Groundwater Sustainability Commission Meeting

MARCH 31, 2021

PREPARED BY WATER SYSTEMS CONSULTING

Public Comment – Items not on Agenda

Chair

Public Comments

By phone:

Dial *9 (then *6 to unmute when prompted)

From your computer:

Raise your hand by clicking the raise hand icon

Response to Comments on GSP Chapters 1-7

Dick Tzou

RESPONSE TO COMMENTS ON GSP CHAPTERS 1-7

RESPONSE TO COMMENTS CAN BE VIEWED AT:

SLOWaterBasin.com

https://portal.slowaterbasin.com/service/document/download/77

Review of common comments on Chapter 7 (Monitoring Network).

Public Comments

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State Water Project in SLO Basin

Courtney Howard

State Water Project Concepts for SLO Basin

March 31, 2021

Presentation Overview

- Roles and Pipeline Capacity
- Concepts and Considerations
- Current Efforts

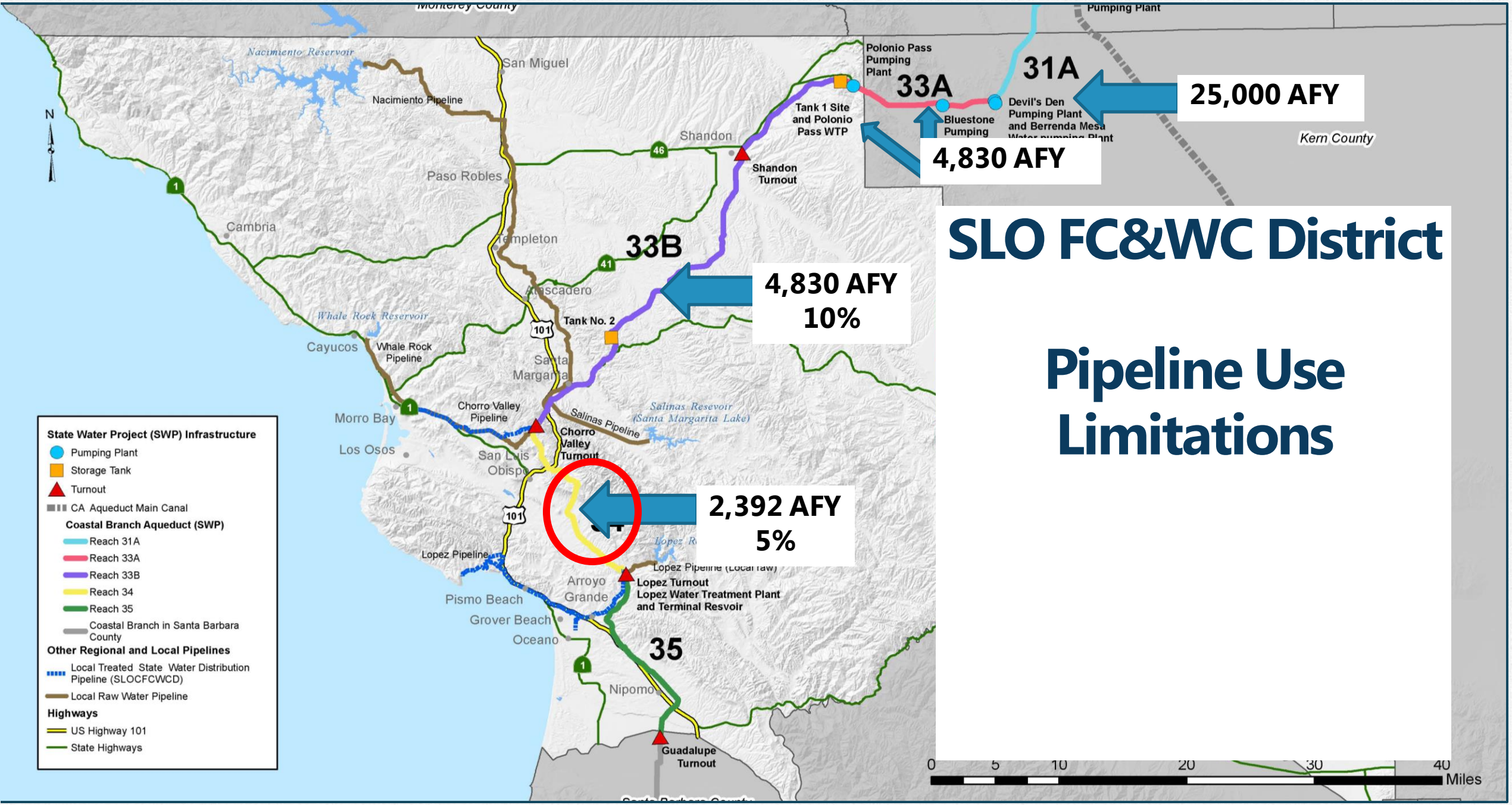
Roles and Agreements

- **DWR – Pipeline Owner, State Water Contract Manager**
- **Santa Barbara County FC&WCD – Contract for State Water**

  Day to day management delegated to CCWA
- **SLO County FC&WCD – Contract for State Water**

  Retained management Agreements with individual participants
- **Central Coast Water Authority (CCWA) – Treatment Plant Owner and Operator of Coastal Branch**

  Agreements with individual participants



SLO FC&WC District

Pipeline Use Limitations

State Water to SLO Basin
Concepts under consideration

- **New connection (turn-out) infrastructure requires agreements with District, CCWA and DWR**

  Agricultural end uses
  Mutual Water Company domestic end uses
  Wheeling through City of San Luis Obispo
  Recharge facilities (creeks, basins or injection)

- **Treated water supply**

  Higher cost, may need to "de-treat" for certain end uses

- **Ultimate costs also subject to negotiation**

Who could you get State Water from?

- **District Participants**

  Lopez

  Chorro Valley

- **Santa Barbara County Participants**

- **District Unsubscribed Amount (14,463 AFY)**

Purchase from SLO FC&WC District

- Using existing capacity allocations
- Purchase Lopez Participants amount
- Purchase Chorro Valley Participants amount using Lopez Turnout or Santa Barbara County Participants' Capacity

	District Subcontractor	Pipe Use Amounts (AFY)
Chorro Valley	CSA 16 (Shandon)	100
	City of Morro Bay	1,313
	CMC	400
	County Ops Center	425
	Cuesta College	200
Lopez	City of Pismo Beach	1,240
	Oceano CSD	750
	San Miguelito MWC	275
	Avila Beach CSD	100
	Avila Valley MWC	20
	San Luis Coastal USD	7
	Total	**4,830 AFY**

Purchase from Santa Barbara County Participants

- Requires their execution of Water Management Tools Amendment (uncertain)
- Requires agreements via DWR and two counties

CCWA Subcontractor	Pipe Use Amounts (AFY)
City of Guadalupe	605
City of Santa Maria	17,820
Southern CA Water Co.	550
Vandenberg AFB	6,050
City of Buellton	636
Santa Ynez ID No. 1	2,200
Carpinteria CWD	2,200
Goleta Valley WD	4,950
La Cumbre MWC	1,100
Montecito WD	3,300
Morehart Land Co.	220
Santa Barbara Research Center	55
City of Santa Barbara	3,300
Total	**42,986 AFY**

Delivering District's unsubscribed State Water to SLO Basin using additional capacity in pipeline

- **Use of additional capacity requires negotiation and updated or new agreements between the parties**

- **Additional capacity ranges from an additional 0 AFY to 9,700 AFY**

  Amount depends on how much of the additional capacity Santa Barbara County would use (e.g. would be 0 if Santa Barbara County uses all of it)

- **State Water Coastal Branch Pipelines Only**

  Potential treatment plant and recipient pipeline capacity constraints

Current Efforts

- **Water Management Tools Study with CCWA**

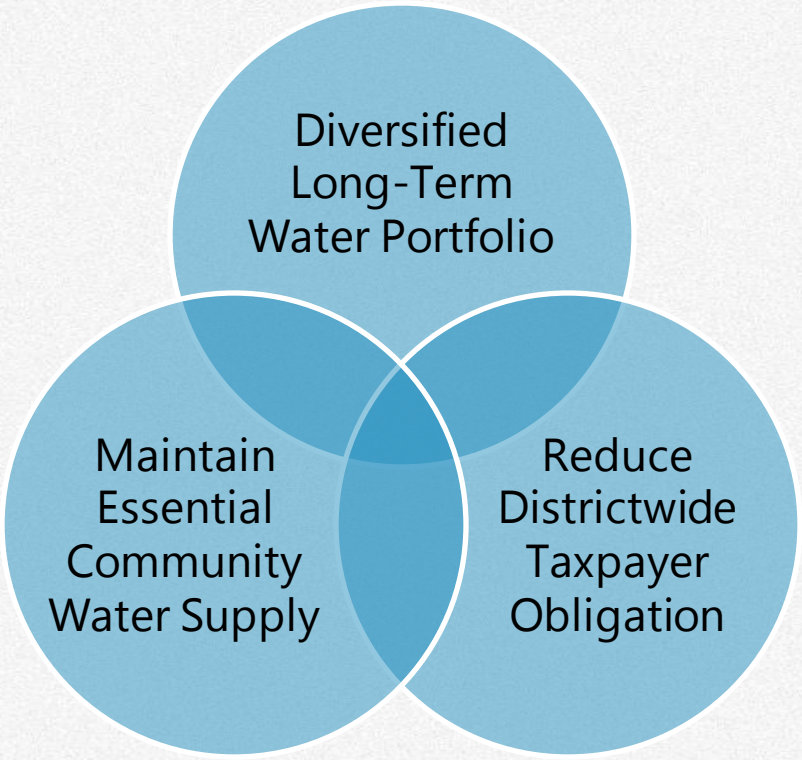
Potential use of additional capacity and other collaborative opportunities

- **Lopez participants contract changes (storage model for Lopez Reservoir)**

May impact availability of State Water for SLO Basin

- **Return to the Board of Supervisors to address groundwater banking issues**

May impact agreements with end users of State Water in the SLO Basin



State Water Project Concepts for SLO Basin

Public Comments

By phone:

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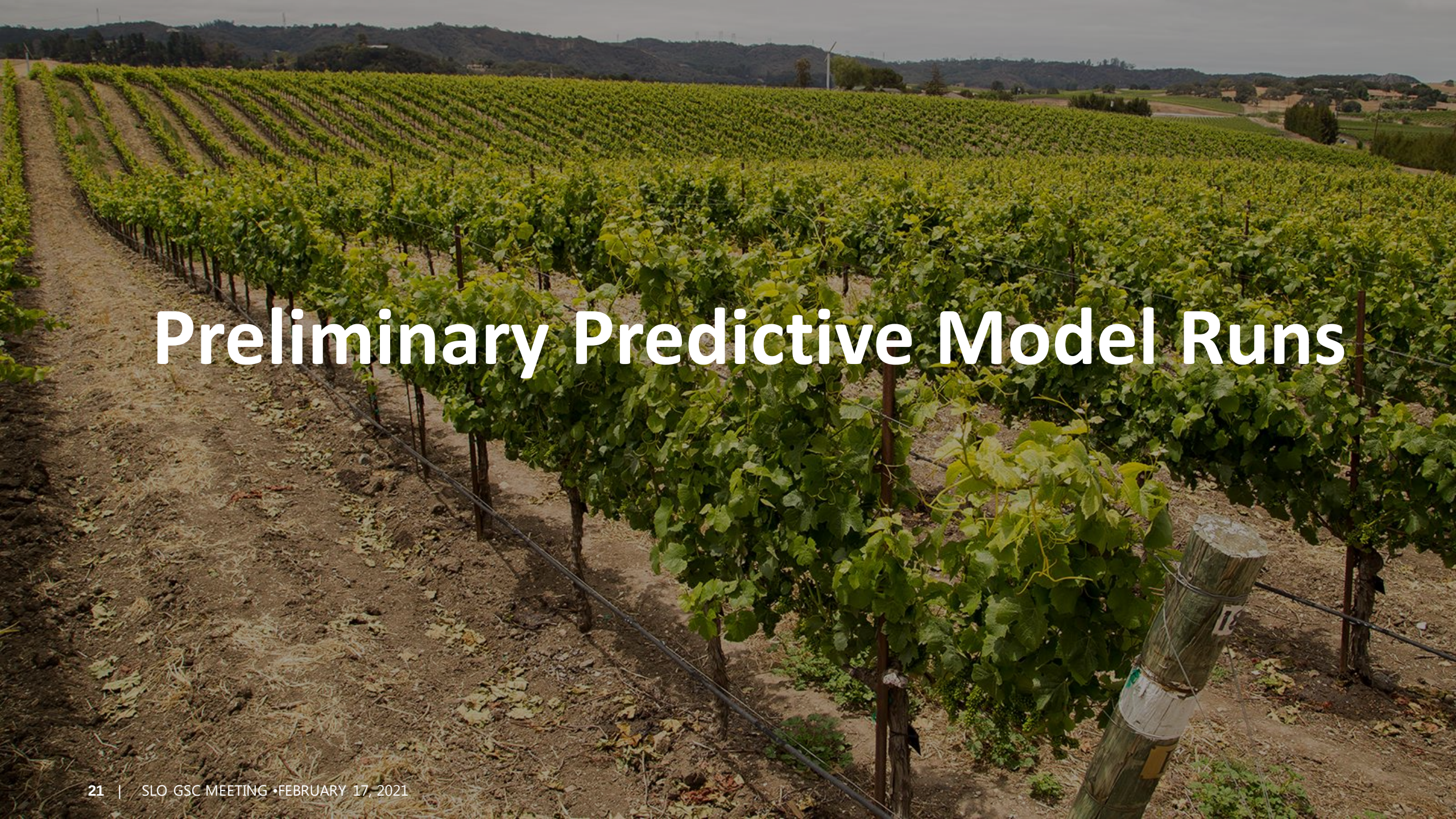
From your computer:

Raise your hand by clicking the raise hand icon

Integrated Model Preliminary Results and Sustainable Management Criteria

Dave O'Rourke, Dan Heimel and Michael Cruikshank

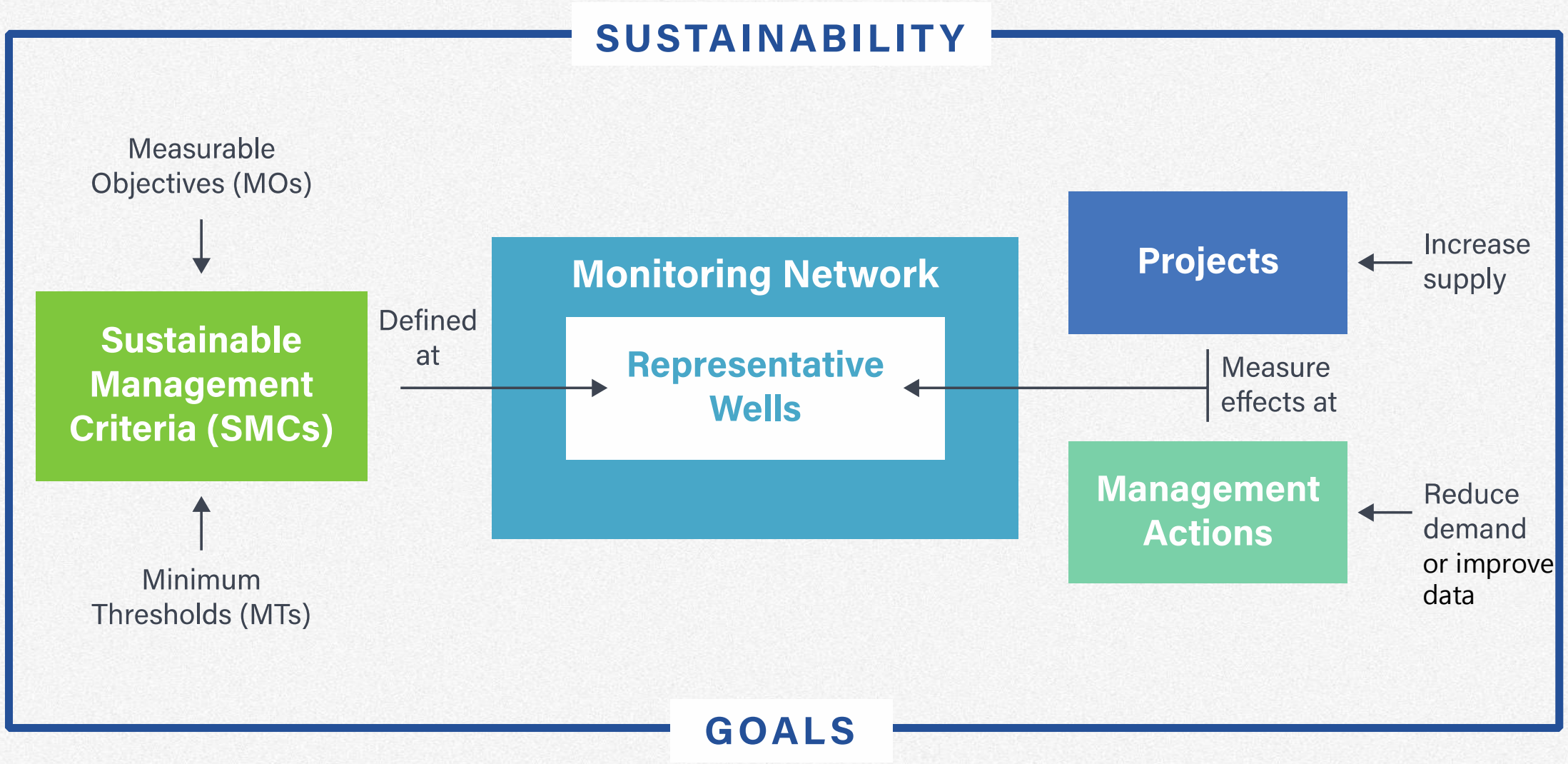


Preliminary Predictive Model Runs

Recommended Sustainable Management Criteria

Based on the comments received and additional modeling scenarios the MO's and MT's shown on the hydrographs in the following slides are the recommended SMC's and will be included in Chapter 8 – Sustainable Management Criteria.

GETTING TO SUSTAINABILITY



SMC Analysis Reminders

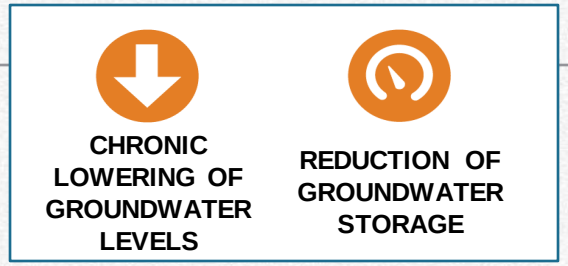
- **MTs are more significant than MOs**
  - MTs are thresholds that **define undesired conditions.**
  - MOs are goals. No penalty for not meeting.
  - WLs can operate in the area in between.

- **Hydrographs of representative wells are non-uniform. Approach to SMCs is variable by location.**
  - Corral de Piedras Creeks convey significant recharge.
  - SE Edna Valley does not have this recharge source.
  - SLO Valley has had no declines.

- **Stakeholder-defined Principles of Sustainability.**
  - Equitably sustain diverse needs.
  - Supply resilience (drought).
  - Ecosystem health.
  - Equitable distribution of cost (and risk).
  - WQ maintained (non-degradation).

- **SMCs will be tested using model simulations.**
  - Various scenarios will be simulated, and water levels at the representative wells will be evaluated.

MINIMUM THRESHOLDS



Minimum Threshold Alternative	Description	Pros	Cons
①	Recent Low Drought (2015) WLs	• Accounts for lowest historical water level • <10% domestic wells dry • Easily referenced and measured	Doesn't consider drought worse than recent droughts
2	Higher WLs than Recent Low Drought WLs	Greater factor of safety than recent drought	More aggressive goal will be harder and more expensive to achieve.
③	Lower WLs than Recent Low Drought WLs	• Allows time for current trends to be reversed (glide path) • Allows for GW development in areas not currently impacted (City of SLO)	Water levels may be lower than today's levels Higher risk of shallow wells going dry

Different rationales in SLO Valley vs Edna Valley
Consider saturated thickness

MEASURABLE OBJECTIVE

Measurable Objective Alternative	Description	Pros	Cons
1	2011 WLs	Returns to Pre-Drought Conditions	No safety factor or recovery from previously lowered water levels
2	Current WLs	Incorporates recovery from recent drought	Does not incorporate recovery from current conditions
3	Current WLs + Recovery Factor (10-20 ft?)	Incorporates recovery above current conditions	May require more $$ for projects
4	Lower WLs than Current WLs	Allows time for current trends to be reversed (glide path) Allows for GW development in areas not currently impacted (SLO Valley)	Water levels may be lower than today's levels

SUSTAINABLE MANAGEMENT CRITERIA

SUSTAINABILITY INDICATOR	CHRONIC LOWERING OF GROUNDWATER LEVELS	REDUCTION OF GROUNDWATER STORAGE	WATER QUALITY DEGRADATION	LAND SUBSIDENCE	INTER-CONNECTED SURFACE WATER DEPLETIONS	SEAWATER INTRUSION
METRIC(S) USED	Groundwater Elevation	Total Volume	- Migration Plumes - # of Supply Wells - Volume - Location of Isocontour	Rate and extent of land subsidence	Volume or rate of surface water depletion	Chloride Concentration Isocontour

SGMA allows all indicators but water quality to be assessed using **WATER LEVELS** as a proxy metric for direct measurement.

WLS IN DOMESTIC WELLS DURING THE 2015 DROUGHT

More than 90% of domestic wells did not go dry based on the 2015 water level contour map (Recent Drought) in Chapter 5

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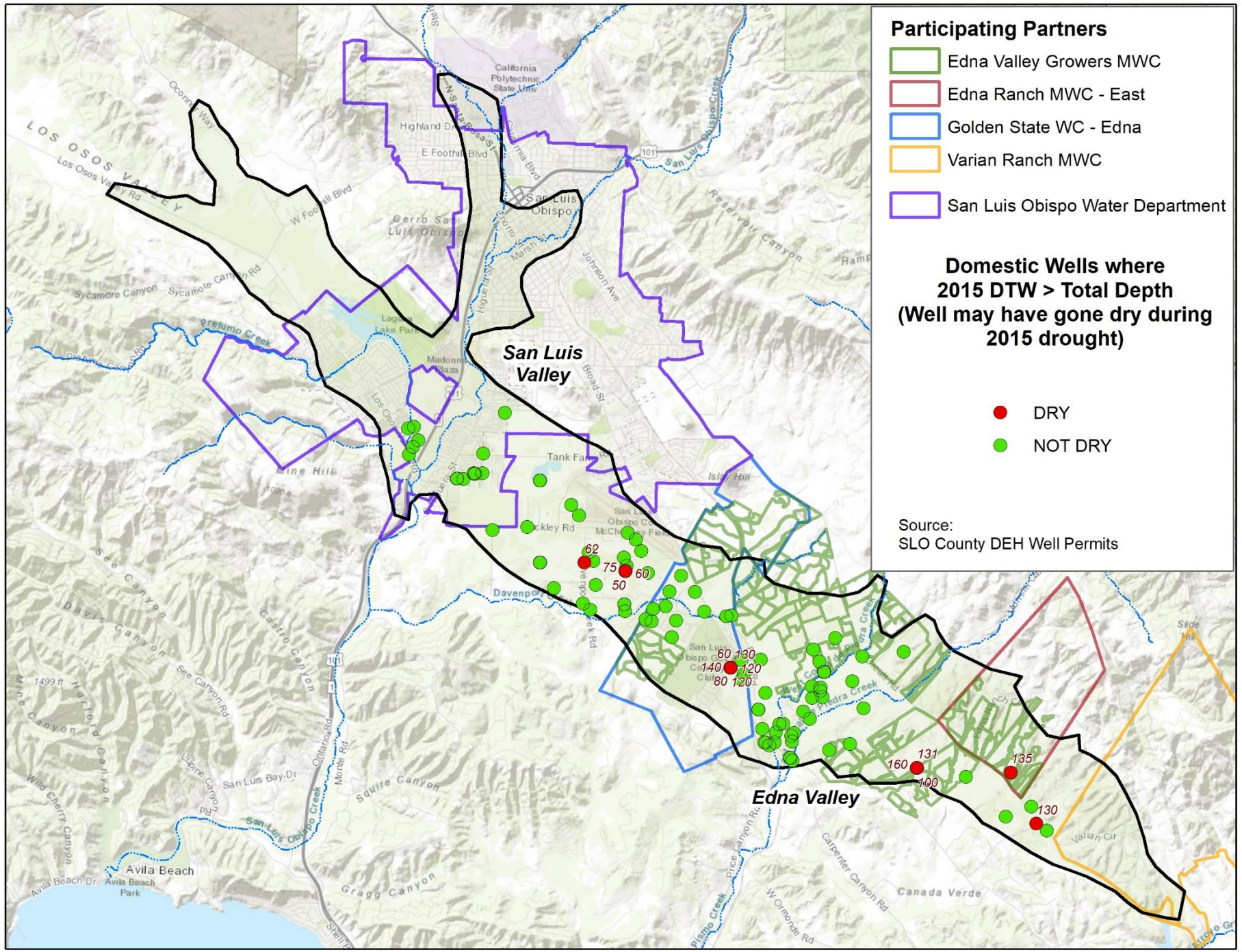
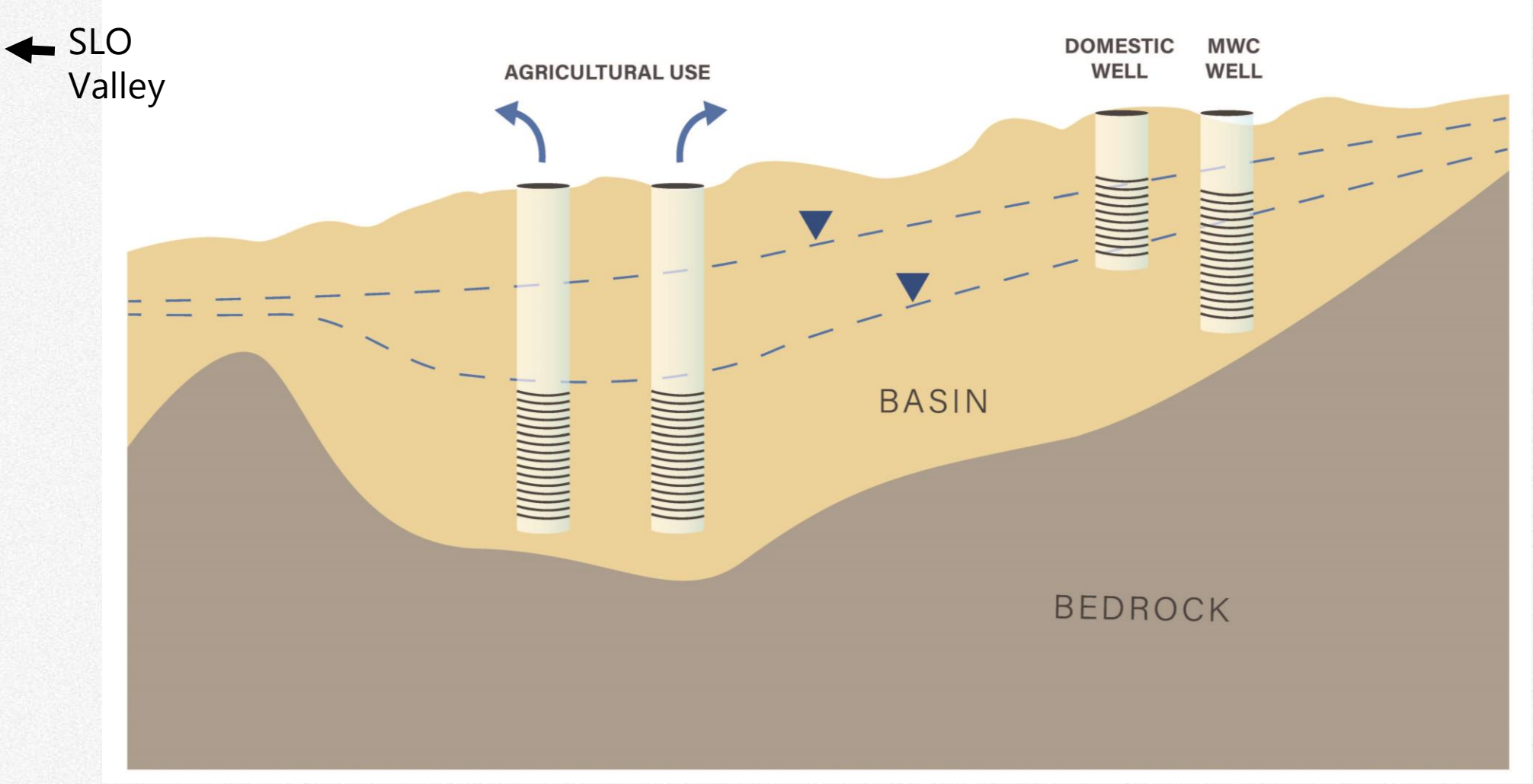
CHRONIC LOWERING OF GROUNDWATER LEVELS

REDUCTION OF GROUNDWATER STORAGE



EDNA BASIN CONCEPTUAL CROSS SECTION

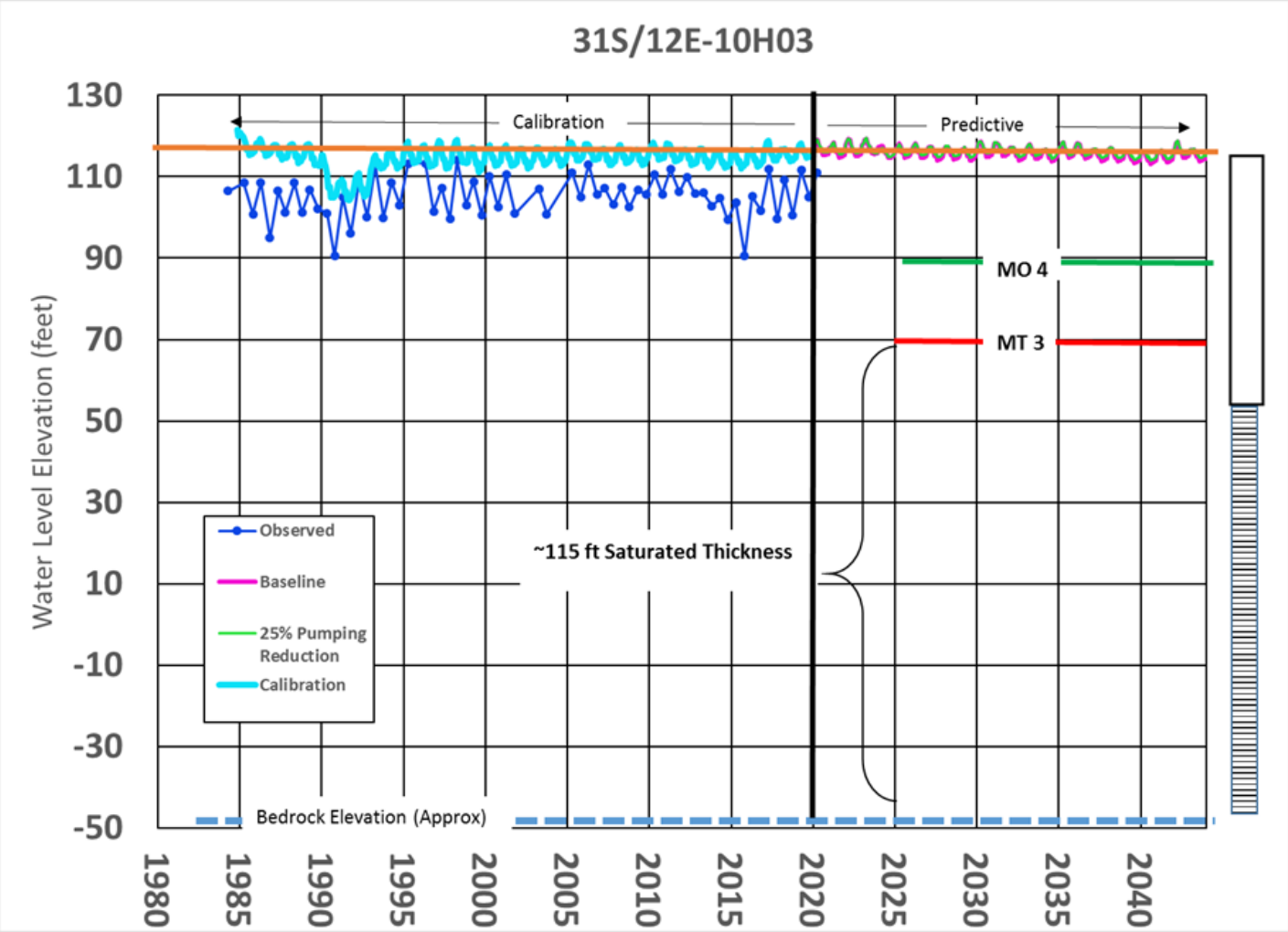


Updated Baseline Model Run

Baseline – No projects. 2019 pumpage maintained, with hydrology from 1995-2019. Used for comparison with other simulations.

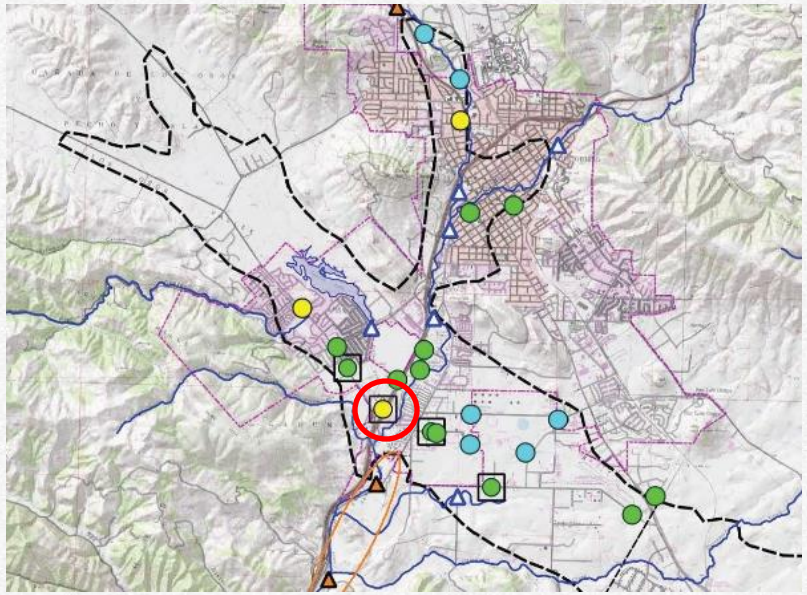
REPRESENTATIVE WELLS - SAN LUIS VALLEY
31S/12E-10H03 (SLV-12)

CHRONIC LOWERING OF GROUNDWATER LEVELS

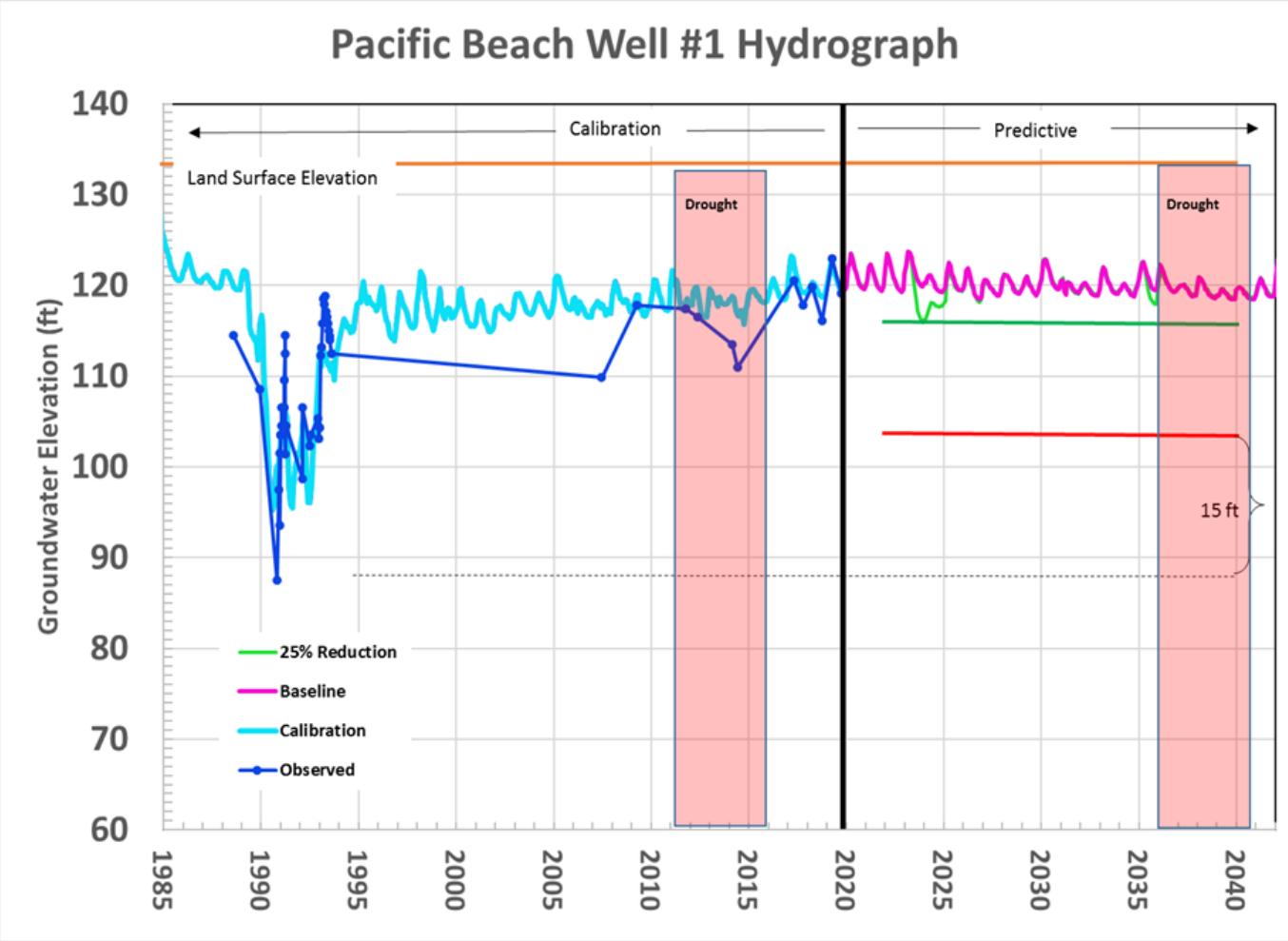


Measurable Objective

Minimum Threshold



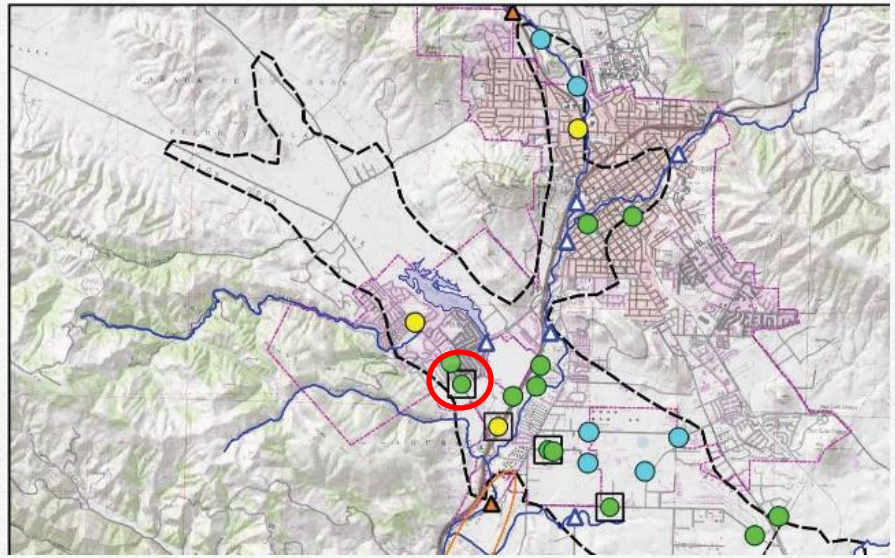
REPRESENTATIVE WELLS –SAN LUIS VALLEY
Pacific Beach 1 (SLV-09)



LAND SUBSIDENCE

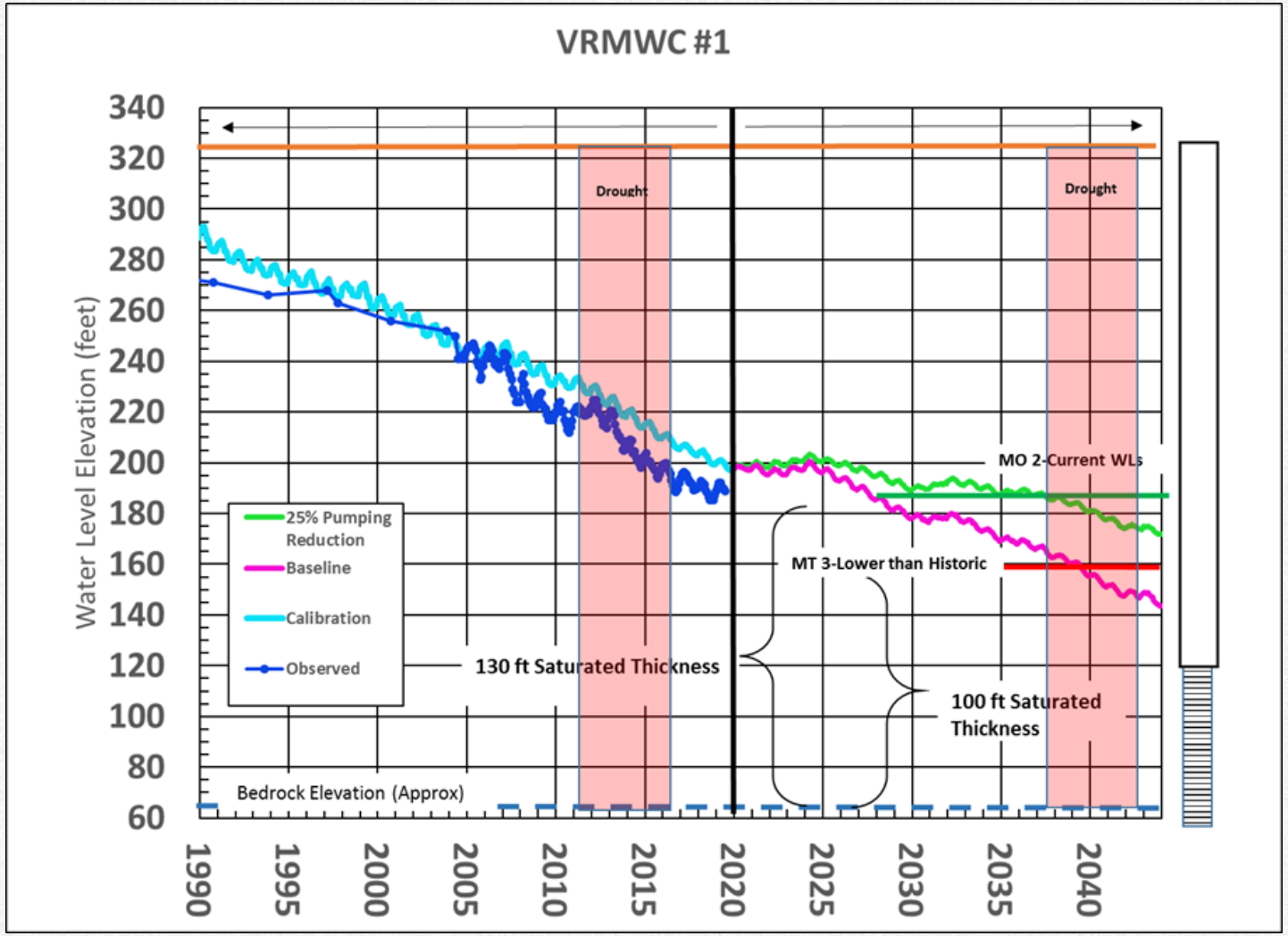
Measurable Objective

Minimum Threshold



REPRESENTATIVE WELLS - EDNA VALLEY

VRMWC Well #1 (EV-16)

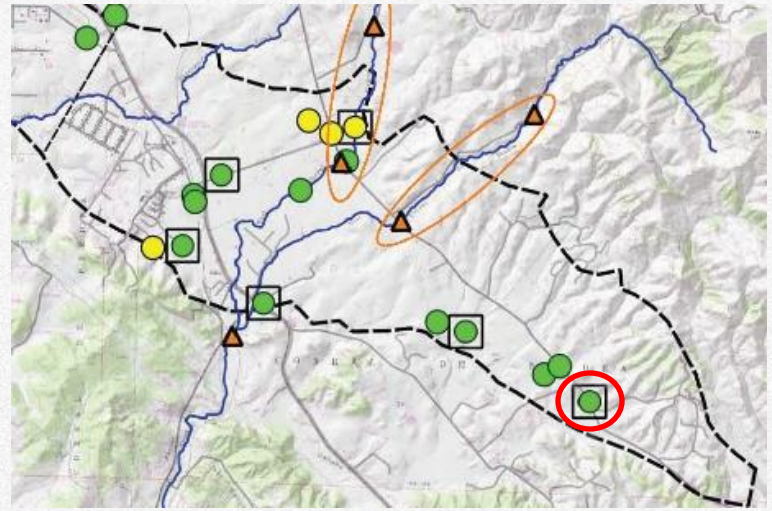


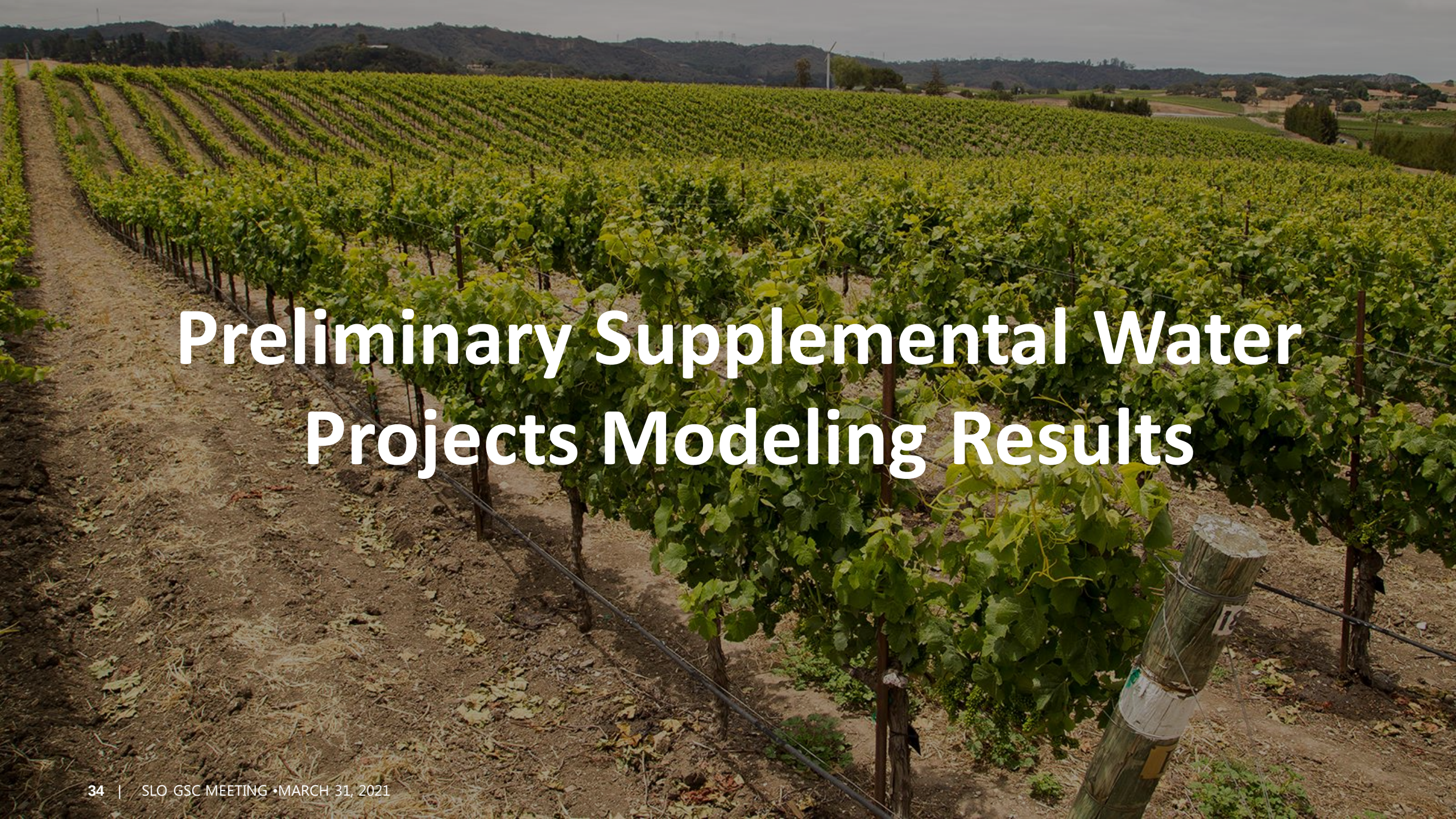
CHRONIC LOWERING OF GROUNDWATER LEVELS

REDUCTION OF GROUNDWATER STORAGE

Measurable Objective

Minimum Threshold





Preliminary Supplemental Water Projects Modeling Results

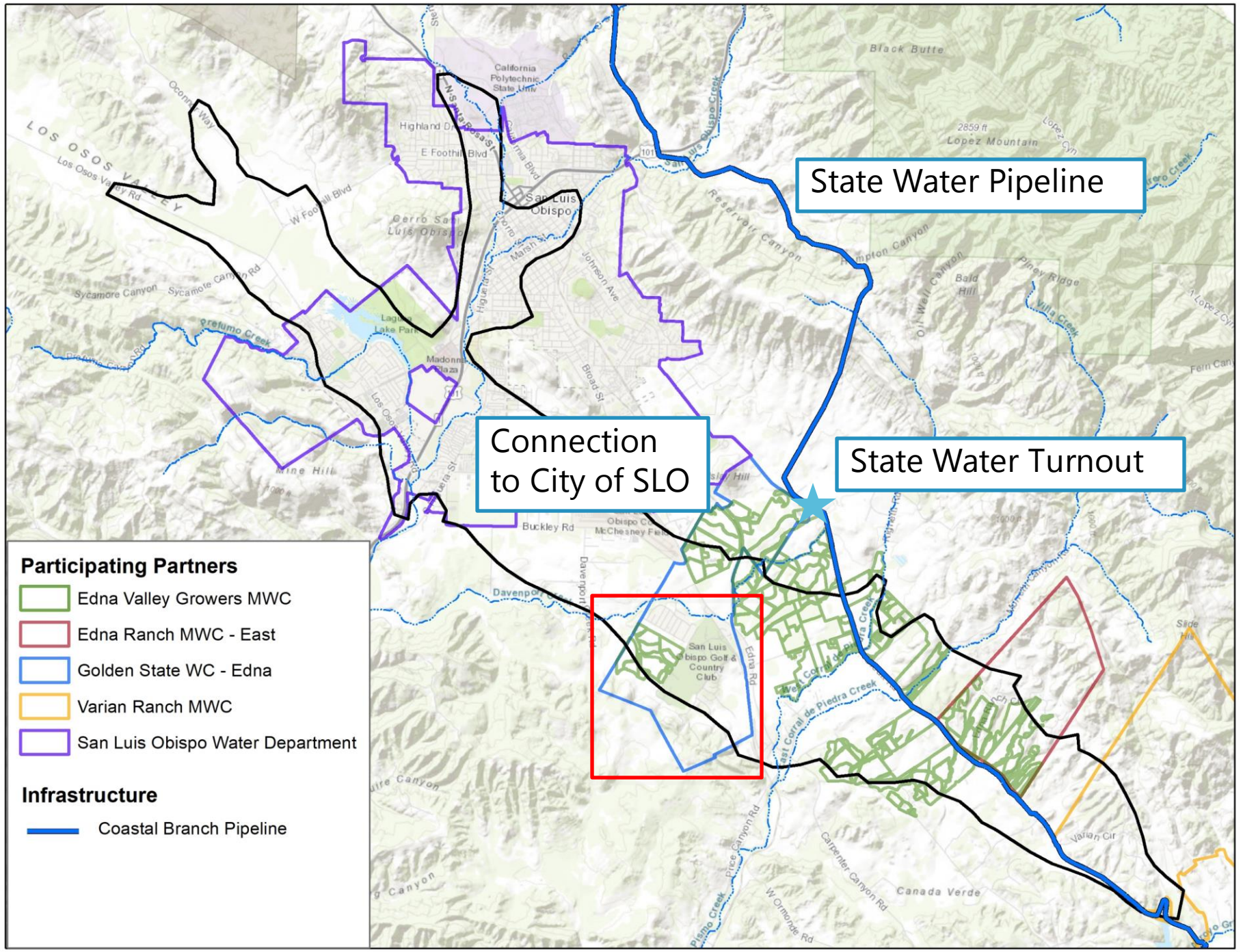
Supplemental Water to GSWC

Quantity: 200 AFY Direct delivery of either SWP or City of SLO potable water

Location of Delivery: Golden State Water Co. Edna Valley Service Area

Reduction in pumping by 200 AFY

Timing: Beginning in 2026



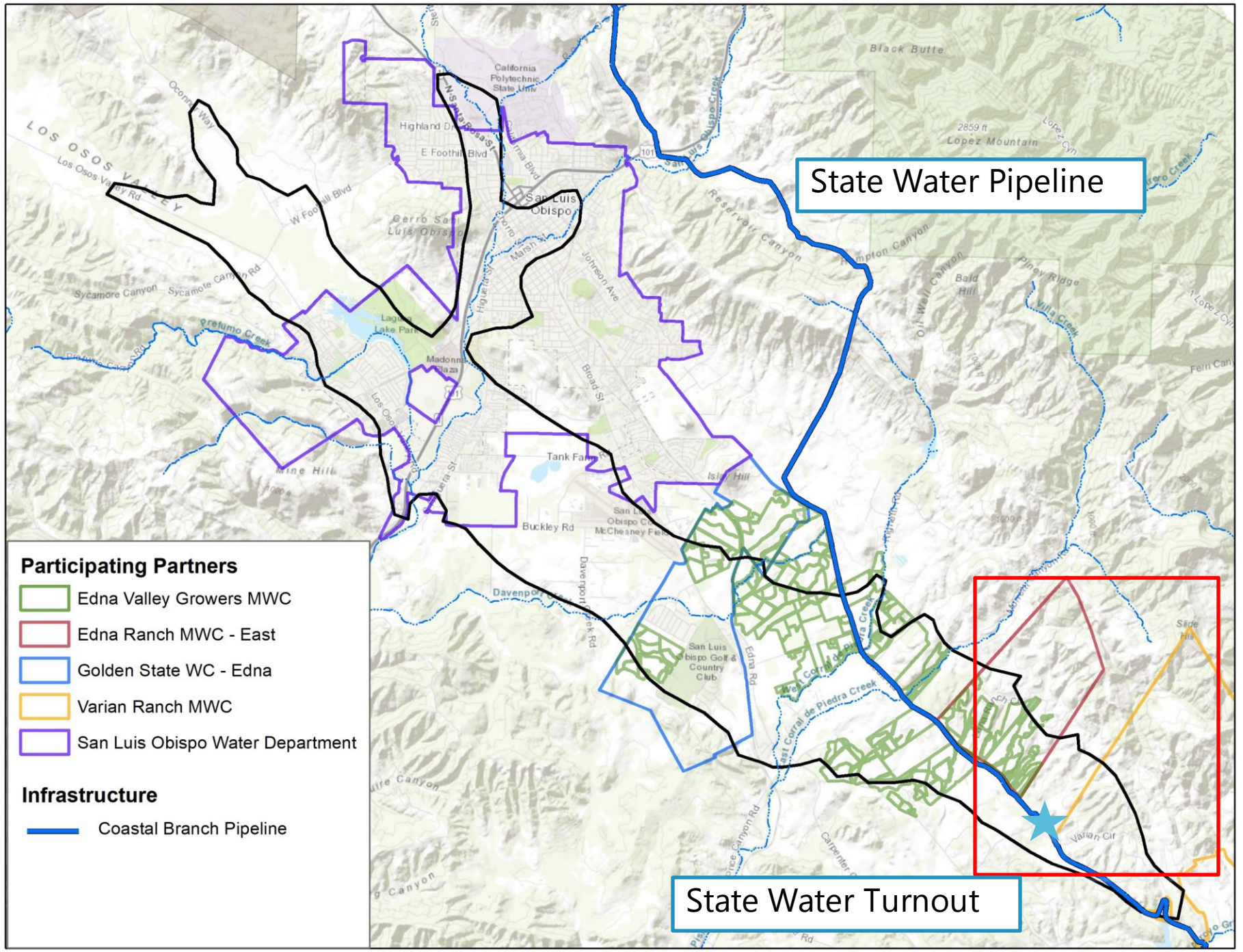
Supplemental Water to MWC

Quantity: 50 AFY Direct delivery of either SWP or Arroyo Grande Wells

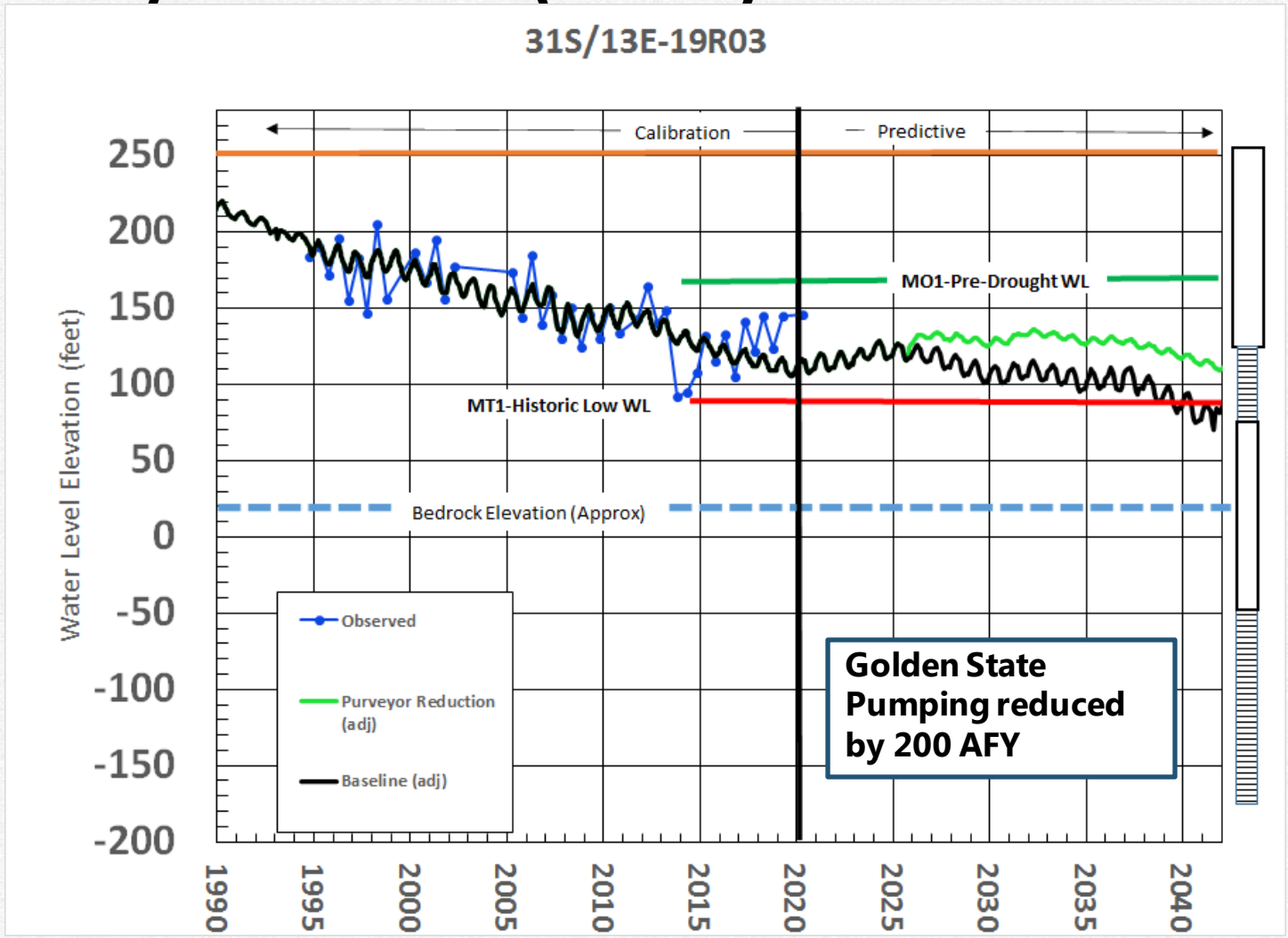
Location of Delivery: Edna Ranch MWC and Varian Ranch MWC

Combined reduction in pumping by 50 AFY

Timing: Beginning in 2026



REPRESENTATIVE WELLS - EDNA VALLEY
31S/13E-19R03 (EV-09)

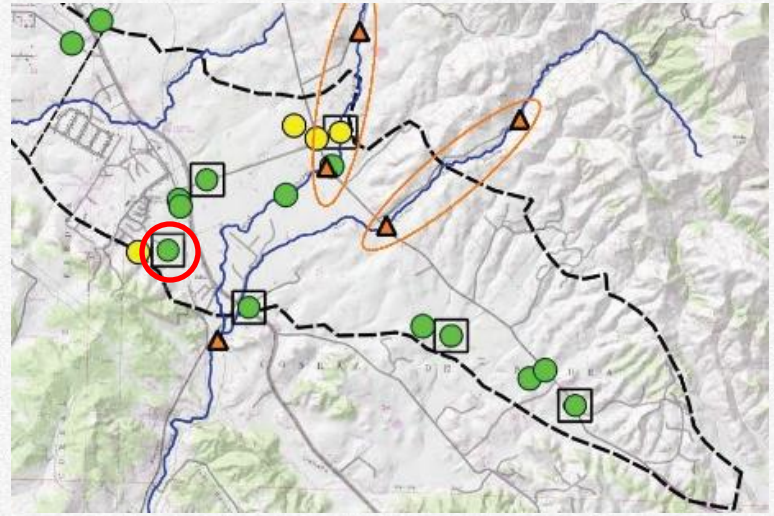


REDUCTION OF GROUNDWATER STORAGE

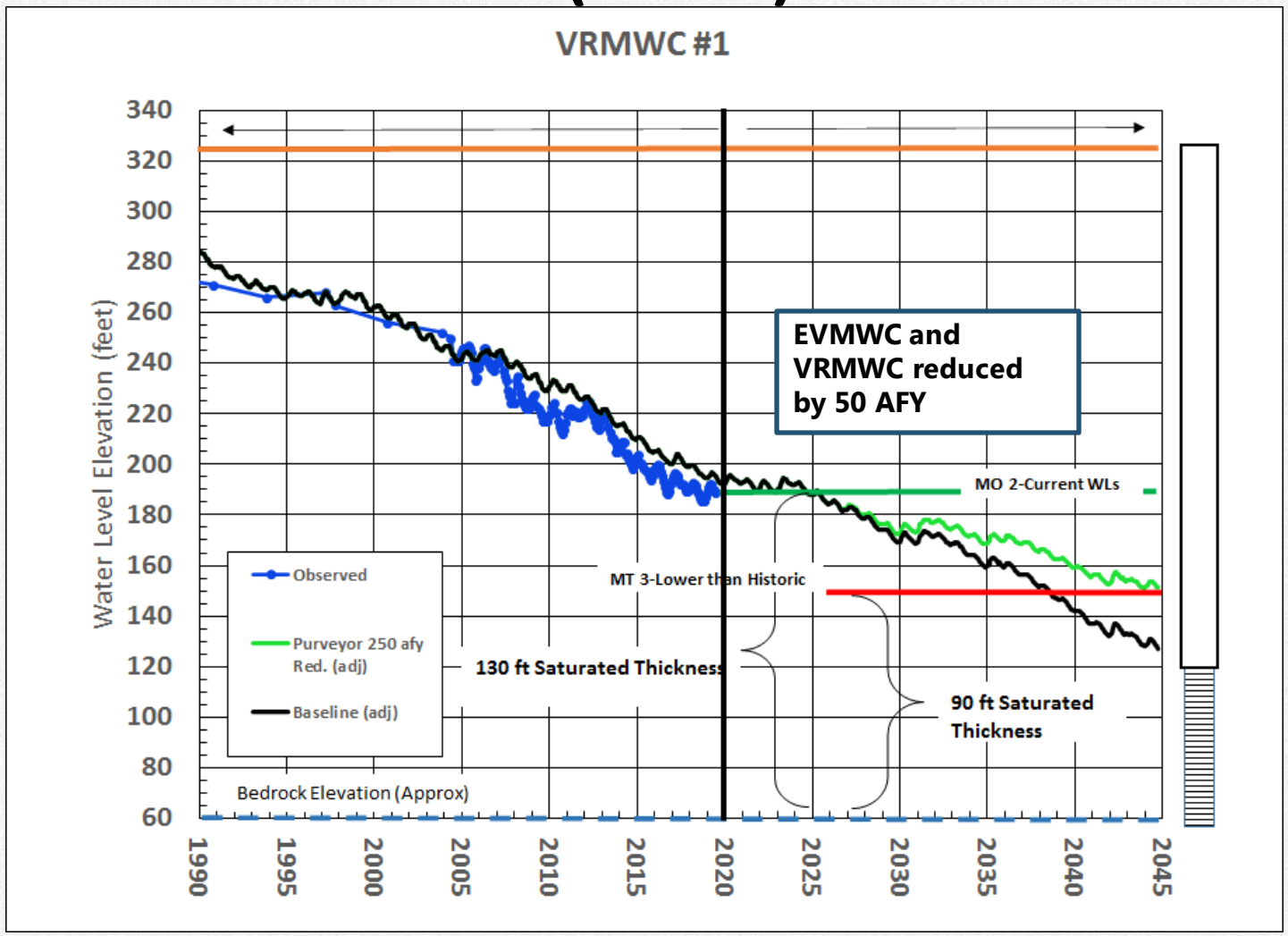
CHRONIC LOWERING OF GROUNDWATER LEVELS

Measurable Objective

Minimum Threshold



REPRESENTATIVE WELLS - EDNA VALLEY
VRMWC Well #1 (EV-16)

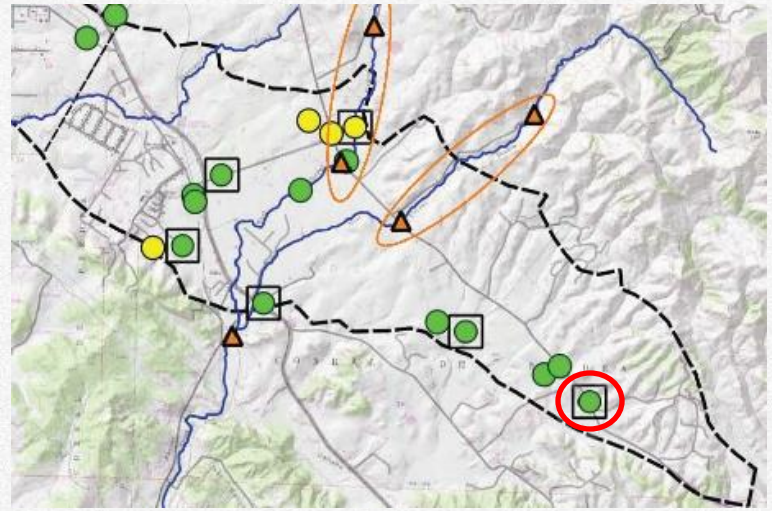


REDUCTION OF GROUNDWATER STORAGE

CHRONIC LOWERING OF GROUNDWATER LEVELS

Measurable Objective

Minimum Threshold

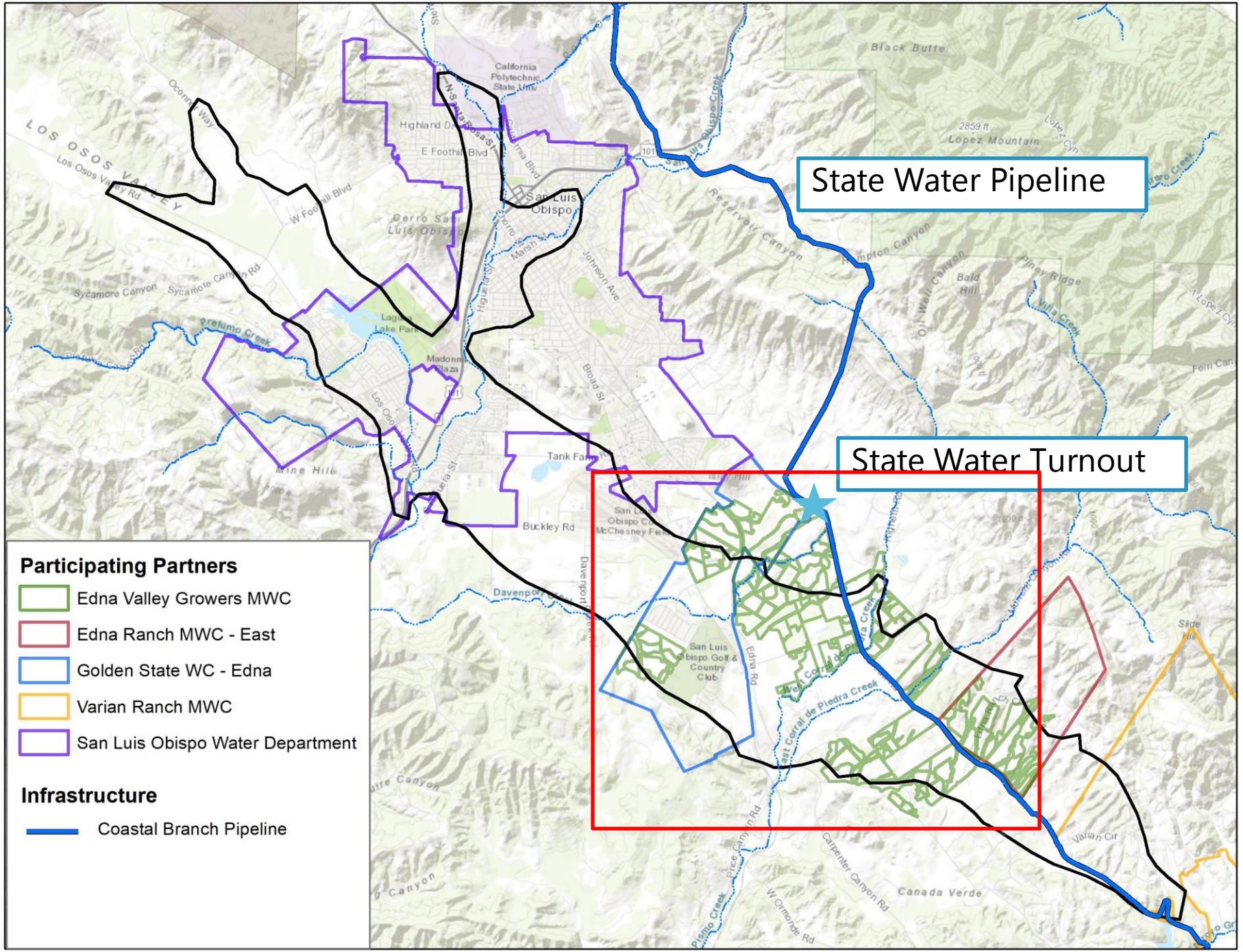


Supplemental Water – Ag Irrigation

Quantity: 1,000 AFY Direct delivery to agricultural users (a portion could be met using Price Canyon Water or City of SLO RW)

Reduces groundwater production by 1,000 AFY

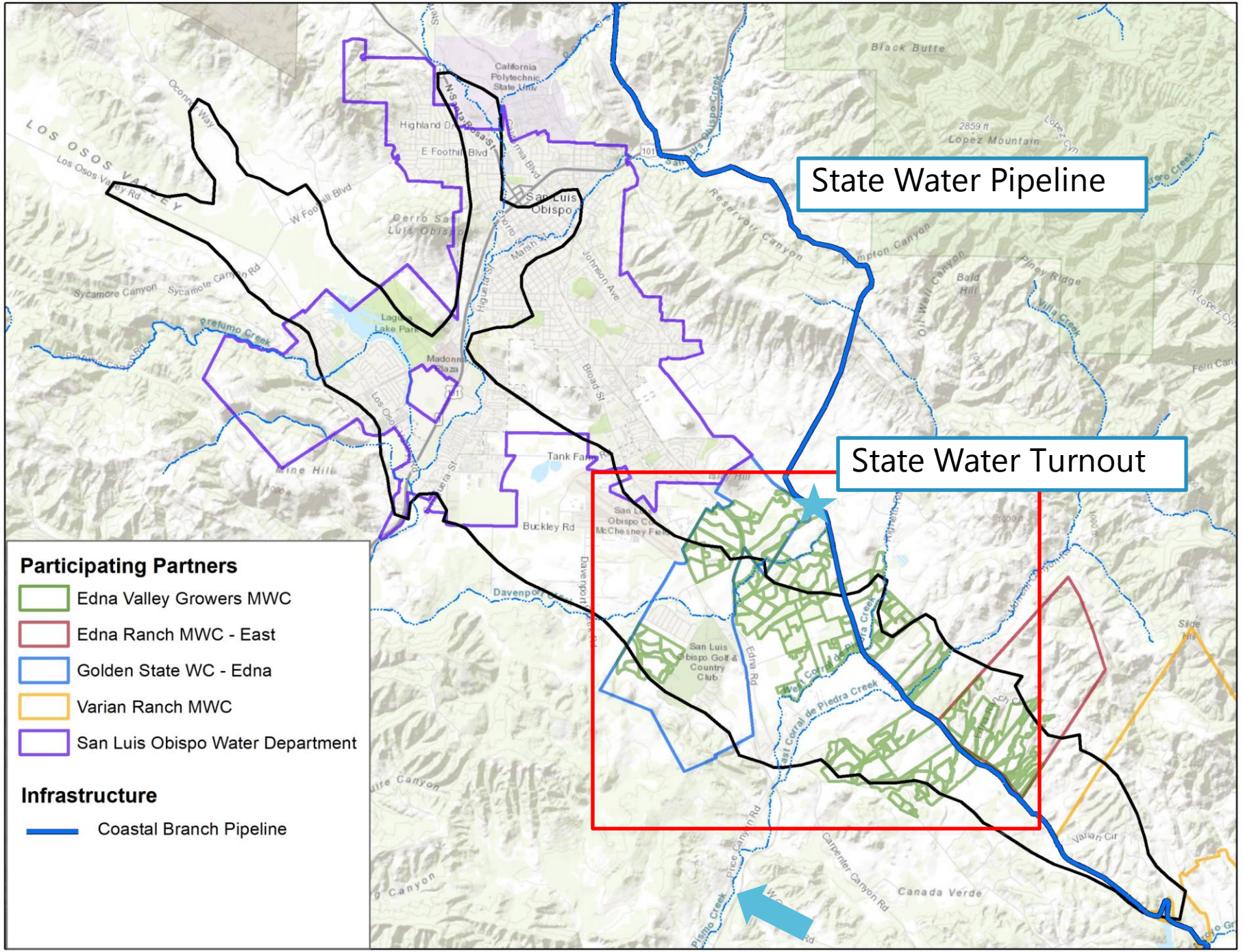
Location of Delivery: Area of declining groundwater in Edna Valley



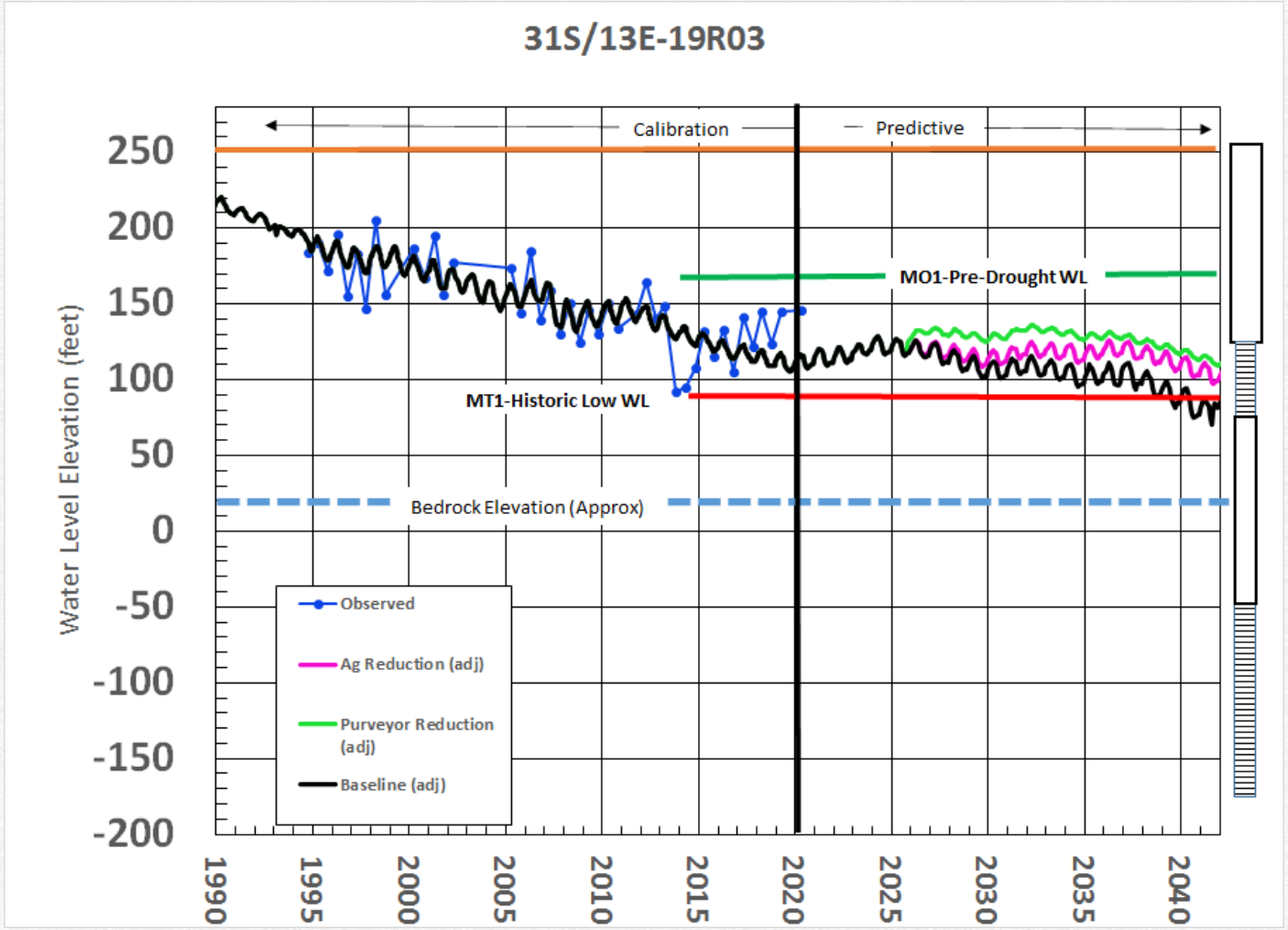
Supplemental Water – Ag Irrigation

Timing: Beginning in 2026

Assumes sufficient capacity in the Coastal Branch is available to meet seasonal demands.



REPRESENTATIVE WELLS - EDNA VALLEY
31S/13E-19R03 (EV-09)

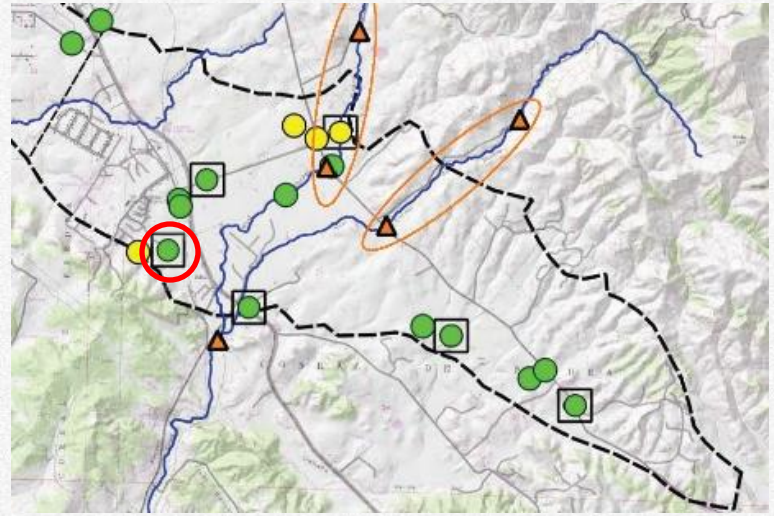


REDUCTION OF GROUNDWATER STORAGE

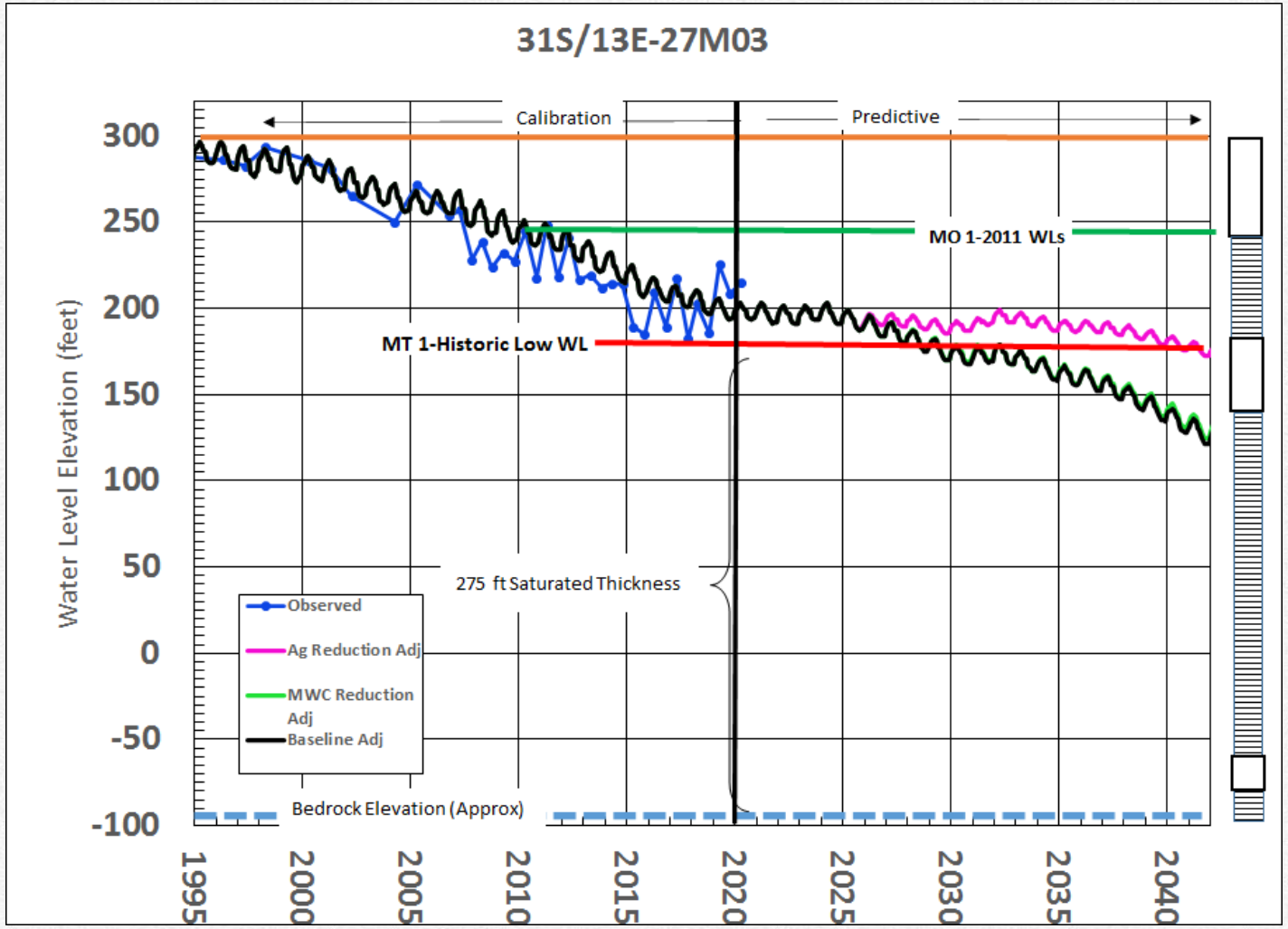
CHRONIC LOWERING OF GROUNDWATER LEVELS

Measurable Objective

Minimum Threshold



REPRESENTATIVE WELLS - Edna Valley
31S/13E-27M03 (EV-13)



REDUCTION OF GROUNDWATER STORAGE

CHRONIC LOWERING OF GROUNDWATER LEVELS

Measurable Objective

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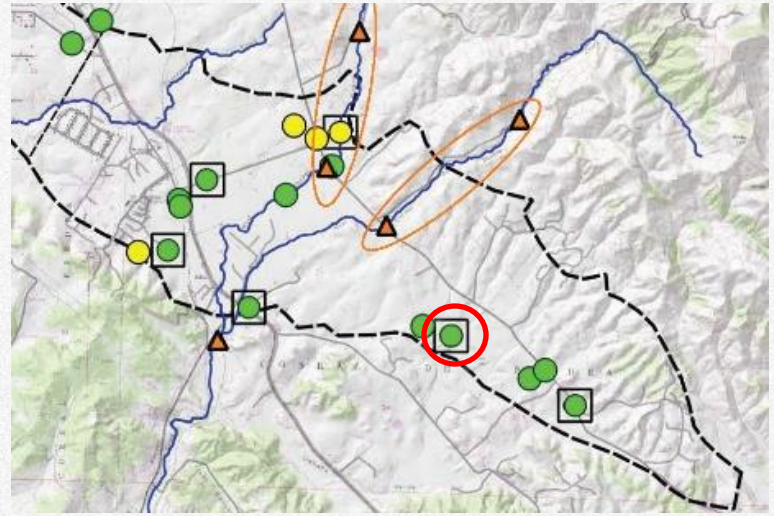
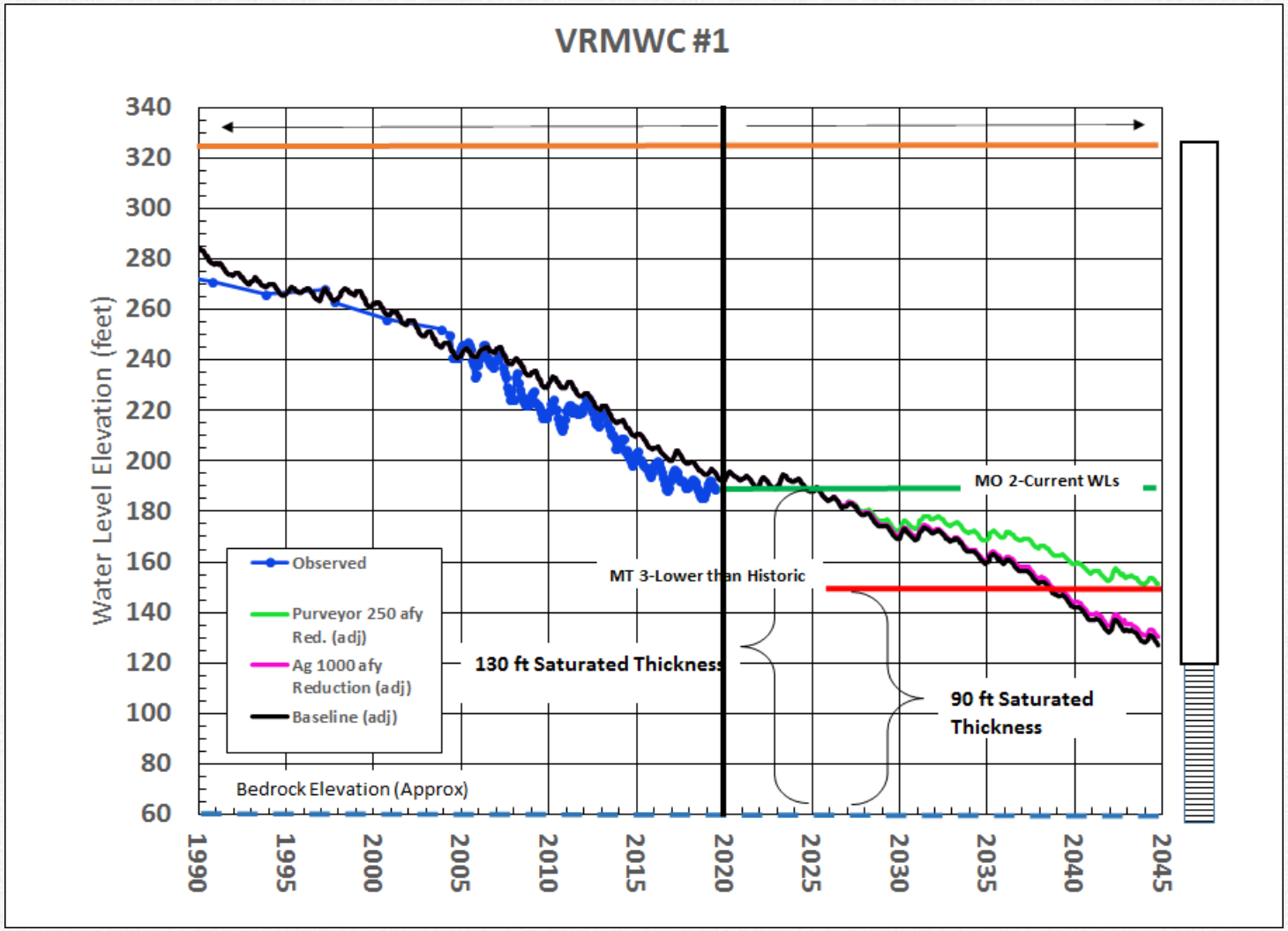


REPRESENTATIVE WELLS - EDNA VALLEY
VRMWC Well #1 (EV-16)

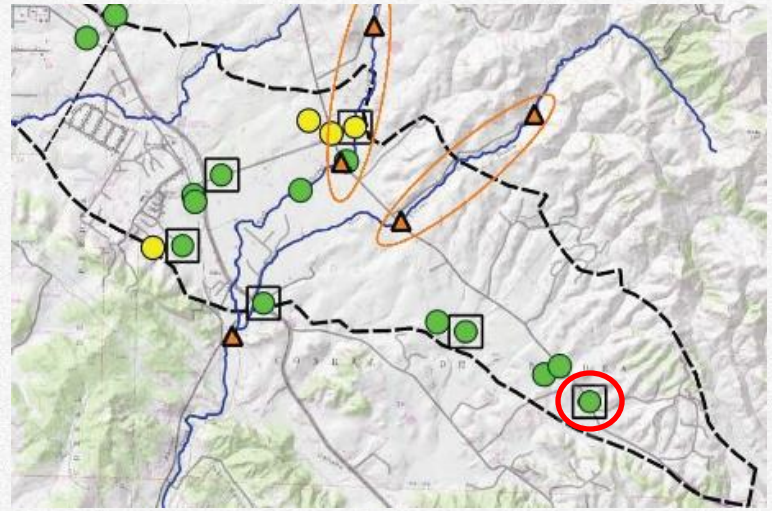


REDUCTION OF GROUNDWATER STORAGE

CHRONIC LOWERING OF GROUNDWATER LEVELS

Measurable Objective

Minimum Threshold

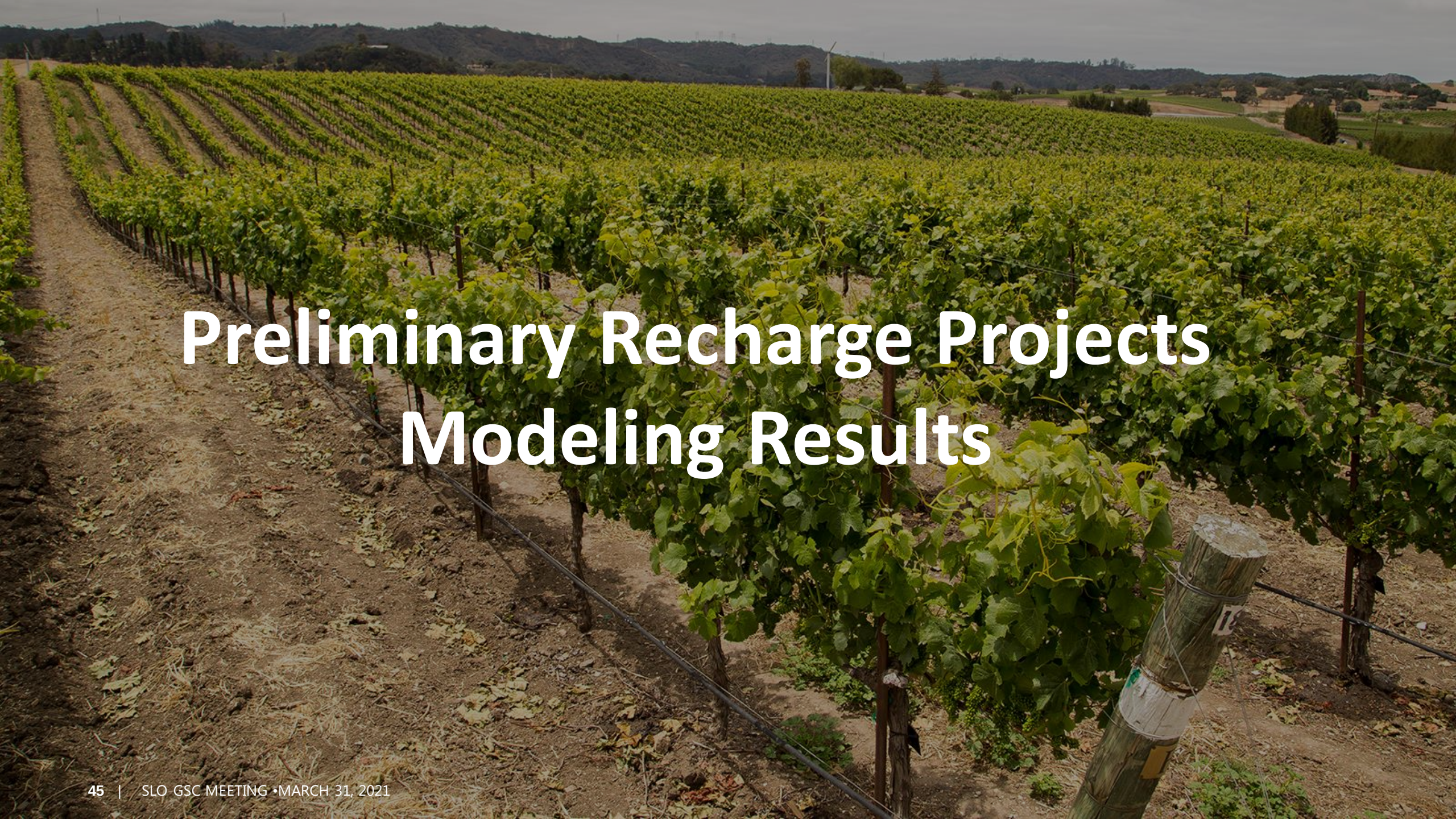


Supplemental Water Model Scenario Takeaways

- Runs are independent

- Supplemental Water Project Scenarios
  - Not one individual project will bring the basin to sustainability
    - Both Purveyor (200 AFY Golden State and 50 AFY MWCs) and Agriculture will likely need supplemental water/pumping reductions to achieve the SMCs
    - Beneficial impacts from the supplemental water to GSWCo and MWC's are concentrated in the areas of pumping reductions
      - Varian Ranch Well #1 (EV-16) does not see significant benefit from the agricultural reductions
      - 31S/13E-27M03 (EV-13) does not see significant benefit from the purveyor reductions

    - 1,000 AFY of supplemental water for Agricultural Uses has the most widespread benefit to the representative wells in Edna Valley



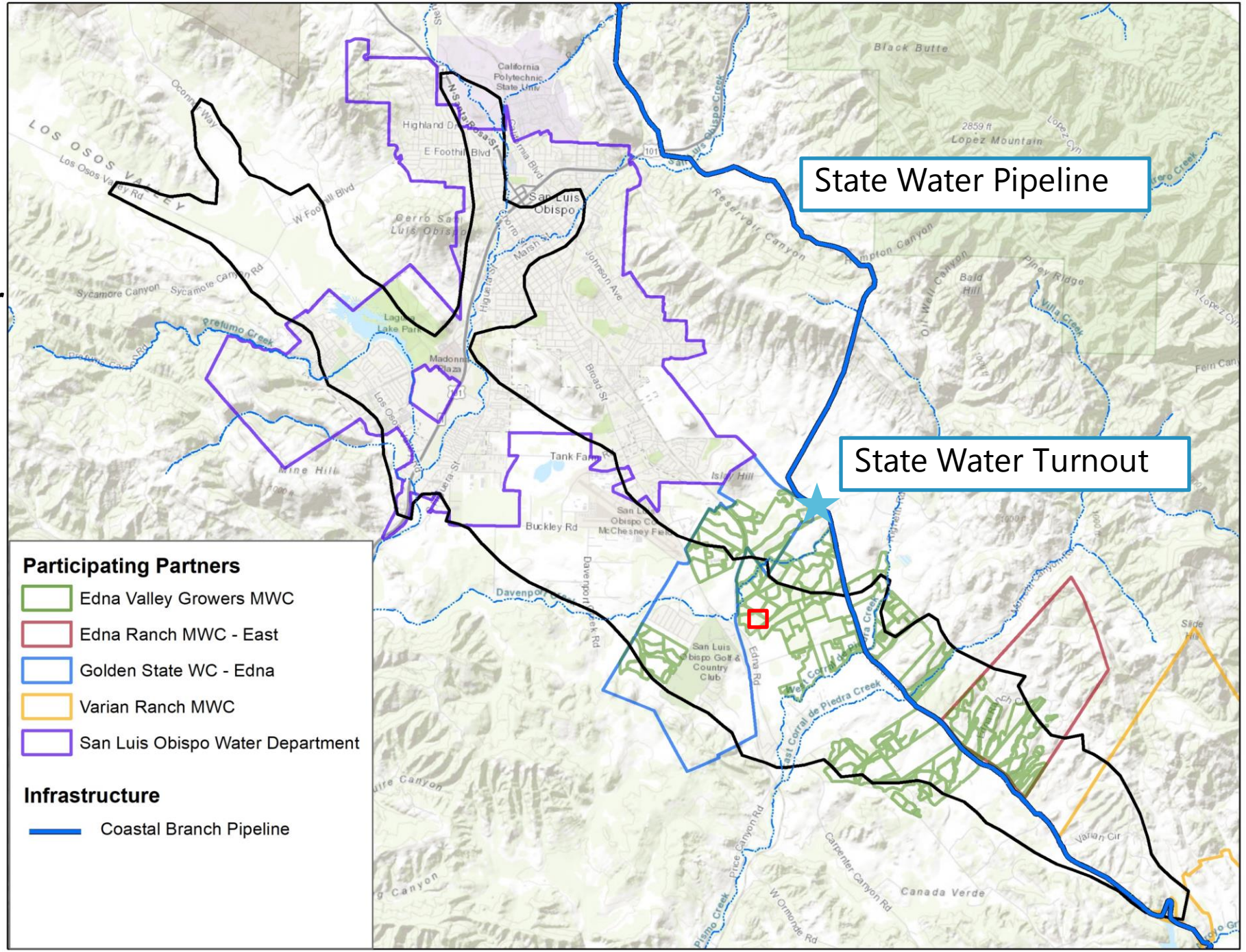
Preliminary Recharge Projects Modeling Results

Groundwater Recharge Basin

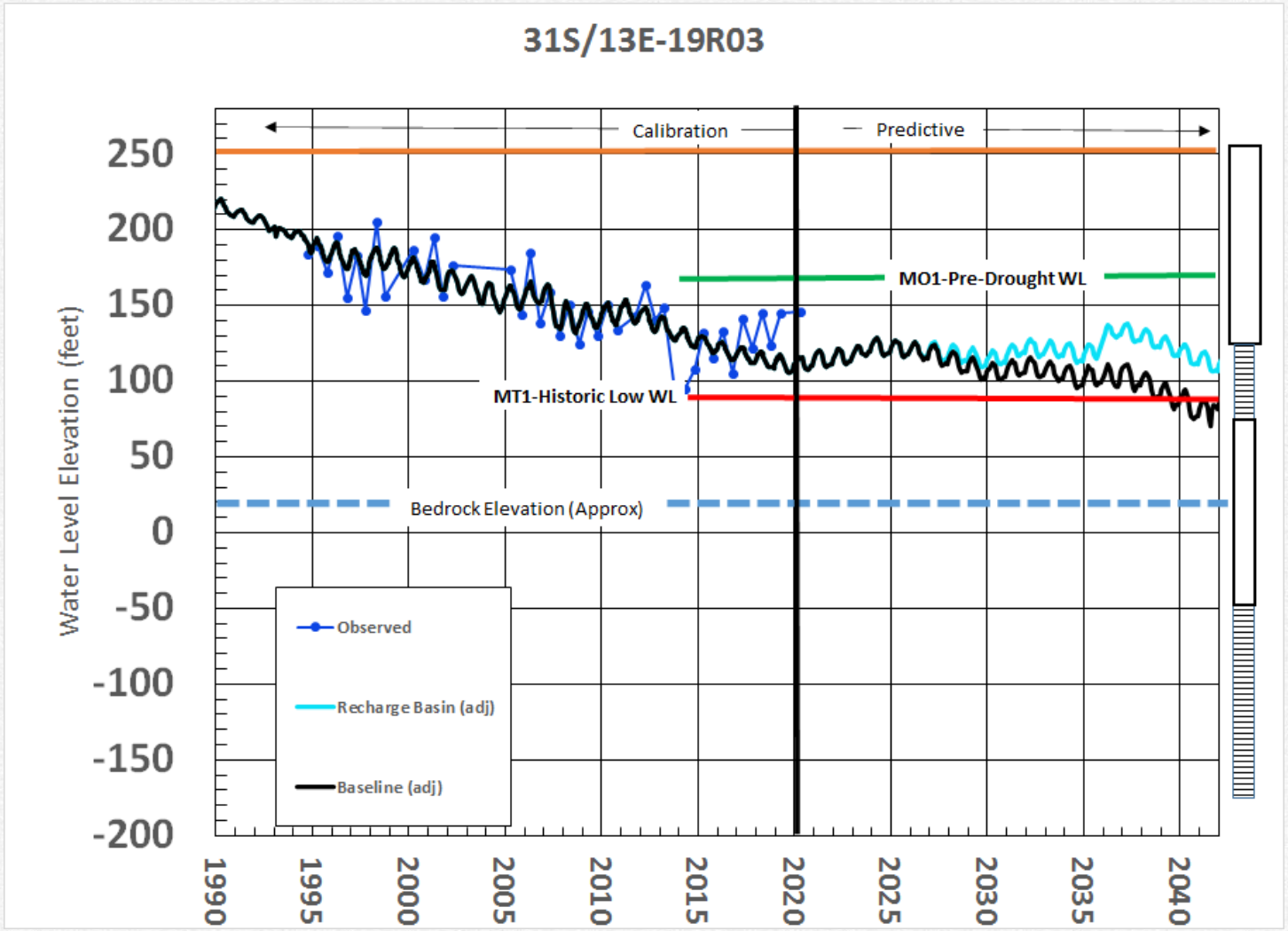
Quantity: 500 AFY (SWP or Price Canyon Water)

Location of Delivery: Area of declining groundwater in Edna Valley

Timing: Year-round deliveries



REPRESENTATIVE WELLS - EDNA VALLEY
31S/13E-19R03 (EV-09)

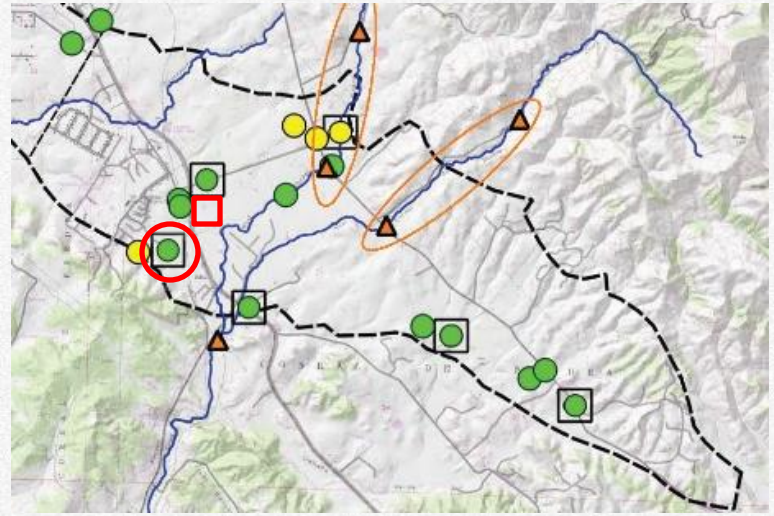


REDUCTION OF GROUNDWATER STORAGE

CHRONIC LOWERING OF GROUNDWATER LEVELS

Measurable Objective

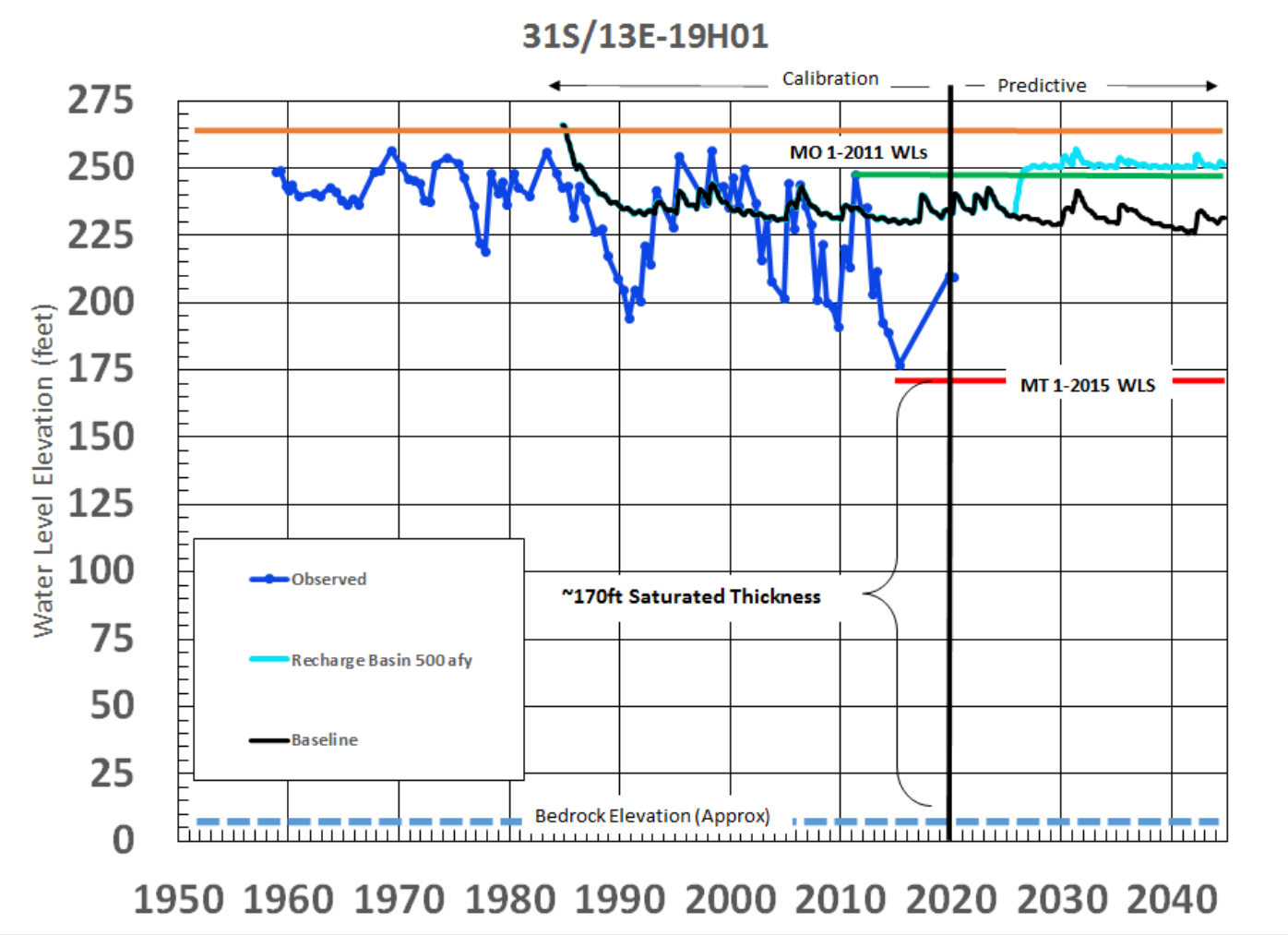
Minimum Threshold



REPRESENTATIVE WELLS - EDNA VALLEY
31S/13E-19H01 (EV-04)

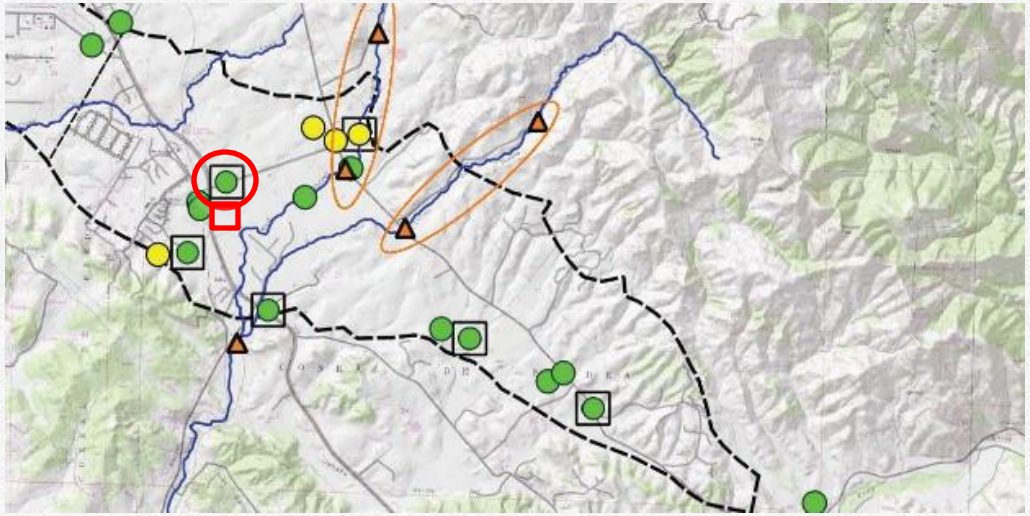
CHRONIC LOWERING OF GROUNDWATER LEVELS

REDUCTION OF GROUNDWATER STORAGE



Measurable Objective

Minimum Threshold



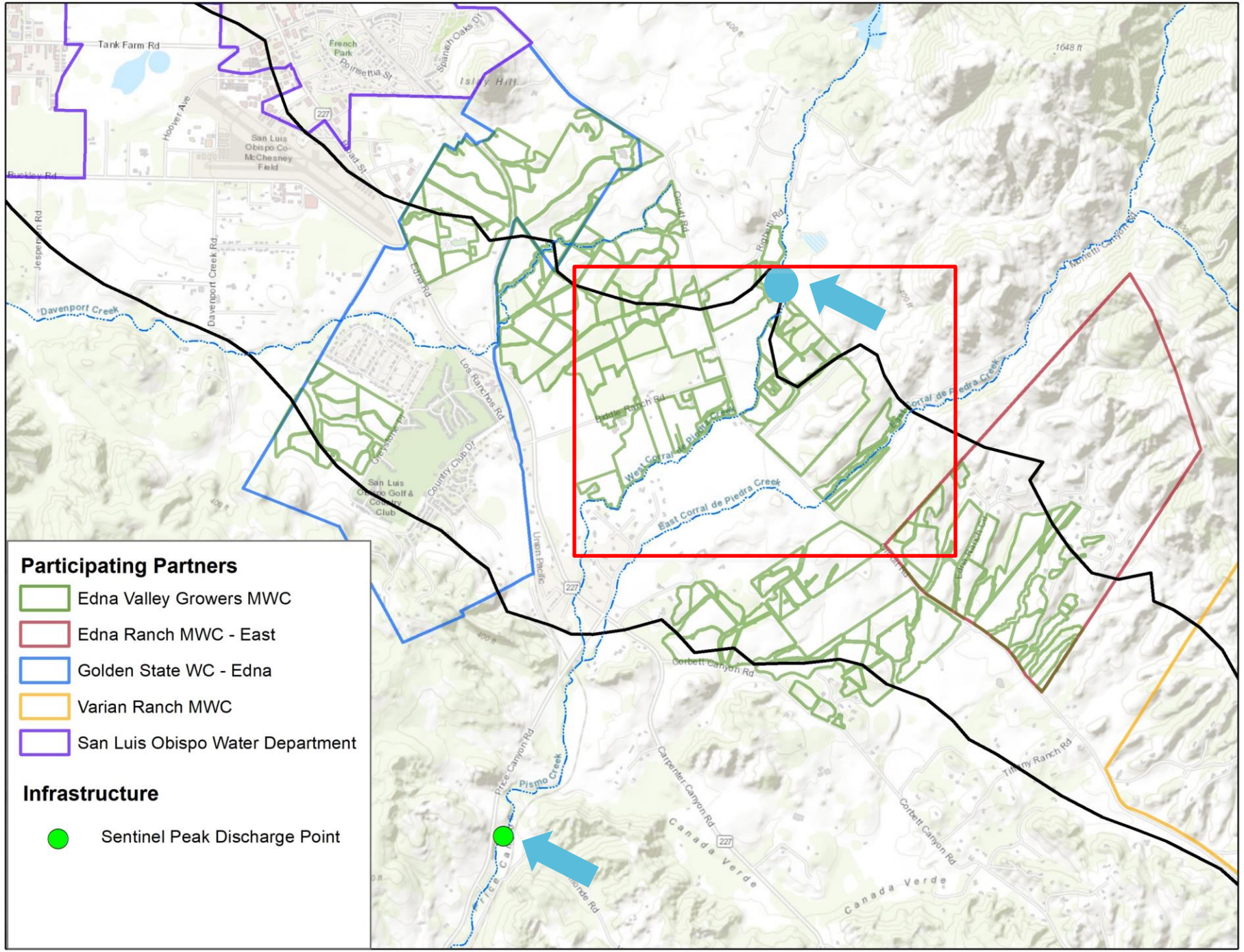
Price Canyon Water Pipeline Project

Quantity: 500 –acre-ft/yr

Location of Delivery: Direct delivery Agriculture or discharge to Corral De Piedras

Increased groundwater recharge

Timing: Beginning in 2026 Year round



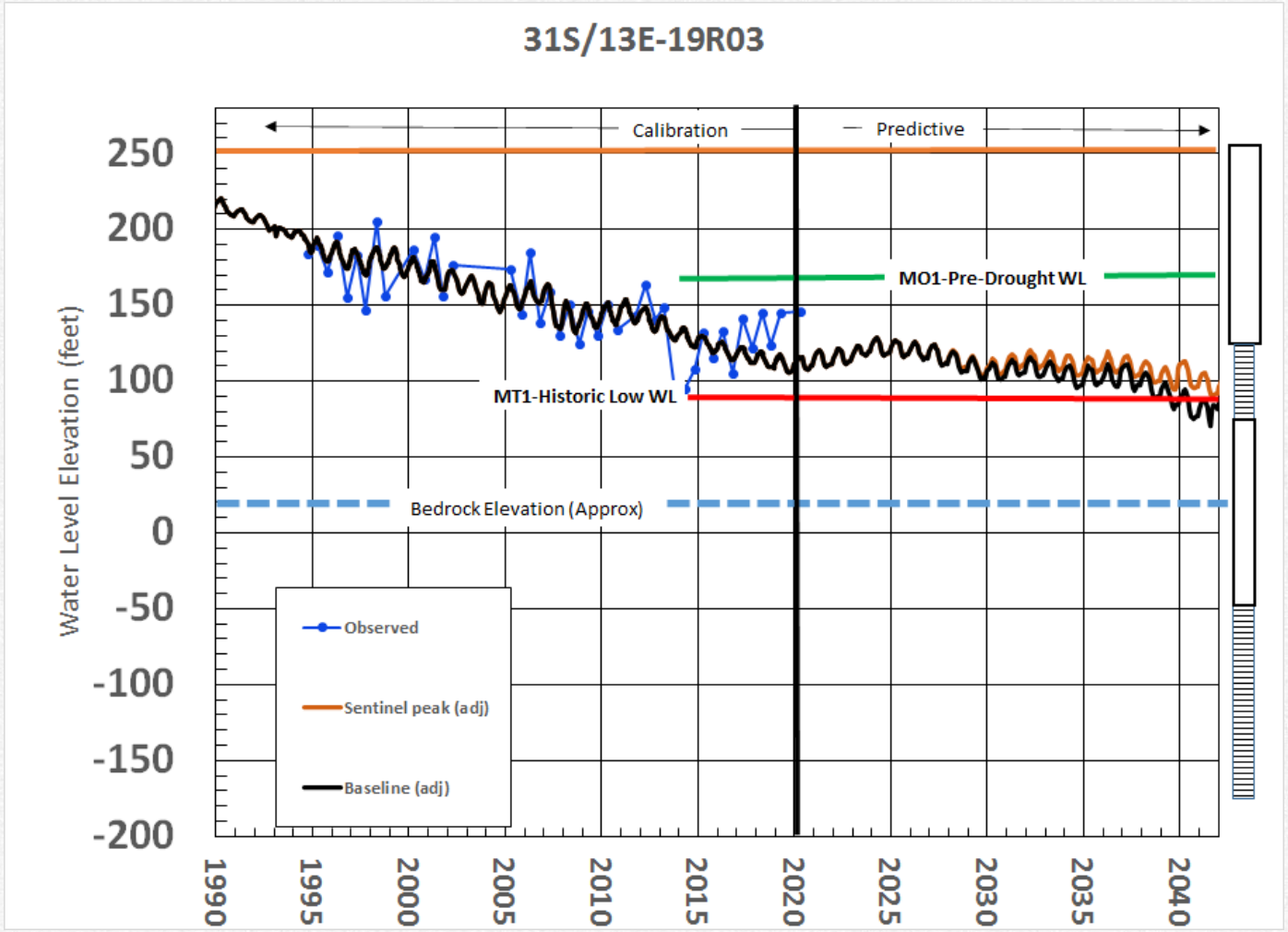
REPRESENTATIVE WELLS - EDNA VALLEY
31S/13E-19R03 (EV-09)

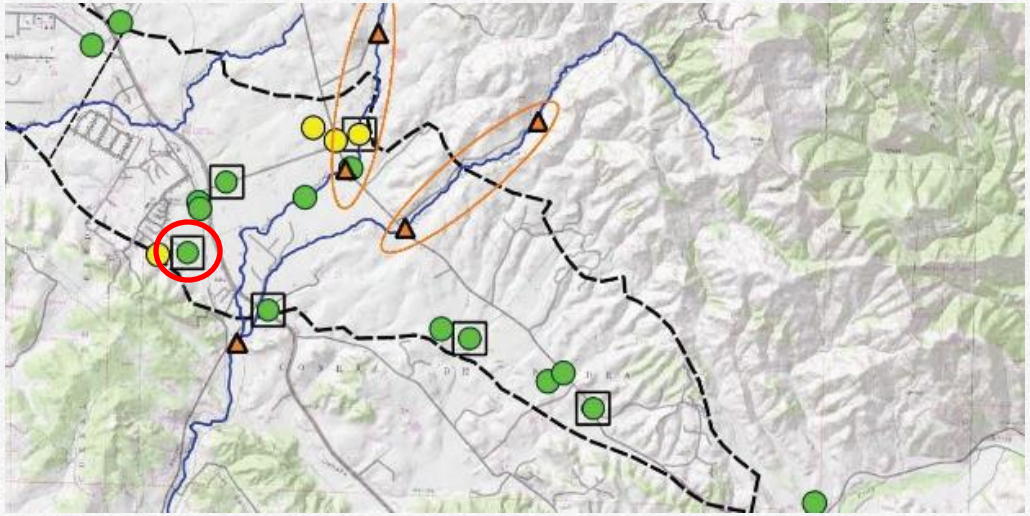
REDUCTION OF GROUNDWATER STORAGE

CHRONIC LOWERING OF GROUNDWATER LEVELS

Measurable Objective

Minimum Threshold

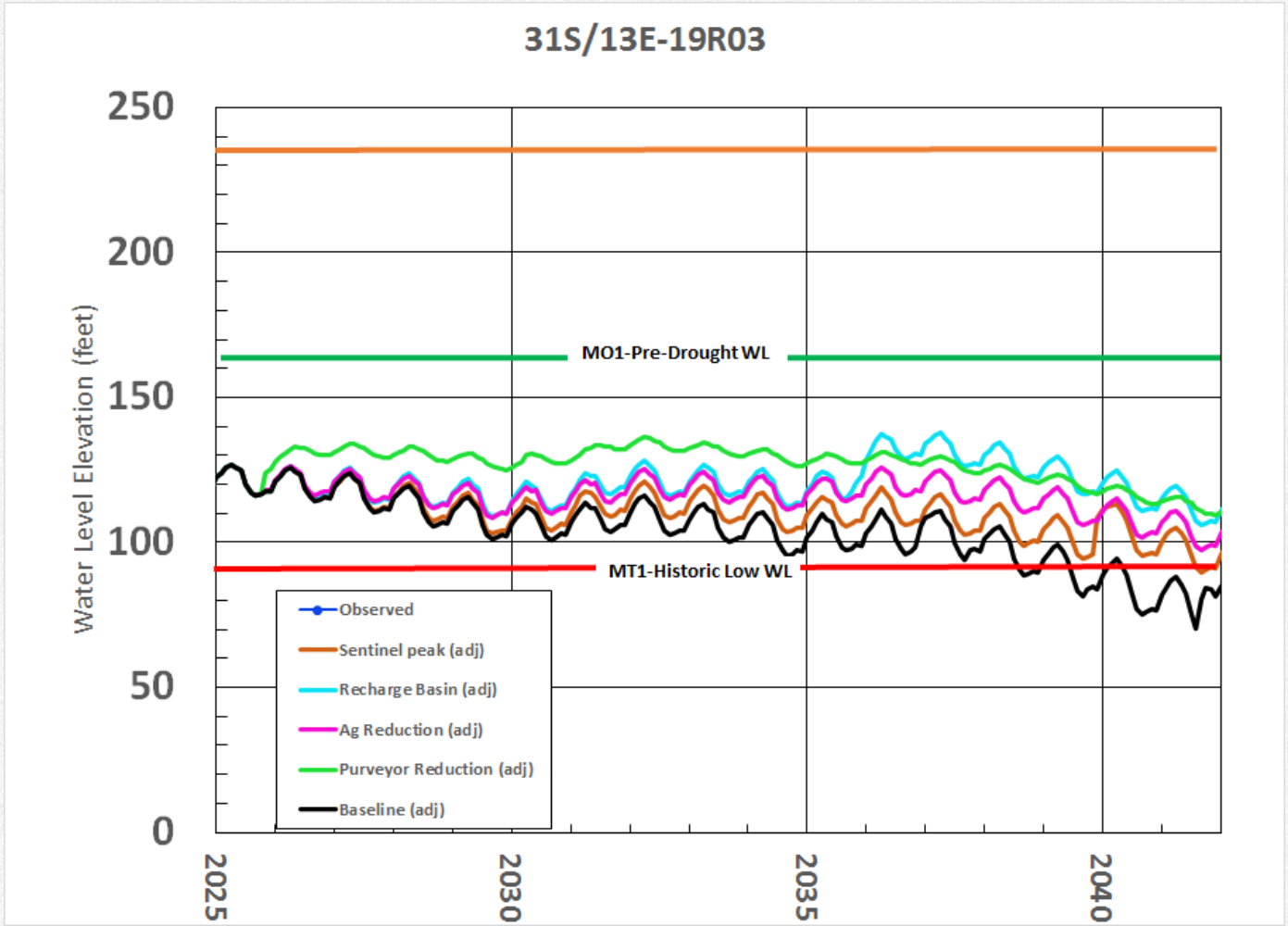




REPRESENTATIVE WELLS - EDNA VALLEY
31S/13E-19R03 (EV-09) - Multiple Results

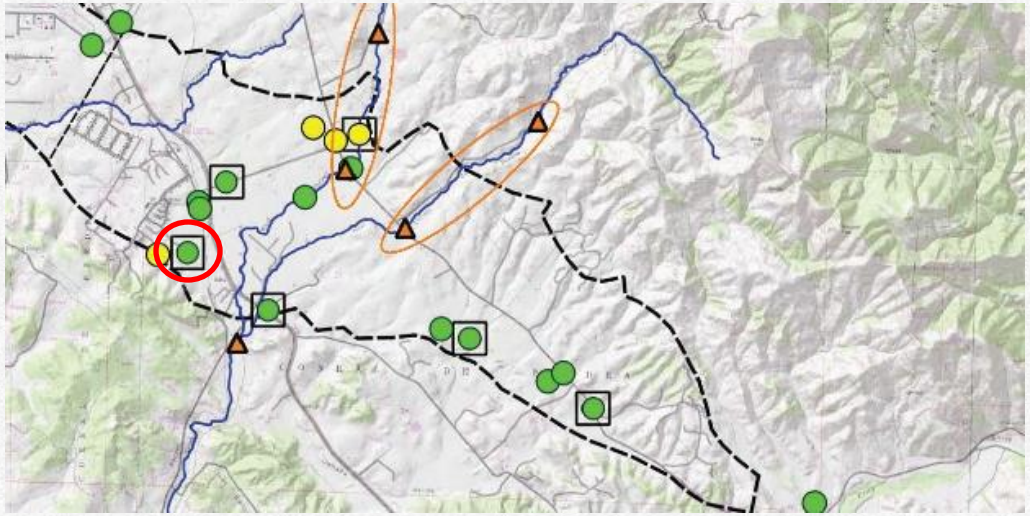
REDUCTION OF GROUNDWATER STORAGE

CHRONIC LOWERING OF GROUNDWATER LEVELS



Measurable Objective

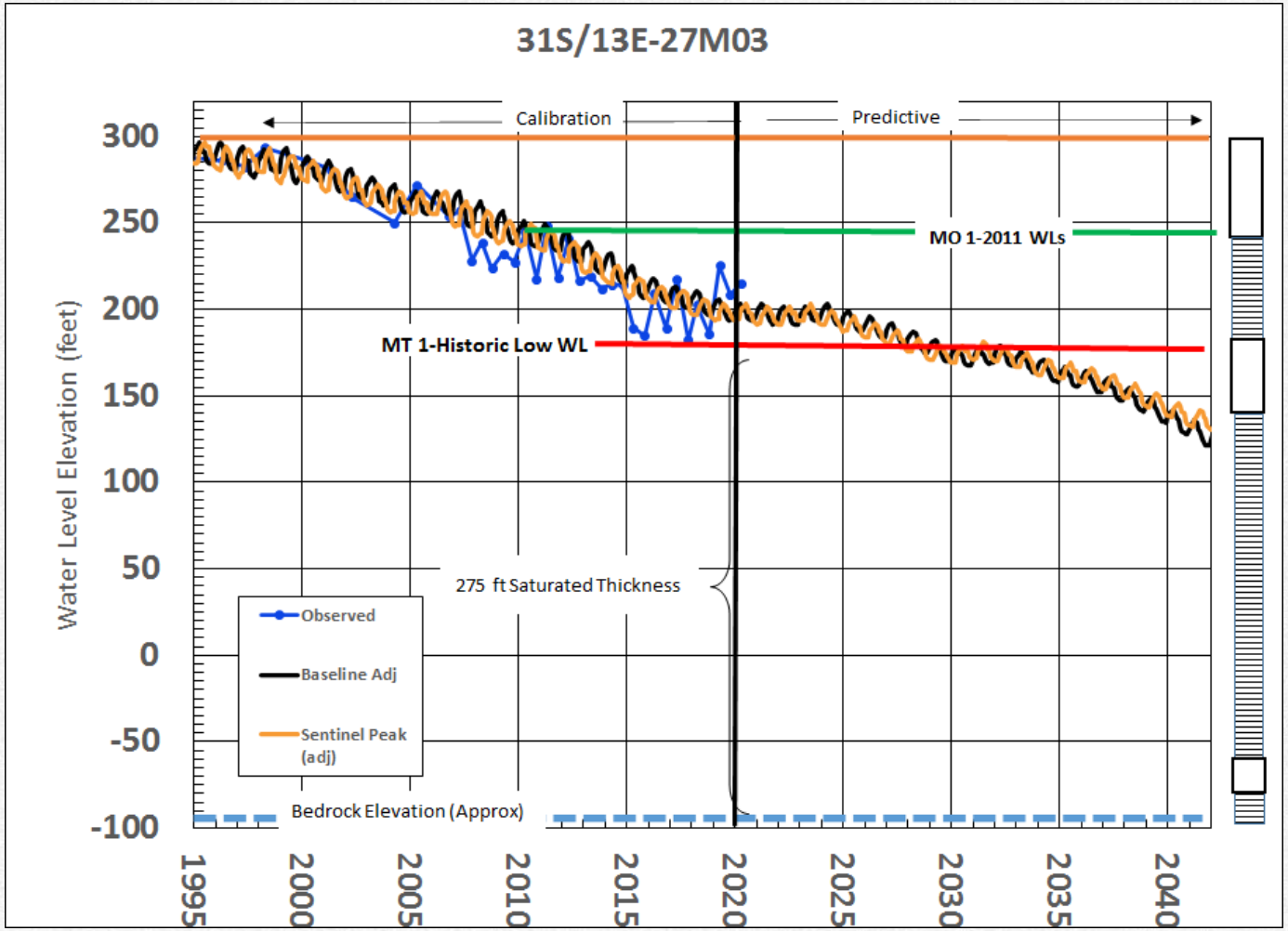
Minimum Threshold



REPRESENTATIVE WELLS – EDNA VALLEY
31S/13E-27M03 (EV-13)

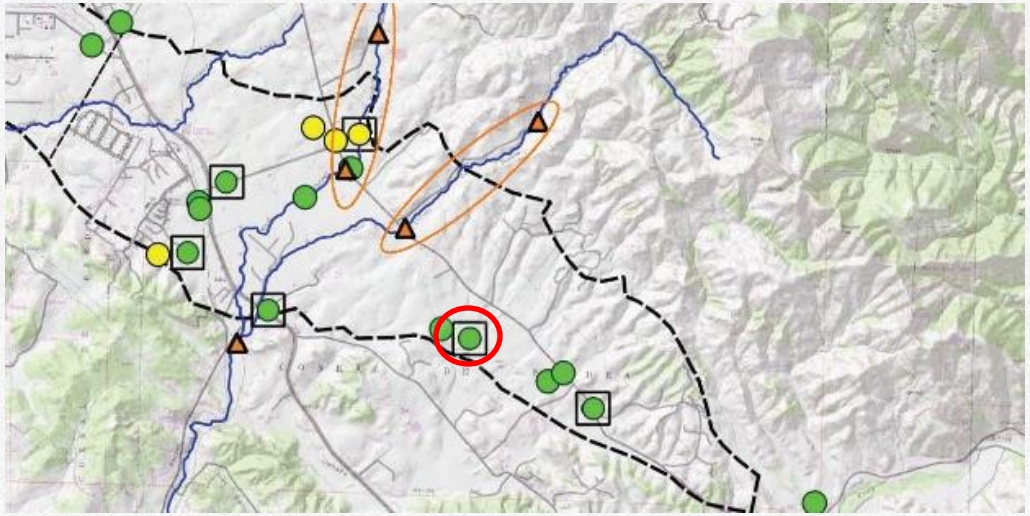
REDUCTION OF GROUNDWATER STORAGE

CHRONIC LOWERING OF GROUNDWATER LEVELS



Measurable Objective

Minimum Threshold



Recharge Projects Model Scenario Takeaways

- Runs are independent

- Recharge Project Scenarios
  - Recharge Basin (500 AFY)
    - Localized increase of about 20-25 ft in EV-04 and EV-09

  - Price Canyon Water Pipeline Project (500 AFY)
    - Increases flow in West Corral de Piedra
    - Benefits the GW/SW interaction SMC
    - Approximately 150 AFY recharges the SLO Basin
    - Groundwater level benefits over 30 feet directly beneath the creek, decrease with distance from West Corral de Piedras at EV-09 (~20 ft) and EV-13 (~5 ft)

Potential Management Actions (Edna Valley)

- Pumping Reductions (Total 3,500 AFY – Ag Pumping, 850 AFY – Non-Ag)
  - Improved irrigation efficiency
  - Water efficient crop conversion
  - Volunteer fallowing crops

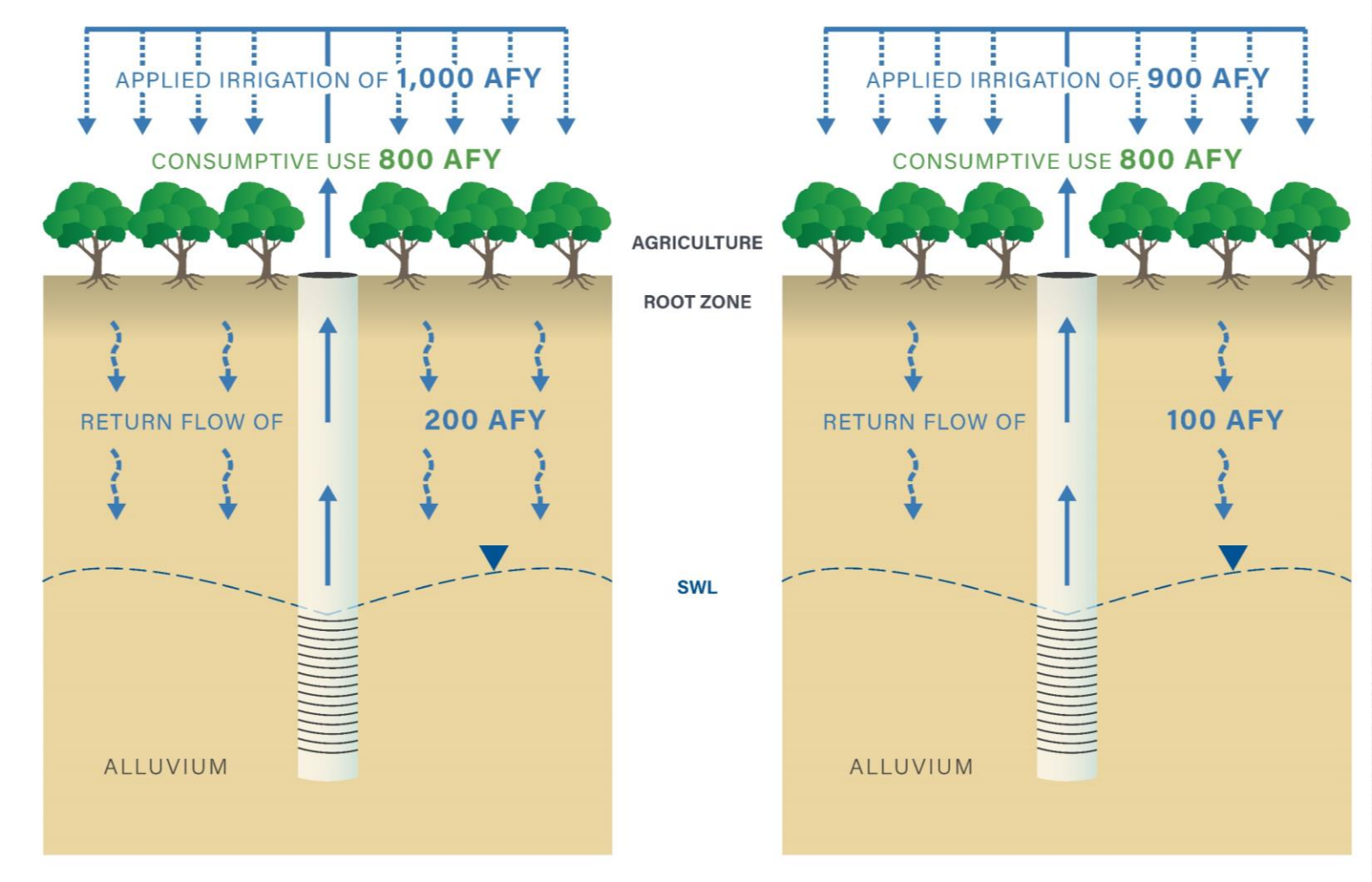
- Metering production wells

Irrigation Efficiencies Management Action

Improved Irrigation Efficiency for Drip Irrigation

Currently 80%
Improve to 90%
Less pumping, but due to decreased return flows, does not improve water budget.

Conversion from spray to drip would result in less pumping, benefit to Basin.

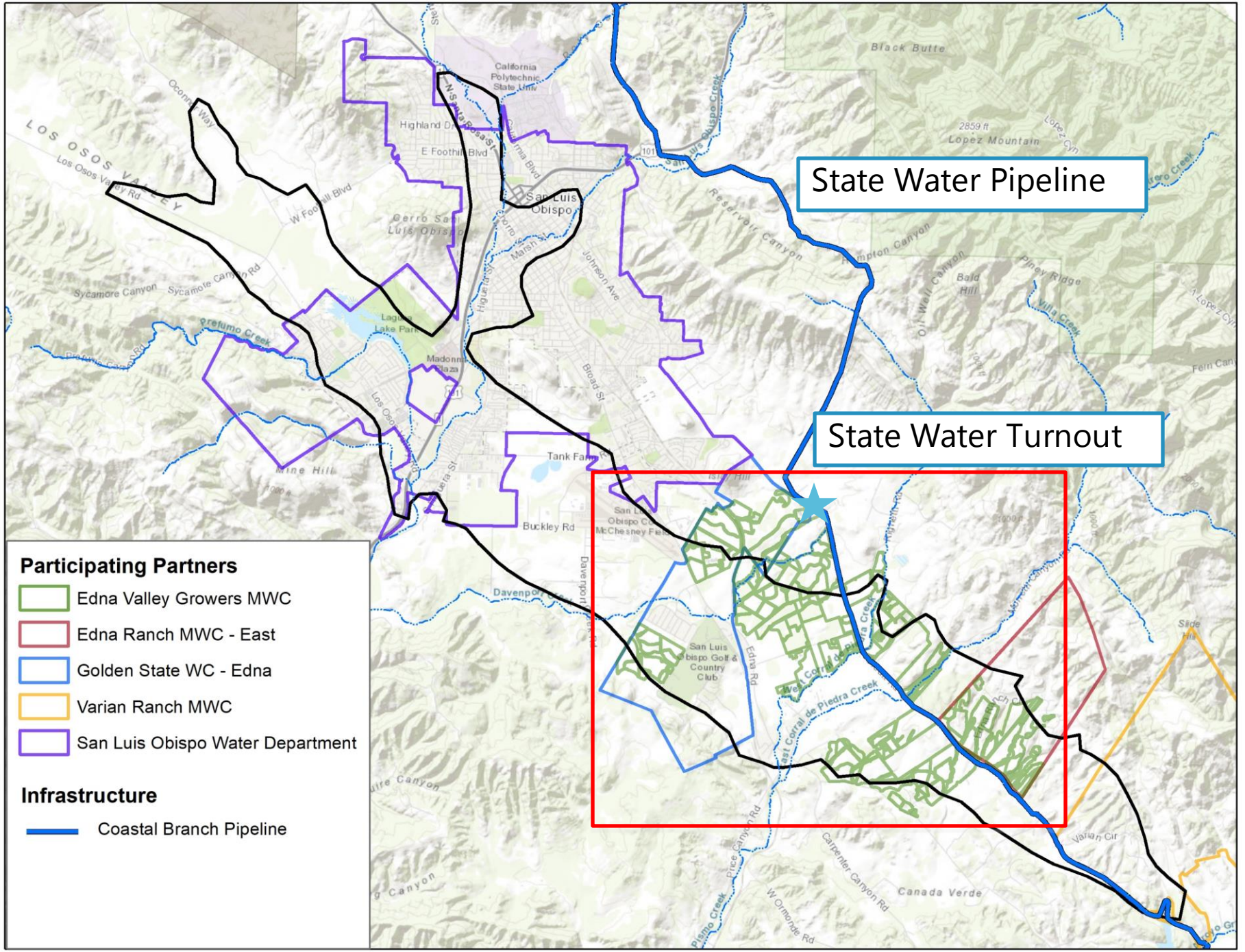


Management Action – Volunteer Fallowing

Quantity: Reduce agricultural groundwater demand across the Edna Valley (portion of 1,000 AFY)

Location of Delivery: Area of declining groundwater in Edna Valley

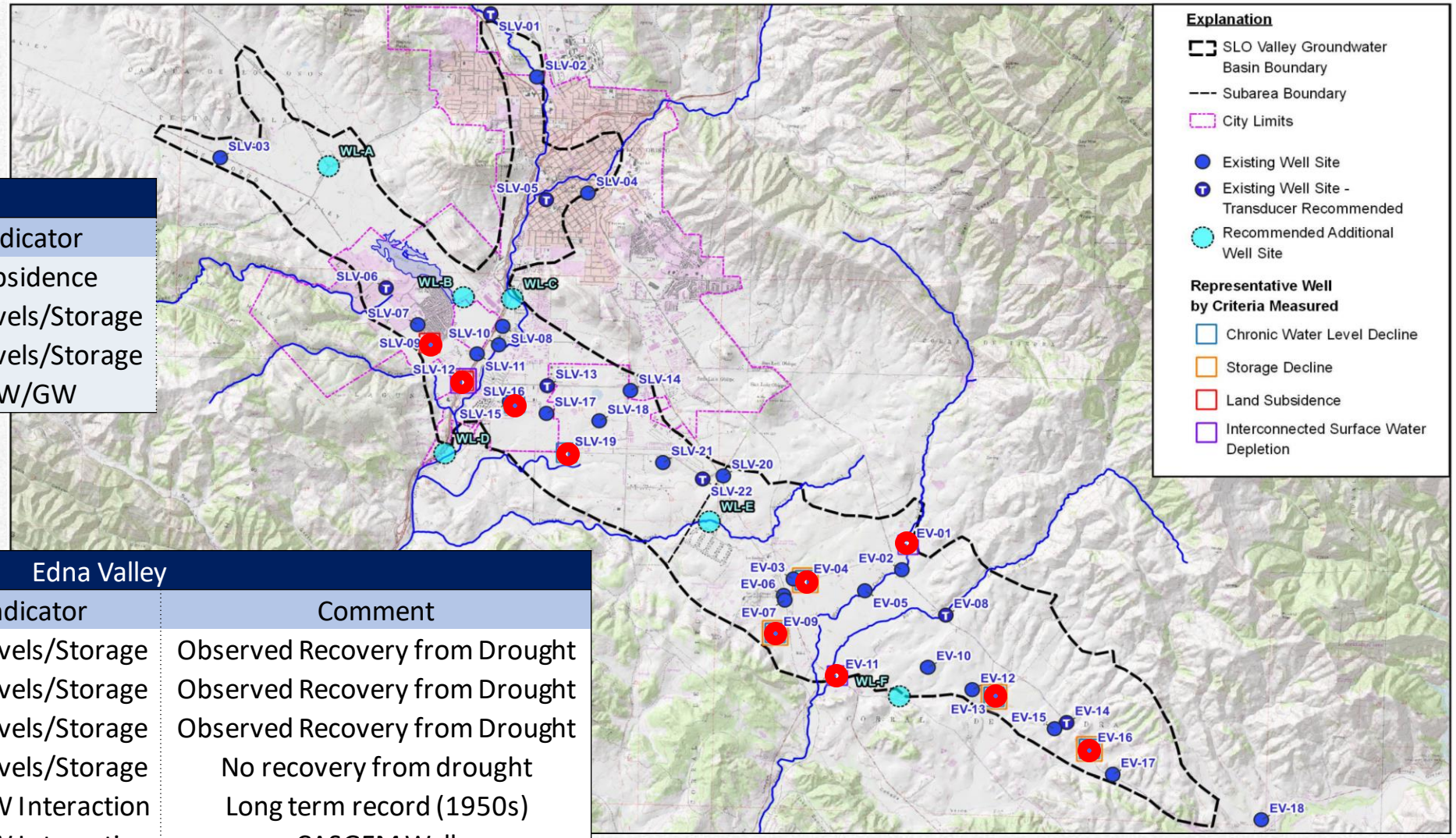
Timing: Beginning in 2026



Sustainable Management Criteria Water Levels and Storage Depletion

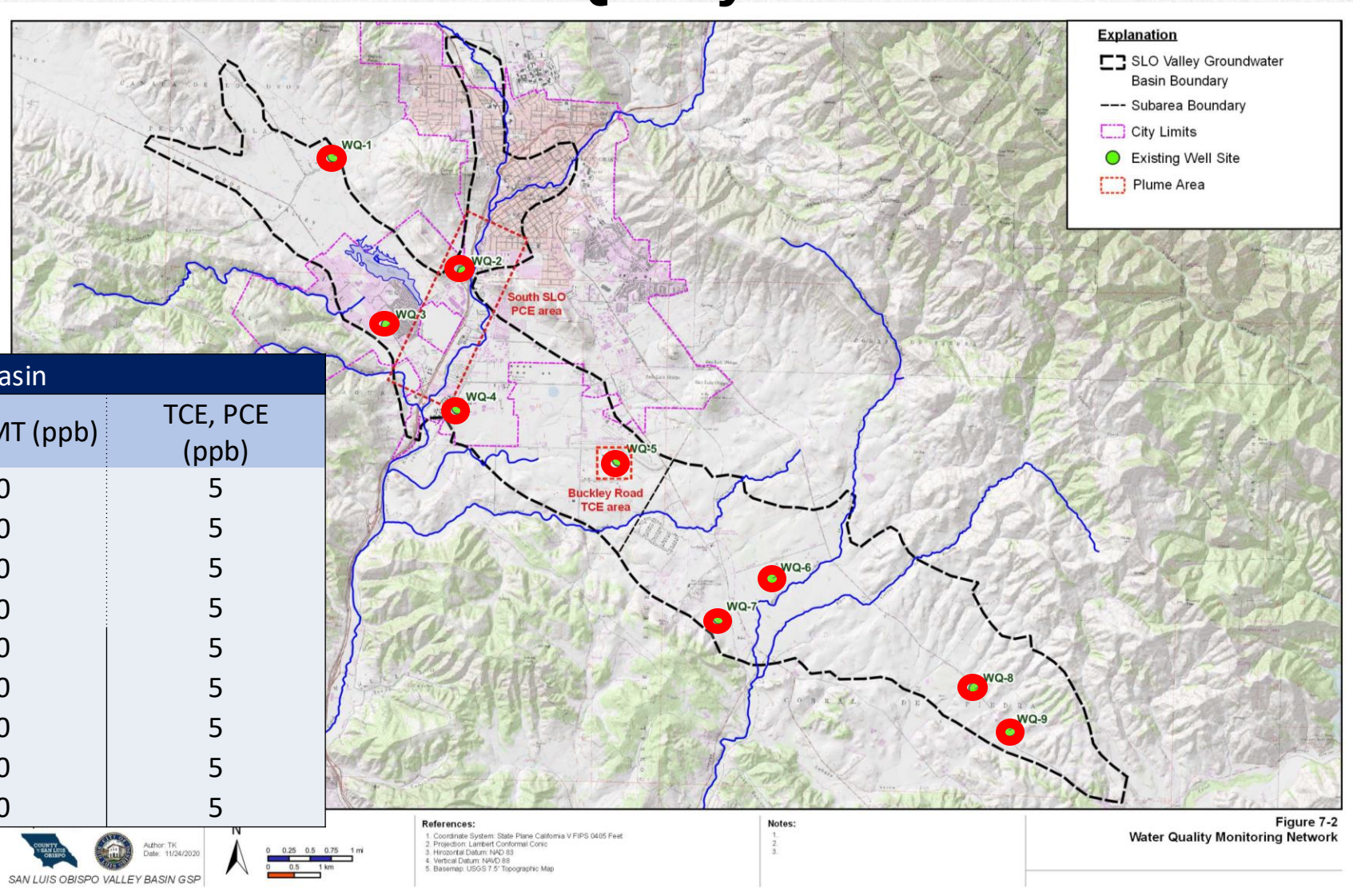
SLO Valley			
ID	MT	MO	Indicator
SLV-09	102	115	Subsidence
SLV-16	70	90	GW Levels/Storage
SLV-19	80	100	GW Levels/Storage
SLV-12	90	105	SW/GW

Edna Valley				
ID	MT	MO	Indicator	Comment
EV-09	92	164	GW Levels/Storage	Observed Recovery from Drought
EV-04	170	247	GW Levels/Storage	Observed Recovery from Drought
EV-13	182	245	GW Levels/Storage	Observed Recovery from Drought
EV-16	150	190	GW Levels/Storage	No recovery from drought
EV-01	263	314	SW/GW Interaction	Long term record (1950s)
EV-11	177	227	SW/GW Interaction	CASGEM Well



Sustainable Management Criteria – Water Quality

SLO Groundwater Basin				
ID	TDS MT (ppm)	NO3 MT (ppm)	Arsenic MT (ppb)	TCE, PCE (ppb)
WQ-1	1,000	10	10	5
WQ-2	1,000	10	10	5
WQ-3	1,000	10	10	5
WQ-4	1,000	10	10	5
WQ-5	1,000	10	10	5
WQ-6	1,000	10	10	5
WQ-7	1,000	10	10	5
WQ-8	1,000	10	10	5
WQ-9	1,000	10	10	5



NEXT STEPS

March 31st GSC Meeting

- Present Model Results from highly ranked projects and management actions
- Goal is to receive input on the recommended SMC to be included in Draft Chapter 8

April 7th GSC Meeting (if desired)

- Additional Discussion on recommended SMC's

May 5th GSC Meeting

- Submit Draft Chapter 8 Sustainable Management Criteria
- Project and Management Actions Cost Estimates
- Introduce Implementation Plan

Sustainable Management Criteria Discussion

Public Comments

By phone:

Dial *9 (then *6 to unmute when prompted)

From your computer:

Raise your hand by clicking the raise hand icon

Future Items

Chair

REQUEST ACCOMMODATIONS

Contact Dick Tzou
County of San Luis Obispo
dtzou@co.slo.ca.us
805-781-4473