February 16, 2021

NOTICE OF MEETING – REQUEST FOR RSVPS

Members of the Joint Recycled Water Advisory Committee with Cities of Palo Alto, East Palo Alto and Mountain View

Santa Clara Valley Water District:
Director Hon. Tony Estremera
Director Hon. Gary Kremen, Chair
Director Hon. Richard P. Santos

City of Palo Alto:
Council Member Hon. Alison Cormack
Council Member Hon. Eri Filseth, Alternate

City of East Palo Alto:
Council Member Hon. Ruben Abrica

City of Mountain View:
Council Member Hon. Pat Showalter
Council Member Hon. Lucas Ramirez, Alternate

Supporting Valley Water Staff Members:
Rick Callender, Esq., Chief Executive Officer
Melanie Richardson, Assistant Chief Executive Officer
Aaron Baker, Chief Operating Officer, Water Utility
Rachael Gibson, Chief of External Affairs
Darin Taylor, Chief Financial Officer
Stan Yamamoto, District Counsel
Brian Hopper, Senior Assistant District Counsel
Heath McMahon, Deputy Operating Officer, Water Utility Capital
Vincent Gin, Deputy Operating Officer, Water Supply Division
Donald Rocha, Deputy Administrative Officer, Office of Government Relations
Greg Williams, Acting Deputy Operating Officer, Raw Water Division
Kirsten Struve, Assistant Officer, Water Supply Division Deputy's Office
Hossein Ashktorab, Unit Manager, Recycled & Purified Water
Charlene Sun, Treasury and Debt Manager
Medi Sinaki, Senior Engineer
Miguel Silva, Associate Engineer (Civil)
Henry Barrientos, Associate Engineer (Civil)
Sherilyn Tran, Civic Engagement Unit Manager
Kristen Yasukawa, Supervising Program Administrator
Elise Latedjou-Durand, Senior Environmental Planner

Supporting City of Palo Alto Staff Members:
Beth D. Minor, City Clerk
Phil Bobel, Assistant Director of Public Works Department
Karin North, Manager, Watershed Protection
Karla Dailey, Senior Resources Planner, Utilities Department
Samantha Engelage, Senior Engineer
Jessica Brettle, Assistant City Clerk

Supporting City of East Palo Staff Member:
Kamal Fallaha, Public Works Dir/City Engr
Humza Javed, Senior Engineer
Michelle Daher, Management Analyst

Supporting City of Mountain View Staff Member:
Michael Fuller, Public Works Director
Gregg Hosfeldt, Assistant Public Works Director
Ed Arango, Public Works, Principal Engineer
Wanda Wong, Deputy City Clerk

The regular meeting of the Santa Clara Valley Water District Joint Recycled Water Advisory Committee with Cities of East Palo Alto//Mtn. View/Palo Alto is scheduled to be held on **Monday, February 22, 2021, at 12:00 p.m.,** via Zoom; https://valleywater.zoom.us/j/91617956564.

A copy of the agenda and corresponding materials are on the following link:
https://www.valleywater.org/how-we-operate/committees/board-advisory-committees.

Please have these materials available for the meeting.

Thank you!

Glenna Brambill
Management Analyst II
Santa Clara Valley Water District
Office of the Clerk of the Board
1-408-630-2408

Join Zoom Meeting
https://valleywater.zoom.us/j/91617956564

Meeting ID: 916 1795 6564
One tap mobile
+16699009128,,91617956564# US (San Jose)

Dial by your location
+1 669 900 9128 US (San Jose)

Santa Clara Valley Water District
Joint Recycled Water Policy Committee with Cities of Palo Alto/East Palo Alto/Mountain View

Teleconference
Join Zoom Meeting https://valleywater.zoom.us/j/91617956564

REGULAR MEETING
AGENDA

Monday, February 22, 2021
12:00 PM

District Mission: Provide Silicon Valley safe, clean water for a healthy life, environment and economy.

JOINT RECYCLED WATER POLICY COMMITTEE W/ CITIES OF PALO ALTO, EAST PALO ALTO & MOUNTAIN VIEW

Gary Kremen - District 7, Committee Chair
Tony Estremera - District 6
Richard P. Santos - District 3

During the COVID-19 restrictions, all public records relating to an open session item on this agenda, which are not exempt from disclosure pursuant to the California Public Records Act, that are distributed to a majority of the legislative body, will be available to the public through the legislative body agenda web page at the same time that the public records are distributed or made available to the legislative body, or through a link in the Zoom Chat Section during the respective meeting. Santa Clara Valley Water District will make reasonable efforts to accommodate persons with disabilities wishing to participate in the legislative body's meeting. Please advise the Clerk of the Board Office of any special needs by calling (408) 265-2600.

Note: The finalized Board Agenda, exception items and supplemental items will be posted prior to the meeting in accordance with the Brown Act.

Santa Clara Valley Water District
Joint Recycled Water Policy Committee with Cities of PA/EPA/MV

REGULAR MEETING
AGENDA

Monday, February 22, 2021 | **12:00 PM** | **Teleconference**

IMPORTANT NOTICES

This meeting is being held in accordance with the Brown Act as currently in effect under the State Emergency Services Act, the Governor's Emergency Declaration related to COVID-19, and the Governor's Executive Order N-29-20 issued on March 17, 2020 that allows attendance by members of the Committee, staff, and the public to participate and conduct the meeting by teleconference, videoconference, or both.

Members of the public wishing to address the Committee during a video conferenced meeting on an item not listed on the agenda, or any item listed on the agenda, should use the "Raise Hand" or "Chat" tools located in Zoom meeting link listed on the agenda. Speakers will be acknowledged by the Committee Chair in the order requests are received and granted speaking access to address the Committee.

Santa Clara Valley Water District (Valley Water) in complying with the Americans with Disabilities Act (ADA), requests individuals who require special accommodations to access and/or participate in Valley Water Committee meetings to please contact the Clerk of the Board's office at (408) 630-2711, at least 3 business days before the scheduled meeting to ensure that Valley Water may assist you.

This agenda has been prepared as required by the applicable laws of the State of California, including but not limited to, Government Code Sections 54950 et. seq. and has not been prepared with a view to informing an investment decision in any of Valley Water's bonds, notes or other obligations. Any projections, plans or other forward-looking statements included in the information in this agenda are subject to a variety of uncertainties that could cause any actual plans or results to differ materially from any such statement. The information herein is not intended to be used by investors or potential investors in considering the purchase or sale of Valley Water's bonds, notes or other obligations and investors and potential investors should rely only on information filed by Valley Water on the Municipal Securities Rulemaking Board's Electronic Municipal Market Access System for municipal securities disclosures and Valley Water's Investor Relations website, maintained on the World Wide Web at https://emma.msrb.org/ and https://www.valleywater.org/how-we-operate/financebudget/investor-relations, respectively.

Under the Brown Act, members of the public are not required to provide identifying information in order to attend public meetings. Through the link below, the Zoom webinar program requests entry of a name and email address, and Valley Water is unable to modify this requirement. Members of the public not wishing to provide such identifying information are encouraged to enter "Anonymous" or some other reference under name and to enter a fictional email address (e.g., attendee@valleywater.org) in lieu of their actual address. Inputting such values will not impact your ability to access the meeting through Zoom.

Join Zoom Meeting
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Meeting ID: 916 1795 6564
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+1 669 900 9128 US (San Jose)
Meeting ID: 916 1795 6564

1. CALL TO ORDER:

1.1. Roll Call.

2. TIME OPEN FOR PUBLIC COMMENT ON ANY ITEM NOT ON THE AGENDA.

Notice to the Public: Members of the public who wish to address the Committee on any item not listed on the agenda should access the "Raise Hand" or "Chat" tools located in Zoom meeting link listed on the agenda. Speakers will be acknowledged by the Committee Chair in order requests are received and granted speaking access to address the Committee. Speakers comments should be limited to two minutes or as set by the Chair. The law does not permit Committee action on, or extended discussion of, any item not on the agenda except under special circumstances. If Committee action is requested, the matter may be placed on a future agenda. All comments that require a response will be referred to staff for a reply in writing. The Committee may take action on any item of business appearing on the posted agenda.

3. APPROVAL OF MINUTES:

3.1. Approval of Minutes 21-0178

Recommendation: Approve the September 5, 2019, Meeting Minutes
Manager: Michele King, 408-630-2711
Attachments: Attachment 1: 090519 Jt RWPC Draft Mins
Est. Staff Time: 5 Minutes

4. ACTION ITEMS:

4.1. Update on Countywide Water Reuse Master Plan. 21-0179

Recommendation: Receive information on the status, findings, and next steps for the Countywide Water Reuse Master Plan.

Manager: Kirsten Struve, 408-630-3138

Attachments: Attachment 1: PowerPoint
Attachment 2: Draft Final CoRe Plan
Attachment 3: Draft Final CoRe Plan Appendices-Link

Est. Staff Time: 15 Minutes

4.2. Update on Collaboration Efforts with the Cities of Palo Alto and Mountain View. 21-0180

Recommendation: Receive information and discuss next steps.

Manager: Kirsten Struve, 408-630-3138

Attachments: Attachment 1: PowerPoint

Est. Staff Time: 15 Minutes

4.3. Next Meeting and Agenda Items. 21-0183

Recommendation: Discuss and confirm next meeting date and agenda items.

Manager: Michele King, 408-630-2711

Est. Staff Time: 5 Minutes

5. CLERK REVIEW AND CLARIFICATION OF COMMITTEE REQUESTS.

This is an opportunity for the Clerk to review and obtain clarification on any formally moved, seconded, and approved requests and recommendations made by the Committee during the meeting.

6. ADJOURN:

6.1. Adjourn

Santa Clara Valley Water District

File No.: 21-0178

Agenda Date: 2/22/2021
Item No.: 3.1.

COMMITTEE AGENDA MEMORANDUM

Joint RWPC with Cities of Palo Alto/E. Palo Alto/Mtn View

SUBJECT:
Approval of Minutes

RECOMMENDATION:
Approve the September 5, 2019, Meeting Minutes

SUMMARY:
A summary of Committee discussions, and details of all actions taken by the Committee, during all open and public Committee meetings, is transcribed and submitted for review and approval.

Upon Committee approval, minutes transcripts are finalized and entered into the District's historical records archives and serve as historical records of the Committee's meetings.

ATTACHMENTS:
Attachment 1: 09052019 Jt RWPC Meeting Minutes

UNCLASSIFIED MANAGER:
Michele King, 408-630-2711

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JOINT RECYCLED WATER POLICY COMMITTEE MEETING
(CITIES OF PALO ALTO/EAST PALO ALTO/MOUNTAIN VIEW/VALLEY WATER)

DRAFT MINUTES

THURSDAY, SEPTEMBER 5, 2019
12:00 PM

(Paragraph numbers coincide with agenda item numbers)

A meeting of the Joint Recycled Water Policy Committee (Committee) was held on September 5, 2019, in the Headquarters Building Boardroom at the Santa Clara Valley Water District (Valley Water), 5700 Almaden Expressway, San Jose, California.

1. CALL TO ORDER/ROLL CALL

A meeting of the Joint Recycled Water Policy Committee was called to order by Chair Director Gary Kremen at 12:03 p.m.

Note: Hon. Alison Cormack is the second representative for the City of Palo Alto.

Committee Members in attendance were: City of East Palo Alto Mayor/Council Member: Hon. Ruben Abrica; City of Mountain View Council Member: Hon. Lucas Ramirez City of Palo Alto Council Members: Hon. Alison Cormack and Hon. Tom DuBois; Valley Water Directors: Hon. Tony Estremera, District 6, Hon Barbara Keegan, District 2 and Hon. Gary Kremen, District 7.

Valley Water Staff/Contractor in attendance were: Gina Adriano, Hossein Ashktorab, Henry Barrientos, Glenna Brambill, Tim Bramer, Mera Burton, Phillippe Daniel, Jerry De La Piedra, Garth Hall, Nina Hawk, Brian Hopper, Elise Latedjou-Durand, Katherine Oven, Steven Peters, Eva Sans, Miguel Silva, Medi Sinaki, David Tucker and Bhavani Yerrapotu.

Guests in attendance were: Ed Arango, Diego Barragan, Phil Bobel, Lou Carella, Karla Dailey, Samantha Engelage, Michael Fuller, Karin North, Dave Warner and Stan Williams.

2. TIME OPEN FOR PUBLIC COMMENT ON ANY ITEM NOT ON AGENDA

There was no one present who wished to speak.

3. APPROVAL OF MINUTES

It was moved by Hon. Barbara Keegan, seconded by Hon. Tom DuBois and carried, by majority vote to approve the minutes of the September 26, 2018, Joint Recycled Water Policy Committee meeting, as presented. Hon. Alison Cormack abstained.

4. ACTION ITEMS

4.1 UPDATE ON NORTHWEST COUNTY STRATEGIC PLANNING

Mr. Phil Bobel and Ms. Samantha Engelage reviewed the materials as outlined in the agenda item and were available to answer questions.

Mr. Stan Williams of Poseidon Water spoke regarding project costs, operation and maintenance-repairs, energy use and costs, climate changes, concept of direct potable reuse-caution-regulatory risks-not yet finalized and funding concerns.

The Committee discussed the following items: options cost raised in the agenda memo-potable vs non potable reuse, non-cost benefits, injected/percolate aquifer water needs to be retreated (no plume/contamination).

Mr. Hossein Ashktorab was available to answer questions.

The Committee took no action.

4.2 UPDATE ON COUNTYWIDE WATER REUSE MASTER PLAN AND REVERSE OSMOSIS CONCENTRATE MANAGEMENT PLAN

Mr. Miguel Silva and Mr. Medi Sinaki reviewed the materials as outlined in the agenda item.

The Committee discussed the following items: Measure E site challenges, discuss location(s) at next meeting, preliminary stages of design, partnerships-funds ongoing discussions and the existing 3 plans.

Mr. Phil Bobel, Mr. Hossein Ashktorab and Mr. Garth Hall were available to answer questions

The Committee took no action.

4.3 UPDATE ON PARTNERSHIP TO EXPAND WATER REUSE

Mr. Jerry De La Piedra reviewed the materials as outlined in the agenda item.

The Committee discussed the following items: Tuolumne and Hetch Hetchy water, multi-use, 9 mgd plant at this time looking to increase in the future, draft agreement has language issues agencies are discussing, flows from the plant effect small plants, water supply guarantees, defining of parameters and quantity, RO responsibility disposition, plant sale, climate change concerns, naming of plant being considered, thanked those that have worked on the agreement to date, technical terms made plain so understandable, partners are looped in, recycled water, lacking historical background and the next steps.

Mr. Ed Arango, Mr. Phil Bobel, Ms. Nina Hawk, Mr. Michael Fuller, Ms. Karin North and Mr. Garth Hall were available to answer questions.

Mr. Dave Warner of Palo Alto had a handout and Mr. Stan Williams spoke regarding their concerns with the water, costs, impacts, and the agreement.

The Committee took no action.

4.4 NEXT MEETING AND TENTATIVE ITEMS

The Committee agreed to schedule the next meeting mid-October, if everything aligns with the agreement and communication plan.

The Committee took no action.

5. CLERK REVIEW AND CLARIFICATION OF COMMITTEE REQUESTS AND RECOMMENDATIONS

Board Committee Liaison Ms. Glenna Brambill reported there were no action items for consideration.

6. ADJOURNMENT

Chair Director Gary Kremen adjourned the meeting at 1:41 p.m.

Glenna Brambill
Board Committee Liaison
Office of the Clerk of the Board

Approved:

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File No.: 21-0179

Agenda Date: 2/22/2021
Item No.: 4.1.

COMMITTEE AGENDA MEMORANDUM

Joint RWPC with Cities of Palo Alto/E. Palo Alto/Mtn View

SUBJECT:
Update on Countywide Water Reuse Master Plan.

RECOMMENDATION:
Receive information on the status, findings, and next steps for the Countywide Water Reuse Master Plan.

SUMMARY:
This item provides an update on Valley Water's Countywide Water Reuse Master Plan (aka CoRe Plan), an integral component of Valley Water's Water Supply Master Plan. Over the past three years, Valley Water, Palo Alto, and Mountain View have met dozens of times to identify and evaluate future reuse opportunities in collaboration with other recycled water producers, wholesalers, retailers, users, and other interested stakeholders. Valley Water has set a goal of meeting at least 10% of the County's total water demand using recycled and purified water. Consequently, Valley Water is developing a CoRe Plan that will provide up to 24,000 acre-feet per year (AFY) of potable water reuse by 2028 (including first phase of 11,200 AFY). The CoRe Plan will be completed in early 2021.

RESULTS:
Since January 2018, the CoRe Plan has produced over 15 critical engineering reports that form the reuse planning foundation and represent key stakeholder feedback into the Draft Final Countywide Water Reuse Master Plan (Attachment 2).

The Draft Final CoRe Plan represents the assemblage of these critical engineering and planning documents into a comprehensive water reuse planning compendium that describes available source water, relevant institutional arrangements, existing reuse systems, expanded reuse potential, feasible project portfolios, and initial cost implications. Development of the CoRe Plan included review by an Independent Advisory Panel and working with regulatory agencies along with project partners and other interested stakeholders. Key highlights of the Draft Final CoRe Plan for the North County area include:

- Analyzed seven feasible potable reuse portfolios for North County.
- Reviewed partnerships and governance to facilitate establishment of institutional

arrangements and agreements with our partnering agencies.
- Developed capital investment and O&M costs to facilitate financial and rate impact assessments between portfolios and project components reflecting source water availability, waste management strategies, regulatory compliance and monitoring, and fiscal assumptions and uncertainty.
- Expanded examination of potable reuse implementation issues, including policy initiatives, public outreach and engagement, program funding, regulatory compliance strategy, and next steps.

Valley Water staff has been hosting a series of one-on-one meetings with our project partners like Palo Alto and Mountain View, state regulators and other interested parties to examine the Draft Final CoRe Plan, review plan highlights and recommendations, request technical feedback, address stakeholder comments and questions, and build upon participant consensus.

The Final CoRe Plan will also include an executive summary, expanded discussion of fiscal and water rate impacts, evaluation of on-site non-potable reuse opportunities, and illustrations for phased implementation.

NEXT STEPS:

Following direction by the Valley Water Recycled Water Committee, Valley Water staff is developing scaled-down projects (11,000 to 14,000 acre-feet per year) that will allow for future phases of expansion. Furthermore, staff is revising the Draft Final CoRe Plan following input from Valley Water Board of Directors, Project Partner Group, Recycled Water Committee, State Regulators, and other interested stakeholders. Staff anticipate presenting the Final CoRe Plan to Valley Water Recycled Water Committee and Board of Directors in March and May 2021, respectively.

ATTACHMENTS:
Attachment 1: PowerPoint
Attachment 2: Draft Final CoRe Plan
Attachment 3: Draft Final CoRe Plan Appendices (link supplied-file is too large).

UNCLASSIFIED MANAGER:
Kirsten Struve, 408-630-3138

Valley Water

Countywide Water Reuse Master Plan (CoRe Plan) Joint RWPC with Cities of Palo Alto/Mtn View

February 22, 2021

Brown AND Caldwell with HydroScience Engineers Trussell Technologies Inc

Valley Water

Stakeholder Engagement - > 45 External Meetings

- Partner Agencies
- Environmental Groups
- Regulators
- Rate Payer Advocacy*
- Water Retailers
- Business Groups
- Planning/Policy Groups

CITY OF GILROY — INCORPORATED MARCH 12, 1870

CITY OF PALO ALTO

MORGAN HILL 2035

CITY OF SUNNYVALE CALIFORNIA

CITY OF SAN JOSE — CAPITAL OF SILICON VALLEY

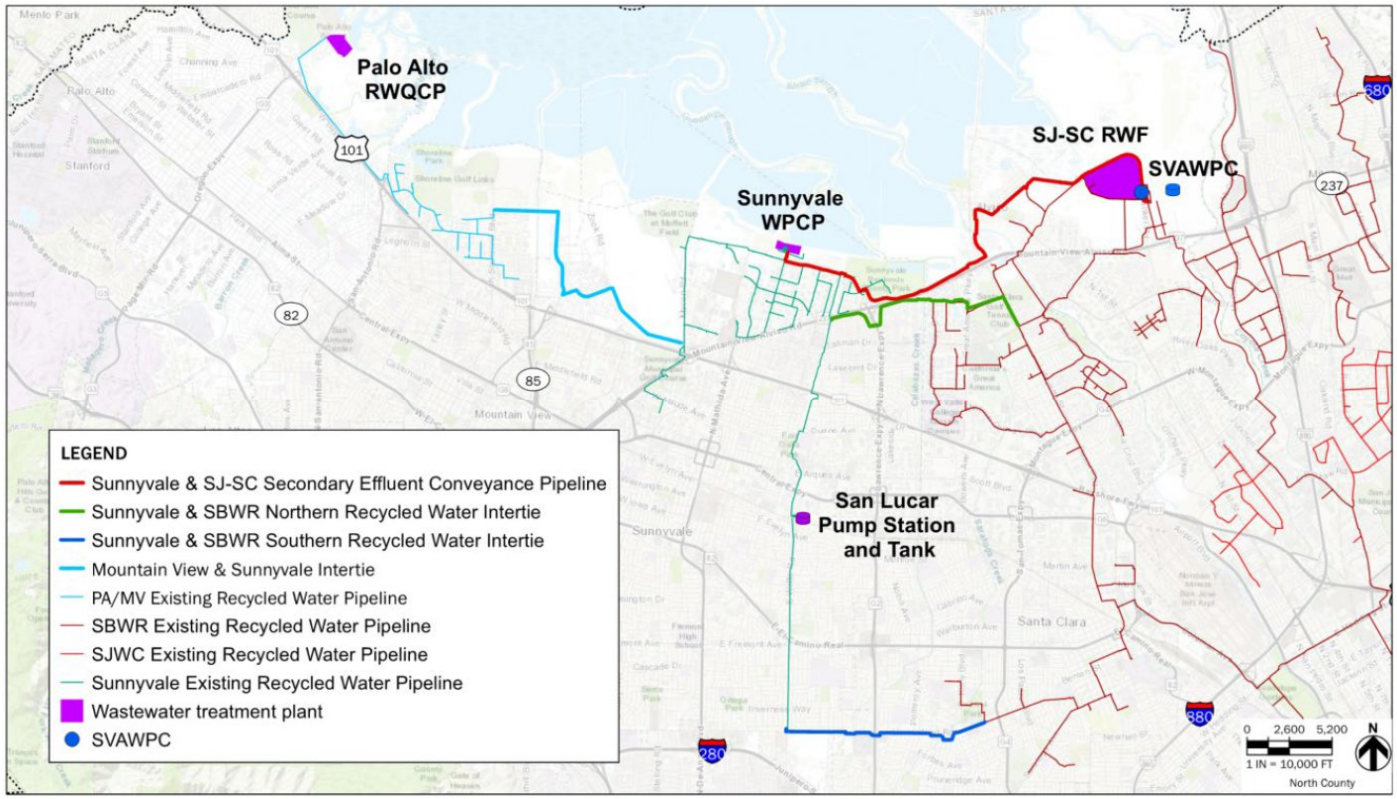
*Water Rate Advocate Representation

Future Reuse Opportunities & Alternatives

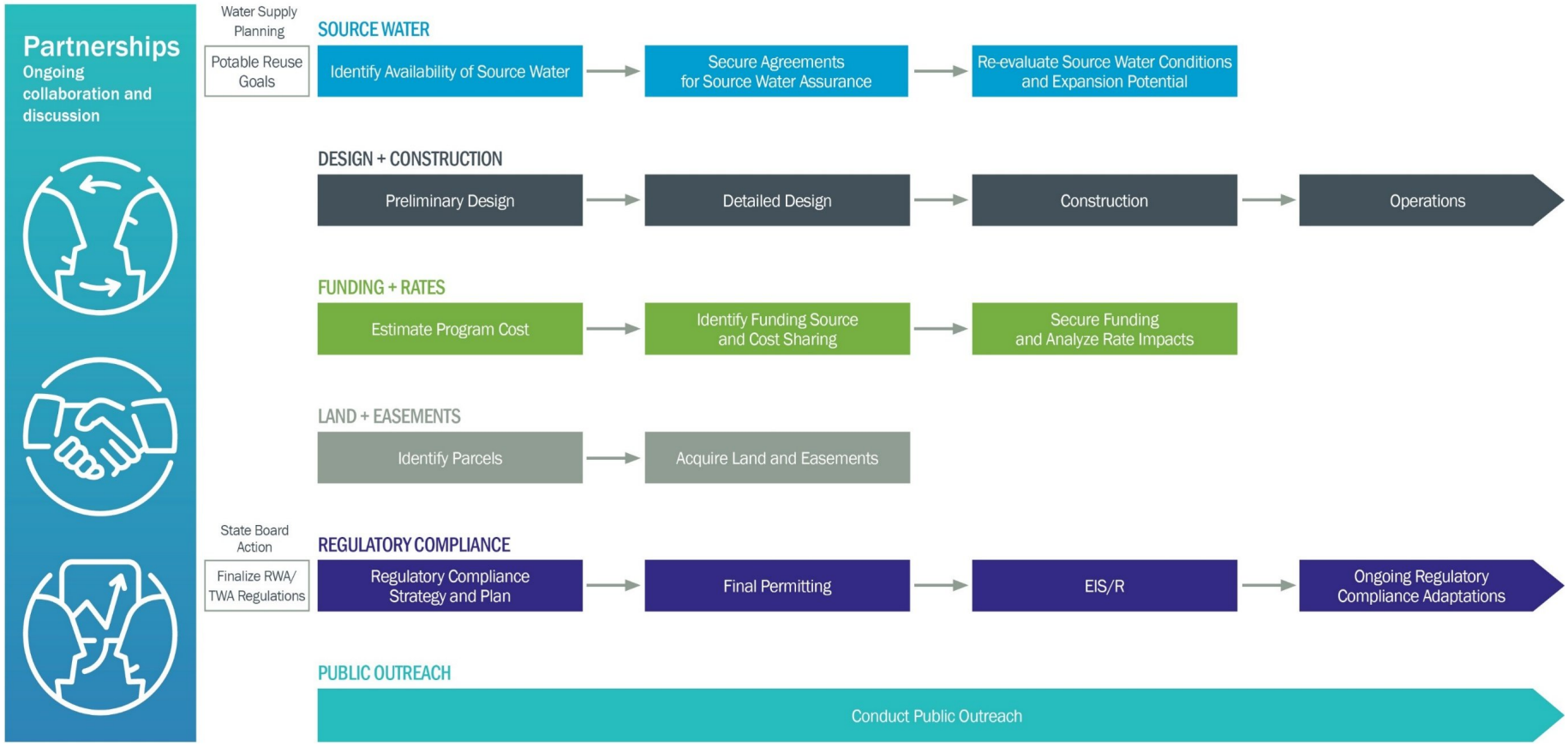
- ✓ Phased Implementation
- ✓ NPR/NPR+ System Expansion
- ✓ System Interconnections
- ✓ AWPFs for NPR+ Expansion

Future Reuse Opportunities & Alternatives

- ✓ Optimized Conveyance
- ✓ RWA Pipeline Extension
- ✓ Operational Flexibility
- ✓ TWA Opportunities



Next Steps for Implementation



valleywater.org

Valley Water

Steps to CoRe Plan Completion

Recycled Water Committee	PPG	Stakeholder Task Force	Regulator Coordination	Final CoRe Plan
Summarize Key Findings & Present CoRe Plan	PPG (Completed 2/19/21) Discuss Implementation Planning & Next Steps	Reconvene Stakeholder TF (early March 2021) Discuss CoRe Plan Status/Findings & Next Steps	Request Summit With Regulators Discuss CoRe Plan, Regulatory Strategy & Next Steps	Address Stakeholder Feedback Finalize CoRe Plan Public Distribution & VW Board

Notes: PPG = Project Partner Group; TF = Task Force; VW = Valley Water.

Valley Water

Clean Water • Healthy Environment • Flood Protection

DRAFT FINAL Countywide Water Reuse Master Plan (CoRe Plan)

October 14, 2020

Prepared by:

Brown AND Caldwell

with:

HydroScience

Trussell TECHNOLOGIES INC

K&A KATZ & ASSOCIATES

Data instincts Public Outreach Consultants

Limitations:

This is a draft report and is not intended to be a final representation of the work done or recommendations made by Brown and Caldwell (BC). It should not be relied upon; consult the final report.

This document was prepared solely for Valley Water (Santa Clara Valley Water District) in accordance with professional standards at the time the services were performed and in accordance with the contract between Valley Water and BC dated January 25, 2018. This document is governed by the specific scope of work authorized by Valley Water; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by Valley Water and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

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GLOSSARY

The following definitions are established for use within this Countywide Water Reuse Master Plan (CoRe Plan). While many terms listed here are industry standard[1], several are specific to Valley Water or this plan.

Foundational Terms

- **CoRe Plan** refers to the Countywide Water Reuse Master Plan developed by Valley Water and its Project Team in coordination with its Project Partners.
- **Potable Water** is drinking water that meets or exceeds state and federal drinking water standards.
- **Non-potable** is water not fit for human consumption.
- **Recycled Water,** or sometimes called "purple pipe" due the distinguishing color of infrastructure reserved for its conveyance and distribution, generally refers to treated domestic wastewater used more than once before passing back into the natural water cycle. While the terms water reuse and recycled water are used interchangeably in some settings, for the purpose of this CoRe Plan, the term recycled water indicates non-potable reuse.
- **Reuse, or Water Reuse,** applies to both non-potable reuse (recycled water) and potable reuse, further described below.

Water Reuse Types

- **Non-potable Reuse (NPR)** refers to recycled water that is not used for drinking, but is safe to use for irrigation, industrial uses, or other non-drinking water purposes.
  - **Enhanced NPR, or NPR+** is recycled water for non-potable reuse that has been blended with purified water to reduce concentration of salts and other dissolved solids to enable broader application of recycled water for non-potable end uses and protect groundwater quality
- **Potable Reuse** refers to recycled water sufficiently purified through advanced treatment to meet or exceed federal and state drinking water standards and is safe for human consumption. Potable reuse takes one of two forms: indirect or direct potable reuse.
  - **Indirect Potable Reuse (IPR)** involves blending purified water with water supply in an environmental system, such as a surface water reservoir or groundwater basin, that acts as a buffer for retaining and diluting the reuse supply before treating the blended supply.[2] IPR can be accomplished through groundwater recharge or surface water augmentation.
    - **Groundwater Recharge (GWR)**, as defined in context of IPR, is a process that involves using constructed facilities that spread water across infiltration basins or percolation ponds (surface spreading),) or pump water directly into the subsurface through injection wells (subsurface injection) to increase water supply in a groundwater aquifer (natural underground water storage).

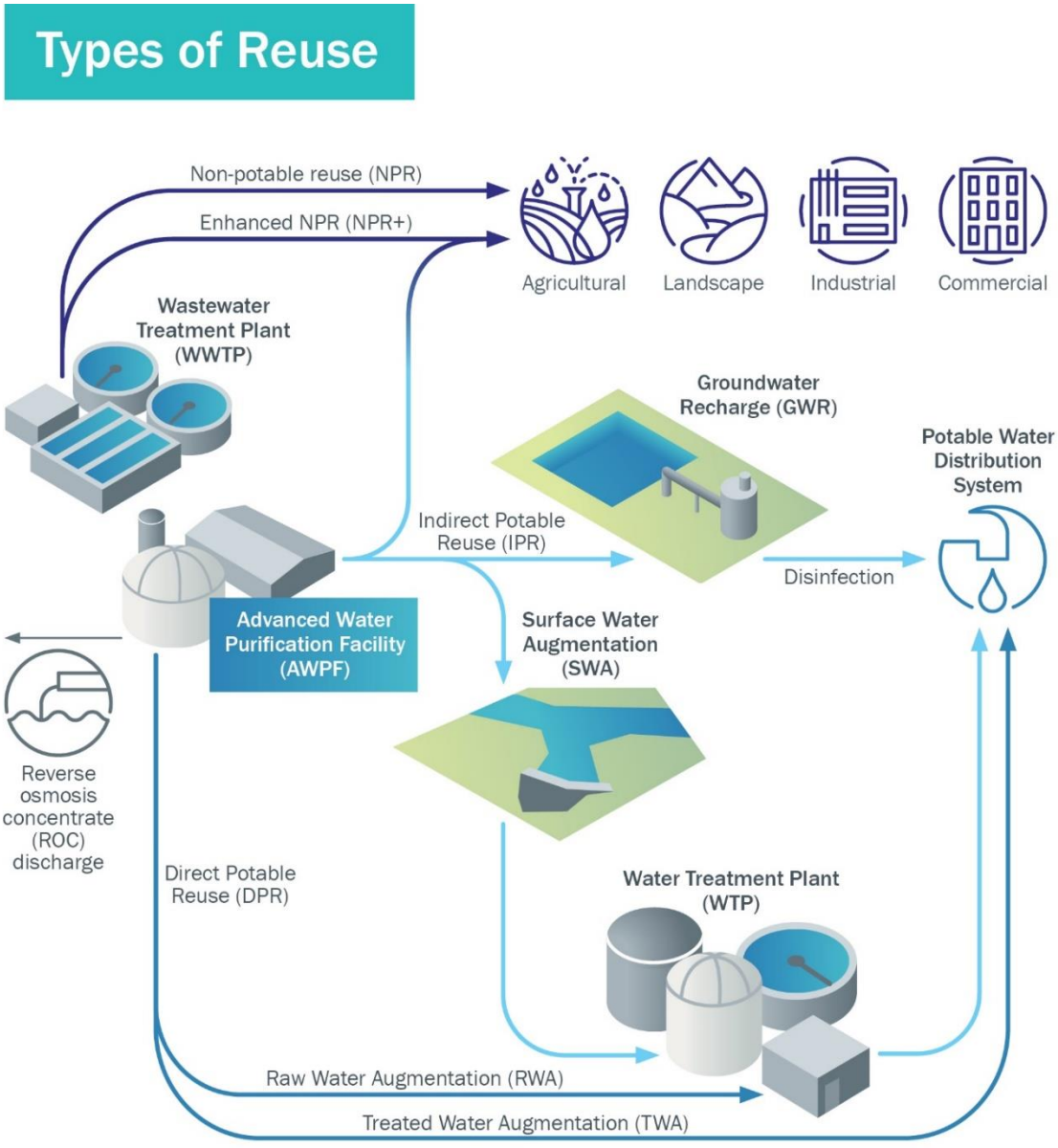
[1] Many definitions listed here are based on the Water Reuse Terminology summary (June 2016) posted on WateReuse Association's website and developed by WateReuse California, Association of California Water Agencies, and California Association of Sanitation Agencies. https://watereuse.org/educate/water-reuse-101/glossary/

[2] Local groundwater is disinfected, while surface water goes through conventional treatment (including disinfection).

- **Surface Water Augmentation (SWA)** involves adding purified water to a surface water reservoir to increase water supply.

– **Direct Potable Reuse (DPR)** involves the treatment and distribution of purified water using engineering controls, without an environmental buffer, in the form of raw water augmentation or treated water augmentation.

- **Raw Water Augmentation (RWA)** involves blending purified water with other supplies immediately upstream of a water treatment plant.
- **Treated Water Augmentation (TWA)** involves introducing purified water directly into a potable (drinking) water distribution system downstream of a water treatment plant.



Visual Glossary-1. Types of reuse explored for Valley Water's CoRe Plan

Water Uses and Delivery Methods

- **Augmentation** is the process of adding recycled or purified water into an existing raw water supply (such as a reservoir, lake, river, wetland, and/or groundwater basin).
- **Beneficial Reuse** is the use of recycled water for purposes that contribute to the water needs of the economy and/or environment of a community.
- **Delivery Points** are locations where treated water would be conveyed for reuse (NPR or PR).
- **Environmental Flow/Benefit** is water quantity, timing, and quality to sustain ecosystems/ habitats/natural systems.
- **Irrigation** is the physical application of water to land to assist in the production of crops or landscape.
- **Retrofit** is the process of constructing and separating potable and recycled water pipelines that allows recycled water to be used for non-potable purposes. This also includes the process of preparing customer use sites for recycled water use.
- **Percolation ponds** are ponds or pits that allow for aquifer recharge using the movement of water through the soil and its layers by gravity and capillary forces

Water Types and Quantity

- **Raw Water** is untreated surface or groundwater that is not suitable for drinking.
- **Wastewater** is the used water of a community (domestic households and commercial businesses for washing food, dishes, clothes, and bodies and for toilet flushing) or industry that contains dissolved and suspended matter.
- **Sewershed** is a sewer collection system that flows to a single end point for treatment; akin to watersheds in the natural environment but focused on wastewater and built environment.
- **Source Control** is careful management of harmful substances that may be introduced into the wastewater collection system.
- **Reused Water** is water used more than once and has been treated to a level that allows for its reuse for a beneficial purpose.
- **Purified Water** is highly treated water of wastewater origin that has passed through proven multistage, multibarrier processes to produce water at the quality fit to supplement or provide supply for potable (drinking) water purposes, as verified through monitoring for its safety and as regulated by the State Water Resources Control Board Division of Drinking Water.
- **Acre-feet per Year (AFY)** is a metric for the volume of water use and/or supply over one year; approximately a football field in area, filled to one foot in depth.
- **Efficiency** is a metric for advanced water purification facilities (AWPF) calculated as purified water produced divided by the facility's design capacity; efficiency reflects an AWPF's online factor (i.e., percent of time equipment is online vs. offline for regular maintenance) as well as source water availability.
- **Million Gallons per Day (mgd)** is a measurement of flow that represents a volume of water supplied, treated, discharged, or conveyed over one day or a facility capacity (maximum physical limit). Used in context of average water/wastewater use over any timescale or peak flows over a shorter timescale.

- **Utilization** is the average amount of purified water used for potable reuse divided by potable reuse capacity; utilization is dependent on delivery point conditions (e.g., groundwater storage capacity and water demand).
- **Yield** is the annual volume of water produced by a facility or natural system; generally lower than the maximum production (design) capacity due to source water availability, maintenance, and other factors that affect AWPF efficiency.

Water Purification Treatment

- **Multi-barrier Processes** are purification processes that consist of several stages to confirm sufficient reduction and/or elimination of various substances that need to be controlled. As in all processes, monitoring is important to confirm the processes are working properly and efficiently. Membrane filtration, reverse osmosis, advanced oxidation, riverbank filtration, soil aquifer treatment, and constructed wetlands all may be parts of a multi-barrier purification process. Not all these processes are needed in all situations.
- **Soil Aquifer Treatment (SAT)** is a natural, passive process that occurs when applying a non-potable water supply, such as recycled water, to a soil interface under controlled conditions to recharge a groundwater aquifer. As water percolates, soil filtration treats the supply through natural, physical, chemical, and biological processes.
- **Ozonation** is the process of applying ozone (O_3), a strong oxidant, to disinfect water.
- **Granular Activated Carbon (GAC)** is used to remove chemicals that are dissolved in water.
- **Advanced Oxidation** is one of the processes that can be used as a safety barrier in the water purification process. Hydrogen peroxide, ultraviolet (UV) light and other processes are used in combination to form a powerful oxidant that provides further disinfection of the water and breaks down chemicals.
- **Reverse Osmosis (RO)** is a method of removing dissolved salts and other constituents from water. Pressure is used to force the water through a semi-permeable membrane that transmits the water but stops most dissolved materials from passing through the membrane. This treatment method is commonly used in desalination, a process that takes salt out of seawater.

Wastewater Treatment Processes and Flow Streams

- **Influent** is the untreated water that flows into a wastewater treatment plant.
  - **Average Dry Weather Flow (ADWF)** is the average daily wastewater influent flow during the three lowest consecutive flow months of the year (e.g., June through August, or July through September), typically presented in million gallons per day (mgd).
- **Discharge** is the release of effluent, which meets regulatory standards, and designated by a regulatory permit to be safely discharged into the environment without causing harm.
- **Effluent** is the treated water discharged from a wastewater treatment plant (WWTP).
  - **Remaining Effluent** is the amount of secondary- or tertiary-treated wastewater available for potable reuse (or other uses such as discharge or blending) after NPR demands, losses, and environmental flows are met; for planning purposes, the CoRe Plan assumes all remaining effluent would be available for potable reuse.
- **Primary Treatment** is a wastewater treatment process where solid matter is removed. The remaining liquid may be discharged (if allowed by regulations) or subjected to further treatment.
- **Secondary Treatment** is a wastewater treatment process where dissolved and suspended biological matter is removed to a non-potable level, so water may be disinfected and discharged into a receiving surface water or used for irrigation at controlled locations.

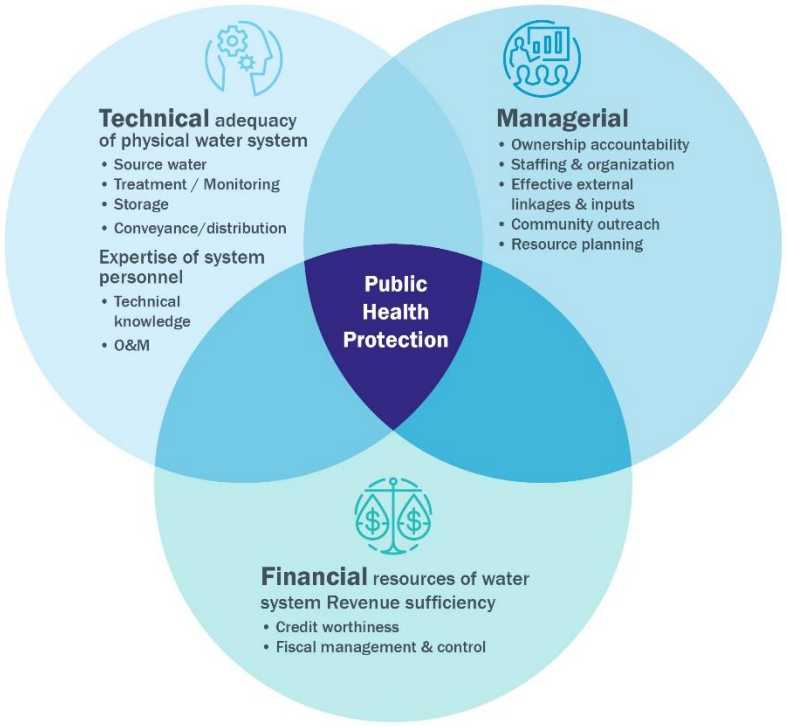
- **Tertiary Treatment** refers to treatment processes to remove nitrogen and phosphorus for uses such as irrigation, discharges into a highly sensitive or fragile ecosystem (e.g., estuaries, low-flow rivers), or blending with other environmental systems such as a river or groundwater basin. Tertiary treatment can include biological and filtration processes.
- **Advanced Water Treatment or Advanced Water Purification** refers to processes that purify water for uses such as irrigation or for water blended with other environmental systems such as a river, reservoir, or groundwater basin prior to reuse. Advanced water treatment can also include treatment processes to remove nitrogen and phosphorus to allow discharge into a highly sensitive or fragile ecosystem (e.g., estuaries, low-flow rivers, coral reefs, etc.).

Planning Approaches

- **One Water Plan** is Valley Water's framework for incremental, intentional, and measurable improvement in water resources management and watershed conditions short term and over decades; within this vision, Valley Water will continue to operate under the current commitments, regulations, restrictions, and challenges that drive day-to-day operations.
- **Portfolio** is a combination of individual project components, a project alternative.
- **Programmatic Approach** is a strategic arrangement of individual, interlinked projects that collectively yield large-scale impacts, such as the Countywide approach to improving regional water supply reliability through considering a range of water reuse opportunities.
- **Rubric** is a framework used for evaluating the potable reuse portfolios based on various regulatory criteria.

Regulations and Permits

- **National Pollutant Discharge Elimination System (NPDES)** was instituted as part of the Clean Water Act, a permit program that controls water pollution by regulating point sources of discharge.
- **Title 22 Standards** are the requirements established by the State Water Resources Control Board Division of Drinking Water (formerly the California Department of Public Health) for the production and use of recycled water. Title 22, Chapter 3, Article 3 of the California Code of Regulations, outlines the level of treatment required for allowable uses for recycled water. The most typical uses include irrigation, firefighting, residential landscape watering, industrial uses, food crop production, construction activities, commercial laundries, toilet flushing, road cleaning, recreational purposes, lakes, ponds, and decorative fountains. Section 13550 of the California Water Code is a declaration by the State Legislature that the use of potable water is a waste if recycled water is available.
- **TMF Capacity**--technical, managerial, and financial capacity—is a concept first introduced by Congress in the 1996 Amendments to the Safe Drinking Water Act when Congress. The derives from a philosophy that capable water systems consistently provide safe and reliable water service, meet water quality standards required by regulations, and practice ongoing vigilance in operations and maintenance of facilities to protect the public's drinking water supply. To describe capability, Congress used the term "capacity development" with three components: technical, managerial, and financial. As shown in the following figure, a water system capable of protecting public health must have adequate capacity in all three components for near-term and long-term sustainability.



Visual Glossary-2. The capability of public water systems to protect public health through long-term sustainability and regulatory compliance requires TMF capacity

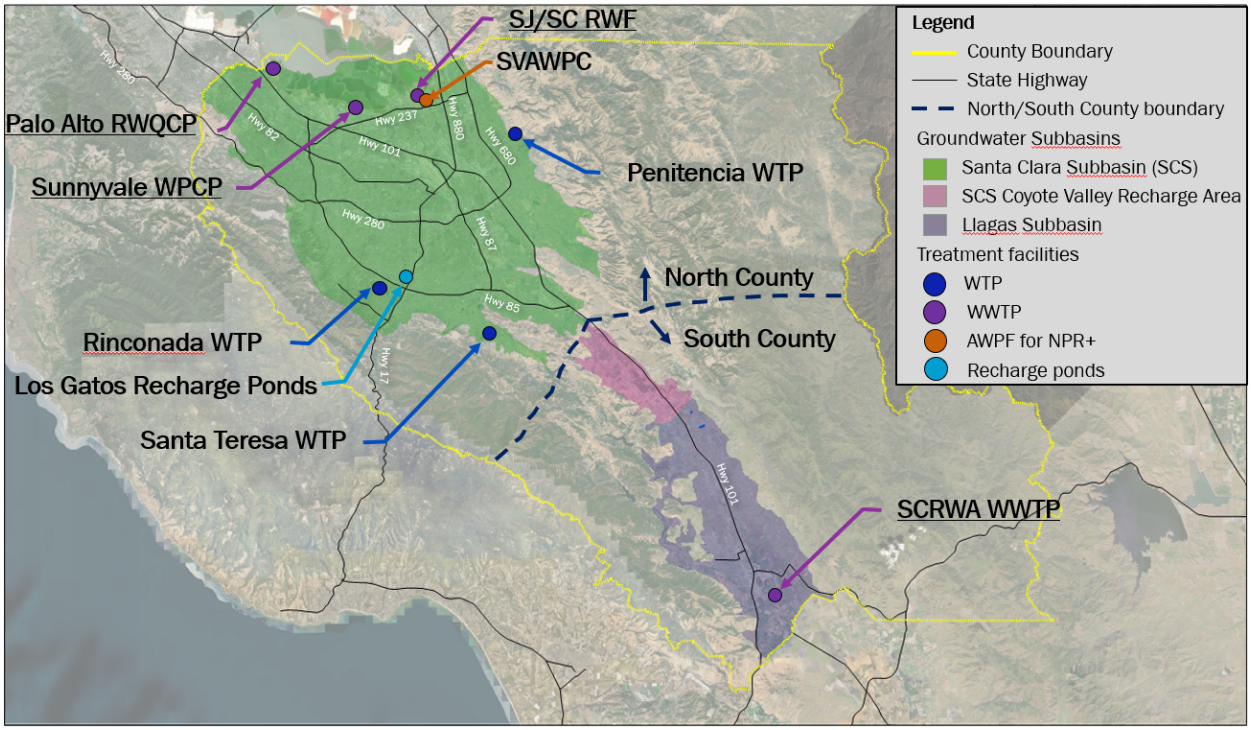
CoRe Plan Partnerships and Engagement

- **Partner Agencies** consist of staff from the cities of Palo Alto, Mountain View, Sunnyvale, San José, Santa Clara, Morgan Hill, and Gilroy that represent the four recycled water producers in Santa Clara County, along with owners/operators of recycled water systems. Valley Water will work closely with these partner agencies to secure source water for reuse and help the Partner Agencies meet their own reuse supply goals.
- **Project Partners** consist of the Partner Agencies and Valley Water. Collectively, they form the **Project Partner Group (PPG)** that meets periodically to develop and shape the CoRe Plan's projects and portfolios.
- **Executive Leadership Group (ELG)** refers to executive-level representatives (e.g., city manager or division manager) from the Partner Agencies who contribute strategic direction to the CoRe Plan.
- **Stakeholder Task Force (TF)** refers to a group convened for the purpose of providing input to Valley Water and the Project Partners with respect to developing the CoRe Plan. The Stakeholder TF is composed of representative interests/organizations related to business/ economy, chambers of commerce, planning, public policy, water rates advocacy, environmental advocacy, environmental justice, medical community, diversity, stormwater, groundwater, other water and recycled water suppliers/agencies.
- **Independent Advisory Panel (IAP)** is a third-party body composed of leading potable reuse researchers and subject matter experts that is invited to review and provide feedback on proposed CoRe Plan projects, portfolios, and options related to technical feasibility and regulatory compliance.

Santa Clara County Geography and Groundwater Basins/Subbasins

The CoRe Plan refers to North County and South County as general reference points. These terms are informal as used in this plan, yet generally consistent with the groundwater benefit zone boundaries. The following terms and figure below offer further context.

- **North County** refers to the area north of Metcalf Road, which encompasses San José, Santa Clara, Sunnyvale, Palo Alto, Mountain View, and other municipalities.
  - The North County sits atop the **Santa Clara Subbasin** (green shaded area in the figure)
- **South County** refers to the area south of Metcalf Road, including Coyote Valley, Morgan Hill, and Gilroy.
  - The area south of Metcalf Road and north of Cochrane Road is the **Coyote Valley Recharge Area** (pink shaded area), which is part of the Santa Clara Subbasin.
  - The **Llagas Subbasin** is the southernmost groundwater subbasin (purple shaded area) and a critical water supply source for the cities of Morgan Hill and Gilroy.



Visual Glossary-3. Santa Clara County General Location, Groundwater Subbasins, and Existing Water/Wastewater Treatment Facilities

ABBREVIATIONS

AACE	Association for the Advancement of Cost Engineering
AB	Assembly Bill
ADWF	average dry weather flow
AFY	acre-feet per year
AWPF	advanced water purification facility
BARR	Bay Area Regional Reliability
Cal Water	California Water Service Company
CCR	California Code of Regulations
CEC	constituent of emerging concern
CEQA	California Environmental Quality Act
CIWQS	California Integrated Water Quality System
CoRe	Countywide Water Reuse
DBFOM	design-build-finance-operate-maintain
DDW	State Water Resources Control Board's Division of Drinking Water
DPR	direct potable reuse
EIR/S	Environmental Impact Report/Statement
EPASD	East Palo Alto Sanitary District
FAT	full advanced treatment
GM	General Manager
GWR	groundwater recharge
IAP	Independent Advisory Panel
IPR	indirect potable reuse
JPA	joint powers authority
LAFCO	Local Agency Formation Commission
LGRP	Los Gatos Recharge Ponds
LRV	log reduction value
MBR	membrane bioreactor
mg/L	milligrams per liter
mgd	million gallons per day
NPDES	National Pollutant Discharge Elimination System
NEPA	National Environmental P Act
North County	northern portion of Santa Clara County (see Glossary)
NPR	non-potable reuse
NPR+	enhanced NPR, a blend of NPR with purified water from AWPF

O&M	operations and maintenance
PR	potable reuse
Regional Board	Regional Water Quality Control Board
RO	reverse osmosis
ROC	RO concentrate
RWA	raw water augmentation
RWC	Valley Water Board's Recycled Water Committee
RWMP	Recycled Water Master Plan
RWQCP	Palo Alto Regional Water Quality Control Plant
RWS	recycled water system
SBWR	South Bay Water Recycling
SCRWA	South County Regional Wastewater Authority
SF Bay	San Francisco Bay
SFPUC	San Francisco Public Utilities Commission
SJ/SC RWF	San José-Santa Clara Regional Wastewater Facility
SNMP	Salt and Nutrient Management Plan
South County	southern portion of Santa Clara County (see Glossary)
State Board	State Water Resources Control Board
SVAWPC	Silicon Valley Advanced Water Purification Center
SWA	surface water augmentation
TDS	total dissolved solids
TM	technical memorandum
TMF	technical, managerial, and financial
TWA	treated water augmentation
UV	ultraviolet
UWMP	Urban Water Management Plan
Valley Water	Santa Clara Valley Water District
WDR	waste discharge requirements
WPCP	Sunnyvale Water Pollution Control Plant
WQOs	water quality objectives
WRR	water reclamation requirements
WSMP 2040	Valley Water's Water Supply Master Plan 2040
WTP	water treatment plant
WWTP	wastewater treatment plant

Section 1:

Introduction

The mission of Santa Clara Valley Water District (Valley Water) is to provide Silicon Valley safe, clean water for a healthy life, environment, and economy. Achieving this mission requires a holistic, One Water approach supporting individual elements.

1.1 One Water Approach

In support of its mission, Valley Water developed the One Water Plan as a 50-year roadmap for integrated water resource planning on a watershed scale. The Plan brings together state, regional, and local policies into a Santa Clara Countywide framework with goals and objectives for Valley Water's three mission components of flood protection, stream stewardship, and water supply. One Water seeks to provide guidance from an overarching perspective and look for opportunities to further protect and enhance water resources.

Valley Water's holistic, forward-looking approach to water resource management and stewardship includes the One Water approach. This approach leverages partnerships to diversify local water resources, integrate systems to maximize water quantity and quality, and deliver projects that provide multiple benefits. Key objectives include:

- Reliable water supply
- Sustainable groundwater
- High-quality water
- Flood risk reduction
- Expanded floodplains
- Supportive stream flows
- Resilient habitats
- Climate change adaptation
- Emergency preparedness
- Community engagement

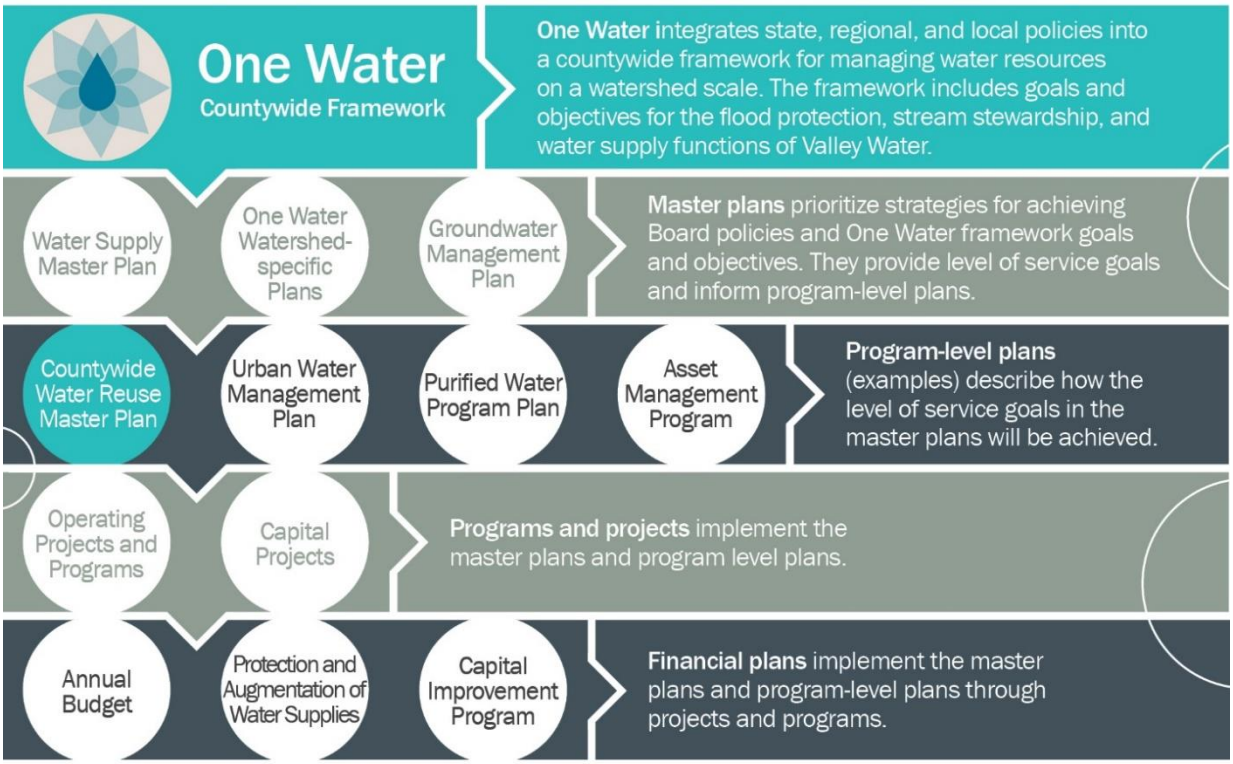


Figure 1-1. Valley Water's One Water Plan as a Countywide framework

1.2 Water Supply Planning

In support of its mission, Valley Water has invested in programs and projects over many decades to manage water demands, protect and develop water supplies, maintain existing infrastructure, and construct new facilities. As described in Valley Water's Water Supply Master Plan 2040 (WSMP 2040), these past and ongoing investments enable Valley Water to manage natural variability in demands and supplies to meet Santa Clara County's current water needs in all but critical drought years—and yet, the county's need for water, particularly reliable dry-year supplies, will continue to grow.

Valley Water's Board of Directors established a goal to increase recycled water use, such that reuse supplies meet 10 percent of total Countywide demands by 2025 and up to 24,000 acre-feet per year (AFY) by 2040. There are many drivers for diversifying and expanding the county's water supply portfolio—including population/ economic growth, increasing climate uncertainty, and other challenges to supply resilience. Recent technological advancements and regulatory developments have made it possible for Valley Water to pursue water reuse as a viable local, drought-resistant potable (drinking water) supply.

The WSMP 2040 evaluates Valley Water's ability to meet Santa Clara County's projected water demands through year 2040 under various conditions and scenarios. Hydrologic conditions considered range from normal water years to 6 sequential drought years, and scenarios begin with a baseline water supply system and build by layering various potential supply projects to address anticipated shortfalls based on comparing projected future demands and supplies. The baseline water supply system reflects an increase in water retailers' non-potable reuse (NPR) from 18,000 AFY in 2018—an estimated 6 percent of Countywide demands that year—to about 28,000 AFY in 2025 and 33,000 AFY in 2040.

Based on the WSMP 2040 water demand forecasts, meeting the Board's goal will require designing and constructing new facilities to begin producing at least 9,000 AFY of potable reuse (PR) supply by 2025.

Further, the WSMP 2040's strategy identifies key goals for 2040 supplies needed to ensure sustainability and drought resilience including a contribution of 57,000 AFY of reuse to diversify and strengthen Valley Water's supply portfolio (14 percent of projected Countywide demands in 2040)—composed of 33,000 AFY for NPR and 24,000 AFY for PR.

To estimate costs and schedule, the WSMP 2040 uses groundwater recharge (GWR) at Los Gatos Recharge Ponds (LGRP) as a placeholder project for modeling and assessing water supply reliability. Valley Water plans to update the modeling assumptions as necessary to reflect consistency with changes to Board-established reliability goals and a confirmed investment strategy. The WSMP 2040 acknowledges that Valley Water's CoRe Plan will identify and evaluate other options for achieving the 2040 reuse target. At the Board's direction, Valley Water will update the WSMP 2040 analysis and project recommendations to align with the finalized CoRe Plan.

Achieving Valley Water's goal of meeting at least 10 percent of the County's 2025 water demands using recycled water will require developing potable reuse and increasing non-potable reuse consistent with Partner Agencies' recycled water system expansion plans.

> "We are the primary water resources agency for all of Silicon Valley, so it's our job to manage and plan for current and future water needs to ensure our region's sustainability," Valley Water Board member Barbara Keegan said. "This includes not just managing the day-to-day water needs for Silicon Valley's residents, businesses, and environment, but also investing in innovative technologies and long-range planning for the region's water needs. By taking a comprehensive, integrated approach to this vital resource, we can protect and preserve it for the benefit of both current and future generations, as well as our valley's environment."
>
> — U.S. Water Alliance One Water Spotlight, March 2016

1.3 CoRe Plan Goals and Objectives

Valley Water initiated the CoRe Plan effort to identify feasible opportunities to expand water reuse as part of the strategy to improve water supply reliability and increase regional self-reliance for the Santa Clara County's nearly 2 million residents and growing economy.

Over decades, Valley Water methodically advanced water reuse in the county by leading planning efforts, developing wholesale recycled water programs, and constructing new infrastructure. Critical to a successful outcome, development of the CoRe Plan will align with Valley Water's One Water Plan and WSMP 2040 and engage project partners to collaboratively identify and evaluate opportunities for expanding reuse.

This vision evolved over recent years and expanded into a programmatic approach and collaborative effort to develop a Countywide reuse strategy that aims to:

The CoRe Plan provides a framework to make collaborative decisions and implement integrated actions to increase water supply reliability throughout the region.

1. Integrate existing recycled water systems and expand NPR
2. Develop purified water systems in partnership with recycled water producers/suppliers and other interested parties to enable potable reuse.

Other CoRe Plan objectives are to:

Determine source water availability and reuse benefits.

Identifies sources and reliable amounts of water available for reuse, the appropriate split between NPR and PR, and regional (Countywide) and local-level (individual project partner) benefits from NPR and PR.

Evaluate potential regional integration.

Optimizes use of supply and infrastructure, builds on existing planning studies, and improves system reliability and flexibility.

Considers innovative approaches and provides a basis for collaboration, interagency agreements, and governance related to residuals management, permitting, and land use decisions.

Support regional collaboration and establish a foundation for continued outreach.

Develops and evaluates reuse opportunities—individual projects and collective portfolios that combine projects—and considers implementation pathways.

Increases public support of water reuse through outreach.

To achieve these objectives, Valley Water is collaborating with Partner Agencies (introduced below) that own and operate four separate wastewater treatment plants (WWTP) and recycled water distribution systems in the County.

Figure 1-2 identifies the sewersheds contributing flow to each of the four WWTPs: Palo Alto Regional Water Quality Control Plant (RWQCP), Sunnyvale Water Pollution Control Plant (WPCP), San José-Santa Clara Regional Wastewater Facility (SJ/SC RWF), and South County Regional Wastewater Authority (SCRWA). Characteristics of these existing facilities are further described in Section 4.

The four WWTPs produce source water for reuse, and recycled water distribution systems deliver the supply to end users. In some circumstances, a water supplier purchases recycled water from a recycled water producer (i.e., from a WWTP) on a wholesale basis, and the recycled water wholesaler provides the recycled water supply to a retailer that delivers water directly to end users.

The collaboration between Valley Water and the Partner Agencies builds on existing partnerships, plans, and infrastructure; explores a wide range of reuse opportunities that support Valley Water's goals; and yields multiple benefits for the collective region.

Partner Agencies include:

Recycled Water Producers (WWTPs)

Palo Alto RWQCP
The Palo Alto RWQCP treats wastewater flows from the cities of Palo Alto, Los Altos, Los Altos Hills, and Mountain View; East Palo Alto Sanitary District (EPASD); and Stanford University. The RWQCP produces and distributes tertiary treated recycled water through the Palo Alto/Mountain View Recycled Water System (RWS).

Sunnyvale WPCP
The Sunnyvale WPCP treats wastewater flows from the City of Sunnyvale and portions of Cupertino and San José. A portion of flow at the WPCP receives tertiary treatment that is then distributed as recycled water to retail customers through the Sunnyvale RWS.

SJ/SC RWF
As the largest WWTP in the county, the SJ/SC RWF treats wastewater flows from the cities of San José and Santa Clara (co-owners of the RWF); the cities of Milpitas, Cupertino, Los Gatos, Saratoga, and Monte Sereno; and County Sanitation District Nos. 2-3 (collectively known as Tributary Agencies). In the 1990s, projected population growth and the RWF's effluent discharge limitations set by the National Pollutant Discharge Elimination System (NPDES) permit inspired San José and Valley Water to collaborate in planning development of the South Bay Water Recycling (SBWR) system, a resource recovery system that reuses treated effluent from the RWF for non-potable purposes. Originally, SBWR was constructed to comply with regulations protecting salt marsh habitat by reducing SJ/SC RWF effluent discharges to the San Francisco Bay (SF Bay). In short order, SBWR's water supply benefits became evident.

SCRWA
The cities of Gilroy and Morgan Hill are members of this joint powers authority (JPA) formed to manage treatment of wastewater flows from these two municipalities in the southern portion of Santa Clara County (South County) at the SCRWA WWTP in Gilroy. The South County RWS distributes tertiary-treated recycled water from the WWTP to NPR end users in Gilroy.

Recycled Water Systems

Palo Alto/Mountain View RWS
Palo Alto distributes recycled water from the RWQCP to end users (retail sales) within its service area and provides Mountain View up to 3 million gallons per day (mgd), measured as an instantaneous flow, on a wholesale basis. In 2019, Valley Water, Palo Alto, and Mountain View executed a long-term, 75-year agreement establishing terms for Valley Water to receive 9 mgd of RWQCP effluent for future potable reuse and for subsidized funding of a new 1.125- to 2.25-mgd local advanced water purification facility (AWPF) in Palo Alto. Purified water from the AWPF will blend with tertiary-treated effluent from the RWQCP to reduce total dissolved solids (TDS)—i.e., remove salts—resulting in improved recycled water quality. This blend is referred to as enhanced NPR, or NPR+, and enables broader application of recycled water for non-potable end uses.

Sunnyvale RWS
The Sunnyvale RWS recently expanded with construction of the 2.5-mile Wolfe Road Pipeline—the outcome of a partnership between Valley Water and Sunnyvale that began in 2013 with designing the pipeline to serve customers south of the San Lucar Pump Station and within Cupertino. As part of this institutional arrangement, Valley Water acts as a recycled water wholesaler and provides recycled water to the California Water Service Company (Cal Water), a retailer serving customers on the Wolfe Road Pipeline. The pipeline was designed to allow Cal Water to deliver recycled water from Sunnyvale's RWS to Apple's campus in Cupertino. Valley Water and Sunnyvale are jointly evaluating additional water reuse alternatives, including an AWPF near the Sunnyvale WPCP.

South Bay Water Recycling
SBWR is a recycled water wholesaler and regional permit holder overseeing regulatory compliance for the quality of recycled water produced at the SJ/SC RWF and its use in the cities of San José, Santa Clara, and Milpitas. Operated by the City of San José, SBWR is funded by the SJ/SC RWF capital and operation budget and wholesale recycled water sales to four local water retailers: the cities of San José (via San José Municipal Water), Santa Clara, and Milpitas; and San Jose Water (an investor-owned utility). Over decades, Valley Water and San José have executed a variety of agreements pertaining to reuse. An agreement established in 2010 set terms for constructing the Silicon Valley Advanced Water Purification Center (SVAWPC), which began operations in 2014. Currently, purified water from the SVAWPC is blended into the SBWR system to improve recycled water quality and reduce TDS. Separately, Valley Water and San José established the Silver Creek Pipeline Agreement that allows Valley Water to wholesale for 5 mgd of SBWR recycled water within a dedicated service area.

South County RWS
SCRWA's recycled water system began operating in 1977 during a historic drought. Operations became intermittent due to a lack of consistent demand for NPR and variabilities in recycled water quality until the 1990s.In 1999, Valley Water and SCRWA executed agreements that established cost-sharing terms and partnering to develop a reuse master plan and capital improvement program, and to define their respective roles pertaining to South County reuse—namely SCRWA as the NPR producer, Valley Water as the wholesaler, and the two municipalities as retailers (though Morgan Hill does not currently have a recycled water distribution system). Terms of one executed agreement establish that SCRWA may sell flows of recycled water that exceed the annual delivery quantity (a mutually agreed-upon flow established each year) to other wholesalers/end users, and Valley Water may sell recycled water to be used by end users outside of the South County RWS service area (with SCRWA's approval).

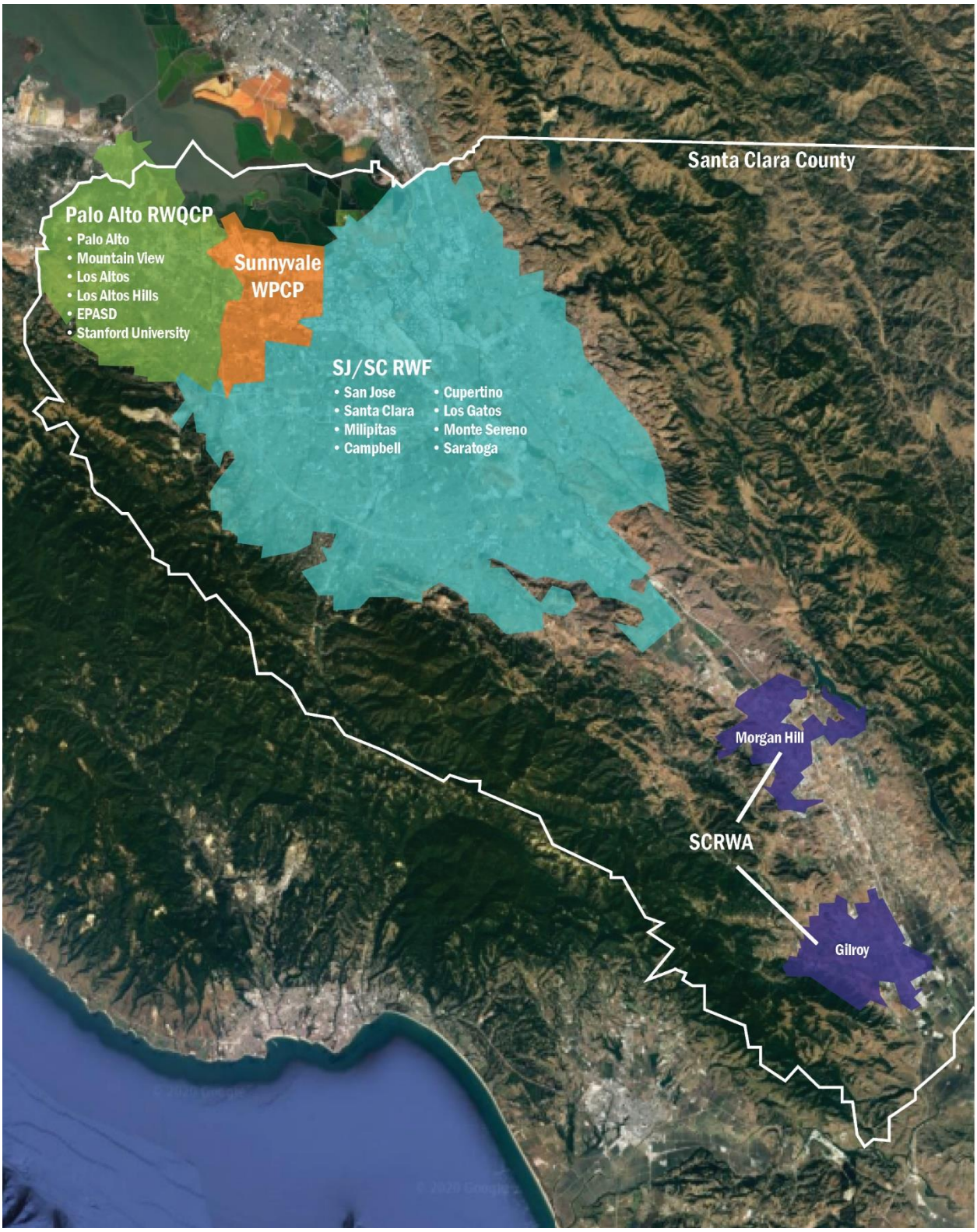


Figure 1-2. Partner Agencies' sewersheds contributing flow to each of the four WWTPs

Section 2:

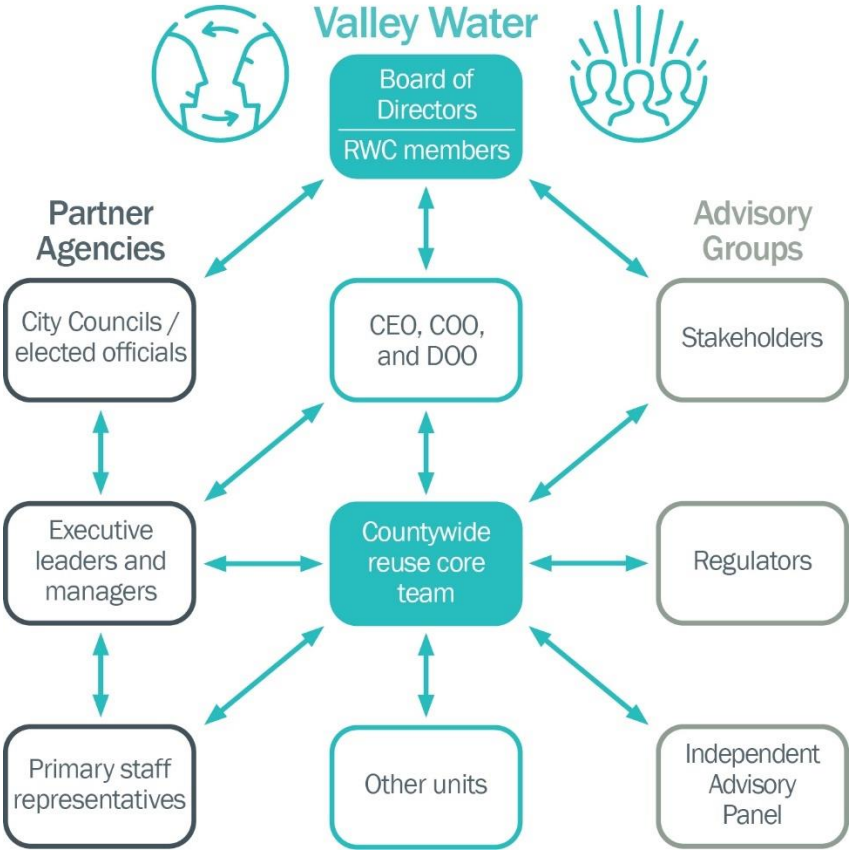
Partnerships and Engagement

Creating a blueprint for a new regional reuse program requires early, frequent, and meaningful collaboration among Valley Water, Partner Agencies, and stakeholders.

To develop and sustain a common vision for the region, robust engagement across various interest groups and levels is imperative. A Countywide approach can benefit the collective region by enhancing water supply reliability, increasing use of existing infrastructure investments, facilitating water transfers during critical shortages, and improving resilience to droughts and climate change.

The engagement approach for developing the CoRe Plan enabled opportunities for a myriad of agencies and subject matter experts to offer input to the plan's development, to garner good will, and to generate support (as shown on Figure 2-1).

Staff from Valley Water's Recycled and Purified Water Unit led development of this plan as a Countywide Reuse Core Team, in coordination with:



VALLEY WATER'S POLICYMAKERS
Valley Water's Board of Directors, composed of seven elected representatives responsible for adopting policies to govern processes and the Board's Recycled Water Committee (RWC)

PARTNER AGENCIES
Partners' staff representing various levels of authority and roles, complementary to those of Valley Water, such as: policymakers (joint committees composed of elected officials and policymakers from Valley Water's RWC and Partner Agencies' city councils or policy advisory committees), executive managers, and staff representatives

ADVISORY GROUPS
Three distinct groups, defined as follows:

- **Stakeholders** invited to participate as task force members, including representative interests/organizations related to business/economy, chambers of commerce, planning, public policy, environmental advocacy, environmental justice, medical community, diversity, stormwater, groundwater, other water and recycled water suppliers/agencies
- **Regulators** including the State Water Resources Control Board's Division of Drinking Water (DDW) and Regional Water Quality Control Boards, Region 2 (San Francisco Bay) and Region 3 (Central Coast)
- **Independent Advisory Panel (IAP)**, a third-party body composed of leading potable reuse researchers and subject matter experts

Figure 2-1. Blueprint for robust engagement and collaboration at multiple levels across various groups to inform the CoRe Plan development

Note: CEO = Chief Executive Officer; COO = Chief Operating Officer; DOO = Deputy Operating Officer

While each aspect of the engagement strategy is important, collaboration with Partner Agencies is uniquely critical to the CoRe Plan's success.

Partnerships between Valley Water and recycled water producers are key to unlocking a path forward for regional reuse. Long-term agreements between project partners are a critical premise for securing reliably available source water for reuse; the absence of which would call into question the realistic feasibility of implementing a Countywide program. Valley Water and Partner Agencies have invested substantial time and effort in collaborating to develop the CoRe Plan. Each Partner Agency provided valuable contributions and unique insight and perspective through group forums, one-on-one meetings, and written feedback that have been considered and, to the extent possible and practicable, addressed in the plan.

This engagement approach sets the tone for continued collaboration as implementation of regional reuse strategies continues. Moving forward, Valley Water's collaboration strategy will continue to emphasize meaningful engagement across various groups and decision-making levels, including the public.

Valley Water will continue to be involved with establishing partnerships and creating new institutional structures to support a common vision for the region. Throughout this planning process and in the future, Valley Water is committed to proactively addressing governance issues to help forge consensus among diverse stakeholders, memorialize commitments, and articulate the vision in actionable planning documents, such as this one.

The mechanism for input varies depending on influencing factors—such as group composition, project milestones/status, schedule sequencing/interdependencies—and takes the form of group meetings, strategic workshops, one-on-one meetings, and written comments. Facilitated meetings and workshops start with empowering stakeholders with critical information to establish a clear, level baseline of working knowledge and support productive group dialogue and decision-making.

Engaging partners early in the process as key decisions are made paves the way for a feasible path forward.

2.1 Reuse Roles and Responsibilities within Santa Clara County

Valley Water is governed by a seven-member Board of Directors who are elected to represent geographical districts in the County and serve overlapping four-year terms. At the Board's direction, Valley Water's CEO/General Manager (GM) and other executive managers oversee operations and performance of staff.

Valley Water's roles and responsibilities are shaped primarily by California state law (i.e., the District Act) along with various Board-established policies and institutional agreements with other parties. Additionally, Valley Water is considered an independent "special district", informally defined as a separate local government that delivers public services to a particular area.[3] Table 2-1 shows Valley Water's roles and responsibilities related to water reuse.

Table 2-1. Valley Water's Responsibilities as a Leader and Partner Advancing Countywide Reuse

Role	Valley Water's Responsibility
Countywide and regional planning for sustainable, resilient water supplies	Develop strategies to secure and optimize the use of existing water supplies and infrastructure and to expand water reuse and long-term water conservation savings. Lead Countywide water supply planning and coordinates with water retailers, reuse project partners, and external interest groups. Participate in a partnership—Bay Area Regional Reliability (BARR)—with seven other water suppliers throughout the region to improve integrated regional water management, drought mitigation, and supply resilience, and to optimize the regional sharing of water resources.
Water retailer assistance	Coordinate and collaborate regularly with the 13 local water retailers in the County to share information, offer technical support, and help develop regional alliances.
Reuse planning, funding, and facilities	Lead collaborative efforts and partnerships to plan reuse projects; cost-share to fund reuse projects; and construct, operate, and maintain reuse facilities.
Reverse osmosis concentrate management	Facilitate collaborative workshops with stakeholders to develop solutions for managing reverse osmosis concentrate (ROC)—a concentrated stream resulting from filtration using reverse osmosis—in addition to conducting pilot-scale testing of treatment alternatives.
Water conservation	Lead Countywide water conservation efforts with innovative, comprehensive programs.
Local surface water management	Operate and maintain 20 appropriative water rights[4] licenses and one filed water right permit with the State Water Resources Control Board totaling more than 227,300 AFY.
Groundwater management	Lead groundwater management efforts for Santa Clara County through comprehensive programs and investments, including storage of surface water in groundwater basins and in-lieu recharge to help balance pumping and provide reserves for use as water supply during dry years.

[3] Per Government Code §16271 [d], a special district is an agency of the state for the local performance of governmental or proprietary functions within a limited boundary. Separate generic statutes apply to special districts that are municipal water suppliers. While the respective Local Agency Formation Commission (LAFCO) administers the formation process, establishing a special district requires voter approval by individuals residing within the geographic area who would be influenced by its proposed fees/services. Special district formation typically requires a majority vote, though two-thirds voter-approval is needed if a proposal involves new special taxes. Special districts are governed by elected boards and may only provide public services allowed by state law.

[4] Under California law, appropriative water rights allow surface water to be diverted at one point and used (appropriated) beneficially at a separate point, in contrast to riparian rights based on ownership of property adjacent to a waterbody.

As described in Section 1, project partners for CoRe include Valley Water and the four Partner Agencies that operate the four WWTPs in the County and currently fulfill roles related to the treatment and delivery of recycled water through existing distribution systems. Figure 2-2 depicts project partners' roles in the treatment, delivery, and sale of recycled water to customers. Wholesalers sell water to retailers, while retailers sell water directly to customers and provide customer service. A single entity may serve all roles as a recycled water producer, owner/operator of a recycled water system, wholesaler, and retailer—such as Palo Alto and Sunnyvale.

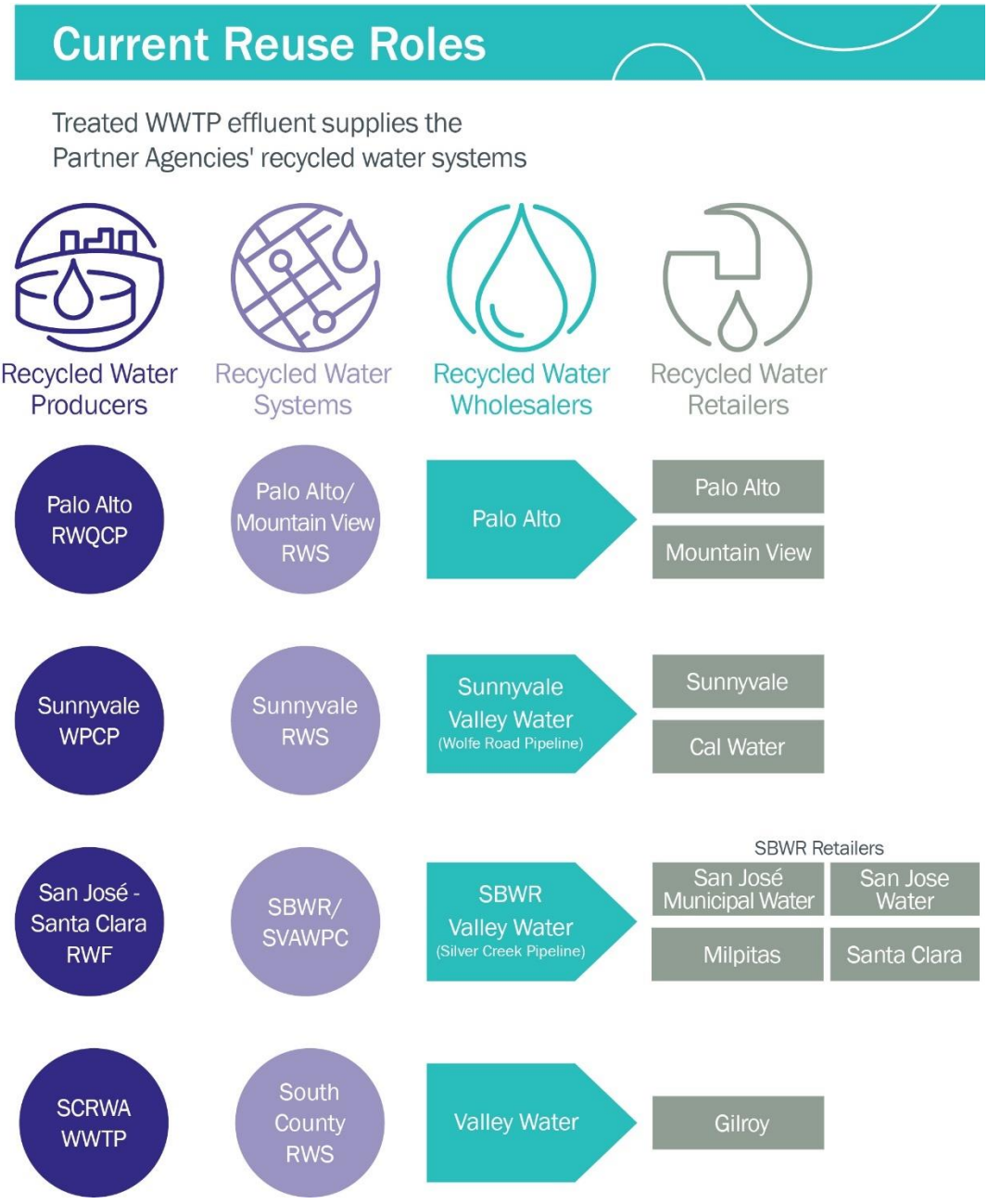


Figure 2-2. Current roles and interagency relationships supporting reuse throughout the County

2.2 Relevant Institutional Arrangements

Current agreements between Valley Water and the Partner Agencies relevant to the CoRe Plan are summarized below. A comprehensive list of past and current agreements is included in Attachment B of ***Appendix D*** (Project Definition, Roles, and Responsibilities). Additional arrangements will be necessary to implement various project elements, as discussed in Section 8.3.

Palo Alto / Mountain View; 2019 Cost Sharing and Supply Agreement

[Expires December 10, 2095]

In December 2019, Valley Water executed an agreement with the cities of Palo Alto and Mountain View that defined cost sharing and supply commitments related to reuse. The agreement extends until December 10, 2095. Key provisions include:

- Cost-sharing for constructing a $20 million local AWPF in Palo Alto for enhanced NPR (NPR+) or other alternatives that benefit RWQCP partners.
- Commitment of 9 mgd of effluent (minimum annual average flow) from Palo Alto to Valley Water at a cost of ~$100/AF for treatment at a regional AWPF.

Sunnyvale; Wolfe Road Pipeline

[Expires 2025; renews every 5 years]

In 2015, Valley Water, Sunnyvale, Apple, and Cal Water agreed to cost-share construction of the Wolfe Road Pipeline. Key provisions of the Recycled Water Supply and Distribution Agreement between Sunnyvale (producer) and Valley Water (wholesaler) include:

- Valley Water owns, but Sunnyvale operates and maintains, the pipeline. Recycled water conveyed through the Wolfe Road Pipeline is owned by Valley Water and may be resold to Valley Water's other customers, regardless of their location.
- For recycled water from Sunnyvale flowing through Wolfe Road Pipeline, a commitment of at least 500 AFY for Valley Water's distribution to users outside the city and an entitlement of up to 595 AFY (and option to purchase more, subject to Valley Water's approval) for Sunnyvale's end users within the city.

City of San José; SBWR Expansion and Silver Creek Pipeline

[Expires January 22, 2027]

In 2002, Valley Water and San José entered into a 25-year agreement to develop a framework for long-term ownership, operation, maintenance, and future expansion of SBWR, and to share costs for the Silver Creek Pipeline. Per the agreement, the City owns the pipeline and acts as wholesaler for recycled water to be delivered to the Metcalf Energy Center and other end users within San José Municipal Water's service area. Valley Water has rights to 5 mgd of recycled water from the Silver Creek Pipeline with the potential for more depending on availability.

City of San José; SVAWPC Agreements [Expire June 30, 2050]	Under the Ground Lease and Property Use Agreement, Valley Water must operate and maintain the SVAWPC, accepting up to 12 mgd of secondary effluent from the SJ/SC RWF to provide up to 8 mgd of purified water for NPR+ (targeting TDS levels of about 500 milligrams per liter (mg/L), which corresponds with the TDS limit for potable water and supports protection of groundwater quality). The Operations and Maintenance Agreement for SVAWPC requires the SJ/SC RWF to accept 1.5 mgd of waste stream discharge and 2 mgd of ROC.
SCRWA; Producer-Wholesaler Agreement [Expires December 31, 2026]	In October 1999, Valley Water entered into a series of three 20-year Producer-Wholesaler agreements (updated in 2006) that established SCRWA as the producer, Valley Water as wholesaler, and the City of Gilroy as retailer of recycled water. As part of the agreements, SCRWA may sell recycled water that exceeds the annual delivery quantity (a mutually agreed-upon flow established each year) to other wholesalers or end users, and Valley Water may sell recycled water to end users outside of the Producer's service area (with approval by SCRWA).

Note on terminology

mgd = million gallons per day: Used in context of defining capacity (maximum possible, or peak, flow) for treatment and conveyance facilities) and/or characterizing average water/wastewater use over any timescale.

AFY = acre-feet per year: Used when discussing annual supply or demand over a longer timescale (one or more years). Overall project yield uses AFY.

Appendix A-2 (Compendium of Flow Assessments, Facility Design Capacity, and Annual Yield) provides additional details

In addition to Valley Water agreements, Partner Agencies have other contractual arrangements that establish financial/supply obligations and other requirements. In some cases, these obligations restrict flow for certain uses, and new or amended agreements may be required to make flow available for projects considered within this CoRe Plan. For example, under a current agreement that expires in 2060, Palo Alto is required to make recycled water available to Mountain View on a demand basis with a peak flow rate of up to 3 mgd. Both Palo Alto and Mountain View have the right to approve or reject proposals to extend their respective distribution systems and transfer recycled water through their own infrastructure and out of their service areas, provided they do not exceed their recycled water allocations.

Section 3:

Regulatory Framework

The CoRe Plan considers a wide range of reuse scenarios, giving way to a spectrum of applicable regulatory and permitting requirements. In general, regulations for water reuse fall into two categories: public health protection and environmental discharge protection.

Since the California Legislature began regulating water reuse in 1969, the state has enacted over 100 relevant statutes. Regulations and permit requirements are integral to shaping more detailed aspects of reuse projects. The intended use(s) of reuse supply and potential impacts to human health and the environment are at the core of these regulations and requirements, establishing clear, enforceable boundaries in the public interest. While end uses for reuse supply typically drive the selection of treatment processes, other factors will also be considered, such as programs requiring and overseeing source water quality control, monitoring, and response. In addition, careful consideration will be given regarding technical, managerial, and financial (TMF) capacities of the agencies responsible for treatment, conveyance, storage, and distribution of reuse supplies.

While this section merely introduces reuse regulations, ***Appendix B-2*** (Regulatory Framework Technical Memorandum [TM]) addresses the topic in substantially more detail.

3.1 Regulators and Respective Purviews

Upon adopting the Porter-Cologne Act in 1969, the California Legislature established a comprehensive program to protect water quality and beneficial uses of water, along with an agency with relevant statutory authority—the State Water Resources Control Board (State Board). The State Board is responsible for setting statewide water quality policy, establishing and enforcing water regulations, and overseeing water reclamation requirements (WRR) and waste discharge requirements (WDR).

The Act also established nine Regional Water Quality Control Boards (Regional Boards) that under the State Board's overall authority with roles defined by their respective individual geographic boundaries. Regional Boards hold the responsibility of administering permit systems to enforce compliance with water quality criteria for recycled water and discharge regulations.

Regional Board

Enforcement of Environmental Discharge Criteria: Water quality requirements to protect surface water and groundwater quality for all designated beneficial uses

The State Board's Division of Drinking Water (DDW, formerly California Department of Public Health has statutory authority over two aspects of water reuse: (1) regulation of public water systems in accordance with the California Safe Drinking Water Act (Health and Safety Code Section 116270 et seq.) and (2) development and adoption of water recycling criteria as required by Section 13521 of the California Water Code.

DDW

Enforcement of Public Health Protection Criteria: Requirements for treatment, monitoring, and effluent water quality for the end use (e.g., landscape irrigation and GWR)

Primary responsibilities of the Regional Boards and DDW are further described as follows.

Regional Water Quality Control Boards

Regional Boards implement water quality planning and regulatory decisions for their specific regions, such as issuing waste discharge requirements (i.e., discharge permits), administering National Pollutant Discharge Elimination System (NPDES) permits for receiving surface water bodies, and enforcing Salt and Nutrient Management Plan (SNMP) requirements for groundwater protection.

The SF Bay Regional Board (Region 2) regulates discharge facilities in the northern part of Santa Clara County (North County), while the Central Coast Regional Board (Region 3) regulates SCRWA's discharges in the South County.

NPDES permits for discharges to surface waters contain specific requirements that limit the pollutants in discharge effluent.

Regional Boards are responsible for specific regulatory areas affecting water reuse:

- Approving pollutant source control programs for wastewater systems
- Issuing and enforcing water reclamation (reuse) requirements to producers and users
- Defining beneficial uses of surface water and groundwater bodies through water quality control plans
- Regulating treatment facility operators
- Determining water rights regarding reuse

In context of the CoRe Plan, three contemplated activities trigger the need to seek new or modified NPDES permits or WDRs/WRRs[5] through Regional Boards, including discharging:

1. Purified water to spreading basins for GWR
2. Purified water to Anderson Reservoir for surface water augmentation (SWA)
3. ROC discharge through surface water outfalls or to local evaporation ponds

Most PR applications in California use full advanced treatment (FAT), which produces significant volumes of ROC that may contain concentrated levels of TDS, nutrients, metals, and toxicity. Depending on the circumstances, reuse projects that discharge ROC to surface water may require a new NPDES individual permit or modifications to an existing NPDES permit. Routing ROC streams to existing outfalls requires careful review of potential impacts to existing NPDES permits to determine whether the ROC stream may compromise compliance with effluent discharge water quality requirements and whether further waste stream treatment and/or permit modifications are needed. Other ROC management strategies, such as deep well injection or evaporation ponds, would require a WDR permit. Similar to the considerations for discharge to surface water bodies, these ROC management strategies would also need to comply with the applicable Basin Plan requirements.

[5] WDRs may be applicable to ROC management involving deep well injection or evaporation ponds, while WRRs and WDRs both may be applicable to product water released to spreading basins for GWR.

SNMPs establish pertinent water quality objectives (WQOs) to protect groundwater quality from potential degradation. Although NPR for irrigation may increase salts and other contaminants in groundwater, NPR+ water supplied by SBWR has a TDS range of 500 to 550 mg/L, thereby increasing the protection of groundwater supplies. Palo Alto is constructing a new local AWPF to create NPR+ supply, and Sunnyvale may opt for NPR+ supply in the future, further decreasing any risk to groundwater quality from irrigation with recycled water.

Division of Drinking Water

DDW develops and enforces public health protection requirements contained in the California Code of Regulations (CCR) Title 22 Uniform Water Recycling Criteria. DDW regulations around potable reuse depend on the type of reuse. For NPR, DDW set increasingly stringent water quality requirements proportionally with the potential for public exposure. For GWR, water quality requirements are more stringent for subsurface injection than for surface spreading. DDW has set a high bar for SWA water quality requirements to protect public health. DDW is currently working on DPR regulations for both RWA and TWA; these regulations are anticipated for release as early as 2023.

DDW specifies public health requirements for water reuse. Key public health criteria include:

- **Pathogen control**
- **Chemical control**
- **Source control**
- **Monitoring/control**
- **Retention/response time**
- **TMF capacity**

3.2 Independent Advisory Panel

Independent Advisory Panel (IAP) is a third-party body composed of leading potable reuse researchers and subject matter experts that is invited to review and provide feedback on proposed CoRe Plan projects, portfolios, and options related to technical feasibility and regulatory compliance.

The IAP held a meeting in late July 2020 to provide input on the countywide reuse portfolios, as reflected in the Draft CoRe Plan completed earlier that month. Panel members noted that GWR (particularly Portfolio 1a) has the highest likelihood of meeting the current target completion date of 2028 given the maturity of the GWR regulations. However, the IAP cautioned that even GWR via surface spreading can take substantial time to implement and require strong partnerships with participating agencies. The IAP also provided valuable input on CoRe Plan proposed treatment trains, source control planning and monitoring considerations, which are summarized in Appendix B1.

3.3 Non-Potable Reuse (Recycled Water)

Water recycling is a form of resource recovery and can be referred to as NPR when serving non-potable end uses, such as irrigation, landscaping, or industrial processes. Typically, recycled water is treated at a WWTP and sold to recycled water users through a dedicated distribution system, separate from the potable drinking water distribution system and distinguished by using purple-colored pipes.

California regulates the treatment, use, and discharge of recycled water according to CCR Title 22. Title 22 addresses water-related issues in the context of environmental health and defines four

categories of recycled water based on level of treatment and resulting water quality, as described in greater detail in ***Appendix B-2***.

Each of the Partner Agencies produces and distributes recycled water that is consistent with Title 22's highest level of treatment for NPR: disinfected tertiary. Further, some Partner Agencies distribute (or will soon distribute) a blend of recycled water and purified water that surpasses the requirements for disinfected tertiary, referred to as NPR+ (meaning, enhanced NPR). Blending purified water with recycled water helps to improve water quality by reducing salinity (TDS) and constituents left untreated through tertiary treatment, such as constituents of emerging concern (CECs) including PFAS. State regulations do not require the monitoring of CECs in recycled water supply serving non-potable applications. Regardless, Valley Water will continue to track potential developments in terms of relevant research and regulations and assess potential impacts of CECs in recycled water on groundwater quality.

3.4 Potable Reuse

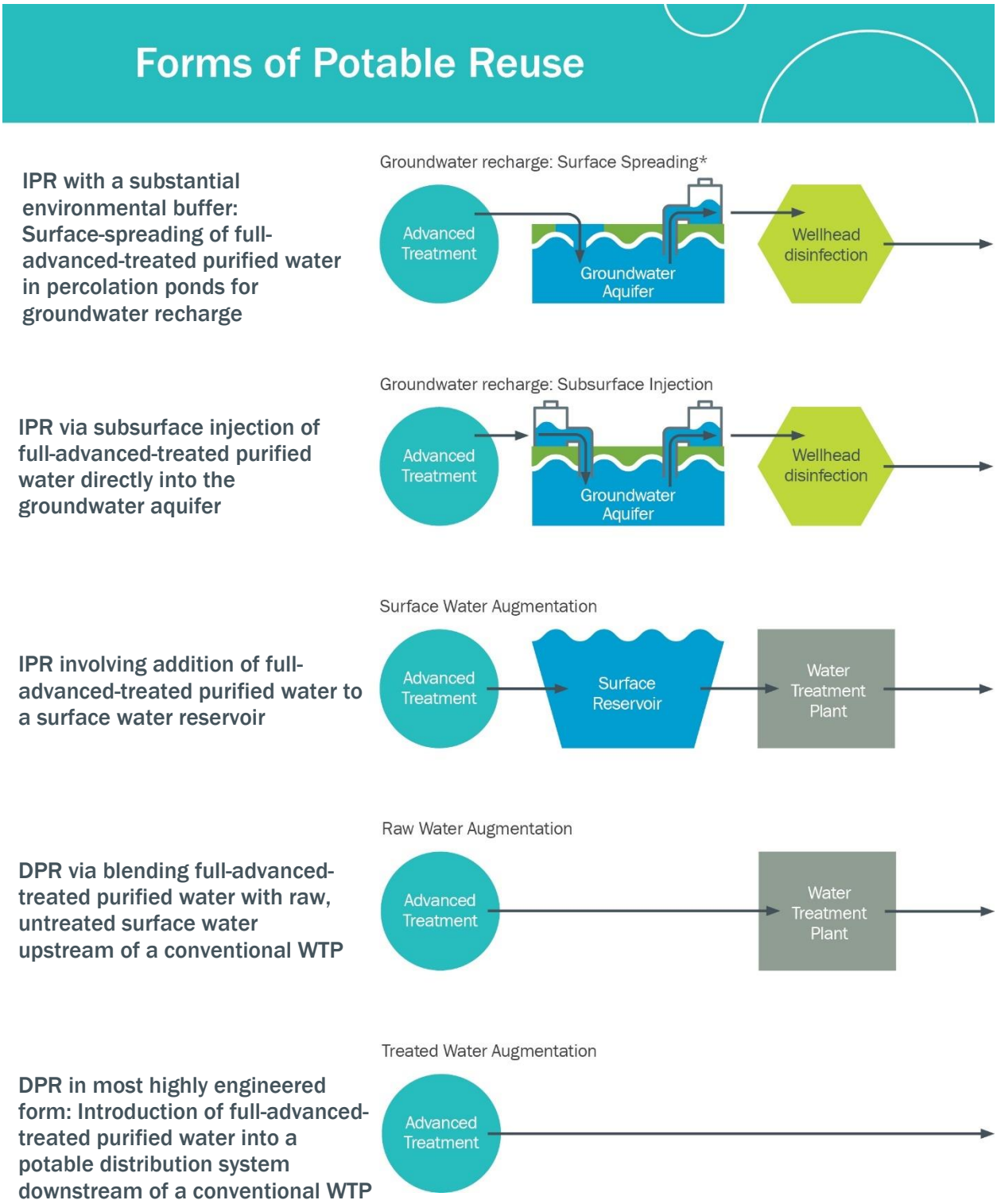
California's regulations acknowledge five specific types of PR (Figure 3-1), each subject to specific permitting requirements. In many cases, these differences are linked to the existence and size of an environmental buffer. As the buffer diminishes in size—or is eliminated in many direct potable reuse (DPR) scenarios—regulatory requirements for other project components increase.

Environmental buffers provide a myriad of benefits—less stringent wastewater and AWPF treatment requirements (due to the attenuation of constituents in the environment), dilution to minimize potential chemical contaminant peaks, and/or decreased monitoring requirements due to increased response time.

The least-direct form of PR—GWR via surface spreading or direct injection—has been practiced in California the longest, with the first successful indirect potable reuse (IPR) project starting in 1962. More than 50 years later, in 2014, the State finalized GWR regulations.

The extended period between initial GWR implementation and final regulations provided regulators an opportunity to learn how to protect public health while fostering the growth of this alternative water supply. Recently finalized in 2018, SWA regulations developed more quickly, yet still benefited from the lessons learned and process of developing GWR regulations.

In DPR—including both raw water augmentation (RWA) and treated water augmentation (TWA)—the environmental buffer may be significantly reduced or eliminated compared to IPR. Consequently, there may be enhanced requirements for pathogen control, chemical attenuation, real-time monitoring, engineered storage, and blending. Though regulations for RWA and TWA have not yet been developed, potential future requirements can be inferred from DDW's recent publications and presentations, the California DPR Expert Panel, and the Project Team's engagement in DPR research and permitting. An evaluation of regulatory compliance strategy for the portfolios' PR elements is provided in Section 8 of this document, with more detail in ***Appendix B-1***.



** Though California regulations allow using tertiary-treated recycled water for groundwater recharge via surface spreading, Valley Water requires full advanced treatment to protect groundwater quality.*

Figure 3-1. California regulations address five specific approaches to potable reuse

Under legislative mandate in Assembly Bill (AB) 574, the State Board is required to develop regulations for RWA by the end of 2023 (with a potential extension to mid-2025). In August 2019, the State Board issued the second edition of its Proposed Framework for Regulating DPR in California, with various updates to their initial draft.

Notably, DDW indicated the intent to develop a single DPR regulatory package that encompasses requirements for both RWA and TWA. The timeline for the DPR regulatory package remains consistent with the AB 574 deadline of December 2023.

Monitoring for CECs such as PFAS is required for potable reuse projects. The proposed treatment trains are effective at removing many CECs, including PFAS, as noted in Valley Water's PFAS fact sheet (Valley Water, 2020b). VW will track regulations and continue to assess potential risk of purified water and CECs to groundwater. Implementation of future groundwater recharge portfolios would include detailed hydrogeologic modeling and monitoring to assess potential for mobilization of constituents, including CECs or metals.

Section 4:

Existing Reuse Systems

Each of the four WWTPs in the County produces recycled water distributed for NPR. In addition, Valley Water's SVAWPC treats a portion of effluent from the SJ/SC RWF to reduce the salinity of SBWR recycled water and demonstrate advanced treatment technology.

The baseline conditions (physical characteristics and flows) of existing reuse facilities are summarized in the following subsections and inform the analysis of expanded reuse potential. Figure 4-1 shows the extent of each recycled water distribution system.

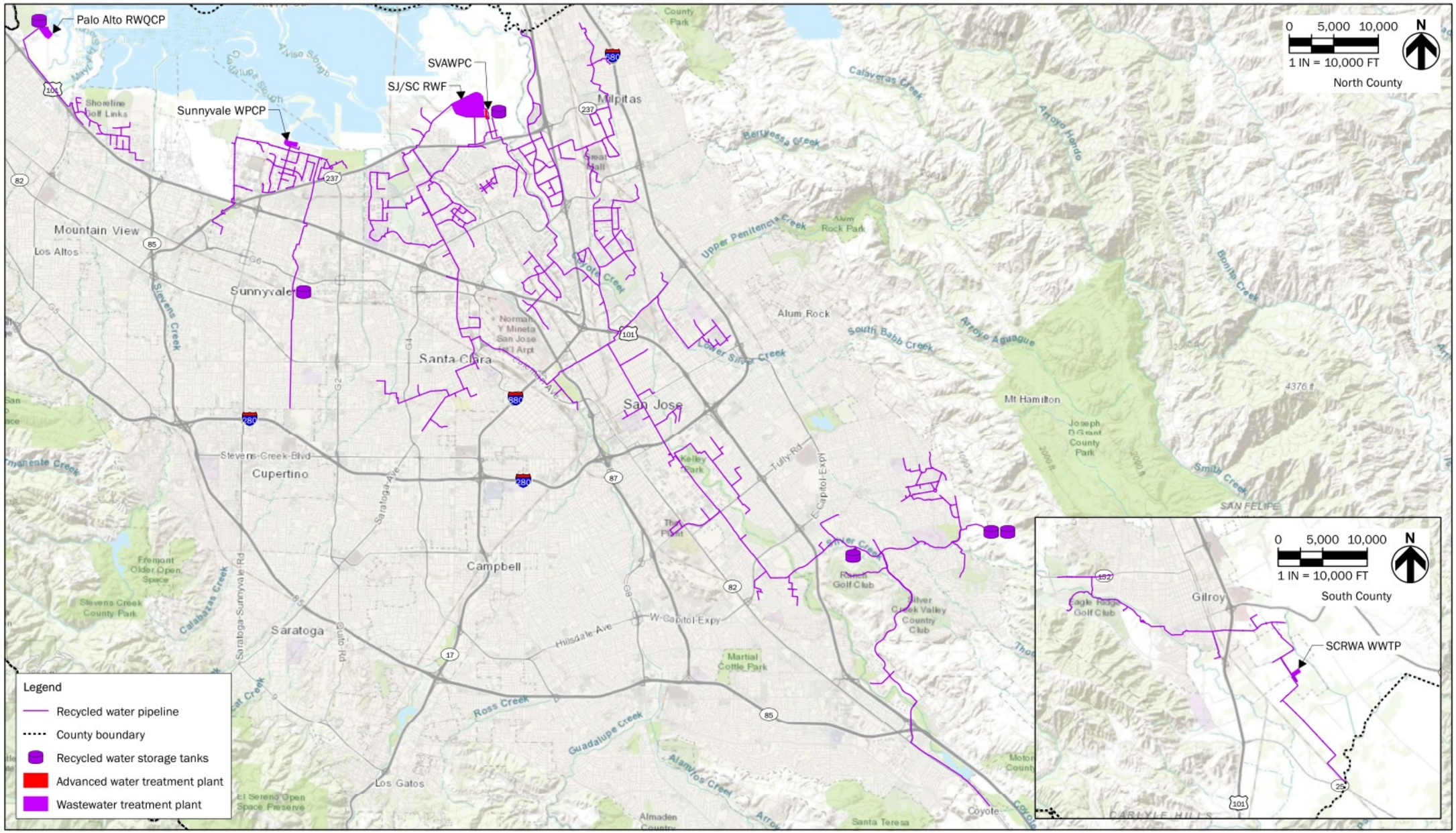


Figure 4-1. Existing recycled water distribution systems throughout Santa Clara County

4.1 System Characteristics

Key characteristics of each WWTP and the corresponding NPR system are summarized below. Many planned improvements—including expanded NPR distribution systems and a new AWPF for NPR+ in Palo Alto—align with the CoRe Plan objectives and are being explored in close coordination with Valley Water.

RECYCLED WATER PRODUCERS (WWTPs)

Palo Alto RWQCP, Advanced Secondary Treatment
Average influent: 20 mgd [a]
NPR production capacity: 5 mgd
Planned improvements: secondary treatment process upgrades (currently in design), parallel outfall (currently in design), headworks, additional recycled water facilities

Sunnyvale WPCP, Tertiary Treatment
Average influent: 12 mgd [a]
NPR production capacity: 4 mgd
Planned improvements: replacing primary treatment facilities (in construction), rehabilitating secondary and tertiary facilities, converting secondary treatment to conventional activated sludge process (Phase I in design)

SJ/SC RWF, Tertiary Treatment
Average influent: 102 mgd [a]
NPR production capacity: 38 mgd
Planned improvements: headworks modifications; upgrades to primary and secondary treatment, filtration, and sludge thickening

SCRWA WWTP, Tertiary Treatment
Average influent: 6 mgd [a]
NPR production capacity: 9 mgd
Planned improvements: addition of a new MBR process

RECYCLED WATER SYSTEMS (NON-POTABLE REUSE)

Palo Alto/Mountain View RWS
Service area: vicinity of Palo Alto RWQCP and North Bayshore area of Mountain View
NPR demands (annual average): 0.6 mgd (2015-2017 average) // 3 mgd (projected [b])
Current challenges: high salinity, insufficient storage, no potable backup
Planned improvements: distribution system expansion; AWPF for NPR+

Sunnyvale RWS
Service area: Northern Sunnyvale (north of Highway 237) and Apple campus in Cupertino
NPR demands (annual average): 1 mgd (2015-2017 average) // 2 mgd (projected [b])
Current challenges: high salinity, color (green tint), insufficient storage
Planned improvements: none planned

SBWR
Service area: San José, Santa Clara, and Milpitas
NPR demands (annual average): 12 mgd (2015-2017 average) // 28 mgd (projected [c])
Current challenges: insufficient storage, lack of isolation valves
Planned improvements: maintenance and reliability upgrades

South County RWS
Service area: Gilroy
NPR demands (annual average): 2 mgd (2015-2017 average) // 3 mgd (projected [b])
Current challenges: high salinity, no potable backup, peak hour demands near system capacity
Planned improvements: distribution system expansion

PURIFIED WATER FACILITY

Silicon Valley Advanced Water Purification Center (SVAWPC)
Owned and operated by Valley Water, the SVAPWC is located across the street from the SJ/SC RWF in San José. SVAWPC was developed to further enhance the quality of SBWR recycled water. Because the facility employs many of the treatment processes needed for PR, it has also been used to evaluate PR as a future water supply option. The current PR water production capacity is 8.0 mgd.

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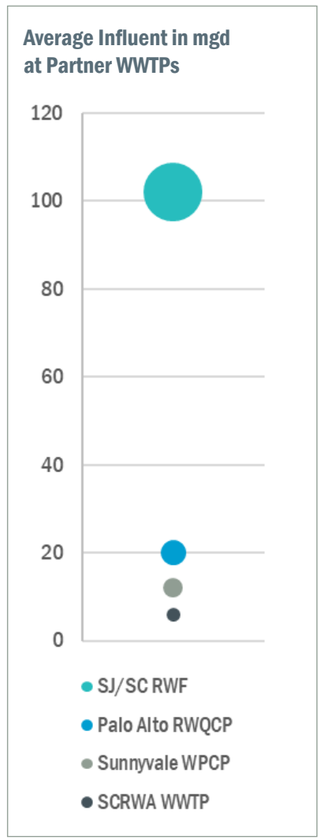
[a] 2014-2019 average influent from California Integrated Water Quality System (CIWQS). Values from CIWQS were reduced by 0.5 mgd for Sunnyvale WPCP to account for a difference in metering location, per direction from Sunnyvale staff.
[b] 2040 NPR demand projections, rounded to the nearest 1 mgd, from 2015 Urban Water Management Plans and do not fully capture potential allocation per contractual agreements.
[c] Updated projections provided by SBWR staff in January 2019

4.2 Existing Flow Conditions

WWTP Influent

Figure 4-2 shows daily influent flows at each of the four WWTPs (2014-2019). Influent varies seasonally, particularly during wet years, with winter flows significantly higher than summer flows. Influent is often characterized as average dry weather flow (ADWF), or the lowest consecutive three-month average, which tends to be much lower than average annual flow.



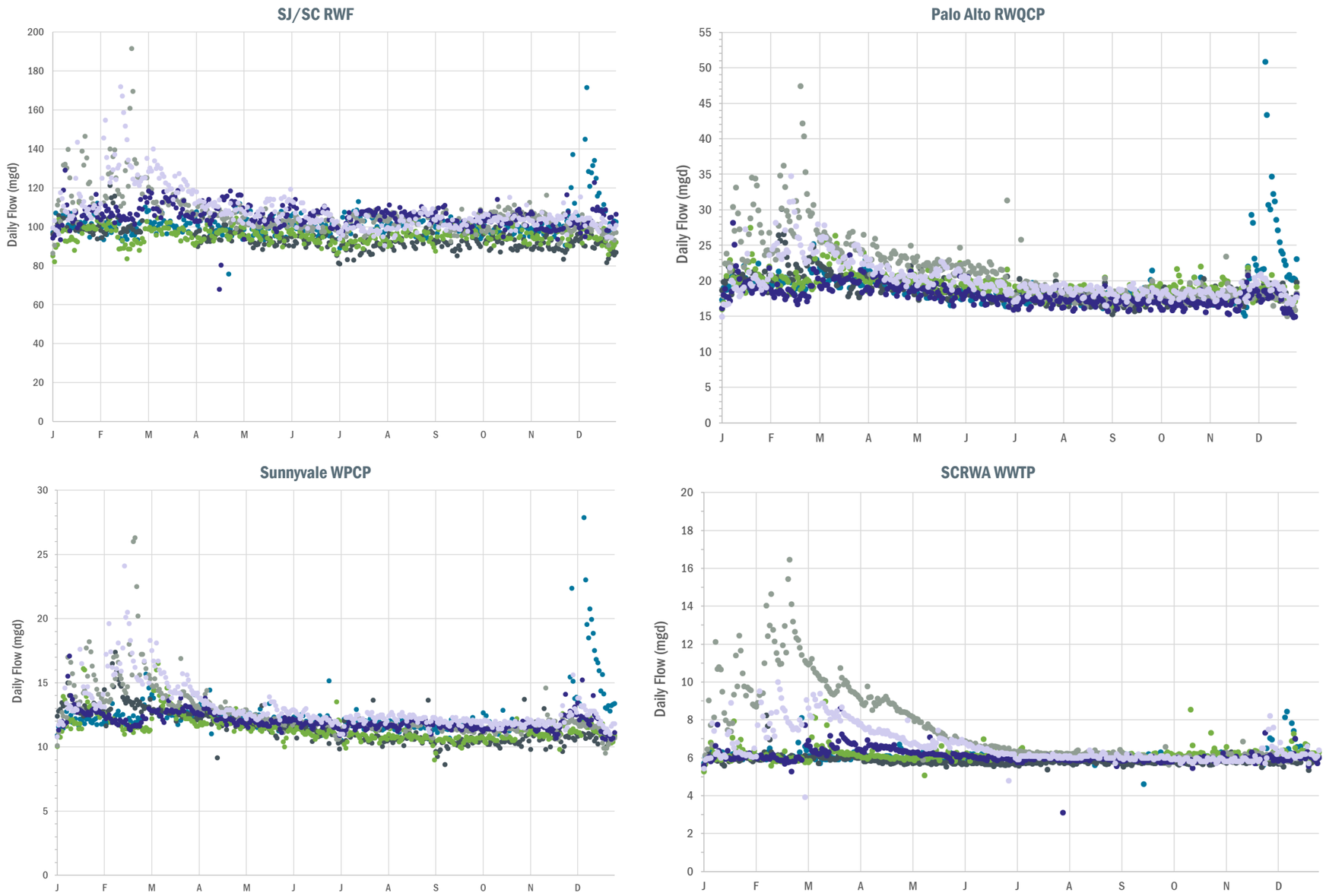


Figure 4-2. Existing flow conditions by Partner Agency, based on average daily WWTP influent flows (2014 through 2019)

Source: California Integrated Water Quality System (CIWQS) database (note – Sunnyvale flows were corrected by reducing WPCP influent by 0.5 mgd, per discussion with Sunnyvale staff).

NPR Demands

Average monthly NPR demands (based on 2015-2017 data provided by Partner Agencies) are shown on Figure 4-3. NPR demand tends to be much higher in summer months, as recycled water is largely used for landscape irrigation. To improve water quality and maintain a target TDS below 500 mg/L, SBWR currently blends purified water from the SVAWPC with its Title 22 recycled water, resulting in reuse supply referred to as enhanced NPR, or NPR+. Palo Alto is planning a local AWPF for NPR+ in the future. Sunnyvale and SCRWA currently do not have a need for NPR+.

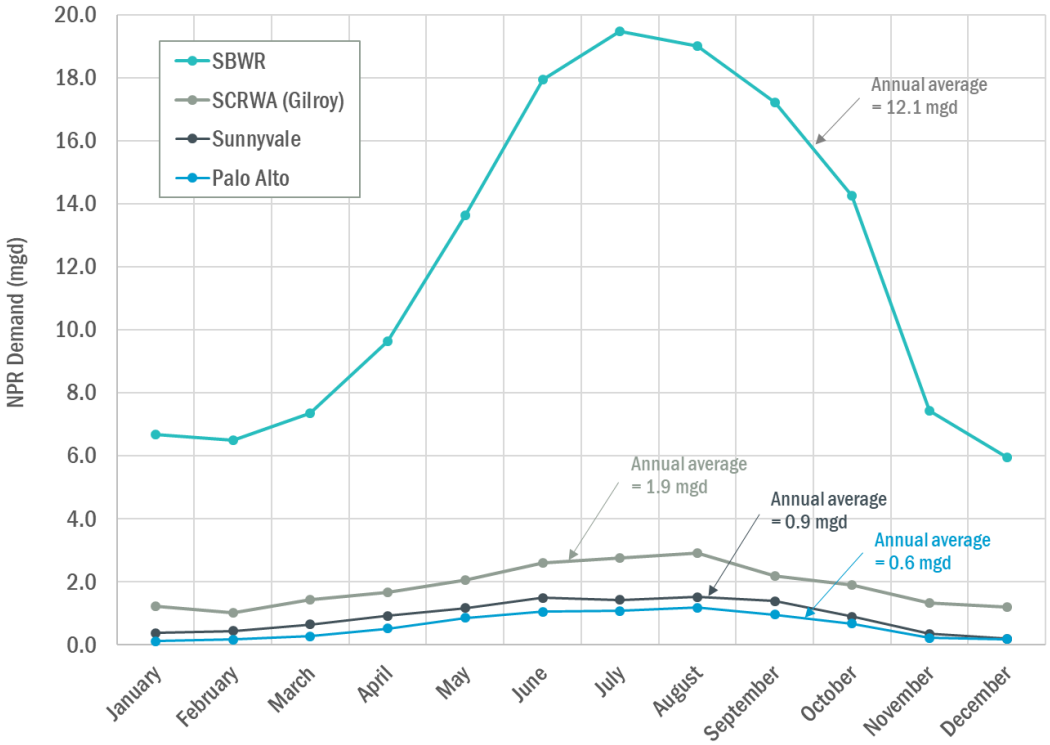


Figure 4-3. Existing NPR demands by Partner Agency, based on average monthly use (2015-2017)

Environmental Flow Requirements

Depending on circumstances, regulatory permits may specify conditions for systems to support ecosystem health by providing environmental flows dictating the quantity, timing, and quality of water flowing to natural systems. Currently, Palo Alto RWQCP is the only WWTP in the county obligated to provide flow for environmental benefit under NPDES permit requirements. While the Palo Alto RWQCP's NPDES permit currently requires 1.0 mgd of effluent to be sent to the Renzel Marsh project, the marsh may be expanded to receive up to 3.0 mgd. This consumptive use further reduces the amount of supply available for reuse.

Losses

Depending on the treatment process, some WWTPs experience losses during treatment. For example, the Palo Alto RWQCP recirculates some effluent for in-plant uses (e.g., wet scrubber water and filter backwash) and experiences a 20 percent loss of the recirculated flow, which equates to approximately 0.3 mgd. Additionally, the Sunnyvale WPCP has some evaporative losses associated with the use of ponds as part of its treatment process. Current evaporative losses are typically between 1 and 2 mgd, though future losses may be up to 4 mgd, including flows for capping and evaporation at their ponds.

4.3 Reuse Research Facilities

In 2014, Valley Water commissioned the SVAWPC, an 8.0-mgd state-of-the-art advanced water treatment facility that includes microfiltration, reverse osmosis (RO), and ultraviolet (UV) light disinfection. A pilot-scale advanced oxidation process is also part of the facility, used to test and demonstrate the continued performance of advanced treatment technologies for producing highly treated water (purified water) to be used for IPR and/or potential DPR applications. The facility provides an excellent venue for both IPR and DPR public education. The 2015 PR Demonstration Test Plan prepared by Valley Water demonstrated effective performance of the SVAWPC to further advance secondary treated wastewater to meet or exceed California drinking water standards. Figure 4-4 shows key results of this study.

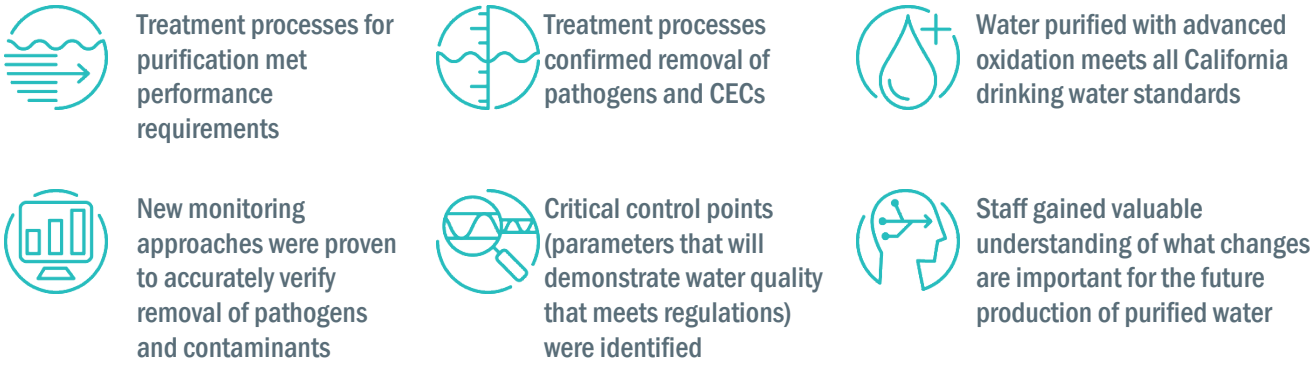


Figure 4-4. Key results of the PR demonstration test plan for SVAWPC

In 2017, Valley Water initiated a ROC Management Project to evaluate viable alternatives for managing ROC from potential advanced water purification facilities that could be built in the County. The ROC Management Study includes evaluating treatment alternatives and discharge options, and installing, testing, and evaluating a pilot-scale engineered open-cell treatment system at the SVAWPC.

Independent of Valley Water's reuse research efforts but still within Santa Clara County, Stanford University is currently operating a water reuse testing and research facility constructed in 2016 called the Codiga Resource Recovery Center. The center has the flexibility to evaluate multiple mobile treatment systems and to vary feed water quality (lake water, greywater, municipal wastewater [raw sewage], primary effluent, and secondary effluent). The flagship treatment technology is a staged anaerobic fluidized bed membrane bioreactor that treats municipal wastewater to secondary effluent water quality standards and converts organic matter to biogas methane. Benefits of this technology include decreased energy use by avoiding aeration and reduced solids handling costs. The center is also evaluating forward osmosis/RO technology first developed by NASA. Currently, all effluent is returned to the sewer for treatment at the Palo Alto RWQCP.

The successful operation of the SVAWPC, along with these advanced technology and research studies, establishes a foundation to provide regional discussions on the feasibility and development of PR projects.

Section 5:

Expanded Reuse Potential

Valley Water's strategy for improving water supply reliability through water reuse is twofold:

1 Integrate and expand existing NPR systems

2 Develop purified water systems within the County

5.1 Projected NPR Demands

Expansion of NPR is a key component of the CoRe Plan, as all four Partner Agencies anticipate increased NPR demand in their service areas. The CoRe Plan assumes that NPR demands will be met before remaining effluent is made available for potable reuse.

Based on the planning horizon for the CoRe Plan, 2040 was used as the timeframe for estimating future flow availability. Because water suppliers developed their 2015 Urban Water Management Plans (UWMP) in coordination with recycled water producers, they generally contain the most recent NPR demand forecasts and therefore were used as the basis for future NPR projections with a few exceptions:

- In January 2019, SBWR provided updated recycled water projections that reflect increased NPR+ demand in areas served by the City of Santa Clara and San José Municipal Water.
- Morgan Hill's 2015 UWMP projected zero long-term NPR deliveries; however, because an NPR project in Morgan Hill may be feasible under a more integrated regional context, the CoRe Plan uses Morgan Hill's conceptual NPR buildout demands from the 2015 South County Recycled Water Master Plan Update.

Expanded reuse potential—including NPR and PR—was evaluated in partnership with recycled water producers, wholesale and retail water suppliers, end users, regulatory agencies and other interested parties.

NPR demand projections by Partner Agency, as summarized in Table 5-1, do not fully capture potential allocations per contractual agreements. For example, Mountain View is contractually entitled to peak flows of up to 3 mgd of recycled water from Palo Alto, though projected NPR demand is less than 3 mgd when considered over a timeframe beyond peak demands. The CoRe Plan assumes future NPR usage aligns with projected demand, though contractual obligations are considered in the context of project feasibility and implementation as they effectively limit the effluent available for PR.

Although future NPR projections are provided as an annual estimate, NPR use varies seasonally. A monthly distribution factor, based on actual NPR data from 2015-2017, was applied to the 2040 projections to estimate future monthly NPR demand.

Table 5-1. Summary of Projected Long-Term NPR Demands by Recycled Water System

Recycled Water System	Recycled Water Retailers	2040 NPR Demand		Current Contractual Obligation[b]
		mgd (average)	AFY[a]	
PA/MV RWS	Palo Alto Mountain View	2.5	2,800	Mountain View has the right to receive up to 3 mgd of peak flow
Sunnyvale RWS	Sunnyvale Cal Water (Cupertino) San José Water (Cupertino)	1.5	1,700	Valley Water can receive 595 AFY for distribution within Sunnyvale and at least 500 AFY for distribution outside Sunnyvale's city limits
SBWR	Santa Clara San José Municipal Water San Jose Water Milpitas	27.6	30,900[c]	Valley Water has the right to at least 5 mgd from the Silver Creek Pipeline (through January 22, 2027, unless a new agreement is established)
SCRWA	Gilroy Morgan Hill	3.3 2.6	3,700 2,900[d]	Per the existing agreement, SCRWA may sell other wholesalers recycled water available in excess of the annual delivery quantity—a flow mutually determined by SCRWA and Valley Water and established each year, and Valley Water may sell recycled water to end users outside of the South County RWS service area (with SCRWA's concurrence)
Countywide	**Total, excluding Morgan Hill** **Total, including Morgan Hill**	**34.9** **37.5**	**39,100** **42,000[d]**	

a. *Projected 2040 NPR demands from 2015 UWMPs within the retail water service areas, rounded to the nearest 100 AFY, except for SBWR and the City of Morgan Hill—see notes (c) and (d).*

b. *Projected NPR demands do not fully capture potential allocations per contractual agreements.*

c. *Reflects updated NPR demands provided by SBWR staff in January 2019.*

d. *Reflects Morgan Hill's conceptual buildout demands per the 2015 South County Recycled Water Master Plan Update.*

5.2 Available Source Water for Potable Reuse

In addition to NPR, some WWTP effluent is reserved for other uses, such as for environmental benefit. Figure 5-1 shows a flow balance for typical WWTP that accounts for various flow streams. The Project Team completed a flow balance for each Partner Agency WWTP to estimate the remaining effluent available for discharge, blending, or additional reuse in 2040. Because NPR expansion is already planned by each Partner Agency, the CoRe Plan assumes projected NPR demands will remain intact, and PR projects will be sourced by remaining effluent (minus any effluent reserved for discharge, blending, or other requirements).

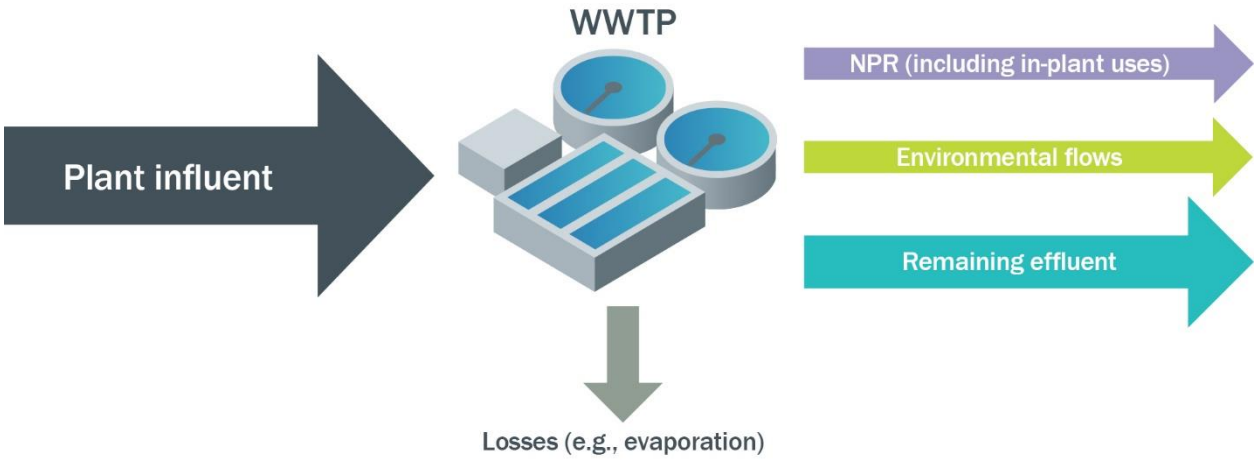


Figure 5-1. Typical WWTP flow balance

INFLUENT
Partner Agencies' wastewater and recycled water master plans were used as the starting point for future plant influent projections, though these projections were adjusted downward to align with baseline conditions (using average monthly median flows, 2014-2018). Based on available projections in Partner Agencies' planning documents, 2035 was used as the timeframe for the influent flow analysis; this provides a conservative (low) estimate of available flow in 2040.

To account for uncertainty in future influent projections, a range of flows was considered. The "lower bound" assumes no increase from baseline (flatlined projection). The "upper bound" assumes same slope (i.e., rate of increase) from Partner Agencies' planning documents.

NPR/NPR+
As described in Section 5.1, retailers' 2015 UWMPs served as the source for projected NPR demand, except for SBWR (whose staff provided updated demands in January 2019) and Morgan Hill (conceptual buildout demand from 2015 South County Recycled Water Master Plan Update). For the three North County systems (SBWR, Palo Alto, and Sunnyvale), additional losses associated with NPR+ (i.e., ROC from advanced treatment) were considered.

ENVIRONMENTAL FLOW REQUIREMENTS
The flow analysis assumed 3 mgd of effluent from the Palo Alto RWQCP will be used to meet environmental flow requirements in 2040, including flows to Renzel Marsh. No environmental flow requirements were identified for the SJ/SC RWF, Sunnyvale WPCP, or SCRWA WWTP.

OTHER LOSSES
In general, treatment losses at the WWTPs were assumed to be negligible, unless otherwise specified by Partner Agency staff. Future losses considered 0.3 mgd lost from recirculated flow at the Palo Alto RWQCP and 4 mgd reserved for evaporation and capping at the Sunnyvale WPCP.

REMAINING EFFLUENT
Remaining effluent (i.e., WWTP influent minus losses, environmental flows, and effluent needed to meet NPR demands) may be available for discharge, blending, or additional reuse. Currently, remaining effluent in North County is discharged to the San Francisco Bay, while remaining effluent in South County is sent to percolation ponds or discharged to the Pajaro River (and eventually Monterey Bay). For this planning-level estimate, it was assumed that all remaining effluent was available for PR, and potential AWPFs were sized accordingly.

Results from the flow analysis are summarized below by Partner Agency. More details on the methodology, data, and assumptions for determining the remaining effluent available for PR and additional details are included in ***Appendix A-2***.

5.2.1 SJ/SC RWF Flow Analysis

Figure 5-2 displays future WWTP influent projections and effluent needed to meet SBWR's future NPR+ projections through 2040. Because no environmental flows or other losses were identified for the SJ/SC RWF, the remaining effluent available for discharge, blending, or additional reuse is calculated simply as the difference between the projected WWTP influent flows and NPR+ demands and estimated at 71 to 79 mgd on average (based on the range of influent projections).

The estimated remaining effluent available exceeds the 30.4 mgd AWPF feed flow needed to produce 24 mgd of purified water (considering treatment losses and a 90% online factor) and achieve Valley Water's goal of developing 24,000 AFY for PR. Despite seasonal flow variability, historical influent data suggest the SJ/SC RWF has sufficient effluent to typically produce 24 mgd of purified water year-round, though some effluent may be needed for future discharge, blending, or other uses.

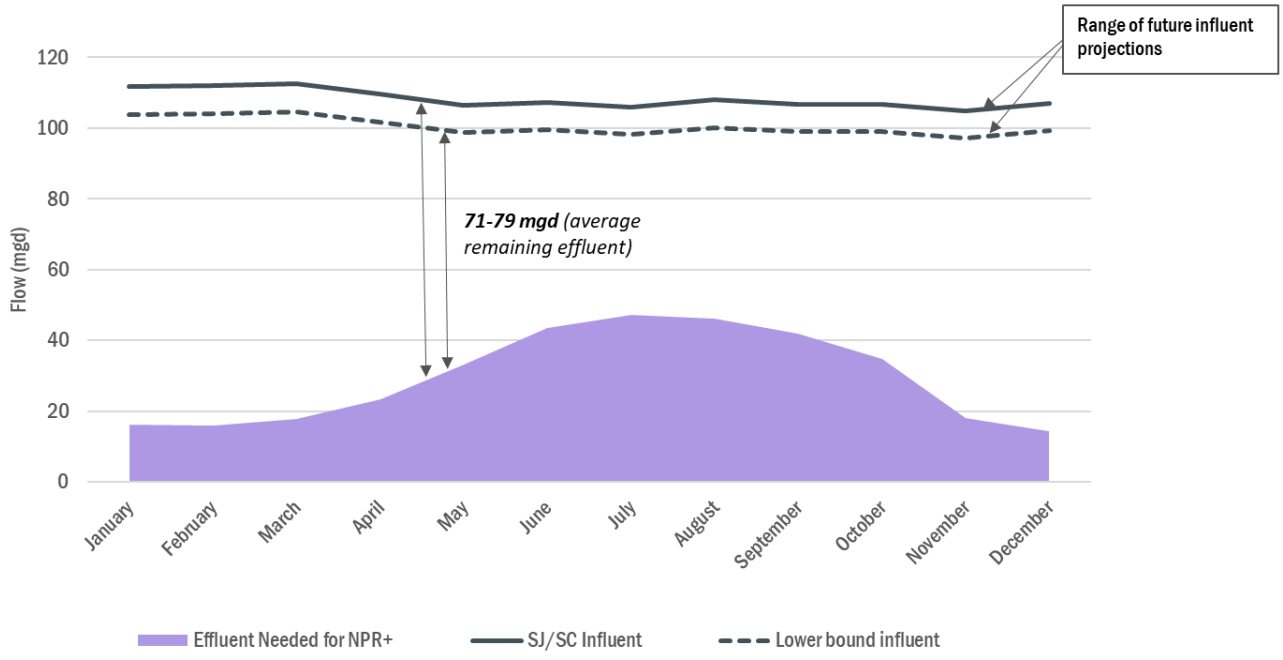


Figure 5-2. Projected flow conditions at SJ/SC RWF considering future influent projections and SBWR NPR+ demands

5.2.2 Palo Alto RWQCP Flow Analysis

The remaining effluent available from the Palo Alto RWQCP is projected to be 13.3 to 15.3 mgd on average (based on the range of influent projections) as shown in Figure 5-3, which displays future influent projections, effluent needed to serve Palo Alto and Mountain View NPR+ demands in 2040, environmental flows (3 mgd), and losses (0.3 mgd).

On its own, the Palo Alto RWQCP does not have sufficient effluent available to produce 24 mgd of purified water. Based on available flows, an AWPF in Palo Alto would be sized at 14 mgd (84% efficiency under "upper bound" conditions). Under "lower bound" conditions, the AWPF would be downsized to 12 mgd to maintain 84% efficiency. AWPF efficiency accounts for the online factor (90% assumed for all facilities) as well as source water availability (projected to be lower in Palo Alto and Sunnyvale than San José). More details on AWPF sizing and utilization are included in ***Appendix A-2***.

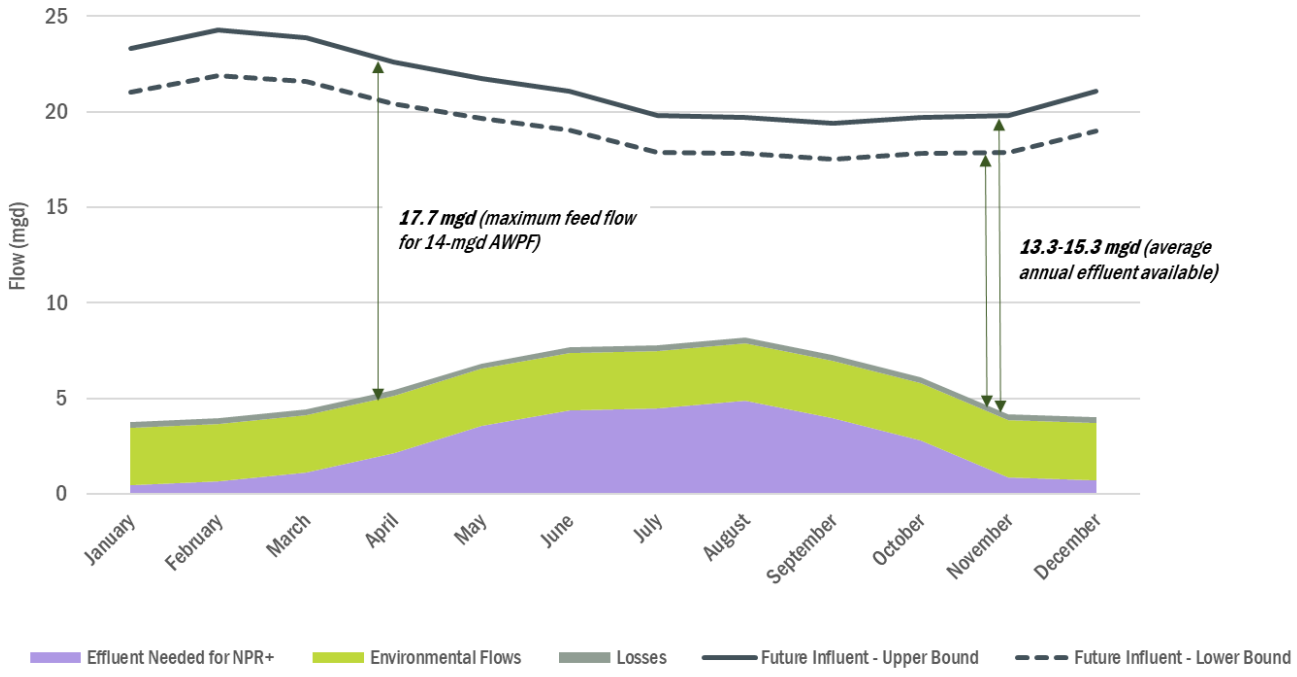


Figure 5-3. Projected flow conditions at Palo Alto RWQCP considering future influent projections and Palo Alto/Mountain View NPR+ demands

5.2.3 Sunnyvale WPCP Flow Analysis

Figure 5-4 displays future influent projections, effluent needed for NPR+, and losses from evaporation and capping associated with Sunnyvale's treatment ponds (4 mgd). No environmental flow requirements are identified for Sunnyvale WPCP. The remaining effluent available is projected to be at least 5 mgd on average.

On its own, the Sunnyvale WPCP does not have sufficient effluent available to produce 24 mgd of purified water. Based on available flows, an AWPF in Sunnyvale would be sized at 10 mgd (88% efficiency under "upper bound" conditions). Under "lower bound" conditions, the AWPF would be downsized to 6 mgd (81% efficiency). Under "upper bound" conditions, Sunnyvale and Palo Alto combined could produce 23,000 AFY of purified water for PR (after accounting for treatment losses and the 90% online factor).

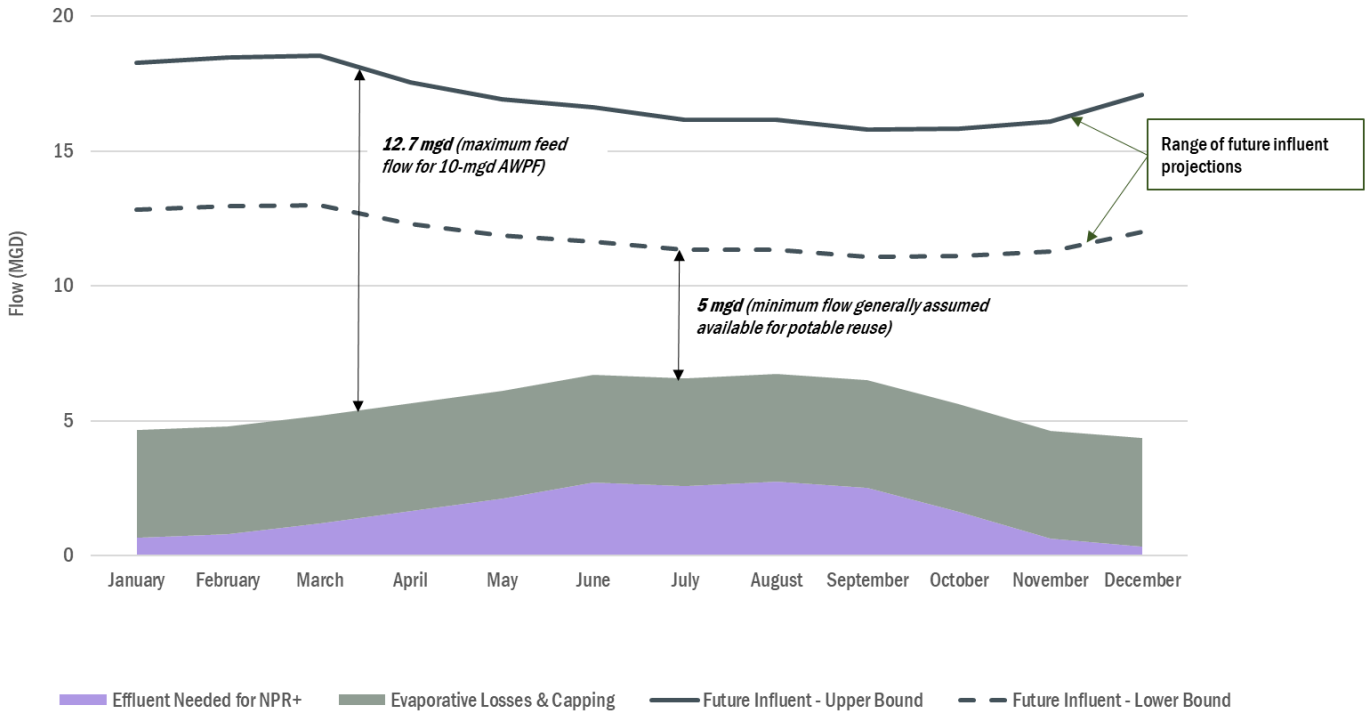


Figure 5-4. Projected flow conditions at Sunnyvale WPCP considering future influent projections and NPR demands

5.2.4 SCRWA WWTP Flow Analysis

SCRWA WWTP influent remained relatively consistent over the past several years (ADWF = 6 mgd) and is projected to be similar in the future. Unlike the WWTPs in North County, only one set of influent projections was considered for SCRWA.

As shown on Figure 5-5, SCRWA WWTP receives wastewater from two cities: Gilroy and Morgan Hill. Currently, NPR is only delivered in Gilroy. During the summer months, a portion of wastewater from Morgan Hill is needed to supply NPR in Gilroy. On average, 3 mgd of remaining effluent is available from SCRWA WWTP. However, if considering satellite treatment in Morgan Hill, only 2.1 mgd of Morgan Hill's wastewater would be available on average, with minimal flow available in the summer months (when needed to supply NPR in Gilroy).

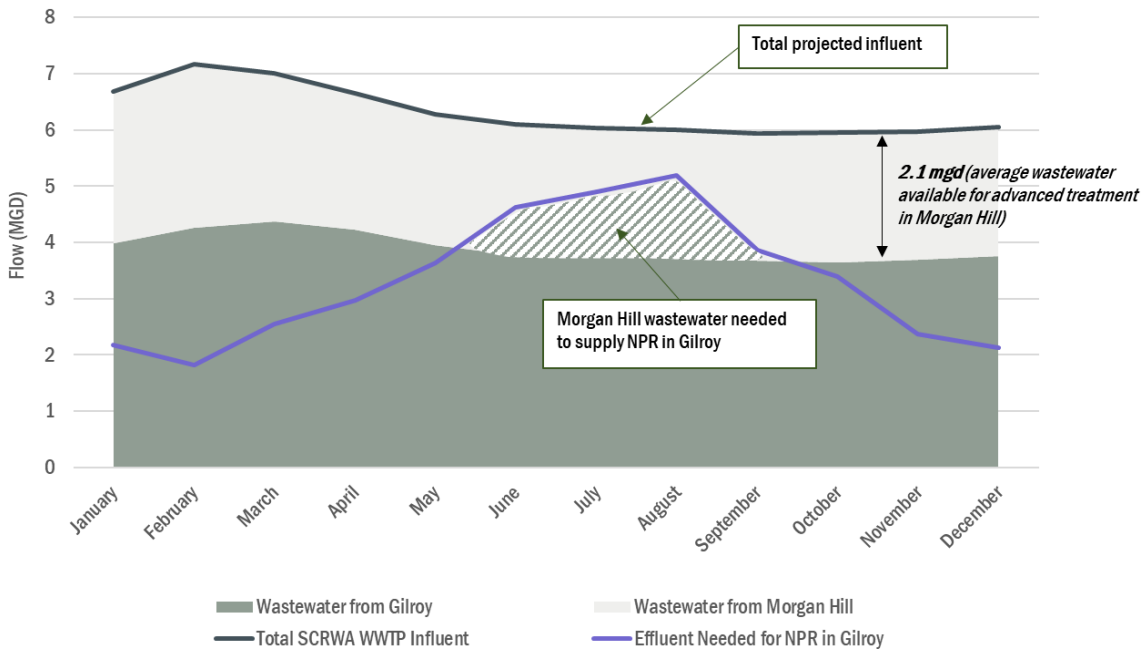


Figure 5-5. Projected flow conditions at SCRWA's WWTP considering future influent projections and South County RWS NPR demands

5.2.5 Summary

Anticipated purified water yields (after treatment losses) are shown in Table 5-2. These values are based on estimated source water availability and do not account for potential limitations at the delivery point (e.g., groundwater basin capacity), which may limit PR in wet years. Annual yields are estimated for planning purposes and cannot be guaranteed.

Table 5-2. Annual Yield for Potable Reuse Considering Producer and Source Water Availability

Facility	Potential Yield (AFY) [a]
San José AWPF	24,000
Palo Alto AWPF	11,700 – 13,200
Sunnyvale AWPF	5,500 – 9,800
Palo Alto and Sunnyvale (combined)	17,300[b] – 23,000
Morgan Hill Satellite AWPF	1,900

a. *Discussions around source water availability and potential purified water yield are ongoing. Yield may be lower during drought conditions or other scenarios.*

b. *Lower bound for Palo Alto AWPF and Sunnyvale AWPF, when shown separately, differ from combined total due to rounding.*

More details on estimated flows, including summaries of projected monthly flows by Partner Agency and AWPF sizing calculations, are included in ***Appendix A-2***.

5.3 Onsite Reuse Considerations

The extent of future onsite non-potable reuse systems (i.e., decentralized building-scale or neighborhood-scale) in the County may have implications for centralized reuse facilities. While onsite reuse can promote public awareness of water reuse and offer potential energy savings, these projects may also reduce the amount of wastewater available for potable reuse and lead to higher solids concentrations in sewers collection systems.

The Project Team surveyed the Partner Agencies to identify existing and/or planned onsite reuse systems in Santa Clara County and held calls with individual Partner Agencies to collect additional information on existing and planned local onsite reuse systems, their scales, and associated costs. Currently, four onsite reuse projects are under development in Mountain View, with potential additional projects being explored elsewhere in the County. Future onsite reuse efforts will require coordination among multiple stakeholders, including Valley Water and the Partner Agencies, to evaluate potential impacts on centralized NPR and PR projects, such as those described in the CoRe Plan.

The next iteration of this document (the Final CoRe Plan) will include the Project Team's assessment of onsite reuse implications in an appendix. In addition, the Final CoRe Plan will identify recommended next steps to potentially inform Valley Water Board's policy-level considerations.

Section 6:

Project Portfolios

The CoRe Plan refers to groups of project elements (advanced treatment facilities and conveyance infrastructure) in the North County as "portfolios" and in the South County as "options". The distinction in nomenclature is a nod to the flexibility of potentially combining a South County option with any North County portfolio. The process of defining the portfolios and options was iterative and collaborative, as described in this section and in more detail in *Appendix A-1* (Feasible Project Portfolios).

6.1 Conceptual Alternatives/Portfolios

Beginning in 2018, the Project Team created groups of projects and packaged them into five conceptual portfolios (formerly called alternatives) that are consistent with guiding principles agreed upon by the Valley Water and Partner Agencies, including:

1. Leverage existing infrastructure where possible
2. Reflect a mix of NPR/NPR+ and PR projects, including potential TWA concepts as a point of comparison for cost-effectiveness
3. Expand Countywide reuse (NPR and/or PR) using source water from each Partner Agency
4. Consider previously explored projects (but not previously deemed infeasible, unless circumstances have changed) and new projects
5. Aim to develop at least 24,000 AFY of PR supply by 2028 to meet the County's water supply demands (consistent with Valley Water's WSMP 2040)

Rather than recommending a single alternative, this CoRe Plan takes a holistic look at reuse opportunities; considers their respective feasibility; and evaluates their benefits, challenges, risks, and costs relative to one another.

In coordination with Valley Water and its Partner Agencies, the Project Team evaluated the five conceptual portfolios and narrowed down to three portfolios, defined by AWPF source water and location, to develop through preliminary design and comparatively evaluate based on key attributes, differentiators, and factors critical to feasibility of future implementation.

Five Portfolios Conceptually Explored

The Partner Agencies developed and assessed five conceptual portfolios.

Evaluation criteria included economics, groundwater management and Countywide (regional) supply reliability, environmental impacts/benefits and sustainability, ease of implementation and permitting/regulatory considerations, and engineering feasibility.

Three Portfolios Selected

Three portfolios feature a variety of project elements developed through preliminary design and evaluated for feasibility. Defined by source of supply and treatment facility location, the three portfolios include:

Portfolio 1: San José AWPF

Portfolio 2: Combined Palo Alto/Sunnyvale Regional AWPF

Portfolio 4: Separate Palo Alto and Sunnyvale AWPFs

Appendix F (Conceptual Alternatives TM) describes in detail the process of developing and assessing the five conceptual portfolios. After narrowing from five to three portfolios, the Project Team developed preliminary (10%) designs for each portfolio, including some permutations, and added new project elements, including different options for South County and potential future TWA concepts. North County portfolios and South County options are described in this section, and all other elements are described in Section 7.

6.2 Feasible Portfolios

The programmatic approach for the CoRe Plan considers a wide range of reuse opportunities for flexible implementation. Project elements, including AWPFs and conveyance/distribution infrastructure, can be combined in a variety of ways to create CoRe portfolios for comparison on an economic, regulatory, institutional, and environmental basis. Project elements are presented and evaluated in groups:

- **NPR/NPR+ distribution system expansion** applies consistently across all portfolios and, therefore, is not considered a differentiator in the portfolio evaluation.
- **South County reuse options** can be included in combination with any portfolio, and therefore are evaluated separately from the portfolios.
- **Baseline elements** comprise each portfolio and are evaluated collectively by portfolio.
- **Alternative elements** are options that have been explored and remain separate from portfolios, as possible "add-on" items or substitutions (e.g., alternative alignments). These elements are included for consideration due to their potential benefits, though they are not included in the evaluation, which focuses on comparing the differences among portfolios. Alternative elements are described in Section 7.

All AWPFs involve treatment using reverse osmosis membranes, resulting in the production of ROC. ROC management strategies for each AWPF are summarized following each portfolio. An overview of North County portfolios and South County options is shown below with key highlights included in the following subsections. More detail is included in ***Appendix A*** (e.g., preliminary designs, cost estimates), and Section 8 provides more information about potential implementation barriers for each portfolio/option.

Table 6-1. NPR/NPR+ (Recycled Water) Distribution System Expansion

PROJECT PORTFOLIOS					ADDITIONAL OPTIONS
North County Portfolios					**South County Options**
Portfolio 1 **San José AWPF**	1a GWR via LGRP	1b RWA via Penitencia WTP	1c TWA deliveries to Santa Clara, San José, and Valley Water retailers (existing pipeline)	1d TWA deliveries to Santa Clara, San José, and Valley Water retailers (new pipeline)	Morgan Hill Option 1: NPR+ from SBWR Morgan Hill Option 2: Satellite AWPF for GWR Morgan Hill Option 3: Satellite AWPF for SWA
Portfolio 2 **Combined Palo Alto and Sunnyvale Regional AWPF**	2a Combined AWPF in Palo Alto for GWR via LGRP	2b Combined AWPF in Sunnyvale for GWR via LGRP			**Alternative Elements** Alternative pipeline alignments, interties, and delivery points. Resized designs. Additional TWA opportunities.
Portfolio 4 **Separate Palo Alto and Sunnyvale AWPFs**	4 Separate AWPF (1 of 2) in Palo Alto for GWR via LGRP	4 Separate AWPF (2 of 2) in Sunnyvale for GWR via LGRP			

Highlights of each portfolio follow below, based on preliminary designs. Cost estimates reflect Association for the Advancement of Cost Engineering (AACE) International's Class 5 criteria. Class 5 estimates have an expected accuracy range of -50 percent to +100 percent. While the accuracy range is not reflected in values presented in this section, a graphical representation of the level of accuracy is provided in Section 6.4.

6.2.1 Portfolio 1 – San José AWPF

Portfolio 1 is centered on using available effluent from the SJ/SC RWF to feed a new AWPF adjacent to the existing SVAWPC. Key features, costs, and ROC management assumptions for Portfolios 1a, 1b, 1c, and 1d are summarized in Tables 6-2 to 6-5, while Figures 6-1 to 6-4 show their respective facility locations and pipeline alignments.

Table 6-2. Portfolio 1a Key Features and Costs

Portfolio 1a Highlights:		
24 mgd AWPF Location: San José Use: GWR at LGRP	**Total Capital Cost:** $650M* **Total Annual O&M Cost:** $20.3M* **Unit Cost, 30-Year Lifecycle:** $2,500-$3,100/AF* **Unit Cost, 100-Year Lifecycle:** $2,000-$2,500/AF* **Projected 2040 Yield:** 19,000-24,000 AFY **Pipeline Length/Diameter:** 0.4 miles of 60-inch; 18.1 miles of 48-inch	**BENEFITS** SJ/SC RWF flows do not limit projected yield. SVAWPC staff could potentially support new AWPF operation due to proximity. **LIMITATIONS** Minimum flow guarantee for source water requires a long-term agreement with San José. Risks to available yield include drought, environmental needs/impacts, and operations. LGRP recharge potential may limit future yield.

**Capital cost is rounded to the nearest $5M, O&M cost is rounded to the nearest $100k, and lifecycle unit cost is rounded to the nearest $100. Capital and O&M costs assume the implementation of the most cost-effective ROC management strategy, based on the Evaluation of ROC Management Options Final Report. Unit costs reflect ROC management and potential 2040 yield ranges.*

Table 6-3. Portfolio 1b Key Features and Costs

Portfolio 1b Highlights:		
24 mgd AWPF Location: San José Use: RWA at Penitencia WTP	**Total Capital Cost:** $640M* **Total Annual O&M Cost:** $22.9M **Unit Cost, 30-Year Lifecycle:** $2,700-$3,200/AF* **Unit Cost, 100-Year Lifecycle:** $2,200-$2,600/AF* **Projected 2040 Yield:** 19,800-24,000 AFY **Pipeline Length/Diameter:** 0.4 miles of 60-inch; 8.9 miles of 48-inch	**BENEFITS** SJ/SC RWF flows do not limit projected yield. Purified water would be delivered to Penitencia WTP for RWA. From there, existing infrastructure could support operational flexibility, such as delivery to LGRP or Rinconada (with additional costs for improvements needed to connect existing systems), pending regulatory approval. **LIMITATIONS** Minimum flow guarantee for source water requires a long-term agreement with San José. Risks to available yield include drought, environmental needs/impacts, and operations. Consistent with Valley Water's WSMP 2040, assuming DPR water is first-priority supply for Penitencia WTP, blending with raw water. If assumption changes, Penitencia WTP's capacity may limit potable reuse yield. Further evaluation and coordination needed to confirm acceptability of purified water blending ratio.

**Capital cost is rounded to the nearest $5M, O&M cost is rounded to the nearest $100k, and lifecycle unit cost is rounded to the nearest $100. Capital and O&M costs assume the implementation of the most cost-effective ROC management strategy, based on the Evaluation of ROC Management Options Final Report. Unit costs reflect ROC management and potential 2040 yield ranges.*

Table 6-4. Portfolio 1c Key Features and Costs

Portfolio 1c Highlights:

24 mgd AWPF

Location: San José

Use: TWA (via existing Milpitas Pipeline)

Total Capital Cost: $555M*

Total Annual O&M Cost: $23.2M*

Unit Cost, 30-Year Lifecycle: $2,500/AF*

Unit Cost, 100-Year Lifecycle: $2,100/AF*

Projected 2040 Yield: 24,000 AFY

Pipeline Length/Diameter: 0.4 miles of 60-inch; 3.9 miles of 36-inch; 4.7 miles of 24-inch

BENEFITS

SJ/SC RWF flows do not limit projected yield. Northern parts of Santa Clara and San José could receive TWA to supplement water supply. For other water retailers, purified water would flow south through Milpitas Pipeline, serving several upstream of Piedmont Valve Yard, before blending with other treated supply and distributing via the East Pipeline. Existing infrastructure could support potential operational flexibility, such as delivery to LGRP or Rinconada (with additional costs for improvements needed to connect existing systems), pending regulatory approval.

LIMITATIONS

Minimum flow guarantee for source water requires a long-term agreement with San José. Risks to available yield include drought, environmental needs/impacts, and operations. Using the Milpitas Pipeline to convey purified water precludes independent use of an emergency connection to SFPUC's system, via the Milpitas Intertie (northern end of Milpitas Pipeline). Further evaluation and coordination needed to confirm acceptability of purified water blending ratio.

**Capital cost is rounded to the nearest $5M, O&M cost is rounded to the nearest $100k, and lifecycle unit cost is rounded to the nearest $100. Capital and O&M costs assume the implementation of the most cost-effective ROC management strategy, based on the Evaluation of ROC Management Options Final Report. Unit costs reflect the ROC management range as a single value due to rounding.*

Table 6-5. Portfolio 1d Key Features and Costs

Portfolio 1d Highlights:

24 mgd AWPF

Location: San José

Use: TWA (via new dedicated pipeline to Piedmont Valve Yard)

Total Capital Cost: $605M*

Total Annual O&M Cost: $23.3M*

Unit Cost, 30-Year Lifecycle: $2,600/AF*

Unit Cost, 100-Year Lifecycle: $2,200/AF*

Projected 2040 Yield: 24,000 AFY

Pipeline Length/Diameter: 0.4 miles of 60-inch; 8.2 miles of 36-inch; 4.7 miles of 24-inch

BENEFITS

SJ/SC RWF flows do not limit projected yield. Northern parts of Santa Clara and San José could receive TWA to supplement water supply. For other water retailers, purified water would flow south through a new dedicated pipeline before blending with other treated supply and distributing via the Milpitas Pipeline (flowing north) and the East Pipeline. Existing infrastructure could support potential operational flexibility such as delivery to LGRP or Rinconada (with additional costs for improvements needed to connect existing systems), pending regulatory approval.

LIMITATIONS

A minimum flow guarantee for source water requires a long-term agreement with San José. Risks to available yield include drought, environmental needs/impacts, and operations. Further evaluation and coordination needed to confirm acceptability of purified water blending ratio.

**Capital cost is rounded to the nearest $5M, O&M cost is rounded to the nearest $100k, and lifecycle unit cost is rounded to the nearest $100. Capital and O&M costs assume the implementation of the most cost-effective ROC management strategy, based on the Evaluation of ROC Management Options Final Report. Unit costs reflect ROC management range as a single value due to rounding.*

Figure 6-1. Facility locations and pipeline alignments for Portfolio 1a (San José AWPF, GWR at LGRP)

Figure 6-2. Facility locations and pipeline alignments for Portfolio 1b (San José AWPF, RWA at Penitencia WTP)

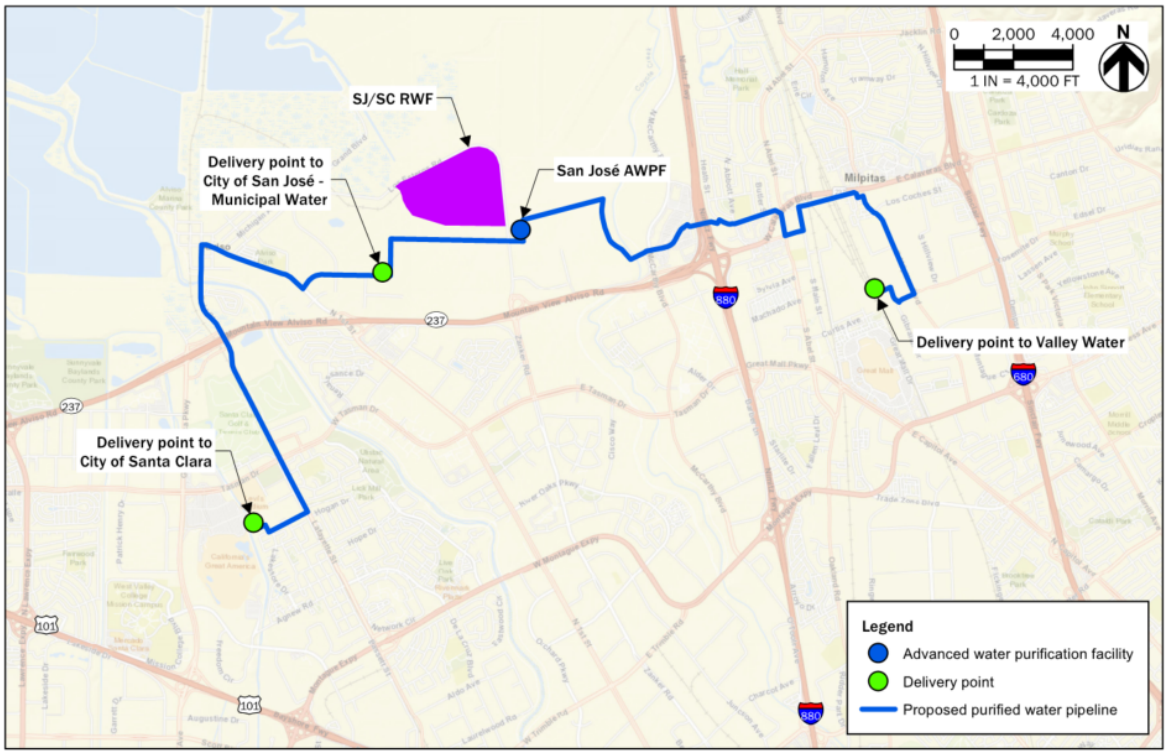


Figure 6-3. Facility locations and pipeline alignments for Portfolio 1c (San José AWPF TWA, Milpitas Pipeline)

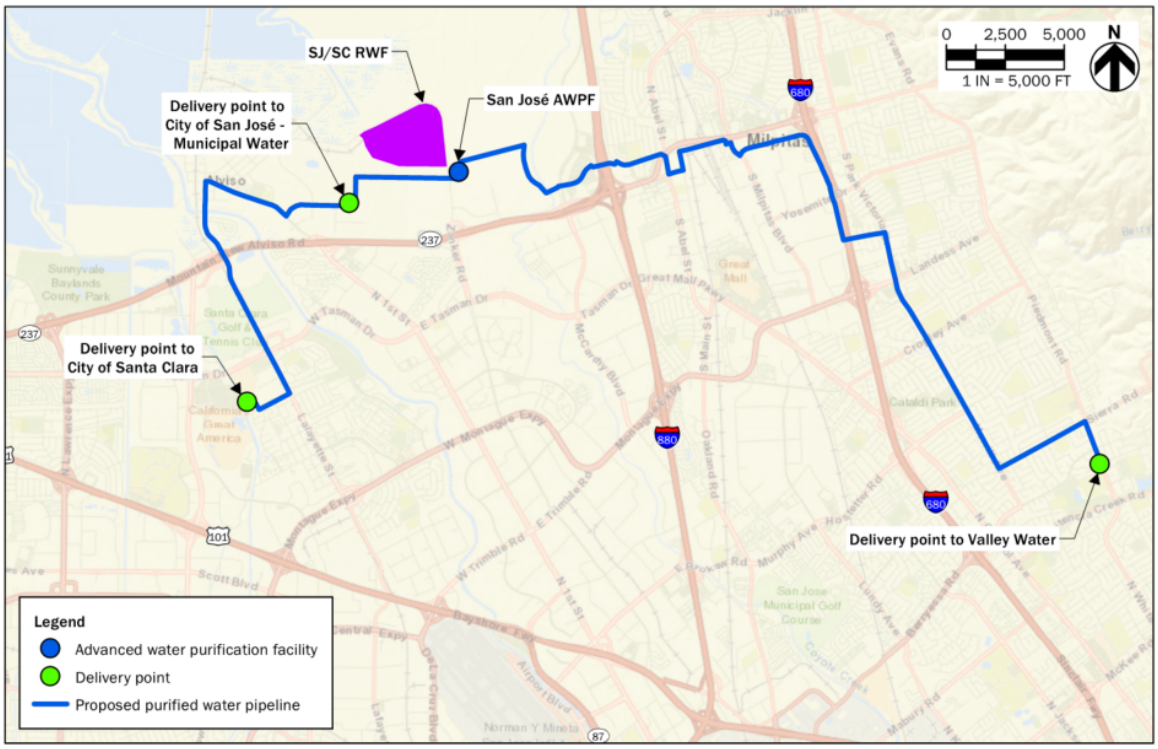


Figure 6-4. Facility locations and pipeline alignments for Portfolio 1d (San José AWPF TWA, new pipeline)

Valley Water's ROC Management Team (Valley Water staff and a consultant team led by GHD) separately evaluated ROC management strategies and documented the findings in a report dated September 1, 2020 entitled *Evaluation of ROC Management Options Final Report* (Valley Water, 2020a), which is attached to the CoRe Plan as ***Appendix G***.

Each variation of the Portfolio 1 San José AWPF is estimated to produce up to 4.3 mgd of ROC. The ROC Management Options Final Report identified two options for managing ROC from the San José AWPF portfolios:

- PORTFOLIO 1, ROC OPTION 1: Blending and discharge at a new outfall downstream of existing effluent outfall discharge weir. This option involves constructing a ROC pump station and holding tank, 1.8 miles of 18-inch HDPE pipe from the AWPF to a new outfall near the existing effluent weir, and an outfall diffuser at the discharge point. Treatment processes for nutrients and CECs are also included in the ROC management cost estimate.
- PORTFOLIO 1, ROC OPTION 2: Discharge at a new shallow outfall at Coyote Creek. This option involves constructing a ROC pump station and holding tank, 3.8 miles of 18-inch HDPE pipe from the AWPF to a new outfall at Coyote Creek, and an outfall diffuser at the discharge point. Treatment processes for nutrients and CECs are also included in the ROC management cost estimate

The ROC Management Options Final Report includes an analysis of various strategies at the San José AWPF without recommending a single option for implementation, thus allowing flexibility for continued discussions and negotiations among Valley Water, Partner Agencies, and Regional Boards. Capital and O&M costs shown in Tables 6-2 to 6-5 assume implementation of the most cost-effective strategy at the San José AWPF. Capital costs could increase (an addition of up to $10M) if implementing a higher cost strategy as evaluated in the final report of ROC management options.

6.2.2 Portfolio 2 – Combined Palo Alto/Sunnyvale Regional AWPF

Portfolio 2 is centered around combining available effluent from the Palo Alto RWQCP and the Sunnyvale WPCP for treatment at one AWPF that would provide regional benefit through GWR at LGRP. Sourcing one AWPF from two WWTPs (operated by two separate agencies) is not common and would likely involve unique interagency and regulatory circumstances. In addition, source flow availability is a key consideration for a Palo Alto and Sunnyvale-based portfolio, as total combined WWTP influents may not be sufficient to meet Valley Water's 24,000 AFY PR goal. Two variations were evaluated, and both are designed to deliver up to 23,000 AFY to LGRP for GWR. Key features and costs for Portfolios 2a and 2b are summarized in Tables 6-6 to 6-7, while Figures 6-5 to 6-6 show their respective facility locations and pipeline alignments.

Table 6-6. Portfolio 2a Key Features and Costs

Portfolio 2a Highlights:		
24.5 mgd AWPF Location: Palo Alto Use: GWR at LGRP (24 mgd) and NPR+ in Sunnyvale (0.5 mgd)	**Total Capital Cost:** $780M* **Total Annual O&M Cost:** $21.0M* **Unit Cost, 30-Year Lifecycle:** $2,900-$3,900/AF* **Unit Cost, 100-Year Lifecycle:** $2,300-$3,000/AF* **Projected 2040 Yield:** 17,000-23,000 AFY **Pipeline Length/Diameter:** 20.3 miles of 48-inch, 10.3 miles of 36-inch	BENEFITS Valley Water has a long-term agreement with Palo Alto to receive flows and is negotiating similarly with Sunnyvale. LIMITATIONS Palo Alto RWQCP and Sunnyvale WPCP flows limit projected yield. Permitting and regulatory compliance for ROC management need to be confirmed. Costs for acquiring AWPF site are not included.

**Capital cost is rounded to the nearest $5M, O&M cost is rounded to the nearest $100k, and lifecycle unit cost is rounded to the nearest $100. Capital and O&M costs assume the implementation of the most cost-effective ROC management strategy, based on the Evaluation of ROC Management Options Final Report. Unit costs reflect ROC management and potential 2040 yield ranges.*

Table 6-7. Portfolio 2b Key Features and Costs

Portfolio 2b Highlights:

24.5 mgd AWPF

Location: Sunnyvale

Use: GWR at LGRP (24 mgd) and NPR+ in Sunnyvale (0.5 mgd)

Total Capital Cost: $795M*

Total Annual O&M Cost: $20.2M

Unit Cost, 30-Year Lifecycle: $2,900-$3,800/AF*

Unit Cost, 100-Year Lifecycle: $2,300-$3,000/AF*

Projected 2040 Yield: 17,000-23,000 AFY

Pipeline Length/Diameter: 17.1 miles of 48-inch;10.0 miles of 36-inch

BENEFITS

Valley Water has a long-term agreement with Palo Alto to receive flows and is in discussions with Sunnyvale.

LIMITATIONS

Palo Alto RWQCP and Sunnyvale WPCP flows limit projected yield. Technical feasibility and costs to prepare Recycle Hill (a former landfill site next to Sunnyvale WPCP) for AWPF construction remain in question. Due to lack of available land, Recycle Hill is the site assumed for preliminary design purposes; costs reflect best available for site preparation. In addition, ROC management options are limited and less feasible compared to other reuse opportunities and AWPF locations.

**Capital cost is rounded to the nearest $5M, O&M cost is rounded to the nearest $100k, and lifecycle unit cost is rounded to the nearest $100. Capital, O&M, and unit costs assume the implementation of the ROC management strategy for an AWPF located in Sunnyvale as identified in the Evaluation of ROC Management Options Final Report. Unit costs reflect potential 2040 yield ranges.*

Both Portfolios 2a and 2b are estimated to produce up to 4.3 mgd of ROC.

The *Evaluation of ROC Management Options Final Report* prepared by GHD (Valley Water, 2020a) identified three options for managing ROC from the Palo Alto Regional AWPF, Portfolio 2a:

- PORTFOLIO 2a, ROC OPTION 1: Blending and discharge at the existing RWQCP outfall. This option involves constructing a ROC pump station and holding tank and 2.1 miles of 18-inch HDPE pipe from the AWPF to the existing outfall. Treatment processes for nutrients and CECs are also included in the ROC management cost estimate.
- PORTFOLIO 2a, ROC OPTION 2: Discharge at a new shallow outfall in San Francisco Bay. This option involves constructing a ROC pump station and holding tank, 2.8 miles of 18-inch HDPE pipe from the AWPF to the existing outfall, and 0.2 miles of 18-inch HDPE pipe from the existing outfall to a location under San Francisco Bay. Treatment processes for nutrients and CECs are also included in the ROC management cost estimate.
- PORTFOLIO 2a, ROC OPTION 3: Discharge at a deep-water outfall north of Dumbarton Bridge. This option involves constructing a ROC pump station and holding tank and 13.3 miles of 20-inch HDPE pipe from the AWPF to an existing deep-water outfall in Redwood City. Treatment processes for nutrients and CECs are also included in the ROC management cost estimate.

The ROC Management Options Final Report provides an analysis of various strategies at the Palo Alto AWPF without recommending a single option for implementation, thus allowing flexibility for continued discussions and negotiations among Valley Water, Partner Agencies, and Regional Boards. Capital and O&M costs shown in Tables 6-6 assume implementation of the most cost-effective strategy at the Palo Alto AWPF. Capital costs could increase (an addition of up to $60M) if implementing a higher cost strategy as evaluated in the final report of ROC management options.

The *Evaluation of ROC Management Options Final Report* prepared by GHD (Valley Water, 2020a) identified a single option for the Sunnyvale Regional AWPF, Portfolio 2b:

- PORTFOLIO 2b, ROC OPTION: Discharge at a new shallow outfall at Guadalupe Slough. Involves constructing a ROC pump station, holding tank, and 6.2 miles of 18-inch HDPE pipe from the AWPF to a new outfall discharge at Guadalupe Slough. ROC management cost estimate includes treatment processes for nutrients and CECs.

Figure 6-5. Facility locations and pipeline alignments for Portfolio 2a (combined regional AWPF in Palo Alto for GWR at LGRP)

Figure 6-6. Facility locations and pipeline alignments for Portfolio 2b (combined regional AWPF in Sunnyvale for GWR at LGRP)

6.2.3 Portfolio 4 – Separate Palo Alto and Sunnyvale AWPFs

Portfolio 4 is centered on using available effluent from the Palo Alto RWQCP and the Sunnyvale WPCP for GWR at the LGRP. In this portfolio, two AWPFs would be constructed to use available flow from each WWTP. The Sunnyvale AWPF would be located on Recycle Hill, and the Palo Alto facility would be on the former Los Altos Treatment Plant site located in Palo Alto. Key features and costs for Portfolio 4 are summarized in Table 6-8, while Figures 6-7 shows its respective facility locations and pipeline alignments.

Table 6-8. Portfolio 4 Key Features and Costs

Portfolio 4 Highlights:

2 AWPFs: 14 mgd in Palo Alto, 0.5 mgd in Sunnyvale

Use: GWR at LGRP

Total Capital Cost: $830M*

Total Annual O&M Cost: $21.8M*

Unit Cost, 30-Year Lifecycle: $3,100-$4,100/AF*

Unit Cost, 100-Year Lifecycle: $2,400-$3,200/AF*

Reuse Type & Delivery Point: GWR at LGRP

Projected 2040 Combined Yield: 17,000-23,000 AFY

Pipeline Length/Diameter: 13.7 miles of 48-inch; 11.6 miles of 36-inch

BENEFITS

Valley Water has a long-term agreement with Palo Alto. Having two AWPFs allows Valley Water to build one facility first and the other when needed.

LIMITATIONS

Palo Alto RWQCP and Sunnyvale WPCP flows limit projected yield. Constructing and operating two separate AWPFs is costly. Costs for acquiring AWPF site in Palo Alto are not included. Technical feasibility and costs to prepare Recycle Hill for AWPF construction remain in question. Due to lack of available land, Recycle Hill site is assumed for preliminary design; costs reflect best available for site preparation. ROC management options are limited at Sunnyvale.

**Capital cost is rounded to the nearest $5M, O&M cost is rounded to the nearest $100k, and lifecycle unit cost is rounded to the nearest $100. Capital and O&M costs assume the implementation of the most cost-effective ROC management strategy at the Palo Alto AWPF, based on the Evaluation of ROC Management Options Final Report (Valley Water, 2020a). Unit costs reflect ROC management and potential 2040 yield ranges.*

Portfolio 4 would produce up to 2.5 mgd of ROC from the Palo Alto AWPF. The same three ROC management options identified in Portfolio 2a also apply to a Palo Alto facility under Portfolio 4, though sizing is different (due to the smaller capacity AWPF in Portfolio 4). The key differences are summarized below.

- PORTFOLIO 4, PALO ALTO ROC OPTIONS 1 AND 2: Portfolio 2a ROC Options 1 and 2, except a smaller 14-inch (vs. 18-inch) HDPE pipe from the AWPF to the existing outfall.
- PORTFOLIO 4, PALO ALTO ROC OPTION 3: Portfolio 2a ROC Option 3, except a smaller 14-inch (vs. 20-inch) HDPE pipe from the AWPF to an existing deep-water outfall in Redwood City.

Similar to Portfolio 2a, the *Evaluation of ROC Management Options Final Report* prepared by GHD (Valley Water, 2020a) provides an analysis of various strategies at the Palo Alto AWPF without recommending a single option for implementation, thus allowing flexibility for continued discussions and negotiations among Valley Water, Partner Agencies, and Regional Boards. Capital and O&M costs shown in Tables 6-8 assume implementation of the most cost-effective strategy at the Palo Alto AWPF. Capital costs could increase (an addition of up to $40M) if implementing a higher cost strategy as evaluated in the final report of ROC management options.

Portfolio 4 would produce up to 1.8 mgd of ROC from the Sunnyvale AWPF. The *Evaluation of ROC Management Options Final Report* prepared by GHD (Valley Water, 2020a) identified a single option for managing ROC from the Sunnyvale facility:

- PORTFOLIO 4, SUNNYVALE ROC OPTION: Same as the Portfolio 2b ROC option, except a smaller 12-inch (vs. 18-inch) HDPE pipe from the AWPF to a new outfall discharge point at Guadalupe Slough.

Figure 6-7. Facility locations and pipeline alignments for Portfolio 4 (separate regional Palo Alto and Sunnyvale AWPFs for GWR at LGRP)

6.3 South County Reuse Options

To explore solutions for augmenting water supply in South County, the Project Team reviewed previous reuse studies and plans before developing new conceptual alternatives for consideration. Though the 2015 South County Recycled Water Master Plan (RWMP) (SCRWA, 2016) evaluated reuse alternatives in both Gilroy and Morgan Hill, the recommendations focused on expanding NPR distribution in Gilroy, since the substantial energy and infrastructure required to convey recycled water north from the SCRWA WWTP to Morgan Hill would be less cost-effective. Recycled water service at the SCRWA facility is already challenged in meeting existing maximum day NPR demand in Gilroy (5.2 mgd in 2014), using most of the average dry weather influent flow (6.0 mgd in 2014); storage and pumping are needed to manage daily and diurnal variations in flow to meet NPR demand.

SCRWA, Morgan Hill, Gilroy, Valley Water, and the Project Team met (in person and via phone) to explore South County reuse project concepts and collaboratively developed a list of potential opportunities, as summarized in Table 6-9. From this list, SCRWA, Morgan Hill, and Gilroy staff agreed to focus the CoRe Plan efforts for South County on improving overall water supply reliability in Morgan Hill and selected three opportunities, referred to as Morgan Hill Options 1, 2, and 3.

Table 6-9. Potential Future South County Reuse Opportunities

Reuse Type	Source Flow	Delivery Point	Summary	Capital Cost ($2019 in millions)
NPR	SCRWA	New Morgan Hill NPR distribution system	Per the 2015 South County RWMP, extend pipeline parallel to existing joint sewer trunk line to convey recycled water from SCRWA in Gilroy to Morgan Hill	$60 [a]
NPR+	SBWR	New Morgan Hill NPR distribution system	Extend Silver Creek Pipeline from Metcalf Energy Center to customers in Morgan Hill; includes a 6-mile pipeline extension and serving peak demands up to 5 mgd for an estimated annualized NPR demand of 2,900 AFY **Referred to as Morgan Hill OPTION 1**	$70 [b]
GWR	Morgan Hill satellite WWTP and AWPF	San Pedro Ponds (assumed location for design and costs)	Recharge Llagas Subbasin using purified water from a satellite WWTP and AWPF in Morgan Hill (flow diverted from the SCRWA trunk line) **Referred to as Morgan Hill OPTION 2**	$130 [b]
SWA	Morgan Hill satellite WWTP and AWPF	Anderson Reservoir	Augment Anderson Reservoir using purified water from a satellite WWTP and AWPF in Morgan Hill, pumping to the reservoir for blending and dilution, and subsequently treating at Santa Teresa and/or Rinconada WTPs. In exchange, Valley Water would recharge Llagas Subbasin with equal volume of raw water from Santa Clara Conduit **Referred to as Morgan Hill OPTION 3**	$150 [b]
SWA	SCRWA and Gilroy AWPF	Coyote Reservoir	Augment Coyote Reservoir using purified water from an AWPF at SCRWA (Gilroy), pumping to the reservoir for blending and dilution, and subsequently treating at Santa Teresa and/or Rinconada WTPs. In exchange, Valley Water would recharge Llagas Subbasin with equal volume of raw water from Santa Clara Conduit	-- [c]
RWA	SCRWA and Gilroy AWPF	Pacheco Conduit	Pump purified water from an AWPF at SCRWA (Gilroy) to Pacheco Conduit for RWA at Santa Teresa and/or Rinconada WTPs. In exchange, Valley Water would recharge Llagas Subbasin with equal volume of raw water from Santa Clara Conduit	-- [c]
TWA	Morgan Hill satellite WWTP and AWPF	Morgan Hill potable distribution system	Deliver purified water from a satellite WWTP and AWPF in Morgan Hill to engineered storage, then into Morgan Hill's potable water distribution system	-- [c]
TWA	SCRWA and Gilroy AWPF	Gilroy potable distribution system	Deliver purified water from an AWPF at SCRWA to engineered storage, then into Gilroy's potable water distribution system	-- [c]

a. Costs from SCRWA (2016) escalated to 2019 dollars.
b. See Appendix A-6: Cost Estimates for cost details.
c. Not available

Morgan Hill reuse options were developed to the same level of detail as North County portfolios, including preliminary designs and AACE Class 5 cost estimates, as summarized in Table 6-10. Valley Water's ROC Management Project Team reported that the only option available for managing ROC from a Morgan Hill or Gilroy-based AWPF is construction of lined evaporation ponds of about 80 to 100 acres in size at a location not yet identified but assumed to be near the SCRWA WWTP for the purpose of preliminary design and costs.

Table 6-10. Morgan Hill Reuse Options 1, 2, and 3 Key Features and Costs

Morgan Hill Option 1 Highlights: 6-mile Silver Creek Pipeline extension (16-inch diameter, 5 mgd capacity) Location: SBWR system connection (to north) and new recycled water system in Morgan Hill (to south) Use: NPR+	**Total Capital Cost:** $70M* **Total Annual O&M Cost:** $2.6M* **Unit Cost, 30-Year Lifecycle:** $2,200/AF* **Unit Cost, 100-Year Lifecycle:** $1,700/AF* **Projected 2040 Yield:** 2,900 AFY **RWS Distribution Pipeline:** 16.4 miles, 16-inch diameter	**BENEFITS** This option would improve water supply reliability for Morgan Hill by importing NPR+ supply from SBWR to serve non-potable demands in place of groundwater, which is currently Morgan Hill's sole water source. Option 1 could be combined with either Option 2 or 3 or Portfolios 2a, 2b, or 4. **LIMITATIONS** An agreement to establish terms of exporting SBWR NPR+ supply from San José and neighboring areas to Morgan Hill would be needed, as the existing Silver Creek Agreement between Valley Water and San José expires in 2027. Long-term supply reliability is unconfirmed. Operational impacts to the SBWR system have not been evaluated, and a new reservoir may be needed to supply reliable summertime flows. Further evaluation is needed to confirm feasibility of implementing Option 1 and variations of Portfolio 1, as they rely on the same source. Valley Water may need to revisit and update the 2011 Recycled Water Irrigation and Groundwater Study to reassess potential impacts of recycled water on the Llagas Subbasin prior to moving forward.
Morgan Hill Option 2 Highlights: 2.5 mgd satellite WWTP and 2.1 mgd AWPF Location: Morgan Hill Use: GWR (delivery point to be confirmed; San Pedro Ponds assumed for preliminary design)	**Total Capital Cost:** $125M* **Total Annual O&M Cost:** $6.8M* **Unit Cost, 30-Year Lifecycle:** $7,200/AF* **Unit Cost, 100-Year Lifecycle:** $6,000/AF* **Projected 2040 Yield:** 1,900 AFY **Conveyance Pipeline:** 2.8 miles, 16-inch diameter	**BENEFITS** This option would improve water supply reliability and drought resilience for Morgan Hill by recharging the Llagas Subbasin with purified water. Option 2 could be combined with either Option 1 or Portfolios 1a, 1b, 1c, 1d, 2a, 2b or 4. **LIMITATIONS** High unit costs with uncertain value to improving South County water supply reliability. Limited wastewater available for satellite treatment in Morgan Hill and relied upon for meeting existing South County RWS demands. Morgan Hill satellite facility would increase solids loads to SCRWA, posing operational issues that may be substantial. If implemented in Morgan Hill, solids handling requires further study and may increase costs significantly. Density and proximity of active private wells limit GWR locations in South County. San Pedro Ponds assumed for delivery point; further evaluation needed to confirm viability of that location and/or alternative delivery points. Conditions and reliability of increasing raw water delivery to Llagas Subbasin need to be confirmed. New permits from Regional Board(s) or DDW may be required for discharging purified water to Anderson Reservoir. As in Option 2, a suitable recharge location is needed. Assumed location of lined evaporation pond in Gilroy for ROC management gets inundated with stormwater (unsuitable for evaporation pond); permitting may be challenging given potential environmental impacts. Option 2 and 3 are mutually exclusive, as they rely on the same supply source.

**Capital cost is rounded to the nearest $5M, O&M cost is rounded to the nearest $100k, and lifecycle unit cost is rounded to the nearest $100.*

**Capital cost is rounded to the nearest $5M, O&M cost is rounded to the nearest $100k, and lifecycle unit cost is rounded to the nearest $100. All costs shown here assume the implementation of the ROC management strategy for a Morgan Hill AWPF as identified in the Evaluation of ROC Management Options Final Report prepared by GHD (Valley Water, 2020a).*

Morgan Hill Option 3 Highlights:

2.5 mgd satellite WWTP and AWPF

Location: Morgan Hill

Use: SWA at Anderson Reservoir

Total Capital Cost: $145M*

Total Annual O&M Cost: $7.3M*

Unit Cost, 30-Year Lifecycle: $8,000/AF*

Unit Cost, 100-Year Lifecycle: $6,600/AF*

Projected 2040 Yield: 1,900 AFY

Conveyance Pipeline: 5.6 miles, 16-inch diameter

BENEFITS

This option would improve water supply reliability and drought resilience for Morgan Hill by recharging the Llagas Subbasin with raw water supplied from Valley Water via the Santa Clara Conduit in exchange for an equivalent amount of purified water delivered to Anderson Reservoir for SWA. Option 3 could be combined with either Option 1 or Portfolios 1a, 1b, 1c, 1d, 2a, 2b or 4.

LIMITATIONS

High unit costs with uncertain value to improving South County water supply reliability. Limited wastewater available for satellite treatment in Morgan Hill and relied upon for meeting existing South County RWS demands. Morgan Hill satellite facility would increase solids loads to SCRWA, posing operational issues that may be substantial. If implemented in Morgan Hill, solids handling requires further study and may increase costs significantly. The conditions and reliability of increasing raw water delivery to Llagas Subbasin need to be confirmed. New permits from Regional Board(s) or DDW may be required for discharging purified water to Anderson Reservoir. As in Option 2, a suitable recharge location is needed. Assumed location of lined evaporation pond in Gilroy for ROC management gets inundated with stormwater (unsuitable for evaporation pond); permitting may be challenging given potential environmental impacts. Option 2 and 3 are mutually exclusive, as they rely on the same supply source.

**Capital cost is rounded to the nearest $5M, O&M cost is rounded to the nearest $100k, and lifecycle unit cost is rounded to the nearest $100. All costs shown here assume the implementation of the ROC management strategy for a Morgan Hill AWPF as identified in the Evaluation of ROC Management Options Final Report prepared by GHD (Valley Water, 2020a).*

The Morgan Hill satellite AWPF is estimated to produce up to 0.4 mgd of ROC. The *Evaluation of ROC Management Options Final Report* prepared by GHD (Valley Water, 2020a) identified one option for managing ROC from this facility:

- MORGAN HILL AWPF, ROC OPTION: Discharge to a lined evaporation pond of about 80 to 100 acres. Due to the area of land required for this approach and lack of adequately-sized plots in Morgan Hill, Valley Water's ROC Management Team assumed this approach would require pumping ROC and conveying through 11.1-miles of HDPE pipeline of 8-inch diameter to a SCRWA-owned plot of land near the WWTP in Gilroy.

The Draft Final CoRe Plan uses this ROC management approach for the preliminary design and cost estimate related to the Morgan Hill satellite AWPF. However, the viability of the assumed location for the evaporation pond remains in question.

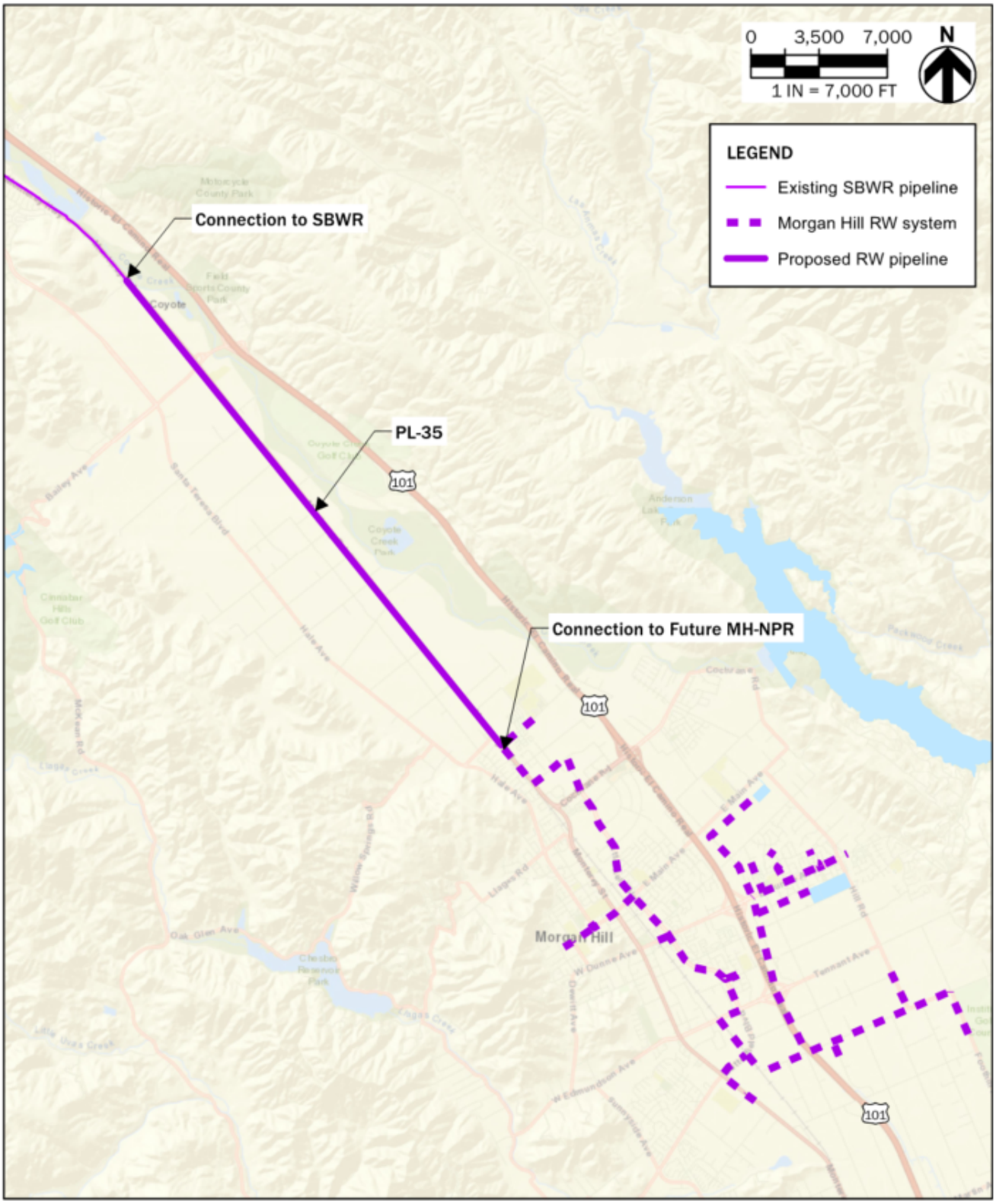


Figure 6-8. Facility locations and pipeline alignments for Morgan Hill Option 1 (NPR+ from SBWR)

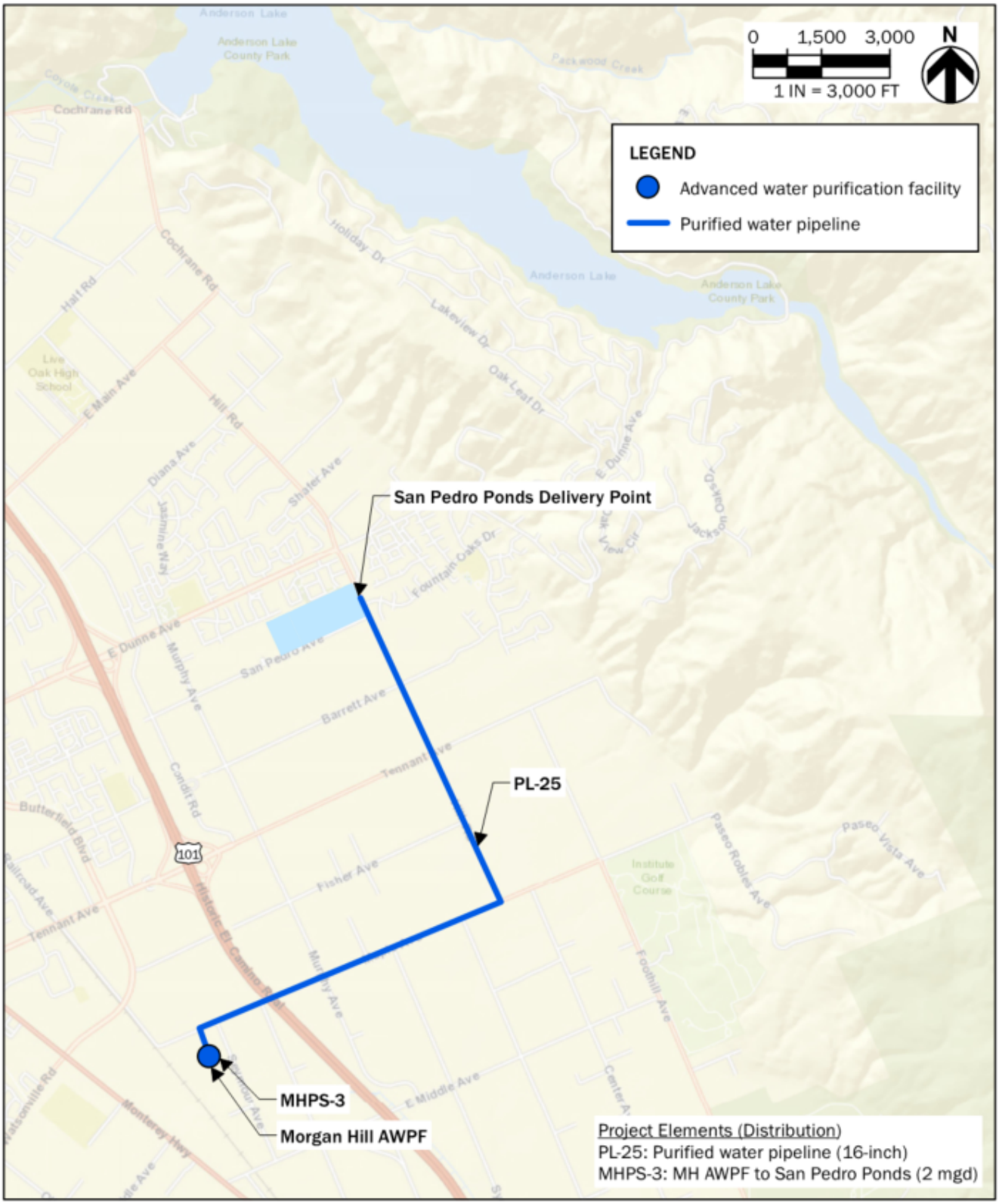


Figure 6-9. Facility locations and pipeline alignments for Morgan Hill Option 2 (Morgan Hill satellite AWPF, GWR at San Pedro Ponds)

Note: The San Pedro Ponds delivery point is assumed for preliminary design; further evaluation is needed to determine feasibility.

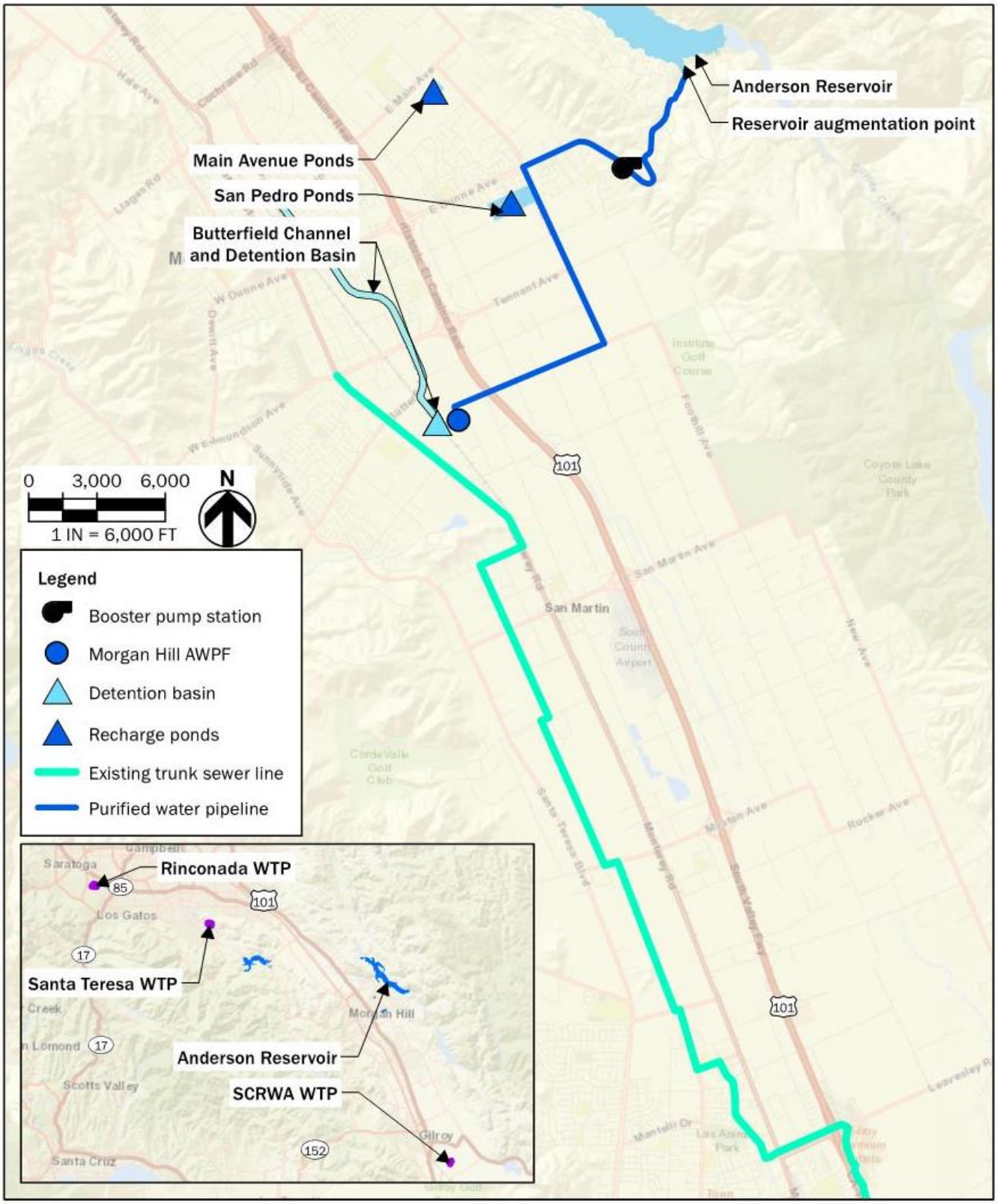


Figure 6-10. Facility locations and pipeline alignments for Morgan Hill Option 3 (Morgan Hill satellite AWPF, SWA at Anderson Reservoir)

6.4 At-a-Glance Comparison of Portfolios/Options and Cost Estimates

To compare North County portfolios and South County options to one another, Figure 6-11 visually depicts the range of estimated unit costs based on 30-year and 100-year life-cycle.

The ranges of unit costs reflect the following factors.

1. Source water availability, which influences purified water production, AWPF efficiency, and total yield for potable reuse
2. ROC management strategy selected for implementation for portfolios that consider an AWPF in San José or Palo Alto
3. Level of accuracy associated with Class 5 cost estimates, which ranges from -50 percent to +100 percent

As described in Sections 7 and 8, many opportunities exist for repackaging parts of the portfolios with one another, adding/removing specific elements, changing assumed alignments, and/or optimizing the design capacity of treatment facilities and conveyance infrastructure to accommodate a lower demand. Some of these actions could increase costs, while others are anticipated to result in significant cost savings. In addition, the unit costs shown in Figure 6-11 and summarized in Table 6-11 reflect project costs without considering external funding, which are not necessarily the costs to Valley Water. Thus, comparison of these unit costs to those of other supplies may be misleading at this stage.

Several conclusions based on observed trends in the cost comparison include the following.

North County

For similar production capacities, capital cost estimates are lower for DPR than IPR, as shown in Figure 6-12.

- All four variations of Portfolio 1 (San José AWPF) are estimated at lower capital costs than Portfolios 2 and 4 (Palo Alto and/or Sunnyvale AWPFs).
- Of the four Portfolio 1 variations, estimated capital costs are lowest for TWA options (Portfolios 1c and 1d); RWA and GWR are similar, though RWA appears less costly in comparison.
- Portfolios 2 and 4, both variations of Portfolio 2 (the combined regional AWPF located in Palo Alto [2a] or Sunnyvale [2b]) have lower estimated capital costs compared to two separate AWPFs in Palo Alto and Sunnyvale (Portfolio 4).

GWR (Portfolios 1a, 2a, 2b, and 4) are estimated to have lower annual operations and maintenance (O&M) costs compared to DPR (Portfolios 1b, 1c, and 1d), as shown in Figure 6-13.

South County

Morgan Hill Option 1, NPR+ from SBWR, is estimated to have lower capital and annual O&M compared to the IPR options. Options 2 and 3 are estimated at similar costs for both capital and annual O&M.

Estimated Ranges of Unit Costs

As defined by AACE International for Class 5 level of project definition, the cost estimating accuracy ranges from -50% to +100%, as shown in Figure 6-11 for 30-year and 100-year life-cycles.

Any modifications or optimizations of these estimated life-cycle costs can either increase or reduce costs. Therefore, these cost estimates are susceptible to change.

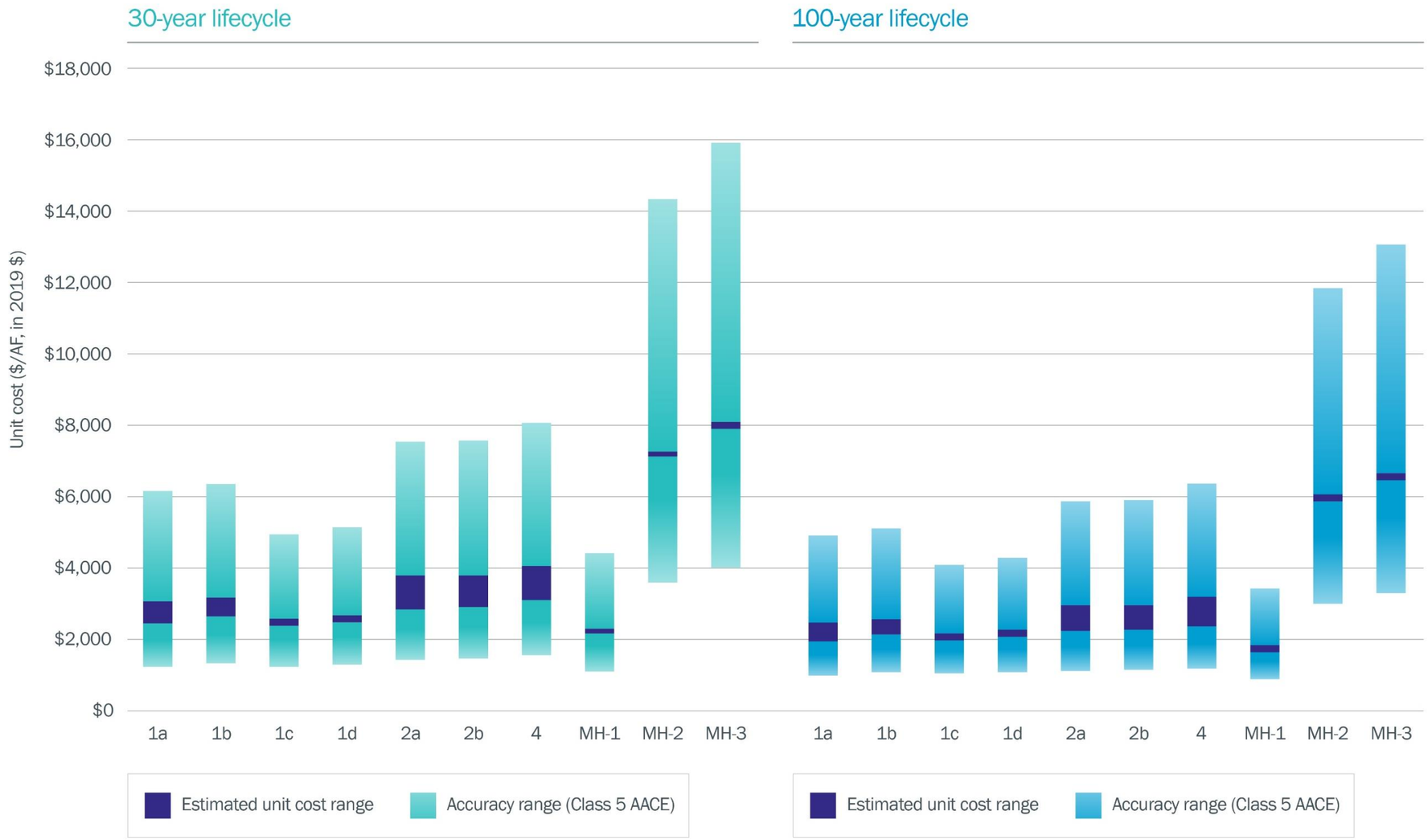


Figure 6-11. Ranges of estimated unit costs (30-year [left] and 100-year [right] life-cycles) with AACE Class 5 level of accuracy

Note: Unit costs as presented do not consider potential external funding and are not necessarily the costs to Valley Water. Thus, comparison of these unit costs to other supplies may be misleading at this stage.

Estimated Ranges of Capital Costs

As defined by AACE International for Class 5 level of project definition, the cost estimating accuracy ranges from -50% to +100%, as shown in Figure 6-12 capital costs.

Any modifications or optimizations of these estimated life-cycle costs can either increase or reduce costs. Therefore, these cost estimates are susceptible to change.

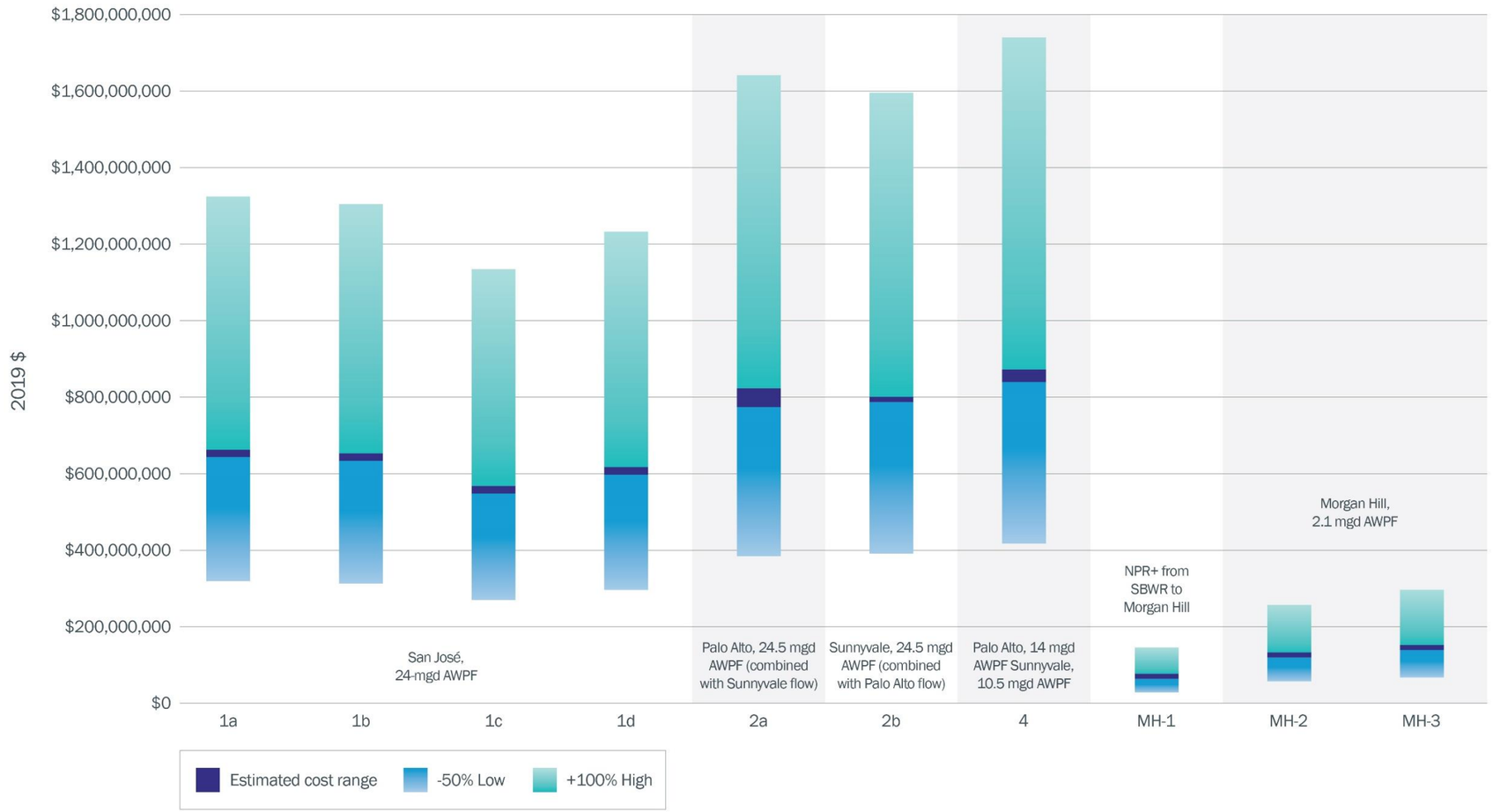


Figure 6-12. Ranges of estimated capital costs with AACE Class 5 level of accuracy

Note: As presented, capital costs do not reflect potential external funding and are not necessarily the costs to Valley Water.

Estimated Ranges of Annual O&M Costs

As defined by AACE International for Class 5 level of project definition, the cost estimating accuracy ranges from -50% to +100%, as shown in Figure 6-13 O&M costs.

Any modifications or optimizations of these estimated life-cycle costs can either increase or reduce costs. Therefore, these cost estimates are susceptible to change.

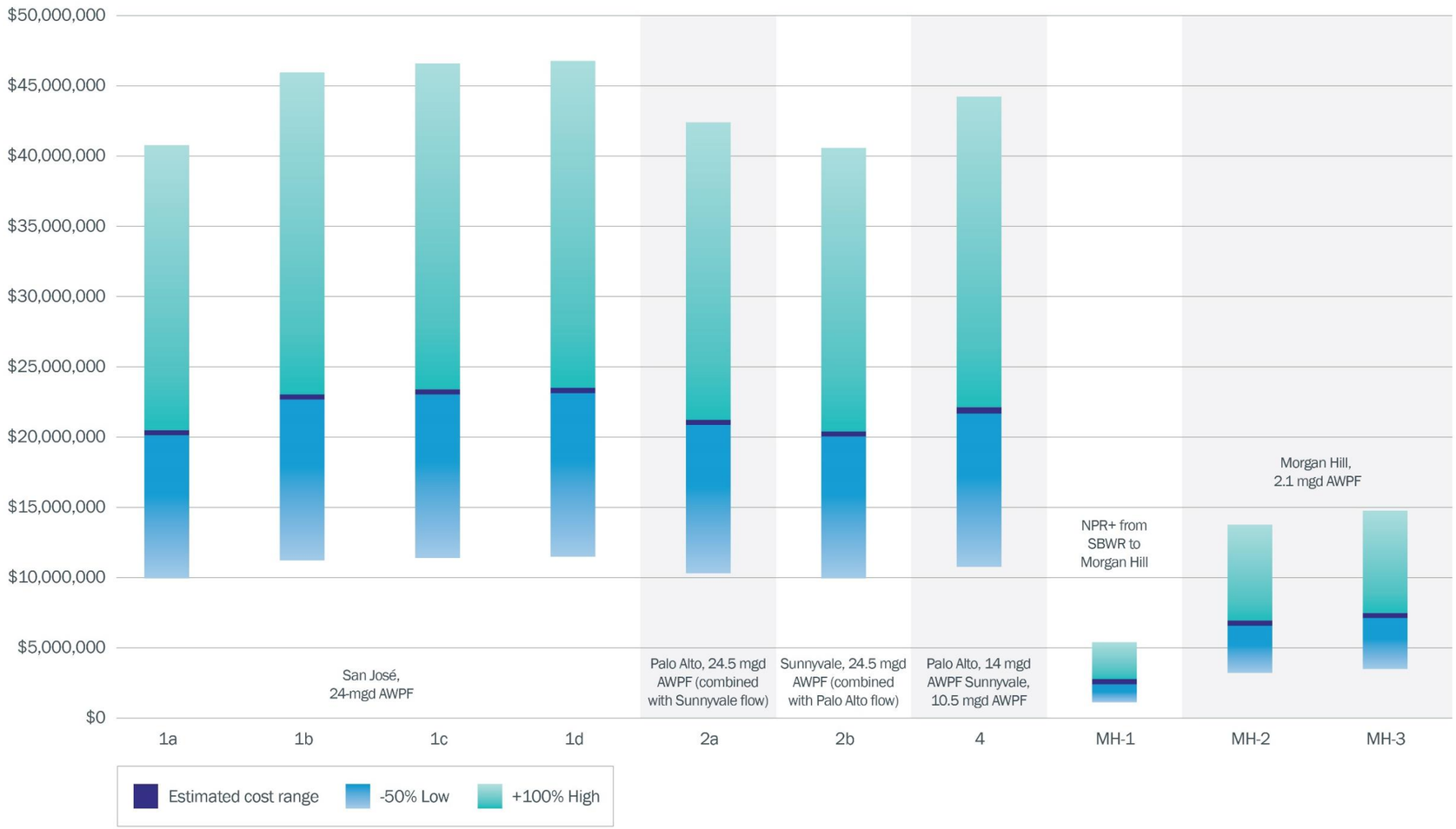


Figure 6-13. Ranges of estimated annual O&M costs with AACE Class 5 level of accuracy

Note: As presented, capital costs do not reflect potential external funding and are not necessarily the costs to Valley Water.

Table 6-11. Summary of North County Project Portfolios and South County Reuse Options

Portfolio 1 **San José AWPF**	Variation	**Portfolio 1a** Delivers **19,000**-24,000 **AFY** to LGRP for GWR	**Portfolio 1b** Delivers **19,800**-24,000 **AFY** to the SBA terminal tank upstream of Penitencia WTP for RWA	**Portfolio 1c** Delivers **24,000 AFY** total for TWA, including up to 4 mgd directly to Santa Clara and San José (north of Highway 101) and up to 20 mgd to Valley Water's retailers serving purified water to several turnouts as the water flows south through the existing Milpitas Pipeline before reaching Piedmont Valve Yard (i.e., a blending location near Penitencia WTP) and delivery via East Pipeline	**Portfolio 1d** Delivers **24,000 AFY** total for TWA, including up to 4 mgd directly to Santa Clara and San José (north of Highway 101) and up to 20 mgd to Valley Water's retailers through a dedicated purified water pipeline to Piedmont Valve Yard (i.e., a blending location near Penitencia WTP) for delivery via Milpitas Pipeline and East Pipeline
	ROC Management Strategy	Discharge ROC to a new outfall near existing outfall under a separate NPDES permit	Discharge ROC to a new outfall near existing outfall under a separate NPDES permit	Discharge ROC to a new outfall near existing outfall under a separate NPDES permit	Discharge ROC to a new outfall near existing outfall under a separate NPDES permit
	Estimated Costs – Total Capital	$630M (+$20M assumed for ROC)	$620M (+$20M assumed for ROC)	$535M (+$20M assumed for ROC)	$585M (+$20M assumed for ROC)
	Estimated Costs – Annual O&M	$18.5M (+$1.8M assumed for ROC)	$21.1M (+$1.8M assumed for ROC)	$21.4M (+$1.8M assumed for ROC)	$21.5M (+$1.8M assumed for ROC)
	Estimated Costs – 30-year Unit Basis	$2,500-**$3,100/AF**	$2,700-**$3,200/AF**	**$2,500/AF**	**$2,600/AF**
	Estimated Costs – 100-year Unit Basis	$2,000 -**$2,500/AF**	$2,200-**$2,600/AF**	**$2,100/AF**	**$2,200/AF**
Portfolio 2 **Combined Palo Alto and Sunnyvale Regional AWPF**	Variation	**Portfolio 2a** Combines source flow at a regional AWPF in Palo Alto and delivers **17,000**-23,000 **AFY** to LGRP for GWR	**Portfolio 2b** Combines source flow at a regional AWPF in Sunnyvale and delivers **17,000**-23,000 **AFY** to LGRP for GWR		
	ROC Management Strategy	Blend ROC with residual final effluent; discharge at existing outfall	Discharge ROC at a new shallow-water outfall at Guadalupe Slough for enhanced mixing.		
	Estimated Costs – Total Capital	$745M (+$35M assumed for ROC)	$755M (+$40M assumed for ROC)		
	Estimated Costs – Annual O&M	$19.4M (+$1.6M assumed for ROC)	$18.6M (+$1.6M assumed for ROC)		
	Estimated Costs – 30-year Unit Basis	$2,900-**$3,900/AF**	$2,900-**$3,800/AF**		
	Estimated Costs – 100-year Unit Basis	$2,300-**$3,000/AF**	$2,300-**$3,000/AF**		
Portfolio 4 **Separate Palo Alto and Sunnyvale Regional AWPFs**		**Portfolio 4** Treats source flow at two separate AWPFs and delivers a combined **17,000**-23,000 **AFY** to LGRP for GWR			
	Separate Facility	Palo Alto AWPF	Sunnyvale AWPF		
	ROC Management Strategy	Blend ROC with residual final effluent; discharge at existing outfall	Discharge ROC at a new shallow water outfall at Guadalupe Slough for enhanced mixing		
	Estimated Costs – Total Capital	$785M (+$45M assumed for ROC)			
	Estimated Costs – Annual O&M	$20.2M (+$1.6M assumed for ROC)			
	Estimated Costs – 30-year Unit Basis	$3,100-**$4,100/AF**			
	Estimated Costs – 100-year Unit Basis	$2,400-**$3,200/AF**			
Morgan Hill Reuse Options	Variation	**Option 1** Delivers **2,900 AFY** of NPR+ from SBWR to a new Morgan Hill recycled water system	**Option 2** Delivers **1,900 AFY** from a Morgan Hill satellite WWTP and AWPF to San Pedro Ponds for GWR (note: delivery point requires further evaluation; San Pedro Ponds assumed for preliminary design)	**Option 3** Delivers **1,900 AFY** from a Morgan Hill satellite WWTP and AWPF to Anderson Reservoir for SWA	
	ROC Management Strategy	Not applicable	Lined evaporation ponds	Lined evaporation ponds	
	Estimated Costs – Total Capital	$70M	$75M (+$50M assumed for ROC)	$95M (+$50M assumed for ROC)	
	Estimated Costs – Annual O&M	$2.6M	$6.7M (+$0.1M assumed for ROC)	$7.2M (+$0.1M assumed for ROC)	
	Estimated Costs – 30-year Unit Basis	**$2,200/AF**	**$7,200/AF**	**$8,000/AF**	
	Estimated Costs – 100-year Unit Basis	**$1,700/AF**	**$6,000/AF**	**$6,600/AF**	

6.5 Evaluation and Risk

The Project Team created two tools to compare portfolios: an evaluation tool and a risk tool. The evaluation tool compares portfolios relative to one another based on prioritization criteria identified by Valley Water and its Partner Agencies. Risks for each portfolio are assessed separately from the overall evaluation to provide a focused review of aspects that may disrupt, delay, or halt projects. The risk tool supports an assessment of portfolios considering likelihood and consequence of each risk. The tool returns a calculated composite risk score for each portfolio. ***Appendix A-7*** (Evaluation and Risk Tool) provides detailed descriptions of the approaches for developing and using the tools to compare portfolios, and brief summaries follow below.

6.5.1 Evaluation Tool

In October 2018, Valley Water and its Partner Agencies reached collective agreement on five evaluation criteria representing program goals. Each criterion contains one or more sub-criteria, for a total of 19 sub-criteria that further define each and serve to differentiate between portfolios. Several program goals important to Valley Water and its Partner Agencies are not reflected in the criteria and sub-criteria because the evaluation tool focuses on sub-criteria that distinguish between portfolios and set them apart from one another. All portfolios protect groundwater and surface water quality, as required by Valley Water.

Criteria and sub-criteria are presented in Table 6-12. As conditions change and new information becomes available, it is anticipated that portfolios will perform differently with respect to the criteria and sub-criteria, and results of the tool will change.

Table 6-12. Criteria and Sub-criteria Built into the CoRe Evaluation Tool

Criteria	Sub-Criteria (used to further define and score criteria)
Economics	Estimated life-cycle costs: 30-year
Countywide (regional) supply reliability	Projected 2040 PR annual purified water production Purified water delivery point utilization Local reuse benefit – retains reuse supply in same sewer service area
Environmental impacts/benefits and sustainability	Minimizing carbon footprint (evaluated using energy use as a surrogate for carbon emissions) Environmental and social justice Equity in supply benefits (with respect to water rights)
Ease of implementation and regulatory compliance	Partnerships/collaboration Public health regulatory considerations Environmental compliance regulatory considerations Design readiness Anticipated permit requirements Public acceptance/support
Engineering feasibility	Need for pilot study (treatment technology proven at full scale) Pipeline construction Land acquisition / ownership Site preparation requirements Ease of operation

To demonstrate the evaluation tool's functionality, the Project Team used a variety of weighting scenarios in the tool to change the relative importance of criteria and sub-criteria in scoring the North County portfolios and South County options. ***Appendix A-7*** includes scenario outcomes. For all four weighting scenarios explored by the Project Team, Portfolio 1a outperforms other North County portfolios, and Morgan Hill Option 1 outperforms other South County options.

6.5.2 Risk Tool

The Project Team identified risks within seven categories through input from water reuse subject matter experts, water industry guidance (such as Water Research Foundation's Reference Manual 4715; Water Research Foundation, 2019), and risks discussed during meetings between Valley Water and Partner Agencies. The Project Team qualitatively analyzed risks related to each portfolio/option considering the likelihood and consequence(s) of a particular risk occurring and mitigation strategies that could eliminate the risk or reduce its impact.

Example results from the risk assessment tool for North County portfolios and South County options are presented in Figure 6-14 and ***Appendix A-7.*** In this example, Portfolios 1a and 2a and Morgan Hill Option 1 return the lowest composite risk scores based on the Project Team's input for each of seven risk categories.

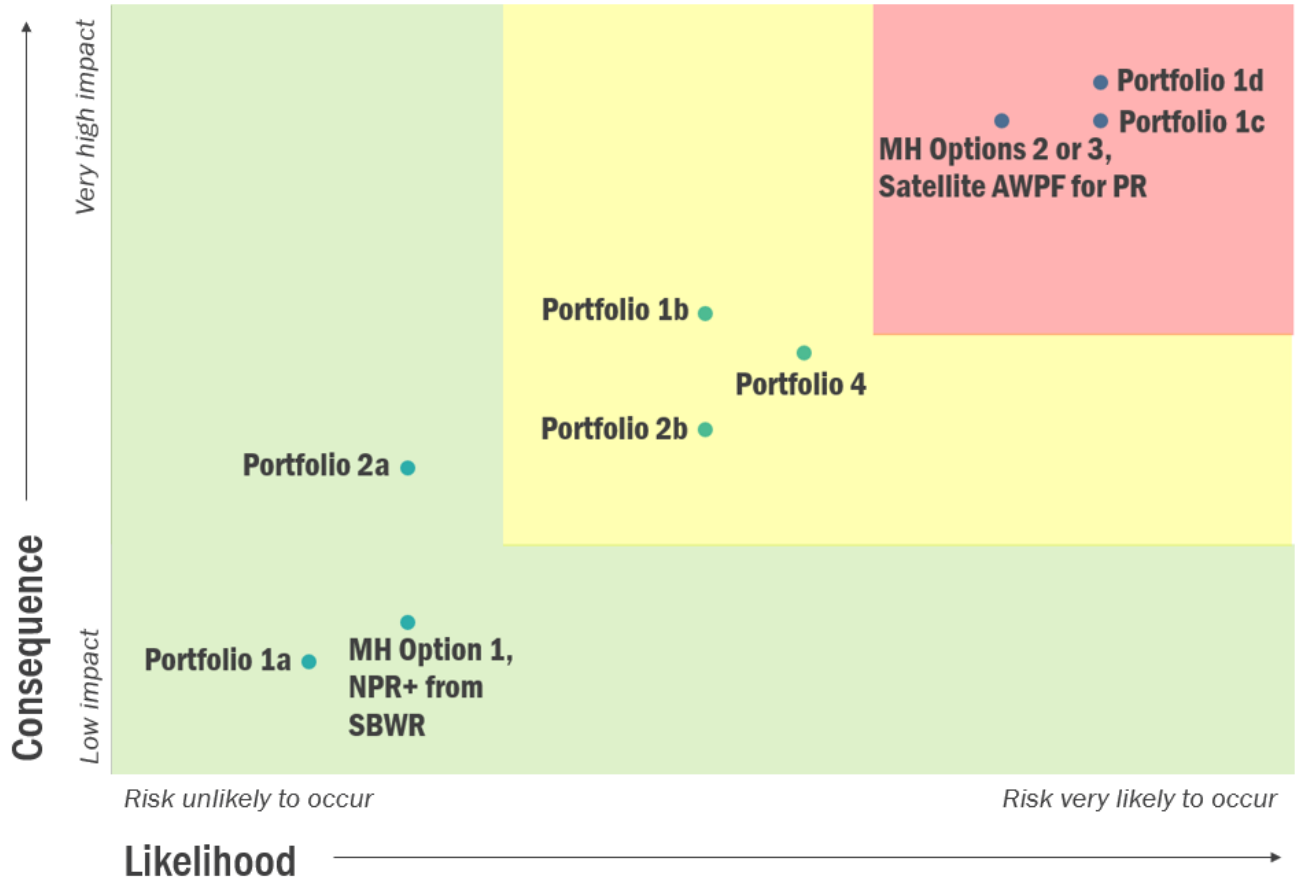


Figure 6-14. Example results of risk assessment tool results to compare CoRe portfolios and options

6.5.3 ROC Management Strategies Evaluation

GHD evaluated various ROC management strategies in terms of their ability to comply with the SFB Basin Plan and CTR, as documented in detail within the *Evaluation of ROC Management Options Final Report* (Valley Water, 2020a). To distill the outcomes of the evaluation, Table 6-13 summarizes benefits and challenges related to the strategies GHD evaluated and includes recommended next steps for Valley Water to consider during future phases of project selection and implementation.

Table 6-13. Overview of ROC Management Strategies Evaluation Prepared by GHD (Valley Water, 2020a)

ROC Management Strategy	Applicable AWPF Location	Benefits	Challenges	Recommended Next Steps
1. Existing Outfall & IAP Recommendation Use existing outfall and rely on blending with current discharge	San José (Portfolios 1a-1d)	• Anticipated compliance with applicable discharge requirements, based on GHD's analysis • Anticipated to meet target AWPF production capacity, based on GHD's analysis • Likely feasible to permit by 2028 due to avoidance of developing a new outfall	• Involves securing a new permit that requires coordination between Valley Water and San José • Requires inter-agency agreements to commingle discharge flows	• Further discuss regulatory approach with Regional Board and other agencies with jurisdiction • Obtain inter-agency agreements to define roles and responsibilities for permit compliance
	Palo Alto (Portfolios 2a and 4) Sunnyvale (Portfolios 2b and 4)	• Anticipated compliance with applicable discharge requirements, based on GHD's analysis, so long as AWPF production rate is lowered to ensure sufficient blending • Likely feasible to permit by 2028 due to avoidance of developing a new outfall	• Uncertainty regarding the willingness of the Regional Board to consider alternative compliance assessments such as mass-loading based objectives • Limited recycled water capacity due to minimum discharge needed for dilution; capacity ranges depending on assumptions, shown below as a percent of target capacity Palo Alto AWPF – Portfolio 2a: 46-82% and Portfolio 4: 27-68% Sunnyvale AWPF – Portfolio 2b: 3-51% and Portfolio 4: 52-88% • Involves securing a new permit that requires coordination between Valley Water and Palo Alto and/or Sunnyvale • Requires inter-agency agreements to commingle discharge flows	• Further discuss regulatory approach with Regional Board and other agencies with jurisdiction and determine whether alternative limits such as mass-based requirements could be applied • Obtain inter-agency agreements to define roles and responsibilities for permit compliance
2. New Outfall Blending at a new outfall near an existing outfall	San José (Portfolios 1a-1d)	• Anticipated compliance with applicable discharge requirements, based on GHD's assumptions • Anticipated to meet target AWPF production capacity, based on GHD's analysis	• Dilution with San José discharge in the environment (rather than prior to discharge) may limit ability to receive dilution credit • Uncertainty in feasibility of implementing by 2028, given a new outfall is subject to environmental regulatory requirements (endangered species present • Involves securing a new permit that requires coordination between Valley Water and San José	• Further discuss regulatory approach with Regional Board and other agencies with jurisdiction • Evaluate schedule requirements for implementing a new outfall • Obtain inter-agency agreements to define roles and responsibilities for permit compliance
3. New Outfall with Enhanced Mixing Discharge at a new enhanced mixing outfall	San José (Portfolios 1a-1d) Palo Alto (Portfolios 2a and 4) Sunnyvale (Portfolios 2b and 4)	• Offers potential for more dilution credit compared to using the existing outfall or a new shallow outfall • Anticipated to meet target AWPF production capacity, based on GHD's analysis • May not require coordination with the Project Partner to obtain an NPDES Permit	• Uncertainty in feasibility of implementing by 2028, given a new outfall is subject to environmental regulatory requirements (endangered species present) • Unconfirmed (and not guaranteed) amount of dilution achieved by a new outfall • Permitting uncertainty, considering development of an outfall extension at Palo Alto was not permitted in the 1980s	• Continue to assess potential dilution credit that could be achieved depending on outfall design • Further discuss regulatory approach with Regional Board and other agencies with jurisdiction • Evaluate schedule requirements for implementing a new outfall
4. Deep Water Discharge Outfall Discharge at an existing deep-water outfall (Silicon Valley Clean Water)	Palo Alto (Portfolios 2a and 4)	• Offers potential for more dilution credit compared to using an existing outfall • Based on GHD's analysis, meets target AWPF production capacity	• Unknown capacity of the outfall requires verification • Involves securing a new permit that requires coordination between Valley Water, Silicon Valley Clean Water, and Palo Alto	• Verify capacity and dilution of the existing deep-water outfall • Evaluate schedule requirements for connecting to the existing outfall • Obtain inter-agency agreements to define roles and responsibilities for permit compliance
5. Evaporation Pond Discharge into a lined evaporation pond (in Morgan Hill)	Morgan Hill (South County Options 2 and 3)	• Provides a potential option for disposing ROC produced in Morgan Hill (far from the SF Bay) • Other site-specific benefits may arise after identifying a feasible location	• Requires Valley Water to acquire a significant amount of land • Other site-specific challenges may arise after identifying a suitable location	• Identify a suitable location for the evaporation ponds • Further discuss regulatory approach with Regional Board and other agencies with jurisdiction • Evaluate schedule requirements for connecting to the existing outfall

Section 7:

Potential Future Opportunities and Alternative Elements

The CoRe Plan considers a wide range of reuse scenarios, giving way to a spectrum of applicable regulatory and permitting requirements. In general, regulations for water reuse fall into two categories: public health protection and environmental discharge protection.

7.1.1 NPR/NPR+ Expansion (Featured in All Portfolios)

Several Partner Agencies are evaluating potential projects to expand existing recycled water systems. Figure 7-1 shows the locations of NPR and NPR+ expansion projects as identified in existing recycled water master plans6. Section 2.3 of ***Appendix A-1*** presents a summary of the capital costs and potential demand for NPR and NPR+ projects that have been previously studied by retailers in their respective recycled water master plans. Projects in the figure do not necessarily reflect full potential buildout conditions for each Partner Agency. If demands for new potential NPR/NPR+ projects as listed in existing recycled water master plans were summed with existing NPR demands throughout the County, the resulting demand projections exceed those identified summarized in 2015 UWMPs. The feasibility and cost-effectiveness of projects are not necessarily confirmed. Further, some projects included in recycled water master plans do not account for full costs, such as retrofits and treatment to improve NPR quality. These factors may contribute to the discrepancy.

Use of recycled water can be a logical, cost-effective water management strategy, depending on site-specific, case-specific circumstances. Many variables play a role in that determination, including the need for supplemental water supply of a certain quality, within an established timeframe, and during specific conditions.

[6] Sunnyvale is not currently funding expansion of its recycled water system. Potential NPR/NPR+ expansion projects listed in this report are based on the City of Sunnyvale's 2013 Feasibility Study for Recycled Water Expansion.

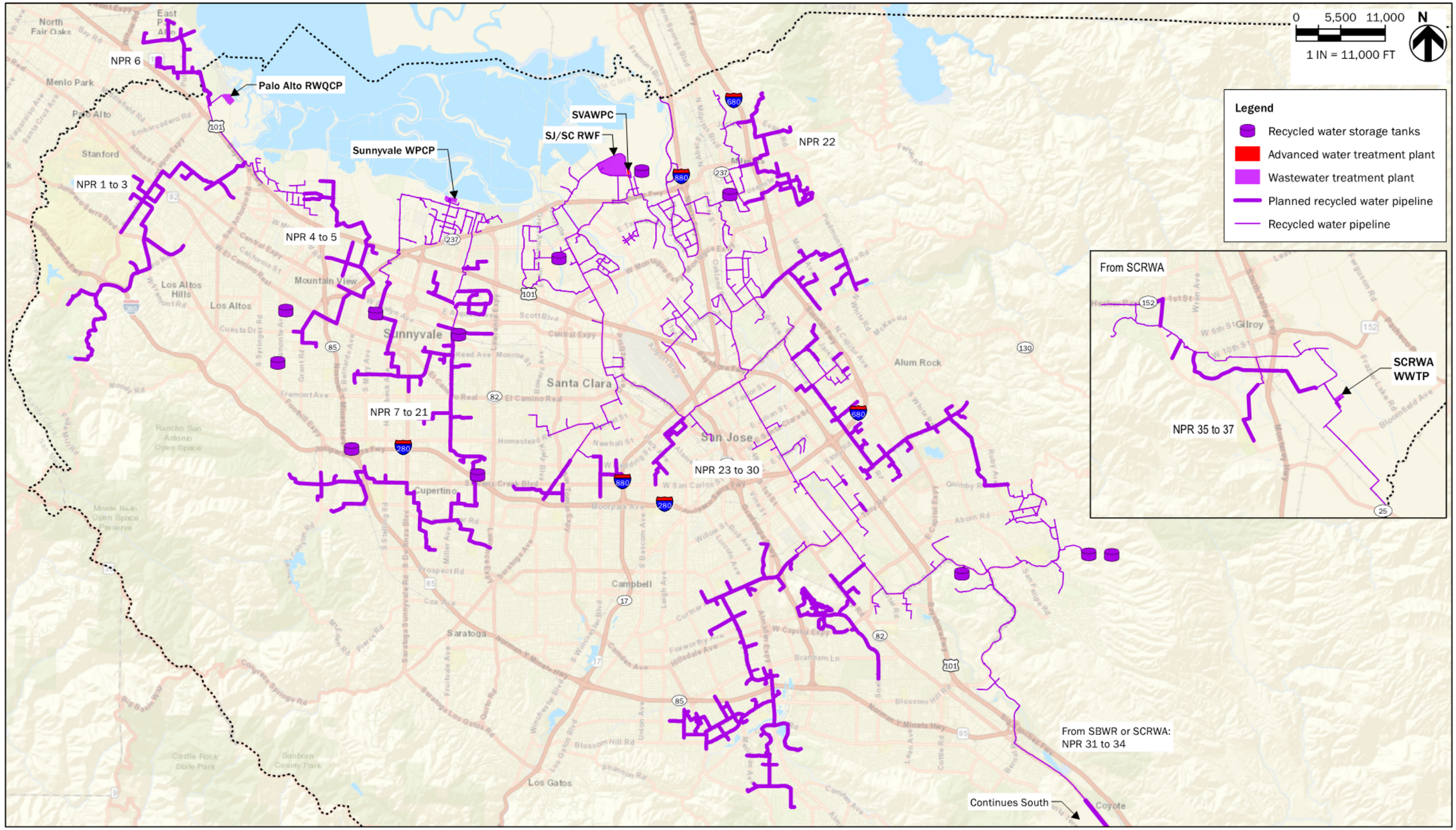


Figure 7-1. Planned expansion of existing recycled water distribution systems throughout Santa Clara County

Note: Recycled water infrastructure improvements are currently undefined for City of Santa Clara and San José Municipal Water service areas.

7.1.2 Interties between Recycled Water Systems

Connecting recycled water systems serves several potential functions, including:

Reliability: If an outage occurs in one system, available capacity from an adjoining system could be used. Supply from an adjoining system could also support pipeline maintenance activities, such as shutdowns of transmission mains.

Peak demand supply mitigation: Peak day and peak hour demands are a challenge in some systems, and supply from an adjoining system could be leveraged to meet demands.

Freeing up effluent for PR: By meeting NPR demands of adjacent systems, the amount of supply offset could provide more flow for PR or ROC dilution. For example, if Sunnyvale's NPR demand were met by SBWR, Sunnyvale could provide more supply for PR or ROC dilution. Vice versa, if SBWR's NPR+ expansion was met using effluent from Sunnyvale, SBWR would be able to confidently meet NPR+ demands even during dry years, allowing for supply for PR.

Interties may require pump stations, pressure-reducing valves, or other facilities depending on the function and operation. Additionally, interties between recycled water distribution systems would need to be accompanied by treatment improvements (i.e., an AWPF for NPR+) to avoid negatively impacting the water quality of a neighboring system. Valley Water has studied pipeline alignments for four intertie opportunities in North County:

- **Sunnyvale-SBWR interties.** Three variations of an intertie between Sunnyvale and SBWR were considered, including an effluent intertie to convey secondary effluent from Sunnyvale WPCP to the SJ/SC RWF or SVAWPC and two recycled water interties (one northern and one southern connector).
- **Sunnyvale-PA/MV intertie.** An intertie could connect an existing 16-inch pipeline on Enterprise Way in Sunnyvale to a new 16-inch recycled water pipeline located in Moffett Field.

These interties are summarized in Table 7-1, with alignments shown in Figure 7-2. A more detailed discussion of cost and design assumptions is included in Section 2.3 of ***Appendix A-1.***

Table 7-1. Summary of Potential Recycled Water System Interties

Intertie	Description	Length/Diameter	Capital Cost (2019$)
Sunnyvale – SBWR effluent intertie	30-inch pipeline to convey secondary effluent from the Sunnyvale WPCP to the SJ/SC RWF or SVAWPC	32,000 LF / 30-inch	$86M
Sunnyvale – SBWR recycled water intertie, northern connector	Connection of existing SBWR 30-inch pipeline located at Lafayette Drive and Tasman Road to an existing 24-inch Sunnyvale pipeline at Sunnyvale East Channel and Persian Drive	16,000 LF / 24-inch	$14.5M
		15,000 LF / 30-inch	$51.1M
	Hydraulically modeled to deliver peak recycled water demand of 2.7 mgd from SBWR to Sunnyvale	15,000 LF / 30-inch	$23M
Sunnyvale – SBWR recycled water intertie, southern connector	Connection of existing 16-inch SBWR pipeline at Homestead Rd and Las Palmas Dr to existing Wolfe Rd pipeline	12,000 LF / 16-inch	$7M
	Hydraulically modeled to deliver peak recycled water demand of 2.7 mgd from SBWR to Sunnyvale	12,000 LF / 30-inch	Not available
Sunnyvale – Mountain View recycled water intertie	Connection of existing 16-inch pipeline on Enterprise Way in Sunnyvale to a new 16-inch recycled water pipeline located in Moffett Field that would connect to the Mountain View recycled water distribution system	18,600 LF / 16-inch	$16M

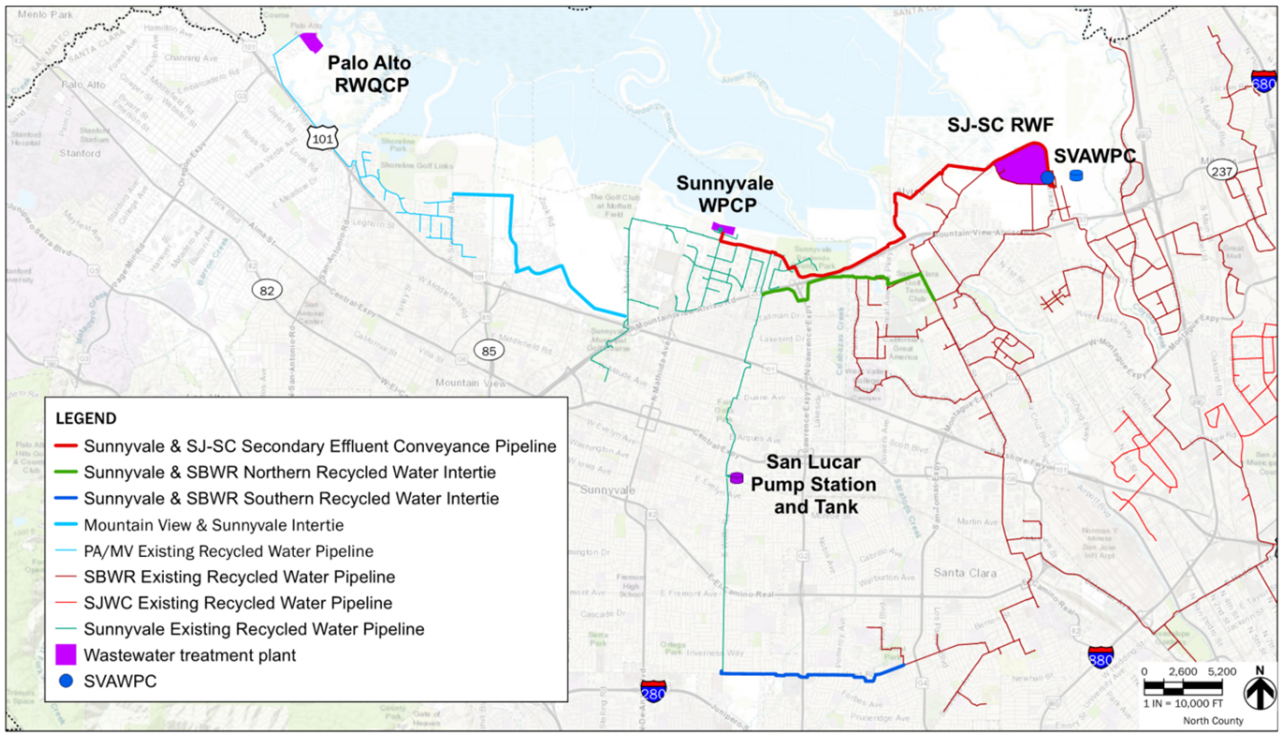


Figure 7-2. Potential interties between Recycled Water Systems

7.1.3 Potential Future Reuse Opportunities, Design Variations, and Alternative Elements

Valley Water and its Partner Agencies may consider adapting the portfolios and options summarized in Section 6 to further increase benefits, such as operational flexibility. Some potential future reuse opportunities are summarized below, along with alternatives project elements that are not incorporated into baseline components of any portfolio but may be considered through either a substitution (e.g., an alternate pipeline alignment) or "add-on" (e.g., new interties between NPR+ systems).

Resized design capacity of AWPFs

Several conditions may warrant revisiting and revising the design capacity of AWPFs considered to date to "right-size" projects. For example, Valley Water may consider the impacts of source water availability—that is, long-term agreements with Partner Agencies guaranteeing a minimum flow to support potable reuse—along with any potential refinements to supply planning that changes Board's Drought Response Target for potable reuse (currently 24,000 AFY) or effluent flow needed for ROC management strategies that involve blended discharge. A limitation to this approach is that phased, incremental increase of an AWPF capacity through strategies like modular construction may be limited by conveyance capacity.

Optimized/resized design of conveyance capacity

The Project Team developed preliminary design of conveyance infrastructure using pipeline diameters consistent with those considered under the Final Expedited Purified Water Program Plan (Valley Water, 2018). However, Valley Water purposefully sized the 48-inch diameter pipelines in the Expedited Purified Water Program Plan to be larger than needed, such that the system would allow for increased flow in the event that Valley Water secured additional source water. Based on a high-level estimate, reducing the

Portfolio 1a 48-inch pipeline of about 18.1 miles from San José to LGRP to 42-inch or 36-inch diameter would reduce capital costs by an amount on the order of $45M (15%) and $90M (30%), respectively. Design refinement would be needed to confirm the costs savings, as O&M implications have not been assessed.

Pipeline extension from LGRP to Rinconada WTP

To increase operational flexibility of portfolios involving GWR at LGRP, a pipeline extension and pump station would allow the opportunity to send purified water to Rinconada WTP for RWA. This RWA variation would improve potable reuse supply yield at times when the groundwater basin reaches capacity and recharge is not possible. Before this pipeline scenario is implemented, AWPFs configured for GWR would require treatment upgrades to align with anticipated regulatory requirements for RWA.

Operational flexibility for DPR portfolios (San José AWPF to Penitencia WTP) via Central Pipeline

Portfolios 1b, 1c, and 1d center around DPR from a San José AWPF, and each features a delivery point proximate to Penitencia WTP, thus allowing an access point to Central Pipeline—an existing raw water conveyance system leading to LGRP and Rinconada WTP—and providing increased operational flexibility. This scenario could allow Valley Water to send purified water from a San José AWPF and route around Penitencia WTP to flow to LGRP for GWR in the interim timeframe, and once DDW has finalized DPR regulations, RWA via Penitencia or TWA may be possible. Operational analysis is needed to determine whether and/or how Rinconada WTP would blend purified water with existing sources of raw water.

Alternate alignments from Palo Alto to LGRP

Portfolio 2a and Portfolio 4 include conveyance of purified water from an AWPF in Palo Alto south to LGRP. Four possible route variations were considered, though one default alignment was selected for the purpose of determining costs and relative pipe lengths across portfolios. By default, Portfolios 2a and 4 both use an eastern route that bypasses Sunnyvale. Alternate routes, shown as dashed lines on in ***Appendix A-1***, include a western route that bypasses Sunnyvale, and two routes (eastern and western) that travel through Sunnyvale. Routes that bypass Sunnyvale are substantially shorter and therefore save pipeline and pumping costs; whereas routes that travel through Sunnyvale allow PR flow to be diverted to the Sunnyvale WPCP for blending with recycled water to produce NPR+.

Alternate alignment from Sunnyvale to LGRP

By default, Portfolio 2b includes the eastern alignment to convey purified water from a Sunnyvale AWPF to LGRP, though there is also a western alignment option shown as a dashed line on the Portfolio 2b figure in ***Appendix A-1***.

West County TWA

Portfolios 1c and 1d explore using SJ/SC RWF source water for TWA because that allows for a case study that presents the full range of potable reuse options for comparison against one another. However, other TWA opportunities exist throughout the County. One option builds on a concept Valley Water is already considering and involves extending the West Pipeline. The Westside TWA Scenario would deliver up to 24,000 AFY of purified water. Like Portfolio 2a, effluent would be conveyed from the Palo Alto RWQCP and Sunnyvale WPCP to a 24-mgd AWPF that would be constructed at the former Los Altos Treatment Plant site. More details about this scenario are included in ***Appendix A-1*** and ***Appendix A-8***.

South County TWA

Two potential South County TWA options have been discussed with staff from Morgan Hill and Gilroy. The first TWA option would use water treated at a satellite WWTP and AWPF in Morgan Hill and then delivered to the Morgan Hill drinking water distribution system. It is likely this option would have a high life-cycle unit cost given the high level of treatment, lack of ROC management options, and limited yield. A second TWA option would use water treated at a new AWPF adjacent to SCRWA in Gilroy and deliver purified water to the Gilroy drinking water distribution system. This option would likely have similar limitations as the first South County TWA option and limit supply available for NPR use in Gilroy.

AWPF for NPR+ in Sunnyvale

Sunnyvale does not have a need for NPR+ in its service area but would need to provide water quality consistent with SBWR or PA/MV NPR+ if interconnecting recycled water systems. Portfolios 2b and 4 have an AWPF located in Sunnyvale and include an additional 0.5 mgd of design capacity to blend PR with NPR supply for NPR+ in Sunnyvale. Portfolio 2a includes a 2,000-foot, 12-inch pipeline that carries 0.5 mgd of purified water from the 48-inch Palo Alto AWPF to the LGRP pipeline south to the Sunnyvale's San Lucar NPR storage tank. Purified water added to San Lucar would produce NPR+ for distribution throughout Sunnyvale's RWS.

Additional AWPF in San José for NPR+

Referred to as an "SVAWPC expansion" in some past studies, an additional AWPF may be considered in San José to increase purified water production to meet increasing demands for NPR+ while maintaining a TDS level of 500 mg/L year-round.

Section 8:

Project Implementation Strategy

8.1 Regulatory Compliance Strategy

Assessing the reuse portfolios in terms of regulatory compliance provides a view into issues that might impact their feasibility or future permitting.

While this section summarizes the strategy for regulatory compliance, ***Appendix B-1*** (Regulatory Compliance Strategy TM) addresses the topic in substantially more detail.

8.1.1 Overview

The regulatory analysis intends to:

1. Highlight key regulatory considerations applicable to each portfolio that may impact public health or environmental compliance
2. Identify differences between portfolios in terms of potential regulatory and permitting challenges
3. Note efforts that are required or may assist with future regulatory and permitting efforts

The CoRe Plan contains potable reuse portfolios in North County that consider GWR, RWA, and TWA and reuse options in South County that consider NPR+, GWR, and SWA. Figure 8-1 summarizes the regulations and required permits for each type of potable reuse.

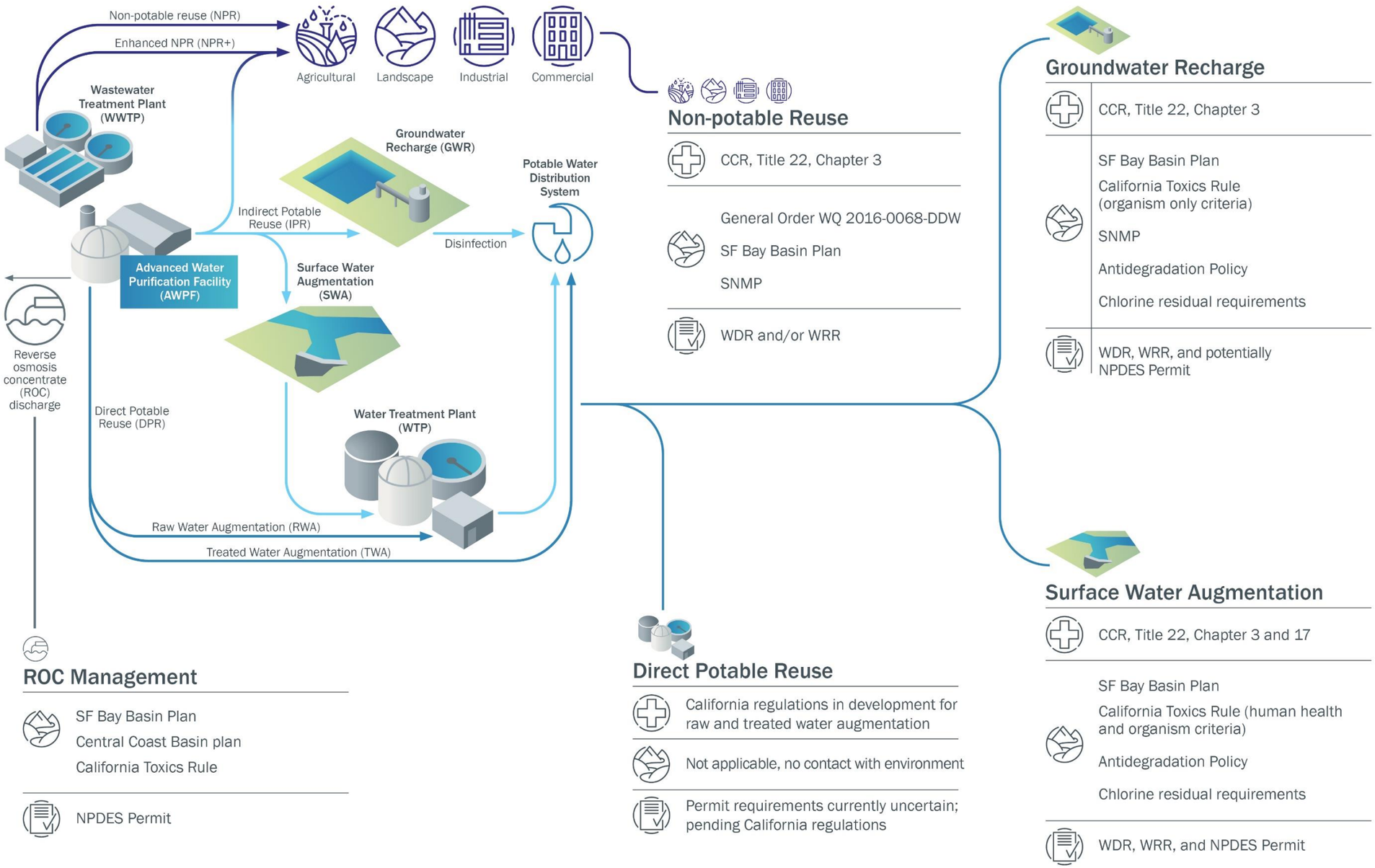


Figure 8-1. Summary of relevant regulations and required documentation for non-potable and potable reuse

8.1.2 Regulatory Compliance Evaluation Results

A rubric was developed for each form of reuse to assess the relative difficulty or ease of complying with the associated regulatory criteria and permitting requirements.

Existing regulations for GWR and SWA informed a set of six criteria for evaluating the IPR portfolios.

- Pathogens
- Chemicals
- Source control
- Monitoring and controls
- Retention and response time
- Technical, managerial, and financial (TMF) capacity

Ranks were assigned to each criterion based on regulatory certainty, number of precedents, and experience of other permitted projects. The evaluation of RWA and TWA portfolios used the same six criteria but required making assumptions to develop the rankings, since DDW has not yet developed DPR regulations. For comparison, Table 8-1 shows the rankings color-coded in light blue (less complex) to dark blue (more complex) in terms of regulatory compliance.

Table 8-1. Summary of Regulatory Considerations for Public Health in the Potable Reuse Portfolios – Level of Complexity

Reuse type	GWR			SWA	RWA and TWA		
Portfolio	1a	2a/2b	4	Morgan Hill	1b RWA	1c TWA	1d TWA
Pathogens	○	○	○	○	○	○	○
Chemicals	○	○	○	○	○	◒	◒
Source control	○	○	○	○	◒	◒	◒
Monitoring and control	○	○	○	○	◒	●	◒
Retention and response time	○	○	○	○	◒	◒	◒
TMF	◒	◒	◒	◒	●	●	●

○ *low complexity* ◒ *medium complexity* ● *high complexity*

The results are a spectrum from straightforward compliance for GWR portfolios to increasingly complex for SWA and DPR (RWA and TWA). Increasing the level of certainty around criteria such as specific regulatory considerations and multi-agency coordination could reduce complexity of some portfolios. **Future actions that may help regulators feel more comfortable with these issues could involve demonstrating the public health protectiveness of a candidate treatment train or the proper functioning of an enhanced monitoring and control system.**

The portfolios must also demonstrate compliance with environmental discharge considerations by presenting a plan to address ROC waste streams and—in all but the DPR portfolios—purified water releases to the environment. Table 8-2 summarizes the portfolios' rankings in terms of environmental considerations and associated regulatory compliance.

Table 8-2. Summary of Regulatory Considerations for Environmental Compliance in the Potable Reuse Portfolios – Level of Complexity

Reuse type	GWR			SWA	RWA/TWA
Portfolio	1a	2a/2b	4	Morgan Hill	1b/1c/1d
	Environmental Discharge of Purified Water				
SF Basin Plan	○	○	○	○	N/A
California Toxics Rule	○	○	○	◒	N/A
SNMP	○	○	○	N/A	N/A
Anti-degradation	○	○	○	○	N/A
Chlorine residual	○	○	○	○	N/A

○ *low complexity* ◒ *medium complexity* ● *high complexity*

8.1.3 Regulatory Strategy Next Steps

Several factors can influence the initial snapshot of these rankings, such as: (a) regulators' engagement and feedback on the portfolios, (b) greater clarity regarding future regulatory requirements for DPR, and (c) additional efforts by Valley Water and its partners to address or resolve the issues ranked as medium or high complexity.

Strategies to overcome some of these issues and uncertainties include the following.

- Continued partner engagement on interagency agreements
- Demonstration testing of potable reuse treatment systems
- Evaluation of enhanced monitoring and control systems
- Pathogen monitoring campaigns to support higher WWTP LRV credits
- Evaluation of WTP performance and crediting in RWA scenarios
- Further coordination with the SF Bay Regional Board to confirm the feasibility and permitting requirements of ROC management strategies and AWPF product water releases for all portfolios

With greater clarity on the potable reuse project(s) and/or portfolio moving into future phases, additional reuse-specific studies may be needed. Valley Water should coordinate with staff from DDW and the SF Bay Regional Board and consult the IAP to confirm the need for such studies, which could include the following.

- Tracer studies to confirm aquifer retention time (GWR) or to validate hydrodynamic models (SWA)
- Hydrodynamic studies to confirm mixing and dilution requirements in SWA reservoirs
- Studies to evaluate anticipated blending ratios in the SWA, RWA, and TWA portfolios
- Studies related to ROC discharge and AWPF product water release to confirm anticipated regulatory compliance

The complete process of implementing a potable reuse project will require multiple years and involve various steps, starting with the development and testing of a potable reuse concept before moving into the design, permitting, construction, and start-up of the system. Two recently permitted projects that were pursued on expedited timelines—Monterey One Water's GWR project and the City of San Diego's SWA project—required more than 10 years for completion.

8.2 Rate Impacts

As the groundwater management agency and primary wholesale water supply for Santa Clara County, Valley Water is responsible for actively managing and replenishing groundwater basins and operating and maintaining a large, complex water system what includes three pump stations, four WTPs, 10 reservoirs, 142 miles of pipe, and nearly 400 acres of recharge facilities. Groundwater production charges and treated water charges paid by retail water suppliers support the costs of operating and maintaining the system, repair and replacement of aging infrastructure, and other services required to maintain clean, safe, reliable groundwater supplies.

The cost of implementing the portfolios and options developed in this plan would be met by ratepayers within the relevant groundwater benefit zones. Using preliminary cost estimates documented in previous drafts of this plan, Valley Water staff estimated the anticipated incremental percent increase to the municipal and industrial groundwater production charges for each portfolio and option in the period of financial year 2022 to 2030. Incremental rate increases would be in addition to anticipated rate increases unassociated with this plan's portfolios and options.

Valley Water staff estimated that the implementation of a North County portfolio would result in an increase to the Groundwater Benefit Zone W-2 groundwater production charge ranging from 1.9% to 2.5%, depending on the portfolio. Variation between the rate impact from each portfolio was relatively minor.

In South County, the implementation of a Morgan Hill option was estimated to incrementally increase W-5 Groundwater Benefit Zone groundwater production charge ranging from 2.2% (Option 1) to 4% (Option 3). Based on recently updated cost estimates, rate impacts for Options 2 and 3 are anticipated to increase.

The Final CoRe Plan will incorporate revised estimates of the rate impacts due to implementing the potential portfolios and options based on the final cost estimates.

8.3 Public Outreach and Engagement

Public awareness, understanding, and support are integral to the success of any potable reuse program and often represent a greater implementation challenge compared to technical feasibility. Technology has not stopped a potable reuse project from proceeding, but politics and public perception have been common roadblocks. These challenges are not insurmountable. However, successful public outreach requires careful planning, cohesion among partners, commitment to consistent and transparent communication, and follow-through.

While potable reuse is not yet fully mainstream, it is a proven approach and yields a reliable, drought-resistant, safe, high-quality drinking water supply. Over years and particularly in the last decade, water suppliers, industry professional associations, and research organizations have invested in robust potable reuse research portfolios to confirm protection of public health and inform regulations, for example, through projects demonstrating effectiveness of treatment processes and establishing failproof strategies. In addition to verifying technical feasibility of DPR, a substantial part of the research effort relates to public communications, outreach, and acceptance. In fact, Valley Water participated as a utility partner in one such project in 2014—Water Environment & Reuse Foundation's Research Project 13-02, *Model Communication Plans for Increasing Awareness and Fostering Acceptance of Direct Potable Reuse*—which involved opinion research including meetings with two local focus groups and a phone survey of 600 randomly-selected voters in the county.

Learning lessons from successful water reuse projects

To reiterate a critical point: technology has never been the reason a potable reuse project was stopped – if a project does not move forward once all the elements such as design, siting and funding are in place, it is because of public and political opposition. Successful projects – and there are more of these each day as communities seek to secure their local water supplies to protect their economy and quality of life – have comprehensive, consistent, and sustained public outreach programs. Valley Water has been implementing such a program for most of the last decade and it is clear from the staff report that they intend to continue this program and seek additional ways to reach stakeholders and diverse audiences in their service area. Considering expanding this program countywide can only benefit Valley Water and its Project Partners.

Valley Water and its Project Partners can learn and benefit from those that have successfully forged a path for getting public support—and even enthusiastic support—by understanding and implementing best practices and remaining mindful of avoiding pitfalls.

Developing a public outreach action plan in collaboration with Partner Agencies and their respective locally elected officials and policymakers

Alignment on a public outreach and engagement strategy is needed at many levels, such as between Valley Water and its Partner Agencies. An important early step is collaboration among the project partners and their respective locally elected officials and policymakers to confirm support for potable reuse through committing support for executing an ongoing action plan for public outreach. Ideally this will include those officials and policymakers fully exercising their leadership voices as reuse champions.

To set the direction for future community and ratepayer engagement related to implementing a potable reuse program in Santa Clara County, Valley Water and the Project Team surveyed Partner Agencies through an online poll and compiled their input on preferred public outreach approaches, related opportunities, and key concerns/challenges. Following the online survey, Valley Water and the Project Team hosted a virtual workshop in June 2020 with Partner Agencies and water retailers throughout the county to further explore the approach for future public outreach and engagement related to potable reuse.

Through surveying the partners and receiving real-time input, the Project Team identified some key themes and insights, summarized as follows.

- **Valley Water should lead a coordinated outreach program with local support for implementation.** Partner Agencies and water retailers have strong interest in collaborating regionally with Valley Water to advance potable reuse, relying on Valley Water to lead and fund outreach as part of the next steps in potable reuse implementation. Most stated a lack of adequate resources to conduct effective outreach and a lack of confidence with their ability to advance a related outreach program on their own. Project partner involvement, such as conducting local educational and awareness activities and providing financial or staff support, could be fleshed out in a next phase countywide outreach program.
- **Articulate messaging is needed to convey strategic, unique value of potable reuse.** As Project Agencies have emphasized, among the earliest steps is a need to articulate the strategic and unique value potable reuse opportunities hold for the County in terms of addressing vulnerability of the existing supply portfolio, buffering risk, and strengthening resilience and dry year supply reliability.
- **A pilot project, such as public taste tests of purified water, may be helpful.** Uncertainty about whether one project or multiple projects will proceed limits Partner Agencies' ability to identify what may be needed to increase effective outreach or whether a pilot for public taste tasting is desirable. Most

agencies thought that taste testing could be helpful if/when it is appropriate based on whether a project is moving forward and/or DDW approval has been secured.

- **Issues of greatest concern are mirror those of other potable reuse programs.** The Partner Agencies and water retailers identified several challenges and issues of greatest concern related to public outreach that closely resemble those from other potable reuse programs: (1) trust in water purification science and in the utility providing it, (2) quality of the water/what if something goes wrong, (3) project cost/water bill impact, and (4) real time testing and monitoring.

Looking ahead to a countywide public outreach program

Valley Water should continue to apply the comprehensive approach described in its *Final Draft Strategic Communication Plan for Recycled Water* (2011) to inform next steps on outreach to advance reuse projects.

In addition, Valley Water's recent public survey can help guide a more widespread countywide outreach program. There are issues still in play, such as ratepayers' tolerance for a potential rate increase. Some key takeaways from the 2020 research related to water reuse opinions and attitudes conducted by EMC:

- The phrase "using advanced purified water for drinking" received an overall positive reaction and appears to be an adequate description of potable reuse. This is an important finding: no additional explanation is needed for support of this concept by most of the population.
- Additional information about potable reuse benefits and safety, however, does increase support even more.
- GWR has the most support (67%), but at least 63% support adding advanced purified water at the treatment plant and 58% support adding it directly to tap water.
- Environmental benefits, safety of the water, being prepared for a disaster or other unknowns related to water supply are all themes that resonate well.
- But awareness of water reuse is low. Slightly more than one half of respondents have not heard of recycled water/water reuse. While "using advanced purified recycled water for drinking" resonates as a good idea, most of the population seems to be unfamiliar with the use of recycled water, which could impact support upon constructing projects and increasing rates to pay for them.

Given these findings, the following outreach objectives should be considered.

1 Communicate key messages about reuse to external audiences and interested parties

- Raise awareness about recycled water uses among a broad range of Santa Clara County residents
- Brand recycled water as high quality, environmentally beneficial and water-efficient
- Use potable reuse terminology that resonates with the public, such as "using advanced purified water for drinking"
- Ensure spokespeople are well-trained and informed
- Translate and communicate in appropriate languages
- Provide timely information to community leaders so that information spreads through communities as they discuss recycled water with their constituencies
- Expand tours and events – virtually for now and in-person when safe
- Use social media to reach a variety of audiences

2 Communicate key messages about reuse to Board Members and staff

- Consider employees as important an audience as external audiences
- Inform employees first, before external audiences, and address their questions or issues with recycled water and/or potable reuse
- Provide constant and updated information, both written and oral, to existing and new board members/elected officials at all levels

3 Communicate key messages about reuse to water retailers and cities

- Keep elected officials and staff updated with written and oral communication
- Use social media platforms as appropriate to reach specific audiences
- Gain support for expanding both non-potable and potable reuse from local and state elected officials

4 Inform stakeholders about recycled and purified water and the many possible uses

- Demonstrate transparency by discussing pertinent aspects reuse such as water quality, regulatory oversight, fail-safe methods, and more
- Partner with local education providers at elementary, middle, and high school and beyond to inform next generations
- Partner with community groups to present information and enlist their support to distribute information about reuse through their communication channels (websites, newsletters and more)
- Provide open channels of communication for questions about recycled water and potable reuse

5 Ensure the science and technology behind purified water and potable reuse are understood and accepted

- Seek assistance from public health and water quality professionals/experts to communicate with the public about water quality and safety
- Focus on the work and opinion of Independent Advisory Panels about water quality and safety of potable reuse

6 Minimize confusion, opposition, and discomfort with using purified water for potable reuse

- Explain technical aspects of recycled water and potable reuse in layperson's terms using easy-to-understand language and visual aids for leave-behind materials
- Reach broadly into all communities and ensure presentations reach underserved population groups and multicultural audiences
- Work with multicultural elected officials, leaders, and organizations as well as faith-based leaders and organizations to build understanding and support

7 Create and maintain a pathway to information for all stakeholders

- Tailor information to groups and address their specific interests and concerns
- Translate all informational materials as needed
- Conduct an annual tracking poll to gauge success in reaching key stakeholders/audiences

8 Seek balanced media coverage throughout the region

- Provide timely and accurate information to reporters
- Respond quickly to correct inaccurate articles or reports

8.4 Partnerships and Governance

As Valley Water and its Partner Agencies advance the CoRe Program toward implementation, the need for establishing institutional arrangements and agreement on governance structures will become imperative. While the scope of this CoRe Plan does not address institutional partnership arrangements or governance, substantial coordination and thought leadership among the project partners has occurred around these topics over many years.

For example, in November 2008, members of Valley Water's Board, San José's City Council, and Santa Clara's Mayor held a Recycled Water Liaison Committee meeting to develop long-term agreement program element options. The group discussed four collaborative agreement models that represent how Valley Water could work together with SBWR to enable increased water reuse in the County. These models, which could still be used to shape new Partner Agency agreements today, include the following.

Funding/Incentive Agreement: Valley Water would provide an incentive to the Partner Agency in $/AF for administering the WWTP and RWS. The parties would need to agree on cost-sharing and responsibilities for individual joint facilities on an individual basis.

Customer Contract for Purchase: Valley Water would sign a contract with a Partner Agency for the purchase of recycled water in future years. The Partner Agency would retain its role and relationship with existing customers and receive revenue from additional recycled water sales, while Valley Water could ask for a guaranteed supply of recycled water. This agreement structure is like the relationship between West Basin Municipal Water District and Los Angeles County Sanitation District.

Cooperative Agreement: The Partner Agency and Valley Water would form a committee of the two agencies and share capital costs for new facilities as well as early operations and maintenance costs.

Joint Powers Authority (JPA): Could be set up to manage reuse within the County, handle regional water exchanges, and act on behalf of Valley Water and Partner Agencies.

In 2016, Valley Water surveyed 83 water, wastewater, irrigation, and public utilities throughout California that either participate in a role to produce, wholesale, and/or retail recycled and purified water. The agencies surveyed represent a mix of municipalities, JPAs, private companies, independent public agencies, and special districts. Through the survey, Valley Water collected information on reuse demands, planned projections, infrastructure, O&M, partnership agreements, and best practice methods.

Through the survey, Valley Water identified governance models for reuse involving the following roles and responsibilities of water agencies.

- **Wholesale-only.** One water supplier serves the role of wholesale-only for NPR, and one serves the role of wholesale-only for potable reuse. All three are special districts.
- **Finance-only.** Three water agencies (two special districts and one independent public agency) provide finance-only support for NPR.
- **Total ownership (treatment and either wholesale, retail, or both wholesale/retail).** Four water suppliers that are special districts have total ownership of NPR systems. Five water suppliers, including four special districts and one independent public agency) have total ownership of potable reuse systems.

Several others have policies and procedures for their involvement in recycled water for NPR, as follows.

- **Build-and-transfer model.** Two water suppliers (a special district and a municipality) have separately implemented a model of building and transferring reuse infrastructure to another agency. The extent of infrastructure and roles vary in each of the two scenarios.
- **Interties between NPR systems.** Two special water districts in Orange County have policies and procedures pertaining to an intertie between their NPR systems. A water supplier and recycled water producer (both special districts) in Los Angeles County also have policies and procedures for an NPR intertie connecting their systems.

The survey yielded several conclusions related to non-potable and potable reuse applications, summarized as follows.

Non-potable reuse

- The interest and willingness of water and wastewater agencies in California to participate in partnership have been largely driven by complementary needs—water supply augmentation (particularly dry-year reliability) and compliance with WWTP effluent discharge limitations under NPDES permits.
- An industry standard does not yet exist for roles, procedures, and policies related to NPR systems, leading to wide variability when comparing governance across the many partnerships.

Potable Reuse

- Water supply and groundwater protection (e.g., seawater intrusion) have been primary drivers for the development of potable reuse systems in California, consistent with Valley Water's motivations in leading countywide potable reuse planning.
- There is a trend in the industry for water agencies to primarily engage in a single role as the producer, wholesaler, and retailer collectively.

As part of implementation, Valley Water and project partners will continue to consider these models and may also explore new concepts that show promise. For example, one concept involves developing governance structures focused on increasing adaptive capacity—which is, essentially, the ability to adapt based on changing conditions—and decreasing institutional fragmentation (e.g., across sectors and governmental levels). Several governance approaches along this line include integrated water resources management, polycentricity and place-based planning, and adaptive governance.

8.5 Policy Issues

Through development of the CoRe Plan, Partner Agencies identified policy issues that require consideration and/or resolution to promote willingness and establish new long-term agreements. Some examples follow.

Equity issues related to water assurance disparities

California's system for allocating water supply has long been a source of controversy due to its complexity, ambiguity, and inequities. Some Partner Agencies have security in water assurances for meeting their communities' future needs even during drought, while others are similarly opposite. San José Municipal Water is in the latter category. Thus, creating an imbalance in water security by moving water from a community with less-secure water assurance to a neighboring community (and particularly to one with more secure water rights) is problematic and would require a policy-level intervention to resolve. This issue is included as a sub-criterion in the evaluation tool.

Opportunities for water supply transfers or exchanges

A water transfer or exchange could help address the issue related to equity in water assurances, whereby the areas with less-secure water rights are given an option to purchase potable supply from the area(s) with more-secure water rights in exchange for NPR supply or reuse source water. In addition, the flexibility of RWA and TWA portfolios could be increased if supported by agreements to transfer or exchange supply among water suppliers to balance needs and supplies.

Distributed systems approach with fit-for-community reuse strategies

Interest in onsite (decentralized) NPR systems seems to be growing among private sector companies in Silicon Valley, particularly technology providers. Onsite reuse refers to building- or development-scale wastewater treatment and reuse of the treated stream for non-potable uses at the building or development site (e.g., irrigation, toilet-flushing, cooling tower water). The combination of this growing trend and flatline WWTP influent flows over recent years may result in competing demands for wastewater as a resource. If not properly managed, this approach may cause impacts to centralized treatment and infrastructure resulting in a ripple effect with impacts to cost, energy, and other factors. The distributed systems approach is a regionally optimized blend of both centralized and onsite reuse. These potential impacts may be mitigated by taking a Countywide distributed systems approach to optimize the blend of both centralized reuse projects—like the portfolios considered under this CoRe Plan—and onsite reuse to reflect local conditions in a fit-for-community strategy to identify effective ways to control costs, reduce greenhouse gas emissions, increase public awareness, and advance environmental stewardship throughout the communities in the County. Valley Water and its Partner Agencies may consider reevaluating source flow availability annually to monitor impacts and trends related to onsite reuse.

Priorities and reuse understanding among elected officials

Political will and support for reuse shifts with the tides of election cycles. Changes in elected officials brings uncertainty. In advancing next steps, a primer may help to orient new elected officials with water reuse concepts and the history of reuse and related partnerships within the County.

8.6 Environmental Review and Documentation

Valley Water will produce an Environmental Impact Report/Statement (EIR/S) that addresses NEPA and CEQA requirements and encompasses the full spectrum of potable reuse project portfolios/options and alternative alignments. The EIR/S will support the implementation of potable reuse and consider various alternatives.

According to CEQA Guidelines, an EIR describes impacts resulting from actions related to a project or program. The latter involves developing a programmatic EIR that acts as a foundation to support subsequently prepared individual project-level environmental documents. The programmatic approach provides for future flexibility as needed.

The level of effort for NEPA/CEQA is anticipated to be significant. Anticipated permitting requirements for each portfolio are included as a sub-criterion of the evaluation tool (see Section 6.5 and ***Appendix A-7***).

8.7 Program Funding

In strategizing and planning funding to support the program's implementation, Valley Water 's Board considered several public financing alternatives and opted to use private financing.

Valley Water explored several public financing alternatives, summarized as follows.

- **Low-interest loans,** such as those offered under Water Infrastructure Finance and Innovation Act (WIFIA), Clean Water State Revolving Fund (SRF) Loan Program, and/or Infrastructure SRF (ISRF) Loan Program
- **Grant funding,** such as programs established under Title XVI of the Reclamation Projects Authorization and Adjustment Act, Water Recycling Funding Program Construction Grants, and/or Integrated Regional Water Management Grants
- **Potential stimulus funding** based on the precedent set by the American Recovery and Reinvestment Act of 2009

Each of these alternatives has a unique set of eligibility requirements, criteria for scoring, and funding terms. For example, WIFIA favors projects that generate economic benefits and address water resource challenges, specifically pointing to groundwater recharge and water reuse, with assumed repayment of 49 percent of capital costs 5 years after the respective AWPF is operational. As well, public financing opportunities may vary with time. The future availability of current funding programs is uncertain.

Private financing through a public-private partnership (P3) partner assumes payments begin when a facility is operational, less Valley Water's 30 percent share of debt financing. Valley Water proceeds with implementation under a P3—either as a fixed-price design-build-finance-operate-maintain (DBFOM) with a sufficiently defined project to anticipate costs or a progressive DBFOM to further develop the project concepts and costs—an SRF loan would be precluded.

The total program cost to be financed depends on construction timing and duration, along with apparent factors such as facility size.

8.8 Recommended Next Steps for Implementation

Implementing the CoRe Plan project(s) will not be a linear process. Valley Water will work with Partner Agencies on multiple implementation steps simultaneously, and the interdependency of some of those steps adds complexity. Figure 8-2 depicts a simplistic view of implementation steps within several parallel categories without indicating the complexities added by interrelationships. For example, securing source water through establishing long-term agreements is needed before proceeding with detailed design, yet program costs and other factors may influence agreement terms. Potential barriers to implementation should be considered, such as those summarized in Table 8-3, as early as possible to manage risk.

Next Steps for Implementation

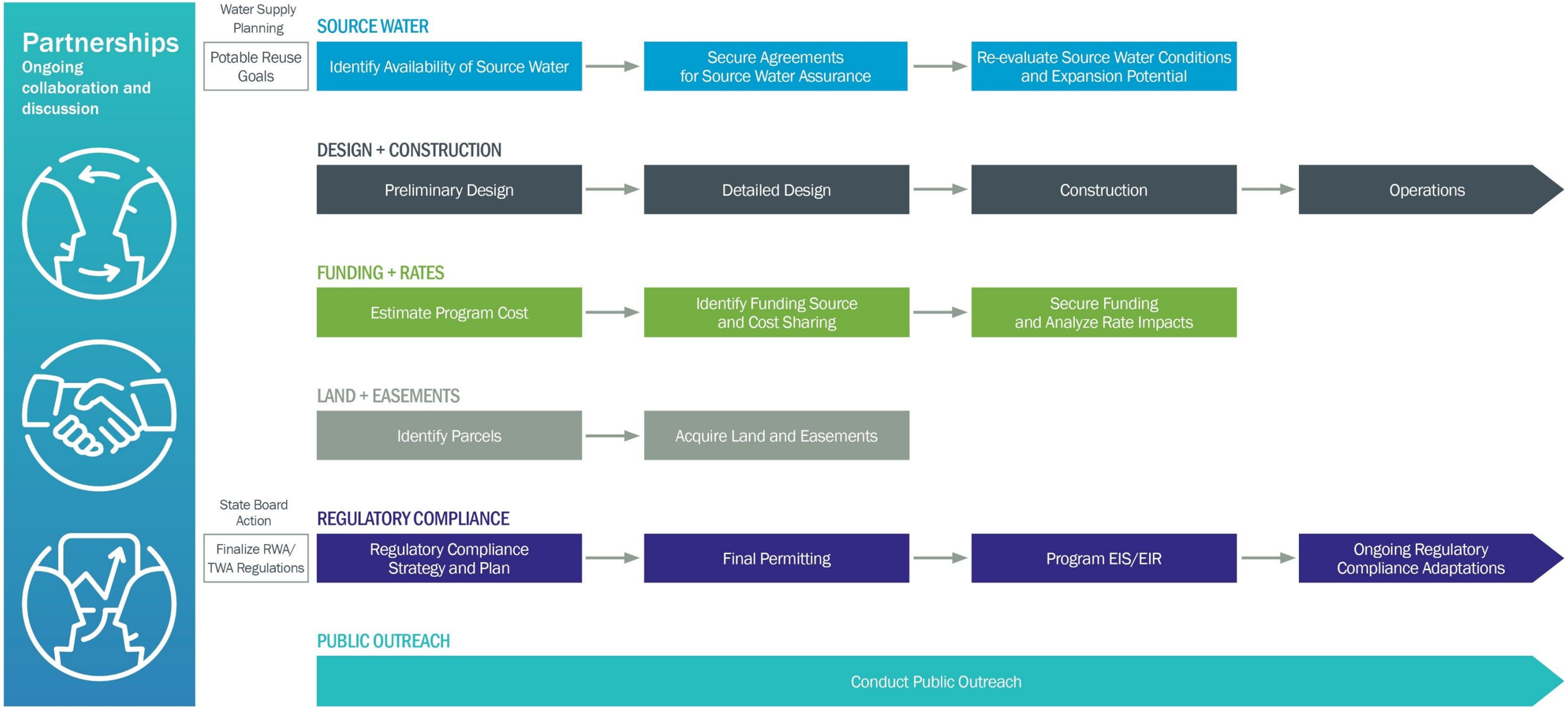


Figure 8-2. Categorized next steps for implementing the CoRe Program

Table 8-3. Potential Barriers to Implementing Potable Reuse Portfolios/Options

Portfolio 1 **San José AWPF**	**1a** A long-term agreement is needed between Valley Water and San José to establish a guaranteed minimum flow of sources water (SJ/SC RWF effluent) for feed flow to the AWPF. Risks to available yield include drought, environmental needs/impacts, and operations. LGRP recharge potential may limit future yield.	**1b** A long-term agreement is needed between Valley Water and San José to establish a guaranteed minimum flow of sources water (SJ/SC RWF effluent) for feed flow to the AWPF. Risks to available yield include drought, environmental needs/impacts, and operations. Consistent with Valley Water's WSMP 2040 Water Evaluation and Planning modeling assumptions, DPR water is assumed to be first-priority supply for WTPs with raw water added as diluent. If this assumption changes, Penitencia WTP's capacity may limit potable reuse yield Capacity of Penitencia WTP could limit potable reuse yield. Since the South Bay Aqueduct and Penitencia WTP are in an active landslide area, special geotechnical considerations and evaluation are needed. Depending on the findings and planned route, construction costs may increase due to special measures for addressing geotechnical concerns at this area.	**1c** A long-term agreement is needed between Valley Water and San José to establish a guaranteed minimum flow of sources water (SJ/SC RWF effluent) for feed flow to the AWPF. Risks to available yield include drought, environmental needs/impacts, and operations. Using the Milpitas Pipeline to convey purified water precludes independent use of an emergency connection between Valley Water's treated water system and SFPUC's Regional Water System to transfer water in emergencies. Delivering purified water to SFPUC would require inter-agency agreements and, likely, permitting each downstream delivery point (i.e., each water supplier that could access the supply in the downstream portion of the RWS). Details regarding potential terms for inter-agency agreements and DDW permits would need to be explored and established to further pursue this concept. Blending ratios of purified water with other supplies need to be confirmed. Using the Milpitas Pipeline for purified water conveyance may result in delivering high ratios of purified water to several turnouts along the Milpitas Pipeline. An evaluation is needed to confirm sufficient space for a tie-in at Piedmont valve yard. Because Gibraltar pump station belongs to the City of Milpitas, a separate agreement would be needed to use their reservoirs as blending facility, and reservoir storage capacities would need to be verified for future blending.	**1d** A long-term agreement is needed between Valley Water and San José to establish a guaranteed minimum flow of sources water (SJ/SC RWF effluent) for feed flow to the AWPF. Risks to available yield include drought, environmental needs/impacts, and operations. An evaluation is needed to confirm sufficient space for a tie-in at Piedmont valve yard. Because Gibraltar pump station belongs to the City of Milpitas, a separate agreement would be needed to use their reservoirs as blending facility, and reservoir storage capacities would need to be verified for future blending.
Portfolio 2 **Combined Palo Alto/Sunnyvale Regional AWPF in Palo Alto (2a) or Sunnyvale (2b)**	**2a** Flows from Palo Alto RWQCP and Sunnyvale WPCP limit projected yield. A long-term agreement is needed between Valley Water and Sunnyvale to establish a guaranteed minimum flow of source water (WPCP effluent) for feed flow to the AWPF. Permitting and regulatory compliance for ROC management need to be confirmed. Costs do not reflect land for AWPF site.	**2b** Flows from Palo Alto RWQCP and Sunnyvale WPCP limit projected yield. A long-term agreement is needed between Valley Water and Sunnyvale to establish a guaranteed minimum flow of source water (WPCP effluent) for feed flow to the AWPF. Technical feasibility and extent of costs related to site preparation to construct an AWPF at the parcel next to Sunnyvale's WPCP, Recycle Hill (a former landfill site) remain in question. Due to lack of available land, Recycle Hill is the site assumed for preliminary design purposes, and best available information is included to reflect potential site preparation costs. ROC management options are limited and less feasible compared to other reuse opportunities and AWPF locations.		
Portfolio 4 **Separate Palo Alto and Sunnyvale AWPFs**	**4** Flows from Palo Alto RWQCP and Sunnyvale WPCP limit projected yield. A long-term agreement is needed between Valley Water and Sunnyvale to establish a guaranteed minimum flow of source water (WPCP effluent) for feed flow to the AWPF. Constructing and operating two separate AWPFs is estimated to be the highest cost portfolio. ROC management options are limited and less feasible compared to other reuse opportunities and AWPF locations. Permitting and regulatory compliance for ROC management need to be confirmed. Costs do not reflect land for AWPF site in Palo Alto. Due to lack of available land, Recycle Hill (the former landfill site by the WPCP) is assumed for preliminary design purposes. Technical feasibility and costs of constructing at this site remain uncertain. Best available information is included to reflect potential site preparation costs.			
South County Options	**Option 1** The Silver Creek Pipeline Agreement granting 5 mgd of SBWR supply to Valley Water via the Silver Creek Pipeline expires in January 2027. Without a renewed agreement, implementation of Option 1 would be infeasible. Valley Water is studying potential impacts of NPR/NPR+ irrigation on local groundwater quality in Morgan Hill.	**Option 2** If further study of Morgan Hill recharge locations does not identify a suitable location, implementation of Option 2 would be infeasible. ROC Management at lined evaporation ponds may be ruled infeasible during environmental review.	**Option 3** Additional evaluation is needed to confirm this exchange concept is feasible without additional recharge facilities. Details around the conditions and reliability of increasing Valley Water's raw water deliveries to Llagas Subbasin remain unconfirmed. As in Option 2, a suitable recharge location is needed. New permits may be required through the SF Bay or Central Coast Regional Board, or DDW, for discharging purified water to Anderson Reservoir. ROC Management at lined evaporation ponds may prove infeasible during environmental review.	

To implement a water reuse program within the County, Valley Water will work closely with its Partner Agencies and Board of Directors, including Recycled Water Committee members, to take the following steps, many of which are interdependent and are not listed sequentially.

- ✓ Initiate Countywide collaborative potable reuse **public outreach and engagement** informed by portfolios to be implemented, planned project locations, and rate impacts.
- ✓ Start **environmental review** at the end of preliminary design and, following certification of the final EIR/S, proceed with selecting a P3 partner and permitting.
- ✓ Continue to refine **regulatory compliance** strategy as reuse opportunities take shape and new DPR regulations are established. Seek Regional Board buy-in on ROC management.
- ✓ Refine **reuse goals** based on pending updates to water demand projections. Confirm minimum available **source water** to secure partnership agreement(s) and achieve goals. Resolve **policy issues** and define governance structure.
- ✓ Execute **long-term agreements** for source water and confirm project portfolios and alternative elements for implementation based on partnership agreements. Prepare **refined designs** to right-size projects based on available flows.
- ✓ Acquire **land and/or easements** for reuse program/projects and identify roles and responsibilities for site preparation.
- ✓ Secure **program funding** and refine resulting **rate impacts**.

Section 9:

Appendices List

Appendices are compiled in a separate file and include the following (ordered by relevance/importance).

Appendix A: Feasible Project Portfolios

- Appendix A-1: Feasible Project Portfolios TM
- Appendix A-2: Compendium of Flow Assessments, Facility Design Capacity, and Annual Yield
- Appendix A-3: Design Criteria
- Appendix A-4: Preliminary Project Designs
- Appendix A-5: Basis of Cost
- Appendix A-6: Cost Estimates
- Appendix A-7: Evaluation and Risk Assessment Tool
- Appendix A-8: Treated Water Augmentation Pre-Screening Analysis

Appendix B: Regulatory Compliance

- Appendix B-1: Regulatory Compliance Strategy TM
- Appendix B-2: Regulatory Framework TM

Appendix C: Hydraulic Modeling

- Appendix C-1: Modeling Plan and Results
- Appendix C-2: SBWR System Master Plan Updates TM

Appendix D: Project Definition, Roles, and Responsibilities

- Appendix D-1: Project Definition, Roles, and Responsibilities

Appendix E: Baseline Analysis

- Appendix E-1: Baseline Analysis
- Appendix E-2: Recycle Hill Geotechnical Preliminary Study
- Appendix E-3: Recycle Hill Geotechnical and Geo-environmental Exploration Plan

Appendix F: Conceptual Alternatives

- Appendix F-1: Conceptual Alternatives

Appendix G: ROC Management Reference Files

Section 10:

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DRAFT FINAL

Countywide Water Reuse Master Plan
Appendices

Prepared for
Santa Clara Valley Water District
October 2020

***For a full copy of Appendices, click here: https://fta.valleywater.org/dl/9o6e8Q8gsE/?**

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Santa Clara Valley Water District

File No.: 21-0180

Agenda Date: 2/22/2021
Item No.: 4.2.

COMMITTEE AGENDA MEMORANDUM

Joint RWPC with Cities of Palo Alto/E. Palo Alto/Mtn View

SUBJECT:
Update on Collaboration Efforts with the Cities of Palo Alto and Mountain View.

RECOMMENDATION:
Receive information and discuss next steps.

SUMMARY:
The Santa Clara Valley Water District (Valley Water), continues to collaborate with the cities of Palo Alto and Mountain View on several recycled and purified water planning and expansion projects. This agenda memo provides a summary of recently completed and ongoing efforts.

A. Advanced Water Purification System Feasibility Study.

The Advanced Water Purification Feasibility Study (Study) completed in 2017 determined how to improve recycled water quality from the Palo Alto Regional Water Quality Control Plant (RWQCP). The Study summarized the different treatment options to reduce total dissolved solids concentrations from 900 mg/L to 450 mg/L; treatment facility layout options; additional storage and instrumentation needed to blend purified water with tertiary treated recycled water; and an evaluation of reverse osmosis concentrate management. Valley Water contributed 80% of the cost for this effort with Palo Alto and Mountain View contributing the remaining 20%.

B. Northwest County Recycled Water Strategic Plan (Strategic Plan).

The Strategic Plan was completed in 2019 and presented to the Palo Alto City Council on March 3, 2020. The Strategic Plan included an evaluation to expand recycled water from the Palo Alto RWQCP to recycled water customers in Stanford, Los Altos, Los Altos Hills, Mountain View, East Palo Alto and Menlo Park. Key deliverables included: a financial plan, preliminary design, funding strategies, and a study of groundwater in Northwest County. Valley Water contributed 90% of the cost for this effort with Palo Alto contributing the remaining 10%.

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

The Partnership Agreement between Valley Water and Cities of Palo Alto and Mountain View was executed at the end of 2019 and since then Valley Water completed the first annual option payment to the City of Palo Alto for $200,000 in July 2020. The Agreement includes three major components including: Valley Water funding a local salt removal facility in Palo Alto (for $16M); an effluent transfer option to Valley Water for a regional purification facility; and a water supply option for the Cities of Palo Alto and Mountain View to request additional water supply if needed.

The City of Palo Alto has also engaged the smaller partners to the RWQCP to obtain effluent transfer commitments. In August 2020 the City of Los Altos agreed to commit its wastewater effluent to a future regional purification facility. Palo Alto will take this agreement to their Council in FY2021.

In addition, Palo Alto issued a request for proposals in mid-2020 for the design of the local Salt Removal Facility and is currently finalizing the procurement process to start the design work which will last about 18 months at a cost of $2.9M. This effort will be followed by the construction of the 1.125 MGD facility in about two-years' time, which will be funded in part by Valley Water (up to $16M).

D. Update on Palo Alto Regional Advanced Water Purification Facility

Valley Water staff continues to work with the City of Palo Alto to obtain access to the former Los Altos Treatment Plant (LATP) Site located just south of the RWQCP to conduct preliminary environmental and geotechnical investigations. The environmental work includes the delineation of existing wetlands, and the geotechnical work includes a field exploration to determine soil conditions at the site. In addition, staff is also pursuing the preliminary geotechnical investigations along the pipeline alignment from the LATP to the Los Gatos Recharge System in the City of Campbell. The information obtained from these efforts will be incorporated into a request for proposals advertisement later this year as part of the Public Private Partnership (P3) Indirect Potable Reuse Project.

In addition, Valley Water staff is working with Palo Alto staff on the California Environmental Quality Act (CEQA) process, including preparation of a Notice of Preparation (NOP), scheduling a scoping meeting and conducting outreach to local stakeholders.

In the coming months Valley Water staff will work closely with Palo Alto staff to explore land leasing options for the LATP Site and discuss strategies to address permitting options for the use of the existing RWQCP's outfall to the bay for Reverse Osmosis concentrate.

ATTACHMENTS:
Attachment 1: PowerPoint

UNCLASSIFIED MANAGER:
Kirsten Struve, 408-630-3138

Valley Water

Clean Water • Healthy Environment • Flood Protection

Update on Collaboration Efforts with the Cities of Palo Alto and Mountain View

Joint Recycled Water Advisory Committee February 22, 2021

Valley Water

Valley Water Collaboration with Palo Alto and Mountain View

Cost Share Agreements

- Advanced Water Purification System Facility Study (2017)
  - Evaluate treatment technologies to reduce TDS
  - Evaluate sites for treatment systems
  - Scalability for near- and long-term demands
  - Impacts to existing discharge permits and future regulations
  - Construction costs for 1-2 MGD facility upgrade
  - Greenhouse gas emissions and energy usage
- Northwest County Recycled Water Strategic Plan (2020)
  - Phase III Expansion
  - Northwest Groundwater Study
  - Potable Reuse Study
  - Expanding Recycled Water to Partner Agencies

Valley Water Collaboration with Palo Alto and Mountain View

Partnership Agreement to Advance Resilient Water Reuse Programs in Santa Clara County- December 2019

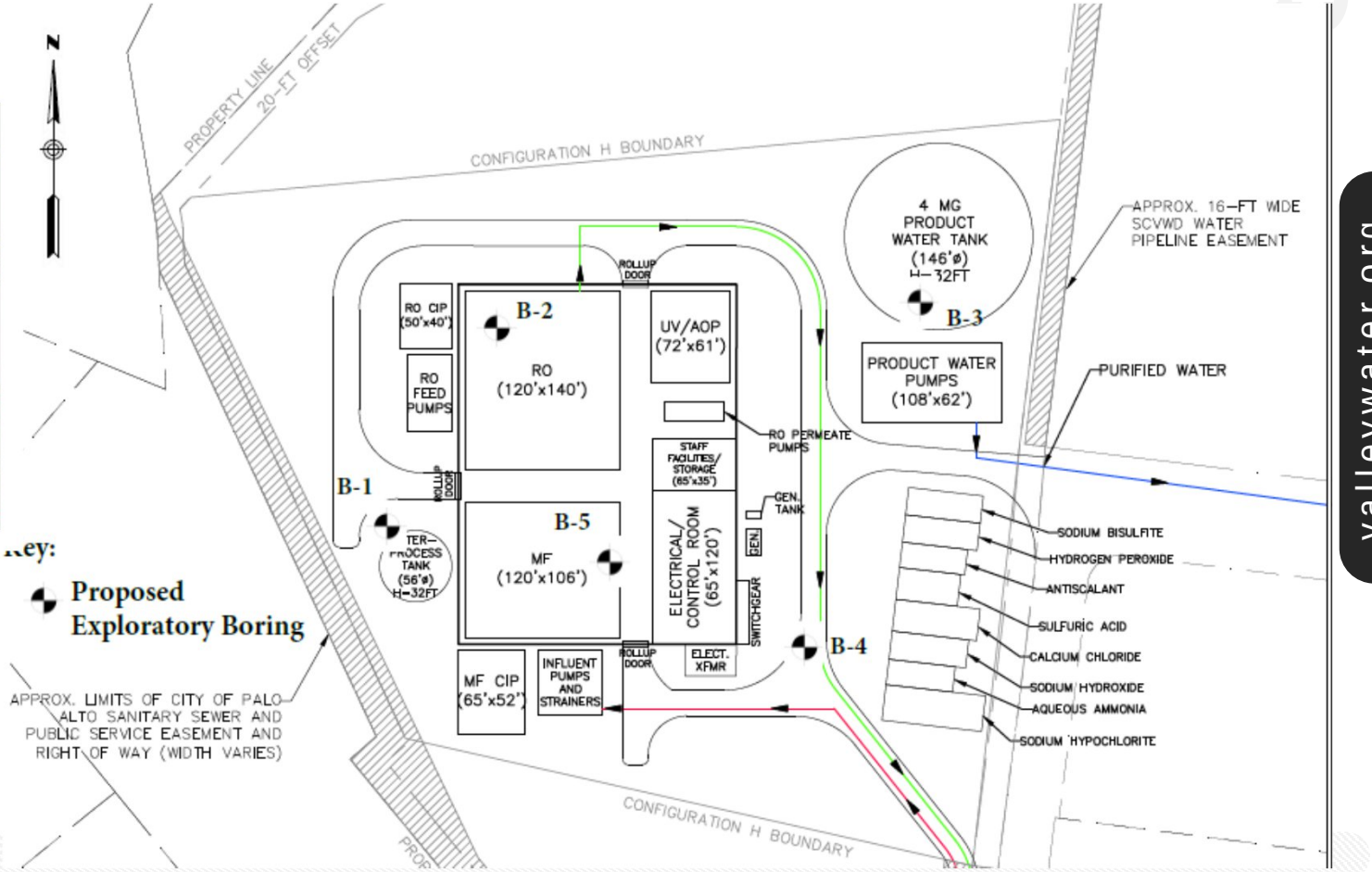
- Funding A Local Salt Removal Facility Owned And Operated By Palo Alto
  - Salt Removal Facility Design Phase. NTP March 2021 for 18 months ($2.9M)
- An Effluent Transfer Option To Valley Water For A Regional Purification Facility Owned And Operated By Valley Water, To Provide Advanced Purified Water For Potable Reuse, And
- A Water Supply Option For The Cities Of Palo Alto And Mountain View To Request An Additional Supply If Needed.

Update on Palo Alto Regional Advanced Water Purification Facility

- Valley Water continues to work with Palo Alto to obtain access to LATP
- Valley Water is planning preliminary environmental and geotechnical work at LATP and along the conveyance pipeline to the Los Gatos Recharge System
- Valley Water is working with Palo Alto on the CEQA process, including preparation of a Notice of Preparation (NOP), scheduling a scoping meeting and conducting outreach to local stakeholders.
- Valley Water and Palo Alto to discuss permitting strategies to discharge ROC.

Valley Water

Potential AWPF Layout in Palo Alto



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Valley Water Collaboration with Palo Alto and Mountain View

Next Steps

- Continue quarterly interagency staff level meetings
- Work with Palo Alto staff to provide review of local Salt Removal facility design, if requested.
- Complete preliminary environmental and geotechnical work
- Discuss leasing options for the LATP Site
- Discuss ROCM permitting strategies with Palo Alto
- Provide Annual Option payment to Palo Alto by July 1, 2021

Valley Water

Clean Water • Healthy Environment • Flood Protection

Santa Clara Valley Water District

File No.: 21-0183

Agenda Date: 2/22/2021
Item No.: 4.3.

COMMITTEE AGENDA MEMORANDUM

Joint RWPC with Cities of Palo Alto/E. Palo Alto/Mtn View

SUBJECT:
Next Meeting and Agenda Items.

RECOMMENDATION:
Discuss and confirm next meeting date and agenda items.

SUMMARY:
Review calendar for potential meeting dates in 2021.

ATTACHMENTS:
None.

UNCLASSIFIED MANAGER:
Michele King, 408-630-2711

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