



Update on Vina Subbasin Grant Funded Recharge Project

Tuscan Water District
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Grant Funded Projects



Funding End Date:
March 2026



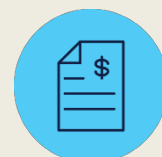
Data Gap Identification
and Data Improvement



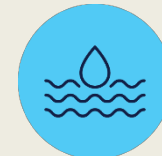
Demand Reduction
Strategies



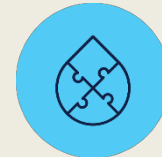
Lindo Channel
Recharge Feasibility



Long-Term Fee Study



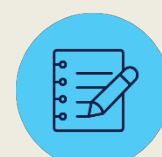
Water Supply and
Recharge Feasibility 



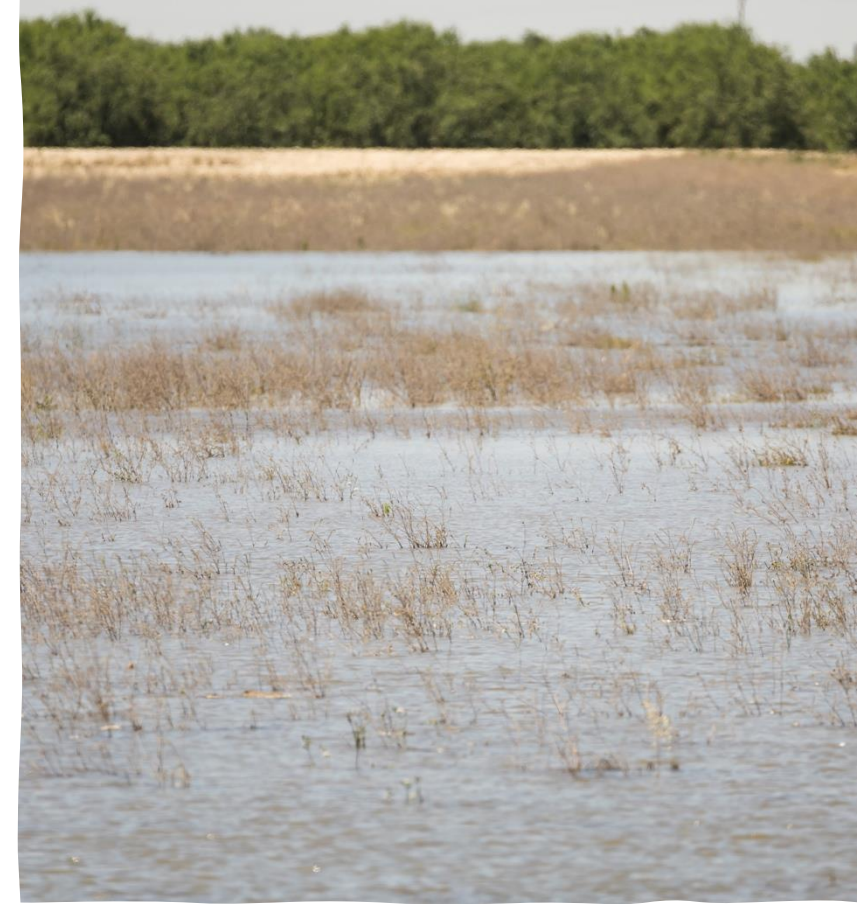
Inter-basin Coordination
Analysis and Modeling



Outreach Program



Grant Administration



Water Supply & Recharge Feasibility Project

1. Identify two most promising water supply projects and complete feasibility analysis
2. Identify potential recharge pilot projects
 - Collect site-specific data
 - Conduct recharge tests (where viable)
 - Advance successful concepts to preliminary design and funding ready packages

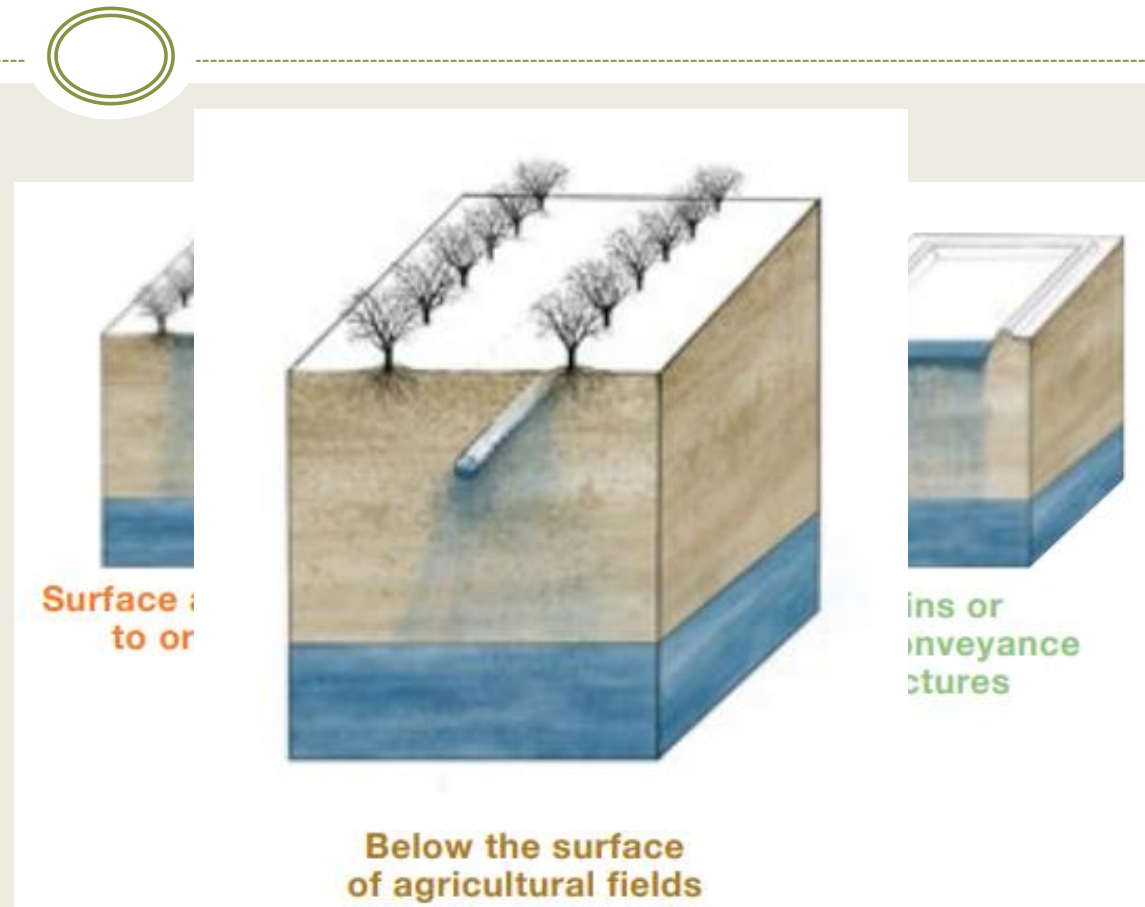


Recharge Method Spotlight: Reverse Tile Drains

A traditional tile drain system operated in reverse – **delivering water instead of draining or removing it.**

Water is routed into 10- to 15-foot-deep subsurface perforated pipes via surface inlets or standpipes.

From there, it **percolates below the root zone** and recharges the underlying aquifer.



Recharge Method Spotlight: Reverse Tile Drain Projects



Dunnigan Example – Under Development (2025)

How the System Works

- Subsurface reverse tile drains will be **installed 9-12 feet below ground** on gravelly loam soils.
- Dunnigan Water District Central Valley Project (CVP) Contract Water or high flows from the Sacramento River (e.g. 3F Water) will be used.

Recharge Benefit for 40-acre site

- Approximately 6.5 acre-feet (AF) per day
- **~1,600 AF annual recharge** when operated for 8 months/year

Costs

- Installation Cost: Around \$3,400 per acre (or \$4,600/acre with prevailing wage)
- **Install Cost for 40 Acres: ~\$135,000 (~\$185,000 w/ prevailing wage – required for grant funded projects)**
- Water Cost: Approximately \$50-\$100 per acre-foot.

➡ Over 25 Years: \$10,500/year → \$6.60 per AF

Kern County Example (2018)

How the System Works

- Subsurface reverse tile drains were **installed 9 feet below ground** on sandy loam soils.
- California's State Water Project (Article 21) water was pumped into the system.

Recharge Benefit for 40-acre site

- Approximately 5 acre-feet (AF) per day
- **~1,825 AF annual recharge** when operated continuously

Costs

- Installation Cost: Around \$2,000 per acre
- **Install Cost for 40 Acres: ~\$80,000**
- Water Cost: Approximately \$30 per acre-foot.



Butte County

WATER & RESOURCE CONSERVATION

Recharge Project Identification and Field Investigation



1. Project Identification and Assessment

2. Groundwater Recharge Investigation Report

3. Pilot Project Implementation Report



We have one or more recharge goals for any given recharge site or concept:

1. Flood mitigation

2. Groundwater well supply

3. Habitat support or rehabilitation (Groundwater Dependent Ecosystems)

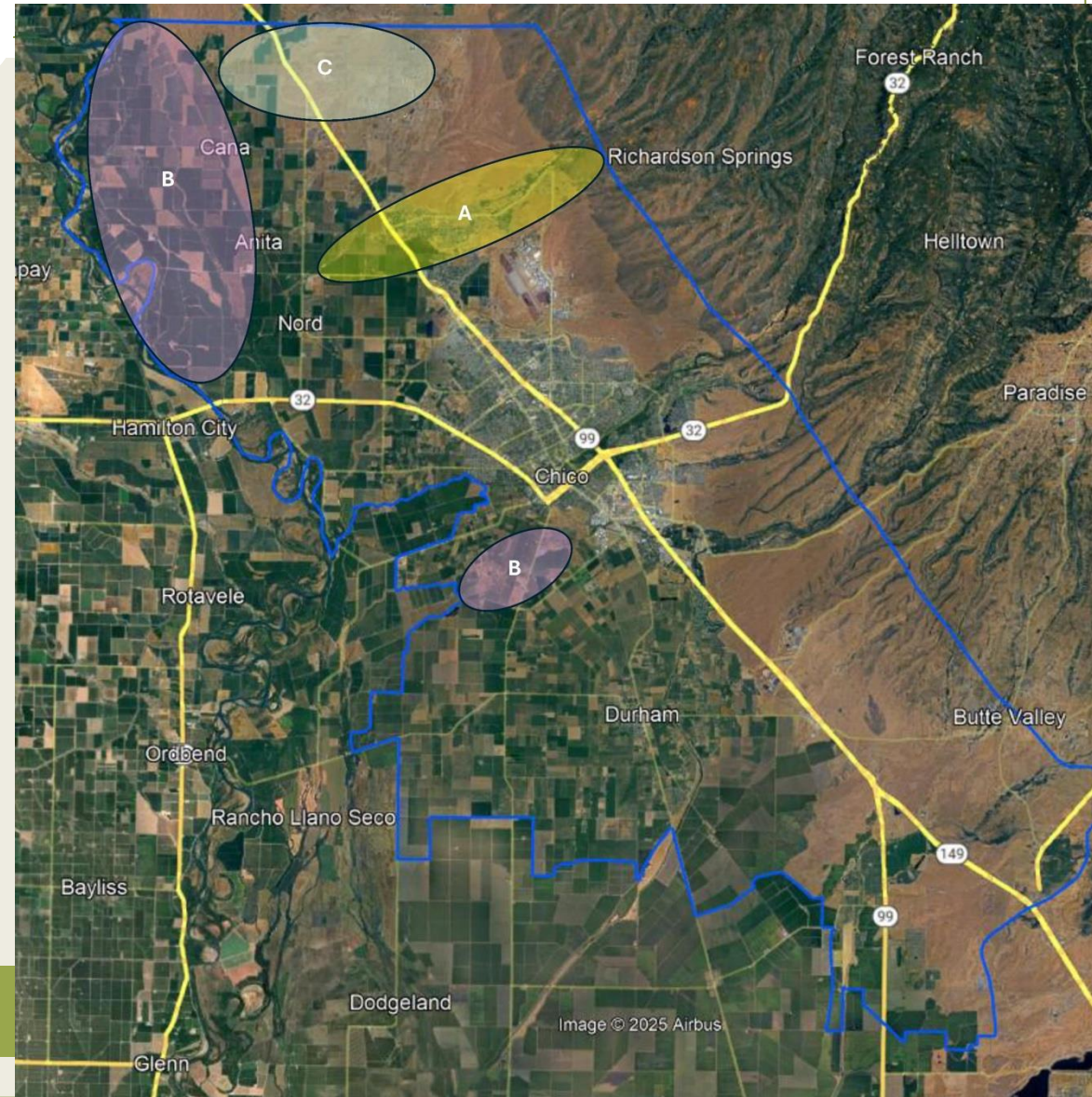
Current Status: Potential Areas and Concepts

A. Rock Creek Corridor

B. Recharge on/under Ag Land

C. Eastside Recharge

- Concept: Capture flood flows from creeks (Rock Creek, Pine Creek, Comanche Creek) into off-stream storage ponds, route them through a reverse tile drain network, and/or recharge flood flows via existing ponds and ditches.

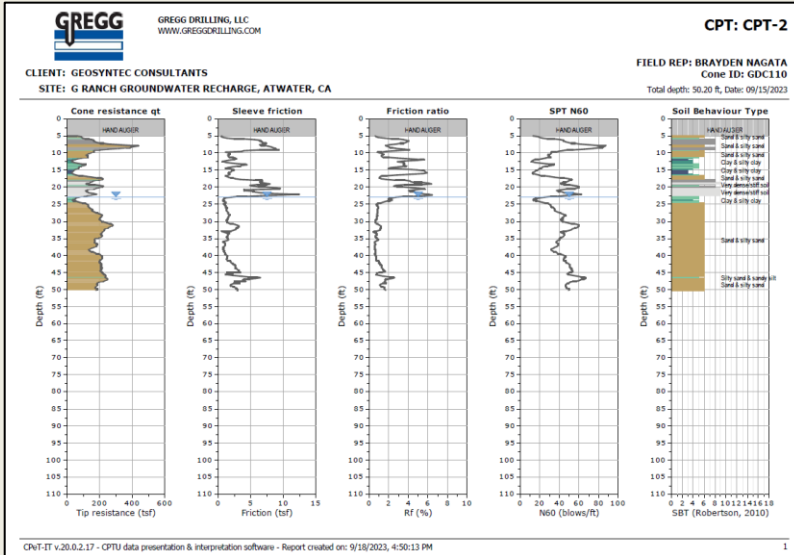


What will we learn?



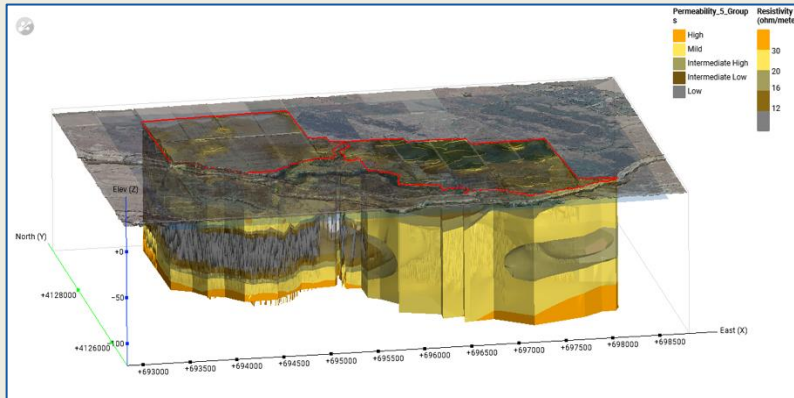
- How recharge can work on or below orchards
- How much recharge can occur in areas with relatively shallow groundwater – where is there potential for managed recharge given depth to water conditions?
- What methods can be used to retain flood flows and move them to areas water can recharge
- Better understand natural recharge that occurs in areas east of HWY 99 and how to enhance recharge in those areas (and areas w/ cemented units)

Next Steps this Summer: Field Investigations



Key Data Collection Tools

- Infiltration rates – Cone penetrometer tests, soil permeability from borings
- Vertical movement – tTEM surveys
- Site monitoring – Stilling wells, shallow monitoring wells, soil moisture sensors





Questions?

