Desalination Engineering Feasibility Study-Update

Santa Clara Valley Water District

Environmental and Water Resources Committee

January 26, 2026

Agenda

- Overview
- Fatal Flaw Analysis Results
  - Subsurface Intakes
  - Screened Surface Intakes
  - Siting Facility
  - Brine Management
- Alternatives Analysis
- Next Steps

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Study Overview & Approach

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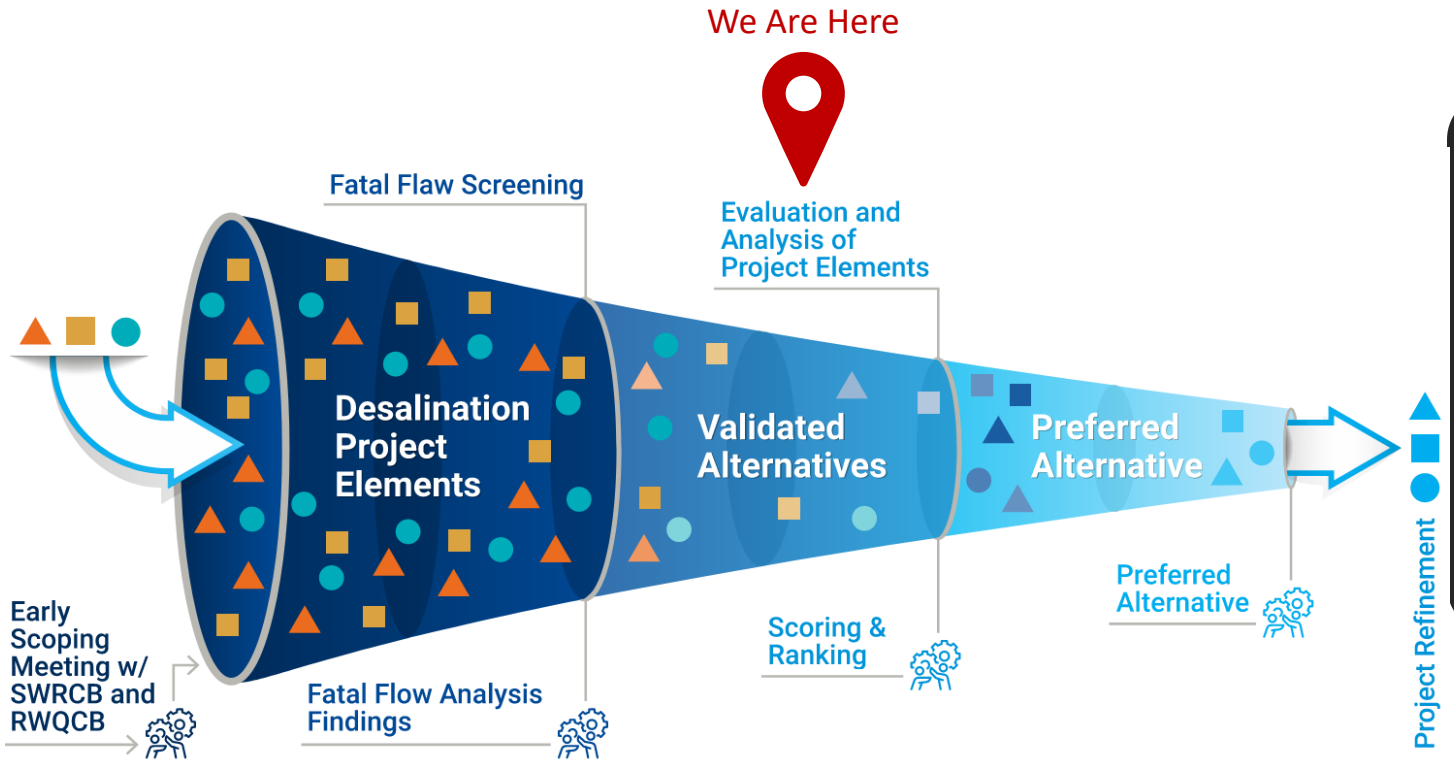
Fatal Flaw Analysis Components

- **Intakes**
  - Subsurface
  - Screened surface intake
    - Type, location, and screen options
- **Facility Siting**
  - Several sites analyzed
- **Brine Management**
  - Comingling brine with treated wastewater
  - New deep outfall with diffusers
  - Horizontal levees
  - Cargill use



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Fatal Flaw Analysis Results

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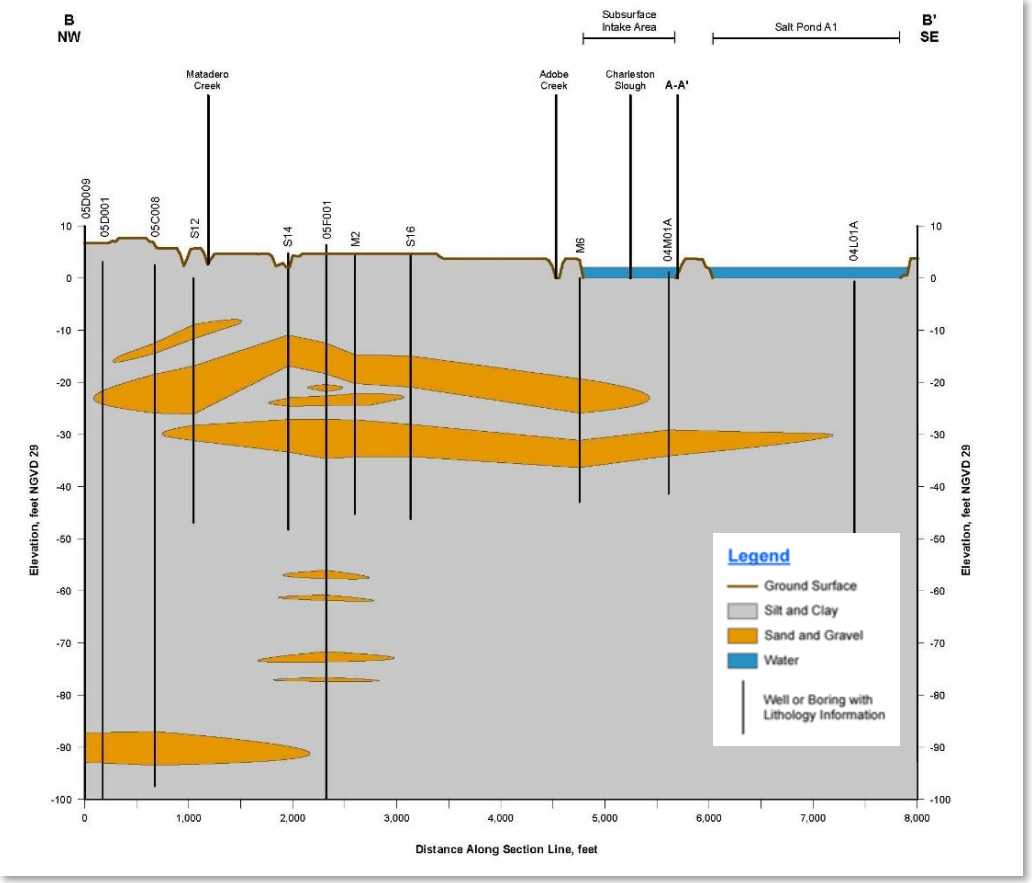
Subsurface Intake Wells

Preliminary Findings

- Shallow aquifer near the Bay has thin, discontinuous water pockets
- No direct lateral connection to the Bay.
- A minimum demand of ~20 MGD would require **<u>~700 wells</u>**
- Require to acquire large areas of land



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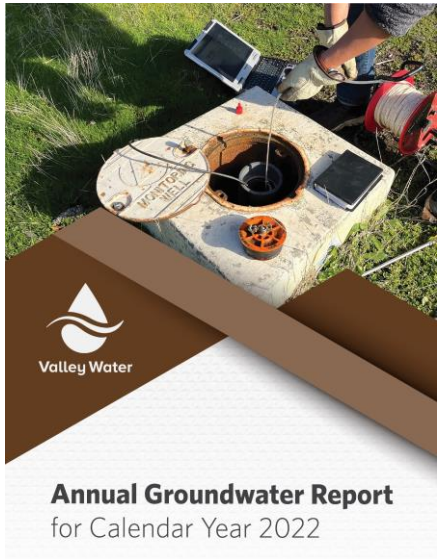
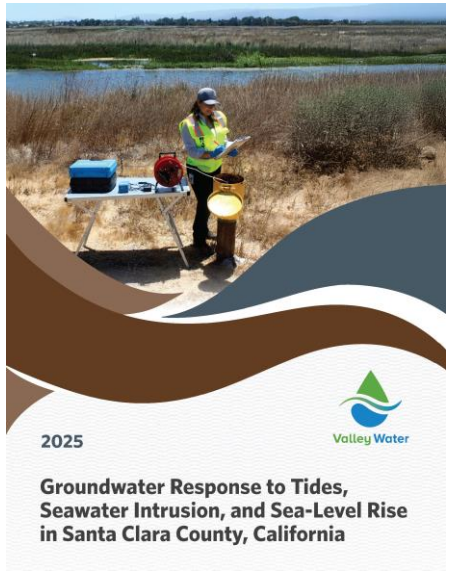
Subsurface Intake Wells

Basis for Findings

- Extensive history of groundwater basin
- Ongoing and comprehensive monitoring and reporting
  - Annual groundwater reports
  - Sustainable Groundwater Management Act (SGMA)
  - Special studies related to seawater level rise and potential impacts





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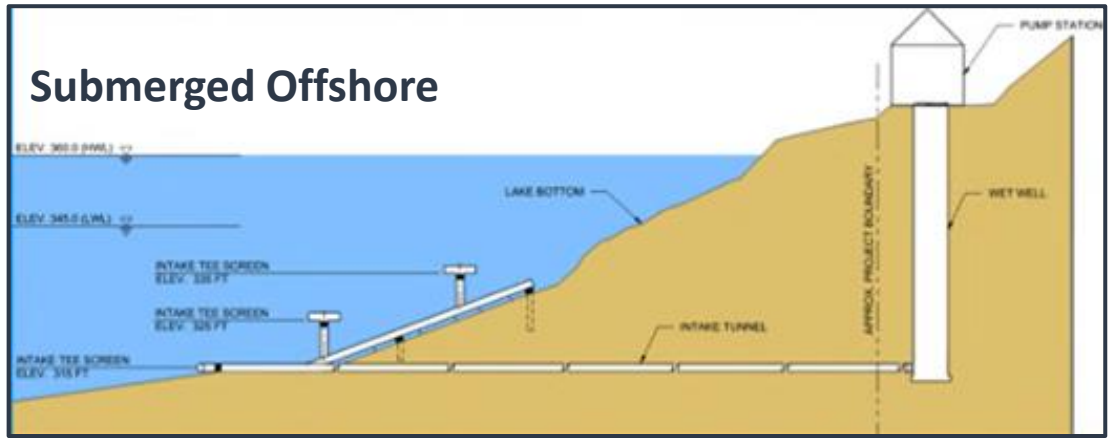
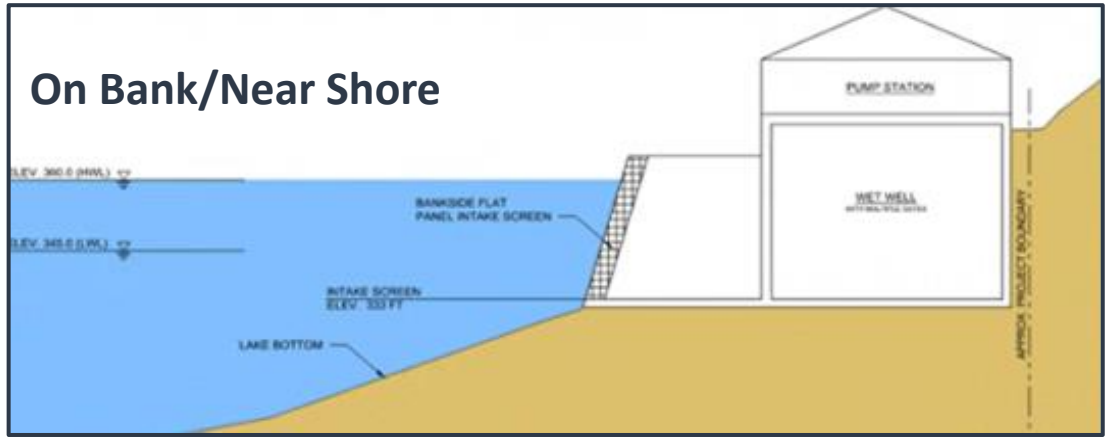
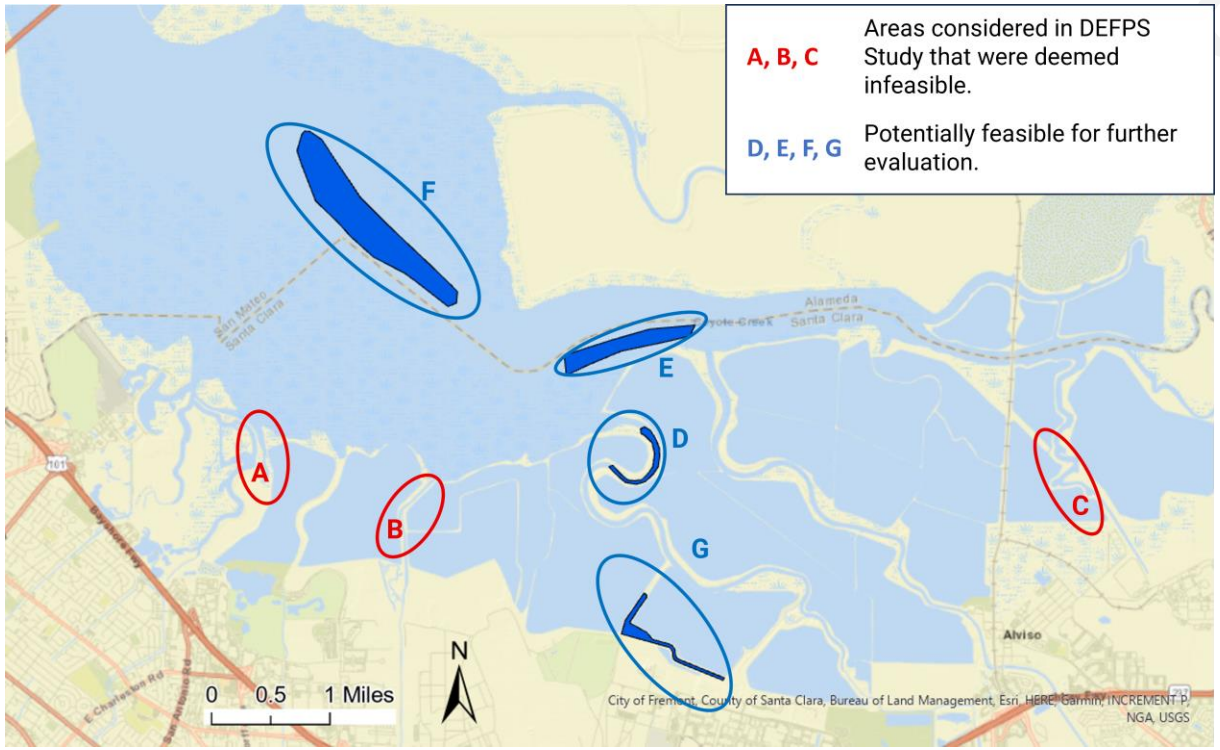
Intake Alternatives





Intake Types

Intake Locations



Conical Screen

Cylindrical Screen

Hemispherical Screen

Screen Options

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Facility Siting: 12 Locations Evaluated

Local WWTP | Preferred Site | Potentially Infeasible Site | Other Site

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Brine Management

Options Evaluated

- Comingling with Treated Wastewater Effluent from Existing WWTP
- New deep Bay Outfall with Brine Diffuser
- Horizontal Levee
- Cargill Salt

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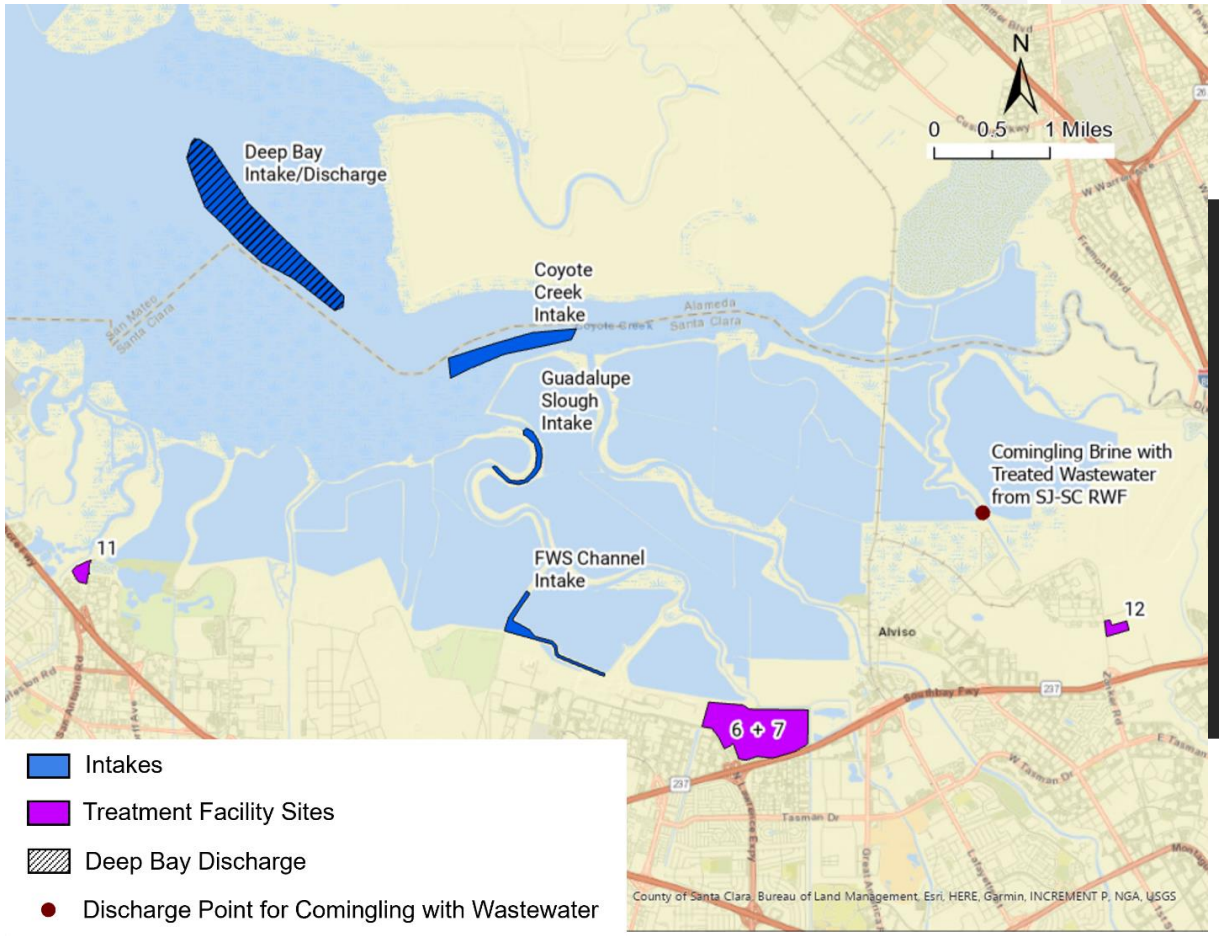
Fatal Flaw Analysis Summary

- **Intakes**
  - Subsurface – infeasible
  - Screened surface intake
    - 3 locations potentially feasible
    - 3 screen types (conical, cylindrical, and hemispherical)
- **Facility Siting**
  - Multiple sites analyzed
    - 3 sites potentially feasible
- **Brine Management**
  - Comingling brine with treated wastewater
  - New Deep outfall with diffusers
  - Horizontal levees – infeasible
  - Cargill use – infeasible



Alternatives Analysis

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Alternatives Analysis

Summary Approach to Alternative Development and Screening

- Fatal Flaw Analysis of Intake, Facility, Brine Management ✓
- Advancement of Evaluation on Intake, Facility, Brine Management ✓
- Develop Multi-Criteria Ranking Framework ✓
- Score Components Passed through Fatal Flaw Analysis
- Develop Alternatives Based on Top-Ranked Components & Geographic Proximity
- Score Alternatives using the Multi-criteria ranking framework

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Alternatives Analysis -Intake Conveyance and Distribution

Intake Volumes vs Produced Water at 42% Recovery Rate

Intake Water (MGD)	Produced Water (MGD)
24	10
47	20
95	40

Possible Conveyance to Existing Distribution System

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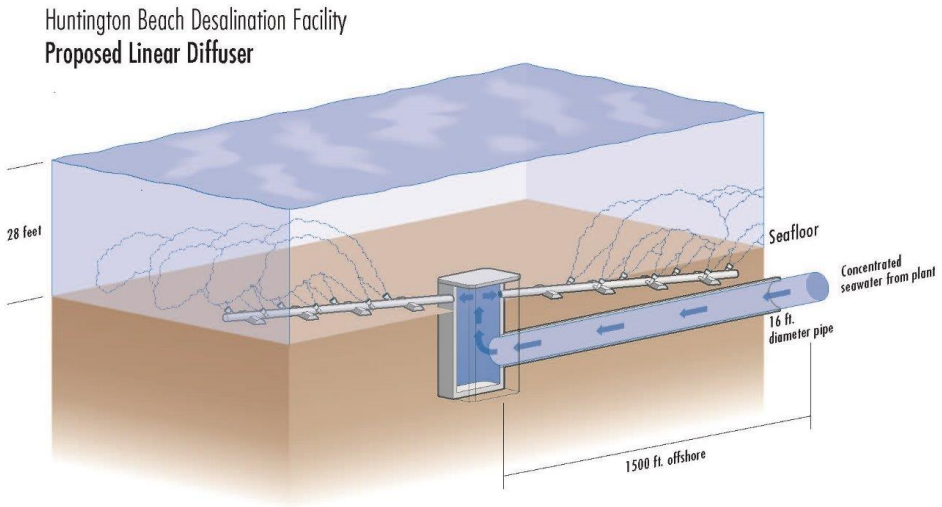
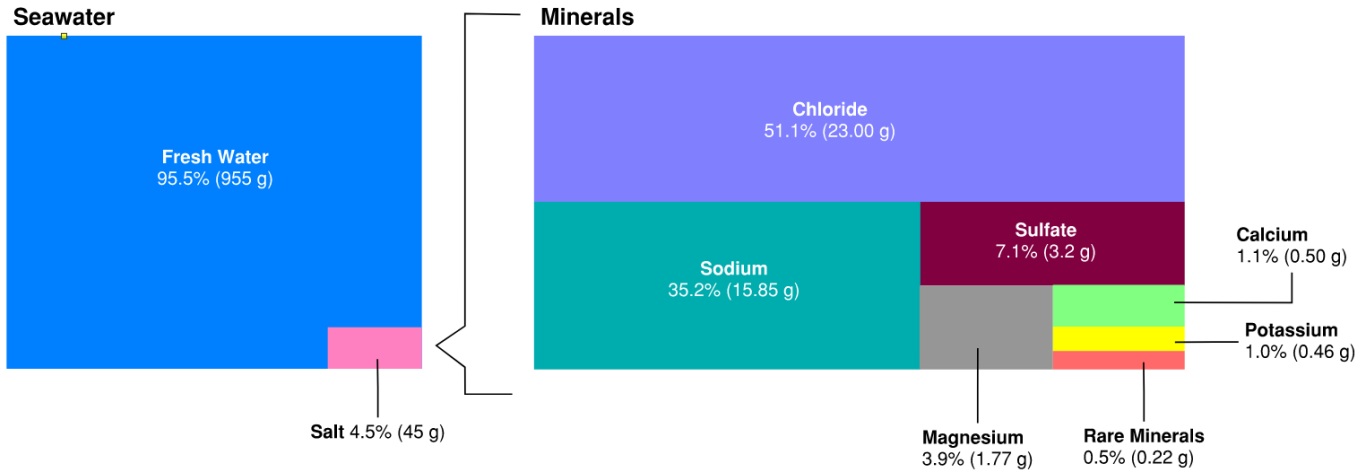
Alternatives Analysis - Brine Discharge Considerations



Conceptual Graphic of a Multi-Port Brine Diffuser for a Deepwater Discharge System



Resource Recovery-Constituents in Seawater

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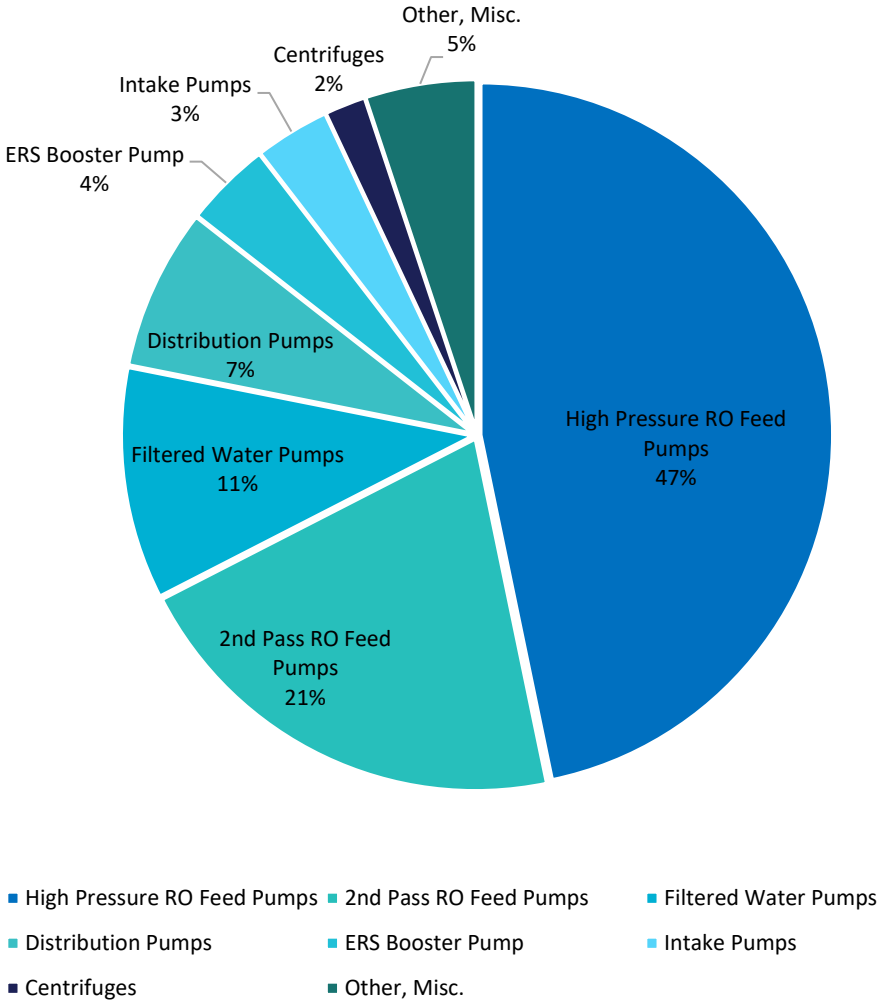
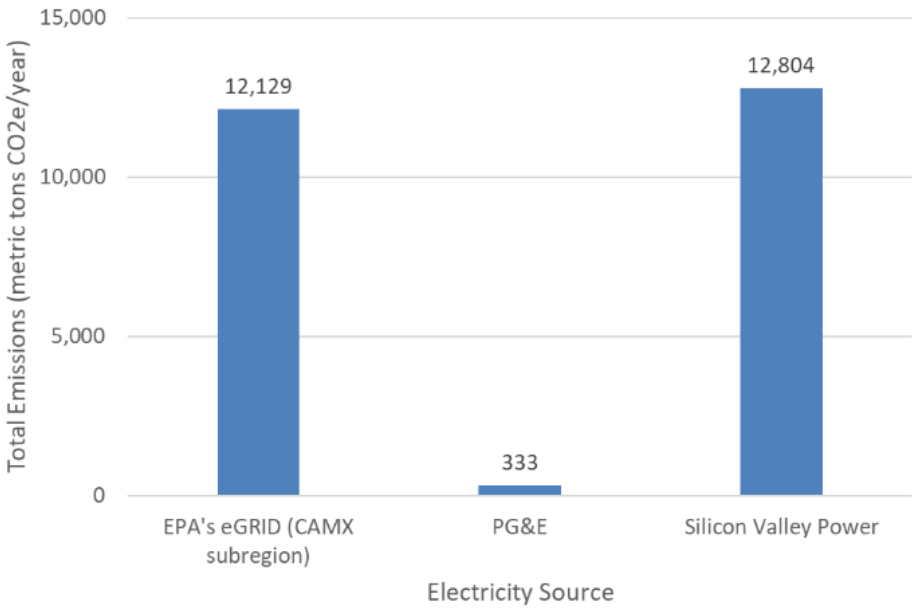
Alternatives Analysis-Energy Use Considerations





GHD Emissions by Electricity Source

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Next Steps

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Next Steps

- **Complete** Alternative Analysis Report.
- **Plan to meet** with the Recycled Water Committee after completion of Alternative Analysis Report – First Quarter of 2026
- **Plan to engage** with relevant interest groups during development of Alternative Analysis Report – First Quarter of 2026

Where We Are Today

Thank you!

Valley Water

Clean Water • Healthy Environment • Flood Protection

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