United Water
CONSERVATION DISTRICT

EXTRACTION BARRIER AND BRACKISH (EBB) Water Treatment Project

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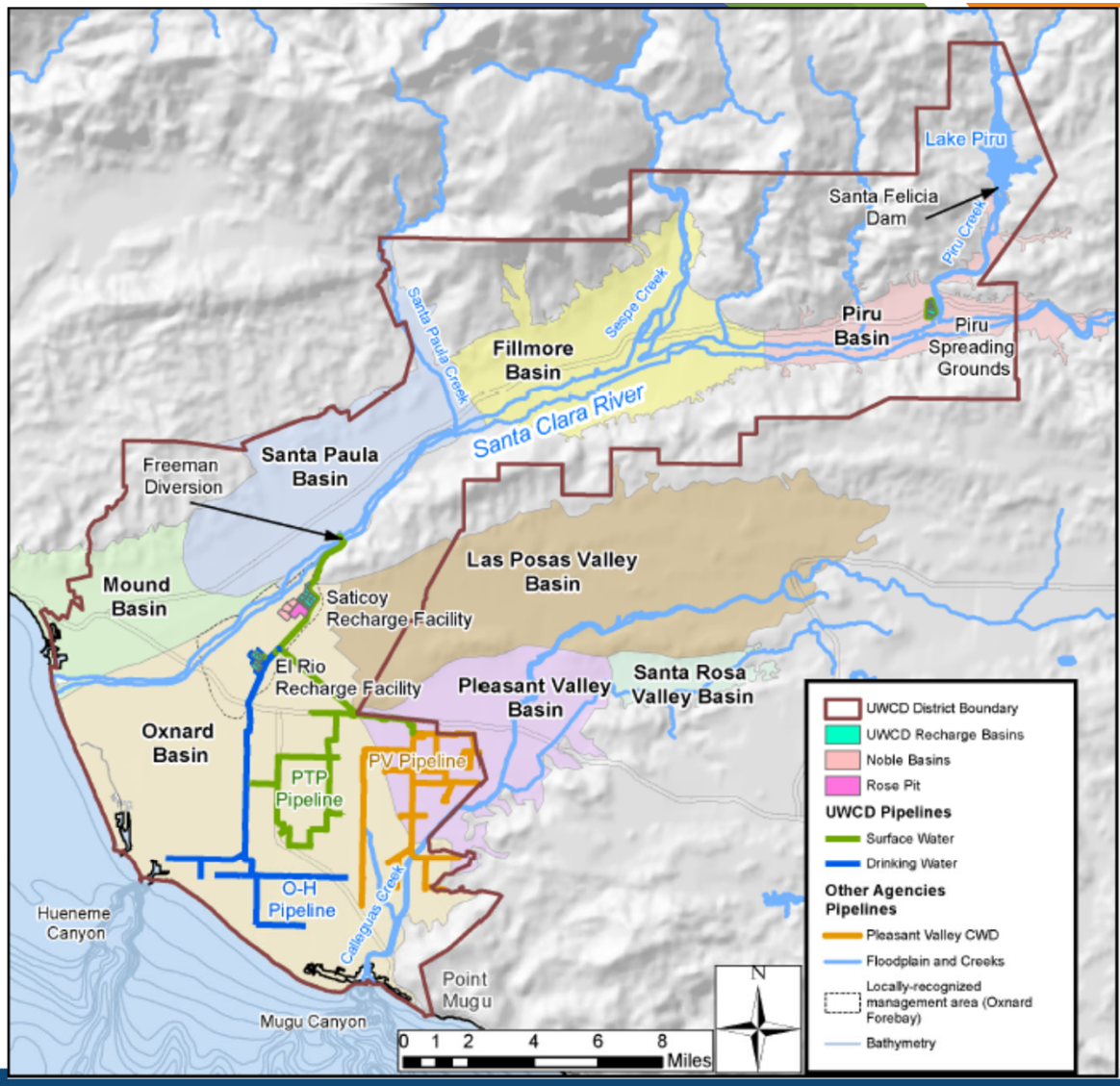
- **LARGE GROUNDWATER BASINS** in southern Ventura County *(all are DWR high-priority basins)*
- **EXTENSIVE RELIANCE** on groundwater for both Ag and M&I supply
- **LONG HISTORY** of overdraft and seawater intrusion in coastal basins

Long history of conjunctive use strategies

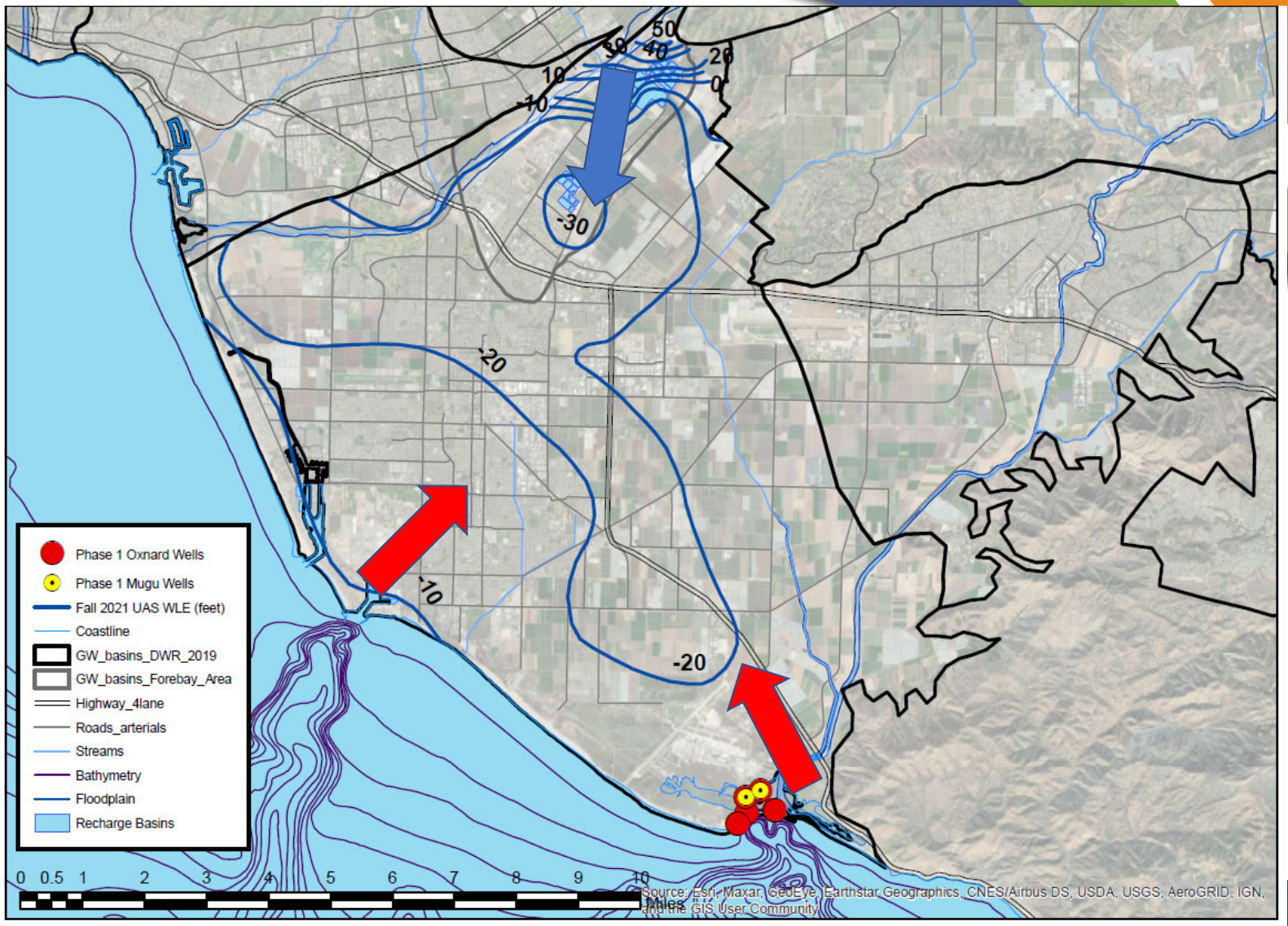
- Managed aquifer recharge
- Use surface water and imported water when available
- Use of groundwater when it is not.

Demand management by FCGMA

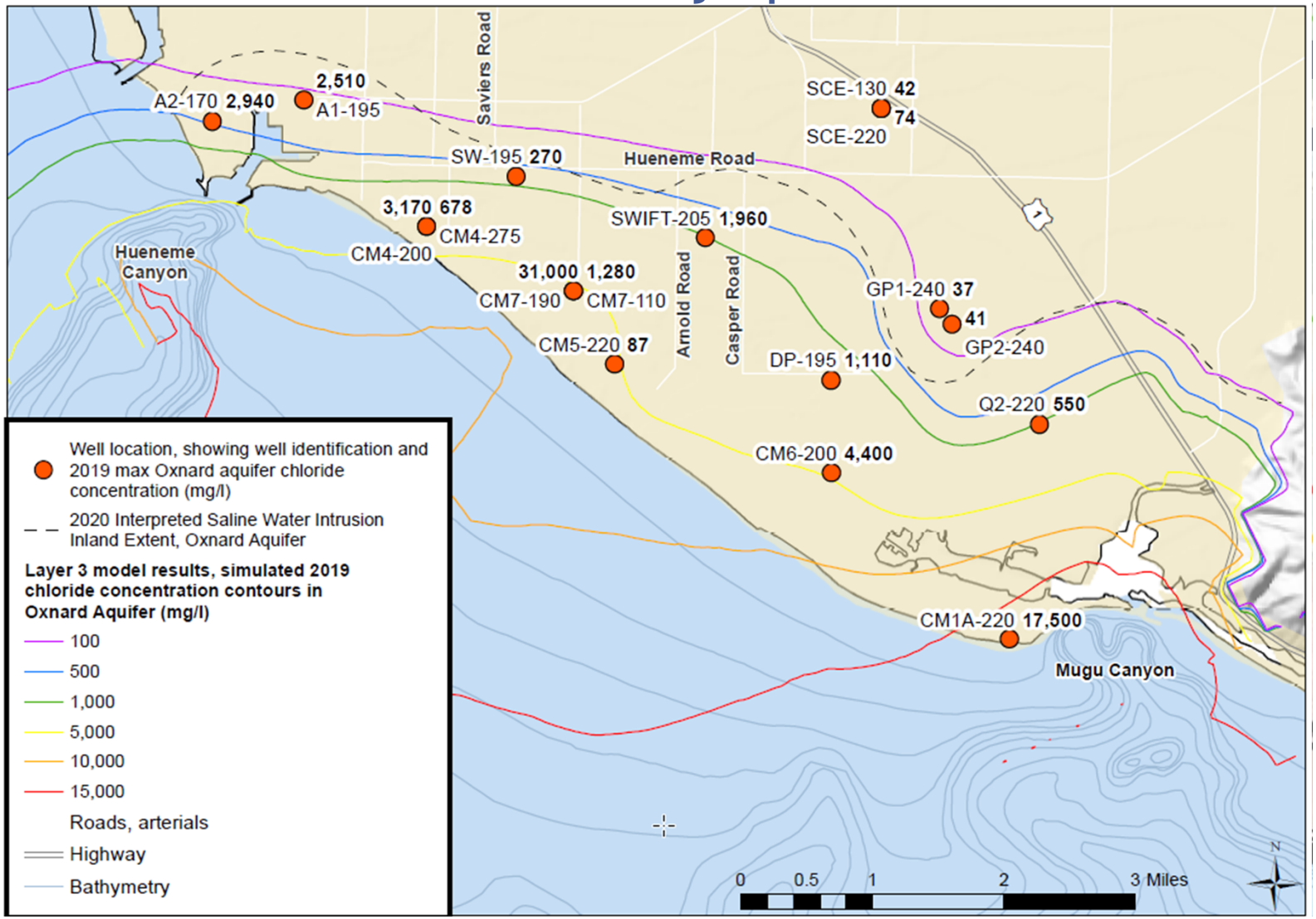


Fall 2021 groundwater elevations in the Upper Aquifer System

- Onshore gradients in all coastal areas

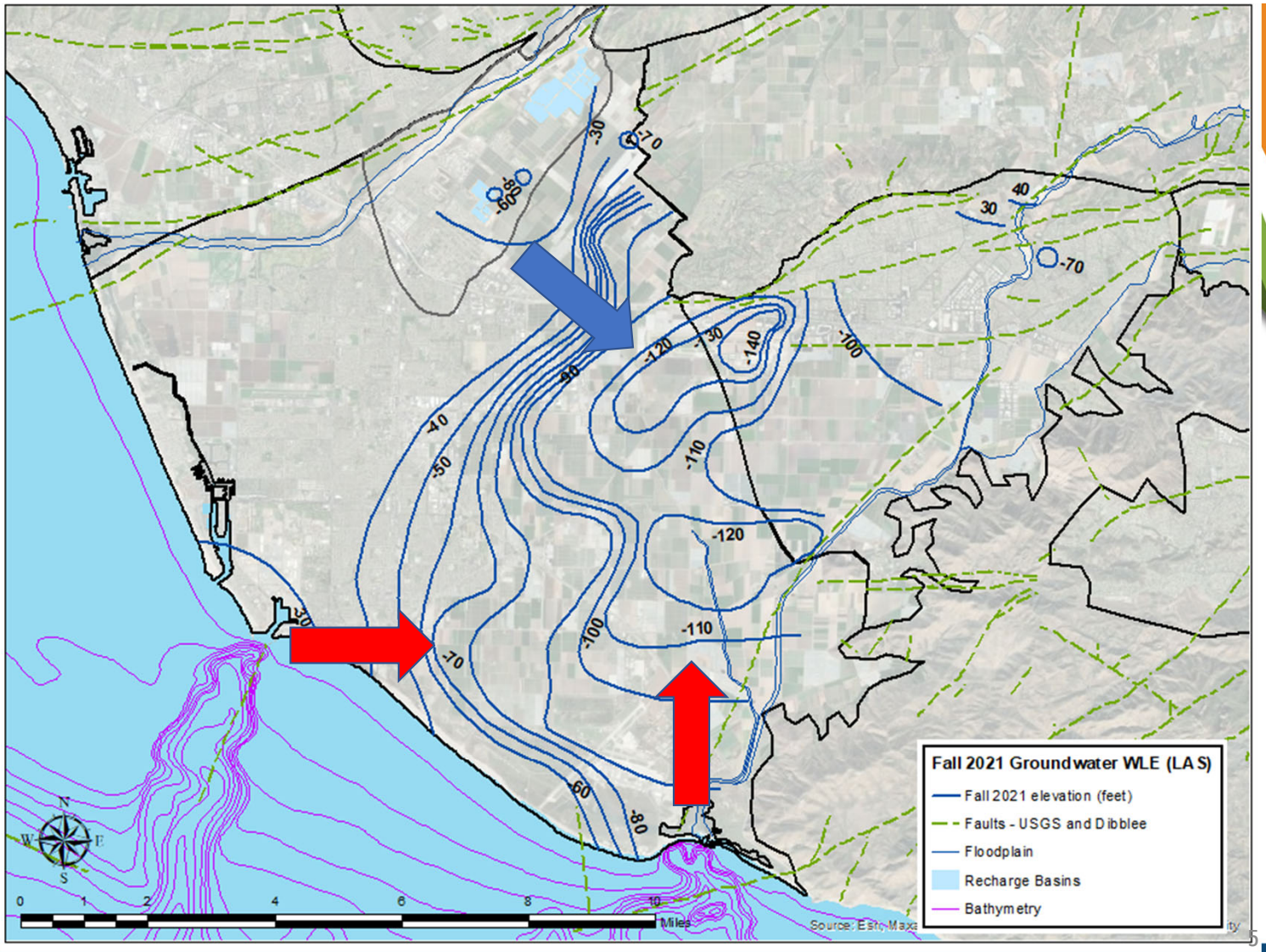


Seawater intrusion has been a major problem since the 1950s



Fall 2021 groundwater elevations in the Upper Aquifer System

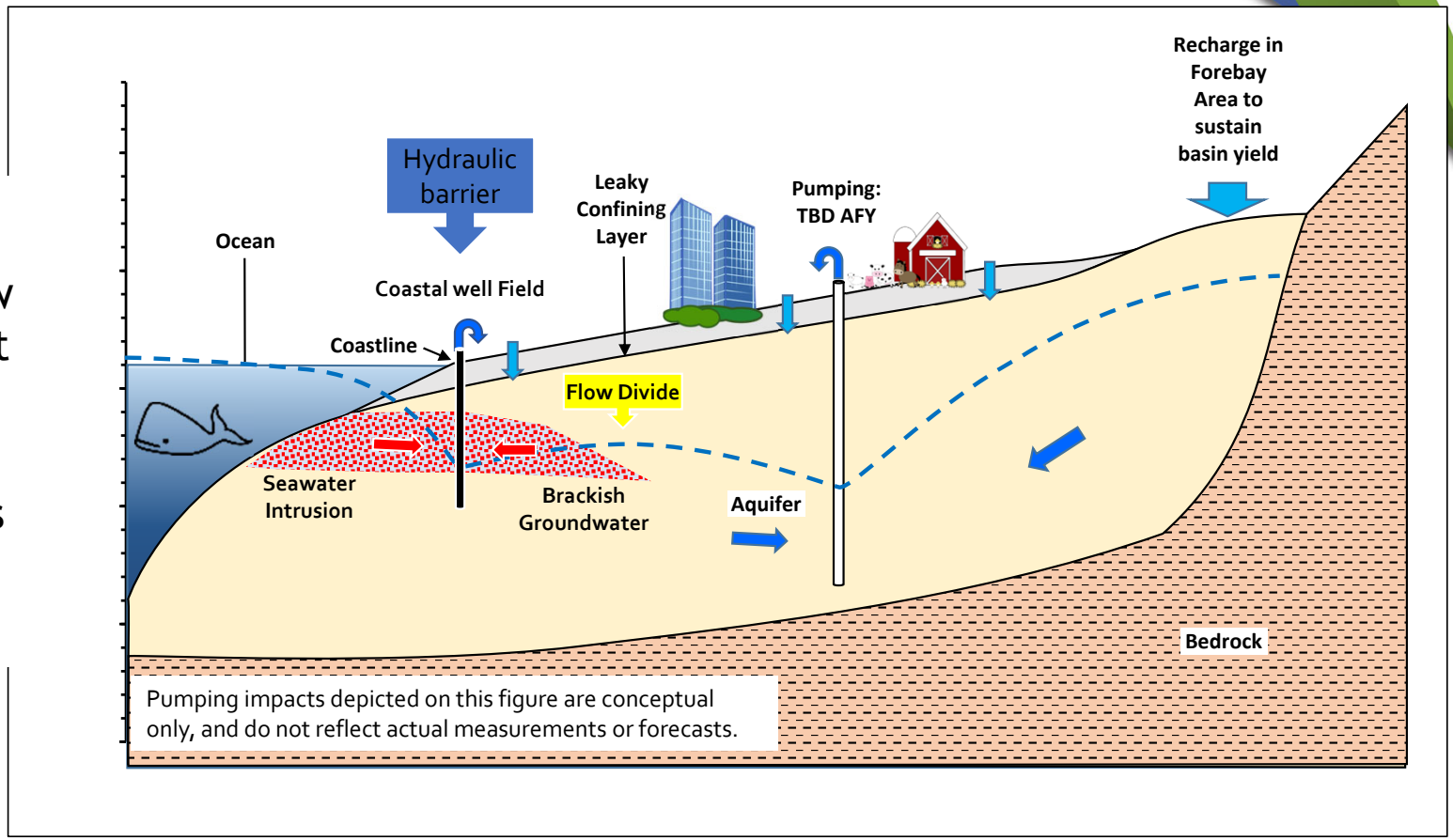
- Onshore gradients in all coastal areas
- Strong vertical gradients from UAS down to LAS



Extraction Barrier Concept

Benefits

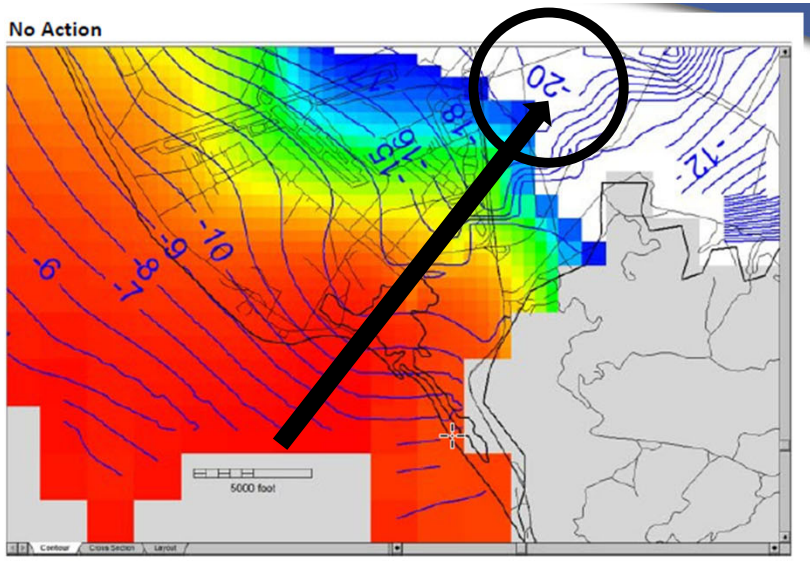
- Groundwater flow towards the coast
- Removes saline water from impaired aquifers
- No open water intake structures



Oxnard Aquifer 2,500 AFY Pumping

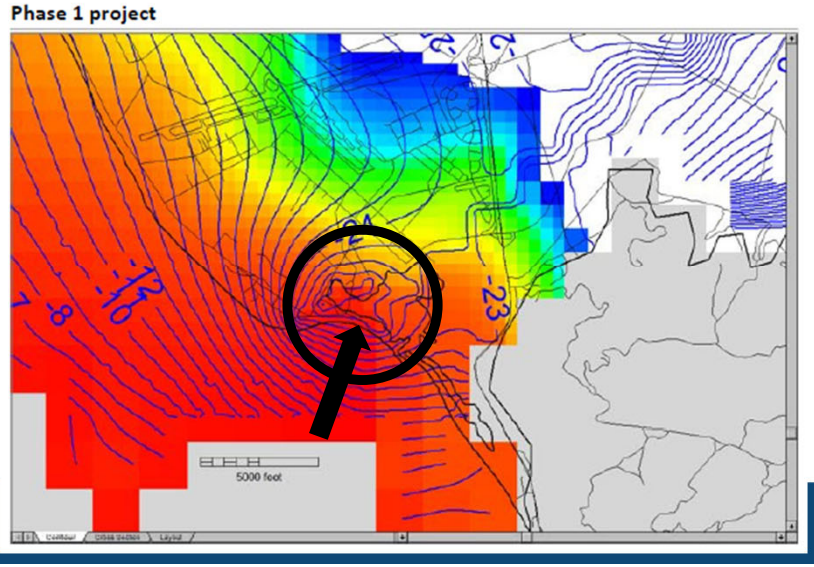
Phase 1 EBB Water extraction wells

- Influence on coastal groundwater elevations
- Simulated chloride concentrations after five years



No Action Scenario

- Onshore flow towards inland areas



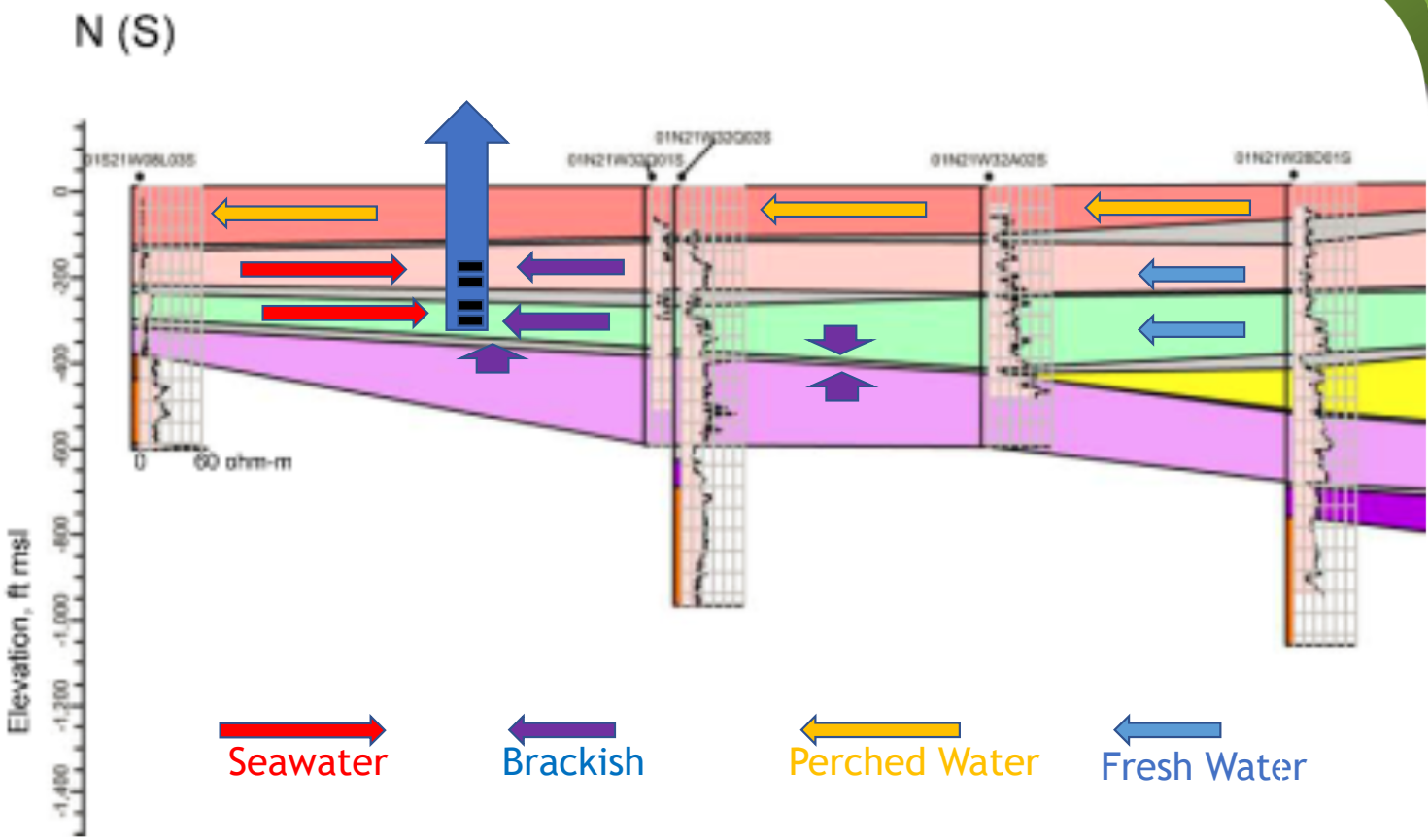
Five Years of Phase 1 Operation

- Groundwater depression at coast creates barrier to seawater intrusion

Groundwater Flow with Project

Pumping rates in **Oxnard aquifer that controls seawater front** and avoids significant vertical flow down from perched aquifer

Design Mugu aquifer pumping rates **to balance heads between aquifers** and minimize migration of saline water down to deeper aquifers



Funding and Project Support

Water Board Prop 1 Round 2 Grant Funding (2019-2021)

1. **Groundwater Model Conversion, Calibration and Simulations**
2. **Demonstration of Project Effectiveness via Modeling**
3. **Regulatory Engagement - TAC Meetings**
   - State Water Resources Control Board (Water Board)
   - LA Regional Water Quality Control Board
   - Division of Drinking Water
   - Fox Canyon Groundwater Management Agency
   - Naval Base Ventura County

Prop 1 Round 3 Implementation Grant proposal submitted July 2022

EBB Water Technical Studies Completed

- Geologic model refinements in Project area
- Solute transport (chloride) modeling with 35-year calibration period added to groundwater flow model
- Feasibility study for Project pumping at various scales
- Baseline water quality sampling for contaminants
- Phase 1 project memo characterizing salt removal from the Oxnard basin
- Simulated inland extent of chloride impacts through 2019

Project Planning Update

Phase 1A
(Exploration Phase)

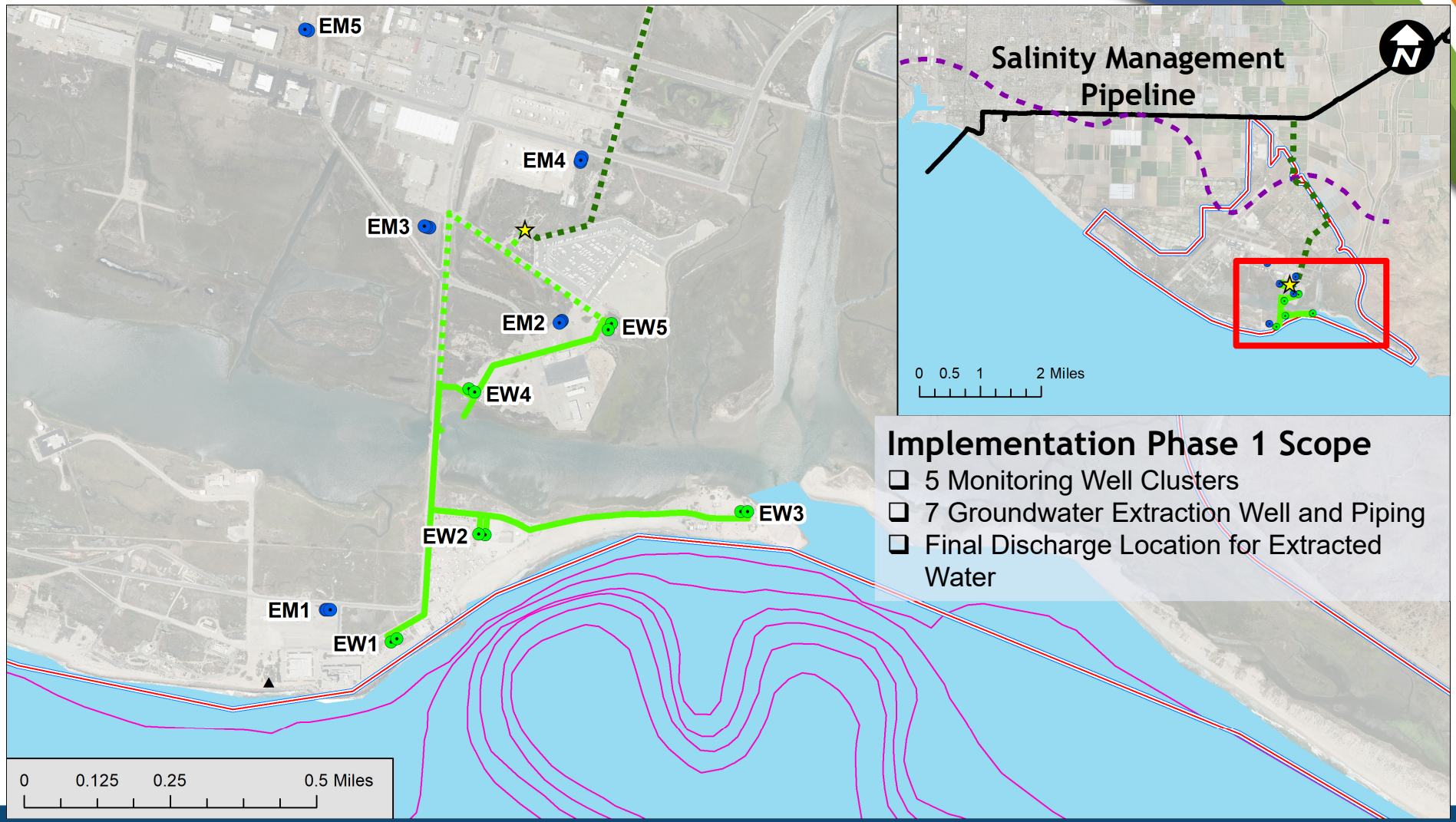
- Feasibility Study (**2019 SWRCB Prop 1 Round 2 Planning Grant**)
- Design, CEQA, Permits
- Fieldwork

Phase 1B
(Implementation Phase)

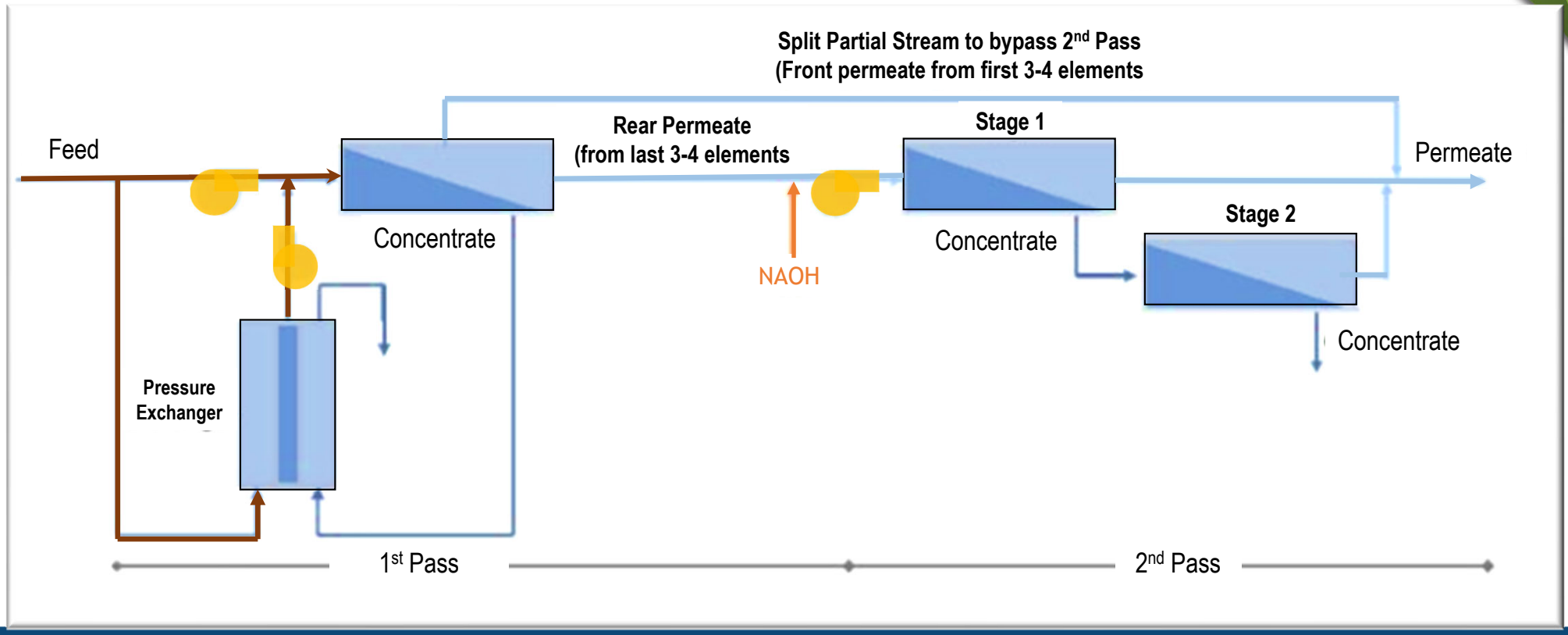
- Monitoring Wells (**2022 DWR SGM Grant**)
- Extraction Wells, Pipelines, and Point of Groundwater Discharge **(2022 SWRCB Prop 1 Round 3 Implementation Grant - *award pending***)

Phase 2
(Build-out Phase)

- Expanded extraction well field and monitoring wells
- Water treatment and brine disposal
- Treated water distribution on base (MOU) and Oxnard Plain


EM5
EM4
EM3
EM2
EW5
EW4
EW3
EW2
EM1
EW1
0 0.125 0.25 0.5 Miles
Salinity Management Pipeline
N
0 0.5 1 2 Miles
Implementation Phase 1 Scope
❑ 5 Monitoring Well Clusters
❑ 7 Groundwater Extraction Well and Piping
❑ Final Discharge Location for Extracted Water

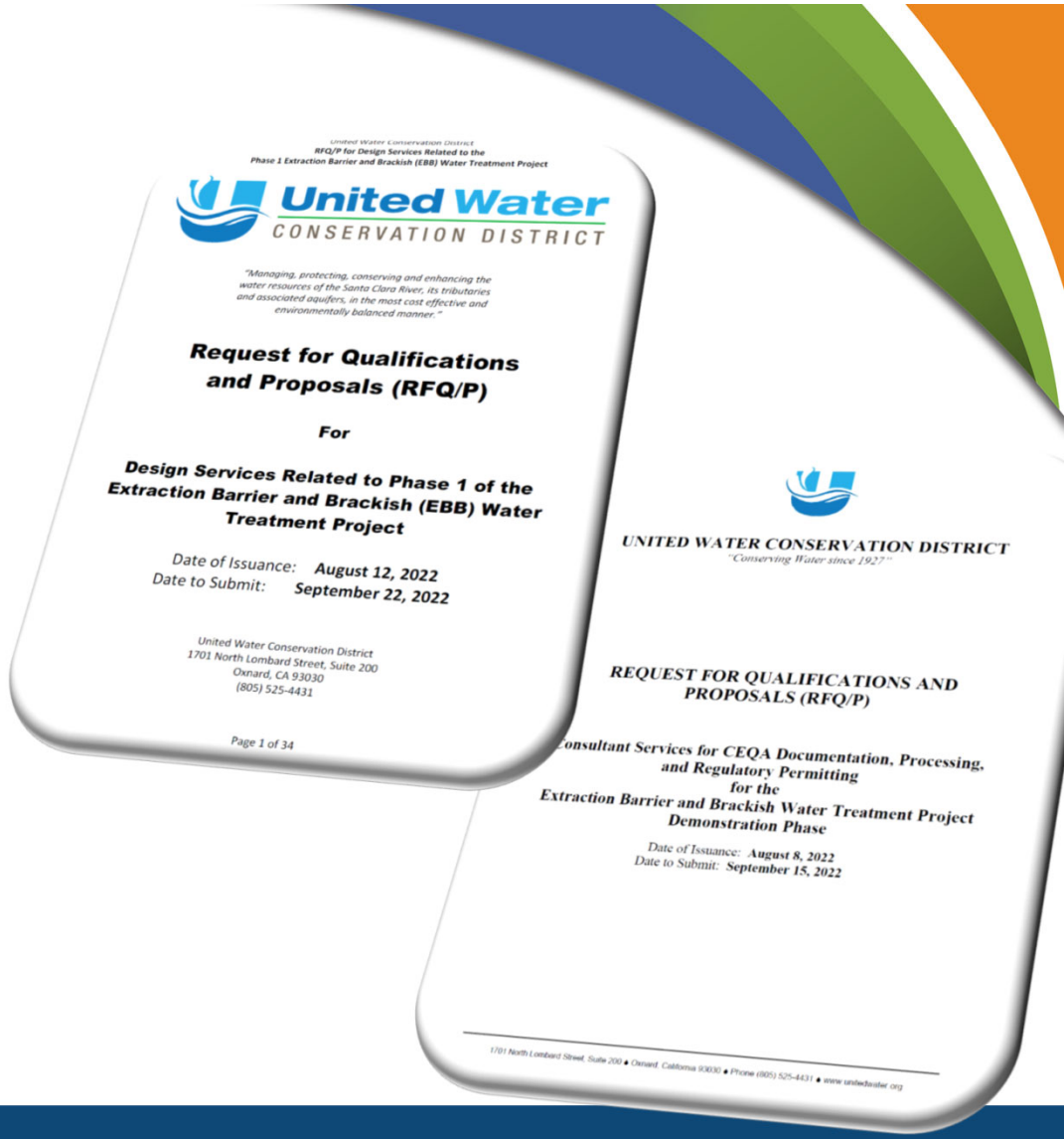
Extended Desktop Modeling
(Trussell Tech, 2022)



Phase 1 Project

Requests for Qualifications/ Proposals:

- ❑ **CEQA and Permitting Services**
  - Released on Aug 8
  - 5 proposals received on Sept 15
- ❑ **Design Services**
  - Released on Aug 12
  - 1 proposal received on Sept 22



Regulatory Engagement

Currently Engaged:

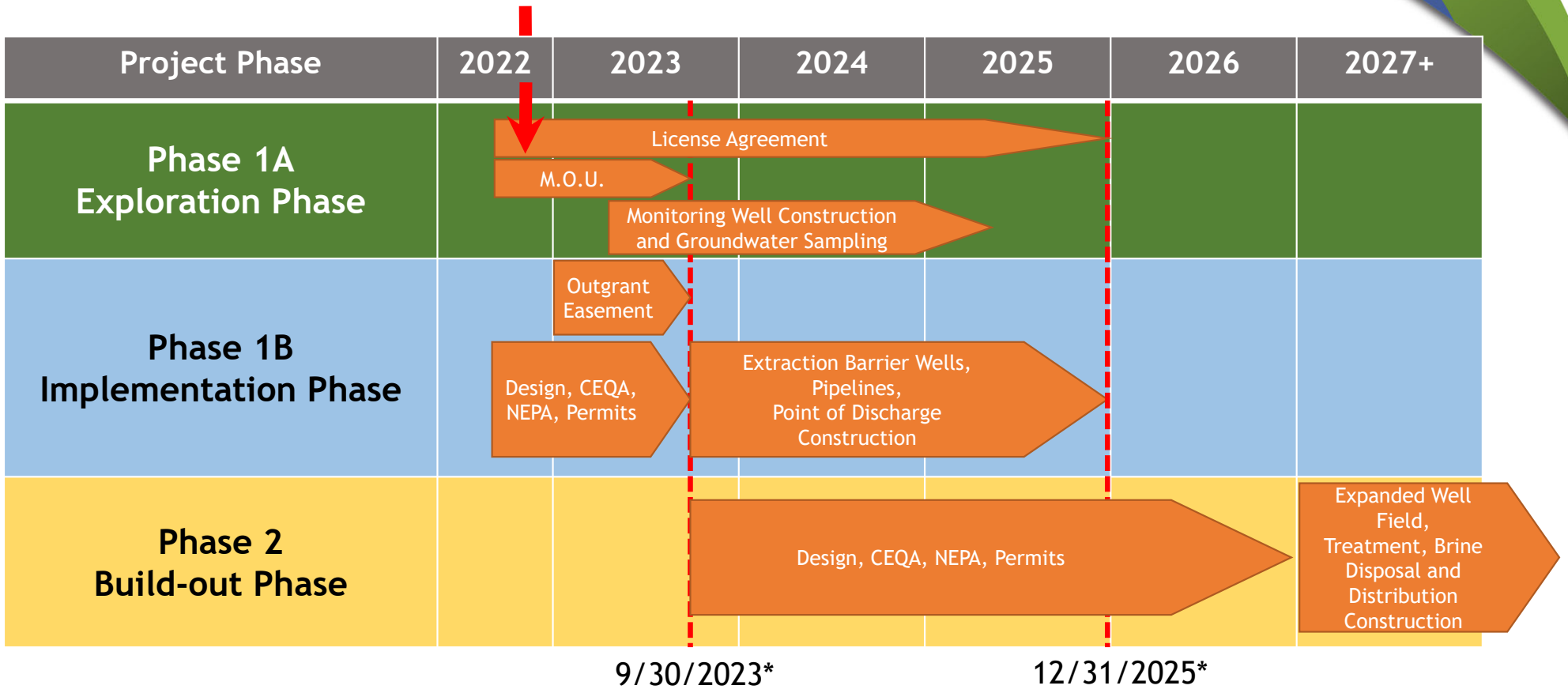
Division of Drinking Water

Future Engagements:

US Army Corps of Engineers®

Office of Historic Preservation

Project Timeline



* Per 2022 SWRCB Prop 1 GWGP Implementation Grant Schedule

Project Benefits

- **CONTROL** seawater intrusion with an extraction barrier
- **RESTORE** offshore groundwater gradients in coastal areas
- **REMOVE** saline and brackish water from the Oxnard basin
- **SUPPORT** and increase sustainable yield of the OPV basins
- **MITIGATING** the need for significant groundwater extraction reduction
- **ENHANCEMENT** resilience of the local water supply
- **ENABLING** NBVC to meet its water security goals

Doheny Ocean Desalination Project

Doheny Desalination Facility Coastal Development Permit application is **approved** by California Coastal Commission On October 13, 2022

Letters of Support