Santa Margarita Groundwater Agency

GSP Implementation Near Term Activities

Board of Directors Meeting

July 28, 2022

SMGWA

Santa Margarita Groundwater Agency

GSP Implementation Near Term Activities

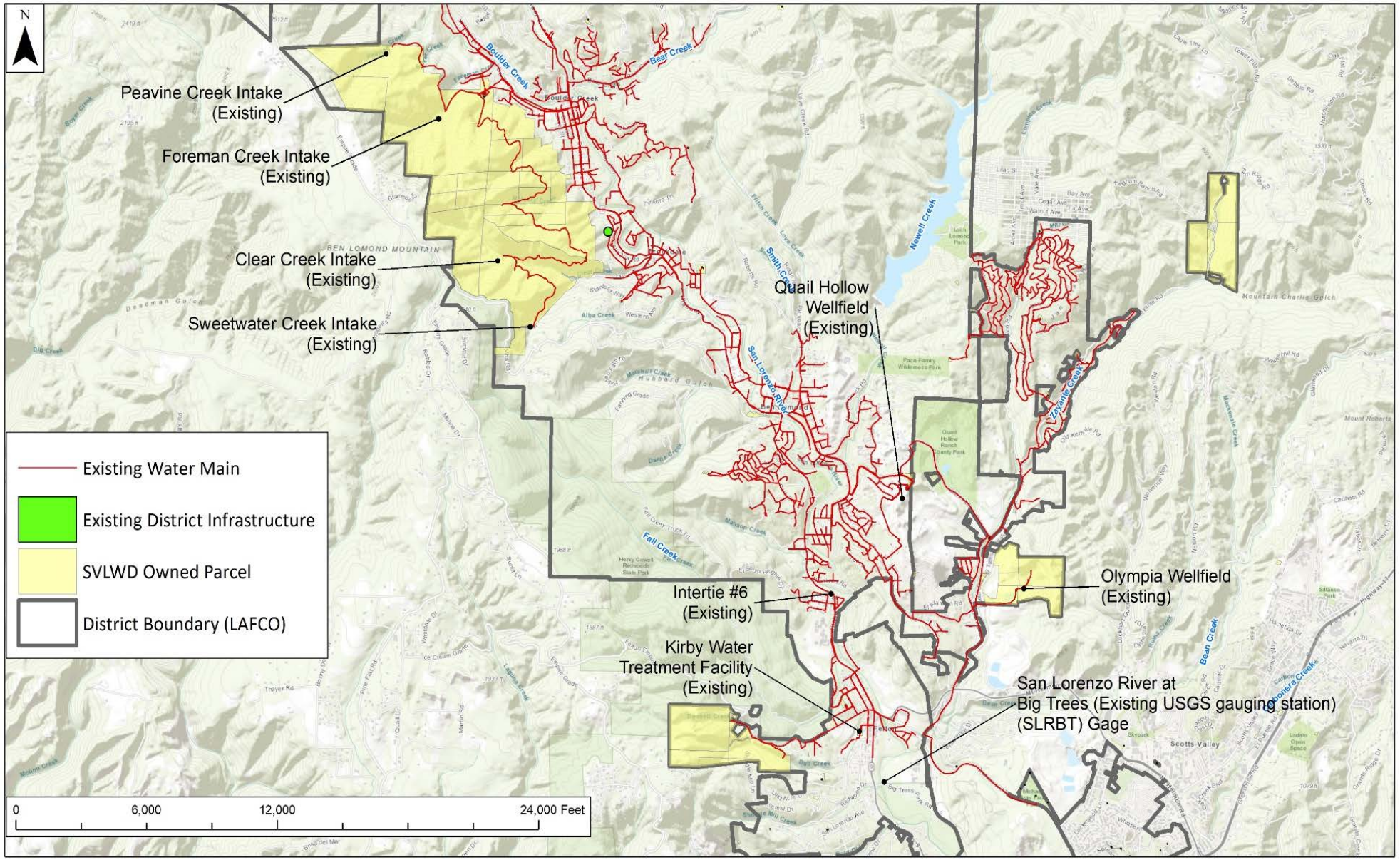
Inter-District Conjunctive Use

Carly Blanchard, San Lorenzo Valley Water District

SMGWA

Inter-District Conjunctive Use (SLVWD)

San Lorenzo Valley WATER DISTRICT



Inter-District Conjunctive Use (SLVWD)

- Background
  - Conjunctive Use Plan (CUP) was developed under a Wildlife Conservation grant administered by the County of Santa Cruz awarded in 2018.
  - The grant's deliverables included:
    - Two studies:
      - (1) the Water Availability Assessment (WAA) and;
      - (2) the Fisheries Resource Considerations and;
  - The CUP and;
  - CEQA analysis (Initial Study – Mitigated Negative Declaration (IS-MND)

San Lorenzo Valley WATER DISTRICT

Inter-District Conjunctive Use (SLVWD)

- Description
  - CUP was developed as a framework for implementing the most beneficial surface and groundwater supply reliability projects. The elements of the proposed project include:
    - Non-emergency Use of three System Interties
    - North System Diversion transfers to the South & Felton Systems
    - Felton System Diversions to North & South Systems
    - Loch Lomond Reservoir

San Lorenzo Valley WATER DISTRICT

Inter-District Conjunctive Use (SLVWD)

- Objective: The CUP allows flexibility to move water from where it is available to where it is needed within the District's jurisdiction, in a manner that creates net benefits for instream flows in the watershed and groundwater basin.
  - The District's operations are comprised of three largely independent water systems:
    - North System located in the San Lorenzo Valley;
    - South System located in the Scotts Valley area; and
    - Felton System located in Felton.
  - 313.4 AF annually from the Loch Lomond reservoir.

San Lorenzo Valley WATER DISTRICT

Inter-District Conjunctive Use (SLVWD)

- Linkage with Other Projects and Status
  - This project was initially defined and evaluated jointly by the County of Santa Cruz and San Lorenzo Valley Water District. It is listed as a high-priority project management action in the GSP submitted by SMGWA in January 2022.

San Lorenzo Valley WATER DISTRICT

Santa Margarita Groundwater Agency

GSP Implementation Near Term Activities

Aquifer Storage and Recovery

Heidi Luckenbach, City of Santa Cruz

SMGWA

Aquifer Storage and Recovery (SCWD)

- Brief Introduction to Santa Cruz Water System
- Objective of an ASR project in the Santa Margarita Groundwater Basin
- Background & Description of Work Performed
- Linkage with Other Projects
- Project Task Status

CITY OF SANTA CRUZ

Aquifer Storage and Recovery (SCWD)

Santa Cruz Water System - Introduction

- 1985-1989: North Santa Cruz County Water Master Plan – Regional and Local focused projects including additional groundwater
- 1989 – 1997: Recognition of need to increase storage including enlarging Loch Lomond as well as interties
- 1997 – 2013: Implementation of the City's Integrated Water Plan focusing on Conservation – Curtailment – Regional Seawater Desalination
- 2013 – 2015: Water Supply Advisory Committee (WSAC)
- 2015 – present: Implementation of the WSAC work plan including additional conservation, water transfers & exchanges, and feasibility evaluation of ASR in the Mid-County and Santa Margarita Groundwater Basins

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Aquifer Storage and Recovery (SCWD)

Objectives of ASR in the Santa Margarita Groundwater Basin

- Contribute to the ability of Santa Cruz Water Department to meet supply reliability goals (WSAC, 2015)
- Contribute to attaining sustainability of the basin by meeting sustainable management criteria by 2042
- Promote conjunctive use of resources and regional collaboration

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Aquifer Storage and Recovery (SCWD)

Background & Description of Work Performed

- City of Santa Cruz Water Supply Advisory Committee (2015)
- ASR Phased Evaluation (2015 – present)
- Groundwater Modeling for Scotts Valley Water District Kennedy Jenks (2015)
- Santa Margarita Groundwater Agency Concept (2021)
- City of Santa Cruz Water Rights Project (2021)

Aquifer Storage and Recovery (SCWD)

Background & Description of Work Performed/WSAC

- WSAC Recommendations: Conservation, Transfers & Exchanges with neighboring water agencies, ASR, Recycled Water, Desalination
- The ASR concept includes the diversion of excess winter and spring water from city sources, treatment at the Graham Hill Water Treatment Plant and injection into the Mid-County and/or Santa Margarita Groundwater Basin
- At that time ~600mgy was estimated as available for injection
- 10% losses were assumed

Aquifer Storage and Recovery (SCWD)

Background & Description of Work Performed/ASR

- ASR Phased Evaluation (2015 – present)

- **Phase 0 –** Reconnaissance-level work focused on review of published information, review of existing wells, etc.
- **Phase 1 – Technical Feasibility Analyses**: Performance of higher-level technical feasibility investigations including groundwater modeling, completion of site-specific injection capacity and geochemical interaction analyses, and development of an ASR pilot testing program. (1-2 years)
- **Phase 2 – Pilot ASR Testing**: Performance of an ASR pilot testing program and assessment of probable ASR system performance, costs and schedule to complete build-out of the ASR system. (1-2 years)
- **Phase 3 – Project Implementation**: Development of full-scale ASR project basis-of-design, construction of ASR system facilities (*perhaps incrementally*), establishment of ASR project operational parameters, and long-term operation of project to achieve target storage volumes. (2-10years)

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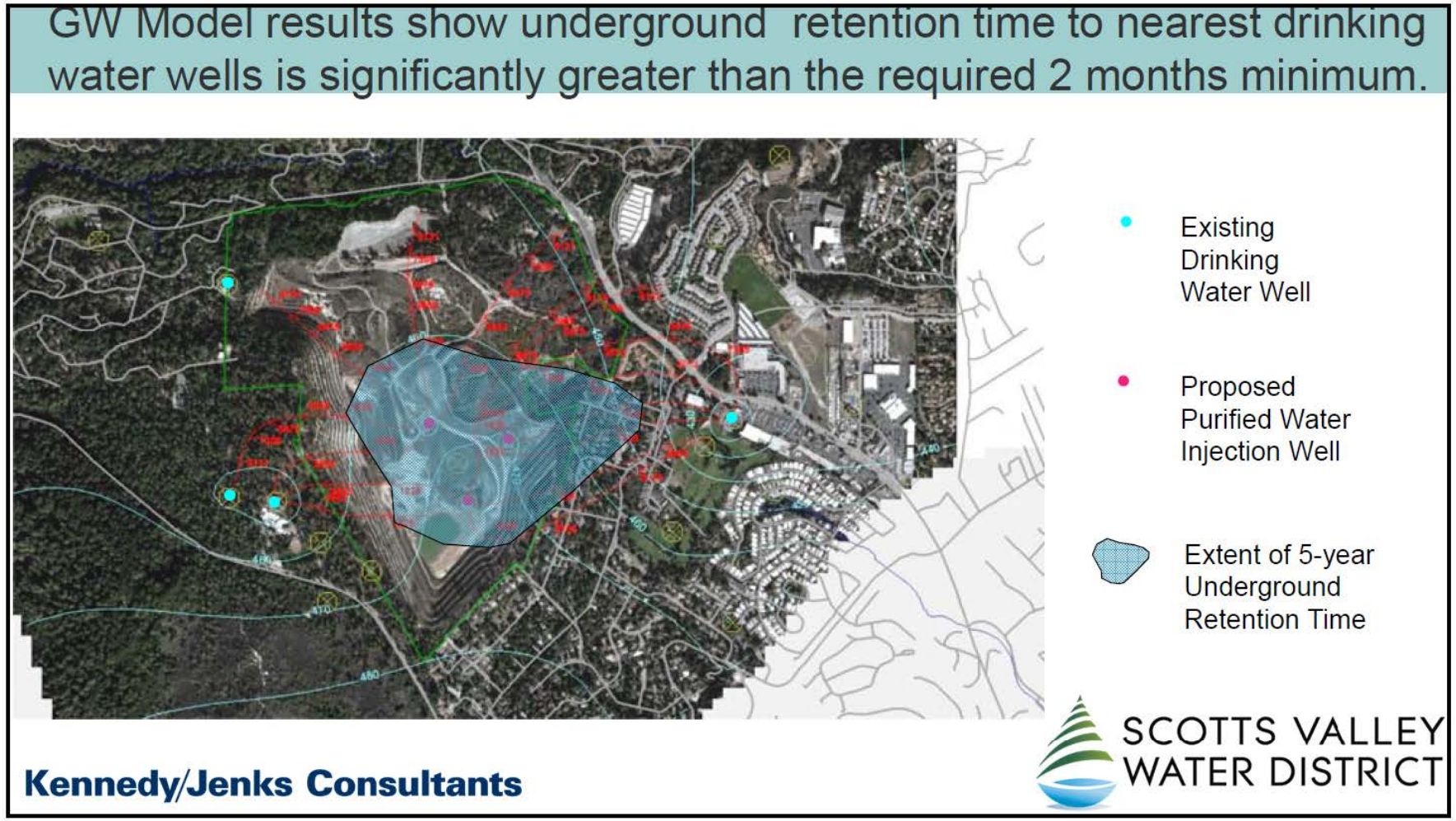
Aquifer Storage and Recovery (SCWD)

Background & Description



Reference: "Hanson Quarry GWR Project RW Facilities Planning Study" Presentation By Kennedy/Jenks Consultants to the Santa Margarita Groundwater Basin Advisory Committee (11/18/2015)

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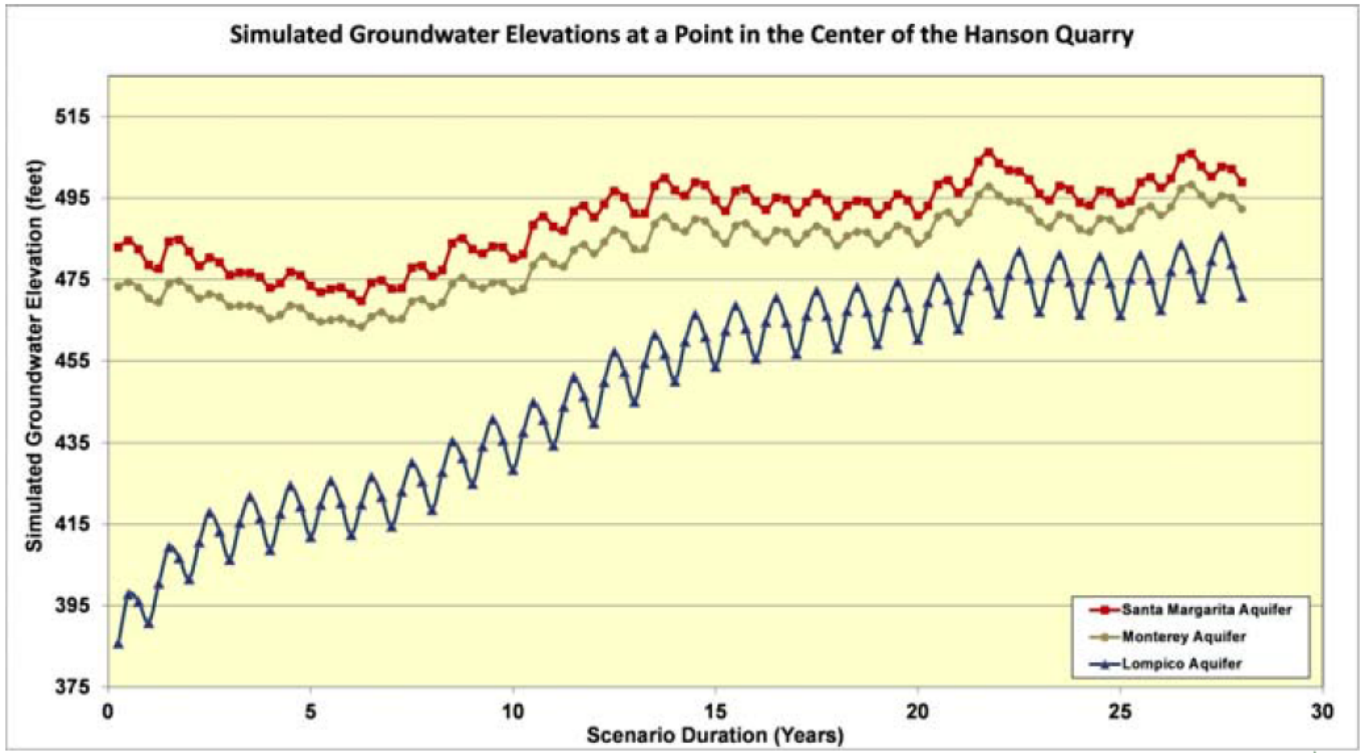
Aquifer Storage and Recovery (SCWD)

Background & Description

The GW Model shows that the Lompico Aquifer under HQ can continue to receive the volumes of injection water for over 20 years



Lowest Surface Elevation in Hanson Quarry - 554 feet

Elevation of SM/Lompico Contact - 480 feet

Kennedy/Jenks Consultants

SCOTTS VALLEY WATER DISTRICT

Reference: "Hanson Quarry GWR Project RW Facilities Planning Study" Presentation By Kennedy/Jenks Consultants to the Santa Margarita Groundwater Basin Advisory Committee (11/18/2015)

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Aquifer Storage and Recovery (SCWD)

Background & Description

May 2015
Project No. 14-0101

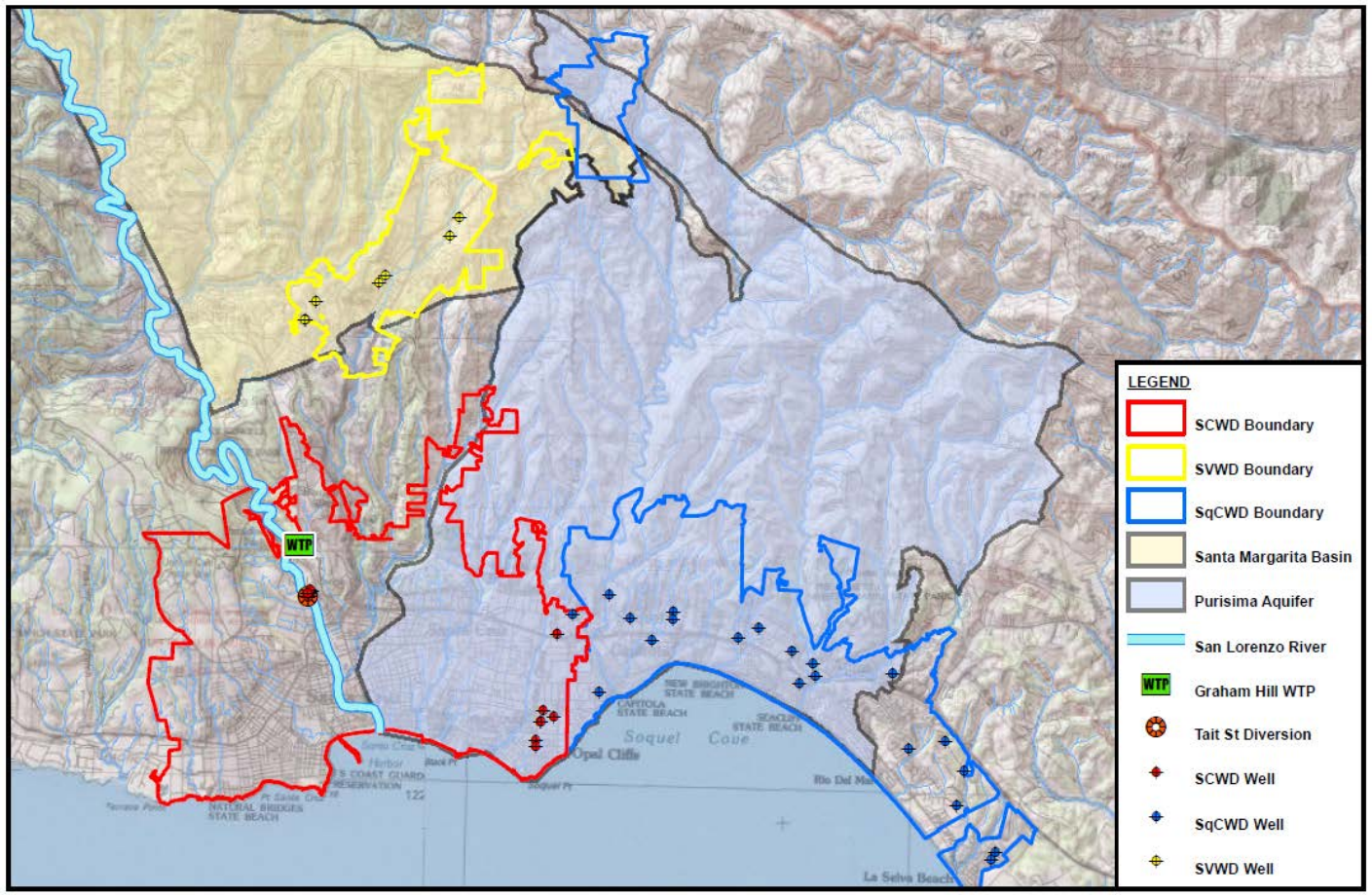

FIGURE 1. STUDY AREA LOCATION MAP
Reconaissance-Level ASR Study
Stratus Consulting / City of Santa Cruz WSAC

ref: Pueblo Water Resources May 2015 for City of Santa Cruz Water Supply Advisory Committee

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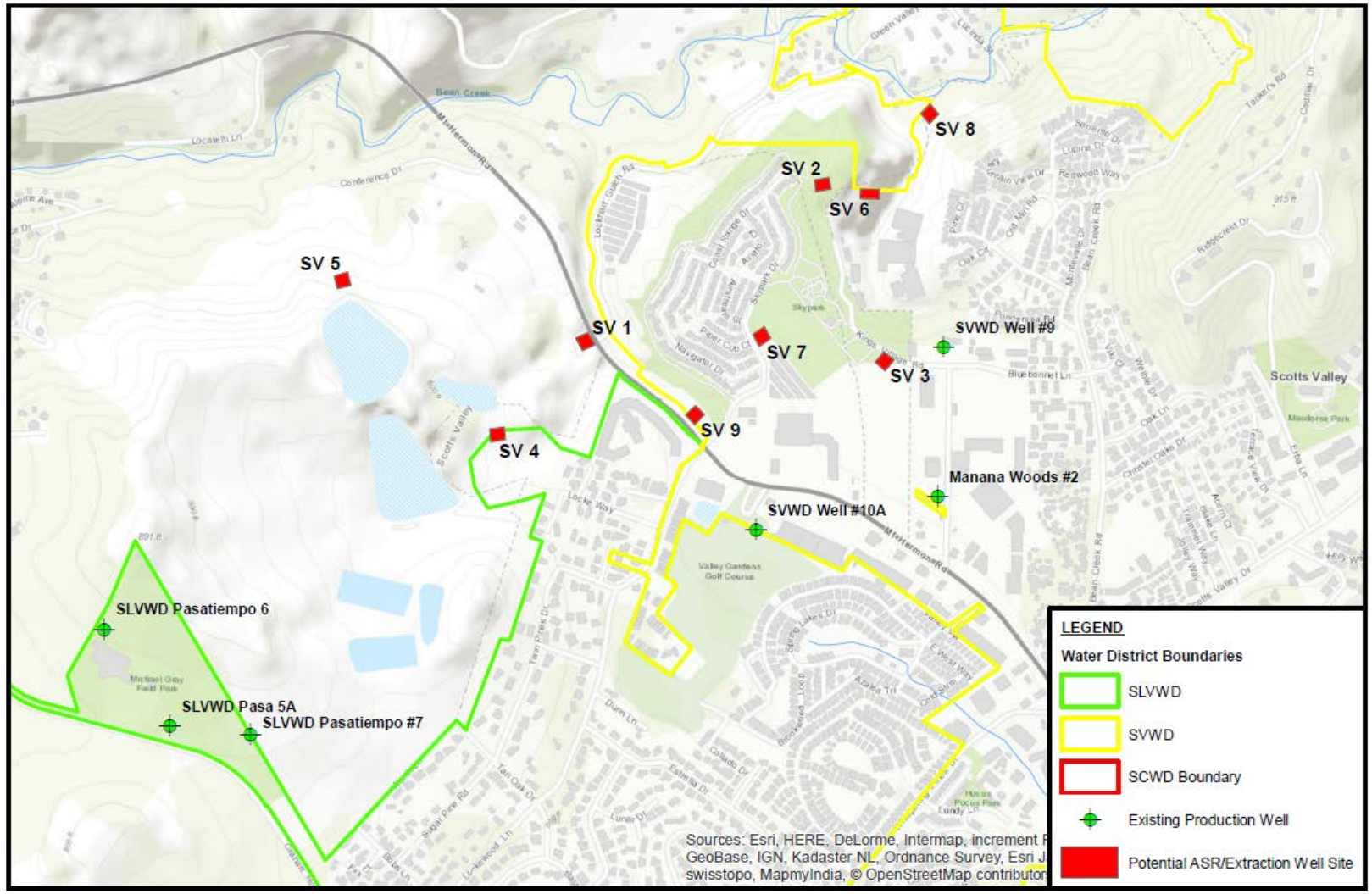
Aquifer Storage and Recovery (SCWD)

Background & Description

- Des

July 2018
Project No. 15-0111



PUEBLO water resources

N W E S

1 inch = 1,000 feet

0 500 1,000 2,000 Feet

FIGURE 1. SIMULATED POTENTIAL ASR/EXTRACTION WELL SITES - SMBG
Santa Cruz ASR Project - Phase 1 Feasibility Investigation
City of Santa Cruz

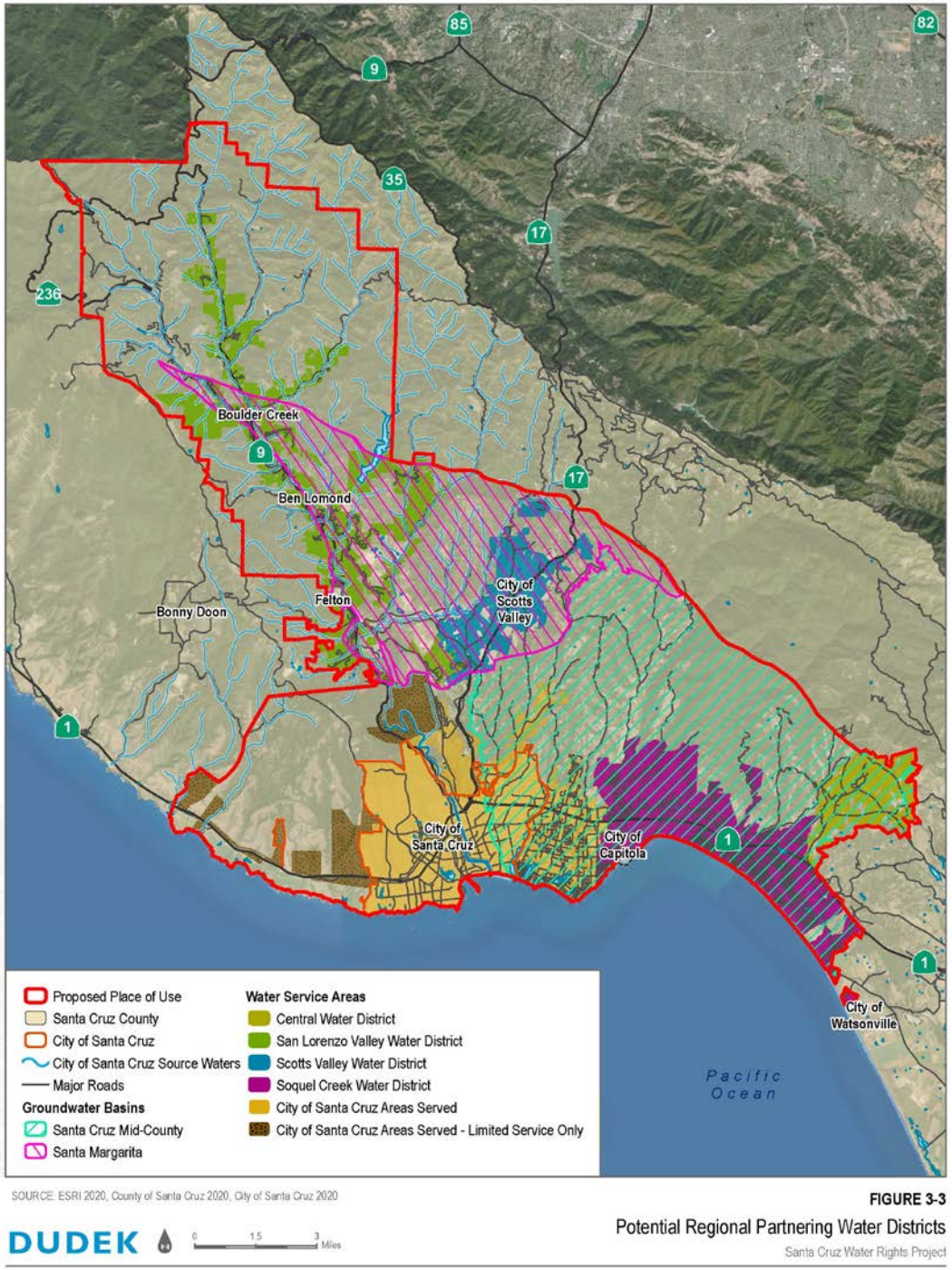
CITY OF SANTA CRUZ

Santa Cruz Water Rights Project

Background & Description

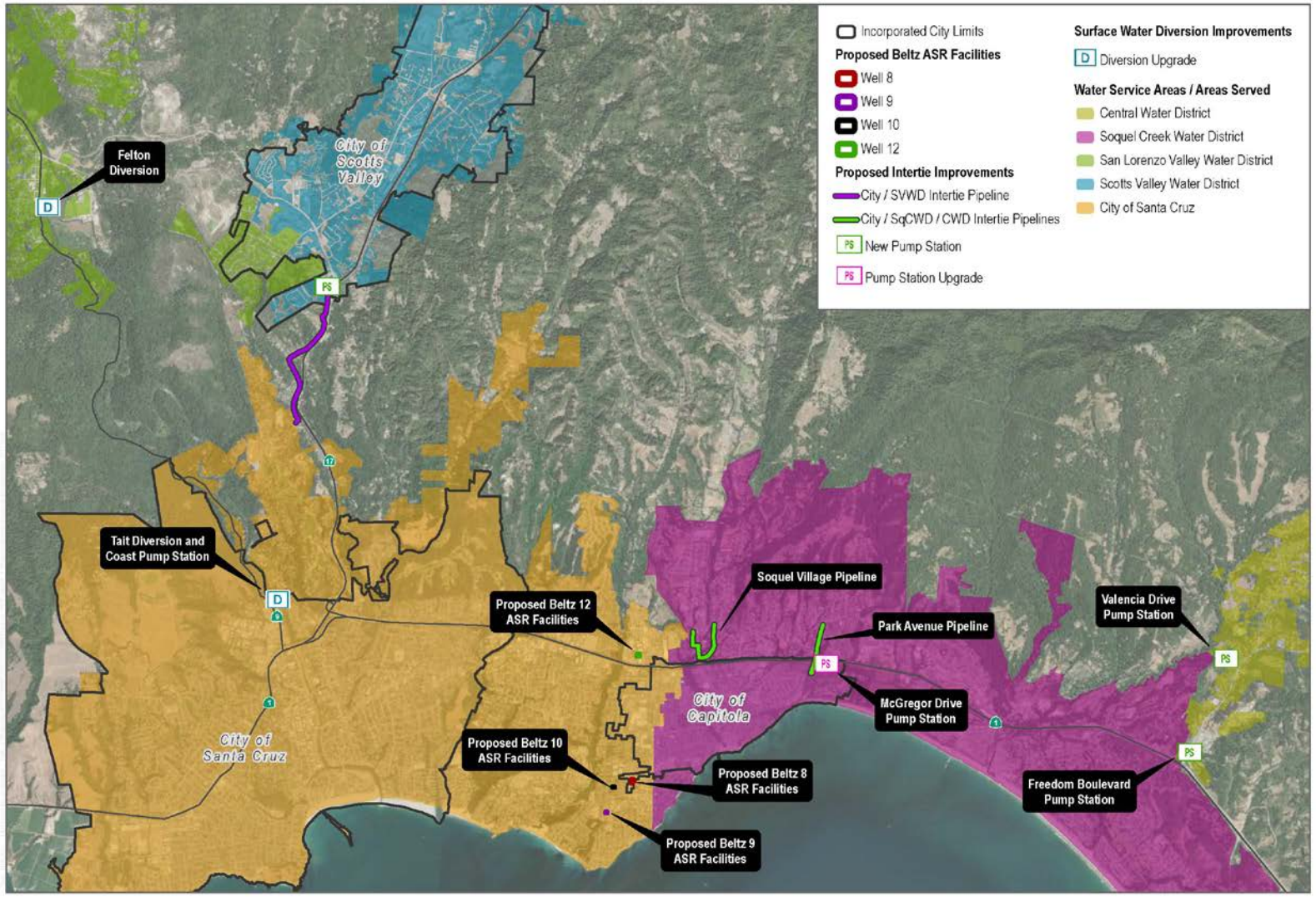
Table 3-3. Project and Programmatic Components

Proposed Project Components	Project Components	Programmatic Components
WATER RIGHTS MODIFICATIONS		
Place of Use	✓	
Points of Diversion	✓	
Underground Storage and Purpose of Use	✓	
Method of Diversion	✓	
Extension of Time	✓	
Bypass Requirement (Agreed Flows)	✓	
INFRASTRUCTURE COMPONENTS		
Water Supply Augmentation Components		
Aquifer Storage and Recovery (ASR)		✓
New ASR Facilities at Unidentified Locations		✓
Beltz ASR Facilities at Existing Beltz Well Facilities	✓	
Water Transfers and Exchanges and Intertie Improvements		✓
Surface Water Diversion Improvements		
Felton Diversion Fish Passage Improvements		✓
Tait Diversion and Coast Pump Station Improvements		✓



Aquifer Storage and Recovery (SCWD)

Linkages with Other Projects



SOURCE: Bing Maps Accessed 2020, Kennedy/Jenks Consultants 2012 and 2014, URS 2013, County of Santa Cruz 2020

DUDEK 0 3,250 6,500 Feet

FIGURE 3-4

Proposed New and Upgraded Infrastructure Components

Santa Cruz Water Rights Project

CITY OF SANTA CRUZ

Aquifer Storage and Recovery (SCWD)

Project Status

7. Schedule Table of Priority Next Project Tasks

See below from WSAC preliminary ASR work plan

Phase	General Description	Task #	Task	Estimated Duration (years)
1	Higher-Level Feasibility Analyses	1.1	Identify / Select Existing Well(s) for Potential Pilot ASR Testing	0.25
		1.2	Perform Site-Specific Injection Capacity Constraints Analysis for Selected Existing Well	0.25
		1.3	Perform 3-component Geochemical Interaction Modeling	0.25
		1.4	Develop Pilot ASR Testing Program	0.25
		1.5	Identify Potential New ASR Well Sites	0.5
		1.6	Preliminary Groundwater Modeling of ASR Scenarios (parallel to above tasks)	0.5 - 2.0
			Phase 1 Duration Subtotal	1 - 2
2	Pilot ASR Testing	2.1	Retrofit Existing Well for Pilot ASR Testing (temporary facilities)	0.25
		2.2	Perform Injection Well Hydraulic Testing	0.25
		2.3	Develop Multiple ISR Cycle Testing Program (based on results of T 2.2)	0.25
		2.4	Implement Multiple ISR Cycle Tests	1.0 - 2.0
		2.5	Refined Groundwater Modeling of ASR Scenarios (based on results of T 2.4)	0.5
		2.6	Develop Design-of-Design for Permanent ASR Well Facilities	0.5
			Phase 2 Duration Subtotal	2 - 4
3	Project Implementation	3.1	Procurement of ASR Facilities Properties / ROW	1.0
		3.2	Design / Engineer ASR Well Project Facilities (parallel with T 2.1)	1.0
		3.3	Perform CEQA for Permanent ASR Project	0.5
		3.4	ASR Well Drilling and Production Testing	1.5
		3.5	Infrastructural Improvements (diversion/treatment/conveyance) parallel with T 2.4	1.5
		3.6	Perform ASR Demonstration Testing and Develop Site-Specific Operational Parameters	1.0 - 2.0
			Phase 3 Duration Subtotal	4 - 6
			Total Estimated Duration	**6 - 11**

CITY OF SANTA CRUZ

Aquifer Storage and Recovery (SCWD)

Project Task Status

5A. Project Task Status

Task Type	Status				Report Title and Date/ Link if applicable
	Not Applicable	Completed	Outstanding Project Tasks		
			Initiated, Not Completed	Not Initiated	
Preliminary Feasibility Studies	☐	☐	☒	☐	
Hydraulic Modeling	☐	☐	☐	☒	
Groundwater Modeling	☐	☐	☒	☐	
Right of Way Definition	☐	☐	☐	☒	
Water Availability Analysis	☐	☐	☒	☐	
Water Quality Analyses (surface and groundwater compatibility)	☐	☐	☒	☐	Very high level work has been initiated
Hydro-Geochemical and Related Groundwater Analyses	☐	☐	☒	☐	
Groundwater Anti-Degradation Analysis	☐	☐	☐	☒	
Pre-Design Report	☐	☐	☐	☒	
Injection Project Pilot Testing	☐	☐	☐	☒	
Preliminary Design	☐	☐	☐	☒	
Preliminary Environmental Analysis and Permitting Requirements	☐	☐	☐	☒	
Water Rights Modifications	☐	☐	☒	☐	
Cost Estimates	☐	☐	☒	☐	
Development of Inter-Agency Agreements	☐	☐	☐	☒	Only early discussions are being held
Implementation Planning	☐	☐	☒	☐	

CITY OF SANTA CRUZ

Santa Margarita Groundwater Agency

GSP Implementation Near Term Activities

Purified Wastewater Recharge

David McNair, Scotts Valley Water District

SMGWA

Purified Wastewater Recharge (SVWD)

Background:

- Scotts Valley Water District has conducted feasibility studies looking at local and regional recycle water sources to provide an Indirect Potable Reuse groundwater injection system as a means to recover the Santa Margarita Ground Water Basin (SMGWB)
- The Santa Cruz Regional Recycled Water Facilities Planning Study completed by the City of Santa Cruz (City) in 2018 evaluated recycled water alternatives.
- A Phase 2 Recycled Water Feasibility Study currently underway is evaluating Soquel Creek Water District's (SqCWD) Pure Water Soquel (PWS) Project, the recent studies by SVWD looking at local and regional alternatives, and the Santa Margarita Groundwater Agency (SMGWA) Groundwater Sustainability Plan (GSP).

SCOTTS VALLEY WATER DISTRICT

svwd.org svwater

Purified Wastewater Recharge (SVWD)

Description:

- Utilizing recycled water as a supplemental supply source for groundwater replenishment helps to achieve ground water sustainability through local and regional collaboration.
- Soquel Creek Water District (SqCWD) is constructing the Pure Water Soquel project. It will treat Santa Cruz wastewater and produce purified water for groundwater injection to replenish the Mid-County groundwater basin and prevent seawater intrusion.
- The Pure Water Soquel project is sized to produce 1,500 AFY with the potential expansion to 3,000 AFY if other local or regional demands arise.

SCOTTS VALLEY WATER DISTRICT
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Purified Wastewater Recharge (SVWD)

Objective:

- Concept 1. Maximize tertiary production at SqCWD's Pure Water Soquel Facility providing tertiary recycled water to an advanced water treatment facility in Scotts Valley for groundwater recharge in the SMB.
- Concept 2. Maximize purified water production at SqCWD's Pure Water Soquel Facility providing purified recycled water to Scotts Valley for groundwater recharge in the SMB.
- Both concepts could provide non-potable reuse to customers along the way such as the DeLaveaga Golf Course, Pasatiempo Golf Course and SVWD recycled water customers

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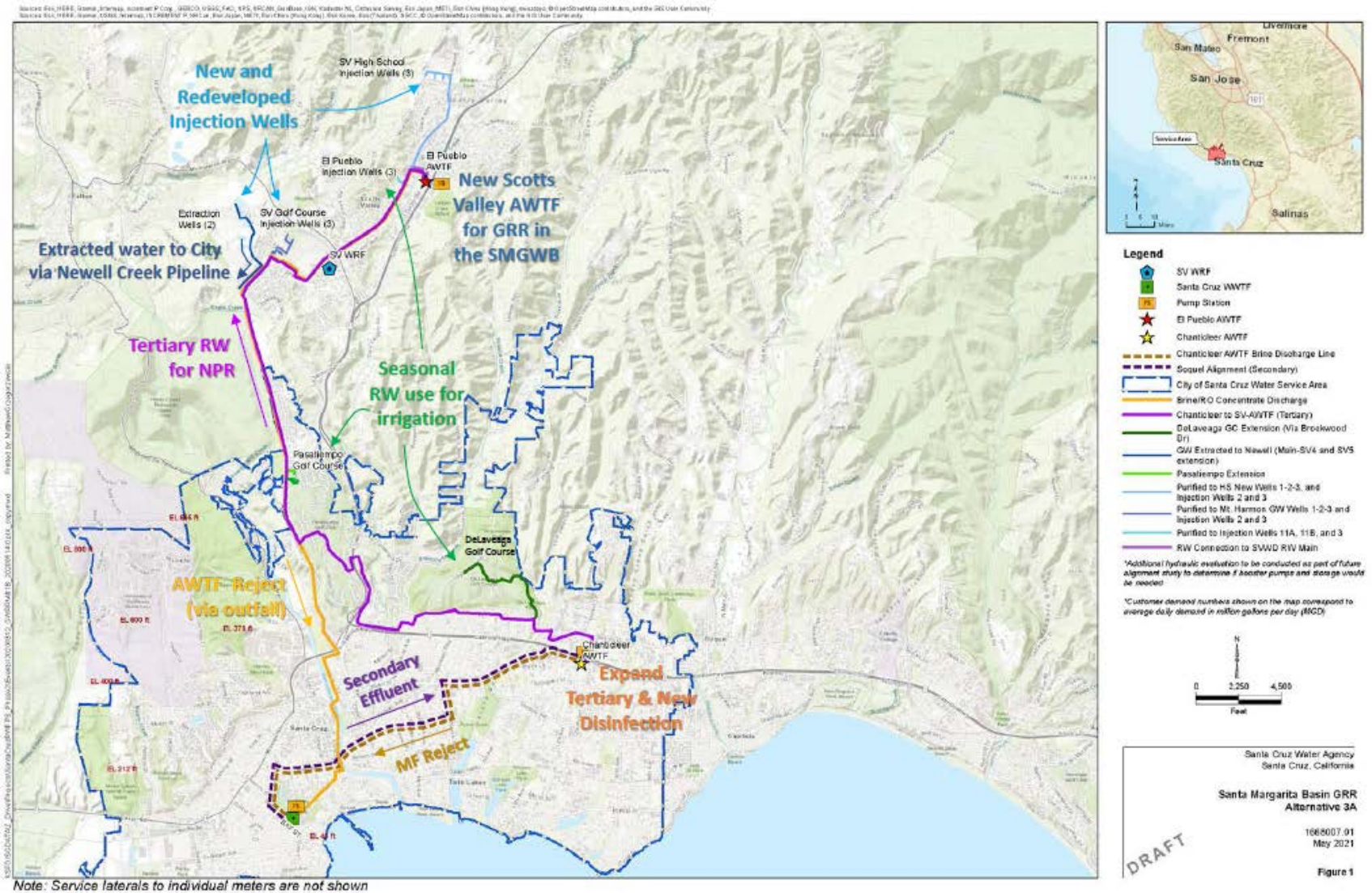
Purified Wastewater Recharge (SVWD) Concept 1



Legend

- SV WRF
- Santa Cruz WWTF
- Pump Station
- El Pueblo AWTF
- Chanticleer AWTF
- Chanticleer AWTF Brine Discharge Line
- Soquel Alignment (Secondary)
- City of Santa Cruz Water Service Area
- Brine/RO Concentrate Discharge
- Chanticleer to SV-AWTF (Tertiary)
- DeLaveaga GC Extension (Via Brookwood Dr)
- GW Extracted to Newell (Main-SV4 and SV5 extension)
- Pasatiempo Extension
- Purified to HS New Wells 1-2-3, and Injection Wells 2 and 3
- Purified to Mt. Harmon GW Wells 1-2-3 and Injection Wells 2 and 3
- Purified to Injection Wells 11A, 11B, and 3
- RW Connection to SVWD RW Main

*Additional hydraulic evaluation to be conducted as part of future alignment study to determine if booster pumps and storage would be needed

*Customer demand numbers shown on the map correspond to average daily demand in million gallons per day (MGD)

Santa Cruz Water Agency
Santa Cruz, California

Santa Margarita Basin GRR
Alternative 3A

1668007.01
May 2021

DRAFT

Figure 1

Note: Service laterals to individual meters are not shown

SCOTTS VALLEY WATER DISTRICT

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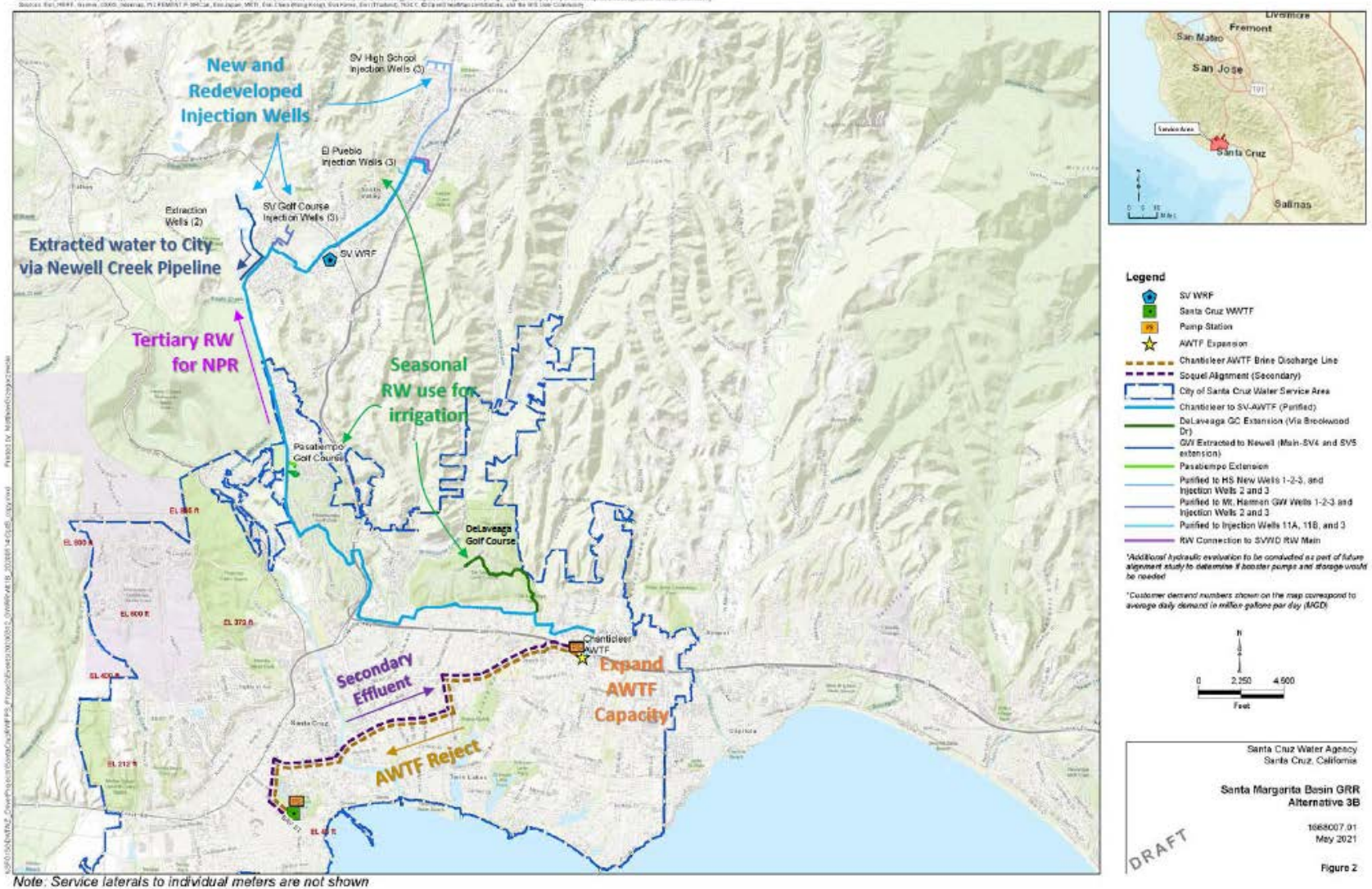
Purified Wastewater Recharge (SVWD) Concept 2



Legend

- SV WRF
- Santa Cruz WWTF
- Pump Station
- AWTF Expansion
- Chanticleer AWTF Brine Discharge Line
- Soquel Alignment (Secondary)
- City of Santa Cruz Water Service Area
- Chanticleer to SV-AWTF (Purified)
- DeLaveaga GC Extension (Via Brookwood Dr)
- GW Extracted to Newell (Main-SV4 and SV5 extension)
- Pasatiempo Extension
- Purified to HS New Wells 1-2-3, and Injection Wells 2 and 3
- Purified to Mt. Herman GW Wells 1-2-3 and Injection Wells 2 and 3
- Purified to Injection Wells 11A, 11B, and 3
- RW Connection to SVWD RW Main

*Additional hydraulic evaluation to be conducted as part of future alignment study to determine if booster pumps and storage would be needed

*Customer demand numbers shown on the map correspond to average daily demand (in million gallons per day (MGD)

N

0 2,250 4,500

Feet

Santa Cruz Water Agency
Santa Cruz, California

Santa Margarita Basin GRR
Alternative 3B

1668007.01
May 2021

DRAFT

Figure 2

Note: Service laterals to individual meters are not shown

SCOTTS VALLEY WATER DISTRICT

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Purified Wastewater Recharge (SVWD)

Linkage with Other Projects:

- This project was initially defined and evaluated by the Scotts Valley Water District and the City of Santa Cruz.
- The SMGWA GSP includes this in its Projects and Management Actions (PMAs).

SCOTTS VALLEY WATER DISTRICT

svwd.org svwater

Next Steps

Task Type	Status				Report Title and Date/ Link if applicable
	Not Applicable	Completed	Outstanding Project Tasks		
			Initiated, Not Completed	Not Initiated	
Preliminary Feasibility Studies	☐	☒	☐	☐	KJ TM June 2021
Hydraulic Modeling	☐	☐	☒	☐	
Groundwater Modeling	☐	☐	☒	☐	
Right of Way Definition	☐	☐	☒	☐	
Water Availability Analysis	☐	☐	☒	☐	
Water Quality Analyses (surface and groundwater compatibility)	☐	☐	☒	☐	
Hydro-Geochemical and Related Groundwater Analyses	☒	☐	☒	☐	
Groundwater Anti-Degradation Analysis	☐	☐	☒	☐	
Pre-Design Report	☐	☐	☒	☐	
Injection Project Pilot Testing	☐	☐	☒	☐	
Preliminary Design	☐	☐	☒	☐	
Preliminary Environmental Analysis and Permitting Requirements	☐	☐	☒	☐	
Water Rights Modifications	☒	☐	☐	☐	
Cost Estimates	☐	☐	☒	☐	KJ TM June 2021. Needs updating
Development of Inter-Agency Agreements	☐	☐	☒	☐	Initial discussions are being held
Implementation Planning	☐	☐	☒	☐	

SCOTTS VALLEY WATER DISTRICT

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Purified Wastewater Recharge (SVWD)

David McNair, Operations Manager

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SCOTTS VALLEY WATER DISTRICT

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