BACWA BAY AREA CLEAN WATER AGENCIES

May 16, 2023

Recycled Water Committee Meeting

SF-Peninsula Regional PureWater (SPRP) Program

SPRP Parties

SPRP Parties:

BAWSCA Bay Area Water Supply & Conservation Agency

San Francisco Water Power Sewer

Redwood City California Founded 1867

SVCW Silicon Valley Clean Water

City of San Mateo California

City of Foster City Incorporated 1971

California Water Service

MPWD

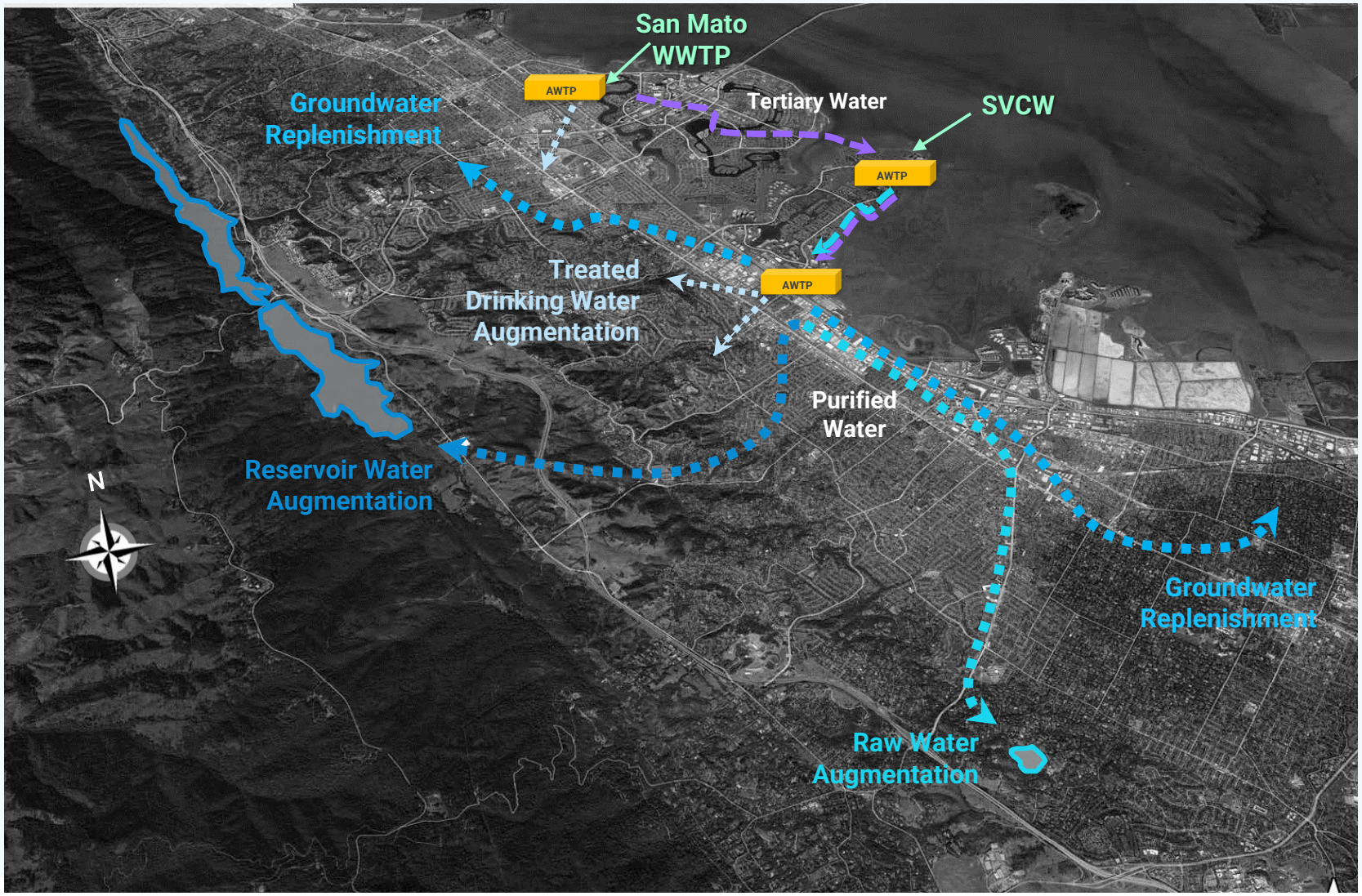
Consulting Team:

Kennedy Jenks

Data instincts Public Outreach Consultants

MULTI-PHASED APPROACH TO BENEFICAL REUSE

- **Phase 1:**
  Initial Study
- **Phase 2:**
  Concept and Institutional Studies
- **Phase 3:**
  Feasibility Study



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PROGRAM STATS

PURIFIED WATER

- Advanced Treatment MF/RO/UV/AOP (+O3/BAC)
- 6 to 12 mgd of purified water production

COSTS

- Capital Costs ~$350M - $750M
- Life Cycle Unit Costs ~$4,000/AFY - $5,000/AFY

MAJOR FACILITIES

- 20+ miles of pipelines
- 4 Pump Stations
- 6 MG of Storage
- Discharge/Tie-ins

PARTNERSHIPS SPAN BOUNDARIES AND SERVICE AREAS

WATER PROVIDERS

San Francisco Water Power Sewer

MID-PENINSULA WATER DISTRICT

CALIFORNIA WATER SERVICE CO.

WATER AND WASTEWATER SERVICES

Redwood City California Founded 1867

CITY OF FOSTER CITY INCORPORATED 1971

WASTEWATER AGENCIES

SVCW Silicon Valley Clean Water

CITY OF SAN MATEO CALIFORNIA

SPECIAL DISTRICT

BAWSCA Bay Area Water Supply & Conservation Agency

Source Waters

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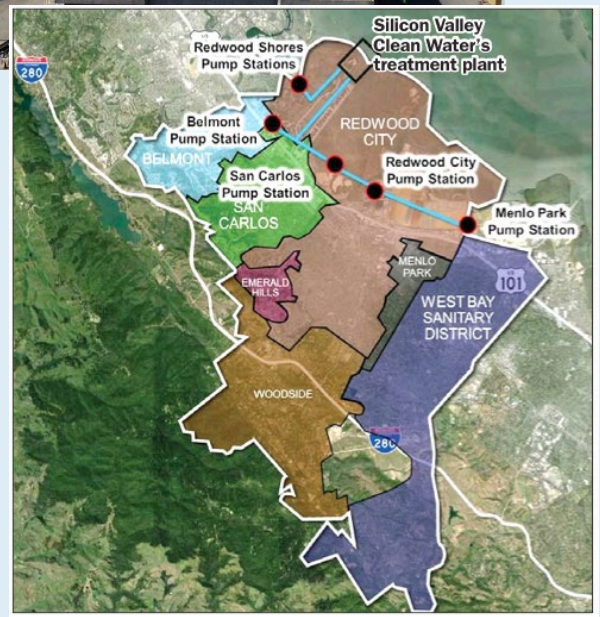
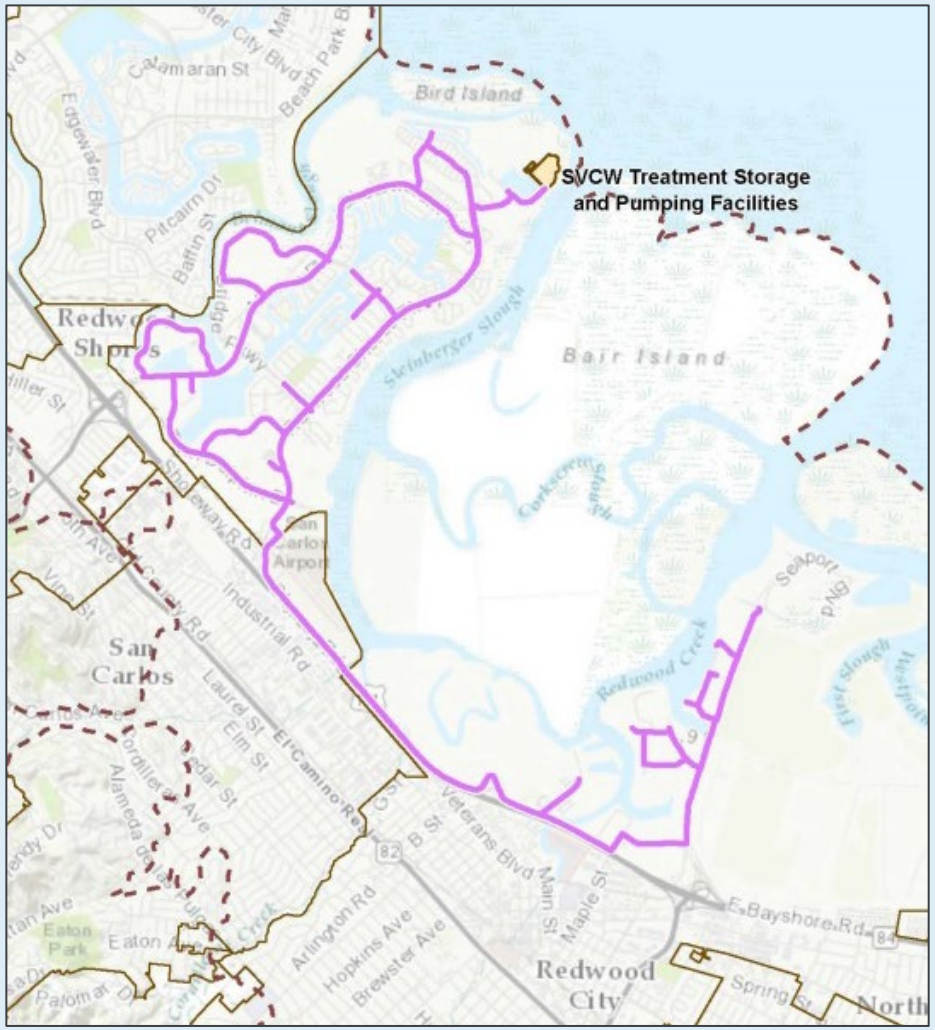
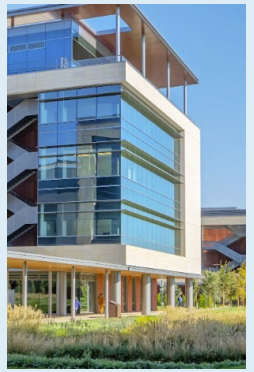
Source Water from SVCW







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Source Water from San Mateo

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Types of Potable Reuse

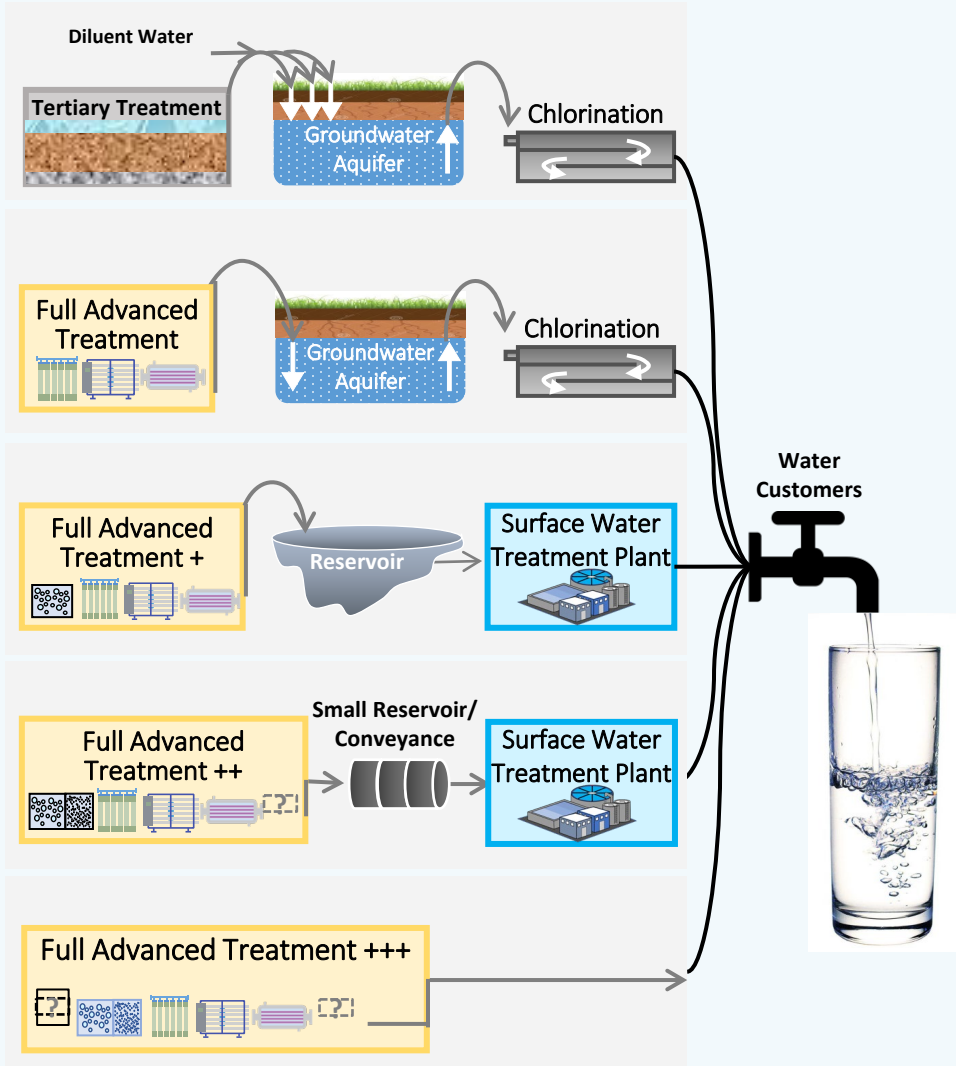
Groundwater Recharge:
Surface Spreading

Groundwater Recharge:
Direct Injection

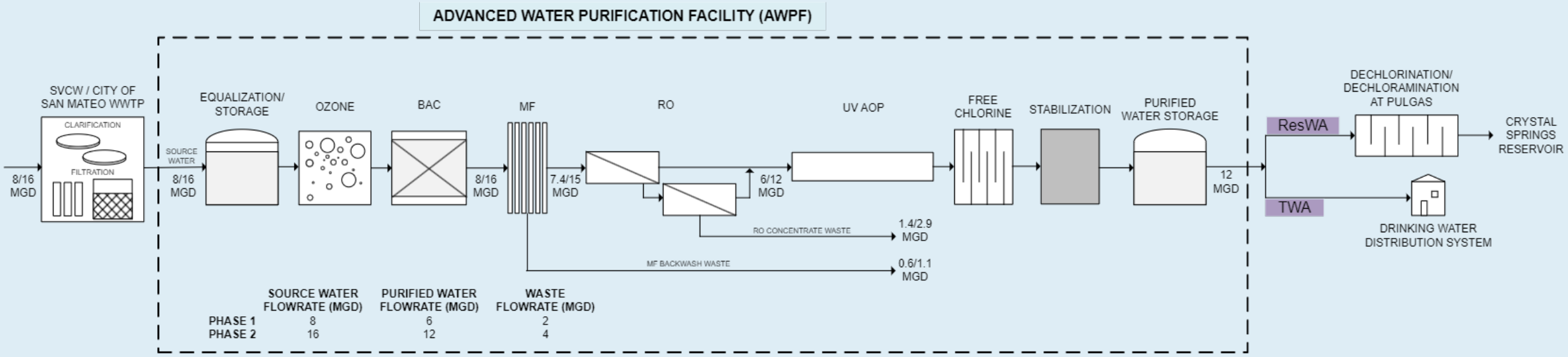
Reservoir Water Augmentation
PREP Phase 1-3 (Crystal Springs Res)

Raw Water Augmentation

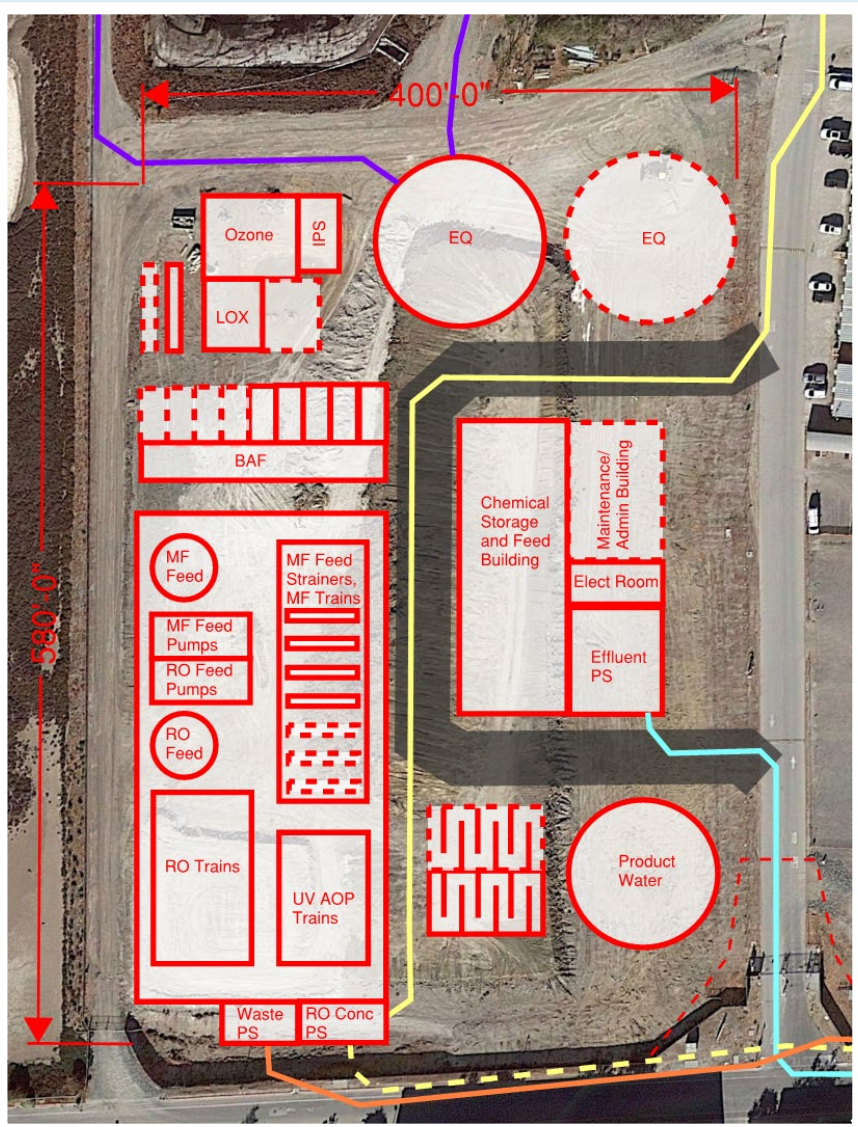
Treated Drinking Water Augmentation
PREP Phase 3 (CalWater, Redwood City)

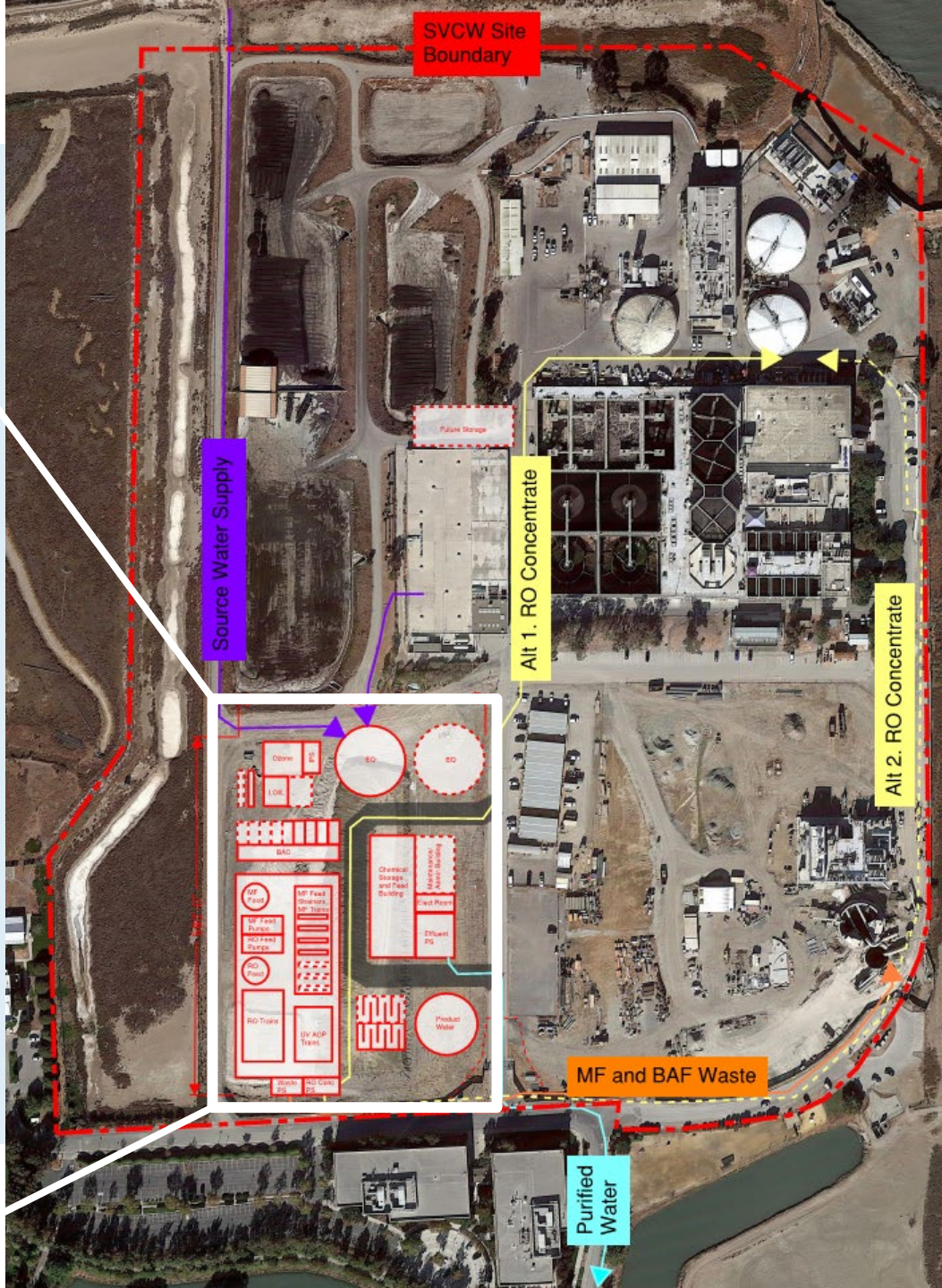


Treatment Train for ResWA & TDWA



AWPF Layout





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Conveyance | Overview

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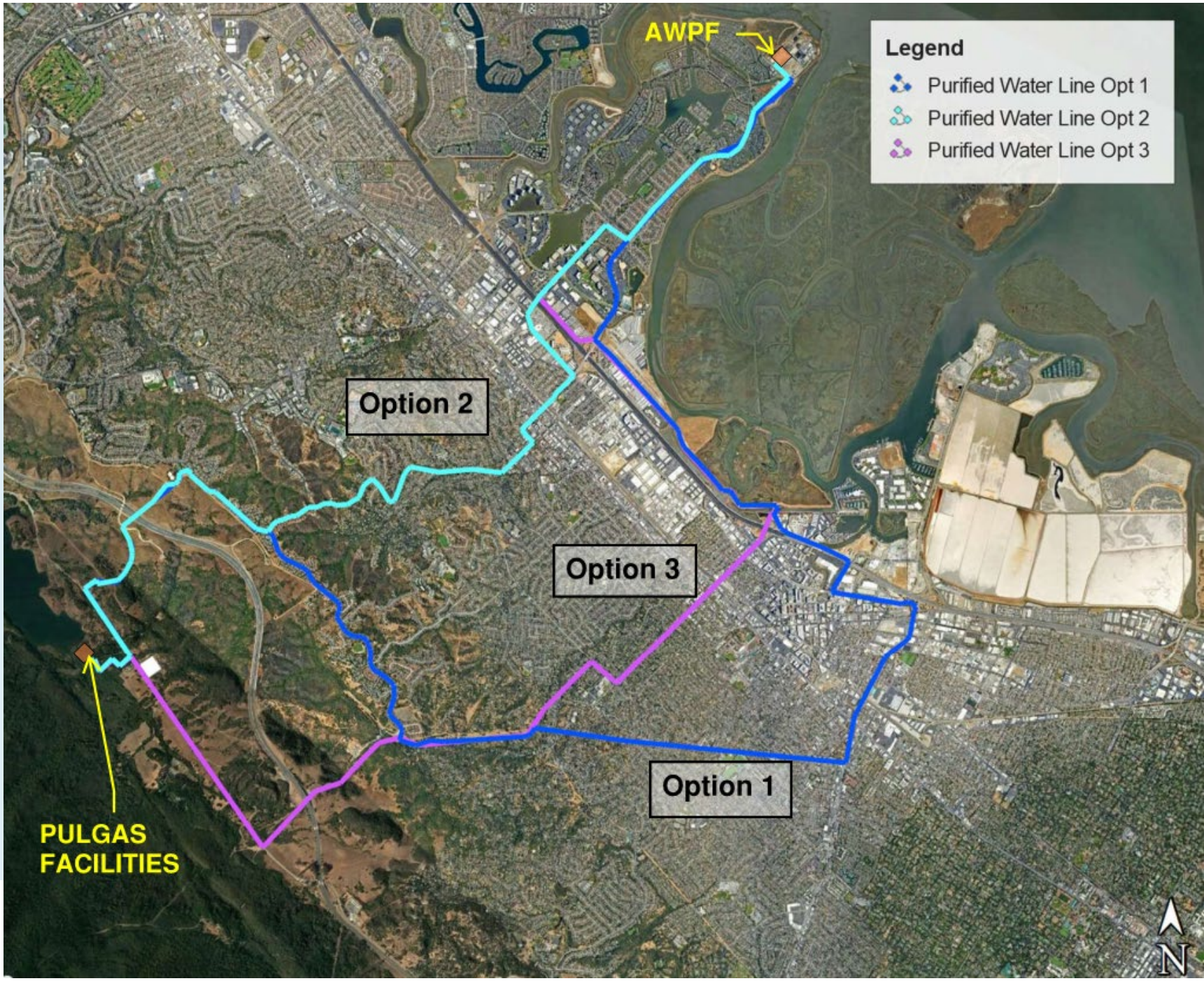
Conveyance | Alignment Options

Three potential alignments are being considered

CHALLENGES:

- Utility congestion in urban areas
- Siting for 1 to 3 intermediate booster pump stations



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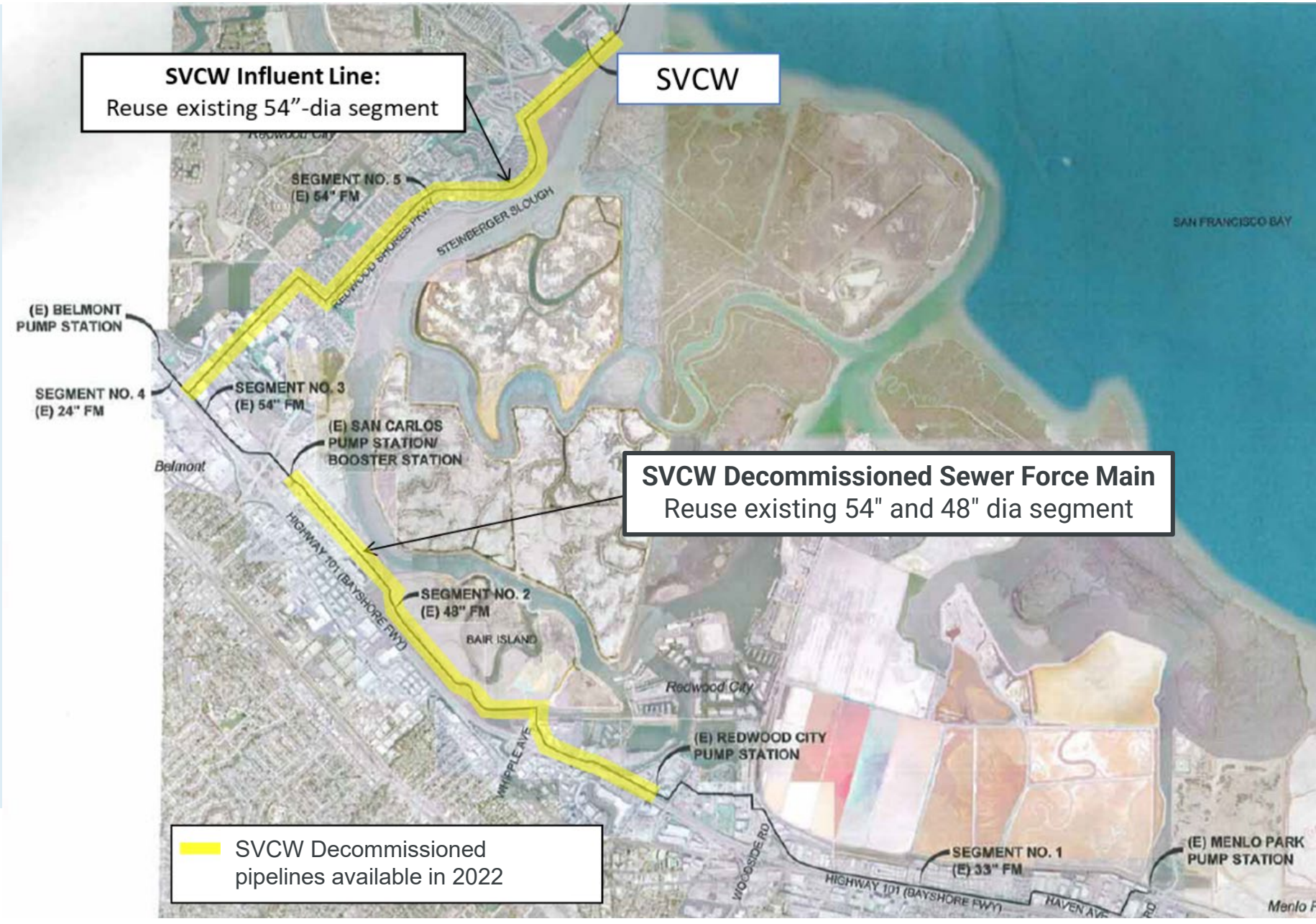
Conveyance | Repurposing Assets

Repurposing decommissioned sewer force main by installing and/or suspending a new pipeline within the pipe.

BENEFITS:

- Minimize impacts during construction
- Realize cost savings



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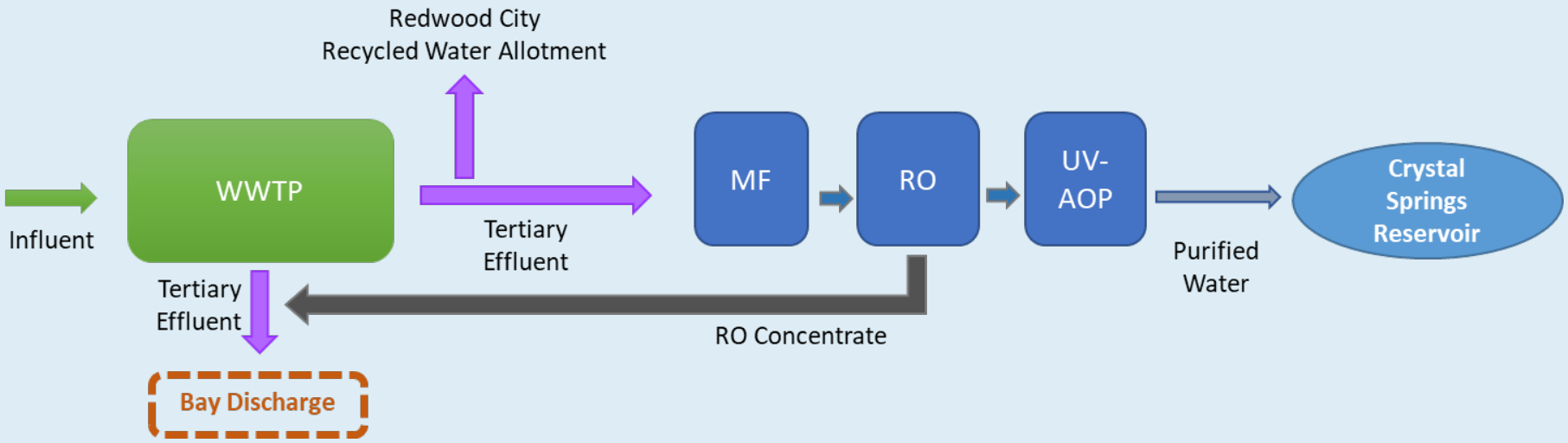
RO Concentrate Disposal | Bay Discharge Requirements

Summary of Existing and Future Regulations at SVCW Outfall to SF Bay

Permit	Permit Type	Key Relevant Items
SVCW WDR ORDER No. R2-2018-0005 **NPDES No. CA0038369**	Individual	Dry Season (May 1 to Sept 30) Effluent Limits
WDR for Mercury and PCBs **ORDER No. R2-2017-0041** **NPDES No. CA0038849**	SF Bay Watershed	Year-Round Effluent Limits Average annual – by mass Monthly and weekly – by concentration
WDR for Nutrients **ORDER No. R2-2014-0014** **NPDES No. CA0038873**	SF Bay Watershed	Focus on Nutrients 2014 – 2018: Concentration and load monitoring 2019 – 2024: Load targets 2025 onwards: Potential load reductions



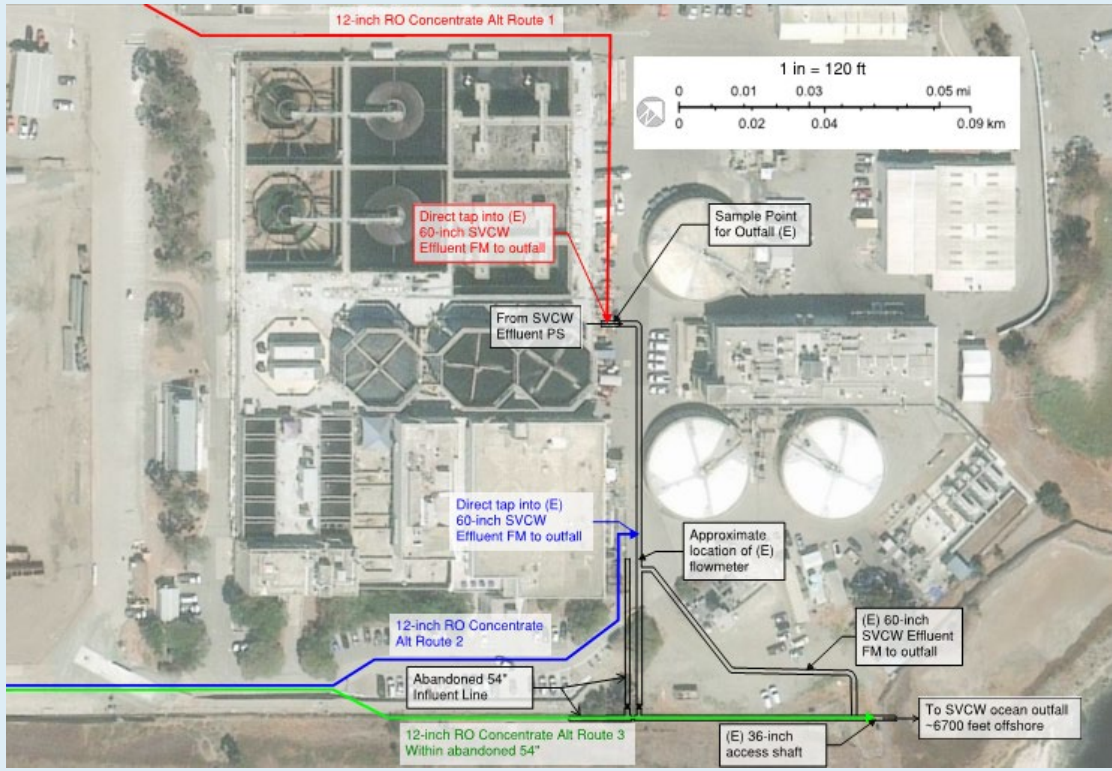
RO Concentrate Disposal

- Key NPDES permit Requirements
  - Dry Season Water Quality Effluent Limits
  - Waste Load Discharge Targets for Nutrients
  - Toxicity

Blending Source Waters

	AWPF Source Water		Discharge via the SVCW Outfall		
Operating Scenario	SVCW Effluent (MGD)	San Mateo Effluent (MGD)	Remaining SVCW Effluent to Outfall (MGD)[1]	RO Concentrate Flow Rate (MGD)	Total Flowrate at SVCW Outfall (MGD)
SVCW Effluent Phase 1	8	-	1.7	1.1	2.8
San Mateo Effluent Phase 1	-	8	9.7	1.1	10.8
50/50 Blended Effluent Phase 1	4	4	5.7	1.1	6.8
50/50 Blended Effluent Phase 2	8	8	1.7	2.1	3.8

Potential point of connection to SVCW Outfall



Pulgas Facility Considerations | Reservoir Augmentation and Drinking Water Distribution Requirements

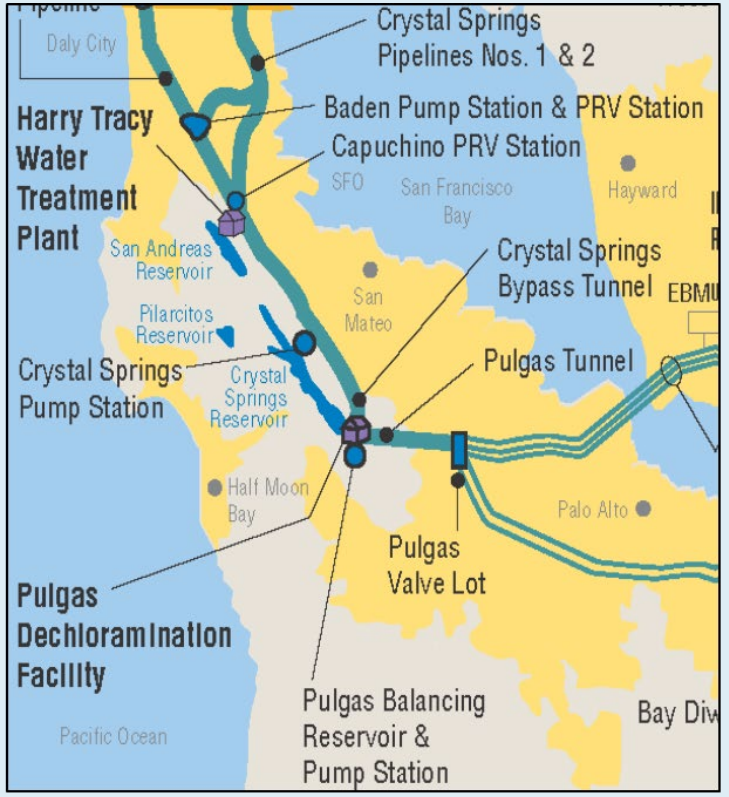
Drivers:

- Phase 1: Reservoir Water Augmentation
  - Basin Plan Requirements
  - Total chlorine residual < 0.21 mg/L
  - Ammonia < 0.025 mg/L as N

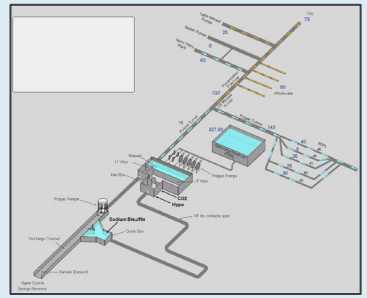
- Phase 2: Treated Drinking Water Augmentation
  - Chloraminated water into drinking water distribution system

Chlorine Residual Management Options:

- Centralized vs Decentralized
- Operational changes vs infrastructure investment



Above: Flows from the Pulgas Dechloramination Facility enter the Pulgas Discharge Chanel for release to Upper CSR.

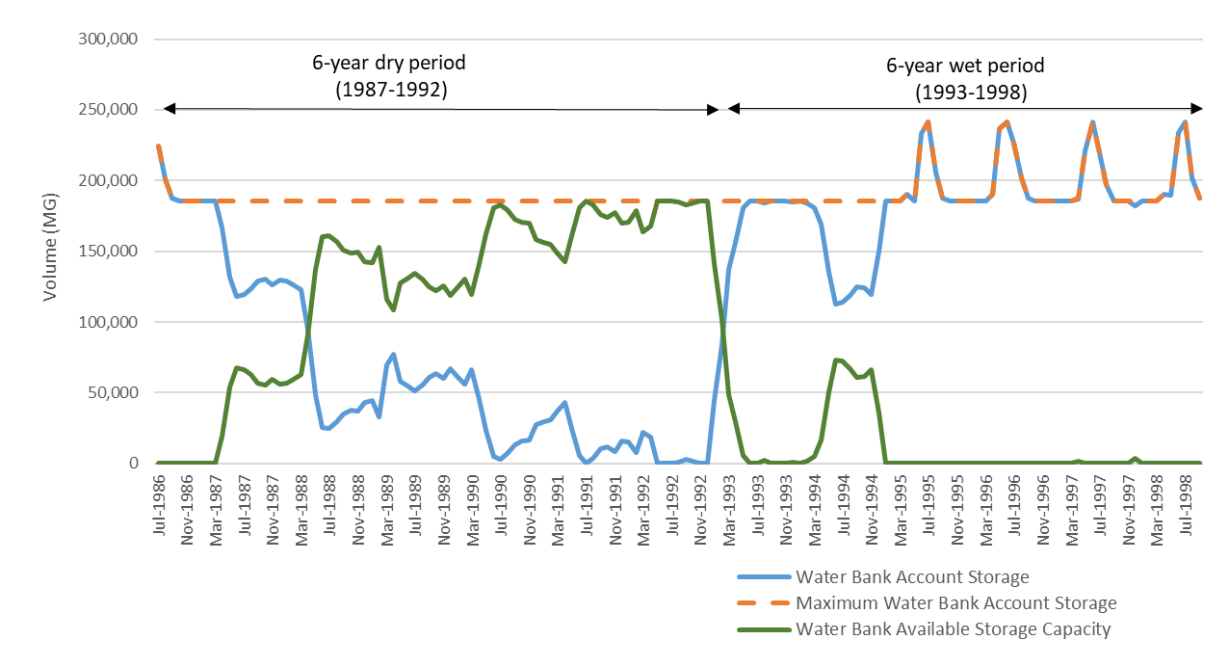


Operational Considerations

- Three Operational Strategies
  1. Continuous AWPF Production
  2. Ramped Down AWPF Production
  3. Seasonal AWPF Shut Down

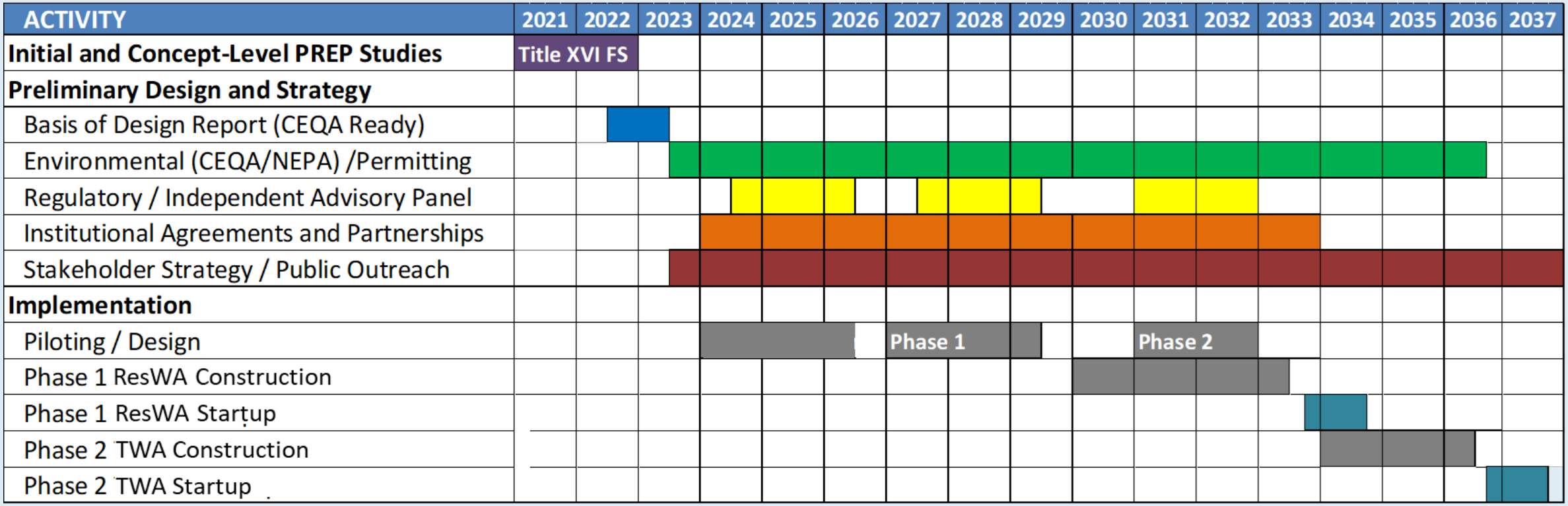
- Recirculation in response to regulatory alarms

- Emergency Shutdowns
  - Power outage
  - Pump station failure
  - Breakpoint chlorination system failure
  - Chloramination system failure
  - Power Outage
  - Other critical asset failure (e.g. pumps, membrane racks, UV reactors)



Crystal Springs Reservoir Reservoir Operations Model

POTENTIAL TIMELINE



Q & A

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