

Vina Subbasin Surface Water Supply Feasibility Analysis

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With contributions from Jenny Scheer



Project Background



- Sustainable Groundwater Management Grant Surface Water Supply Project
- Initial Project List
 - Sacramento/Feather River Exchange
 - Feather River/Butte Creek Exchange
 - South Vina Extension
 - Maximize existing Butte Creek water rights
 - Oroville-Chico Pipeline
 - Paradise-Chico Intertie (became Ridge to Valley)
 - Local Creeks
 - Sacramento River Riparian Rights
 - New Water Right
- Water Commission narrowed to four on December 4, 2024 for Fatal Flaw Analysis
- Water Commission recommend final two on April 2, 2025 and BOS concurred on May 9, 2025

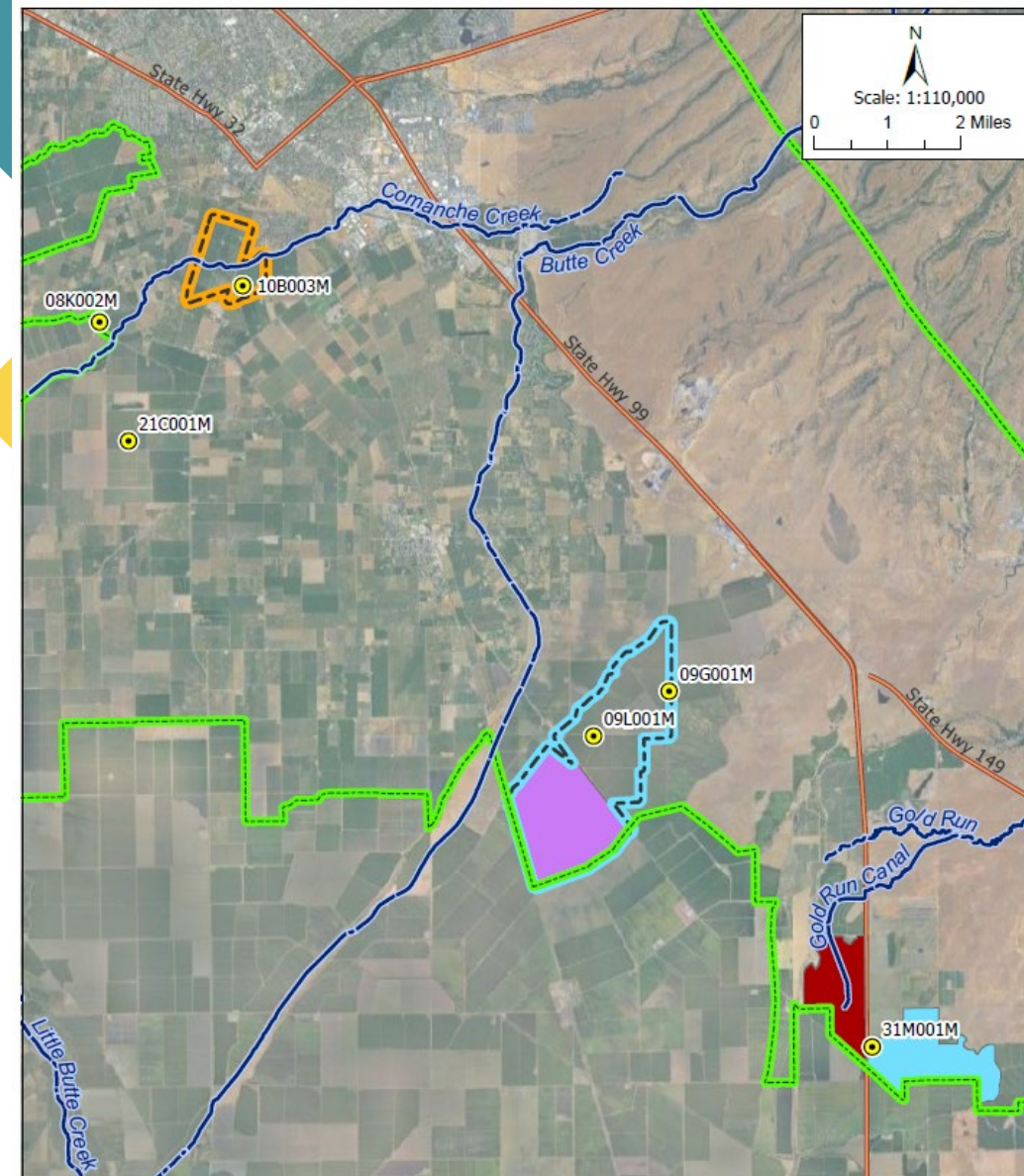
Final Project Options

- **South Vina Extension**

- Western Canal Water District deliver water into Vina Subbasin
- 2,476 acres across three landowners
- ~6,970 AF/yr from WCWD or Butte County Table A

- **Ridge to Valley**

- Convey underutilized Paradise Irrigation District water through Butte Creek to farmland in Vina Subbasin.
- 1,500 – 3,500 AF/yr

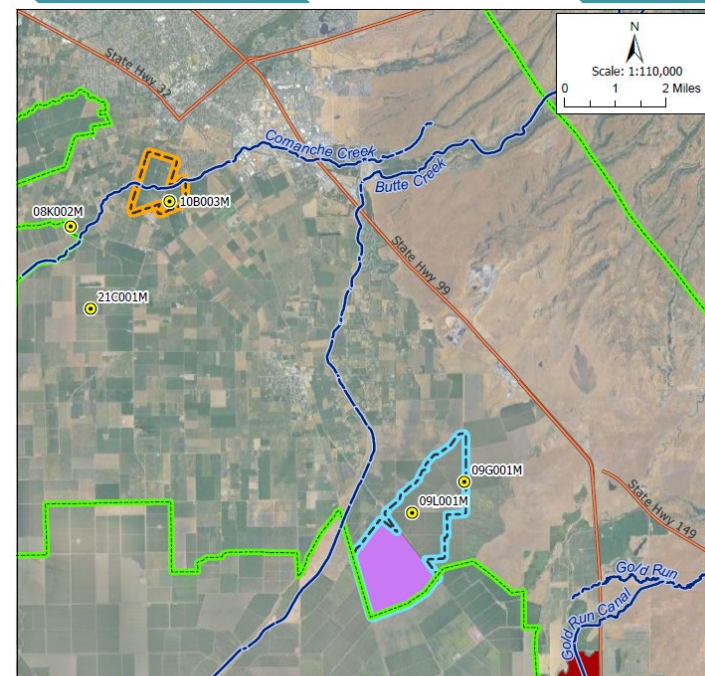


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|--------------------------|--------------------------|
| Ridge to Valley Option A | GW level monitoring well |
| Ridge to Valley Option B | Vina Subbasin |
| East Cherokee Strip | |
| Hamlin Slough | |
| West Cherokee Strip | |

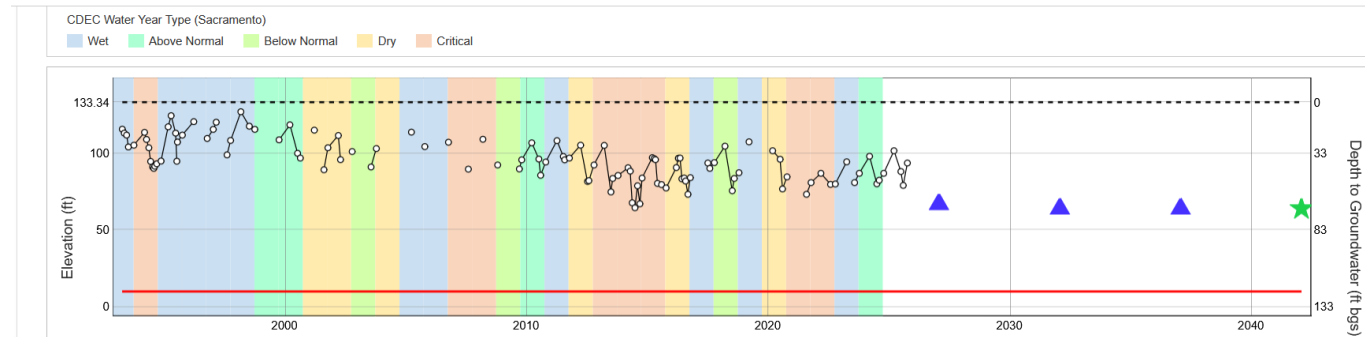
Vina Subbasin Monitoring Wells
Spatial Reference: NAD 1983 CA State Plane Zone I
Created by: Water & Land Solutions Date exported: 1/26/2026

Project Benefits

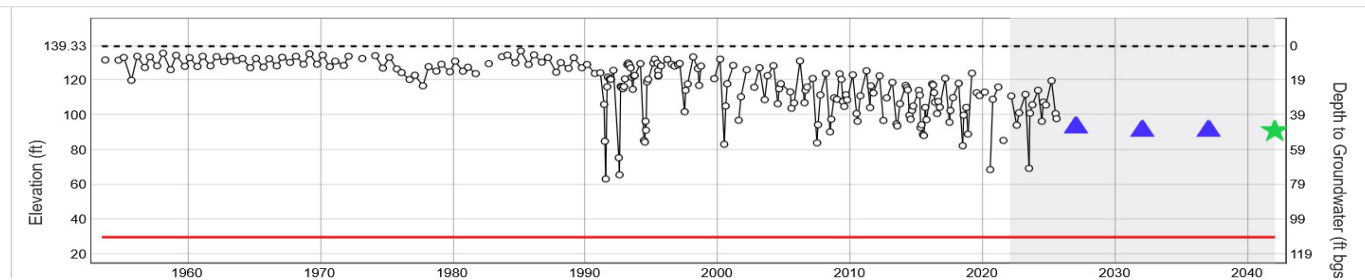
- Groundwater level benefits commensurate with the amount of surface water delivered
 - South Vina Extension - 6,970 AF/yr
 - Ridge to Valley - 1,500 - 3,500 AF/yr



Site Code: 396654N1218780W001 State Well Number: 21N01E21C001M Local Well Name: 21N01E21C001M

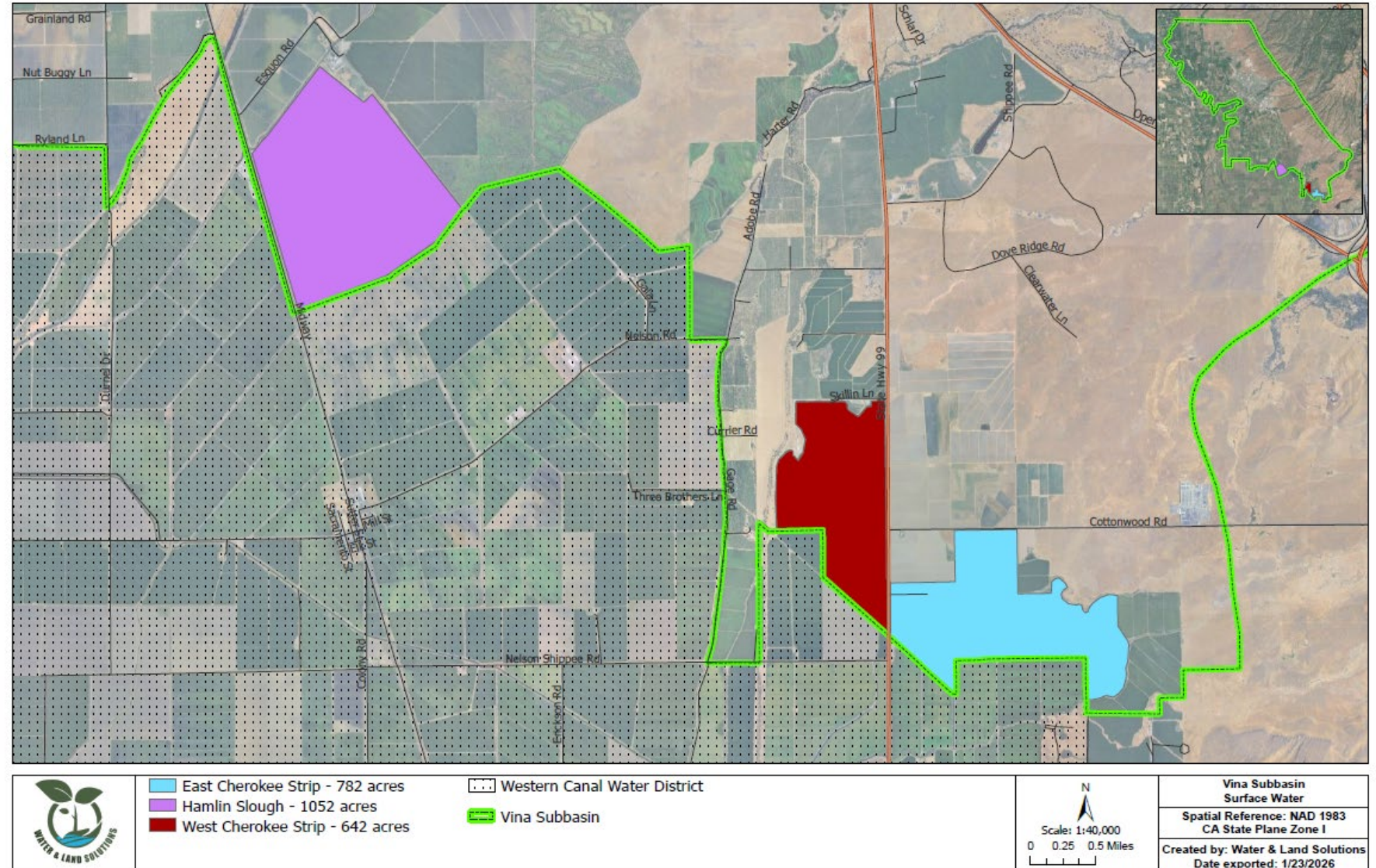


Site Code: 396066N1217586W001 State Well Number: 20N02E09L001M Local Well Name: 20N02E09L001M



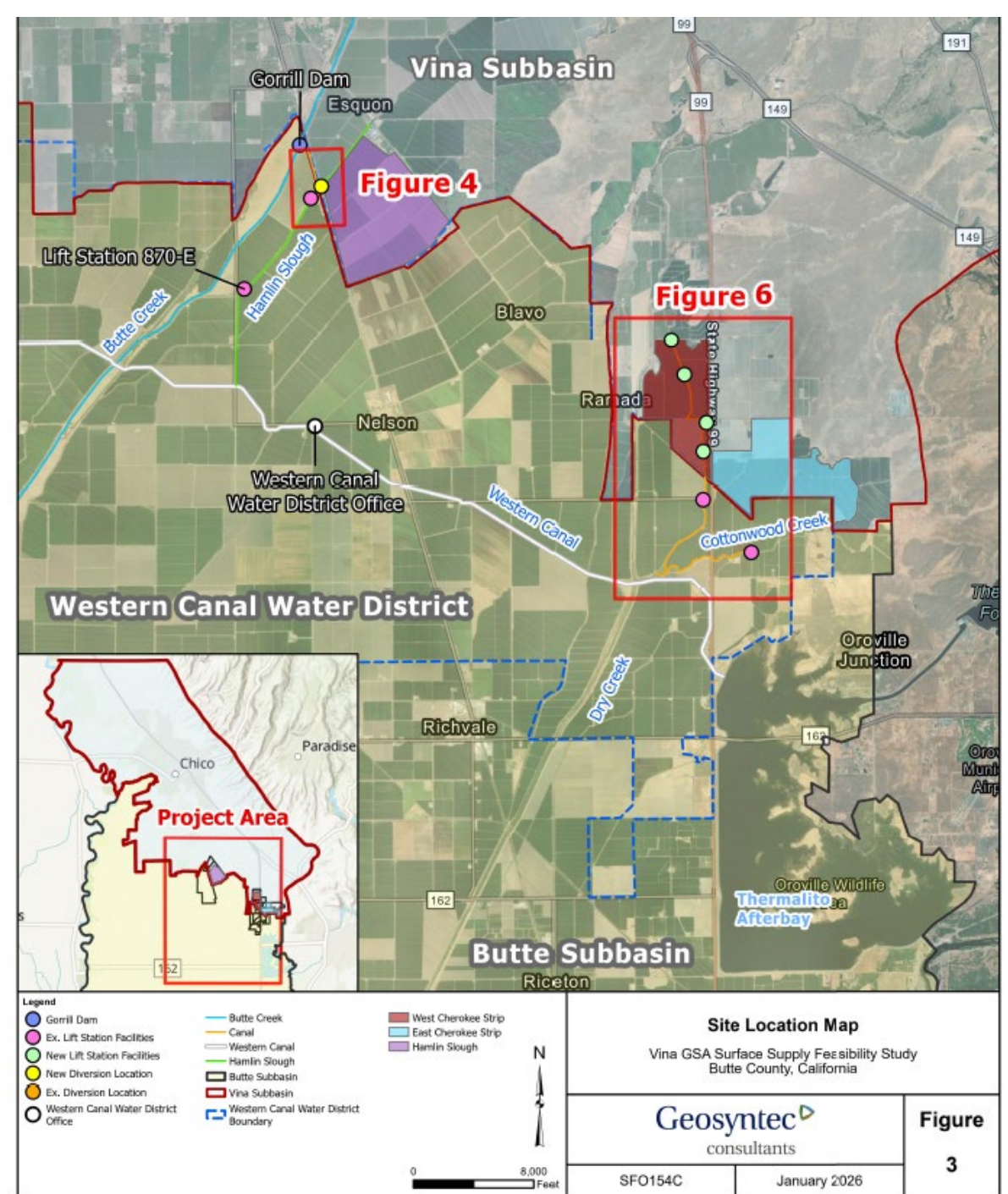
South Vina Extension

6,970 AF/yr



Infrastructure Needs

- 9 new or upgraded lift pumps
- 12 new meters
- Pipe through Cottonwood Creek levee
- Significant permitting: 18 months, \$215,000
- \$5M+ in construction costs



Cost Estimates – Capital

- Preliminary capital costs per AF for infrastructure, including permitting, design, and construction amortized over 10 years

Project/Site	Total Estimated Construction Cost	Acre-feet (7 in 10 yrs)	\$/AF
Hamlin Slough	\$749,000	15,687	\$ 47.75
West Cherokee Strip	\$3,298,000	17,395	\$ 174.60
East Cherokee Strip	\$1,091,000	15,708	\$ 56.82
TOTAL	\$5,067,200	48,790	\$ 105.31

Cost Estimates – Water Cost

- To be determined by water supplier and project implementer
- **WCWD:** likely higher than current out of district fee of \$14/AF
 - Additional wheeling charge for Hamlin Slough project
- **Table A:** \$106.60/AF or \$176/AF
 - Additional wheeling charges from WCWD and private landowners
- **O&M:** \$51/AF

Total Cost Benefit

Table A* Costs per Acre-foot

Property	Total AF/yr	Water Rate	O&M'	Capital	Total Cost
Hamlin Slough^	2,240	\$ 141.55	\$ -	\$ 47.75	\$ 189.30
West Cherokee Strip	2,485	\$ 141.55	\$ 204.00	\$ 174.60	\$ 520.15
East Cherokee Strip	2,244	\$ 141.55	\$ 102.00	\$ 56.82	\$ 300.37

*If public funding were secured for capital costs, total costs would be reduced to:

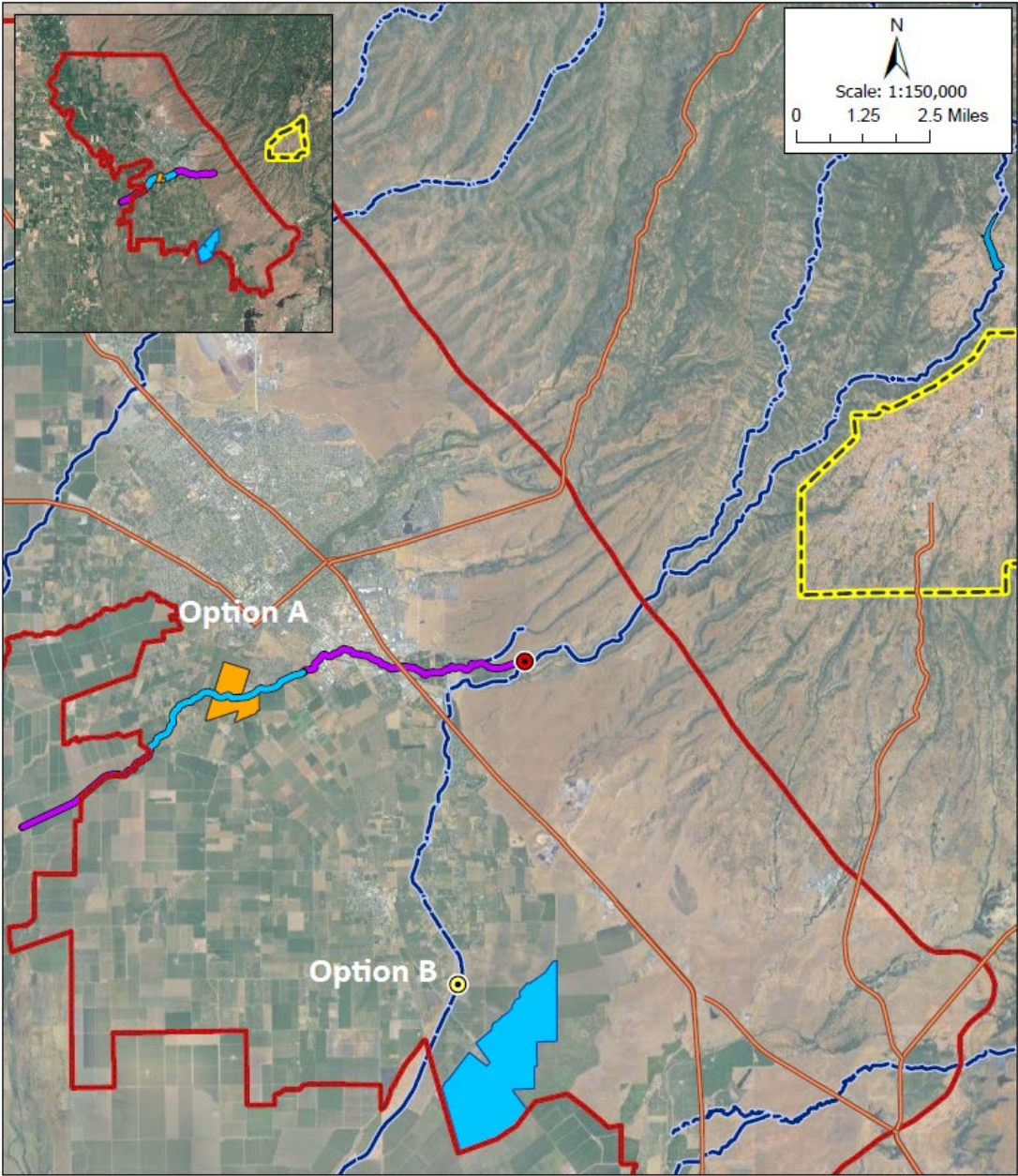
- \$141.55/AF/year for the Hamlin Slough projects,
- \$345.55/AF/year for the West Cherokee Strip projects, and
- \$243.55/AF/year for the East Cherokee Strip properties








South Vina Extension Recommendations

1. Define project implementer
2. Pursue grant funding to reduce capital costs and improve financial feasibility
3. Initiate permitting early
4. Determine water rates to determine funding needs and project strategy
5. Develop financial incentives for landowner participation as needed

Ridge to Valley

1,500 - 3,500 acre-feet (AF)



	 Parrott-Phelan Canal	 Vina Subbasin	Ridge to Valley	
	 Priority Area	 Paradise Irrigation District		Spatial Reference: NAD 1983 CA State Plane Zone I
	 Adams Diversion Dam	 Parrott-Phelan Diversion Dam		Created by: Water & Land Solutions Date exported: 1/22/2026

Infrastructure Needs

- Conveyance – existing natural infrastructure
- Diversions – no additional
- Delivery to farm – no additional
- On-farm improvements
 - For option A, up to 3 pump stations with filters, etc needed to create a dual source system for walnuts
 - For option B, no additional improvements needed to flood irrigate rice

Transfer Process

- SWRCB – temporary v long-term transfer
- Court Approval for amendments for Butte Creek adjudication
- CEQA Review

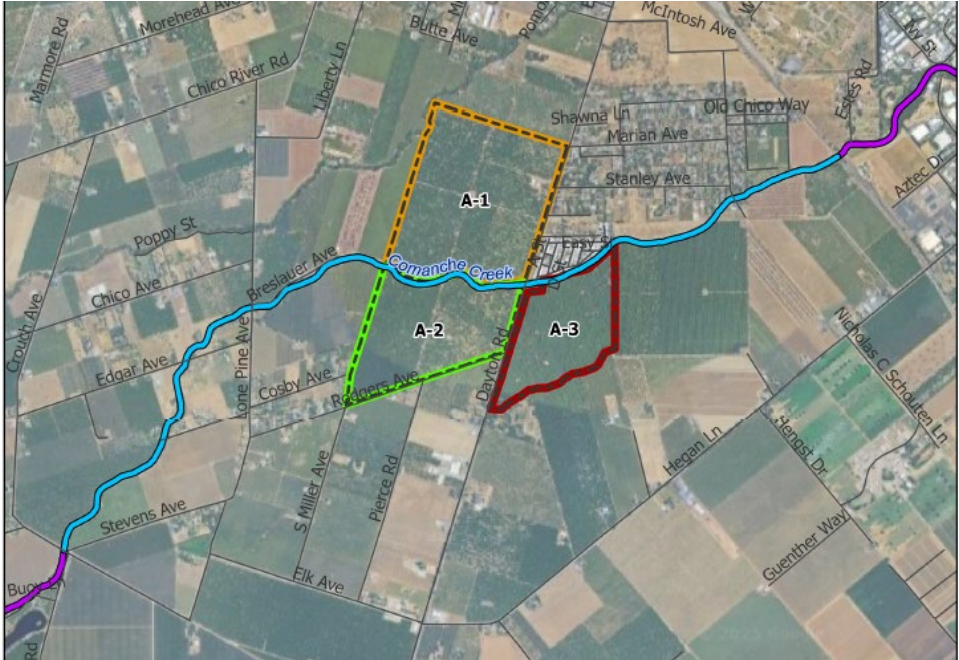
Cost Estimates – Upfront Costs

- On-Farm Improvements – Option A

	Total Capital	Total AF	Annual Capital (\$/AF)
A-1	\$202,300	700	\$35
A-2	\$134,867	400	\$41
A-3	\$110,977	300	\$45
TOTAL	\$448,144	1,400	\$40

- On-Farm Improvements – Option B

N/A



Cost Estimates – Water Costs

- Cost of water – TBD by PID Board
- Median price here is \$297.50/AF, rounded to \$300/AF
- Additional cost for legal expenses & CEQA
- Option A wheeling cost: \$25/AF

Seller	Buyer/Leasee	\$/AF	Amount (AF)	Year	Location
Glenn Colusa Irrigation District	Sutter Mutual Water Company	\$55.07	20,000	2024	North-of-Delta
Butte County	Del Oro Water Company/Cal Water-Oroville	\$106.70	668	2025	North-of-Delta
Butte County	Palmdale Water District/Westside Districts	\$176.40	24,000	2025	South-of-Delta
Yuba County Water Agency	Healthy River and Landscape Program	\$290	41,000	2025 - 2033	In-Delta
South Sutter Water District	Woodland-Davis Clean Water Authority	\$550	2,000	2024-25	North-of-Delta
Butte Water District	Santa Clara Valley Water District	\$650+	21,000	2025	South-of-Delta
Western Canal Water District	Metropolitan Water District of Southern California	\$600	Up to 26,400	2025	South-of-Delta

Total Cost Benefit

PID* Total Costs per Acre-foot					
Property	Total AF/yr	Water Rate	O&M^	Capital±	Total Cost
A	1,400	\$ 300.00	\$ 86.07	\$ 39.05	\$ 425.12
B	3,500	\$ 300.00	\$ 0.00	\$ 0.00	\$ 300.00

- Funding options:
 - On-farm improvements: State, Federal, local, private
 - Could reduce total costs to \$386.07/AF/year for Option A
 - Cost of Water: private and local

Ridge to Valley Recommendations

1. Adopt a Phased Approach:

Phase 1: 1,500 AF to Option B for three years, with temporary annual transfers

Phase 2: Up to 3,500 AF with a long-term multi-year transfer

2. Cost Share

3. Option B is most cost effective and most easily implementable, but there may be other benefits to Option A

4. Consider further exploration of groundwater level benefits of the two project areas potentially using the Butte Basin Groundwater Model to evaluate effects on groundwater levels.

Thank you

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Groundwater Sustainability Implications



- GSP showed downward trend in groundwater levels
- Groundwater levels are a 2022 GSP proxy for storage, subsidence, and interconnected surface waters
- No known in-elastic subsidence
- GSP tracks high calcium, high nitrates and total dissolved solids in the Chico area.
- Seawater intrusion not relevant to Vina