year Timeframe) –** The City commits to converting 6 sites (out of a total of 81 sites) per year for approximate completion in FYE 2035 (approximately a 13-year timeframe).
- **Scenario 3 (11-year Timeframe) –** The City commits to converting 8 sites (out of a total of 81 sites) per year for approximate completion in FYE 2032 (approximately a 10-year timeframe).

4.7.1 Funding Sources

4.7.1.1 Utility Rates, Charges, and Fees

Utility rates, charges, and fees, such as rates charged to users for each unit of water used or monthly wastewater treatment fees, can be used to fund recycled water system improvements. The City could also implement a benefit assessment fee through a public voting process, which would recover costs through annual property taxes. Benefit assessment fees are usually included as a separate line item on the annual property tax bill sent to each property owner.

Interest income has also been incorporated into the cash flows and is based on an average of the beginning and ending fund balances (excluding bond proceeds) and further recognizes annual cash flow operations. Carollo assumed an interest income rate of 1.5 percent per annum.

Recycled Water Sales

This analysis used the City's existing recycled water rate structure which consists of two components, a monthly meter charge based on meter size and a uniform rate based on metered recycled water consumption. This analysis also assumes no future increases to the monthly meter charge or the uniform rate. The City's existing recycled water rates are shown on the City's website and illustrated below in Table 4.5.

Table 4.5 City of Mountain View Existing Recycled Water Rates by Meter Size

Meter Size	Monthly Rate
5/8-inch	$15.55
3/4-inch	$15.55
1-inch	$31.10
1.5-inch	$62.20
2-inch	$99.55
3-inch	$186.60
4-inch	$311.00
6-inch	$622.00
8-inch	$995.20
10-inch	$1,492.80

Note:
(1) Uniform rate of $5.00 per CCF for all metered consumption.

Please note, for purposes of this analysis, all recycled water customers were assumed to possess a 5/8-inch meter. Furthermore, Carollo assumed the existing rates remain in effect throughout the respective study periods evaluated in Scenarios 1 through 3.

Recycled water sales are projected on an annual basis and cumulatively increase as more customers are connected to the recycled water system. Annual projections under each scenario are presented in Table 4.6 below.

Table 4.6 Annual Recycled Water Sale Projections by Scenario

Revenue Description	Scenario 1	Scenario 2	Scenario 3
Recycled Water Meter Charges	$1,120	$1,120	$1,493
Recycled Water Sales (Consumption)(1)	$93,862	$187,725	$244,042
Total	**$94,422**	**$188,844**	**$245,535**

Note:
(1) Uniform rate of $5.00 per CCF for all metered consumption.

4.7.1.2 Avoided Costs

As part of this analysis, Carollo assumed potable sales exceeded the City's minimum contractual obligations throughout the study period and as such it should be recognized that any amount of recycled water sold as a substitute for potable water allows for incremental revenue to be earned through the sale of potable water to additional potable customers or through increased existing potable water customer demands. In discussions with City staff, Carollo assumed the City's average cost of potable water is equal to the tier 2 rate for residential single-family customers or $7.01 per one hundred cubic feet (CCF). In recognition of the benefit of selling recycled water as well as potable water, it was assumed a non-cash benefit (i.e. avoided cost) should be recognized as a revenue line item in each scenario's cash flow. Carollo recognizes the avoided cost as a positive (revenue) cash flow which is most easily derived by subtracting the tier 2 potable residential single family rate of $7.01 per CCF (recognized as the City's average cost of potable water) by the current recycled water rate of $5.00 per CCF. This results in an avoided cost benefit

(revenue) of $2.01 per CCF of recycled water consumption and is recognized as such throughout each scenarios' respective study period. Lastly, monthly meter charges are excluded from avoided costs as these charges are identical regardless of the type of service provided (i.e. potable water versus recycled water service).

It's important to note, Carollo assumed the City would adequately meet its minimum contractual obligation for potable water sales.

4.7.2 Funding Uses

4.7.2.1 Capital Costs

As stated previously, costs are based on the recommended North Bayshore expansion project only. The project outlined in this chapter formed the basis for the capital program, assuming a site implementation/start-up rate of three, six or eight sites per year under Scenarios 1, 2, and 3, respectively. Alternative 1 distant projects are also considered even though they are outside the City's planning horizon. Table 4.3 summarizes the total capital for the recommended project.

Additional annual capital costs are assumed for recycled water system expansion improvements and begin in FYE 2022 at $65,000, increasing 2 percent annually throughout each scenarios' study period.

4.7.2.2 Operating Costs

Annual operations and maintenance costs are identical regardless of scenario (although appear different because each scenario has a different divisor based on the expected study period of 27, 14, or 11-years) and escalate ata rate of 3 percent annually throughout each scenarios' respective study period. Operations and maintenance costs were estimated as 2 percent of capital costs (excluding Engineering, Construction Management, Environmental, and Legal costs). These costs were included in each year of the cash flow model beginning in FYE 2022.

4.7.2.3 Total Annual Costs

To develop an annual cost for each project, total costs are distributed over the project duration using a straight line method which considers total costs and divides them equally among the amount of time for completing connection of all 81 sites (i.e. 27-years under Scenario 1, 14-years under Scenario 2 and 11-years under Scenario 3).

These annualized capital costs were combined with annual O&M costs to develop a forecast of costs for each year. Afull detailed annual cost forecast is provided in Appendix G where all values are presented in 2022 dollars for FYE 2022.

As the City continues to connect users to the recycled water system, recycled water revenues are projected to exceed O&M, as well as capital costs in the later years. However, the City is projected to fall short of covering both O&M and capital costs in the earlier years of the forecast. Tables 4.7 through 4.9 depict early results of the cash flows under Scenarios 1 through 3, respectively, through FYE 2036. Additional cash flow details under each Scenario can also be found in Appendix G.

Table 4.7 Scenario 1 (3 Sites per Year) – Projected Annual Cash Flow

FYE	Revenues	Expenses				Net Revenues
		O&M	Capital – ALT1	Capital – Improvements	Total Costs	
2022	$94,422	$21,779	$1,223,925	$65,000	$1,310,703	-$1,216,281
2023	$188,844	$22,432	$1,223,925	$66,300	$1,312,656	-$1,123,812
2024	$283,266	$23,105	$1,223,925	$67,626	$1,314,655	-$1,031,389
2025	$377,688	$23,798	$1,223,925	$68,979	$1,316,701	-$939,013
2026	$472,110	$24,512	$1,223,925	$70,358	$1,318,795	-$846,684
2027	$566,533	$25,247	$1,223,925	$71,765	$1,320,937	-$754,405
2028	$660,955	$26,005	$1,223,925	$73,201	$1,323,130	-$662,175
2029	$755,377	$26,785	$1,223,925	$74,665	$1,325,374	-$569,997
2030	$849,799	$27,588	$1,223,925	$76,158	$1,327,671	-$477,872
2031	$944,221	$28,416	$1,223,925	$77,681	$1,330,022	-$385,801
2032	$1,038,643	$29,269	$1,223,925	$79,235	$1,332,428	-$293,785
2033	$1,133,065	$30,147	$1,223,925	$80,819	$1,334,890	-$201,825
2034	$1,227,487	$31,051	$1,223,925	$82,436	$1,337,411	-$109,924
2035	$1,321,909	$31,983	$1,223,925	$84,084	$1,339,991	-$18,082
2036	$1,416,331	$32,942	$1,223,925	$85,766	$1,342,633	$73,699

Table 4.8 Scenario 2 (6 Sites per Year) – Projected Annual Cash Flow

FYE	Revenues	Expenses				Net Revenues
		O&M	Capital – ALT1	Capital – Improvements	Total Costs	
2022	$188,844	$43,557	$2,447,849	$65,000	$2,556,406	-$2,367,562
2023	$377,688	$44,864	$2,447,849	$66,300	$2,559,013	-$2,181,324
2024	$566,533	$46,210	$2,447,849	$67,626	$2,561,685	-$1,995,152
2025	$755,377	$47,596	$2,447,849	$68,979	$2,564,424	-$1,809,047
2026	$944,221	$49,024	$2,447,849	$70,358	$2,567,231	-$1,623,010
2027	$1,133,065	$50,495	$2,447,849	$71,765	$2,570,109	-$1,437,044
2028	$1,321,909	$52,009	$2,447,849	$73,201	$2,573,059	-$1,251,150
2029	$1,510,753	$53,570	$2,447,849	$74,665	$2,576,083	-$1,065,330
2030	$1,699,598	$55,177	$2,447,849	$76,158	$2,579,184	-$879,586
2031	$1,888,442	$56,832	$2,447,849	$77,681	$2,582,362	-$693,920
2032	$2,077,286	$58,537	$2,447,849	$79,235	$2,585,621	-$508,335
2033	$2,266,130	$60,293	$2,447,849	$80,819	$2,588,962	-$322,831
2034	$2,454,974	$62,102	$2,447,849	$82,436	$2,592,387	-$137,412
2035	$2,642,699	$63,965	$2,447,849	$84,084	$2,595,899	$46,800
2036	$2,830,424	$65,884	$2,447,849	$85,766	$2,599,499	$230,924

Table 4.9 Scenario 3 (8 Sites per Year) – Projected Annual Cash Flow

FYE	Revenues	Expenses				Net Revenues
		O&M	Capital – ALT1	Capital – Improvements	Total Costs	
2022	$245,535	$56,624	$3,182,204	$65,000	$3,303,828	-$3,058,293
2023	$491,070	$58,323	$3,182,204	$66,300	$3,306,827	-$2,815,757
2024	$736,604	$60,073	$3,182,204	$67,626	$3,309,902	-$2,573,298
2025	$982,139	$61,875	$3,182,204	$68,979	$3,313,057	-$2,330,918
2026	$1,227,674	$63,731	$3,182,204	$70,358	$3,316,293	-$2,088,619
2027	$1,473,209	$65,643	$3,182,204	$71,765	$3,319,612	-$1,846,403
2028	$1,718,743	$67,612	$3,182,204	$73,201	$3,323,017	-$1,604,273
2029	$1,964,278	$69,641	$3,182,204	$74,665	$3,326,509	-$1,362,231
2030	$2,209,813	$71,730	$3,182,204	$76,158	$3,330,091	-$1,120,279
2031	$2,454,974	$73,882	$3,182,204	$77,681	$3,333,767	-$878,792
2032	$2,699,016	$76,098	$3,182,204	$79,235	$3,337,537	-$638,520
2033	$2,943,058	$78,381	$3,182,204	$80,819	$3,341,404	-$398,346
2034	$3,187,100	$80,733	$3,182,204	$82,436	$3,345,372	-$158,272
2035	$3,431,142	$83,155	$3,182,204	$84,084	$3,349,443	$81,699
2036	$3,675,184	$85,649	$3,182,204	$85,766	$3,353,619	$321,565

4.8 Funding Plan Options

4.8.1 Pay-As-You-Go and Reserve Funding

As discussed, PAYGO involves funding the capital program through rate revenues as projects occur. This can be combined with reserve funding to fund the capital program. Sources of revenues include user rates and fees. However, having sufficient cash flow and/or reserves is a substantial challenge for this approach. The utility must possess substantial reserves in order to adequately fund the capital program, and rates must typically rise continually in order to produce adequate PAYGO revenues.

4.8.2 Debt Financing

Alternatively, the City could pursue debt financing, including both conventional and CWSRF loans.

4.8.2.1 Conventional Financing

Conventional financing typically consists of a 30-year term with an interest rate between 3 and 5 percent. In addition, conventional financing often requires the borrower maintain a debt service reserve fund. Additionally, the City would also have to monitor its debt service coverage ratio to ensure it is meeting the bond coverage ratio stipulated in the bond offering document or official statement.

4.8.2.2 State Revolving Fund (SRF) Financing

The California SRF has a set of guidelines that capital projects must meet in order to qualify to apply for and receive funds. Eligible projects include:

- Wastewater treatment plants.
- Sewer collectors and interceptors.
- Combined sewers.
- Septic to sewer conversions.
- Storm water reduction and treatment.
- Water reclamation facilities.

Because the recommended recycled water program is for the purposes of water reclamation, it would qualify as an eligible project. Similar to conventional financing, SRF financing can be used to fill any funding gaps between the capital plan and available revenues. However, when comparing conventional debt financing to SRF loans, SRF loans come with more advantageous borrowing terms, including below market interest rates (currently 1.2 percent in California) and lower fees (i.e. cost of issuance). Furthermore, repayment does not begin until one year following completion of the eligible project. In contrast, conventional debt financing repayment typically begins immediately. Repayment can be postponed, but interest is capitalized (i.e. accrues annually and must be repaid) in the interim.

One consideration regarding SRF funding is how disbursements are managed. Under conventional financing, the entire amount of proceeds are made upfront and therefore immediately available to the borrower. However, the SRF program requires agencies to fund the costs upfront (from cash, reserves, bridge-financing, etc.) and then submit receipts and forms for reimbursement. Typically, this process takes about three-months.

4.9 Comparative Cash Flow Analysis

Under each Scenario, Carollo provided comparative cash flows assuming the PAYGO and conventional financing (assuming 30-year revenue bonds at 4 percent interest excluding a debt service reserve fund) funding approaches described above. Results of these comparative cash flow analyses are provided in Appendix H. It is important to note, the primary difference between each Scenario relates to the pace at which recycled water customers are connected to the recycled water system and as such, the pace at which revenues are received as well as respective costs incurred.

4.9.1 Projected Annual Cash Flow under PAYGO Funding

Assuming PAYGO funding under Scenario 1, the City would require additional cash of approximately $3.985M from FYE 2022 through FYE 2029 to meet expected cash flow deficits and remain financially viable.

Similarly, under Scenario 2 and assuming PAYGO funding, the City would require additional cash of approximately $7.165M from FYE 2022 through FYE 2029 to meet expected cash flow deficits and remain financially viable.

It's important to note, assuming PAYGO funding under Scenario 3, the City would require additional cash of approximately $8.965M from FYE 2022 through FYE 2029 to meet expected cash flow deficits and remain financially viable.

Please refer to Appendix H for specific cash flow results under each of the three PAYGO funding scenarios.

4.9.2 Projected Annual Cash Flow under Conventional Financing

Carollo evaluated long-range cash flows under each Scenario and developed an adequate balance between user rate revenues and debt issuances to meet projected revenue requirements. Carollo assumed the City will issue 30-year revenue bonds at an assumed interest rate of 4 percent and will not require creation of, or a deposit to, a formal debt service reserve fund. Carollo has forecasted debt issuances, as needed once every three years, totaling $6.870, $12.200, and $15.215 million, respectively under Scenarios 1, 2, and 3, to adequately meet projected cash flow shortfalls.

4.10 Sensitivity Analysis

The sensitivity analysis is developed to project the impact of any shortfalls in demand that may occur. Demand may not materialize as anticipated, or key stakeholders may back out of the projects. These potential changes in assumptions could result in the City paying a larger proportionate share of costs.

4.10.1 Unit Cost Calculation

Unit cost calculations are often the simplest method of representing sensitivity analyses. Therefore resulting impacts of each scenario can be easily demonstrated through unit cost calculations. The unit costs at buildout for each Scenario are outlined in Table 4.10. Total costs have been summed over the respective scenarios' study periods (including retirement of all debt issued under their respective scenarios) and divided by the projected total recycled water demand at buildout (469,300 acre feet).

Table 4.10 Unit Cost Calculation

Scenario	Total Cost ($)	AF (at Buildout)	$ / AF
Scenario 1 – 27-year	$41,069,352	469,300	$88
Scenario 2 – 14-year	$49,146,879	469,300	$105
Scenario 3 – 11-year	$54,219,714	469,300	$116

4.10.2 Sensitivity Analysis Results

Using the unit costs derived in Table 4.11, the sensitivity analysis tested the unit costs under a variety of lower demand scenarios, ranging from a 5 percent reduction all the way down to 20 percent. Presenting these reduced scenarios provides the City an idea of the magnitude in changing costs per acre foot if full demand is not realized as expected. This analysis did not take into account any reduced operating costs and assumed these costs are fixed regardless of actual demands. Table 4.14 summarizes the unit cost sensitivity analysis results.

Table 4.11 Unit Cost Sensitivity Analysis

Scenario	Baseline ($/AF)	5% Reduction ($/AF)	10% Reduction ($/AF)	20% Reduction ($/AF)
Scenario 1 – 26-year	$88	$92	$97	$109
Scenario 2 – 13-year	$105	$110	$116	$131
Scenario 3 – 10-year	$116	$122	$128	$144

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Appendix A

REFERENCES

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References

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Appendix B

LETTERS OF SUPPORT

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Google

Dec. 13, 2013

Mr. Gregg Hosfeldt
Assistant Director of Public Works
City of Mountain View
231 North Whisman Road
Mountain View, CA 94043

GOOGLE'S INTEREST IN AND INTENTION TO UTILIZE RECYCLED WATER FOR LANDSCAPE IRRIGATION AND OTHER PURPOSES AT NASA BAY VIEW

Dear Mr. Hosfeldt,

Thank you for providing information regarding the City's preliminary feasibility work to expand the availability of recycled water. Google supports the City's efforts and believes extension of the recycled water distribution system will lessen potable water demands on the Hetch Hetchy Regional Water System, the Santa Clara Valley Water District imported and local supplies, and local groundwater supplies. We support the efforts of the City of Mountain View to expand the recycled water system to increase conservation of our limited potable water supply.

We are currently planning for the development of a new campus on a leased, vacant parcel of land within the Bay View district of NASA Ames Research Center. As recycled water becomes available east of Stevens Creek for our anticipated new facilities, we believe that we can meet our green building objectives in part by using this new water supply for irrigation, cooling, and toilet-flushing purposes. Our early estimates indicate potential demand to be approximately 47 acre-feet per year.

Sincerely,

David Radcliffe
VP Real Estate

Copy:
Elizabeth Flegel, Water Conservation Coordinator, City of Mountain View

CITY OF MOUNTAIN VIEW

PUBLIC WORKS DEPARTMENT • PUBLIC SERVICES DIVISION
231 North Whisman Road • Post Office Box 7540 • Mountain View • California • 94039-7540
650-903-6329 • Fax 650-962-8079

December 31, 2013

CITY OF MOUNTAIN VIEW INTENTION TO CONVERT FROM POTABLE WATER TO RECYCLED WATER FOR LANDSCAPE IRRIGATION

This purpose of this letter is to express the City of Mountain View's intention to use recycled water for irrigation at City-owned properties within the Recycled Water Feasibility Study proposed expansion area. The City believes the extension of the recycled water distribution system will lessen potable water demands on the Hetch Hetchy Regional Water System, the Santa Clara Valley Water District's imported and local supplies, and local groundwater. Expansion of the recycled water system is also a key component of the City's environmental sustainability program, and the City continues to encourage and facilitate increased recycled water use through ongoing water quality improvement projects.

The City currently uses approximately 25 acre-feet per year of potable water to irrigate roadway and park landscaping within the feasibility study area. As recycled water becomes available for these facilities, the City intends to replace potable water with recycled water at these sites.

Gregg A. Hosfeldt
Assistant Public Works Director

cc: Elizabeth Flegel, Water Conservation Coordinator

National Aeronautics and
Space Administration

Ames Research Center
Moffett Field, CA 94035-1000

December 16, 2013

Reply to Attn of: JCE/213-8

Mr. Gregg Hosfeldt
Assistant Director of Public Works
City of Mountain View
231 North Whisman Road
Mountain View, CA 94043

Subject: NASA Ames' interest in and intention to convert from potable water to recycled water for landscape irrigation purposes

Dear Mr. Hosfeldt,

Thank you for providing information regarding the City's preliminary feasibility work to expand the availability of recycled water. NASA Ames supports the City's efforts and believes extension of the recycled water distribution system will lessen potable water demands on the Hetch Hetchy Regional Water System, the Santa Clara Valley Water District imported and local supplies, and local groundwater supplies. We support the efforts of the City of Mountain View to expand the recycled water system to increase conservation of our limited potable water supply. Ames has new connections to available reclaimed water systems contemplated in our FY10-FY32 Center Master Plan.

We currently irrigate approximately 70 acres of landscape. As recycled water becomes available, Ames will have the opportunity to participate to replacing potable water connections with new recycled water service for irrigation purposes in new construction projects.

Sincerely,

Steve A. Frankel
Chief, Facilities Engineering Branch
Facilities Engineering and Real Property Management Division

Symantec

December 18, 2013

MR GREGG HOSFELDT
ASSISTANT DIRECTOR OF PUBLIC WORKS
CITY OF MOUNTAIN VIEW
231 NORTH WHISMAN ROAD
MOUNTAIN VIEW, CA 94043

SYMANTEC'S INTEREST AND INTENTION TO CONVERT FROM POTABLE WATER TO RECYCLED WATER FOR LANDSCAPE IRRIGATION PURPOSES

Dear Mr. Hosfeldt:

Thank you for providing information regarding the City's preliminary work to expand the availability of recycled water. Symantec supports the City's efforts and believes extension of the recycled water distribution system will lessen potable water demands on the Hetch Hetchy Regional Water System, the Santa Clara Valley Water District imported and local supplies, and local groundwater. We support the efforts of the City of Mountain View to expand the recycled water system to help conserve our potable water supply.

We currently irrigate approximately 21 acre-feet (~6.8 million gallons) of water per year for irrigation of land. As recycled water becomes available for our facility, we believe that we can likely participate by replacing potable water with recycled water for irrigation purposes.

Sincerely,

Cecily Joseph
VP, Corporate Social Responsibility

cc: Elizabeth Flegel, Water Conservation Coordinator

EF/7/PSD/703-10-10-13L-E

Appendix C

RECYCLED WATER USE AGREEMENT

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AMENDMENT NO. 1 TO THE FIRST AMENDED AND RESTATED CONTRACT NO. C059999 BETWEEN THE CITY OF PALO ALTO AND THE CITY OF MOUNTAIN VIEW

This Amendment No. 1 to the FIRST AMENDED AND RESTATED CONTRACT NO. C059999 BETWEEN THE CITY OF PALO ALTO AND THE CITY OF MOUNTAIN VIEW, is entered into _August 28,_2017, by and between the CITY OF PALO ALTO, a chartered city and a municipal corporation of the State of California ("PALO ALTO"), and the CITY OF MOUNTAIN VIEW, a chartered city and a municipal corporation of the State of California ("MOUNTAIN VIEW").

RECITALS

WHEREAS, on January 11, 2005, PALO ALTO and MOUNTAIN VIEW entered into an agreement (AGREEMENT) defining the cost sharing of the Mountain View-Moffett Area Recycled Water Facility Project, including the Project's design and related construction expenses, the allocation of related grant revenues, and the repayment of loans; and

WHEREAS, on June 18, 2007, PALO ALTO and MOUNTAIN VIEW amended and restated the entire AGREEMENT; and

WHEREAS, PALO ALTO and MOUNTAIN VIEW wish to amend the AGREEMENT to extend the term of the AGREEMENT and add language defining each Party's responsibility for the costs of operating and maintaining the recycled water portion of the Joint System.

AGREEMENT

NOW, THEREFORE, in consideration of the recitals and mutual promises of the Parties contained herein, PALO ALTO and MOUNTAIN VIEW agree to the below-referenced amendments to the AGREEMENT as follows:

SECTION 1: The following sections of the AGREEMENT are replaced in their entirety:

1.2 Scope of AGREEMENT

(a) This AGREEMENT is intended to set forth the general terms and conditions for implementation and operation of the PROJECT described in Section 1.1 of this AGREEMENT, as well as the financial obligations of each Party with respect

to design, construction, construction management, State and Federal grants, and repayment of the SRF loan.

(b) This AGREEMENT, including this Amendment No. 1, covers beneficial, nonpotable recycled water uses such as landscape irrigation using disinfected tertiary recycled water treated pursuant to Cal. Code Regs., Title 22, § 60301.230. This AGREEMENT does not cover activities by PALO ALTO, MOUNTAIN VIEW, or any other party to replenish groundwater resources, including spreading basins, percolation ponds, or injection through groundwater wells. Furthermore, this AGREEMENT does not cover direct potable reuse (Water Code, § 13561(b)), indirect potable reuse for groundwater recharge (Water Code, § 13561(c)), or surface water augmentation (Water Code, § 13561(d)).

1.4 Term of AGREEMENT

Unless earlier terminated as provided in Section 9.3 or according to the terms set forth in Section 1.4.1, the obligations and responsibilities of the Parties commenced on January 11, 2005 and shall expire on December 31, 2060.

4.1 Recycled Water Operation and Maintenance Costs to Partner Agencies

(a) Background. The RWQCP is required to produce treated wastewater of sufficient quality to meet its National Pollutant Discharge Elimination System ("NPDES") Permit requirements for discharge to San Francisco Bay. The RWQCP's NPDES Permit also requires the RWQCP to produce tertiary treated water of sufficient quality to meet State Title 17 and Title 22 requirements for irrigation and reuse. Historically, the RWQCP's marginal operating and maintenance costs of recycled water production and distribution ("Marginal O&M Costs") have been negligible and have not been charged directly to Partners who have received the recycled water. Now, the Parties wish to equitably allocate Marginal O&M Costs to the Partners using the recycled water.

(b) Recycled Water Operation and Maintenance Cost Determination Process. The Marginal O&M Costs will be charged to the particular Partner agencies in proportion to their usage, as determined in Section 8.3. PALO ALTO in its capacity as the RWQCP Administrator (referred to herein as the "RWQCP Administrator") will work cooperatively with the Partner agencies to determine the Marginal O&M Costs by December 1, 2018, and by July 1, 2019 will begin charging Partners who use recycled water. The RWQCP Administrator will evaluate and adjust the Marginal O& M Costs annually by July 1 of each year.

(c) Recycled Water Production Charges. The Basic Agreement No. 2963 between PALO ALTO, MOUNTAIN VIEW, and LOS ALTOS, dated October

10, 1968, ("Basic Agreement") addresses revenue from distribution of recycled water. The Marginal O&M Costs established pursuant to Section 4.1(b) of this Amendment are consistent with Section 15 of the Basic Agreement, wherein PALO ALTO, as the Administrator, determines such costs. Revenue to the RWQCP from the Marginal O&M Costs established pursuant to Section 4.1(b) shall be considered Joint System revenue for all parties to the Basic Agreement.

(d) No Recycled Water Commodity Charge. There shall be no recycled water commodity charge to any Partner, as long as the receiving Partner is below its entitlement, as described in Section 16 of the Basic Agreement. Partner requests for recycled water that exceed the available recycled water supply shall be handled as described in Section 16 of the Basic Agreement.

6.2 Rights to Acquire and Sell Recycled Water

(a) Right to Acquire. Section 16 of Basic Agreement addresses rights of the Parties to acquire wastewater by-products, including recycled water, from the RWQCP commensurate with the Party's contribution of wastewater input flow to the total plant flow at the RWQCP.

(b) Right to Sell. Subject to the provisions of Sections 6.1, 6.3, 6.4, and 6.5 of this AGREEMENT, MOUNTAIN VIEW and PALO ALTO maintain the right to sell recycled water, consistent with State regulations and the Water Reuse Permit, within and outside their respective jurisdictional limits provided they do not exceed their corresponding right to the use of wastewater products as set forth in Section 8.2 of this AGREEMENT.

(c) Changes to Recycled Water and Wastewater Allocation and/or Entitlement. Should either MOUNTAIN VIEW or PALO ALTO desire a quantity of recycled water or wastewater that requires an increase in the current recycled water capacity allocation listed in Section 8.2 of this AGREEMENT, or the wastewater entitlement contained in Section 16 of the Basic Agreement, MOUNTAIN VIEW and PALO ALTO shall meet and confer in good faith concerning the use of their allocation or entitlement, and future plans for utilization of their allocation or entitlement. The temporary exceedance of a Party's available allocation under Section 8.2 of this AGREEMENT, or a Party's entitlement under Section 16 of the Basic Agreement, shall not be unreasonably withheld by MOUNTAIN VIEW or PALO ALTO, as RWQCP Administrator. Should the Parties fail to agree on such temporary use, the Administrator shall determine temporary usage allocations, consistent with the Parties' actual usage so long as the Party not seeking a temporary exceedance is not utilizing its full Section 8.2 capacity allocation.

8.2 Delivery Schedules

PALO ALTO, as the RWQCP Administrator, shall make recycled water available to MOUNTAIN VIEW on a demand basis, with a peak flow rate of up to two thousand eighty-five (2,085) gallons per minute (up to a total of three (3) million gallons per day), and a peak flow rate to PALO ALTO of up to six hundred ninety-five (695) gallons per minute (up to a total of one (1) million gallons per day). MOUNTAIN VIEW and PALO ALTO shall coordinate recycled water demand within their jurisdictions to maximize operational efficiency of the RWQCP. The allocations contained in this section are consistent with the rights of the Parties to use wastewater products as set forth in the Basic Agreement."

SECTION 2: The following sections are added to the AGREEMENT:

1.2.1 Future Capital Projects

Future recycled water capital projects, including replacement projects, capacity expansion projects, and projects to add treatment units or improvements are not covered by this AGREEMENT. A new or modified agreement will be used to determine cost allocation and other key project parameters for the aforementioned projects. For example, PALO ALTO, MOUNTAIN VIEW, and the Santa Clara Valley Water District are evaluating the feasibility of advanced water purification at the RWQCP, and such a project, if undertaken, would require a new or modified agreement between the relevant Parties to determine cost and capacity allocations. The Parties' consideration and exploration of these recycled water initiatives should not be interpreted to prevent the Parties from exploring other new technologies.

1.4.1 Expiration of Basic Agreement Controls Term of this AGREEMENT

The Basic Agreement initial term was fifty (50) years. Addendum 8 to the Basic Agreement extended the term through December 31, 2060. The Basic Agreement is the foundation for operation of the RWQCP. If the Basic Agreement expires at any time prior to the term stated in Section 1.4 of this AGREEMENT (December 31, 2060), this AGREEMENT and all Amendments thereto shall automatically expire concurrent with the expiration of the Basic Agreement.

5.3 System Reliability

MOUNTAIN VIEW and PALO ALTO acknowledge it is necessary to develop and maintain a reliable recycled water system and the RWQCP may incur capital design and construction costs to enhance reliability needs based on the nature

and types of use set forth in Exhibit L of the AGREEMENT. MOUNTAIN VIEW and PALO ALTO will monitor the joint system and as needs are identified, work cooperatively to incorporate improvements, including, but not limited to, water storage, backup pumping, and emergency power supply equipment. If either Party requests specific improvements to the recycled water joint system, the RWQCP Administrator will review and determine if the request is above and beyond the needs for the type of use set forth in the Facility Plan. The RWQCP Administrator will determine the cost share for improvements beyond the needs for the type of use set forth in the Facility Plan. The RWQCP, MOUNTAIN VIEW, and PALO ALTO will not unreasonably withhold approval of, and will contribute funding for, improvements that will increase system reliability and enhance the long-term use of recycled water.

5.4 Recycled Water Transmission Line to Mountain View

Either Party may use the transmission line, without additional cost, to accept delivery of higher amounts of recycled water than stated in Sections 8.2 and 8.3 so long as the other (or second) Party's ability to obtain its Section 8.2 recycled water capacity allocation is not impacted. If the second Party cannot obtain its Section 8.2 capacity allocation, the first Party must reduce incremental deliveries until the second Party can secure its Section 8.2 capacity allocation.

8.3 Usage

(c) Currently, all recycled water supplied by the RWQCP to Partners is used for irrigation, construction project uses, and decorative water impoundments and features, in compliance with the RWQCP's existing Water Reuse Permit from the RWQCB. Both the Water Reuse Permit and the Facility Plan acknowledge potential additional types of water reuse, such as dual plumbing, in the future.

(d) If MOUNTAIN VIEW or PALO ALTO request additional types of use of recycled water to be supplied by the RWQCP, the RWQCP Administrator will review the RWQCP's Water Reuse Permit, operational capability, and conditions and capacities of its facilities, and determine if the request can be accommodated. The RWQCP Administrator has the right to deny such request in favor of the safe and proper operation of wastewater treatment priorities to meet regulatory requirements. If the RWQCP Administrator determines it can accommodate such request, the RWQCP Administrator will review the operations and the type of upgrades needed, and determine the requesting Party's costs for the upgrades and required operational and maintenance funding needed to accommodate the request. The requesting Party shall pay for any improvements needed for the RWQCP to provide recycled water for additional types of uses, including the marginal costs of production.

(e) MOUNTAIN VIEW has requested the addition of dual plumbing as part of its reuse, and the RWQCP has determined that dual plumbing is a permitted use under its Water Reuse Permit (Exhibit A) and current State Title 17 and 22 regulations. The total quantity, schedule, and rate of delivery of recycled water to MOUNTAIN VIEW shall remain unchanged.

(f) MOUNTAIN VIEW and PALO ALTO agree to enforce any and all regulatory requirements for dual plumbing, landscape irrigation and other recycled water uses within each Party's jurisdiction, including, but not limited to, the following requirement for dual-plumbed buildings: both Parties shall require an on-site, automatically activated potable water backup to be used when recycled water service is disrupted, shutdown, or is otherwise unavailable.

8.6 Level of Service

(d) MOUNTAIN VIEW and PALO ALTO acknowledge their mutual goal of continuing to reduce the total dissolved solids (TDS), sodium, and chloride levels in the RWQCP's recycled water over time. To that end, in 2010, MOUNTAIN VIEW and PALO ALTO each adopted a Recycled Water Salinity Reduction Policy to identify and pursue all cost-effective measures to reduce the salinity of the recycled water delivered from the RWQCP. These efforts resulted in declines in the salinity levels at the RWQCP.

To continue this progress, MOUNTAIN VIEW and PALO ALTO agree to maintain their ongoing salinity level monitoring and reduction efforts for the term of the Basic Agreement, or until both Parties mutually determine that such efforts are no longer needed. In recognition of salinity reduction efforts already undertaken, each Party reserves the right to prioritize its capital improvement projects in its sole discretion. Salinity reduction efforts may include, but are not limited to:

1.) targeted public and private sewer system rehabilitation and/or repair;

2.) targeted investigation of saline water infiltration;

3.) targeted investigation and monitoring of saline water dischargers; outreach to dischargers with higher than permitted TDS, sodium, and chloride constituents; and enforcement of each agency's sewer use ordinance;

4.) consideration of total sodium, chloride, and TDS load as criteria for prioritizing sewer rehabilitation as contemplated in each agency's sewer master plan updates; and

5.) other necessary controls to reduce salinity to mutually acceptable and achievable levels.

9.15 Dispute Resolution

Should any dispute or controversy arise between the Parties with respect to this AGREEMENT that cannot be settled after engaging in good faith negotiations, the Parties agree to resolve the dispute in accordance with the following:

(a) Each Party shall designate a senior management or executive level representative to negotiate any dispute;

(b) The representatives shall attempt, through good-faith negotiations, to resolve the dispute by any means within their authority;

(c) If the issue remains unresolved after sixty (60) days of good-faith negotiations, the Parties shall attempt to resolve the dispute by negotiation between legal counsel. If the above process fails, the Parties shall resolve any remaining disputes through mediation to expedite the resolution of the dispute.

(d) The mediation process shall provide for the selection within thirty (30) days by both Parties of a disinterested third person as mediation, shall commence within thirty (30) days and shall be concluded within sixty (60) days from the commencement of the mediation. Mediation shall be nonbinding.

(e) The Parties shall equally bear the costs of any third party in any alternative dispute resolution process.

(f) The alternative dispute resolution process is a material condition to this AGREEMENT and must be exhausted prior to either Party initiating legal action. This alternative dispute resolution process is not intended to nor shall be construed to change the time periods for filing a claim or action specified by Government Code Sections 900, *et seq*."

SECTION 3: All other sections of the AGREEMENT remain in full force and effect.

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This Amendment No. 1, made and entered into this 28 day of August 2017, by and between:

"CITY OF PALO ALTO":
a chartered city and a municipal corporation of the State of California

By: DocuSigned by: 39E7298FB2064DB...
City Manager

APPROVED AS TO FORM:

DocuSigned by: 36C6B9D557AF4E3...
City Attorney

"CITY OF MOUNTAIN VIEW":
a chartered city and a municipal corporation of the State of California

By: DocuSigned by: Michael Fuller BD318942A7C745B...
Public Works Director

By: DocuSigned by: Dan Rich 6C34C095D81D4E6...
City Manager

APPROVED AS TO FORM:

DocuSigned by: Jannie Quinn 345B85D9467D403...
City Attorney

FINANCIAL APPROVAL:

DocuSigned by: Patty Kong CAF5A9D4177649C...
Finance and Administrative Services Director

Certificate Of Completion

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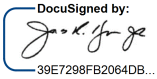
James Keene james.keene@cityofpaloalto.org City Manager City of Palo Alto Security Level: Email, Account Authentication (None) **Electronic Record and Signature Disclosure:** Accepted: 4/14/2015 5:40:07 PM ID: 44fe333a-6a81-4cb7-b7d4-925473ac82e3	DocuSigned by:  39E7298FB2064DB... Using IP Address: 50.206.118.3 Signed using mobile	Sent: 9/28/2017 8:57:29 AM Viewed: 10/12/2017 10:49:52 AM Signed: 10/12/2017 10:50:04 AM

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Notary Events	Signature	Timestamp

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Envelope Sent	Hashed/Encrypted	10/12/2017 10:50:05 AM
Certified Delivered	Security Checked	10/12/2017 10:50:05 AM
Signing Complete	Security Checked	10/12/2017 10:50:05 AM
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Electronic Record and Signature Disclosure

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From time to time, City of Palo Alto (we, us or Company) may be required by law to provide to you certain written notices or disclosures. Described below are the terms and conditions for providing to you such notices and disclosures electronically through your DocuSign, Inc. (DocuSign) Express user account. Please read the information below carefully and thoroughly, and if you can access this information electronically to your satisfaction and agree to these terms and conditions, please confirm your agreement by clicking the 'I agree' button at the bottom of this document.

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Withdrawing your consent

If you decide to receive notices and disclosures from us electronically, you may at any time change your mind and tell us that thereafter you want to receive required notices and disclosures only in paper format. How you must inform us of your decision to receive future notices and disclosure in paper format and withdraw your consent to receive notices and disclosures electronically is described below.

Consequences of changing your mind

If you elect to receive required notices and disclosures only in paper format, it will slow the speed at which we can complete certain steps in transactions with you and delivering services to you because we will need first to send the required notices or disclosures to you in paper format, and then wait until we receive back from you your acknowledgment of your receipt of such paper notices or disclosures. To indicate to us that you are changing your mind, you must withdraw your consent using the DocuSign 'Withdraw Consent' form on the signing page of your DocuSign account. This will indicate to us that you have withdrawn your consent to receive required notices and disclosures electronically from us and you will no longer be able to use your DocuSign Express user account to receive required notices and consents electronically from us or to sign electronically documents from us.

All notices and disclosures will be sent to you electronically

Unless you tell us otherwise in accordance with the procedures described herein, we will provide electronically to you through your DocuSign user account all required notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you during the course of our relationship with you. To reduce the chance of you inadvertently not receiving any notice or disclosure, we prefer to provide all of the required notices and disclosures to you by the same method and to the same address that you have given us. Thus, you can receive all the disclosures and notices electronically or in paper format through the paper mail delivery system. If you do not agree with this process, please let us know as described below. Please also see the paragraph immediately above that describes the consequences of your electing not to receive delivery of the notices and disclosures electronically from us.

How to contact City of Palo Alto:
You may contact us to let us know of your changes as to how we may contact you electronically, to request paper copies of certain information from us, and to withdraw your prior consent to receive notices and disclosures electronically as follows:
To contact us by email send messages to: david.ramberg@cityofpaloalto.org

To advise City of Palo Alto of your new e-mail address
To let us know of a change in your e-mail address where we should send notices and disclosures electronically to you, you must send an email message to us at david.ramberg@cityofpaloalto.org and in the body of such request you must state: your previous e-mail address, your new e-mail address. We do not require any other information from you to change your email address..
In addition, you must notify DocuSign, Inc to arrange for your new email address to be reflected in your DocuSign account by following the process for changing e-mail in DocuSign.

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To request delivery from us of paper copies of the notices and disclosures previously provided by us to you electronically, you must send us an e-mail to david.ramberg@cityofpaloalto.org and in the body of such request you must state your e-mail address, full name, US Postal address, and telephone number. We will bill you for any fees at that time, if any.

To withdraw your consent with City of Palo Alto
To inform us that you no longer want to receive future notices and disclosures in electronic format you may:

i. decline to sign a document from within your DocuSign account, and on the subsequent page, select the check-box indicating you wish to withdraw your consent, or you may;
ii. send us an e-mail to david.ramberg@cityofpaloalto.org and in the body of such request you must state your e-mail, full name, IS Postal Address, telephone number, and account number. We do not need any other information from you to withdraw consent.. The consequences of your withdrawing consent for online documents will be that transactions may take a longer time to process..

Required hardware and software

Operating Systems:	Windows2000? or WindowsXP?
Browsers (for SENDERS):	Internet Explorer 6.0? or above
Browsers (for SIGNERS):	Internet Explorer 6.0?, Mozilla FireFox 1.0, NetScape 7.2 (or above)
Email:	Access to a valid email account
Screen Resolution:	800 x 600 minimum
Enabled Security Settings:	•Allow per session cookies •Users accessing the internet behind a Proxy Server must enable HTTP 1.1 settings via proxy connection

** These minimum requirements are subject to change. If these requirements change, we will provide you with an email message at the email address we have on file for you at that time providing you with the revised hardware and software requirements, at which time you will

have the right to withdraw your consent.

Acknowledging your access and consent to receive materials electronically

To confirm to us that you can access this information electronically, which will be similar to other electronic notices and disclosures that we will provide to you, please verify that you were able to read this electronic disclosure and that you also were able to print on paper or electronically save this page for your future reference and access or that you were able to e-mail this disclosure and consent to an address where you will be able to print on paper or save it for your future reference and access. Further, if you consent to receiving notices and disclosures exclusively in electronic format on the terms and conditions described above, please let us know by clicking the 'I agree' button below.

By checking the 'I Agree' box, I confirm that:

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- I can print on paper the disclosure or save or send the disclosure to a place where I can print it, for future reference and access; and

- Until or unless I notify City of Palo Alto as described above, I consent to receive from exclusively through electronic means all notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to me by City of Palo Alto during the course of my relationship with you.

FIRST AMENDED AND RESTATED CONTRACT NO. C059999
BETWEEN THE CITY OF PALO ALTO AND
THE CITY OF MOUNTAIN VIEW

This First Amended and Restated Contract No. C0599999 (the "Agreement") is entered into as of June 18, 2007, by and between the CITY OF PALO ALTO, a chartered city and a municipal corporation of the State of California ("PALO ALTO"), and the CITY OF MOUNTAIN VIEW, a chartered city and a municipal corporation of the State of California ("MOUNTAIN VIEW"). This Agreement amends and restates in its entirety that certain Contract No. C059999 between PALO ALTO and MOUNTAIN VIEW dated as of January 11, 2005.

RECITALS:

A. PALO ALTO and MOUNTAIN VIEW and the CITY OF LOS ALTOS are parties, ("RWQCP Partners") to a BASIC AGREEMENT BETWEEN THE CITY OF PALO ALTO, THE CITY OF MOUNTAIN VIEW AND THE CITY OF LOS ALTOS FOR ACQUISITION, CONSTRUCTION AND MAINTENANCE OF A JOINT SEWER SYSTEM ("Basic Agreement") for transmission, treatment and disposal of sewage, including the Palo Alto Regional Water Quality Control Plant ("RWQCP"), executed on October 10, 1968 and as amended from time to time.

B. Pursuant to the Basic Agreement, Palo Alto is the owner of the RWQCP facilities and the Administrator of the Basic Agreement with the duty to maintain and operate the RWQCP.

C. The Basic Agreement provides that each party has the right to acquire at its expense wastewater for reuse as required by the party, and that if amounts requested exceed available supply, the supply shall be allocated in proportion to each party's percentage of wastewater input flow to the total plant flow.

D. The RWQCP is required to reduce pollutant and fresh water discharge to San Francisco Bay. Water reclamation and reuse has been determined to be the most economical method to meet this requirement, and the Regional Water Quality Control Board has approved the RWQCP water reclamation program as the method to reduce discharges to the Bay. Currently, there is a very limited market for recycled water. In order to meet the requirement to reduce discharge to San Francisco Bay, the RWQCP must promote the use of recycled water by improving public perception and developing markets for recycled water.

E. The RWQCP is the program manager for the RWQCP Water Reclamation (Regional Program) covered under the California Regional Water Quality Control Board Order # 93-160, Adopted Water Reclamation Requirements for the RWQCP (the "Water Reuse Permit," attached as Exhibit A), and in the past, the RWQCP has delivered recycled water to the Mountain View Shoreline Golf Links, but service to the golf course was curtailed in 2001 due to a damaged pipeline. The RWQCP currently distributes approximately 1 million gallons per day of recycled water to the Palo Alto Golf Course and Greer Park. The Water Reuse Permit is attached as Exhibit A to and made a part of this Agreement.

F. The RWQCP prepared and adopted the Water Reclamation Master Plan (Brown and Caldwell, 1992). The Mountain View-Moffett Area Water Recycling Facility Project ("PROJECT") is one of the five projects identified in the Water Reclamation Master Plan.

G. The Project is more particularly described in the Regional Water Recycling Facilities Planning Study ("Facilities Plan") prepared for the RWQCP by RMC Water and Environment (RMC) in January 2004. The Facilities Plan identifies reuse sites located outside of PALO ALTO and MOUNTAIN VIEW, including Moffet Field, Sunnyvale, East Palo Alto and Stanford.

H. PALO ALTO and MOUNTAIN VIEW are mutually interested in implementing the PROJECT to expand the use of recycled water from the RWQCP in the Mountain View Shoreline Regional Park Community to provide a locally-controlled, drought-proof alternative for landscape irrigation and other non-potable uses on the terms and conditions set forth in this Agreement.

I. PALO ALTO and MOUNTAIN VIEW are working jointly to obtain a State Revolving Fund ("SRF") loan for the design and construction of the Project with a zero percent (0%) interest loan repayable over a 20-year period.

J. On November 6, 2006 the PALO ALTO City Council directed the City Manager to file a Financial Assistance Application for a loan from the State Water Resources Control Board ("SWRCB") in an amount not to exceed nineteen million dollars ($19,000,000.00) for the design and construction of the PROJECT. (Resolution No. 8407, attached as Exhibit B). On November 14, 2006, the MOUNTAIN VIEW City Council similarly authorized PALO ALTO to file for a Financial Assistance Application for a loan from the SWRCB for the design and construction of the PROJECT (Resolution No. 17145, attached as Exhibit C).

K. On May 22, 2007, the State Water Resources Control Board approved PALO ALTO's application for a SRF loan in an amount not to exceed nineteen million dollars ($19,000,000).

AGREEMENT

NOW, THEREFORE, in consideration of the covenants, terms, conditions, and provisions of this Contract, the parties agree:

1. GENERAL

1.1 Project Narrative

The PROJECT shall be as described in the Facilities Plan that corresponds to the State Water Resources Control Board Water Recycling Project No. 3212-010. Pursuant to the California Environmental Quality Act a mitigated negative declaration for the PROJECT (SCH# 2003102161) was completed and adopted by the PALO ALTO City Council in January 2004 (Resolution No. 8391, attached as Exhibit D).

1.2 Scope of Agreement

This Agreement is intended to set forth the general terms and conditions for implementation and operation of the PROJECT described in Section 1.1 of this Agreement, as well as the financial obligations of each party with respect to design, construction, construction management, state and federal grant, and repayment of the SRF loan.

1.3 Other Agreements Relevant to this PROJECT

(a) The parties' August 2005 Agreement details the organization and responsibilities of the project managers and project engineers working for each party during the design and construction phase of the PROJECT (MV/Moffett Area Water Recycling Facility Project Design-Construction Agreement Between the Cities of Palo Alto and Mountain View, attached as Exhibit E).

(b) The June 23, 2003 Contract between PALO ALTO and RMC and the May 9, 2005 amendment to that Contract detail the provision of professional design services for the PROJECT (Contract No. C3151060 Between the City of Palo Alto and RMC, and Amendment No. One to Contract No. C3151060 Between the City of Palo Alto and RMC Water and Environment, attached as Exhibits F and G.)

1.4 Term and Renewal of Agreement

Unless earlier terminated as provided in section 9.3, the obligations and responsibilities of the parties commenced on January 11, 2005 and shall be in force for thirty (30) years or the life of the SRF loan, whichever is longer. Following the original Agreement term, the Agreement term shall be automatically renewed on a year-by-year basis. Following the original Agreement term, either party may terminate the agreement by notifying the remaining party of their intention at least ninety (90) calendar days before the date of the automatic renewal.

2. CONSTRUCTION OF RECYCLED WATER FACILITIES

PALO ALTO, as the administrator of the RWQCP and the applicant for the State grant, will administer the design and construction of the PROJECT in accordance with the most current Title 22 and Title 17 of the California Code of Regulations at time of construction. MOUNTAIN VIEW and PALO ALTO will work together and be responsible for the approval of design and construction work in compliance with each city's standards, and for certain design and construction activities including monitoring and inspecting the construction and reviewing submittals.

3. FINANCIAL PROVISIONS RELATED TO CONSTRUCTION OF RECYCLED WATER FACILITIES

3.1 Obligations contingent on available funding.

PALO ALTO's and MOUNTAIN VIEW's obligation to make monetary contributions and PALO ALTO's obligation to administer design and construction are contingent on availability of Chapter 7 grant funding and SRF loan funding from the SWRCB.

3.2 Allocation of Costs

Monetary contributions and allocations from each party for the design, construction, construction management, State and Federal grants and SRF loan repayments for the PROJECT shall be in accordance with the percentages and allocations set forth herein. Each party is generally responsible for costs incurred in its own jurisdiction.

(a) Design Costs

Design of the PROJECT is in progress, pursuant to the Agreements between PALO ALTO and RMC (attached as Exhibits F and G). PALO ALTO and MOUNTAIN VIEW estimate that PROJECT design will cost approximately $1,750,000. To date, MOUNTAIN VIEW has paid approximately $902,700 for its share of design costs. Costs for the design of the Project have been and will continue to be allocated between PALO ALTO and MOUNTAIN VIEW as follows:

PALO ALTO	33.06%
MOUNTAIN VIEW	66.94%

(b) Construction Costs

PALO ALTO and MOUNTAIN VIEW estimate that PROJECT construction will cost approximately $17,600,000, including a 10% construction contingency. Allocations for construction costs include both transmission and distribution pipelines as follows:

(i) Transmission

Costs of the backbone transmission pipeline (30" and 24" pipes as shown in Exhibit H) shall include costs for the pipes, the associated accessories, creek crossings, road crossings, trenching, testing, and the proportionate costs for mobilization, insurance, and bonds. Backbone transmission pipeline costs shall be allocated as follows:

PALO ALTO	33.33%
MOUNTAIN VIEW	66.67%

(ii) Distribution

Costs of the distribution system shall include pipes less than 24", laterals, and user connections within the city of MOUNTAIN VIEW. Distribution system costs shall include the costs for the pipes, use site retrofits, customer connections, the associated

accessories, creek crossings, trenching, testing, and the proportionate costs for mobilization, insurance and bonds. Distribution system costs shall be allocated as follows:

PALO ALTO	0%
MOUNTAIN VIEW	100%

(c) Construction Management Costs

PALO ALTO and MOUNTAIN VIEW estimate that PROJECT construction management will cost approximately $1,300,000 including a contract contingency. Costs associated with construction management shall be allocated in the same manner as construction costs, described in section 3.2(b), above.

(d) State Revolving Fund (SRF) Loan Administration Fees and Charges

SRF loan ("loan") administration fees and charges will be allocated in proportion to each city's loan amount and the total amount requested from the SWRCB. Each city's loan obligations shall remain in place for the life of the loan.

3.3 Allocation of Grants

PALO ALTO and MOUNTAIN VIEW estimate that PROJECT will receive approximately five million dollars ($5,000,000) in grant funding.

(a) Design, construction and construction management grants.

State and Federal grants designed specifically for design, construction or construction management shall be applied proportionally based on the allocation of design costs described in Section 3.2(a).

(b) State and Federal grant funding not designated to a specific project.

State and Federal grant funding not designated to a specific project phase will be applied proportionately to the total costs of design, construction, and construction management of the transmission pipeline and distribution system based on the contract prices for the tasks and the terms of the grant contracts.

3.4 SRF Loan

(a) Establishment and Funding of Local Match Account

As required by the SWRCB, PALO ALTO has established a local match account prior to the issuance of the SRF loan contract. (See Resolution No. 8690, attached as Exhibit I.) This local match account shall be the account for the Project and the source of funds used to pay Contractors in exchange for services associated with the PROJECT.

The total PROJECT cost is estimated to be approximately $21,000,000. PALO ALTO will deposit a minimum of twenty percent (20%) of its share of the total estimated project cost into PALO ALTO's local match account within thirty (30) days from the execution of this Amended Agreement and in accordance with SRF loan requirements. MOUNTAIN VIEW will

deposit a minimum of twenty percent (20%) of its share of the total estimated project cost into PALO ALTO's local match account by August 15, 2007.

(b) Administration and Funding of Local Match Account

PALO ALTO will administer the local match account and withdraw funds as needed to pay the Contractor(s) in exchange for services associated with this PROJECT. PALO ALTO will provide MOUNTAIN VIEW with a quarterly accounting of the funding levels of the local match account. If funds in the local match account fall below five hundred thousand dollars ($500,000) PALO ALTO will request funds in writing from MOUNTAIN VIEW based on PROJECT cash flow requirements for the next sixty (60) days. Upon receipt of PALO ALTO's request, MOUNTAIN VIEW agrees to provide PALO ALTO with a mutually agreed upon amount of funding within thirty (30) days.

PALO ALTO and MOUNTAIN VIEW mutually agree that within thirty (30) days from receipt of MOUNTAIN VIEW's local match contribution, PALO ALTO will place MOUNTAIN VIEW's local match funds into an interest bearing bank account. PALO ALTO will apply any interest earned on this account as a credit on MOUNTAIN VIEW's quarterly RQWCP bill.

(c) SRF Loan Amount

(i) Based on the value of the construction bids received, PALO ALTO and MOUNTAIN VIEW have mutually agreed that the total amount of funding requested from the SWRCB is nineteen million dollars ($19 million). The SWRCB will issue the loan for the exact loan amount upon PALO ALTO's execution of a construction contract for the PROJECT.

(ii) PALO ALTO and MOUNTAIN VIEW anticipate borrowing nine million dollars ($9 million) from the SWRCB. Seven million, five hundred thousand dollars ($7.5 million) is projected to be used for the PROEJCT. One million five hundred thousand dollars ($1.5 million) represents the SWRCB's charge to both cities for administering and financing the loan.

(iii) Each city shall be responsible for its share of the SRF loan for the life of the loan. Each city has read and understood the SWRCB's SRF policy and requirements. PALO ALTO, as the administrator of the RWQCP and the applicant for the SRF loan, will administer the loan and agrees to the loan's terms and conditions as stated in the SRF policy and requirements.

(d) SRF Loan Repayment Process

PALO ALTO and MOUNTAIN VIEW agree to establish and maintain one or more dedicated sources of revenue for the repayment of the loan.

The first annual loan repayment will be due to the SWRCB one year after construction is completed. (See Section XX of the State Water Resources Control Board Policy ("SWRCB Policy") for Implementing the State Revolving Fund for Construction of Wastewater Treatment Facilities, attached as Exhibit J.) RQWCP will send a loan repayment notice annually to MOUNTAIN VIEW and MOUNTAIN VIEW will pay its portion of the SRF loan payment to RQWCP within thirty (30) days of receipt of the loan repayment notice.

4. RECYCLED WATER PRICING

4.1 Cost to PALO ALTO and MOUNTAIN VIEW

The RWQCP is required to, and does treat the wastewater to the standard suitable for reuse, and encourages the use of recycled water. In addition, the RWQCP discharge permit requires delivery of recycled water to Shoreline Golf Links for reuse. The RWQCP has the ability to provide the quantities of recycled water set forth in Section 8.2 at no additional cost to the RWQCP Partners. Accordingly, PALO ALTO, as the operator of the RWQCP has agreed to provide recycled water for reuse in the quantities set forth in section 8.2 to MOUNTAIN VIEW and PALO ALTO at no cost.

4.2 Cost to Customers

MOUNTAIN VIEW and PALO ALTO agree that the rates charged to the end user should provide an economic incentive to customers to use recycled water. Each city shall determine the recycled water rates within its jurisdictional limits.

5. OPERATION and MAINTENANCE of FACILITIES

5.1 Facilities Within the RWQCP

PALO ALTO, as the owner-operator of the RWQCP, will operate and maintain the treatment, operational storage and pumping facilities within the RWQCP's site to produce a minimum of 4 million gallons per day of recycled water treated to the most current standards of Title 22 of the California Code of Regulations.

5.2 Facilities Outside the RWQCP

MOUNTAIN VIEW and PALO ALTO will each operate and maintain the recycled water delivery pipe and distribution system (up to the end user meter) within their jurisdictional limit at their own cost in accordance with the Water Reuse Permit requirements.

6. OWNERSHIP and EXTENSION of FACILITIES

6.1 Ownership of Facilities Outside the RWQCP

MOUNTAIN VIEW and PALO ALTO shall retain sole ownership and control of infrastructure constructed outside the RWQCP and within each City's limits. The RWQCP partners and other parties, including those identified in the Facilities Plan, that want to connect to the pipeline shall consult with the RWQCP, MOUNTAIN VIEW and PALO ALTO.

6.2 Right to Sell Recycled Water

Subject to the provisions of subsections 6.1, 6.3, 6.4 and 6.5 of this Agreement, MOUNTAIN VIEW and PALO ALTO maintain the right to sell recycled water, consistent with State regulations and the Water Reuse Permit; within and outside their respective jurisdictional limits provided they do not exceed their corresponding right to the use of wastewater products as set forth in section 8.2 of this Agreement.

6.3 Right to Transfer Water

(a) MOUNTAIN VIEW shall have the right to approve or disapprove water transfers through infrastructure owned by MOUNTAIN VIEW to other entities for water reuse sites not contemplated in the Facilities Plan. MOUNTAIN VIEW shall not have the right to approve or disapprove water transfers to other entities for reuse sites that are described in the Facilities Plan. MOUNTAIN VIEW reserves the right to secure reimbursement of operating and capital expenses related to any water transfer through infrastructure owned by MOUNTAIN VIEW.

(b) PALO ALTO shall have the right to approve or disapprove water transfers through infrastructure owned by PALO ALTO to other entities for reuse sites not contemplated in the Facilities Plan. PALO ALTO shall not have the right to approve or disapprove water transfers to other entities for reuse sites that are described in the Facilities Plan. PALO ALTO reserves the right to secure reimbursement of operating and capital expenses related to any water transfer through infrastructure owned by PALO ALTO.

(c) PALO ALTO and MOUNTAIN VIEW agree that the RQWCP shall have the right to approve or disapprove water transfers through its infrastructure to other entities for reuse sites not contemplated in the Facilities Plan and that the RQWCP shall be entitled to reimbursement of operating and capital expenses related to any water transfer other than to PALO ALTO, MOUNTAIN VIEW or other parties to the Basic Agreement.

6.4 Rights of the RWQCP

(a) MOUNTAIN VIEW and PALO ALTO acknowledge and agree that the PROJECT is a regional project structured to provide connectivity with other communities as described in the Facility Plan and will work in good faith with the RWQCP to provide such connections in the future.

(b) MOUNTAIN VIEW and PALO ALTO agree that nothing in this Agreement shall limit the right of the RWQCP to expand its recycled water program area, its water rights, and the right to allow connections to the main recycled water conveyance pipe located in PALO ALTO, so long as the RWQCP's ability to meet its recycled water delivery obligations as specified in section 8.2 of this Agreement is not impacted.

(c) MOUNTAIN VIEW retains the right to approve all connections to MOUNTAIN VIEW's infrastructure except with respect to those connections required for reuse sites identified in the Facility Plan. PALO ALTO retains the right to approve all connections to PALO ALTO's infrastructure except with respect to those connections required for reuse sites identified in the Facility Plan. PALO ALTO will administer the RWQCP to develop provisions to address future conditions of the water reuse program including timing and capacity to serve demands.

6.5 Extension of FACILITY

(a) MOUNTAIN VIEW shall have the right to expand the recycled water infrastructure within MOUNTAIN VIEW's jurisdictional limits, so long as MOUNTAIN VIEW does not exceed its allocated recycled water supply. MOUNTAIN VIEW will consult in

advance with the RWQCP to ensure such extension does not conflict with any requirements of the RWQCP's operating or regulatory permits.

(b) PALO ALTO shall have the right to expand the recycled water infrastructure within PALO ALTO's jurisdictional limits, so long as PALO ALTO does not exceed its allocated recycled water supply. PALO ALTO will consult in advance with the RWQCP to ensure such extension does not conflict with any requirements of the RWQCP's operating or regulatory permits.

7. PERMIT COMPLIANCE

7.1 Compliance with Water Reuse Permit

PALO ALTO as the administrator of the RWQCP will be the lead agency in complying with and maintaining the RWQCP Water Reuse Permit. However, MOUNTAIN VIEW and PALO ALTO are responsible, where applicable, to comply with the requirements (including monitoring, training and reporting) of the Water Reuse Permit and the Rules and Regulations of the RWQCP Regional Water Reuse Program (attached hereto as Exhibit K). MOUNTAIN VIEW and PALO ALTO will hold the end users responsible for the proper application and use of recycled water. PALO ALTO and MOUNTAIN VIEW shall require all users to permit the California State Water Quality Control Board or its authorized representative entry for inspection within the parties' respective jurisdiction as authorized by law.

7.2 Compliance with Title 22

MOUNTAIN VIEW and PALO ALTO will be responsible, within their respective city limits, for assuring that cross-connections between potable water and recycled water systems have not been created and that backflow prevention devices are in proper working order by conducting or requiring customer testing, in accordance with the most current version of Title 22 of the California Code of Regulations.

7.3 Emergency Contacts

PALO ALTO shall maintain a list of emergency contacts and responsibilities with respect to the recycled water system at the RWQCP. MOUNTAIN VIEW and PALO ALTO will provide their emergency contact information to RWQCP for addition to the list. MOUNTAIN VIEW and PALO ALTO are the initial responders to all emergencies relative to the recycled water conveyance pipe and distribution system located within the jurisdictional limits of MOUNTAIN VIEW and PALO ALTO, respectively. PALO ALTO on behalf of the RWQCP agrees to assist upon request. RWQCP shall be reimbursed in a timely manner for the costs incurred for emergency-response activities undertaken by RWQCP on behalf of MOUNTAIN VIEW and PALO ALTO, which shall include the actual labor, material and equipment cost, plus actual overhead costs.

8. RECYCLED WATER SERVICE PROVISIONS

8.1 Delivery Pressure

MOUNTAIN VIEW and PALO ALTO agree that the recycled water will be delivered at a minimum pressure of 65 pounds per square inch at the reuse site connection point as measured at the customer's meter.

8.2 Delivery Schedules

PALO ALTO as the RWQCP administrator shall make recycled water available to MOUNTAIN VIEW on a demand basis, with a peak flow rate of up to 3 million gallons per day (2,085 gallons per minute), and to PALO ALTO up to 1 million gallons per day (695 gallons per minute). MOUNTAIN VIEW and PALO ALTO shall coordinate recycled water demand within their jurisdiction as necessary and cooperate with the RWQCP in the operation for optimal efficiency. The allocations contained in this section are consistent with the rights of the parties to use wastewater products as set forth in the Basic Agreement.

8.3 Usage

(a) PALO ALTO and MOUNTAIN VIEW have reviewed and agreed to the water reuse sites and quantities described in the Facility Plan including reuse sites located outside of their respective jurisdictions. A summary of the reuse sites and quantities is set forth in the Recycled Water Market Assessment Summary attached as Exhibit L and made a part of this Agreement. Each city will implement a plan to achieve the short-term usage for their respective jurisdiction projected in the report, which indicates an initial quantity of recycled water usage of 750 acre-feet per year, increasing over the next ensuing 5 years to 1,480 acre-feet per year.

(b) For RWQCP operating and planning purposes, MOUNTAIN VIEW and PALO ALTO will cooperate to provide RWQCP with customer estimated monthly delivery demand for recycled water for the ensuing year and such other information that MOUNTAIN VIEW and PALO ALTO may have available to assist RWQCP in determining projects annual deliveries for the next ensuing 5 years.

8.4 Reimbursement of Grant

If for any reason the State Water Resources Control Board requires reimbursement of all or part of the grant, MOUNTAIN VIEW and PALO ALTO (including the RWQCP) will provide a share of the reimbursement in proportion to each organization's monetary contribution as set forth in section 3 of this Agreement.

8.5 Metering and Measurement of Flows

Metering of each end user will be conducted bi-monthly by MOUNTAIN VIEW and PALO ALTO. MOUNTAIN VIEW and PALO ALTO shall provide the RWQCP water use information. The total of the end user metering will be used annually for reporting recycled water usage to regulatory agencies and to the State Water Resources Control Board.

8.6 Level of Service

(a) MOUNTAIN VIEW and PALO ALTO understand and acknowledge that the RWQCP is charged with the responsibilities to operate the wastewater treatment facilities. Any right to the recycled water from the RWQCP shall be subordinate to the rights and responsibilities of the RWQCP to the wastewater treatment facilities. Any circumstance beyond the RWQCP's control that causes a reduction in the flow from the RWQCP may cause a decrease in recycled water available to MOUNTAIN VIEW and PALO ALTO. MOUNTAIN VIEW and PALO ALTO agree that in such an event they shall request the RWQCP to allocate reduced flow between them in proportion to the allocation of recycled water supply between participating agencies as set forth in section 8.2 of this Agreement.

(b) The RWQCP is required to treat wastewater to a quality where it can be used for all purposes allowed for disinfected tertiary recycled water as specified in Title 22 of the California Code of Regulations. Accordingly, all recycled water to be delivered from the RWQCP to MOUNTAIN VIEW and PALO ALTO will be of such quality.

(c) MOUNTAIN VIEW and PALO ALTO recognize that there will be factors beyond the control of the RWQCP that could cause operational difficulties at the RWQCP resulting in the temporary production of recycled water that does not meet the requirements of the Water Reuse Permit for the intended uses. In such cases, Palo Alto as the administrator of the RWQCP shall temporarily suspend recycled water delivery. PALO ALTO as the administrator of the RWQCP shall use its best efforts to re-establish the production of recycled water of suitable quality and shall re-establish supply of the recycled water as soon as reasonably possible.

9. MISCELLANEOUS PROVISIONS

9.1 Access to Public Right-of-Way

Both parties agree to provide access to the public right-of-way for purposes of construction and construction management of the PROJECT. The parties shall use their best efforts to enter into encroachment agreements as necessary for that purpose.

9.2 Construction Equipment

Both parties agree to make space available for the contractor(s) equipment during the construction and construction management phases of the PROJECT.

9.3 Early Termination

(a) In the event that the state does not provide Chapter 7 grant and/or SRF loan funding at the level anticipated by the parties, either party may elect to terminate this Agreement by providing written notice of termination to the other party within ninety (90) days.

(b) In addition, if the lowest responsive and responsible bid for construction of the PROJECT exceeds the construction budget established for the PROJECT and after conferring the parties are unable to agree on new funding amounts or to locate other sources of funds for the PROJECT, either party may elect to terminate this Agreement upon written notice to the other.

(c) If, following execution of a construction and/or construction management contract for the PROJECT, the estimated PROJECT costs increase and exceed the PROJECT contingency, PALO ALTO shall notify MOUNTAIN VIEW promptly. Following notification of the increased cost, PALO ALTO and MOUNTAIN VIEW shall meet in a timely manner to discuss alternative funding sources and strategies for completion of the PROJECT. If the parties are unable to agree on new funding amounts or to locate other sources of funding for the PROJECT, then either Party shall have the right to terminate this Agreement upon ten days notice to the other.

(d) In the case of a Force Majeure Event, PALO ALTO may terminate this Agreement upon ten (10) days notice to MOUNTAIN VIEW. As used herein "Force Majeure Event" means any matter or condition beyond the reasonable control of PALO ALTO, including war, public emergency or calamity, fire, earthquake, extraordinary inclement weather, Acts of God, strikes, labor disturbances or actions, civil disturbances or riots, litigation brought by third parties against PALO ALTO, or any act of a superior governmental authority or court order, which delays or prevents PALO ALTO from performing its obligation to administer construction of the PROJECT under section 2 of this Agreement.

(e) MOUNTAIN VIEW and PALO ALTO shall remain responsible for PROJECT costs and loans incurred, whether before or after termination of this Agreement, in connection with termination of the PROJECT construction and/or construction management contract, in the same proportion to each organization's monetary contribution and loan amount as set forth in section 3 of this Agreement.

9.4 Claims

Claims arising out of actions subject to this Agreement shall be administered by the city with jurisdiction over the geographic area in which the claim arose.

9.5 Assignment

Neither party may assign or transfer any interest in this Agreement without the prior written consent of the other.

9.6 Notices

All notices and other communications required or permitted to be given under this Agreement shall be in writing and may be delivered by hand, by facsimile transmission with verification of receipt, or by United States mail, postage prepaid and return receipt requested, addressed to the respective parties as follows:

Public Works Department
Attn: Director of Public Works
City of Palo Alto
250 Hamilton Avenue, 6th Floor
Palo Alto, CA 94303

Public Works Department
Attn: Public Works Director
City of Mountain View
500 Castro Street
Mountain View, CA 94041

or to such other address as any party may designate by notice in accordance with this Section.

A copy of any notice of a legal nature, including, but not limited to any claims against either party, its officers or employees shall also be served in the manner specified above to the following addresses:

City Attorney
250 Hamilton Avenue, 8th Floor
Palo Alto, CA 94301

City Attorney
City of Mountain View
500 Castro Street
Mountain View, CA 94041

Notice shall be deemed effective on the date delivered or, if appropriate, on the date delivery is refused.

9.7 Attorney's Fees

In the event either party breaches any of the terms, covenants or provisions of this Agreement, and the other party commences litigation to enforce any provisions of this Agreement, the cost of attorney's fees and the attendant expenses will be payable to the prevailing party by the non-prevailing party upon demand.

9.8 Successors and Assigns

The terms of this Agreement shall be binding and inure to the benefits of the parties hereto and their successors and assigns.

9.9 Governing Law

The parties agree that the law governing this Agreement shall be that of the State of California.

9.10 Venue

In the event that suit shall be brought by either party hereunder, the parties agree that trial of such action shall be exclusively vested in a state court in the County of Santa Clara or, where appropriate, in the United States District Court for the Northern District of California, San Jose, California.

9.11 Headings

The headings of the sections and subsections of this Agreement are inserted for convenience only. They do not constitute a part of this Agreement and shall not be used in its construction.

9.12 Waiver

The waiver by any party to this Agreement of a breach of any provision of this Agreement shall not be deemed a continuing waiver or a waiver of any subsequent breach of that or any other provision of this Agreement.

9.13 Integration

This Agreement, including all Exhibits attached hereto, represents the entire understanding of the parties as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered hereunder. This Agreement may only be amended by written agreement executed by both parties.

9.14 Severability

If any term, covenant, condition or provision of this Agreement, or the application thereof to, any person or circumstance, shall to any extent be held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the terms, covenants, conditions or provisions of this Agreement, or the application thereof to any person or circumstance, shall remain in full force and effect and shall in no way be affected, impaired or invalidated thereby.

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This Agreement, made and entered into this ___ day of ____, 2007, by and between:

"PALO ALTO"

CITY OF PALO ALTO

City Manager

APPROVED AS TO FORM:

Deputy City Attorney

Director of Administrative Services

APPROVED:

Glenn Roberts
Director of Public Works

"MOUNTAIN VIEW"

CITY OF MOUNTAIN VIEW

City Manager

APPROVED AS TO FORM:

City Attorney

Financial Approval:

APPROVED:

Cathy R. Lazarus
Director of Public Works

EXHIBITS:

Exhibit "A" -	Water Reuse Permit
Exhibit "B" -	Resolution No. 8407
Exhibit "C" -	Resolution No. 17145
Exhibit "D" -	Resolution No. 8391
Exhibit "E" -	MV/Moffett Area Water Recycling Facility Project Design-Construction Agreement Between the Cities of Palo Alto and Mountain View
Exhibit "F" -	Contract No. C3151060 Between the City of Palo Alto and RMC Water and Environment
Exhibit "G" -	Amendment No. One to Contract No. C3151060 Between the City of Palo Alto and RMC Water and Environment
Exhibit "H" -	Backbone Transmission Pipeline
Exhibit "I" -	Resolution No. 8690
Exhibit "J" -	State Water Resources Control Board Policy for Implementing the State Revolving Fund for Construction of Wastewater Treatment Facilities
Exhibit "K" -	Rules and Regulations of the RWQCB Regional Water Reuse Program
Exhibit "L" -	Recycled Water Market Assessment Summary

EXHIBIT "L"

EXHIBIT "L"

TABLE 3-2: RECYCLED WATER MARKET ASSESSMENT SUMMARY

Potential Users	Annual Demand Estimates (AFY)	Factor of Usage [a]	Annual Demand Estimates w/ Factor of Usage (AFY)	Peaking Factors (month/day/hour) [b]	Timing of Demand	Water Quality Needs/Customer Concerns	Data Sources [c]
Facility Plan Service Area							
Shoreline Golf Links/ Shoreline Park	449	0.5	224	2.6/1/3.4	Existing	Salt content	A
Shoreline Amphitheatre, Misc.	62	1	62	2.3/1/3	Existing	-	A
Charleston Park/Farmer's Field Area	26	1	26	2.3/1.4/3	Existing	-	A
Shoreline Area Road Medians	33	1	33	2.3/1/3	Existing	-	A
Shoreline Industrial Park/Charleston South	150	1	150	2.3/1/3	Existing	-	A
Shoreline West	418	1	418	2.3/1/3	Existing	-	A
North Shoreline Areas	246	1	246	2.3/1/3	Existing	-	A
Crittenden Site	62	1	62	2.3/1/3	Existing	-	A
Truck Fills	2	1	2	2.3/1/3	Existing	-	A
Landfill Maintenance Flare Stations	30	1	30	1/1/1	Existing	-	A
Caltrans	50	1	50	2.3/1/3	Some existing/ Some future	-	A,B
Moffett Field	262	0.25/0.5[f]	115	1,2.3/1/3,3.6	0-20 years	-	C,D
Municipal Service Area, Miscellaneous	13	0.5	7	2.3/1/3	Some existing/ Some future	-	B,D,E
Greer Park	57	1	57	2.3/1/3	Existing	-	D
FACILITY PLAN SERVICE AREA TOTAL	1,860		1,480				
Feasibility Plan Service Area							
East Palo Alto	21	0.5	11	2.3/1/3	Existing	-	B,E
Mountain View	488	0.25/0.5/0.75	222	2.3/1,1.3/3	Some existing/ Some future	Public perception associated with the use of recycled water for school field irrigation	A,D

Potential Users	Annual Demand Estimates (AFY)	Factor of Usage [a]	Annual Demand Estimates w/ Factor of Usage (AFY)	Peaking Factors (month/day/hour) [b]	Timing of Demand	Water Quality Needs/Customer Concerns	Data Sources [c]
Los Altos/Los Altos Hills	1078	0.25/0.5	407	2.3/1.4/3	Existing	Distance from backbone pipeline	B
Palo Alto [d] (not including Stanford University)[e]	2380	0.5	1192	2.3/1/3	Some existing/ Some future	-	B
FEASIBILITY PLAN SERVICE AREA TOTAL	3,970		1,830				
OVERALL TOTAL	5,830		3,310				

Notes:

1. A complete list of customers is provided in Appendix C with the factor of usage for each individual customer.

Footnotes:

a. The factor of usage is a number that was multiplied by the average annual demand to determine a more "realistic" average annual demand for each potential customer. For example, at Moffett Field where several sources of water are available (i.e. treated contaminated groundwater, Sunnyvale recycled water), a factor of usage of 0.5 was used due to the likelihood that the other sources of water would also be utilized.

b. Month/day/hour peaking factors are defined as the ratio of: peak month demand/total year demand; days of usage/7 days; and hours of usage/24 hours, respectively.

c. A – Water meter data; B – 1992 Master Plan; C – NASA Ames Development EIS; D – Acreage & Water Usage Analysis; E – City Staff Input

d. This does not include the Palo Alto Golf Course even though it is within the RWQCP service area/Feasibility Plan Service Area because the supply line is separate and does not need to be modified.

e. Stanford University could likely be accommodated with the proposed pipeline by scheduling delivery to minimize peak flows.

f. Different uses within this potential users grouping utilize different factors of usage.

Appendix D

CITY OF MOUNTAIN VIEW DUAL PLUMBING ORDINANCE

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ARTICLE II. - PLUMBING CODE

SEC. 8.30. - 2016 California Plumbing Code.

SEC. 8.30.1. - 2016 California Plumbing Code adopted.

The California Plumbing Code, 2016 edition, first printing, including Appendices A, D and I, based on the 2015 Uniform Plumbing Code, promulgated by the International Association of Plumbing and Mechanical Officials Association, 4755 East Philadelphia Street, Ontario, California, 91761-2816, which regulates the erection, installation, alteration, repair, relocation, removal, replacement, conversion, use and maintenance of plumbing, gas, drainage systems, and other similar work in order to provide minimum requirements and standards for the protection of the public health, safety and welfare; is adopted and by this reference made a part of this municipal code with the same force and effect as though set out herein in full. One (1) copy of the California Plumbing Code is on file for public inspection in the building inspection office.

(Ord. No. 11.13, § 9, 10/22/13; Ord. No. 17.16, § 1, 11/22/16.)

SEC. 8.30.2. - Subsection 101.1 amended—Administration.

Subsection 101.1 of the California Plumbing Code is amended to read as follows:

101.1. Title. This document shall be known as the "California Plumbing Code" and may be cited as such and will be refer to herein as "this code." Administrative provisions of the California Plumbing Code are referenced to the California Building Code, Chapter 1, Division II for provisions.

(Ord. No. 11.13, § 9, 10/22/13; Ord. No. 17.16, § 1, 11/22/16.)

SEC. 8.30.3. - Subsection 107.1 amended—Procedure for appeals.

Subsection 107.1 of the California Plumbing Code is added, to read as follows:

107.1 Procedure for appeals. The provisions of Section 8.10.18 of this code are hereby incorporated by reference as if fully set forth herein. When Section 8.10.18 is used in reference to a plumbing code appeal, the term "Plumbing Permit" shall replace the term "Building Permit" in said section.

(Ord. No. 11.13, § 9, 10/22/13; Ord. No. 17.16, § 1, 11/22/16.)

SEC. 8.30.4. - Subsection 1614.A.0 added—Nonpotable water reuse systems.

Subsection 16.14A.0 of the California Plumbing Code is added to read as follows:

1614A.0. Definitions.

Commercial building. For the purpose of this Chapter 16A, a commercial building is defined as a building that is used for commercial purposes. It shall not include any building used for residential purposes, including, but not limited to, hotels, motels, apartments, condominiums or similar buildings.

Dual plumbing system or dual plumbed. A system that utilizes separate piping systems for recycled water and potable water within a building, as defined by California Code of Regulations, Title 22, Division 4.

Floor trap priming. The practice of adding water to traps beneath floor drains to ensure a barrier from sewer gas.

Recycled Water. Nonpotable water that meets California Department of Public Health statewide uniform criteria for disinfected tertiary recycled water. Recycled water is also known as reclaimed water.

(Ord. No. 17.16, § 1, 11/22/16.)

SEC. 8.30.5. - Subsection 1618.A.0 amended—Installation.

Subsection 16.18A.0 of the California Plumbing Code is amended to read as follows:

1618A.0. Installation.

a. The recycled water piping system shall not include any hose bibbs. Only quick couplers that differ from those used on the potable water system shall be used on the recycled water piping system.
b. The recycled water system and the potable water system within the building shall be provided with the required appurtenances (valves, air/vacuum relief valves, etc.) to allow for testing as required for cross connection test in Section 1620A.0.
c. Recycled water pipes laid in the same trench or crossing building sewer or drainage piping shall be installed in compliance with Sections 609.0 and 720.0 of this code. Recycled water pipes shall be protected similar to potable water pipes.
d. All new commercial buildings or groups of new commercial buildings submitting for a building permit after January 1, 2017 in the city, where the total square footage of the building(s) is greater than twenty-five thousand (25,000) square feet, shall incorporate dual plumbing in the design of the building to allow the use of recycled water, when it becomes available, for flushing toilets and urinals and priming floor traps.

(Ord. No. 17.16, § 1, 11/22/16.)

SECS. 8.31—8.39. - Reserved.

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Appendix E

IRRIGATION ORDINANCE

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ARTICLE V. - RECYCLED WATER FOR IRRIGATION

SEC. 35.100.1. - Findings.

Potable water is one of our most precious natural resources and is becoming increasingly scarce in the semiarid State of California. The use of treated, nonpotable water for construction and irrigation will increase the amount of potable water available for other uses in the city. The City of Mountain View is dedicated to conserving the potable water supply. Recycled water is a sustainable water source that reduces potable water consumption and is not subject to rationing during drought. After careful study, the city council has determined that recycled water shall be used within the boundaries of the Shoreline Regional Park Community for irrigation purposes whenever it is available and beneficial to the customer.

This article will implement an important program that will assist the Shoreline Regional Park Community in preserving this precious commodity. In adopting this program, the council has balanced the needs of all water users and through this implementation strategy will allow water users sufficient flexibility to meet their potable and nonpotable water needs.

(Ord. No. 14.04, 12/26/04.)

SEC. 35.100.2. - Converting existing potable water users to recycled water.

Within the boundaries of the Shoreline Regional Park Community, retail, commercial and industrial customers to be served by recycled water in the initial conversion have been identified in the "Regional Water Recycling Facilities Planning Study" dated January 2004. This study may be amended from time to time to add additional customers. These customers will be notified by mail that a conversion to recycled water for irrigation purposes is required, along with the conditions of use, pricing and construction schedule. Recycled water customers may file a request for an exemption or adjustment from these requirements with the director of public works.

(Ord. No. 14.04, 12/26/04.)

SEC. 35.100.3. - Use of recycled water in new construction.

All applications for land use permits, building permits and other discretionary actions within the boundaries of the Shoreline Regional Park Community, filed after the adoption of this ordinance, shall include the following:

a. Incorporation of recycled water usage into the design of landscape and irrigation systems.
b. Consideration of plants suitable for irrigation with recycled water.

c. The installation of the infrastructure necessary to connect the irrigation system to the city's recycled water supply.

d. The use of recycled water in lieu of potable water during construction activity.

The city maintains the right to require recycled water use for additional purposes as appropriate.

(Ord. No. 14.04, 12/26/04.)

SEC. 35.100.4. - Exemptions and adjustments.

An application for an exemption or an adjustment to the requirement to use recycled water shall be made to the director of public works. Requests for an exemption or adjustment may be made consistent with state law and shall be based on the finding by the director that the use of recycled water demonstrates an adverse effect to the applicant's landscaping installed prior to the effective date of the ordinance codified herein. The director of public works may also consider any additional factors, including any special costs or hardships which may be created by the use of recycled water. A written determination will be made on all requests for exemptions or adjustments within ten (10) business days and mailed to the applicant.

(Ord. No. 14.04, 12/26/04.)

SEC. 35.100.5. - Administrative provisions.

The director of public works shall establish written application and appeals procedures and may promulgate guidelines for the implementation of this program.

(Ord. No. 14.04, 12/26/04.)

SEC. 35.100.6. - Appeals.

Denial of any application for an exemption and/or adjustment to the provisions of recycled water use may be appealed to the city manager, whose decision shall be final. An application for appeal shall be filed with the city clerk in writing within ten (10) business days after the director of public works' decision and shall state the specific grounds for the appeal. The city manager shall hear the appeal within sixty (60) calendar days after the appeal has been filed with the city clerk and shall issue a written decision within thirty (30) days.

(Ord. No. 14.04, 12/26/04.)

SEC. 35.100.7. - Failure to comply with this article.

In addition to existing penalties in state and local law for violation of the provisions of this article, the director of public works may assess the following penalties, subject to the appeal provisions set forth above:

a. A water service surcharge of fifty percent (50%) of the general water service rate as set forth in Mountain View City Code Section 35.27 to use potable water for irrigation.

b. Continued use of potable water for irrigation, after written warning or warnings by the director, may result in the discontinuation of water service supplied for irrigation by the City of Mountain View following a noticed hearing as set forth in Sec. 35.100.6. A charge as set forth in the city's master fee schedule shall be paid prior to the reactivation or restoration of water service.

(Ord. No. 14.04, 12/26/04.)

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Appendix F

EXISTING AND FUTURE RECYCLED WATER USERS

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Table F.1 - Existing (Alt 0) Recycled Water Demands

No.	Account No.	Meter No.	Customer Name	Address	Model Junction	User Type	Demands (afy)
1	9060-026000.00	09060771C	Shoreline Amphitheatre/Live Na	1 Amphitheatre Pk	158	Irrigation-Only (Non-Potable)	15.18
2	9060-019000.00	09060772	City Of M V 234410	1000 Crittenden Ln	194	Irrigation-Only (Non-Potable)	13.28
3	9060-077000.00	08168593	Google Llc	1010 Joaquin Rd	468	Irrigation-Only (Non-Potable)	8.74
4	9060-087000.00	08168594	Google Llc	1015 Joaquin Rd	456	Irrigation-Only (Non-Potable)	4.56
5	9060-014000.00	08168577	Grubb & Ellis/Microsoft Field	1045 La Avenida Av 1085	444	Irrigation-Only (Non-Potable)	22.12
6	9060-079000.00	08168598	Google Llc	1055 Joaquin Rd	126	Irrigation-Only (Non-Potable)	10.85
7	9060-072000.00	08168602	Google Llc	1058 Huff Av	398	Irrigation-Only (Non-Potable)	0.03
8	9060-017200.00	13107963	Google Llc	1200 Crittenden Ln	812	Irrigation-Only (Non-Potable)	0.17
9	9060-013000.00	08168579	V T A	1235 La Avenida Av	442	Irrigation-Only (Non-Potable)	2.83
10	9060-014100.00	14482013	Google Llc	1255 Pear Av	80	Irrigation-Only (Non-Potable)	14.46
11	9060-017100.00	13054593	Google Llc	1300 Crittenden Ln 1500	812	Irrigation-Only (Non-Potable)	17.40
12	9060-011000.00	08168600	Computer History Museum	1401 N Shoreline Bl	792	Irrigation-Only (Non-Potable)	5.18
13	9060-032500.00	No Meter No. Associated with Account No.	City Of M V 234256	1420 Charleston Rd A	644	Irrigation-Only (Non-Potable)	0.10
14	9060-023000.00	09060767	Shoreline Amphitheatre/Live Na	1497 Terminal Bl	46	Irrigation-Only (Non-Potable)	9.47
15	9060-078000.00	08168603	Google Llc	1500 Plymouth St	458	Irrigation-Only (Non-Potable)	4.15
16	9060-052000.01	08168942	Google Llc	1500 Salado Dr A	368	Irrigation-Only (Non-Potable)	0.07
17	9060-076000.00	08168589	Google Llc	1545 Charleston Rd	466	Irrigation-Only (Non-Potable)	3.62
18	9060-073000.00	08169013	Google Llc	1550 Plymouth Av	746	Irrigation-Only (Non-Potable)	7.49
19	9060-074000.00	08168596	Google Llc	1565 Charleston Rd	394	Irrigation-Only (Non-Potable)	4.37
20	9060-075000.00	08169008	Google Llc	1585 Charleston Rd	14	Irrigation-Only (Non-Potable)	11.33
21	9060-034000.00	08168937	Google Llc	1600 Amphitheatre Pk	452	Irrigation-Only (Non-Potable)	5.19
21	9060-029000.00	08168943	Google Llc	1600 Amphitheatre Pk	452	Irrigation-Only (Non-Potable)	10.96
21	9060-033000.00	08168930	Google Llc	1600 Amphitheatre Pk	452	Irrigation-Only (Non-Potable)	13.18
21	9060-031000.00	08168582	City Of M V 235430	1600 Amphitheatre Pk	452	Irrigation-Only (Non-Potable)	19.91
22	9060-656000.01	17975574	Google Llc	1625 Plymouth St A	130	Irrigation-Only (Non-Potable)	10.81
23	9060-070000.00	08168587	City Of M V 234256	1661 Charleston Rd A	406	Irrigation-Only (Non-Potable)	4.63
24	9060-083500.00	11133167	Google Llc	1764 N Shoreline Bl	100	Irrigation-Only (Non-Potable)	1.26
25	9060-028000.00	08168586	City Of M V 234256	1780 Amphitheatre Pk	292	Irrigation-Only (Non-Potable)	0.31
26	9060-082100.00	17042516	Google Inc Dba Google Llc	1804 N Shoreline Bl	932	Irrigation-Only (Non-Potable)	1.27
27	9060-082000.00	08169011	Google Llc	1842 N Shoreline Bl	418	Irrigation-Only (Non-Potable)	4.22
28	9060-026500.00	10257634	City Of M V 234410	1921 Amphitheatre Pk	292	Irrigation-Only (Non-Potable)	5.72
29	9060-027000.00	08168941	Google Llc	1925 Amphitheatre Pk 1975	292	Irrigation-Only (Non-Potable)	6.87
30	6080-256000.04	No Meter No. Associated with Account No.	LINKEDIN CORPORATION	2025 STIERLIN CT	924	Irrigation	2.78
31	6080-258000.04	No Meter No. Associated with Account No.	LINKEDIN CORP	2027 STIERLIN CT	924	Irrigation	2.90
32	6080-261000.03	No Meter No. Associated with Account No.	BRITANNIA HACIENDA VIII LLC	2029 STIERLIN CT	924	Irrigation	5.40
33	6080-262000.05	No Meter No. Associated with Account No.	BRITANNIA HACIENDA VIII LLC	2051 STIERLIN CT	924	Irrigation	7.18
34	6080-265000.04	No Meter No. Associated with Account No.	LINKEDIN CORPORATION	2061 STIERLIN CT	924	Irrigation	8.29
35	6080-267000.05	No Meter No. Associated with Account No.	BRITANNIA HACIENDA VIII LLC	2071 STIERLIN CT A	924	Irrigation	4.61
36	6080-270000.06	No Meter No. Associated with Account No.	GOOGLE INC	2081 STIERLIN CT A	924	Irrigation	14.22
37	6080-275000.05	No Meter No. Associated with Account No.	BRITANNIA HACIENDA VIII LLC	2091 STIERLIN CT	924	Irrigation	11.42
38	9060-019500.00	12309634	City Of M V 263038-55320	2195 N Shoreline Bl	654	Irrigation-Only (Non-Potable)	0.99
39	9060-057000.00	08168932	City Of M V 234256	2299 Garcia Av	290	Irrigation-Only (Non-Potable)	0.94
40	9060-020000.00	09060768	Shoreline Amphitheatre/Live N	2391 N Shoreline Bl	658	Irrigation-Only (Non-Potable)	4.75
41	9060-037000.00	08170888	City Of M V 234256	2400 Garcia Av A	110	Irrigation-Only (Non-Potable)	8.29

42	9060-037500.00	15143510	City Of M V 235400	2450 Garcia Av	672	Irrigation-Only (Non-Potable)	4.70
43	9060-051000.00	08168935	Intuit Inc	2475 Garcia Av 2535	276	Irrigation-Only (Non-Potable)	20.61
44	9060-038000.00	08168933	Intuit Inc	2500 Garcia Av 2550	450	Irrigation-Only (Non-Potable)	9.94
45	9060-039000.00	08168936	City Of M V 234256	2535 Garcia Av A	276	Irrigation-Only (Non-Potable)	1.11
46	9060-054000.01	180006506	Google Llc	2598 Bayshore Pk A	322	Irrigation-Only (Non-Potable)	5.69
47	Future Account	No Meter No. Associated with Account No.	N/A	2600 MARINE WY	344	Dual Plumbed	5.00
47	9060-042200.00	16493667	Intuit Inc	2600 Marine Wy	344	Irrigation-Only (Non-Potable)	8.86
48	9060-024000.00	09054835	41%239178/33%235400/26%225971	2612 N Shoreline Bl A	404	Irrigation-Only (Non-Potable)	0.24
49	9060-091000.00	10249737	62%239178- 29%235400- 9%225971	2614 N Shoreline Bl	404	Irrigation-Only (Non-Potable)	137.82
49	9060-092000.00	09062154A	City Of M V 225570	2614 N Shoreline Bl A	404	Irrigation-Only (Non-Potable)	4.62
50	9060-055050.00	180006505	Google Llc	2644 Bayshore Pk A	70	Irrigation-Only (Non-Potable)	1.89
51	9060-049000.01	08168931	Caltrans D-4 (Mnvw)	2665 Bayshore Pk	270	Irrigation-Only (Non-Potable)	0.07
52	9060-043000.01	09060775	Intuit Inc	2700 Coast Av	672	Irrigation-Only (Non-Potable)	7.47

Table F.2 - Existing (Alt 1) Recycled Water Demands

No.	Account No.	Meter No.	Customer Name	Address	Model Junction	Use Type	Demands (afy)
3	6085-702000.03	09060601	Google Llc	1010 Joaquin Rd	468	Irrigation-Only	3.51
6	9070-686000.05	09059302	Google Llc	1055 Joaquin Rd	126	Dual Plumbed	6.58
10	Future Account	No Meter N	N/A	1255 PEAR AV	80	Irrigation-Only	6.22
10	6080-059200.01	14075005	Google Llc	1255 Pear Av	80	Irrigation-Only	2.31
11	6080-277000.02	09060516	Google Inc	1300 Crittenden Ln 1500	812	Irrigation-Only (Non-Potable)	29.00
14	9060-022000.00	70031034D	City Of M V 234410	1497 Terminal Bl	46	Irrigation-Only	9.31
16	9070-671000.04	08185233A	Google Llc	1500 Salado Dr A	368	Irrigation-Only	12.66
17	9070-687000.03	09060607	Google Llc	1545 Charleston Rd	466	Irrigation-Only	2.33
19	6085-725000.03	06388516A	Google Llc	1565 Charleston Rd	394	Irrigation-Only	2.59
20	9070-688000.05	08031132	Google Llc	1585 Charleston Rd	14	Irrigation-Only	4.89
26	6080-322100.00	15083987	Google Inc Dba Google Llc	1804 N Shoreline Bl	932	Irrigation-Only	1.77
53	9070-641000.09	07149002	Google Inc	2011 Stierlin Ct	160	Irrigation-Only	7.71
54	9070-642000.07	08186879	Google Llc	2015 Stierlin Ct	926	Irrigation-Only	7.65
55	9070-643000.06	08186869	Google Llc	2017 Stierlin Ct	160	Irrigation-Only	3.88
55	9070-644000.06	08185236	Google Llc	2017 Stierlin Ct A	160	Irrigation-Only	14.28
56	9070-645000.06	08186867	Google Llc	2017 Stierlin Ct B	160	Irrigation-Only	14.05
37	9070-654000.06	08172612	Google Llc	2091 Stierlin Ct	160	Irrigation-Only	3.33
40	6080-286000.02	08172604	City Of M V 235400	2391 N Shoreline Bl	658	Irrigation-Only	1.64
43	9070-670000.02	05088734A	Intuit Inc	2475 Garcia Av 2535	276	Irrigation-Only	2.90
57	9070-668000.02	09060594A	Intuit Inc	2600 Casey Av 2650	352	Irrigation-Only	6.33
54	9030-509000.00	08169322	62%239178- 29%235400- 9%225971	2614 N Shoreline Bl	404	Irrigation-Only (Non-Potable)	165.82
51	9060-049000.00	08168931	Caltrans D-4 (Mnvw)	2665 Bayshore Pk	270	Irrigation-Only	6.58
52	9070-666000.01	12216203A	Intuit Inc	2700 Coast Av 2750	672	Dual Plumbed	3.51
58	Future Account	No Meter N	N/A	100 Huff Ave	152	Irrigation-Only	6.22
59	6080-033000.00	07055474	City Of M V 235450	1030 La Avenida Av	J100	Dual Plumbed	1.23
60	Future Account	No Meter N	N/A	1045 La Avienda St	444	Irrigation-Only	6.22
60	6080-032000.00	07055469	City Of M V 235450	1045 La Avenida Av	444	Irrigation-Only	1.32
61	9070-691000.01	09060596	Google Llc	1058 Huff Av A	398	Irrigation-Only (Non-Potable)	2.03
61	9060-068000.00	08168592	Google Inc Dba Google Llc	1058 Huff Av Unit A	398	Irrigation-Only	18.74
62	6080-044100.00	15962995	Cross Over Health	1080 La Avenida Av	444	Irrigation-Only	1.37
63	6080-049000.00	15171116	Grubb & Ellis/Microsoft Field	1090 La Avenida Av B	444	Irrigation-Only	2.08
64	9070-684000.04	09056321	Google Llc	1098 Alta Av	140	Irrigation-Only (Non-Potable)	11.55
65	9060-018000.00	09060774	City Of M V 234410	1100 Crittenden Ln	194	Fire Sprinkler	2.30
66	6080-231000.01	No Meter N	Google Inc	1200 Charleston Rd Unit 1210	882	Irrigation-Only	6.72
66	9070-639000.01	09060532	Google Llc	1200 Charleston Rd 1210	882	Irrigation-Only	4.82
67	6080-228100.00	15196454A	Google Llc	1201 Charleston Rd	880	Irrigation-Only	10.60
67	6080-282000.00	08799754	City Of M V 235450	1201 Crittenden Ln	812	Irrigation-Only	1.23
68	9070-637000.03	09056286	Google Llc	1215 Charleston Rd	938	Irrigation-Only	3.50
68	6080-206100.00	15196450A	Google Llc	1215 Charleston Rd	938	Fire Sprinkler	7.32
69	6080-232000.01	No Meter N	Google Inc	1220 Charleston Rd Unit 1230	882	Irrigation-Only	6.64
69	9070-640000.01	09060525A	Google Llc	1220 Charleston Rd 1230	882	Irrigation-Only	7.02
70	9070-918000.01	06599367A	Caltrans D-4 Mnvw	1225 N Shoreline Bl	792	Irrigation-Only	1.57
70	9070-919000.00	11013778	Caltrans D-4 (Mnvw)	1225 N Shoreline Bl	792	Commercial	1.87
71	6080-209000.05	No Meter N	Google Llc	1230 Shorebird Wy	938	Irrigation-Only	1.39

72	6080-235000.00	08186871	City Of M V 234256	1250 Charleston Rd	818	Irrigation-Only	1.22
72	6080-237100.00	15196458A	Google Llc	1250 Charleston Rd	818	Irrigation-Only	3.83
73	9070-631000.02	08034403	Pear Ave Group	1288 Pear Av A	440	Irrigation-Only	5.45
74	9070-638000.03	09056287	Google Llc	1295 Charleston Rd A	938	Irrigation-Only	5.90
75	6080-239100.00	15196452	Google Llc	1300 Charleston Rd	162	Irrigation-Only	4.44
76	9070-634000.05	08031137	Google Llc	1300 Spacepark Wy	936	Commercial	2.28
77	6080-211000.04	No Meter N	Google Llc	1310 Shorebird Wy	936	Irrigation-Only	1.22
77	6080-211100.00	14075163	Google Llc	1310 Shorebird Wy	936	Irrigation-Only	8.46
78	9070-630000.01	08172801	1325 Pear Av Associates Llc	1325 Pear Av	82	Irrigation-Only	4.41
79	6080-073000.00	06171279A	City Of M V 234410	1335 La Avenida Av	80	Commercial	1.28
80	6080-203000.08	No Meter N	Google Llc	1345 Shorebird Wy	880	Commercial	1.27
81	6080-213000.03	No Meter N	Google Llc	1350 Shorebird Wy	936	Irrigation-Only	1.33
82	9070-636000.05	08169889	Google Llc	1355 Shorebird Wy	880	Irrigation-Only	3.15
83	6080-293200.00	15196453	Google Llc	1364 Charleston Rd	162	Irrigation-Only	5.73
84	9070-635000.04	09056285	Google Llc	1365 Shorebird Wy	880	Commercial	8.99
85	6080-198000.03	No Meter N	Google Llc	1371 Shorebird Wy 1375	936	Irrigation-Only	5.66
86	9070-632000.04	07141276	Pear Av Investor Llc(Debtor In	1380 Pear Av 1390	436	Commercial	3.81
87	6080-214000.04	No Meter N	Google Llc	1380 Shorebird Wy	936	Irrigation-Only	2.66
87	6080-214100.00	15196460A	Google Llc	1380 Shorebird Wy	936	Commercial	2.27
88	6080-196000.03	No Meter N	Accuray	1383 Shorebird Wy	936	Irrigation-Only	2.85
88	6080-196100.00	15196447A	Google Llc	1383 Shorebird Wy	936	Commercial	2.12
89	6080-216000.16	No Meter N	23 And Me	1390 Shorebird Wy	934	Irrigation-Only	3.49
89	6080-216100.00	15196449A	Google Llc	1390 Shorebird Wy	934	Commercial	2.47
90	6080-194000.07	No Meter N	Google Llc	1393 Shorebird Wy 1397	934	Irrigation-Only	3.93
90	6080-194100.00	15956029A	Google Llc	1393 Shorebird Wy	934	Irrigation-Only	2.99
91	6080-219100.00	15196446	Google Llc	1395 Charleston Rd	86	Irrigation-Only	4.75
92	6085-340000.02	09060650	City Of M V 234256	1400 Charleston Rd	58	Irrigation-Only (Non-Potable)	1.22
92	9060-032000.00	08169009	City Of M V 234256	1400 Charleston Rd	58	Irrigation-Only	12.39
93	9070-694000.01	09051937	Google Llc	1489 Charleston Rd	J88	Fire Sprinkler	2.22
94	6080-338000.01	No Meter N	Century Theatres Inc #399	1500 N Shoreline Bl	66	Irrigation-Only	1.98
94	9070-658000.01	08184251	Century Theatres Inc #399	1500 N Shoreline Bl	66	Irrigation-Only	1.98
95	9070-672000.03	09056328	Google Llc	1501 Salado Dr 1505	370	Irrigation-Only	10.04
95	9070-676000.02	09056330	Google Llc	1501 Salado Dr A	370	Irrigation-Only	8.82
96	6080-305000.01	05006667A	City Of M V 225971	1501 Terminal Bl	46	Irrigation-Only (Non-Potable)	1.22
97	9060-089000.00	08456208	City Of M V 234747	1510 N Shoreline Bl A	178	Irrigation-Only	1.64
98	6080-332000.04	08596950	Google Llc	1600 N Shoreline Bl Rear/I	56	Irrigation-Only	1.50
99	9070-690000.06	09060591	Google Llc	1600 Plymouth St 1670	474	Irrigation-Only	9.38
100	6080-328000.08	08169884	Google Llc	1616 N Shoreline Bl	428	Irrigation-Only	3.75
101	9070-693000.07	09060600	Google Llc	1625 Charleston Rd	150	Irrigation-Only	10.21
102	9070-692000.02	09056338	American Century Investments	1665 Charleston Rd	312	Irrigation-Only	8.83
103	9070-657000.01	08168630	Google Llc	1708 N Shoreline Bl	426	Irrigation-Only (Non-Potable)	2.80
104	9060-084000.00	08456247	Hon Management Inc	1758 N Shoreline Bl R	422	Irrigation-Only	1.89
105	6085-358000.00	09060605	City Of M V 225430	1778 Amphitheatre Pk	292	Irrigation-Only	1.23
106	9070-682000.02	09059312	Google Llc	1801 Landings Dr 2199	32	Irrigation-Only	12.95
107	9070-656000.08	08172601	Google Llc	1808 N Shoreline Bl	420	Irrigation-Only	4.08
108	9070-683000.02	09056333	Google Llc	1861 Landings Dr 1871	302	Irrigation-Only	4.26
109	9070-681000.07	09060598	Google Llc	1875 Charleston Rd	380	Irrigation-Only	5.43

110	6080-317000.08	08459763	Google Llc	1890 N Shoreline Bl	410	Irrigation-Only	2.76
111	9070-661000.01	09060590	Google Llc	1900 Charleston Rd 2000	38	Irrigation-Only	12.19
111	9070-660000.01	09056331	Google Llc	1900 Charleston Rd 2000	38	Irrigation-Only	14.74
111	6085-342595.00	190484417	Google Llc	1900 Charleston Rd A	38	Irrigation-Only	1.90
112	9070-678000.09	08031133	Google Llc	1945 Charleston Rd	40	Irrigation-Only	8.77
113	9070-679000.07	09060655	Google Llc	1965 Charleston Rd	40	Dual Plumbed	8.83
114	Future Account	No Meter N	N/A	2000 N Shoreline Rd	448	Irrigation-Only	6.22
115	9070-677000.10	09056336	Google Llc	2025 Garcia Av	370	Irrigation-Only	9.81
116	5005-728000.00	13544321A	Caltrans D-4 (Mnvw)	2100 Charleston Rd	366	Irrigation-Only	1.23
117	9070-680000.02	08184258	Google Llc	2171 Landings Dr	388	Irrigation-Only	3.02
118	9070-633000.02	08031139	Tree Movers Inc	2190 Crittenden Ln	924	Irrigation-Only	8.16
119	9070-673000.02	09056327	Google Llc	2400 Bayshore Pk 2450	336	Irrigation-Only	12.86
120	6085-454000.01	08031143	Intuit Inc	2551 Casey Av	46	Irrigation-Only (Non-Potable)	2.58
121	9060-050000.00	08168928	Zoltan T Albert	2591 Garcia Av	274	Irrigation-Only	1.34
122	9070-665000.02	08799725A	Intuit Inc	2593 Coast Av	362	Dual Plumbed	3.33
123	Future Account	No Meter N	N/A	2601 Garcia Ave	70	Dual Plumbed	6.22
124	Future Account	No Meter N	N/A	2601 Landings Dr	380	Irrigation-Only	6.22
125	5005-723000.00	08456248	Harman Management Corp	2603 Charleston Rd	320	Irrigation-Only	4.65
126	6085-418000.01	08232899	Google Inc Dba Google Llc	2665 Marine Wy	350	Irrigation-Only	2.00
127	9070-667000.03	08184255A	Intuit Inc	2675 Coast Av	798	Irrigation-Only	7.81
128	9070-664000.01	08232892	Google Inc Dba Google Llc	2685 Marine Wy	350	Irrigation-Only	2.20
129	9070-669000.04	09056320	S F P M Llc	2700 Broderick Wy	352	Irrigation-Only	3.64
130	6080-294000.00	08172607	City Of M V 225418	2920 N Shoreline Bl A	752	Irrigation-Only	2.37
131	6080-289000.01	08798715	City Of M V 235400	3160 N Shoreline Bl A	752	Irrigation-Only	1.49
132	9070-685000.06	09056289	Google Llc	900 Alta Av	316	Irrigation-Only (Non-Potable)	9.85
132	9060-067000.00	08168584	Google Inc Dba Google Llc	900 Alta Av	316	Cooling	5.91
133	Future Account	No Meter N	Charleston East	N/A	934	Cooling	0.00
133	Future Account	No Meter N	Bay View	N/A	934	Cooling	23.17
133	Future Account	No Meter N	NASA Research Park	N/A	934	Indoor Residential	20.71
133	Future Account	No Meter N	Charleston East	N/A	934	Indoor Residential	0.00
133	Future Account	No Meter N	Bay View	N/A	934	Indoor Residential	14.70
133	Future Account	No Meter N	NASA Research Park	N/A	934	Irrigation	28.20
133	Future Account	No Meter N	Charleston East	N/A	934	Irrigation	0.00
133	Future Account	No Meter N	Bay View	N/A	934	Irrigation	8.75
133	Future Account	No Meter N	WesCoat Housing	N/A	934	Irrigation	19.24
133	Future Account	No Meter N	NASA Research Park	N/A	934	Irrigation	7.82
133	Future Account	No Meter N	Ames Campus 1	N/A	934	Irrigation	62.43
133	Future Account	No Meter N	Ames Campus 2	N/A	934	Irrigation	62.43
133	Future Account	No Meter N	Army Reserve	N/A	934	Irrigation	41.12
133	Future Account	No Meter N	Parcel 5	N/A	934		27.46

Table F.3 - Existing (Alt 3) Recycled Water Demands

No.	Account No.	Meter No.	Customer Name	Address	Model Junction	User Type	Demands (afy)
134	Future Account	`	N/A	CLYDE AV	J48	Irrigation/Indoor Recycled Use	3.10
135	Future Account	No Meter No. Associated with Account No.	N/A	N SHORELINE BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.32
135	Future Account	No Meter No. Associated with Account No.	N/A	N SHORELINE BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.02
136	Future Account	No Meter No. Associated with Account No.	N/A	SAN VERON AV	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	1.34
137	Future Account	No Meter No. Associated with Account No.	N/A	SHORELINE BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.35
137	Future Account	No Meter No. Associated with Account No.	N/A	SHORELINE BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.45
138	Future Account	No Meter No. Associated with Account No.	N/A	W MIDDLEFIELD RD	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.36
139	Future Account	No Meter No. Associated with Account No.	N/A	1001 N SHORELINE BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	4.71
140	Future Account	No Meter No. Associated with Account No.	N/A	1100 W MAUDE AV	J50	Irrigation/Indoor Recycled Use	20.98
141	Future Account	No Meter No. Associated with Account No.	N/A	1212 TERRA BELLA AV	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	1.73
142	Future Account	No Meter No. Associated with Account No.	N/A	1215 TERRA BELLA AV	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	1.08
143	Future Account	No Meter No. Associated with Account No.	N/A	1274 TERRA BELLA AV	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	4.23
144	Future Account	No Meter No. Associated with Account No.	N/A	1275 LA AVENIDA	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	6.82
145	Future Account	No Meter No. Associated with Account No.	N/A	1400 SHORELINE BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	4.07
146	Future Account	No Meter No. Associated with Account No.	N/A	189 N Bernardo Ave	776	Dual Plumbed	5.00
147	Future Account	No Meter No. Associated with Account No.	N/A	201 RAVENDALE DR	922	Irrigation/Indoor Recycled Use	15.32
148	Future Account	No Meter No. Associated with Account No.	N/A	205 RAVENDALE DR	922	Irrigation/Indoor Recycled Use	9.27
149	Future Account	No Meter No. Associated with Account No.	N/A	280 N BERNARDO AV	848	Irrigation/Indoor Recycled Use	17.29
149	Future Account	No Meter No. Associated with Account No.	N/A	280 N BERNARDO AV	848	Irrigation/Indoor Recycled Use	15.96
150	Future Account	No Meter No. Associated with Account No.	N/A	302 EASY ST	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	2.16
151	Future Account	No Meter No. Associated with Account No.	N/A	303 RAVENDALE DR	J64	Irrigation/Indoor Recycled Use	17.88
152	Future Account	No Meter No. Associated with Account No.	N/A	313 FAIRCHILD DR	J38	Irrigation/Indoor Recycled Use	31.40
153	Future Account	No Meter No. Associated with Account No.	N/A	339 M Whisman Rd	840	Dual Plumbed	5.00
154	Future Account	No Meter No. Associated with Account No.	N/A	339 N BERNARDO AV	848	Irrigation/Indoor Recycled Use	65.11
155	Future Account	No Meter No. Associated with Account No.	N/A	345 RAVENDALE DR	J64	Irrigation/Indoor Recycled Use	19.89
156	Future Account	No Meter No. Associated with Account No.	N/A	350 ELLIS ST	840	Irrigation/Indoor Recycled Use	47.10
157	Future Account	No Meter No. Associated with Account No.	N/A	350 N BERNARDO AV	848	Irrigation/Indoor Recycled Use	16.59
158	Future Account	No Meter No. Associated with Account No.	N/A	405 NATIONAL AV	J42	Irrigation/Indoor Recycled Use	9.86
159	Future Account	No Meter No. Associated with Account No.	N/A	411 CLYDE AV	J50	Irrigation/Indoor Recycled Use	3.79
160	Future Account	No Meter No. Associated with Account No.	N/A	411 NATIONAL AV	J44	Irrigation/Indoor Recycled Use	4.29
161	Future Account	No Meter No. Associated with Account No.	N/A	415 CLYDE AV	J50	Irrigation/Indoor Recycled Use	3.97
162	Future Account	No Meter No. Associated with Account No.	N/A	420 CLYDE AV	J50	Irrigation/Indoor Recycled Use	4.31
163	Future Account	No Meter No. Associated with Account No.	N/A	420 N BERNARDO AV	846	Irrigation/Indoor Recycled Use	9.74
164	Future Account	No Meter No. Associated with Account No.	N/A	425 CLYDE AV	J50	Irrigation/Indoor Recycled Use	3.88
165	Future Account	No Meter No. Associated with Account No.	N/A	433 CLYDE AV	J48	Irrigation/Indoor Recycled Use	4.99
166	Future Account	No Meter No. Associated with Account No.	N/A	440 MOFFETT BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	6.32
167	Future Account	No Meter No. Associated with Account No.	N/A	440 N BERNARDO AV	846	Irrigation/Indoor Recycled Use	8.80
168	Future Account	No Meter No. Associated with Account No.	N/A	441 CLYDE AV	J48	Irrigation/Indoor Recycled Use	4.10
169	Future Account	No Meter No. Associated with Account No.	N/A	450 NATIONAL AV	J42	Irrigation/Indoor Recycled Use	9.28
170	Future Account	No Meter No. Associated with Account No.	N/A	453 RAVENDALE DR	J64	Irrigation/Indoor Recycled Use	8.28
171	Future Account	No Meter No. Associated with Account No.	N/A	455 N BERNARDO AV	846	Irrigation/Indoor Recycled Use	47.53
172	Future Account	No Meter No. Associated with Account No.	N/A	455 NATIONAL AV	J40	Irrigation/Indoor Recycled Use	4.42
173	Future Account	No Meter No. Associated with Account No.	N/A	464 ELLIS ST	840	Irrigation/Indoor Recycled Use	40.03
174	Future Account	No Meter No. Associated with Account No.	N/A	465 FAIRCHILD DR	868	Dual Plumbed	5.00

174	Future Account	No Meter No. Associated with Account No.	N/A	465 FAIRCHILD DR	J44	Irrigation/Indoor Recycled Use	14.66
175	Future Account	No Meter No. Associated with Account No.	N/A	480 ELLIS ST	J40	Irrigation/Indoor Recycled Use	4.35
176	Future Account	No Meter No. Associated with Account No.	N/A	485 CLYDE AV	J48	Irrigation/Indoor Recycled Use	9.68
177	Future Account	No Meter No. Associated with Account No.	N/A	495 CLYDE AV	J48	Irrigation/Indoor Recycled Use	6.01
178	Future Account	No Meter No. Associated with Account No.	N/A	500 ELLIS ST	868	Irrigation/Indoor Recycled Use	5.16
179	Future Account	No Meter No. Associated with Account No.	N/A	501 ELLIS ST	J40	Irrigation/Indoor Recycled Use	8.17
180	Future Account	No Meter No. Associated with Account No.	N/A	515 ELLIS ST	J40	Irrigation/Indoor Recycled Use	8.42
181	Future Account	No Meter No. Associated with Account No.	N/A	550 ELLIS ST	868	Irrigation/Indoor Recycled Use	3.85
182	Future Account	No Meter No. Associated with Account No.	N/A	555 CLYDE AV STE 120	J48	Irrigation/Indoor Recycled Use	0.15
183	Future Account	No Meter No. Associated with Account No.	N/A	555 CLYDE AV STE 160	J48	Irrigation/Indoor Recycled Use	0.17
184	Future Account	No Meter No. Associated with Account No.	N/A	555 E MIDDLEFIELD RD	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	9.52
185	Future Account	No Meter No. Associated with Account No.	N/A	555A ELLIS ST	868	Irrigation/Indoor Recycled Use	8.33
186	Future Account	No Meter No. Associated with Account No.	N/A	559 CLYDE AV STE 200	J48	Irrigation/Indoor Recycled Use	0.16
187	Future Account	No Meter No. Associated with Account No.	N/A	559 CLYDE AV STE 220	J48	Irrigation/Indoor Recycled Use	0.16
188	Future Account	No Meter No. Associated with Account No.	N/A	559 CLYDE AV STE 240	J48	Irrigation/Indoor Recycled Use	0.15
189	Future Account	No Meter No. Associated with Account No.	N/A	559 CLYDE AV STE 260	J48	Irrigation/Indoor Recycled Use	0.15
190	Future Account	No Meter No. Associated with Account No.	N/A	565 CLYDE AV STE 600	J48	Irrigation/Indoor Recycled Use	0.09
191	Future Account	No Meter No. Associated with Account No.	N/A	565 CLYDE AV STE 610	J48	Irrigation/Indoor Recycled Use	0.09
192	Future Account	No Meter No. Associated with Account No.	N/A	565 CLYDE AV STE 620	J48	Irrigation/Indoor Recycled Use	0.12
193	Future Account	No Meter No. Associated with Account No.	N/A	565 CLYDE AV STE 630	J48	Irrigation/Indoor Recycled Use	0.12
194	Future Account	No Meter No. Associated with Account No.	N/A	565 CLYDE AV STE 640	J48	Irrigation/Indoor Recycled Use	0.10
195	Future Account	No Meter No. Associated with Account No.	N/A	565 CLYDE AV STE 650	J48	Irrigation/Indoor Recycled Use	0.10
196	Future Account	No Meter No. Associated with Account No.	N/A	565 CLYDE AV STE 660	J48	Irrigation/Indoor Recycled Use	0.10
197	Future Account	No Meter No. Associated with Account No.	N/A	565 CLYDE AV STE 670	J48	Irrigation/Indoor Recycled Use	0.10
198	Future Account	No Meter No. Associated with Account No.	N/A	569 CLYDE AV STE 500	J48	Irrigation/Indoor Recycled Use	0.09
199	Future Account	No Meter No. Associated with Account No.	N/A	569 CLYDE AV STE 510	J48	Irrigation/Indoor Recycled Use	0.09
200	Future Account	No Meter No. Associated with Account No.	N/A	569 CLYDE AV STE 520	J48	Irrigation/Indoor Recycled Use	0.08
201	Future Account	No Meter No. Associated with Account No.	N/A	569 CLYDE AV STE 530	J48	Irrigation/Indoor Recycled Use	0.08
202	Future Account	No Meter No. Associated with Account No.	N/A	569 CLYDE AV STE 540	J48	Irrigation/Indoor Recycled Use	0.09
203	Future Account	No Meter No. Associated with Account No.	N/A	569 CLYDE AV STE 550	J48	Irrigation/Indoor Recycled Use	0.09
204	Future Account	No Meter No. Associated with Account No.	N/A	569 CLYDE AV STE 560	J48	Irrigation/Indoor Recycled Use	0.09
205	Future Account	No Meter No. Associated with Account No.	N/A	569 CLYDE AV STE 570	J48	Irrigation/Indoor Recycled Use	0.09
206	Future Account	No Meter No. Associated with Account No.	N/A	575 CLYDE AV STE 400	J48	Irrigation/Indoor Recycled Use	0.16
207	Future Account	No Meter No. Associated with Account No.	N/A	575 CLYDE AV STE 420	J48	Irrigation/Indoor Recycled Use	0.16
208	Future Account	No Meter No. Associated with Account No.	N/A	575 CLYDE AV STE 440	J48	Irrigation/Indoor Recycled Use	0.15
209	Future Account	No Meter No. Associated with Account No.	N/A	575 CLYDE AV STE 460	J48	Irrigation/Indoor Recycled Use	0.15
210	Future Account	No Meter No. Associated with Account No.	N/A	579 CLYDE AV STE 300	J48	Irrigation/Indoor Recycled Use	0.16
211	Future Account	No Meter No. Associated with Account No.	N/A	579 CLYDE AV STE 320	J48	Irrigation/Indoor Recycled Use	0.16
212	Future Account	No Meter No. Associated with Account No.	N/A	579 CLYDE AV STE 340	J48	Irrigation/Indoor Recycled Use	0.15
213	Future Account	No Meter No. Associated with Account No.	N/A	579 CLYDE AV STE 360	J48	Irrigation/Indoor Recycled Use	0.15
214	Future Account	No Meter No. Associated with Account No.	N/A	580 CLYDE AV	790	Irrigation/Indoor Recycled Use	21.65
215	Future Account	No Meter No. Associated with Account No.	N/A	599 FAIRCHILD DR	J46	Irrigation/Indoor Recycled Use	4.79
216	Future Account	No Meter No. Associated with Account No.	N/A	605 ELLIS ST	868	Irrigation/Indoor Recycled Use	4.86
217	Future Account	No Meter No. Associated with Account No.	N/A	605 FAIRCHILD DR	838	Irrigation/Indoor Recycled Use	14.75
218	Future Account	No Meter No. Associated with Account No.	N/A	615 NATIONAL AV	J42	Irrigation/Indoor Recycled Use	5.30
219	Future Account	No Meter No. Associated with Account No.	N/A	625 CLYDE AV	790	Irrigation/Indoor Recycled Use	19.62
220	Future Account	No Meter No. Associated with Account No.	N/A	625 NATIONAL AV	J42	Irrigation/Indoor Recycled Use	2.31

221	Future Account	No Meter No. Associated with Account No.	N/A	630 CLYDE AV	790	Irrigation/Indoor Recycled Use	9.47
222	Future Account	No Meter No. Associated with Account No.	N/A	636 ELLIS ST	J46	Irrigation/Indoor Recycled Use	2.59
223	Future Account	No Meter No. Associated with Account No.	N/A	640 CLYDE CT	J52	Irrigation/Indoor Recycled Use	9.85
224	Future Account	No Meter No. Associated with Account No.	N/A	640 NATIONAL AV	J42	Irrigation/Indoor Recycled Use	20.14
225	Future Account	No Meter No. Associated with Account No.	N/A	644 NATIONAL AV	J44	Irrigation/Indoor Recycled Use	21.67
226	Future Account	No Meter No. Associated with Account No.	N/A	645 NATIONAL AV	J44	Irrigation/Indoor Recycled Use	5.02
227	Future Account	No Meter No. Associated with Account No.	N/A	650 CLYDE CT	838	Irrigation/Indoor Recycled Use	10.04
228	Future Account	No Meter No. Associated with Account No.	N/A	665 CLYDE AV	838	Irrigation/Indoor Recycled Use	17.33
229	Future Account	No Meter No. Associated with Account No.	N/A	690 E MIDDLEFIELD RD	J68	Irrigation/Indoor Recycled Use	67.75
230	Future Account	No Meter No. Associated with Account No.	N/A	700 E MIDDLEFIELD RD	844	Irrigation/Indoor Recycled Use	75.04
231	Future Account	No Meter No. Associated with Account No.	N/A	700 Middlefield Rd	844	Dual Plumbed	5.00
232	Future Account	No Meter No. Associated with Account No.	N/A	701 E MIDDLEFIELD RD	842	Irrigation/Indoor Recycled Use	12.15
233	Future Account	No Meter No. Associated with Account No.	N/A	755 RAVENDALE DR	846	Irrigation/Indoor Recycled Use	8.36
234	Future Account	No Meter No. Associated with Account No.	N/A	777 E MIDDLEFIELD RD	844	Irrigation/Indoor Recycled Use	16.59
235	Future Account	No Meter No. Associated with Account No.	N/A	800 E MIDDLEFIELD RD	844	Irrigation/Indoor Recycled Use	18.38
236	Future Account	No Meter No. Associated with Account No.	N/A	807 N SHORELINE BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.41
237	Future Account	No Meter No. Associated with Account No.	N/A	808 N SHORELINE BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.53
238	Future Account	No Meter No. Associated with Account No.	N/A	841 SAN VERON AV	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	1.70
239	Future Account	No Meter No. Associated with Account No.	N/A	850 N SHORELINE BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	1.16
240	Future Account	No Meter No. Associated with Account No.	N/A	869 LINDA VISTA AV	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.12
241	Future Account	No Meter No. Associated with Account No.	N/A	880 MAUDE AV	J50	Irrigation/Indoor Recycled Use	5.89
242	Future Account	No Meter No. Associated with Account No.	N/A	885 MAUDE AV	J50	Irrigation/Indoor Recycled Use	4.28
243	Future Account	No Meter No. Associated with Account No.	N/A	891 MAUDE AV	J50	Irrigation/Indoor Recycled Use	3.28
244	Future Account	No Meter No. Associated with Account No.	N/A	905 W MIDDLEFIELD RD 901	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.02
245	Future Account	No Meter No. Associated with Account No.	N/A	905 W MIDDLEFIELD RD 902	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.02
246	Future Account	No Meter No. Associated with Account No.	N/A	905 W MIDDLEFIELD RD 903	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.02
247	Future Account	No Meter No. Associated with Account No.	N/A	905 W MIDDLEFIELD RD 904	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.02
248	Future Account	No Meter No. Associated with Account No.	N/A	905 W MIDDLEFIELD RD 913	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.02
249	Future Account	No Meter No. Associated with Account No.	N/A	905 W MIDDLEFIELD RD 914	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.02
250	Future Account	No Meter No. Associated with Account No.	N/A	905 W MIDDLEFIELD RD 915	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.01
251	Future Account	No Meter No. Associated with Account No.	N/A	905 W MIDDLEFIELD RD 916	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.01
252	Future Account	No Meter No. Associated with Account No.	N/A	905 W MIDDLEFIELD RD 917	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.02
253	Future Account	No Meter No. Associated with Account No.	N/A	905 W MIDDLEFIELD RD 918	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.02
254	Future Account	No Meter No. Associated with Account No.	N/A	917 N SHORELINE BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.49
255	Future Account	No Meter No. Associated with Account No.	N/A	967 N SHORELINE BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.88
256	Future Account	No Meter No. Associated with Account No.	N/A	975 N SHORELINE BL	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.26
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	760	Irrigation/Indoor Recycled Use	35.05
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J48	Irrigation/Indoor Recycled Use	8.70
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J46	Irrigation/Indoor Recycled Use	1.52
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	1.10
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	842	Irrigation/Indoor Recycled Use	3.73
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.44
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.99
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	1.40
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.15
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	0.04
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	1.29

257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	2.49
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	1.85
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	1.31
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	3.21
257	Future Account	No Meter No. Associated with Account No.	N/A	Parcel without address in GIS	J1306/J104/J76/770	Irrigation/Indoor Recycled Use	1.45

Appendix G

RECOMMENDED PROJECT CAPITAL COSTS AND CASH FLOW

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Table G.2 - Cashflow Assumptions

CASH FLOW ASSUMPTIONS	VALUES
2022 Beginning Fund Balance	$0
O&M Projection (% of Capital)	2.0%
O&M Inflation Escalator	3.0%
Capital - Recycled Water System & Expansion	65,000
Capital - Recycled Water System & Expansion Inflation Escalator	2.0%
Interest Income	1.5%
Acre-Feet to Cubic Feet	43,560
Issue Debt	Yes
Sites for Conversion	81
Scenario 1 - 3 sites per Year	27
Scenario 2 - 6 sites per Year	14
Scenario 3 - 8 sites per Year	11
DEBT INSTRUMENTS AND RATES	
Revenue Bond	4.0%
SRF Loan	1.5%
Tier 2	$7.01
5/8" Meter Charge	$15.55
Recycled Water Rate per CCF	$5.00

Table G.3 - Scenario 1 (27-Year Cash Flow)	FYE 2022	FYE 2023	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	FYE 2030	FYE 2031	FYE 2032
Annual Recycled Water Customers	3	3	3	3	3	3	3	3	3	3	3
Cumulative Recycled Water Customers	3	6	9	12	15	18	21	24	27	30	33
Annual Recycled Water Demand (CCF)	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381
Cumulative Recycled Water Demand (CCF)	17,381	34,763	52,144	69,526	86,907	104,289	121,670	139,052	156,433	173,815	191,196
Beginning Fund Balance	**$0**	**$1,843,618**	**$896,375**	**$56,417**	**$2,041,627**	**$1,292,160**	**$652,815**	**$1,169,655**	**$705,521**	**$355,655**	**$121,720**
Revenues											
Recycled Water Meter Charges	$560	$1,120	$1,679	$2,239	$2,799	$3,359	$3,919	$4,478	$5,038	$5,598	$6,158
Recycled Water Sales (Consumption)	86,907	173,815	260,722	347,629	434,537	521,444	608,351	695,259	782,166	869,073	955,981
Avoided Cost (Potable - Recycled)	34,937	69,873	104,810	139,747	174,684	209,620	244,557	279,494	314,431	349,367	384,304
Interest Income (Excludes Bond Proceeds)	0	20,397	7,093	0	24,817	14,479	5,304	13,959	7,900	3,554	946
Bond Proceeds	2,880,000	0	0	2,880,000	0	0	1,110,000	0	0	0	0
Total Revenues	**$3,002,404**	**$265,205**	**$374,304**	**$3,369,616**	**$636,837**	**$748,902**	**$1,972,131**	**$993,190**	**$1,109,534**	**$1,227,592**	**$1,347,389**
Expenses											
Operations & Maintenance Cost	$15,846	$16,322	$16,811	$17,316	$17,835	$18,370	$18,921	$19,489	$20,073	$20,676	$21,296
Capital Costs - Alt1	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540
Capital Costs - Recycled Water & Expansion Improvements	65,000	66,300	67,626	68,979	70,358	71,765	73,201	74,665	76,158	77,681	79,235
Debt Service	116,400	168,286	168,286	336,571	336,571	336,571	401,630	401,630	401,630	401,630	401,630
Total Expenses	**$1,158,786**	**$1,212,447**	**$1,214,263**	**$1,384,405**	**$1,386,304**	**$1,388,246**	**$1,455,292**	**$1,457,323**	**$1,459,401**	**$1,461,527**	**$1,463,701**
Surplus / (Deficit)	$1,843,618	($947,242)	($839,958)	$1,985,210	($749,468)	($639,344)	$516,839	($464,133)	($349,867)	($233,934)	($116,312)
Ending Fund Balance	**$1,843,618**	**$896,375**	**$56,417**	**$2,041,627**	**$1,292,160**	**$652,815**	**$1,169,655**	**$705,521**	**$355,655**	**$121,720**	**$5,409**
Debt Service Coverage Ratio	25.66x	1.48x	2.12x	9.96x	1.84x	2.17x	4.86x	2.42x	2.71x	3.01x	3.30x

Table G.3 - Scenario 1 (27-Year Cash Flow)	FYE 2033	FYE 2034	FYE 2035	FYE 2036	FYE 2037	FYE 2038	FYE 2039	FYE 2040	FYE 2041	FYE 2042	FYE 2043
Annual Recycled Water Customers	3	3	3	3	3	3	3	3	3	3	3
Cumulative Recycled Water Customers	36	39	42	45	48	51	54	57	60	63	66
Annual Recycled Water Demand (CCF)	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381
Cumulative Recycled Water Demand (CCF)	208,578	225,959	243,341	260,722	278,103	295,485	312,866	330,248	347,629	365,011	382,392
Beginning Fund Balance	**$5,409**	**$8,434**	**$132,536**	**$379,476**	**$751,045**	**$1,249,057**	**$1,875,352**	**$2,631,797**	**$3,520,285**	**$4,542,736**	**$5,701,098**
Revenues											
Recycled Water Meter Charges	$6,718	$7,277	$7,837	$8,397	$8,957	$9,517	$10,076	$10,636	$11,196	$11,756	$12,316
Recycled Water Sales (Consumption)	1,042,888	1,129,795	1,216,703	1,303,610	1,390,517	1,477,425	1,564,332	1,651,239	1,738,147	1,825,054	1,911,961
Avoided Cost (Potable - Recycled)	419,241	454,178	489,114	524,051	558,988	593,925	628,861	663,798	698,735	733,672	768,608
Interest Income (Excludes Bond Proceeds)	103	1,049	3,812	8,416	14,889	23,259	33,552	45,797	60,022	76,257	94,529
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$1,468,950**	**$1,592,300**	**$1,717,466**	**$1,844,474**	**$1,973,351**	**$2,104,125**	**$2,236,822**	**$2,371,471**	**$2,508,100**	**$2,646,738**	**$2,787,415**
Expenses											
Operations & Maintenance Cost	$21,935	$22,593	$23,271	$23,969	$24,688	$25,428	$26,191	$26,977	$27,786	$28,620	$29,479
Capital Costs - Alt1	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540
Capital Costs - Recycled Water & Expansion Improvements	80,819	82,436	84,084	85,766	87,481	89,231	91,016	92,836	94,693	96,587	98,518
Debt Service	401,630	401,630	401,630	401,630	401,630	401,630	401,630	401,630	401,630	401,630	401,630
Total Expenses	**$1,465,924**	**$1,468,199**	**$1,470,525**	**$1,472,905**	**$1,475,339**	**$1,477,830**	**$1,480,377**	**$1,482,983**	**$1,485,649**	**$1,488,377**	**$1,491,167**
Surplus / (Deficit)	$3,025	$124,101	$246,941	$371,569	$498,012	$626,295	$756,445	$888,488	$1,022,451	$1,158,362	$1,296,248
Ending Fund Balance	**$8,434**	**$132,536**	**$379,476**	**$751,045**	**$1,249,057**	**$1,875,352**	**$2,631,797**	**$3,520,285**	**$4,542,736**	**$5,701,098**	**$6,997,345**
Debt Service Coverage Ratio	3.60x	3.91x	4.22x	4.53x	4.85x	5.18x	5.50x	5.84x	6.18x	6.52x	6.87x

Table G.3 - Scenario 1 (27-Year Cash Flow)	FYE 2044	FYE 2045	FYE 2046	FYE 2047	FYE 2048	FYE 2049	FYE 2050	FYE 2051	FYE 2052	FYE 2053	FYE 2054
Annual Recycled Water Customers	3	3	3	3	3	0	0	0	0	0	0
Cumulative Recycled Water Customers	69	72	75	78	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381
Cumulative Recycled Water Demand (CCF)	399,774	417,155	434,537	451,918	469,300	486,681	504,063	521,444	538,825	556,207	573,588
Beginning Fund Balance	**$6,997,345**	**$8,433,483**	**$10,011,541**	**$11,733,582**	**$13,601,695**	**$15,618,001**	**$17,784,084**	**$20,102,116**	**$22,574,301**	**$25,202,872**	**$28,159,643**
Revenues											
Recycled Water Meter Charges	$12,875	$13,435	$13,995	$14,555	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	1,998,869	2,085,776	2,172,683	2,259,591	2,346,498	2,433,405	2,520,313	2,607,220	2,694,127	2,781,035	2,867,942
Avoided Cost (Potable - Recycled)	803,545	838,482	873,419	908,355	943,292	978,229	1,013,166	1,048,102	1,083,039	1,117,976	1,152,913
Interest Income (Excludes Bond Proceeds)	114,870	137,308	161,874	188,600	217,516	248,651	282,031	317,690	355,661	397,240	442,478
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$2,930,159**	**$3,075,001**	**$3,221,971**	**$3,371,101**	**$3,522,421**	**$3,675,400**	**$3,830,624**	**$3,988,127**	**$4,147,942**	**$4,311,365**	**$4,478,447**
Expenses											
Operations & Maintenance Cost	$30,363	$31,274	$32,212	$33,178	$34,174	$35,199	$36,255	$37,343	$38,463	$39,617	$40,805
Capital Costs - Alt1	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540
Capital Costs - Recycled Water & Expansion Improvements	100,489	102,498	104,548	106,639	108,772	110,948	113,167	115,430	117,739	120,093	122,495
Debt Service	401,630	401,630	401,630	401,630	401,630	401,630	401,630	401,630	401,630	233,344	233,344
Total Expenses	**$1,494,022**	**$1,496,942**	**$1,499,930**	**$1,502,988**	**$1,506,116**	**$1,509,317**	**$1,512,591**	**$1,515,942**	**$1,519,371**	**$1,354,594**	**$1,358,185**
Surplus / (Deficit)	$1,436,137	$1,578,059	$1,722,041	$1,868,113	$2,016,305	$2,166,083	$2,318,033	$2,472,185	$2,628,571	$2,956,770	$3,120,262
Ending Fund Balance	**$8,433,483**	**$10,011,541**	**$11,733,582**	**$13,601,695**	**$15,618,001**	**$17,784,084**	**$20,102,116**	**$22,574,301**	**$25,202,872**	**$28,159,643**	**$31,279,905**
Debt Service Coverage Ratio	7.22x	7.58x	7.94x	8.31x	8.69x	9.06x	9.45x	9.84x	10.23x	18.31x	19.02x

Table G.3 - Scenario 1 (27-Year Cash Flow)	FYE 2055	FYE 2056	FYE 2057	FYE 2058	FYE 2059	FYE 2060	FYE 2061	FYE 2062	FYE 2063	FYE 2064
Annual Recycled Water Customers	0	0	0	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	81	81	81	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381
Cumulative Recycled Water Demand (CCF)	590,970	608,351	625,733	643,114	660,496	677,877	695,259	712,640	730,022	747,403
Beginning Fund Balance	**$31,279,905**	**$34,735,575**	**$38,362,051**	**$42,161,805**	**$46,202,893**	**$50,423,295**	**$54,825,606**	**$59,412,458**	**$64,186,518**	**$69,150,492**
Revenues										
Recycled Water Meter Charges	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	2,954,849	3,041,757	3,128,664	3,215,571	3,302,479	3,389,386	3,476,293	3,563,201	3,650,108	3,737,015
Avoided Cost (Potable - Recycled)	1,187,849	1,222,786	1,257,723	1,292,660	1,327,596	1,362,533	1,397,470	1,432,407	1,467,343	1,502,280
Interest Income (Excludes Bond Proceeds)	491,430	544,151	599,433	657,802	719,302	783,491	850,407	920,092	992,583	1,067,923
Bond Proceeds	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$4,649,244**	**$4,823,808**	**$5,000,935**	**$5,181,147**	**$5,364,491**	**$5,550,524**	**$5,739,285**	**$5,930,813**	**$6,125,149**	**$6,322,333**
Expenses										
Operations & Maintenance Cost	$42,029	$43,290	$44,589	$45,927	$47,304	$48,724	$50,185	$51,691	$53,242	$54,839
Capital Costs - Alt1	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540
Capital Costs - Recycled Water & Expansion Improvements	124,945	127,444	129,993	132,593	135,245	137,949	140,708	143,523	146,393	149,321
Debt Service	65,059	65,059	65,059	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Total Expenses	**$1,193,573**	**$1,197,333**	**$1,201,181**	**$1,140,059**	**$1,144,089**	**$1,148,213**	**$1,152,434**	**$1,156,753**	**$1,161,175**	**$1,165,700**
Surplus / (Deficit)	$3,455,670	$3,626,475	$3,799,754	$4,041,088	$4,220,402	$4,402,311	$4,586,852	$4,774,060	$4,963,975	$5,156,633
Ending Fund Balance	**$34,735,575**	**$38,362,051**	**$42,161,805**	**$46,202,893**	**$50,423,295**	**$54,825,606**	**$59,412,458**	**$64,186,518**	**$69,150,492**	**$74,307,125**
Debt Service Coverage Ratio	70.82x	73.48x	76.18x	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table G.4 - Scenario 2 (14-Year Cash Flow)	FYE 2022	FYE 2023	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	FYE 2030	FYE 2031	FYE 2032
Annual Recycled Water Customers	6	6	6	6	6	6	6	6	6	6	6
Cumulative Recycled Water Customers	6	12	18	24	30	36	42	48	54	60	66
Annual Recycled Water Demand (CCF)	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521
Cumulative Recycled Water Demand (CCF)	33,521	67,043	100,564	134,086	167,607	201,128	234,650	268,171	301,693	335,214	368,735
Beginning Fund Balance	**$0**	**$3,621,346**	**$1,857,157**	**$302,093**	**$4,199,730**	**$2,823,371**	**$1,661,785**	**$1,734,335**	**$963,271**	**$415,875**	**$95,439**
Revenues											
Recycled Water Meter Charges	$1,120	$2,239	$3,359	$4,478	$5,598	$6,718	$7,837	$8,957	$10,076	$11,196	$12,316
Recycled Water Sales (Consumption)	167,607	335,214	502,821	670,428	838,035	1,005,642	1,173,249	1,340,856	1,508,463	1,676,070	1,843,677
Avoided Cost (Potable - Recycled)	67,378	134,756	202,134	269,512	336,890	404,268	471,646	539,024	606,402	673,780	741,158
Interest Income (Excludes Bond Proceeds)	0	40,783	16,074	0	52,281	33,388	17,242	20,081	10,267	3,806	750
Bond Proceeds	5,560,000	0	0	5,560,000	0	0	1,080,000	0	0	0	0
Total Revenues	**$5,796,105**	**$512,992**	**$724,388**	**$6,504,418**	**$1,232,804**	**$1,450,016**	**$2,749,974**	**$1,908,918**	**$2,135,208**	**$2,364,852**	**$2,597,901**
Expenses											
Operations & Maintenance Cost	$30,560	$31,477	$32,422	$33,394	$34,396	$35,428	$36,491	$37,586	$38,713	$39,875	$41,071
Capital Costs - Alt1	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398
Capital Costs - Recycled Water & Expansion Improvements	65,000	66,300	67,626	68,979	70,358	71,765	73,201	74,665	76,158	77,681	79,235
Debt Service	224,800	325,005	325,005	650,010	650,010	650,010	713,334	713,334	713,334	713,334	713,334
Total Expenses	**$2,174,759**	**$2,277,181**	**$2,279,451**	**$2,606,782**	**$2,609,163**	**$2,611,602**	**$2,677,424**	**$2,679,983**	**$2,682,604**	**$2,685,288**	**$2,688,038**
Surplus / (Deficit)	$3,621,346	($1,764,189)	($1,555,064)	$3,897,637	($1,376,359)	($1,161,586)	$72,550	($771,065)	($547,396)	($320,436)	($90,137)
Ending Fund Balance	**$3,621,346**	**$1,857,157**	**$302,093**	**$4,199,730**	**$2,823,371**	**$1,661,785**	**$1,734,335**	**$963,271**	**$415,875**	**$95,439**	**$5,302**
Debt Service Coverage Ratio	25.65x	1.48x	2.13x	9.96x	1.84x	2.18x	3.80x	2.62x	2.94x	3.26x	3.58x

Table G.4 - Scenario 2 (14-Year Cash Flow)	FYE 2033	FYE 2034	FYE 2035	FYE 2036	FYE 2037	FYE 2038	FYE 2039	FYE 2040	FYE 2041	FYE 2042	FYE 2043
Annual Recycled Water Customers	6	6	3	0	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	72	78	81	81	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521
Cumulative Recycled Water Demand (CCF)	402,257	435,778	469,300	502,821	536,342	569,864	603,385	636,907	670,428	703,949	737,471
Beginning Fund Balance	**$5,302**	**$148,850**	**$529,519**	**$1,150,232**	**$2,013,952**	**$3,124,250**	**$4,484,748**	**$6,099,120**	**$7,971,095**	**$10,104,454**	**$12,503,033**
Revenues											
Recycled Water Meter Charges	$13,435	$14,555	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	2,011,284	2,178,891	2,346,498	2,514,105	2,681,712	2,849,319	3,016,926	3,184,533	3,352,140	3,519,747	3,687,354
Avoided Cost (Potable - Recycled)	808,536	875,914	943,292	1,010,670	1,078,048	1,145,426	1,212,804	1,280,182	1,347,560	1,414,938	1,482,316
Interest Income (Excludes Bond Proceeds)	1,148	5,050	12,504	23,555	38,250	56,643	78,788	104,741	134,557	168,294	206,008
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$2,834,403**	**$3,074,410**	**$3,317,409**	**$3,563,444**	**$3,813,124**	**$4,066,502**	**$4,323,633**	**$4,584,571**	**$4,849,372**	**$5,118,094**	**$5,390,793**
Expenses											
Operations & Maintenance Cost	$42,303	$43,572	$44,879	$46,225	$47,612	$49,041	$50,512	$52,027	$53,588	$55,196	$56,852
Capital Costs - Alt1	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398
Capital Costs - Recycled Water & Expansion Improvements	80,819	82,436	84,084	85,766	87,481	89,231	91,016	92,836	94,693	96,587	98,518
Debt Service	713,334	713,334	713,334	713,334	713,334	713,334	713,334	713,334	713,334	713,334	713,334
Total Expenses	**$2,690,855**	**$2,693,740**	**$2,696,696**	**$2,699,724**	**$2,702,826**	**$2,706,004**	**$2,709,260**	**$2,712,596**	**$2,716,013**	**$2,719,515**	**$2,723,103**
Surplus / (Deficit)	$143,548	$380,669	$620,713	$863,720	$1,110,298	$1,360,498	$1,614,373	$1,871,975	$2,133,359	$2,398,579	$2,667,690
Ending Fund Balance	**$148,850**	**$529,519**	**$1,150,232**	**$2,013,952**	**$3,124,250**	**$4,484,748**	**$6,099,120**	**$7,971,095**	**$10,104,454**	**$12,503,033**	**$15,170,723**
Debt Service Coverage Ratio	3.91x	4.25x	4.59x	4.93x	5.28x	5.63x	5.99x	6.35x	6.72x	7.10x	7.48x

Table G.4 - Scenario 2 (14-Year Cash Flow)	FYE 2044	FYE 2045	FYE 2046	FYE 2047	FYE 2048	FYE 2049	FYE 2050	FYE 2051	FYE 2052	FYE 2053	FYE 2054
Annual Recycled Water Customers	0	0	0	0	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	81	81	81	81	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521
Cumulative Recycled Water Demand (CCF)	770,992	804,514	838,035	871,556	905,078	938,599	972,121	1,005,642	1,039,163	1,072,685	1,106,206
Beginning Fund Balance	**$15,170,723**	**$18,111,473**	**$21,329,286**	**$24,828,226**	**$28,612,413**	**$32,686,027**	**$37,053,309**	**$41,718,561**	**$46,686,144**	**$51,960,487**	**$57,873,520**
Revenues											
Recycled Water Meter Charges	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	3,854,961	4,022,568	4,190,175	4,357,782	4,525,389	4,692,996	4,860,603	5,028,210	5,195,817	5,363,424	5,531,031
Avoided Cost (Potable - Recycled)	1,549,694	1,617,072	1,684,450	1,751,828	1,819,206	1,886,584	1,953,962	2,021,340	2,088,718	2,156,096	2,223,474
Interest Income (Excludes Bond Proceeds)	247,758	293,604	343,604	397,821	456,316	519,151	586,391	658,100	734,342	817,623	908,046
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$5,667,528**	**$5,948,358**	**$6,233,344**	**$6,522,546**	**$6,816,026**	**$7,113,846**	**$7,416,071**	**$7,722,764**	**$8,033,992**	**$8,352,258**	**$8,677,665**
Expenses											
Operations & Maintenance Cost	$58,557	$60,314	$62,123	$63,987	$65,906	$67,884	$69,920	$72,018	$74,178	$76,404	$78,696
Capital Costs - Alt1	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398
Capital Costs - Recycled Water & Expansion Improvements	100,489	102,498	104,548	106,639	108,772	110,948	113,167	115,430	117,739	120,093	122,495
Debt Service	713,334	713,334	713,334	713,334	713,334	713,334	713,334	713,334	713,334	388,329	388,329
Total Expenses	**$2,726,778**	**$2,730,545**	**$2,734,404**	**$2,738,359**	**$2,742,411**	**$2,746,564**	**$2,750,819**	**$2,755,180**	**$2,759,650**	**$2,439,224**	**$2,443,918**
Surplus / (Deficit)	$2,940,750	$3,217,813	$3,498,940	$3,784,187	$4,073,614	$4,367,282	$4,665,251	$4,967,584	$5,274,342	$5,913,033	$6,233,747
Ending Fund Balance	**$18,111,473**	**$21,329,286**	**$24,828,226**	**$28,612,413**	**$32,686,027**	**$37,053,309**	**$41,718,561**	**$46,686,144**	**$51,960,487**	**$57,873,520**	**$64,107,267**
Debt Service Coverage Ratio	7.86x	8.25x	8.65x	9.05x	9.46x	9.88x	10.30x	10.73x	11.16x	21.31x	22.14x

Table G.4 - Scenario 2 (14-Year Cash Flow)	FYE 2055	FYE 2056	FYE 2057	FYE 2058	FYE 2059	FYE 2060	FYE 2061	FYE 2062	FYE 2063	FYE 2064
Annual Recycled Water Customers	0	0	0	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	81	81	81	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521
Cumulative Recycled Water Demand (CCF)	1,139,728	1,173,249	1,206,770	1,240,292	1,273,813	1,307,335	1,340,856	1,374,377	1,407,899	1,441,420
Beginning Fund Balance	**$64,107,267**	**$70,993,863**	**$78,215,538**	**$85,777,195**	**$93,747,603**	**$102,068,967**	**$110,746,416**	**$119,785,154**	**$129,190,459**	**$138,967,687**
Revenues										
Recycled Water Meter Charges	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	5,698,638	5,866,245	6,033,852	6,201,459	6,369,066	6,536,673	6,704,280	6,871,887	7,039,494	7,207,101
Avoided Cost (Potable - Recycled)	2,290,852	2,358,230	2,425,608	2,492,986	2,560,364	2,627,742	2,695,120	2,762,498	2,829,876	2,897,255
Interest Income (Excludes Bond Proceeds)	1,005,716	1,110,740	1,220,790	1,336,413	1,457,692	1,584,234	1,716,116	1,853,416	1,996,214	2,144,590
Bond Proceeds	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$9,010,320**	**$9,350,330**	**$9,695,364**	**$10,045,973**	**$10,402,236**	**$10,763,763**	**$11,130,631**	**$11,502,916**	**$11,880,699**	**$12,264,060**
Expenses										
Operations & Maintenance Cost	$81,057	$83,488	$85,993	$88,573	$91,230	$93,967	$96,786	$99,689	$102,680	$105,761
Capital Costs - Alt1	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398
Capital Costs - Recycled Water & Expansion Improvements	124,945	127,444	129,993	132,593	135,245	137,949	140,708	143,523	146,393	149,321
Debt Service	63,324	63,324	63,324	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Total Expenses	**$2,123,724**	**$2,128,655**	**$2,133,708**	**$2,075,564**	**$2,080,873**	**$2,086,315**	**$2,091,893**	**$2,097,610**	**$2,103,472**	**$2,109,480**
Surplus / (Deficit)	$6,886,596	$7,221,675	$7,561,656	$7,970,409	$8,321,363	$8,677,449	$9,038,738	$9,405,306	$9,777,228	$10,154,580
Ending Fund Balance	**$70,993,863**	**$78,215,538**	**$85,777,195**	**$93,747,603**	**$102,068,967**	**$110,746,416**	**$119,785,154**	**$129,190,459**	**$138,967,687**	**$149,122,267**
Debt Service Coverage Ratio	141.01x	146.34x	151.75x	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table G.5 - Scenario 3 (11-Year Cash Flow)	FYE 2022	FYE 2023	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	FYE 2030	FYE 2031	FYE 2032
Annual Recycled Water Customers	8	8	8	8	8	8	8	8	8	8	1
Cumulative Recycled Water Customers	8	16	24	32	40	48	56	64	72	80	81
Annual Recycled Water Demand (CCF)	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664
Cumulative Recycled Water Demand (CCF)	42,664	85,327	127,991	170,654	213,318	255,982	298,645	341,309	383,972	426,636	469,300
Beginning Fund Balance	**$0**	**$4,630,326**	**$2,403,537**	**$443,618**	**$5,426,704**	**$3,695,608**	**$2,238,623**	**$2,052,452**	**$1,108,428**	**$450,112**	**$81,716**
Revenues											
Recycled Water Meter Charges	$1,493	$2,986	$4,478	$5,971	$7,464	$8,957	$10,450	$11,942	$13,435	$14,928	$15,115
Recycled Water Sales (Consumption)	213,318	426,636	639,954	853,272	1,066,590	1,279,908	1,493,226	1,706,544	1,919,862	2,133,180	2,346,498
Avoided Cost (Potable - Recycled)	85,754	171,508	257,261	343,015	428,769	514,523	600,277	686,031	771,784	857,538	943,292
Interest Income (Excludes Bond Proceeds)	0	52,361	21,195	0	67,908	44,175	24,090	23,530	11,602	3,959	654
Bond Proceeds	7,080,000	0	0	7,080,000	0	0	1,055,000	0	0	0	0
Total Revenues	**$7,380,565**	**$653,491**	**$922,889**	**$8,282,259**	**$1,570,731**	**$1,847,563**	**$3,183,042**	**$2,428,047**	**$2,716,684**	**$3,009,605**	**$3,305,559**
Expenses											
Operations & Maintenance Cost	$38,895	$40,062	$41,264	$42,502	$43,777	$45,090	$46,443	$47,836	$49,271	$50,749	$52,272
Capital Costs - Alt1	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143
Capital Costs - Recycled Water & Expansion Improvements	65,000	66,300	67,626	68,979	70,358	71,765	73,201	74,665	76,158	77,681	79,235
Debt Service	286,200	413,774	413,774	827,549	827,549	827,549	889,427	889,427	889,427	889,427	889,427
Total Expenses	**$2,750,239**	**$2,880,280**	**$2,882,808**	**$3,299,173**	**$3,301,827**	**$3,304,548**	**$3,369,214**	**$3,372,071**	**$3,374,999**	**$3,378,001**	**$3,381,077**
Surplus / (Deficit)	$4,630,326	($2,226,789)	($1,959,919)	$4,983,086	($1,731,096)	($1,456,984)	($186,172)	($944,024)	($658,316)	($368,395)	($75,518)
Ending Fund Balance	**$4,630,326**	**$2,403,537**	**$443,618**	**$5,426,704**	**$3,695,608**	**$2,238,623**	**$2,052,452**	**$1,108,428**	**$450,112**	**$81,716**	**$6,199**
Debt Service Coverage Ratio	25.65x	1.48x	2.13x	9.96x	1.85x	2.18x	3.53x	2.68x	3.00x	3.33x	3.66x

Table G.5 - Scenario 3 (11-Year Cash Flow)	FYE 2033	FYE 2034	FYE 2035	FYE 2036	FYE 2037	FYE 2038	FYE 2039	FYE 2040	FYE 2041	FYE 2042	FYE 2043
Annual Recycled Water Customers	0	0	0	0	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	81	81	81	81	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664
Cumulative Recycled Water Demand (CCF)	511,963	554,627	597,290	639,954	682,618	725,281	767,945	810,608	853,272	895,936	938,599
Beginning Fund Balance	**$6,199**	**$227,686**	**$750,556**	**$1,579,246**	**$2,718,260**	**$4,172,168**	**$5,945,605**	**$8,043,275**	**$10,469,947**	**$13,230,462**	**$16,329,730**
Revenues											
Recycled Water Meter Charges	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	2,559,816	2,773,134	2,986,452	3,199,770	3,413,088	3,626,406	3,839,724	4,053,042	4,266,360	4,479,678	4,692,996
Avoided Cost (Potable - Recycled)	1,029,046	1,114,800	1,200,554	1,286,307	1,372,061	1,457,815	1,543,569	1,629,323	1,715,077	1,800,830	1,886,584
Interest Income (Excludes Bond Proceeds)	1,741	7,282	17,343	31,991	51,294	75,318	104,136	137,816	176,430	220,051	268,753
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$3,605,718**	**$3,910,331**	**$4,219,464**	**$4,533,183**	**$4,851,557**	**$5,174,654**	**$5,502,543**	**$5,835,295**	**$6,172,981**	**$6,515,674**	**$6,863,448**
Expenses											
Operations & Maintenance Cost	$53,840	$55,455	$57,119	$58,832	$60,597	$62,415	$64,288	$66,216	$68,203	$70,249	$72,356
Capital Costs - Alt1	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143
Capital Costs - Recycled Water & Expansion Improvements	80,819	82,436	84,084	85,766	87,481	89,231	91,016	92,836	94,693	96,587	98,518
Debt Service	889,427	889,427	889,427	889,427	889,427	889,427	889,427	889,427	889,427	889,427	889,427
Total Expenses	**$3,384,230**	**$3,387,461**	**$3,390,774**	**$3,394,169**	**$3,397,649**	**$3,401,217**	**$3,404,874**	**$3,408,623**	**$3,412,466**	**$3,416,406**	**$3,420,445**
Surplus / (Deficit)	$221,488	$522,869	$828,690	$1,139,014	$1,453,908	$1,773,437	$2,097,669	$2,426,672	$2,760,515	$3,099,268	$3,443,002
Ending Fund Balance	**$227,686**	**$750,556**	**$1,579,246**	**$2,718,260**	**$4,172,168**	**$5,945,605**	**$8,043,275**	**$10,469,947**	**$13,230,462**	**$16,329,730**	**$19,772,732**
Debt Service Coverage Ratio	3.99x	4.33x	4.68x	5.03x	5.39x	5.75x	6.11x	6.49x	6.86x	7.25x	7.64x

Table G.5 - Scenario 3 (11-Year Cash Flow)	FYE 2044	FYE 2045	FYE 2046	FYE 2047	FYE 2048	FYE 2049	FYE 2050	FYE 2051	FYE 2052	FYE 2053	FYE 2054
Annual Recycled Water Customers	0	0	0	0	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	81	81	81	81	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664
Cumulative Recycled Water Demand (CCF)	981,263	1,023,926	1,066,590	1,109,254	1,151,917	1,194,581	1,237,244	1,279,908	1,322,572	1,365,235	1,407,899
Beginning Fund Balance	**$19,772,732**	**$23,564,522**	**$27,710,227**	**$32,215,046**	**$37,084,256**	**$42,323,209**	**$47,937,334**	**$53,932,139**	**$60,313,211**	**$67,086,217**	**$74,673,785**
Revenues											
Recycled Water Meter Charges	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	4,906,314	5,119,632	5,332,950	5,546,268	5,759,586	5,972,904	6,186,222	6,399,540	6,612,858	6,826,176	7,039,494
Avoided Cost (Potable - Recycled)	1,972,338	2,058,092	2,143,846	2,229,600	2,315,353	2,401,107	2,486,861	2,572,615	2,658,369	2,744,123	2,829,876
Interest Income (Excludes Bond Proceeds)	322,610	381,698	446,094	515,876	591,123	671,915	758,334	850,462	948,383	1,055,285	1,171,302
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$7,216,376**	**$7,574,536**	**$7,938,004**	**$8,306,858**	**$8,681,176**	**$9,061,040**	**$9,446,531**	**$9,837,731**	**$10,234,724**	**$10,640,698**	**$11,055,787**
Expenses											
Operations & Maintenance Cost	$74,527	$76,763	$79,066	$81,438	$83,881	$86,397	$88,989	$91,659	$94,409	$97,241	$100,158
Capital Costs - Alt1	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143
Capital Costs - Recycled Water & Expansion Improvements	100,489	102,498	104,548	106,639	108,772	110,948	113,167	115,430	117,739	120,093	122,495
Debt Service	889,427	889,427	889,427	889,427	889,427	889,427	889,427	889,427	889,427	475,653	475,653
Total Expenses	**$3,424,586**	**$3,428,832**	**$3,433,185**	**$3,437,648**	**$3,442,224**	**$3,446,915**	**$3,451,726**	**$3,456,659**	**$3,461,718**	**$3,053,130**	**$3,058,449**
Surplus / (Deficit)	$3,791,790	$4,145,704	$4,504,819	$4,869,210	$5,238,953	$5,614,125	$5,994,805	$6,381,072	$6,773,006	$7,587,568	$7,997,337
Ending Fund Balance	**$23,564,522**	**$27,710,227**	**$32,215,046**	**$37,084,256**	**$42,323,209**	**$47,937,334**	**$53,932,139**	**$60,313,211**	**$67,086,217**	**$74,673,785**	**$82,671,123**
Debt Service Coverage Ratio	8.03x	8.43x	8.84x	9.25x	9.67x	10.09x	10.52x	10.96x	11.40x	22.17x	23.03x

Table G.5 - Scenario 3 (11-Year Cash Flow)	FYE 2055	FYE 2056	FYE 2057	FYE 2058	FYE 2059	FYE 2060	FYE 2061
Annual Recycled Water Customers	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	42,664	42,664	42,664	42,664	42,664	42,664	42,664
Cumulative Recycled Water Demand (CCF)	1,450,562	1,493,226	1,535,890	1,578,553	1,621,217	1,663,880	1,706,544
Beginning Fund Balance	**$82,671,123**	**$91,501,117**	**$100,759,241**	**$110,451,771**	**$120,647,420**	**$131,291,239**	**$142,389,795**
Revenues							
Recycled Water Meter Charges	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	7,252,812	7,466,130	7,679,448	7,892,766	8,106,084	8,319,402	8,532,720
Avoided Cost (Potable - Recycled)	2,915,630	3,001,384	3,087,138	3,172,892	3,258,646	3,344,399	3,430,153
Interest Income (Excludes Bond Proceeds)	1,296,568	1,431,219	1,572,290	1,720,341	1,875,474	2,037,328	2,206,002
Bond Proceeds	0	0	0	0	0	0	0
Total Revenues	**$11,480,124**	**$11,913,847**	**$12,353,991**	**$12,801,114**	**$13,255,318**	**$13,716,244**	**$14,183,989**
Expenses							
Operations & Maintenance Cost	$103,163	$106,258	$109,446	$112,729	$116,111	$119,594	$123,182
Capital Costs - Alt1	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143
Capital Costs - Recycled Water & Expansion Improvements	124,945	127,444	129,993	132,593	135,245	137,949	140,708
Debt Service	61,878	61,878	61,878	(0)	(0)	(0)	(0)
Total Expenses	**$2,650,130**	**$2,655,724**	**$2,661,460**	**$2,605,465**	**$2,611,499**	**$2,617,687**	**$2,624,034**
Surplus / (Deficit)	$8,829,994	$9,258,124	$9,692,531	$10,195,648	$10,643,819	$11,098,557	$11,559,955
Ending Fund Balance	**$91,501,117**	**$100,759,241**	**$110,451,771**	**$120,647,420**	**$131,291,239**	**$142,389,795**	**$153,949,751**
Debt Service Coverage Ratio	183.86x	190.82x	197.88x	N/A	N/A	N/A	N/A

Table G.6 - Unit Cost and Sensitivity Analysis

Unit Cost and Sensitivity Analysis

Scenario	Total Cost	Acre Feet	$ / AF
27-Year	$41,069,352	469,300	$88
14-Year	$49,146,879	469,300	$105
11-Year	$54,219,714	469,300	$116

		Demand Reduction		
Scenario	Baseline	5%	10%	20%
27-Year	$88	$92	$97	$109
14-Year	105	110	116	131
11-Year	116	122	128	144

Appendix H

PAYGO FUNDING OPTION TABLES

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Table H.2 - Cashflow Assumptions

CASH FLOW ASSUMPTIONS	VALUES
2022 Beginning Fund Balance	$0
O&M Projection (% of Capital)	2.0%
O&M Inflation Escalator	3.0%
Capital - Recycled Water System & Expansion	65,000
Capital - Recycled Water System & Expansion Inflation Escalator	2.0%
Interest Income	1.5%
Acre-Feet to Cubic Feet	43,560
Issue Debt	Yes
Sites for Conversion	81
Scenario 1 - 3 sites per Year	27
Scenario 2 - 6 sites per Year	14
Scenario 3 - 8 sites per Year	11
DEBT INSTRUMENTS AND RATES	
Revenue Bond	4.0%
SRF Loan	1.5%
Tier 2	$7.01
5/8" Meter Charge	$15.55
Recycled Water Rate per CCF	$5.00

Table H.3 - Scenario 1 (27-Year Cash Flow)	FYE 2022	FYE 2023	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	FYE 2030	FYE 2031	FYE 2032
Annual Recycled Water Customers	3	3	3	3	3	3	3	3	3	3	3
Cumulative Recycled Water Customers	3	6	9	12	15	18	21	24	27	30	33
Annual Recycled Water Demand (CCF)	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381
Cumulative Recycled Water Demand (CCF)	17,381	34,763	52,144	69,526	86,907	104,289	121,670	139,052	156,433	173,815	191,196
Beginning Fund Balance	**$0**	**($919,982)**	**($1,719,336)**	**($2,398,101)**	**($2,956,320)**	**($3,394,034)**	**($3,711,286)**	**($3,908,120)**	**($3,984,582)**	**($3,940,719)**	**($3,776,577)**
Revenues											
Recycled Water Meter Charges	$560	$1,120	$1,679	$2,239	$2,799	$3,359	$3,919	$4,478	$5,038	$5,598	$6,158
Recycled Water Sales (Consumption)	86,907	173,815	260,722	347,629	434,537	521,444	608,351	695,259	782,166	869,073	955,981
Avoided Cost (Potable - Recycled)	34,937	69,873	104,810	139,747	174,684	209,620	244,557	279,494	314,431	349,367	384,304
Interest Income (Excludes Bond Proceeds)	0	0	0	0	0	0	0	0	0	0	0
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$122,404**	**$244,808**	**$367,212**	**$489,616**	**$612,019**	**$734,423**	**$856,827**	**$979,231**	**$1,101,635**	**$1,224,039**	**$1,346,443**
Expenses											
Operations & Maintenance Cost	$15,846	$16,322	$16,811	$17,316	$17,835	$18,370	$18,921	$19,489	$20,073	$20,676	$21,296
Capital Costs - Alt1	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540
Capital Costs - Recycled Water & Expansion Improvements	65,000	66,300	67,626	68,979	70,358	71,765	73,201	74,665	76,158	77,681	79,235
Debt Service	0	0	0	0	0	0	0	0	0	0	0
Total Expenses	**$1,042,386**	**$1,044,161**	**$1,045,977**	**$1,047,834**	**$1,049,733**	**$1,051,675**	**$1,053,662**	**$1,055,693**	**$1,057,771**	**$1,059,897**	**$1,062,071**
Surplus / (Deficit)	($919,982)	($799,354)	($678,766)	($558,218)	($437,714)	($317,252)	($196,835)	($76,462)	$43,864	$164,142	$284,372
Ending Fund Balance	**($919,982)**	**($1,719,336)**	**($2,398,101)**	**($2,956,320)**	**($3,394,034)**	**($3,711,286)**	**($3,908,120)**	**($3,984,582)**	**($3,940,719)**	**($3,776,577)**	**($3,492,204)**
Debt Service Coverage Ratio	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table H.3 - Scenario 1 (27-Year Cash Flow)	FYE 2033	FYE 2034	FYE 2035	FYE 2036	FYE 2037	FYE 2038	FYE 2039	FYE 2040	FYE 2041	FYE 2042	FYE 2043
Annual Recycled Water Customers	3	3	3	3	3	3	3	3	3	3	3
Cumulative Recycled Water Customers	36	39	42	45	48	51	54	57	60	63	66
Annual Recycled Water Demand (CCF)	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381
Cumulative Recycled Water Demand (CCF)	208,578	225,959	243,341	260,722	278,103	295,485	312,866	330,248	347,629	365,011	382,392
Beginning Fund Balance	**($3,492,204)**	**($3,087,652)**	**($2,562,970)**	**($1,918,211)**	**($1,153,427)**	**($268,675)**	**$739,497**	**$1,883,546**	**$3,165,452**	**$4,587,223**	**$6,150,894**
Revenues											
Recycled Water Meter Charges	$6,718	$7,277	$7,837	$8,397	$8,957	$9,517	$10,076	$10,636	$11,196	$11,756	$12,316
Recycled Water Sales (Consumption)	1,042,888	1,129,795	1,216,703	1,303,610	1,390,517	1,477,425	1,564,332	1,651,239	1,738,147	1,825,054	1,911,961
Avoided Cost (Potable - Recycled)	419,241	454,178	489,114	524,051	558,988	593,925	628,861	663,798	698,735	733,672	768,608
Interest Income (Excludes Bond Proceeds)	0	0	0	0	0	3,505	19,526	37,586	57,712	79,936	104,289
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$1,468,847**	**$1,591,250**	**$1,713,654**	**$1,836,058**	**$1,958,462**	**$2,084,371**	**$2,222,796**	**$2,363,259**	**$2,505,790**	**$2,650,418**	**$2,797,174**
Expenses											
Operations & Maintenance Cost	$21,935	$22,593	$23,271	$23,969	$24,688	$25,428	$26,191	$26,977	$27,786	$28,620	$29,479
Capital Costs - Alt1	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540
Capital Costs - Recycled Water & Expansion Improvements	80,819	82,436	84,084	85,766	87,481	89,231	91,016	92,836	94,693	96,587	98,518
Debt Service	0	0	0	0	0	0	0	0	0	0	0
Total Expenses	**$1,064,294**	**$1,066,569**	**$1,068,895**	**$1,071,275**	**$1,073,709**	**$1,076,199**	**$1,078,747**	**$1,081,353**	**$1,084,019**	**$1,086,746**	**$1,089,537**
Surplus / (Deficit)	$404,552	$524,682	$644,759	$764,783	$884,753	$1,008,171	$1,144,049	$1,281,906	$1,421,771	$1,563,671	$1,707,637
Ending Fund Balance	**($3,087,652)**	**($2,562,970)**	**($1,918,211)**	**($1,153,427)**	**($268,675)**	**$739,497**	**$1,883,546**	**$3,165,452**	**$4,587,223**	**$6,150,894**	**$7,858,531**
Debt Service Coverage Ratio	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table H.3 - Scenario 1 (27-Year Cash Flow)	FYE 2044	FYE 2045	FYE 2046	FYE 2047	FYE 2048	FYE 2049	FYE 2050	FYE 2051	FYE 2052	FYE 2053	FYE 2054
Annual Recycled Water Customers	3	3	3	3	3	0	0	0	0	0	0
Cumulative Recycled Water Customers	69	72	75	78	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381
Cumulative Recycled Water Demand (CCF)	399,774	417,155	434,537	451,918	469,300	486,681	504,063	521,444	538,825	556,207	573,588
Beginning Fund Balance	**$7,858,531**	**$9,712,229**	**$11,714,111**	**$13,866,332**	**$16,171,079**	**$18,630,567**	**$21,246,481**	**$24,021,092**	**$26,956,704**	**$30,055,653**	**$33,320,310**
Revenues											
Recycled Water Meter Charges	$12,875	$13,435	$13,995	$14,555	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	1,998,869	2,085,776	2,172,683	2,259,591	2,346,498	2,433,405	2,520,313	2,607,220	2,694,127	2,781,035	2,867,942
Avoided Cost (Potable - Recycled)	803,545	838,482	873,419	908,355	943,292	978,229	1,013,166	1,048,102	1,083,039	1,117,976	1,152,913
Interest Income (Excludes Bond Proceeds)	130,800	159,501	190,425	223,604	259,069	296,851	336,979	379,487	424,410	471,781	521,638
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$2,946,089**	**$3,097,194**	**$3,250,522**	**$3,406,104**	**$3,563,974**	**$3,723,600**	**$3,885,572**	**$4,049,924**	**$4,216,691**	**$4,385,906**	**$4,557,607**
Expenses											
Operations & Maintenance Cost	$30,363	$31,274	$32,212	$33,178	$34,174	$35,199	$36,255	$37,343	$38,463	$39,617	$40,805
Capital Costs - Alt1	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540
Capital Costs - Recycled Water & Expansion Improvements	100,489	102,498	104,548	106,639	108,772	110,948	113,167	115,430	117,739	120,093	122,495
Debt Service	0	0	0	0	0	0	0	0	0	0	0
Total Expenses	**$1,092,392**	**$1,095,312**	**$1,098,300**	**$1,101,358**	**$1,104,486**	**$1,107,686**	**$1,110,961**	**$1,114,312**	**$1,117,741**	**$1,121,250**	**$1,124,840**
Surplus / (Deficit)	$1,853,697	$2,001,882	$2,152,222	$2,304,747	$2,459,488	$2,615,914	$2,774,611	$2,935,612	$3,098,949	$3,264,657	$3,432,767
Ending Fund Balance	**$9,712,229**	**$11,714,111**	**$13,866,332**	**$16,171,079**	**$18,630,567**	**$21,246,481**	**$24,021,092**	**$26,956,704**	**$30,055,653**	**$33,320,310**	**$36,753,077**
Debt Service Coverage Ratio	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table H.3 - Scenario 1 (27-Year Cash Flow)	FYE 2055	FYE 2056	FYE 2057	FYE 2058	FYE 2059	FYE 2060	FYE 2061	FYE 2062	FYE 2063	FYE 2064
Annual Recycled Water Customers	0	0	0	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	81	81	81	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381	17,381
Cumulative Recycled Water Demand (CCF)	590,970	608,351	625,733	643,114	660,496	677,877	695,259	712,640	730,022	747,403
Beginning Fund Balance	**$36,753,077**	**$40,356,391**	**$44,132,726**	**$48,084,587**	**$52,214,516**	**$56,525,093**	**$61,018,931**	**$65,698,683**	**$70,567,036**	**$75,626,718**
Revenues										
Recycled Water Meter Charges	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	2,954,849	3,041,757	3,128,664	3,215,571	3,302,479	3,389,386	3,476,293	3,563,201	3,650,108	3,737,015
Avoided Cost (Potable - Recycled)	1,187,849	1,222,786	1,257,723	1,292,660	1,327,596	1,362,533	1,397,470	1,432,407	1,467,343	1,502,280
Interest Income (Excludes Bond Proceeds)	574,016	628,951	686,481	746,643	809,476	875,018	943,307	1,014,385	1,088,291	1,165,066
Bond Proceeds	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$4,731,829**	**$4,908,609**	**$5,087,983**	**$5,269,989**	**$5,454,666**	**$5,642,051**	**$5,832,185**	**$6,025,107**	**$6,220,857**	**$6,419,476**
Expenses										
Operations & Maintenance Cost	$42,029	$43,290	$44,589	$45,927	$47,304	$48,724	$50,185	$51,691	$53,242	$54,839
Capital Costs - Alt1	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540	961,540
Capital Costs - Recycled Water & Expansion Improvements	124,945	127,444	129,993	132,593	135,245	137,949	140,708	143,523	146,393	149,321
Debt Service	0	0	0	0	0	0	0	0	0	0
Total Expenses	**$1,128,514**	**$1,132,274**	**$1,136,122**	**$1,140,059**	**$1,144,089**	**$1,148,213**	**$1,152,434**	**$1,156,753**	**$1,161,175**	**$1,165,700**
Surplus / (Deficit)	$3,603,315	$3,776,334	$3,951,861	$4,129,930	$4,310,577	$4,493,838	$4,679,751	$4,868,353	$5,059,682	$5,253,776
Ending Fund Balance	**$40,356,391**	**$44,132,726**	**$48,084,587**	**$52,214,516**	**$56,525,093**	**$61,018,931**	**$65,698,683**	**$70,567,036**	**$75,626,718**	**$80,880,495**
Debt Service Coverage Ratio	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table H.4 - Scenario 2 (14-Year Cash Flow)	FYE 2022	FYE 2023	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	FYE 2030	FYE 2031	FYE 2032
Annual Recycled Water Customers	6	6	6	6	6	6	6	6	6	6	6
Cumulative Recycled Water Customers	6	12	18	24	30	36	42	48	54	60	66
Annual Recycled Water Demand (CCF)	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521
Cumulative Recycled Water Demand (CCF)	33,521	67,043	100,564	134,086	167,607	201,128	234,650	268,171	301,693	335,214	368,735
Beginning Fund Balance	**$0**	**($1,713,854)**	**($3,193,821)**	**($4,439,953)**	**($5,452,306)**	**($6,230,935)**	**($6,775,900)**	**($7,087,257)**	**($7,165,069)**	**($7,009,397)**	**($6,620,305)**
Revenues											
Recycled Water Meter Charges	$1,120	$2,239	$3,359	$4,478	$5,598	$6,718	$7,837	$8,957	$10,076	$11,196	$12,316
Recycled Water Sales (Consumption)	167,607	335,214	502,821	670,428	838,035	1,005,642	1,173,249	1,340,856	1,508,463	1,676,070	1,843,677
Avoided Cost (Potable - Recycled)	67,378	134,756	202,134	269,512	336,890	404,268	471,646	539,024	606,402	673,780	741,158
Interest Income (Excludes Bond Proceeds)	0	0	0	0	0	0	0	0	0	0	0
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$236,105**	**$472,209**	**$708,314**	**$944,418**	**$1,180,523**	**$1,416,628**	**$1,652,732**	**$1,888,837**	**$2,124,941**	**$2,361,046**	**$2,597,151**
Expenses											
Operations & Maintenance Cost	$30,560	$31,477	$32,422	$33,394	$34,396	$35,428	$36,491	$37,586	$38,713	$39,875	$41,071
Capital Costs - Alt1	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398
Capital Costs - Recycled Water & Expansion Improvements	65,000	66,300	67,626	68,979	70,358	71,765	73,201	74,665	76,158	77,681	79,235
Debt Service	0	0	0	0	0	0	0	0	0	0	0
Total Expenses	**$1,949,959**	**$1,952,176**	**$1,954,446**	**$1,956,771**	**$1,959,153**	**$1,961,592**	**$1,964,090**	**$1,966,649**	**$1,969,269**	**$1,971,954**	**$1,974,704**
Surplus / (Deficit)	($1,713,854)	($1,479,967)	($1,246,132)	($1,012,353)	($778,630)	($544,964)	($311,358)	($77,812)	$155,672	$389,092	$622,447
Ending Fund Balance	**($1,713,854)**	**($3,193,821)**	**($4,439,953)**	**($5,452,306)**	**($6,230,935)**	**($6,775,900)**	**($7,087,257)**	**($7,165,069)**	**($7,009,397)**	**($6,620,305)**	**($5,997,858)**
Debt Service Coverage Ratio	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table H.4 - Scenario 2 (14-Year Cash Flow)	FYE 2033	FYE 2034	FYE 2035	FYE 2036	FYE 2037	FYE 2038	FYE 2039	FYE 2040	FYE 2041	FYE 2042	FYE 2043
Annual Recycled Water Customers	6	6	3	0	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	72	78	81	81	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521
Cumulative Recycled Water Demand (CCF)	402,257	435,778	469,300	502,821	536,342	569,864	603,385	636,907	670,428	703,949	737,471
Beginning Fund Balance	**($5,997,858)**	**($5,142,123)**	**($4,053,169)**	**($2,731,627)**	**($1,178,127)**	**$607,256**	**$2,648,683**	**$4,954,199**	**$7,527,684**	**$10,373,076**	**$13,494,368**
Revenues											
Recycled Water Meter Charges	$13,435	$14,555	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	2,011,284	2,178,891	2,346,498	2,514,105	2,681,712	2,849,319	3,016,926	3,184,533	3,352,140	3,519,747	3,687,354
Avoided Cost (Potable - Recycled)	808,536	875,914	943,292	1,010,670	1,078,048	1,145,426	1,212,804	1,280,182	1,347,560	1,414,938	1,482,316
Interest Income (Excludes Bond Proceeds)	0	0	0	0	0	24,238	56,597	92,917	133,256	177,673	226,228
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$2,833,255**	**$3,069,360**	**$3,304,905**	**$3,539,890**	**$3,774,875**	**$4,034,097**	**$4,301,442**	**$4,572,747**	**$4,848,071**	**$5,127,473**	**$5,411,013**
Expenses											
Operations & Maintenance Cost	$42,303	$43,572	$44,879	$46,225	$47,612	$49,041	$50,512	$52,027	$53,588	$55,196	$56,852
Capital Costs - Alt1	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398
Capital Costs - Recycled Water & Expansion Improvements	80,819	82,436	84,084	85,766	87,481	89,231	91,016	92,836	94,693	96,587	98,518
Debt Service	0	0	0	0	0	0	0	0	0	0	0
Total Expenses	**$1,977,521**	**$1,980,406**	**$1,983,362**	**$1,986,390**	**$1,989,492**	**$1,992,670**	**$1,995,926**	**$1,999,262**	**$2,002,679**	**$2,006,181**	**$2,009,768**
Surplus / (Deficit)	$855,735	$1,088,954	$1,321,543	$1,553,500	$1,785,383	$2,041,427	$2,305,516	$2,573,485	$2,845,392	$3,121,292	$3,401,245
Ending Fund Balance	**($5,142,123)**	**($4,053,169)**	**($2,731,627)**	**($1,178,127)**	**$607,256**	**$2,648,683**	**$4,954,199**	**$7,527,684**	**$10,373,076**	**$13,494,368**	**$16,895,613**
Debt Service Coverage Ratio	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table H.4 - Scenario 2 (14-Year Cash Flow)	FYE 2044	FYE 2045	FYE 2046	FYE 2047	FYE 2048	FYE 2049	FYE 2050	FYE 2051	FYE 2052	FYE 2053	FYE 2054
Annual Recycled Water Customers	0	0	0	0	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	81	81	81	81	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521
Cumulative Recycled Water Demand (CCF)	770,992	804,514	838,035	871,556	905,078	938,599	972,121	1,005,642	1,039,163	1,072,685	1,106,206
Beginning Fund Balance	**$16,895,613**	**$20,580,920**	**$24,554,460**	**$28,820,461**	**$33,383,216**	**$38,247,077**	**$43,416,459**	**$48,895,842**	**$54,689,769**	**$60,802,850**	**$67,239,761**
Revenues											
Recycled Water Meter Charges	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	3,854,961	4,022,568	4,190,175	4,357,782	4,525,389	4,692,996	4,860,603	5,028,210	5,195,817	5,363,424	5,531,031
Avoided Cost (Potable - Recycled)	1,549,694	1,617,072	1,684,450	1,751,828	1,819,206	1,886,584	1,953,962	2,021,340	2,088,718	2,156,096	2,223,474
Interest Income (Excludes Bond Proceeds)	278,982	335,995	397,332	463,055	533,228	607,917	687,188	771,109	859,747	953,171	1,051,452
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$5,698,751**	**$5,990,750**	**$6,287,072**	**$6,587,779**	**$6,892,938**	**$7,202,612**	**$7,516,868**	**$7,835,774**	**$8,159,396**	**$8,487,806**	**$8,821,071**
Expenses											
Operations & Maintenance Cost	$58,557	$60,314	$62,123	$63,987	$65,906	$67,884	$69,920	$72,018	$74,178	$76,404	$78,696
Capital Costs - Alt1	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398
Capital Costs - Recycled Water & Expansion Improvements	100,489	102,498	104,548	106,639	108,772	110,948	113,167	115,430	117,739	120,093	122,495
Debt Service	0	0	0	0	0	0	0	0	0	0	0
Total Expenses	**$2,013,444**	**$2,017,211**	**$2,021,070**	**$2,025,025**	**$2,029,077**	**$2,033,230**	**$2,037,485**	**$2,041,846**	**$2,046,315**	**$2,050,895**	**$2,055,589**
Surplus / (Deficit)	$3,685,307	$3,973,539	$4,266,002	$4,562,755	$4,863,861	$5,169,382	$5,479,383	$5,793,927	$6,113,081	$6,436,910	$6,765,482
Ending Fund Balance	**$20,580,920**	**$24,554,460**	**$28,820,461**	**$33,383,216**	**$38,247,077**	**$43,416,459**	**$48,895,842**	**$54,689,769**	**$60,802,850**	**$67,239,761**	**$74,005,243**
Debt Service Coverage Ratio	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table H.4 - Scenario 2 (14-Year Cash Flow)	FYE 2055	FYE 2056	FYE 2057	FYE 2058	FYE 2059	FYE 2060	FYE 2061	FYE 2062	FYE 2063	FYE 2064
Annual Recycled Water Customers	0	0	0	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	81	81	81	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521	33,521
Cumulative Recycled Water Demand (CCF)	1,139,728	1,173,249	1,206,770	1,240,292	1,273,813	1,307,335	1,340,856	1,374,377	1,407,899	1,441,420
Beginning Fund Balance	**$74,005,243**	**$81,104,107**	**$88,541,235**	**$96,321,576**	**$104,450,150**	**$112,932,052**	**$121,772,447**	**$130,976,575**	**$140,549,752**	**$150,497,370**
Revenues										
Recycled Water Meter Charges	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	5,698,638	5,866,245	6,033,852	6,201,459	6,369,066	6,536,673	6,704,280	6,871,887	7,039,494	7,207,101
Avoided Cost (Potable - Recycled)	2,290,852	2,358,230	2,425,608	2,492,986	2,560,364	2,627,742	2,695,120	2,762,498	2,829,876	2,897,255
Interest Income (Excludes Bond Proceeds)	1,154,660	1,262,869	1,376,150	1,494,579	1,618,230	1,747,180	1,881,506	2,021,288	2,166,604	2,317,535
Bond Proceeds	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$9,159,265**	**$9,502,458**	**$9,850,725**	**$10,204,138**	**$10,562,775**	**$10,926,710**	**$11,296,021**	**$11,670,788**	**$12,051,089**	**$12,437,005**
Expenses										
Operations & Maintenance Cost	$81,057	$83,488	$85,993	$88,573	$91,230	$93,967	$96,786	$99,689	$102,680	$105,761
Capital Costs - Alt1	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398	1,854,398
Capital Costs - Recycled Water & Expansion Improvements	124,945	127,444	129,993	132,593	135,245	137,949	140,708	143,523	146,393	149,321
Debt Service	0	0	0	0	0	0	0	0	0	0
Total Expenses	**$2,060,400**	**$2,065,331**	**$2,070,384**	**$2,075,564**	**$2,080,873**	**$2,086,315**	**$2,091,893**	**$2,097,610**	**$2,103,472**	**$2,109,480**
Surplus / (Deficit)	$7,098,865	$7,437,128	$7,780,341	$8,128,575	$8,481,902	$8,840,395	$9,204,128	$9,573,177	$9,947,617	$10,327,525
Ending Fund Balance	**$81,104,107**	**$88,541,235**	**$96,321,576**	**$104,450,150**	**$112,932,052**	**$121,772,447**	**$130,976,575**	**$140,549,752**	**$150,497,370**	**$160,824,895**
Debt Service Coverage Ratio	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table H.5 - Scenario 3 (11-Year Cash Flow)	FYE 2022	FYE 2023	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	FYE 2030	FYE 2031	FYE 2032
Annual Recycled Water Customers	8	8	8	8	8	8	8	8	8	8	1
Cumulative Recycled Water Customers	8	16	24	32	40	48	56	64	72	80	81
Annual Recycled Water Demand (CCF)	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664
Cumulative Recycled Water Demand (CCF)	42,664	85,327	127,991	170,654	213,318	255,982	298,645	341,309	383,972	426,636	469,300
Beginning Fund Balance	**$0**	**($2,163,474)**	**($4,028,850)**	**($5,596,190)**	**($6,865,555)**	**($7,837,010)**	**($8,510,621)**	**($8,886,456)**	**($8,964,583)**	**($8,745,074)**	**($8,228,002)**
Revenues											
Recycled Water Meter Charges	$1,493	$2,986	$4,478	$5,971	$7,464	$8,957	$10,450	$11,942	$13,435	$14,928	$15,115
Recycled Water Sales (Consumption)	213,318	426,636	639,954	853,272	1,066,590	1,279,908	1,493,226	1,706,544	1,919,862	2,133,180	2,346,498
Avoided Cost (Potable - Recycled)	85,754	171,508	257,261	343,015	428,769	514,523	600,277	686,031	771,784	857,538	943,292
Interest Income (Excludes Bond Proceeds)	0	0	0	0	0	0	0	0	0	0	0
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$300,565**	**$601,129**	**$901,694**	**$1,202,259**	**$1,502,823**	**$1,803,388**	**$2,103,952**	**$2,404,517**	**$2,705,082**	**$3,005,646**	**$3,304,905**
Expenses											
Operations & Maintenance Cost	$38,895	$40,062	$41,264	$42,502	$43,777	$45,090	$46,443	$47,836	$49,271	$50,749	$52,272
Capital Costs - Alt1	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143
Capital Costs - Recycled Water & Expansion Improvements	65,000	66,300	67,626	68,979	70,358	71,765	73,201	74,665	76,158	77,681	79,235
Debt Service	0	0	0	0	0	0	0	0	0	0	0
Total Expenses	**$2,464,039**	**$2,466,505**	**$2,469,033**	**$2,471,624**	**$2,474,278**	**$2,476,999**	**$2,479,787**	**$2,482,644**	**$2,485,573**	**$2,488,574**	**$2,491,650**
Surplus / (Deficit)	($2,163,474)	($1,865,376)	($1,567,339)	($1,269,365)	($971,455)	($673,611)	($375,835)	($78,127)	$219,509	$517,072	$813,255
Ending Fund Balance	**($2,163,474)**	**($4,028,850)**	**($5,596,190)**	**($6,865,555)**	**($7,837,010)**	**($8,510,621)**	**($8,886,456)**	**($8,964,583)**	**($8,745,074)**	**($8,228,002)**	**($7,414,747)**
Debt Service Coverage Ratio	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table H.5 - Scenario 3 (11-Year Cash Flow)	FYE 2033	FYE 2034	FYE 2035	FYE 2036	FYE 2037	FYE 2038	FYE 2039	FYE 2040	FYE 2041	FYE 2042	FYE 2043
Annual Recycled Water Customers	0	0	0	0	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	81	81	81	81	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664
Cumulative Recycled Water Demand (CCF)	511,963	554,627	597,290	639,954	682,618	725,281	767,945	810,608	853,272	895,936	938,599
Beginning Fund Balance	**($7,414,747)**	**($6,305,573)**	**($4,900,559)**	**($3,199,786)**	**($1,203,336)**	**$1,088,706**	**$3,711,989**	**$6,672,251**	**$9,974,456**	**$13,623,636**	**$17,624,899**
Revenues											
Recycled Water Meter Charges	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	2,559,816	2,773,134	2,986,452	3,199,770	3,413,088	3,626,406	3,839,724	4,053,042	4,266,360	4,479,678	4,692,996
Avoided Cost (Potable - Recycled)	1,029,046	1,114,800	1,200,554	1,286,307	1,372,061	1,457,815	1,543,569	1,629,323	1,715,077	1,800,830	1,886,584
Interest Income (Excludes Bond Proceeds)	0	0	0	0	0	35,737	77,302	123,921	175,668	232,619	294,851
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$3,603,977**	**$3,903,048**	**$4,202,120**	**$4,501,192**	**$4,800,264**	**$5,135,073**	**$5,475,710**	**$5,821,400**	**$6,172,219**	**$6,528,242**	**$6,889,546**
Expenses											
Operations & Maintenance Cost	$53,840	$55,455	$57,119	$58,832	$60,597	$62,415	$64,288	$66,216	$68,203	$70,249	$72,356
Capital Costs - Alt1	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143
Capital Costs - Recycled Water & Expansion Improvements	80,819	82,436	84,084	85,766	87,481	89,231	91,016	92,836	94,693	96,587	98,518
Debt Service	0	0	0	0	0	0	0	0	0	0	0
Total Expenses	**$2,494,803**	**$2,498,034**	**$2,501,347**	**$2,504,742**	**$2,508,222**	**$2,511,790**	**$2,515,447**	**$2,519,196**	**$2,523,039**	**$2,526,979**	**$2,531,018**
Surplus / (Deficit)	$1,109,174	$1,405,014	$1,700,773	$1,996,450	$2,292,042	$2,623,283	$2,960,263	$3,302,204	$3,649,180	$4,001,263	$4,358,528
Ending Fund Balance	**($6,305,573)**	**($4,900,559)**	**($3,199,786)**	**($1,203,336)**	**$1,088,706**	**$3,711,989**	**$6,672,251**	**$9,974,456**	**$13,623,636**	**$17,624,899**	**$21,983,427**
Debt Service Coverage Ratio	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table H.5 - Scenario 3 (11-Year Cash Flow)	FYE 2044	FYE 2045	FYE 2046	FYE 2047	FYE 2048	FYE 2049	FYE 2050	FYE 2051	FYE 2052	FYE 2053	FYE 2054
Annual Recycled Water Customers	0	0	0	0	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	81	81	81	81	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664	42,664
Cumulative Recycled Water Demand (CCF)	981,263	1,023,926	1,066,590	1,109,254	1,151,917	1,194,581	1,237,244	1,279,908	1,322,572	1,365,235	1,407,899
Beginning Fund Balance	**$21,983,427**	**$26,704,475**	**$31,793,376**	**$37,255,541**	**$43,096,456**	**$49,321,689**	**$55,936,889**	**$62,947,785**	**$70,360,189**	**$78,179,998**	**$86,413,192**
Revenues											
Recycled Water Meter Charges	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	4,906,314	5,119,632	5,332,950	5,546,268	5,759,586	5,972,904	6,186,222	6,399,540	6,612,858	6,826,176	7,039,494
Avoided Cost (Potable - Recycled)	1,972,338	2,058,092	2,143,846	2,229,600	2,315,353	2,401,107	2,486,861	2,572,615	2,658,369	2,744,123	2,829,876
Interest Income (Excludes Bond Proceeds)	362,441	435,468	514,012	598,154	687,976	783,563	884,998	992,367	1,105,758	1,225,259	1,350,961
Bond Proceeds	0	0	0	0	0	0	0	0	0	0	0
Total Revenues	**$7,256,208**	**$7,628,306**	**$8,005,922**	**$8,389,136**	**$8,778,030**	**$9,172,688**	**$9,573,195**	**$9,979,636**	**$10,392,099**	**$10,810,673**	**$11,235,445**
Expenses											
Operations & Maintenance Cost	$74,527	$76,763	$79,066	$81,438	$83,881	$86,397	$88,989	$91,659	$94,409	$97,241	$100,158
Capital Costs - Alt1	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143
Capital Costs - Recycled Water & Expansion Improvements	100,489	102,498	104,548	106,639	108,772	110,948	113,167	115,430	117,739	120,093	122,495
Debt Service	0	0	0	0	0	0	0	0	0	0	0
Total Expenses	**$2,535,159**	**$2,539,405**	**$2,543,758**	**$2,548,221**	**$2,552,797**	**$2,557,488**	**$2,562,299**	**$2,567,232**	**$2,572,291**	**$2,577,478**	**$2,582,797**
Surplus / (Deficit)	$4,721,048	$5,088,901	$5,462,164	$5,840,915	$6,225,234	$6,615,200	$7,010,896	$7,412,404	$7,819,809	$8,233,195	$8,652,649
Ending Fund Balance	**$26,704,475**	**$31,793,376**	**$37,255,541**	**$43,096,456**	**$49,321,689**	**$55,936,889**	**$62,947,785**	**$70,360,189**	**$78,179,998**	**$86,413,192**	**$95,065,841**
Debt Service Coverage Ratio	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table H.5 - Scenario 3 (11-Year Cash Flow)	FYE 2055	FYE 2056	FYE 2057	FYE 2058	FYE 2059	FYE 2060	FYE 2061
Annual Recycled Water Customers	0	0	0	0	0	0	0
Cumulative Recycled Water Customers	81	81	81	81	81	81	81
Annual Recycled Water Demand (CCF)	42,664	42,664	42,664	42,664	42,664	42,664	42,664
Cumulative Recycled Water Demand (CCF)	1,450,562	1,493,226	1,535,890	1,578,553	1,621,217	1,663,880	1,706,544
Beginning Fund Balance	**$95,065,841**	**$104,144,099**	**$113,654,209**	**$123,602,507**	**$133,995,416**	**$144,839,455**	**$156,141,235**
Revenues							
Recycled Water Meter Charges	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115	$15,115
Recycled Water Sales (Consumption)	7,252,812	7,466,130	7,679,448	7,892,766	8,106,084	8,319,402	8,532,720
Avoided Cost (Potable - Recycled)	2,915,630	3,001,384	3,087,138	3,172,892	3,258,646	3,344,399	3,430,153
Interest Income (Excludes Bond Proceeds)	1,482,952	1,621,327	1,766,179	1,917,602	2,075,694	2,240,551	2,412,273
Bond Proceeds	0	0	0	0	0	0	0
Total Revenues	**$11,666,509**	**$12,103,956**	**$12,547,879**	**$12,998,375**	**$13,455,538**	**$13,919,467**	**$14,390,261**
Expenses							
Operations & Maintenance Cost	$103,163	$106,258	$109,446	$112,729	$116,111	$119,594	$123,182
Capital Costs - Alt1	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143	2,360,143
Capital Costs - Recycled Water & Expansion Improvements	124,945	127,444	129,993	132,593	135,245	137,949	140,708
Debt Service	0	0	0	0	0	0	0
Total Expenses	**$2,588,252**	**$2,593,845**	**$2,599,582**	**$2,605,465**	**$2,611,499**	**$2,617,687**	**$2,624,034**
Surplus / (Deficit)	$9,078,258	$9,510,111	$9,948,297	$10,392,909	$10,844,039	$11,301,780	$11,766,227
Ending Fund Balance	**$104,144,099**	**$113,654,209**	**$123,602,507**	**$133,995,416**	**$144,839,455**	**$156,141,235**	**$167,907,462**
Debt Service Coverage Ratio	N/A	N/A	N/A	N/A	N/A	N/A	N/A