
Merced GSP Stakeholder Advisory Committee Meeting

February 27, 2023

Meeting will begin at 9:30 am or a few minutes after – thank you for joining us!

Image courtesy: Veronica Adrover/UC Merced

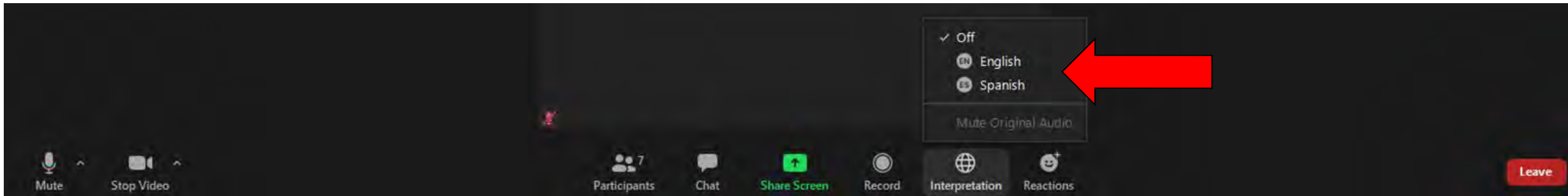
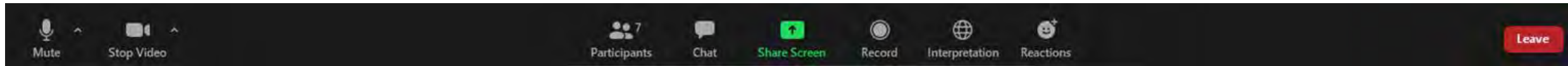


Welcome, Instructions for Zoom

Bienvenidos, Instrucciones para Zoom

We have two language audio channels available. English only speakers, please select English.

Si solamente habla español, debe seleccionar un canal de idioma



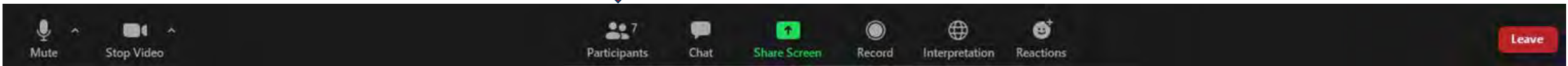
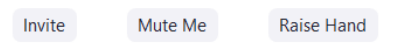
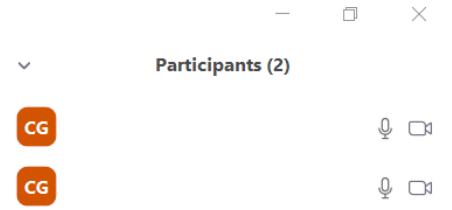
The meeting will have simultaneous interpreting, so you are welcome to comment in your native language.
La junta será interpretada simultáneamente, así que le invitamos a que haga comentarios en su lenguaje nativo.

Welcome, Instructions for Zoom

- We are beginning the meeting with everyone on mute.
- Please keep yourself muted until called upon and asked to unmute.
- **We recommend that you view in “Gallery View” to see the project team and Stakeholder Committee members.**
- **If you have comments, please use the “Raise Hand” feature:**
 - Stakeholder Committee: during discussion time
 - Members of the Public: during Public Comment or when the moderator asks for public comments.
- The moderator will call on you to unmute.
- If you cannot hear the host or have technical issues, use the Chat to Host and we will try to address the issue.

Stakeholder Advisory Committee Members

- Please keep your video on whenever possible.



Stakeholder
Advisory
Committee
February 27
Agenda

1. Call to Order and Welcome
2. Introductions and Roll Call
3. Reports
4. Water Year 2022 Annual Report Preview
5. Demand Reduction Discussion
6. Grant Updates
7. Public Comment
8. Next Steps and Adjourn

Image courtesy: Veronica Adrover/UC Merced

Stakeholder Advisory Committee Members

Present	Committee Member	Interest/Affiliation	Present	Alternate	Interest/Affiliation
	Arlan Thomas	MIDAC member		Ben Migliazzo	Live Oak Farms
	Bob Kelley	Stevinson Representative		Blake Nervino	Stevinson/Merquin
	Breanne Ramos	MCFB		Alexis Rudich	MCFB
	Craig Arnold	Arnold Farms			
	Darren Olguin	Resident of Merced County			
	Dave Serrano	Serrano Farms - Le Grand			
	David Belt	Foster Farms			
	Emma Reyes	Martin Reyes Farm/Land Leveling			
	Greg Olzack	Atwater Resident			
	Jean Okuye	E Merced RCD			
	Joe Sansoni	Sansoni Farms/MCFB			
	Joe Scoto	Scoto Brothers/McSwain School Dist.			
	Jose Moran	Livingston City Council			
	Lacy Carothers	Cal Am Water			
	Lisa Baker	Clayton Water District			
	Lisa Kayser-Grant	Sierra Club			
	Mark Maxwell	UC Merced			
	Maxwell Norton	Unincorporated area			
	Nav Athwal	TriNut Farms			
	Olivia Gomez	Community of Planada		Nataly Escobedo Garcia	Leadership Counsel
	Parry Klassen	ESJWQC			
	Darcy Brown	River Partners			
	Rick Drayer	Merced/Mariposa Cattlemen			
	Simon Vander Woude	Sandy Mush MWC			
	Susan Walsh	City of Merced		Bill Spriggs	Resident City of Merced
	Thomas Dinwoodie	Master Gardener/McSwain			
	Trevor Hutton	Valley Land Alliance			
	Wes Myers	Merced Grassland Coalition		Lou Myers	Benjamin Land LP

Stakeholder Advisory Committee Meeting Agreements

Guidelines for successful meetings

- Civility is required.
 - Treat one another with courtesy and respect.
 - Be honest, fair, and as candid as possible.
 - Personal attacks and stereotyping are not acceptable.
- Creativity is encouraged.
 - Think outside the box and welcome new ideas.
 - Build on the ideas of others to improve results.
 - Disagreements are problems to be solved rather than battles to be won.
- Efficiency is important.
 - Participate fully, without distractions.
 - Respect time constraints and be succinct.
 - Let one person speak at a time.
- Constructiveness is essential.
 - Take responsibility for the group as a whole and ask for what you need.
 - Enter commitments honestly and keep them.

Image courtesy: Veronica Adrover/UC Merced



Reports

Image courtesy: Veronica Adrover/UC Merced



GSA Reports

- Updates from each GSA on activities they are undertaking in their own jurisdiction:
 - Merced Subbasin GSA
 - Merced Irrigation-Urban GSA
 - Turner Island Water District GSA #1

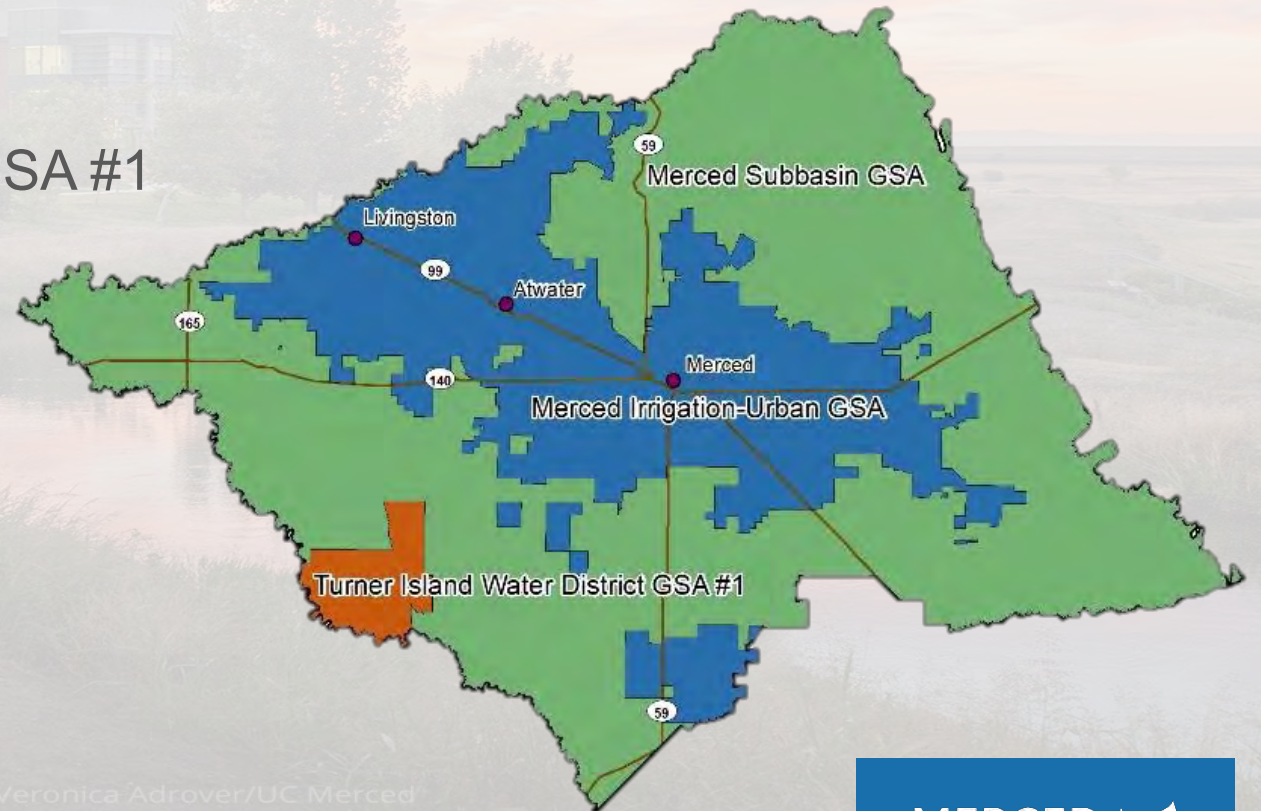


Image courtesy: Veronica Adrover/UC Merced

Flood-Managed Aquifer Recharge Mariposa & Owens Creek

FEBRUARY 27, 2023

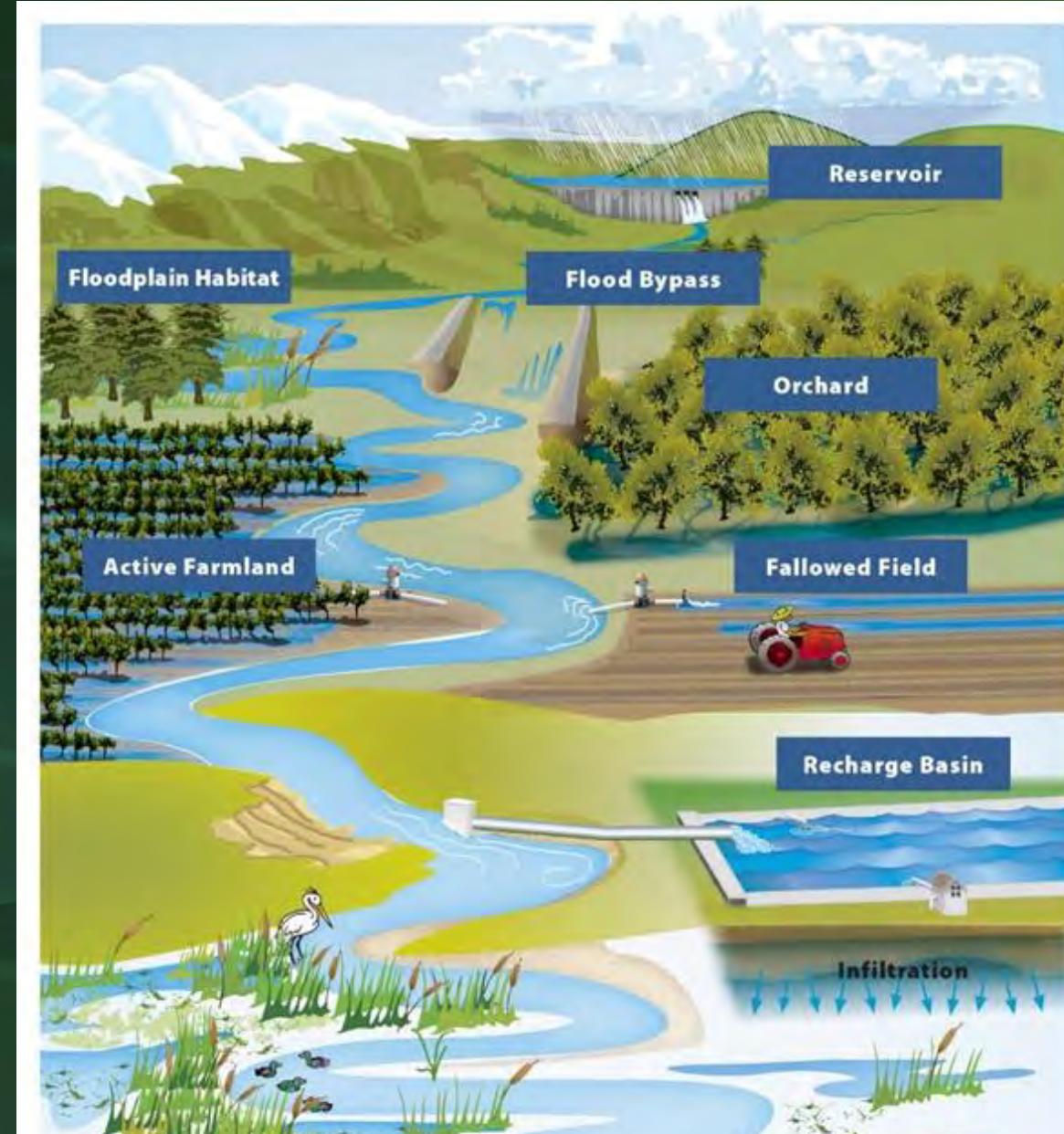


Flood-MAR

An integrated strategy to manage water resources for sustainability & climate resiliency ...

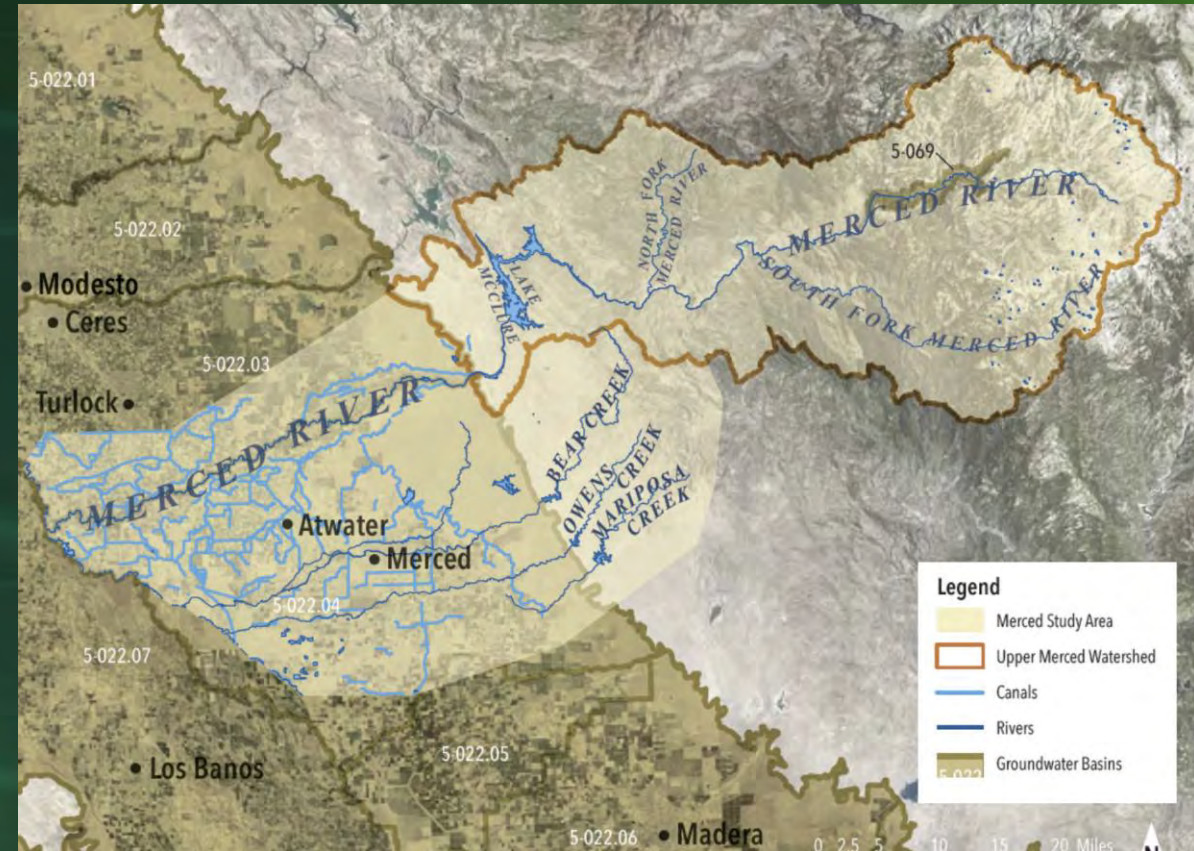
... using high flows from (or in anticipation of) rainfall or snowmelt for managed aquifer recharge ...

... on agricultural lands, working landscapes, and natural managed lands

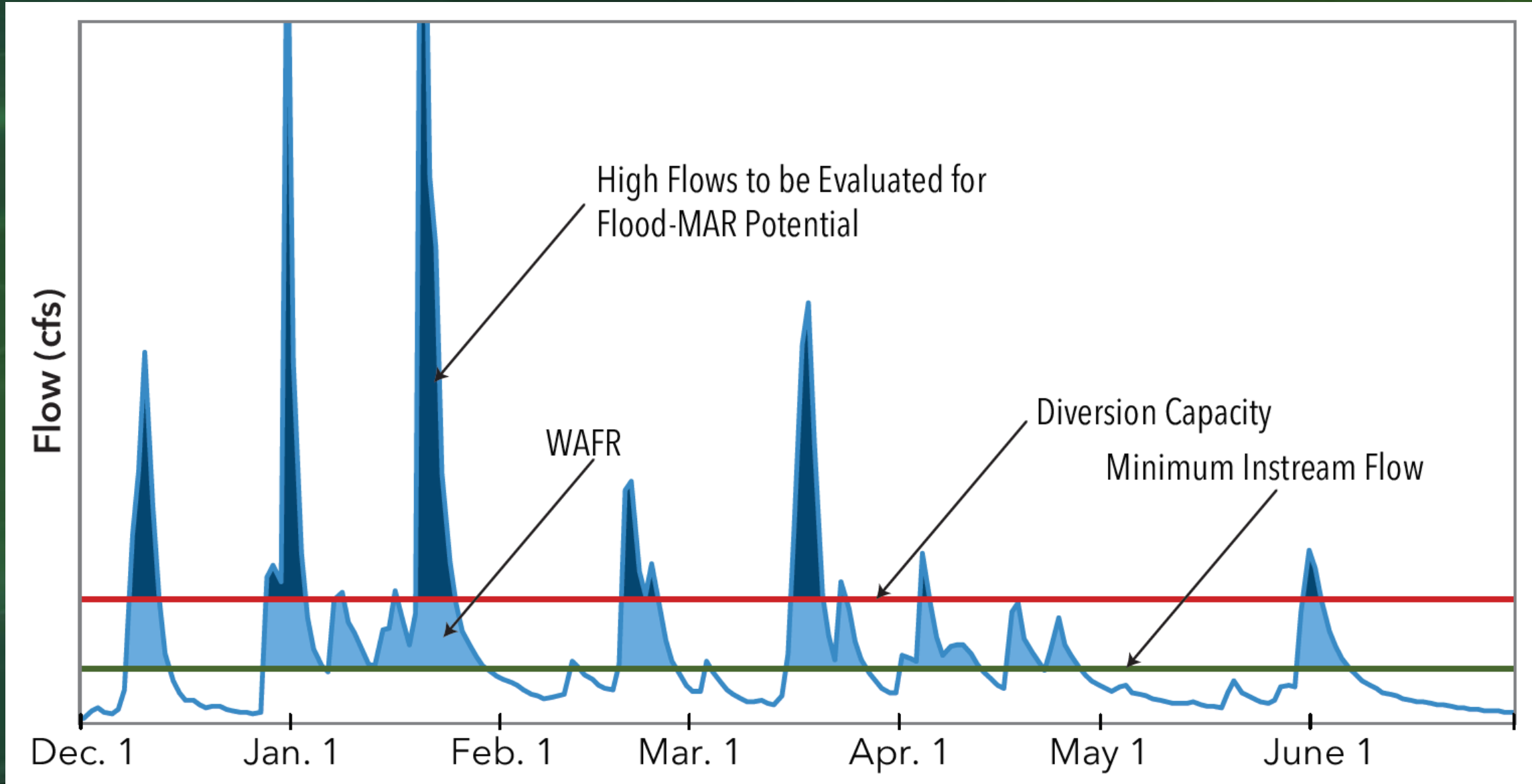


DWR – Study – Merced Watershed

- Level 1 – Existing Infrastructure & Existing Operations
- Level 2 – Existing Infrastructure & Reservoir Reoperations
- Level 3 – New/Expanded Infrastructure & Reservoir Reoperations

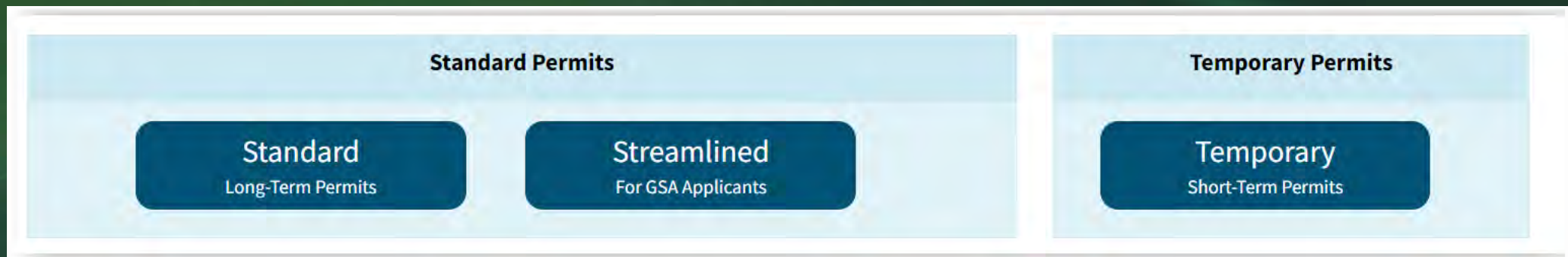


Floodwater to be Evaluated for Flood-MAR



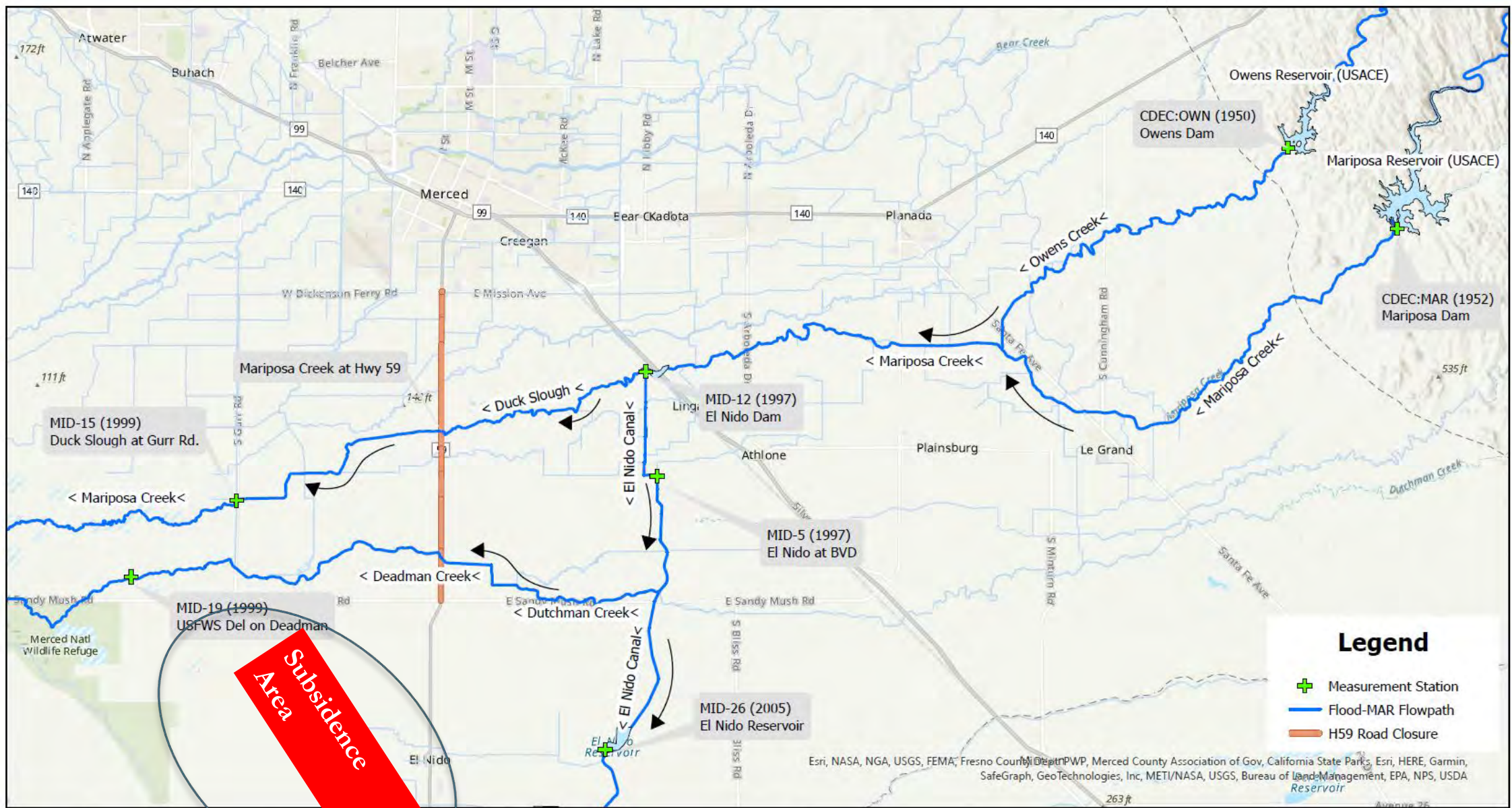
Paths to Flood-MAR

- Diversions during a flood event – Water is not applied to beneficial use and no GW credit is awarded by SWRCB. However, could still be recognized by GSA.
 - *Diversions did occur almost to the end of January under this rule*
- SWRCB Processes for diversions and claiming GW credit



Pilot Project – Temporary Short-Term Permit on Mariposa & Owens Creek Flood- MAR

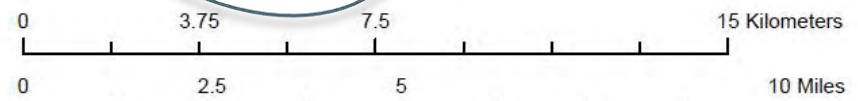
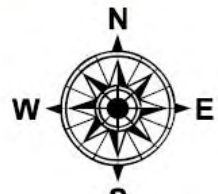
- Process begun in August 2022
- DWR and MID were Co-applicants for the permit
- Funded by DWR
- 1/12/23 – CDFW Permit



Legend

- + Measurement Station
- Flood-MAR Flowpath
- H59 Road Closure

Esri, NASA, NGA, USGS, FEMA, Fresno County Water PWP, Merced County Association of Gov, California State Parks, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA

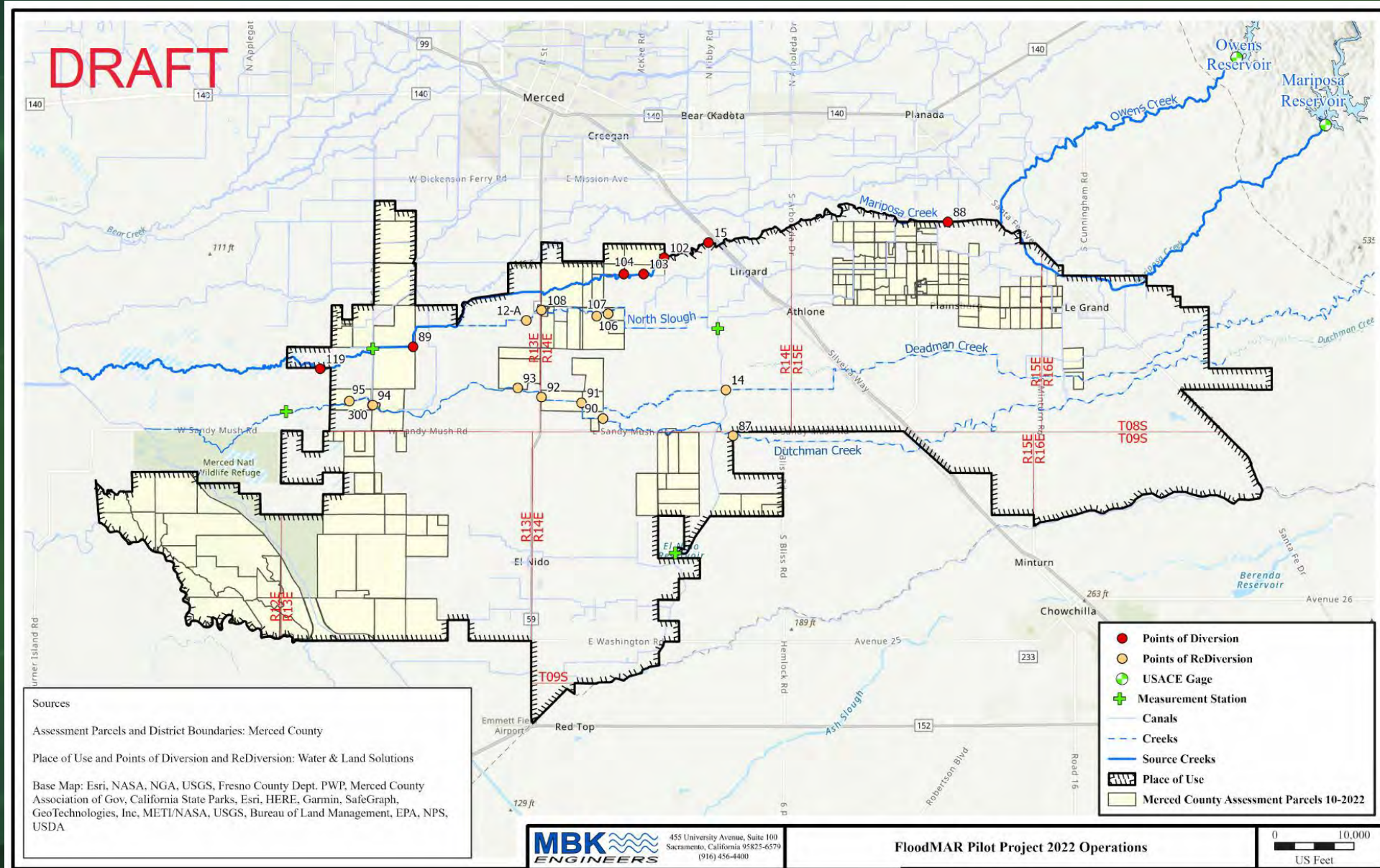


Simplified Flow-path for Flood-MAR
Merced County, California
 8/29/2022

Overall Look



Where the Water Goes



Components of MID/DWR Flood-MAR Permit

1. Diversions under 90-20 Rule Expires March 31, 2023
2. Diversions to prevent flooding at Hwy 59 until May 31, 2023
 - No Diversions have occurred as of yet

90/20 – Method

Owens Creek

90th Percentile Daily Flow Rate (CFS)

Day	December	January	February	March
1	7.04	37.84	45.79	71.67
2	9.71	32.55	58.81	76.14
3	12.02	26.51	84.50	62.31
4	12.54	22.62	57.59	89.10
5	9.60	25.30	63.55	122.89
6	8.20	20.09	79.34	80.93
7	11.56	24.86	81.43	82.05
8	9.67	32.23	64.40	73.62
9	8.80	29.25	87.60	60.61
10	9.54	29.44	115.11	69.07
11	8.81	32.06	110.34	68.37
12	8.28	34.36	99.34	73.90
13	7.02	38.40	118.76	66.48
14	7.02	47.71	127.71	64.36
15	7.21	87.91	132.37	74.53
16	9.01	51.75	99.40	58.63
17	10.82	47.50	78.99	78.22
18	9.03	40.27	91.15	59.33
19	9.68	38.70	75.69	47.21
20	11.17	34.32	69.65	70.84
21	13.54	38.39	62.11	82.75
22	17.00	36.08	59.23	85.77
23	19.54	31.48	104.89	80.44
24	20.77	73.27	61.66	69.66
25	19.35	103.37	67.33	78.45
26	34.77	83.16	59.02	98.90
27	27.77	55.74	53.95	71.29
28	24.07	60.47	43.95	64.54
29	30.20	41.09		54.45
30	40.27	42.69		50.34
31	38.79	47.30		63.48

Mariposa Creek

90th Percentile Daily Flow Rate (CFS)

Day	December	January	February	March
1	25.70	166.95	290.10	349.40
2	53.36	167.60	285.50	358.25
3	65.20	162.80	338.00	362.05
4	58.10	140.70	277.00	576.00
5	66.60	140.40	322.00	557.60
6	46.80	137.73	441.74	437.65
7	56.10	230.40	403.89	393.85
8	61.50	175.55	406.55	364.28
9	42.70	152.85	546.30	313.15
10	46.30	164.50	558.80	312.85
11	37.30	212.65	549.24	331.90
12	40.20	252.00	503.50	399.95
13	47.20	253.30	576.50	322.75
14	41.00	233.65	601.15	298.35
15	40.60	441.50	650.80	468.45
16	59.20	286.10	482.50	284.60
17	45.00	250.85	462.15	382.25
18	46.60	233.60	459.25	312.80
19	53.00	301.95	398.25	238.75
20	56.00	170.05	487.90	343.90
21	65.70	191.65	371.80	406.85
22	74.20	175.15	294.80	484.40
23	161.00	255.30	500.05	390.45
24	105.20	374.85	283.00	453.43
25	119.90	510.75	338.80	439.20
26	182.20	257.30	291.40	469.15
27	150.80	259.80	290.50	325.90
28	141.00	295.40	294.20	318.10
29	174.80	240.40		265.90
30	201.90	225.20		261.00
31	286.60	300.85		308.15

Flows above 90th Percentile
Or 20% of Total Flow from each
Creeks... Whichever is Less

● Sample:

Creek	Owens	Mariposa
Month	March	March
Day	1	1
Actual Flow	80	500
90th Percentile	72	349
Actual - 90th	8	151
20% of Actual	16	100
Existing Capacity	150	
Total Diversions	108	

Alternative Trigger Point

- CA H-59 Flooding
- Closed for 29 days in Jan 2023



Portion of Highway 59 closed in Merced County due to flooding - ABC30 Fresno

Visit

Caltrans District 10
@CaltransDist10

#castorm Merced County: SR-59 @ Mariposa Creek closed both directions due to flooding. No ETO. On-the-spot photos from Caltrans' maintenance



MCAG and 6 others

12:13 PM · Jan 9, 2017 · Twitter Web Client

4 Retweets 2 Likes

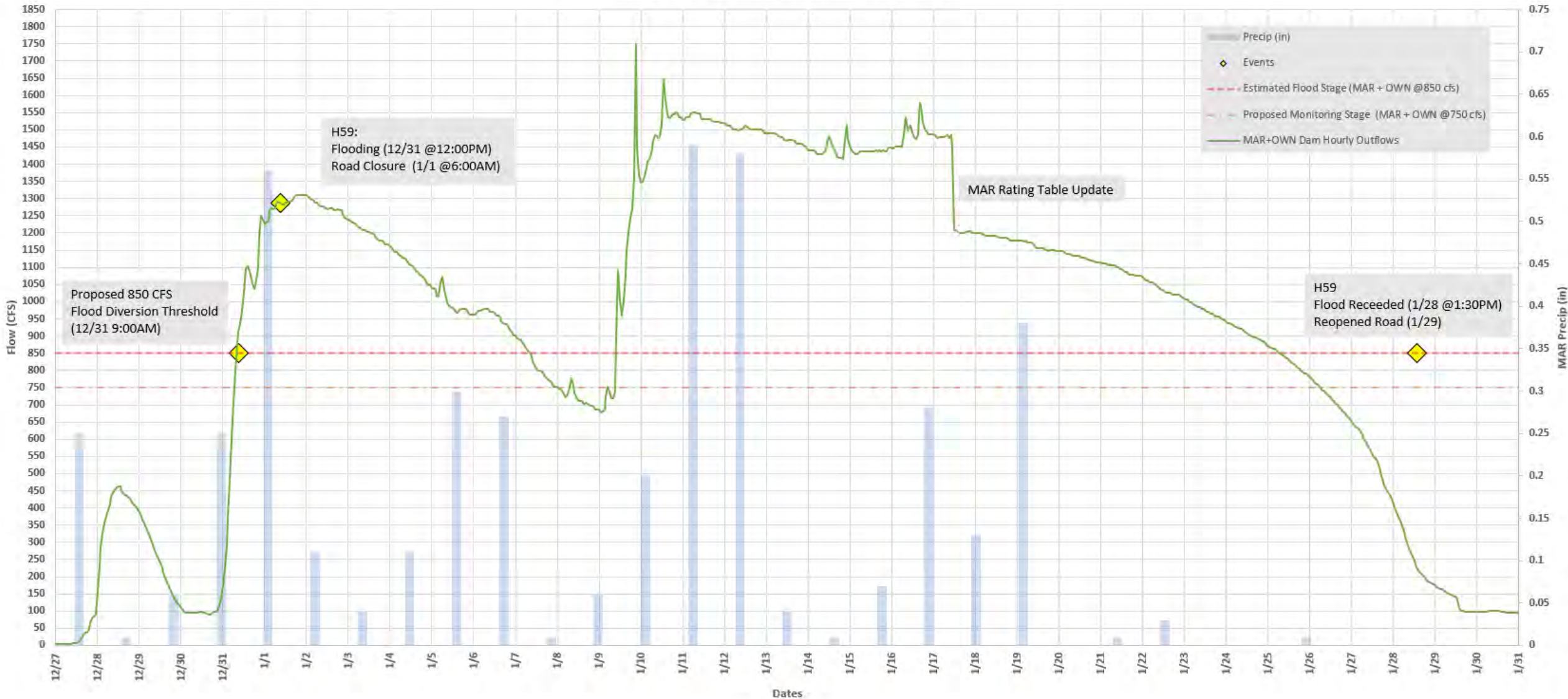


Merced Sun-Star
Mariposa Creek floods section of Highway 59 in Merced County | Merced Sun-Star

Visit

Mariposa Creek – January Flooding

Mariposa & Owens Dam Combined Outflows



Draft Operation Plan

- Forecaster (MID)
 - Keeps group informed on potential FloodMar eligible flows.

2/23/2023 11:30AM		23-Feb	24-Feb	25-Feb	26-Feb	27-Feb	28-Feb
Mariposa Precip Forecast	inches	2.5	-	-	0.2	-	3.3
Inflow Forecast							
Mariposa Creek Dam	50%	40	253	841	377	606	1,654
	90%	34	49	47	35	45	153
Owens Creek Dam	50%	7	100	200	62	112	361
	90%	7	7	7	7	8	11
Combined Deterministic		47	353	1,041	439	718	2,015
Outflow Forecast							
Mariposa Creek (1kCFS <15TAF)		40	253	841	377	606	1,000
Owens Creek (185 CFS <3.6TAF)		7	100	185	62	112	185
Combined		47	353	1,026	439	718	1,185
FloodMar Requirements							
Mariposa Cr. 90th Flow Ex.		500	283	339	291	291	294
Owens Cr. 90th Flow Ex.		105	62	67	59	54	44
90/20 Possible Diversion		No	20	208	78	144	237
Vernalis in Excess		No	No	No	No	No	No
H59 Flood Trigger (>850 CFS)		No	No	50%	No	No	50%
FloodMar Diversions		No	No	No	No	No	No

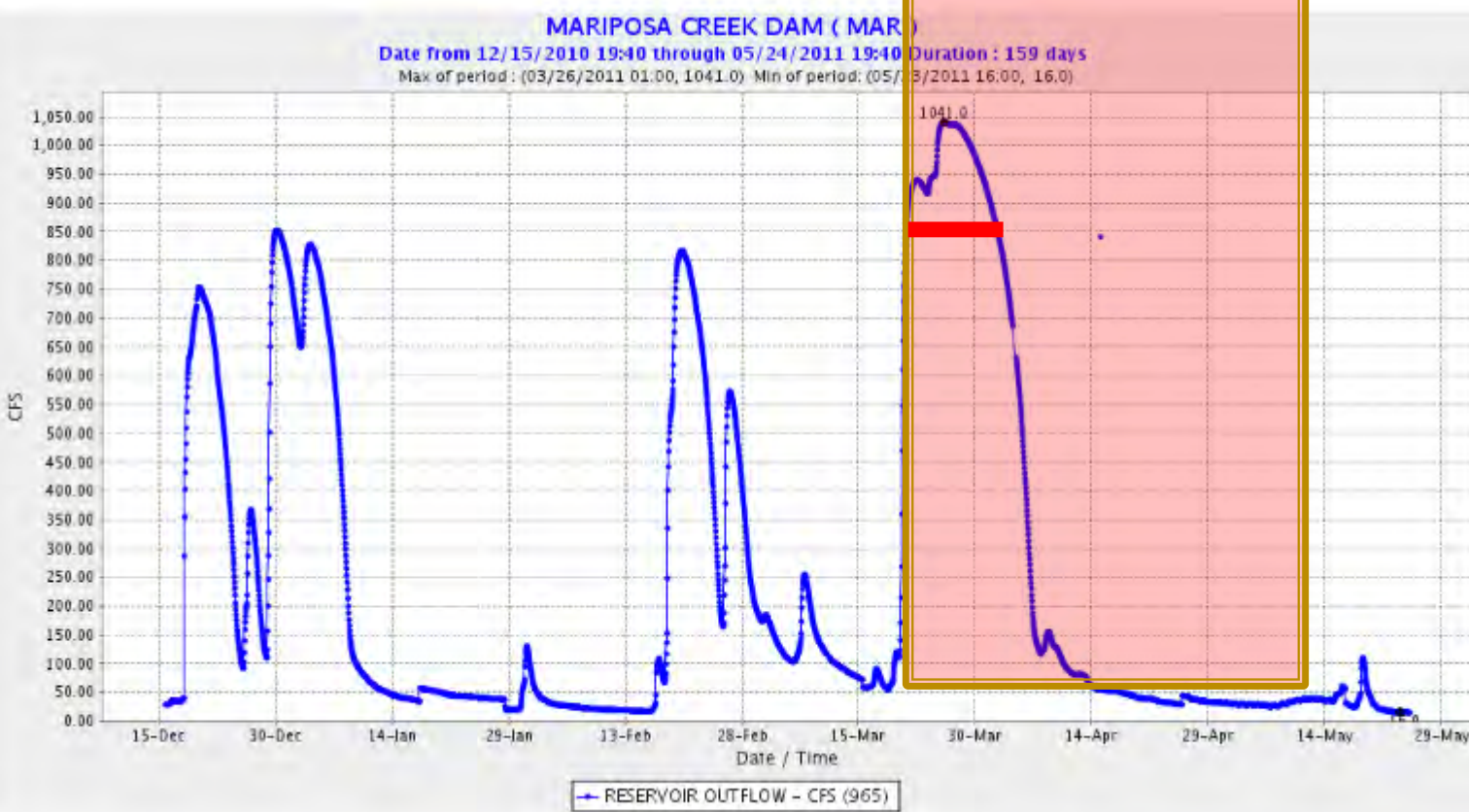
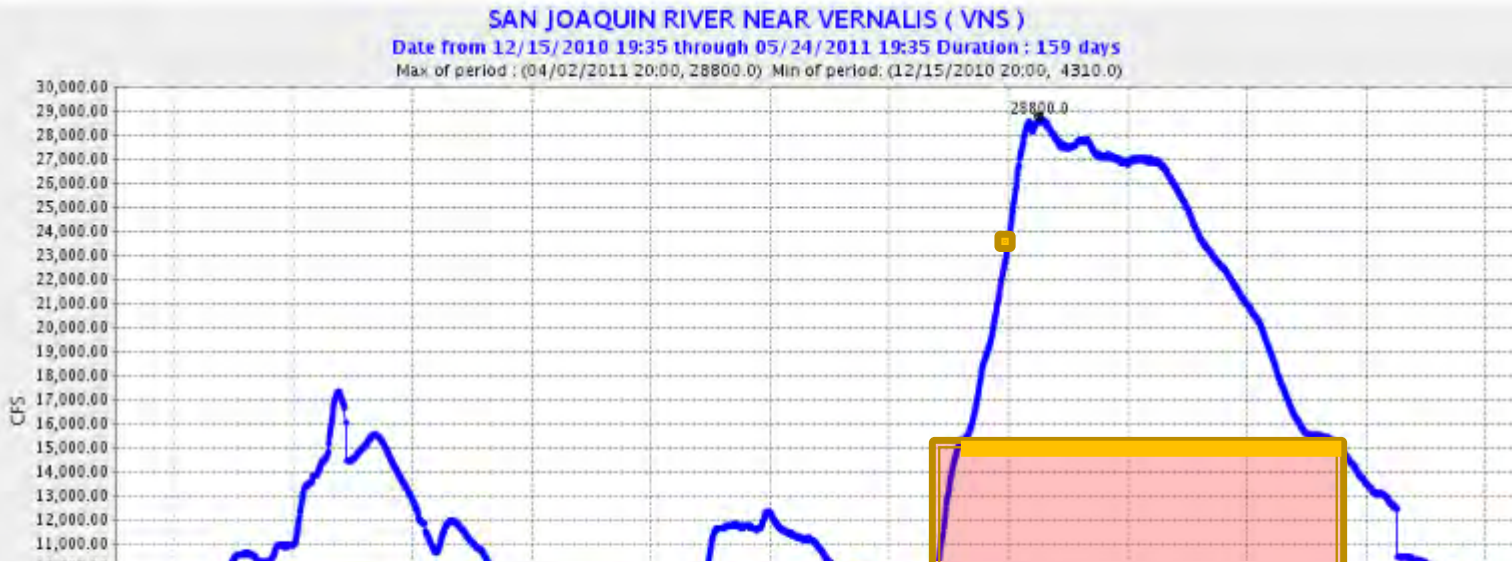
Draft Operation Plan

- Coordinator
 - Reaches out & coordinate with Growers for diversion staging.
 - Collects diversion data and Submit reports to SWCRB
- Growers
 - Maintains contact with Coordinator
 - Stages diversion points and Divert Flood-MAR water following all rules & regs.

Conclusion

- The permit was meant as a proof of concept
- Many requirements and limitations set by SWRCB and CDFW were reduced, still more work is needed.
- The existing permit could be used as a template
- Many challenges still exist:
 - SWD letter of concern to SWRCB
 - Concurrence from Merced County Corroborating MID's observed flooding at Hwy 59 at 850 cfs – pending
- Thresholds for diversion are high and most likely will only happen in wet years

- 2011 Simulated Diversions
- Assume maximum diversion at 850 cfs
- Diversion Days 3/20 to 4/7
- Potential Total Diversion: 30,000 AF



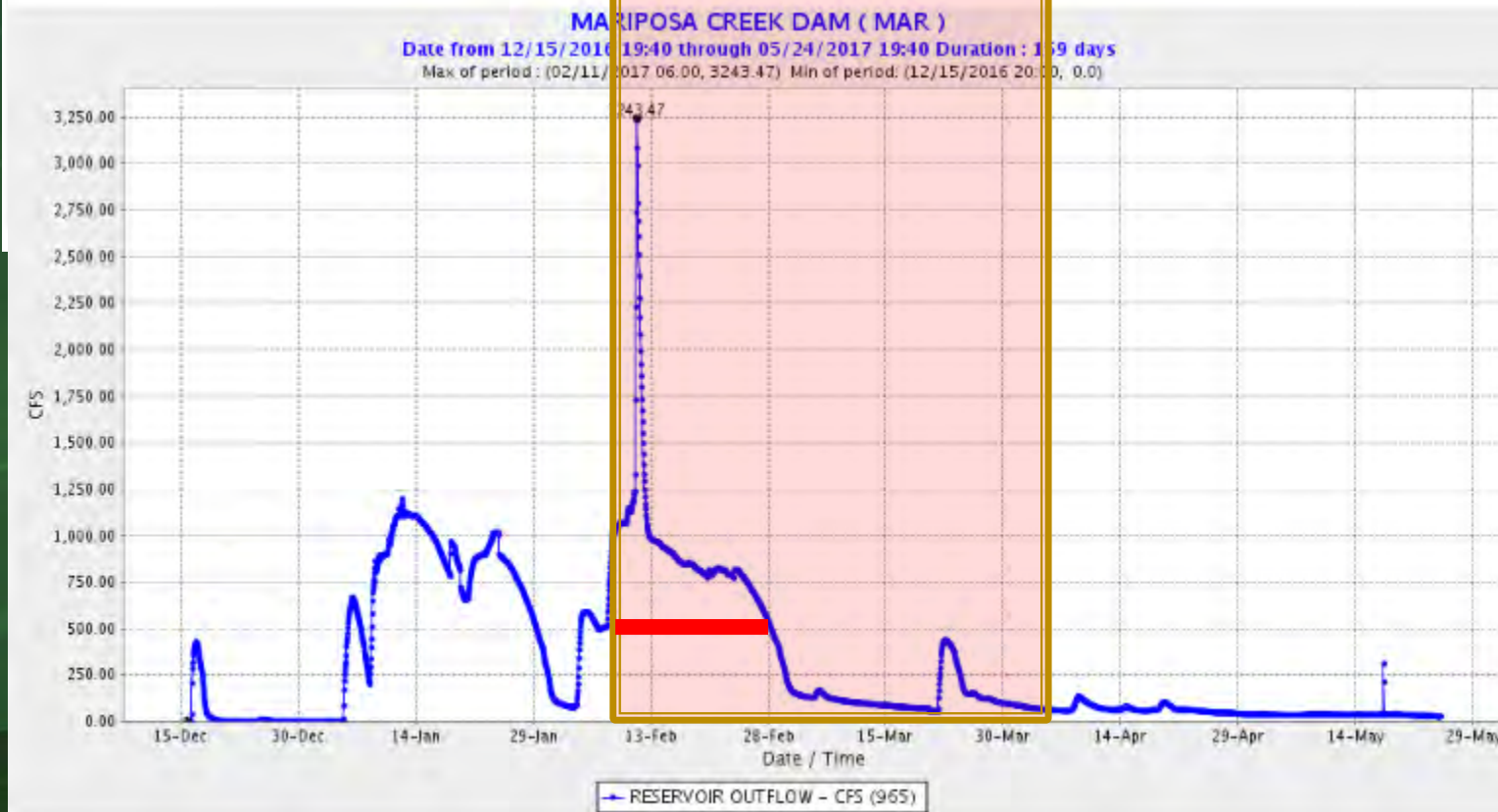
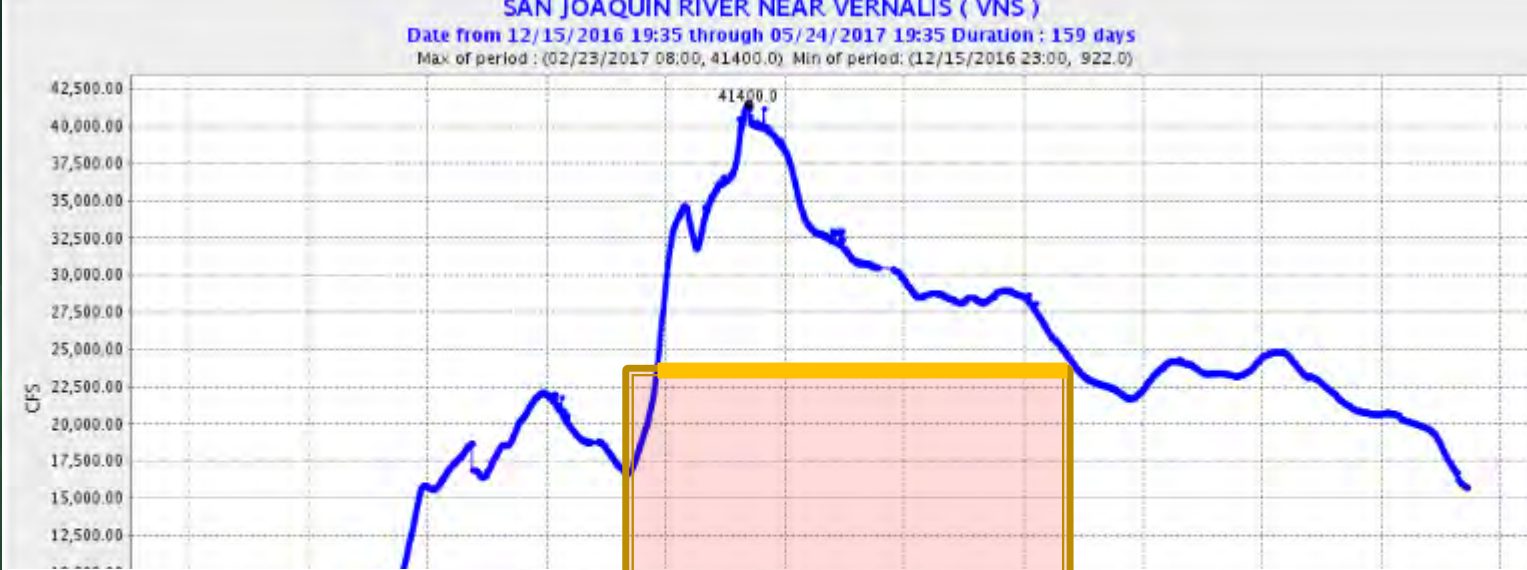
2017 Simulated
Diversions

Assume
maximum
diversion at 500
cfs

Allowed
Diversions Days
2/10 to 2/28

Potential Total
Diversion

18,000 AF



Take Away

- Flood-MAR would have been robust this year if major state reservoirs had a higher carry over similar to 1997, 2010, and 2016. Diversions would have lasted between one and two months, with the maximum available diversion capacity.
- The winners are entities that are prepared to divert and recharge during wet events.

GSA Reports

- Updates from each GSA on activities they are undertaking in their own jurisdiction:
 - Merced Subbasin GSA
 - Merced Irrigation-Urban GSA
 - Turner Island Water District GSA #1

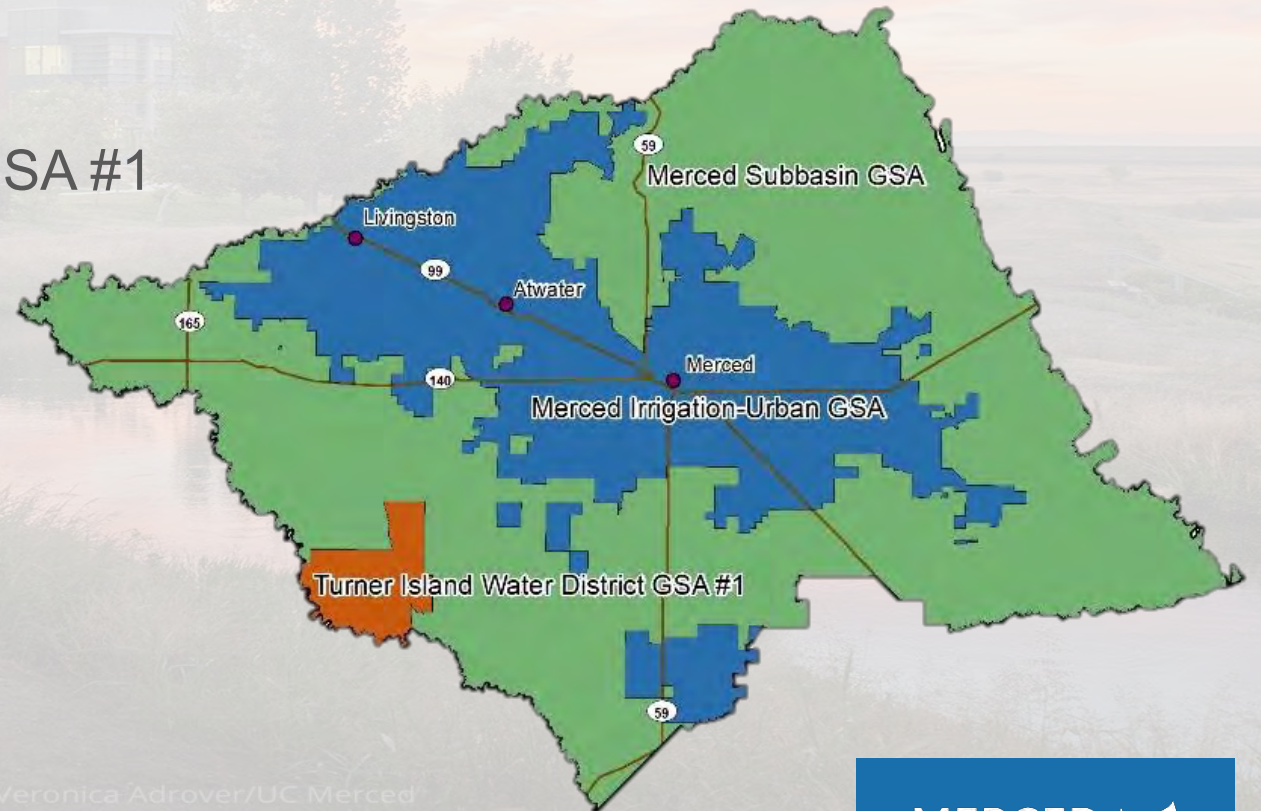
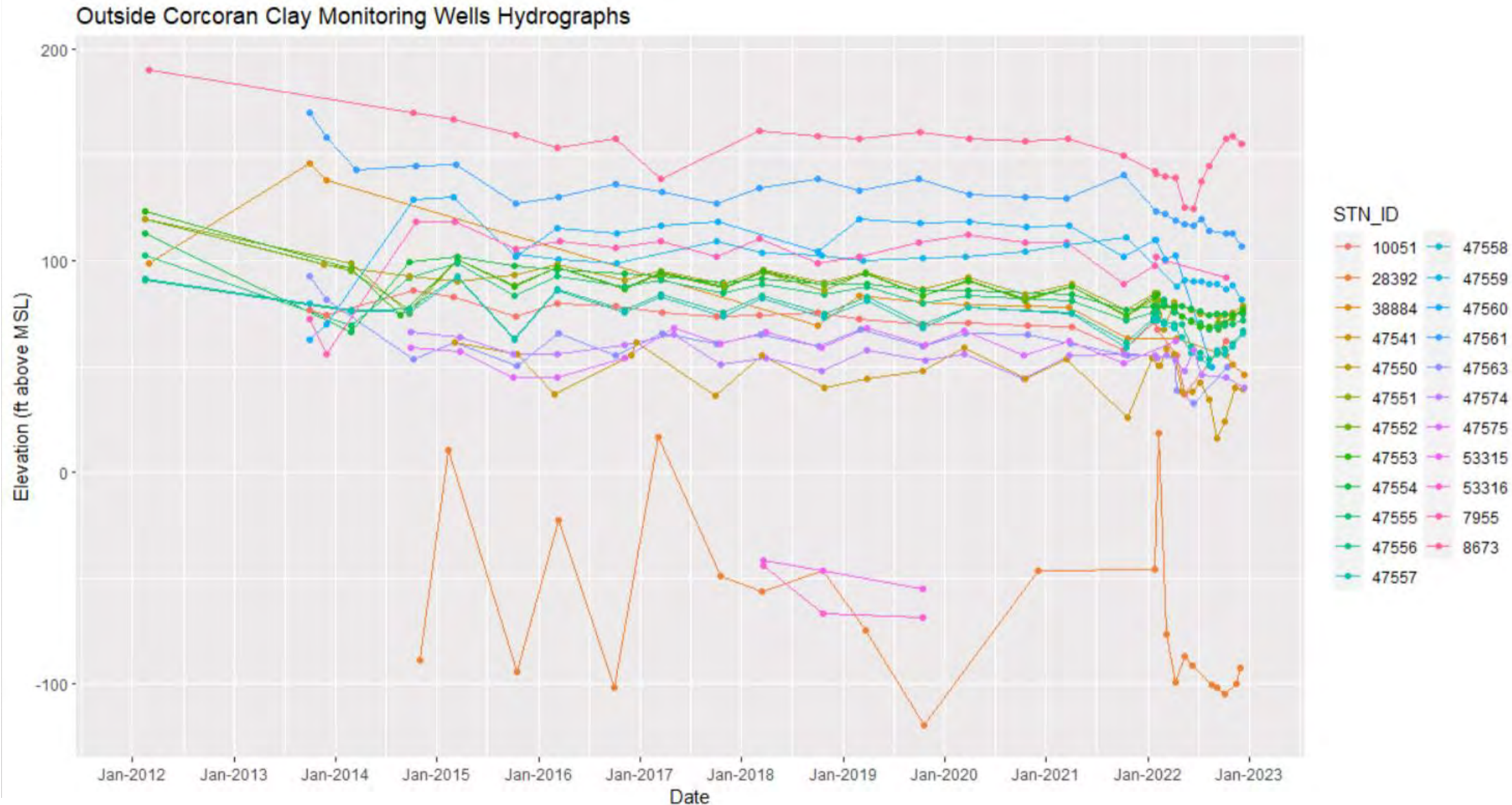
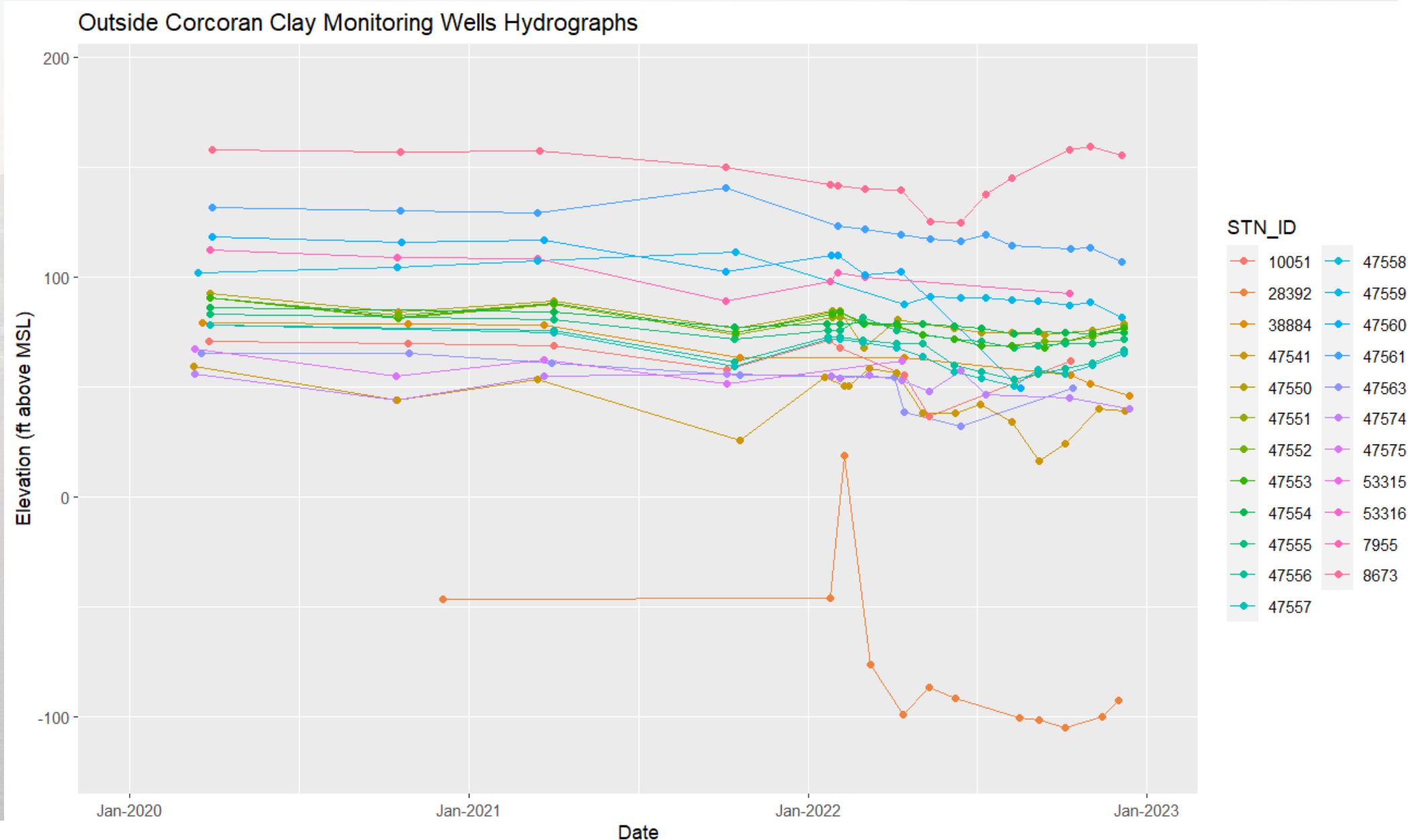


Image courtesy: Veronica Adrover/UC Merced

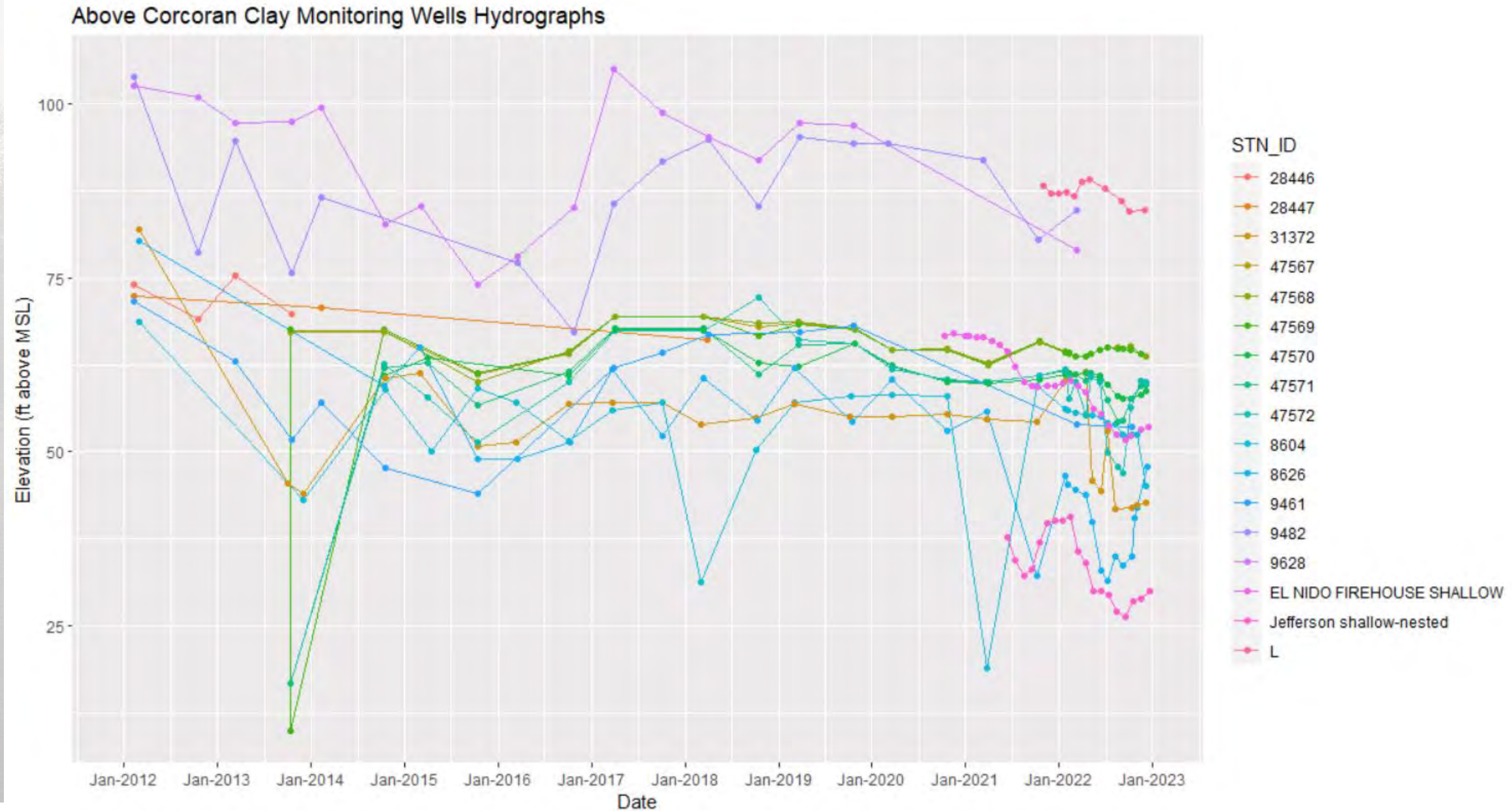
Current Basin Conditions



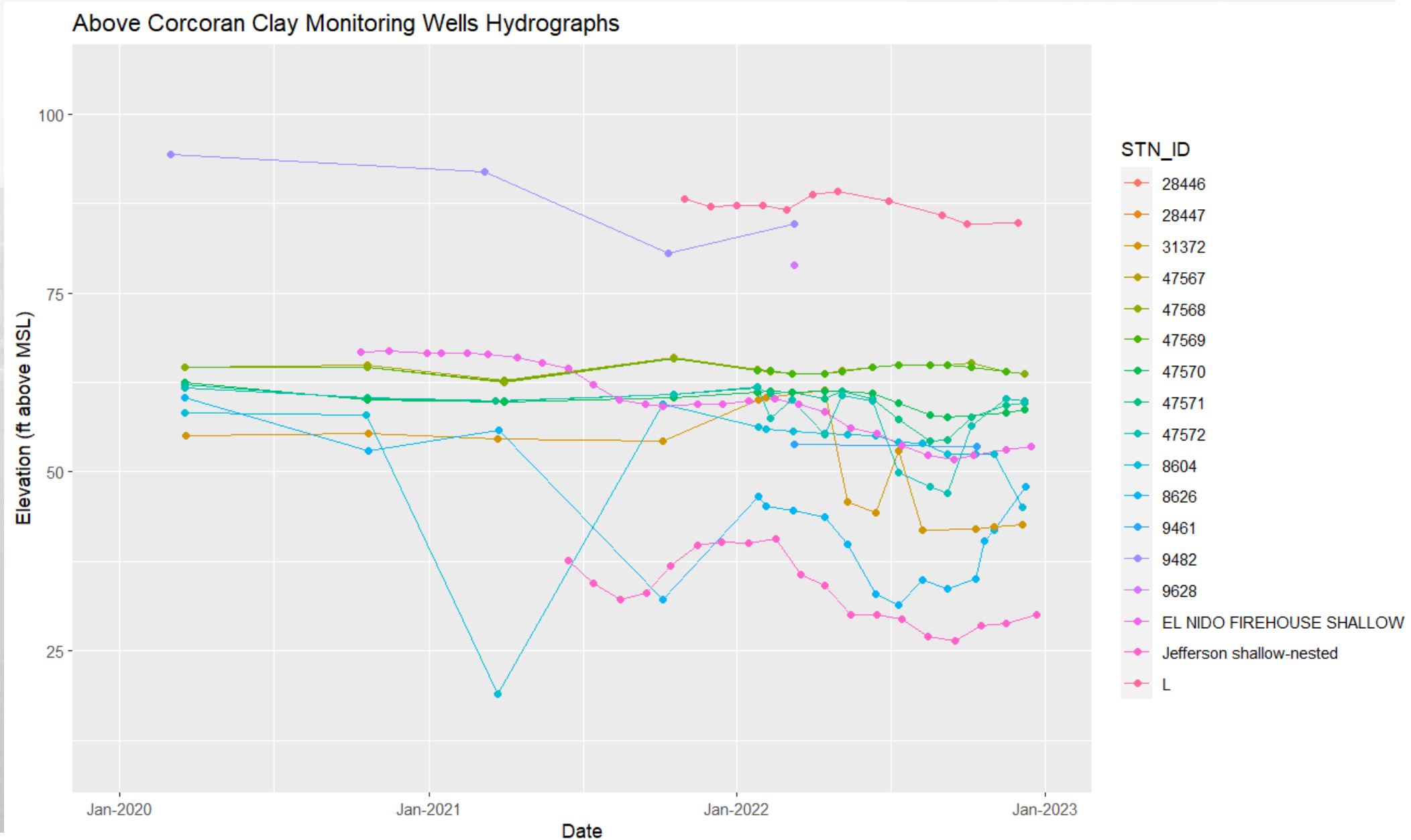
Current Basin Conditions



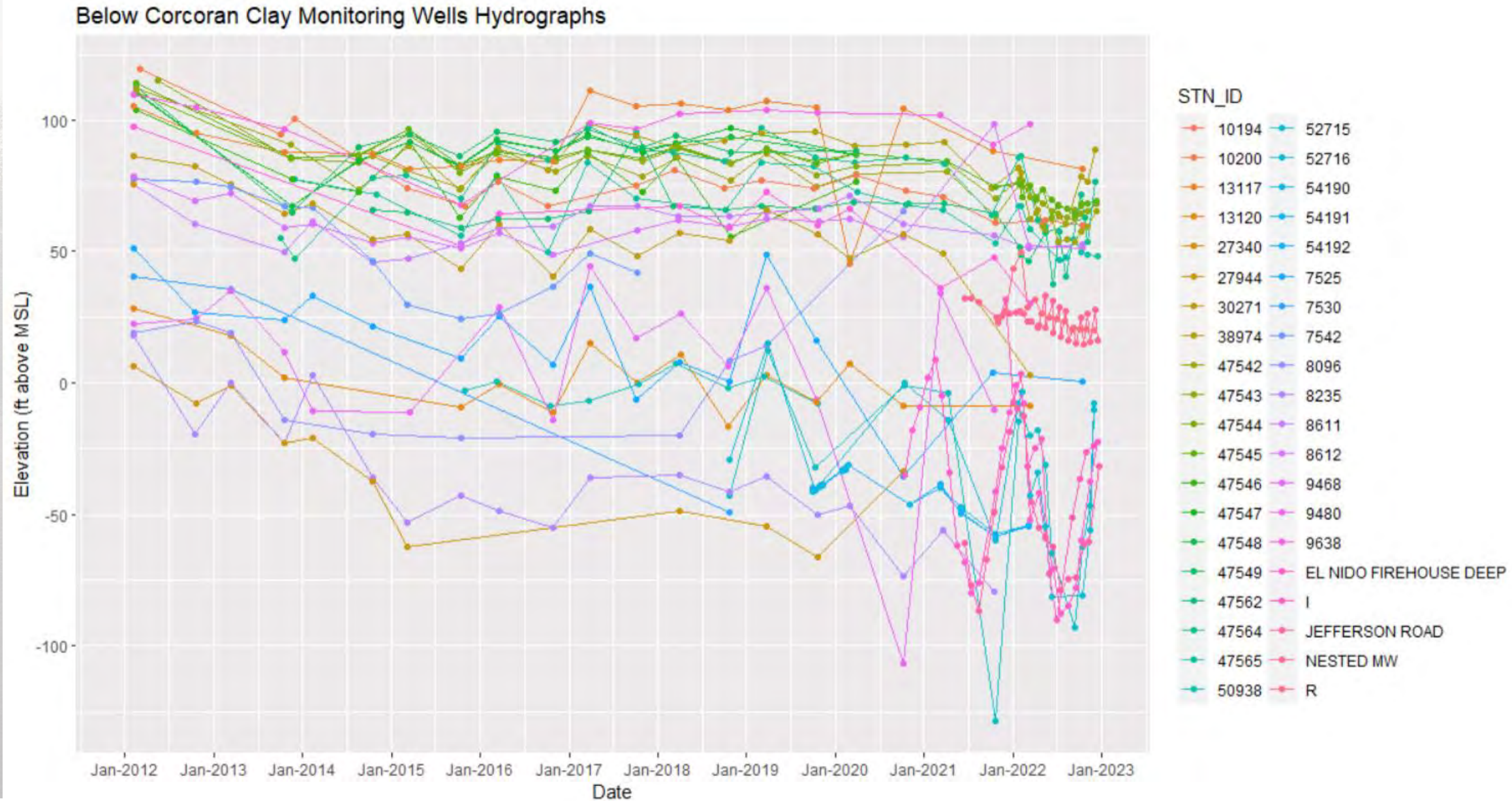
Current Basin Conditions



Current Basin Conditions

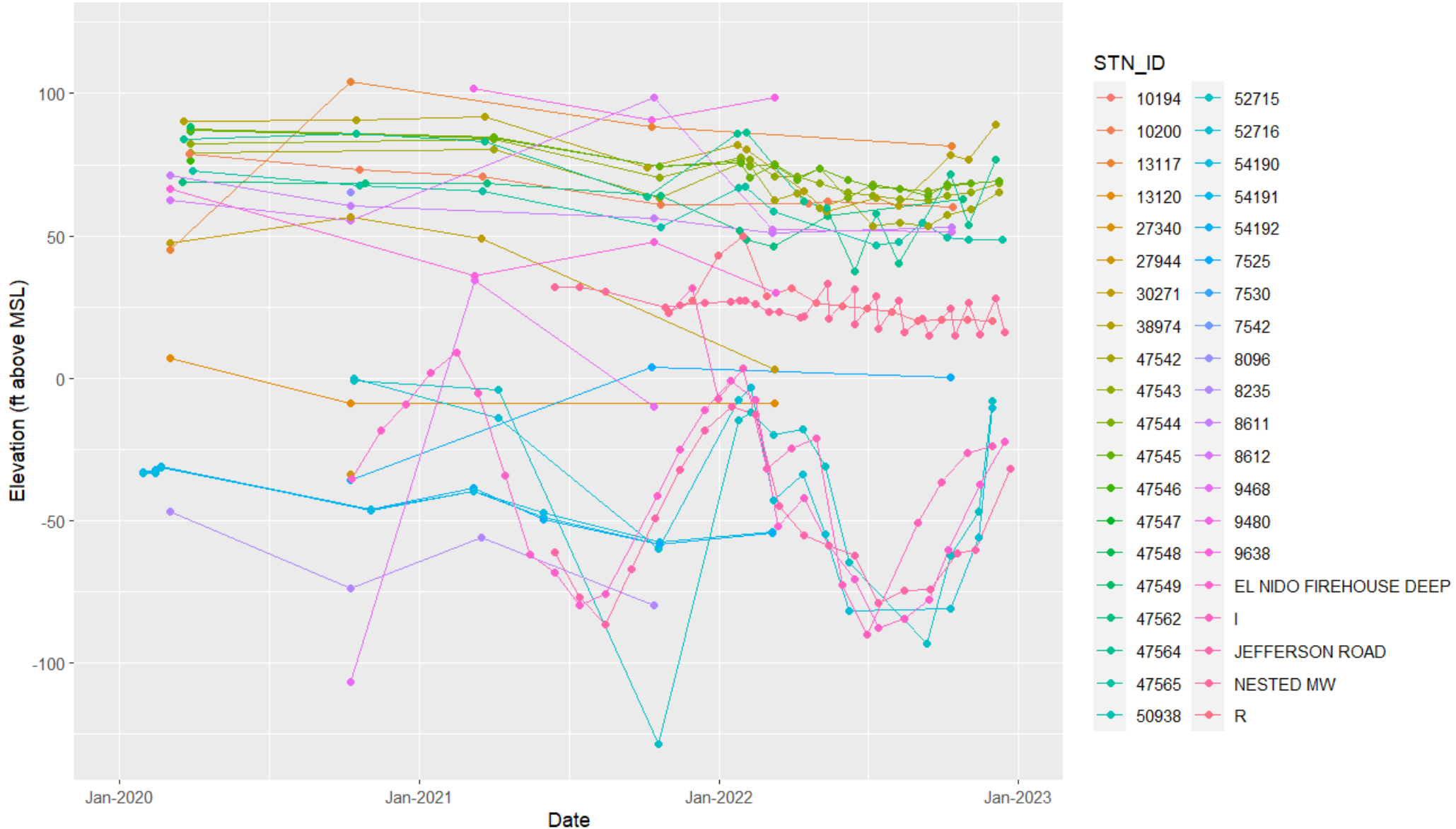


Current Basin Conditions



Current Basin Conditions

Below Corcoran Clay Monitoring Wells Hydrographs



SAC questions and discussion



Image courtesy: Veronica Adrover/UC Merced



Water Year 2022 Annual Report Preview

Image courtesy: Veronica Adrover/UC Merced



The Water Year 2022 GSP Annual Report is being drafted

- SGMA requires annual reports on basin conditions and the status of plan implementation every April 1
- Completed independent of DWR's "incomplete" determination
- Have to report both on:
 - **Basin Conditions**
 - Model update
 - Pumping and surface water diversions
 - Levels, storage, quality, subsidence
 - **Implementation Status**
 - Projects & Management Actions
 - Grant funding
 - Other support activities

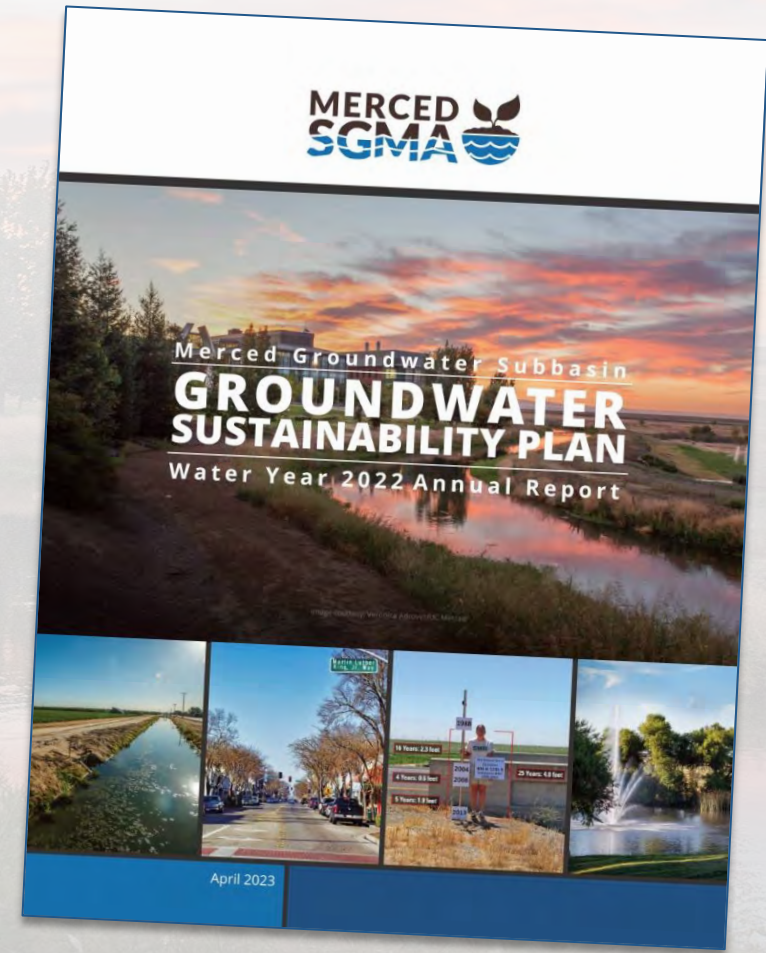








Image courtesy: Veronica Adrover/UC Merced

Sustainable Management Criteria Status

Sustainability Indicator	Minimum Threshold (MT)	Interim Milestone (MT)	Measurable Objective (MO)	Undesirable Result	WY 2022 Annual Report Status
 Groundwater Levels	Fall 2015 groundwater elevation	Based on range of projected values that account for hydrologic uncertainty	November or October 2011 groundwater elevation (measured, or estimation if historical record not available)	Greater than 25% of representative wells fall below MT in 2 consecutive years	16/20 wells fell below MT. 20 of 20 wells fell below MO. 1 well not measured.
 Groundwater Storage	Not applicable - not present and not likely to occur in the Subbasin due to the significant volumes of freshwater in storage				
 Seawater Intrusion	Not applicable - not present and not likely to occur due to the distance between the Subbasin and the Pacific Ocean (and Sacramento-San Joaquin Delta)				
 Degraded Water Quality	1,000 mg/L TDS	1,000 mg/L TDS	500 mg/L TDS	At least 25% representative wells exceed MT for 2 consecutive years	No wells exceeded MT. 3 wells exceeded MO.
 Land Subsidence	0 ft/year, subject to uncertainty of +/-0.16 ft/year	2025: -0.75 ft/year 2030: -0.5 ft/year 2035: -0.25 ft/year	0 ft/year	Exceedance of MT at 3 or more representative sites for 2 consecutive years	December 2022 data not available yet.
 Depletions of Interconnected Surface Waters	Groundwater levels used as a proxy for this sustainability indicator				

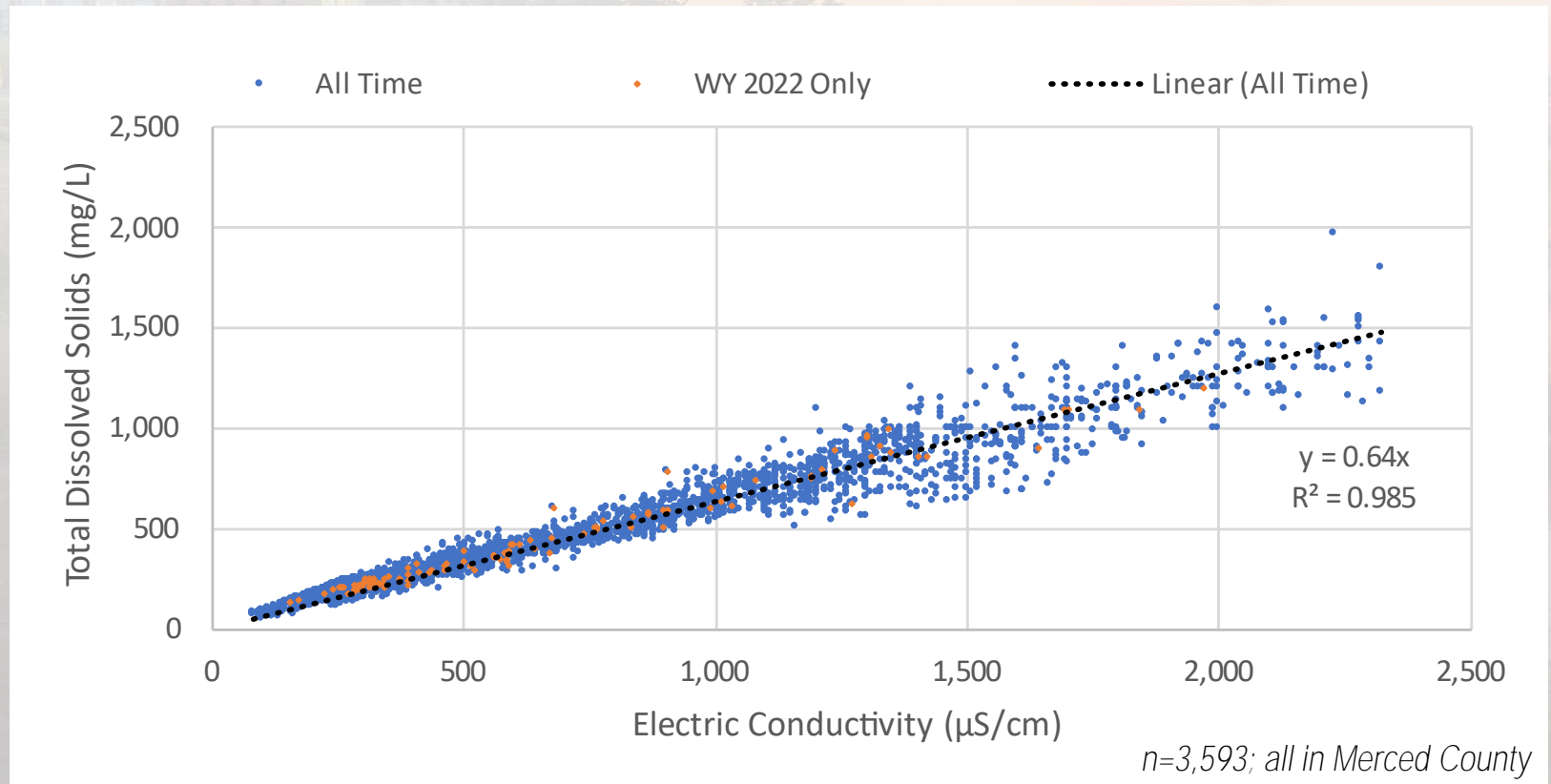
1st year (of 2) with new thresholds where >25% are below MT.
All but one well still above 2025 IM.

7 wells (out of 22 representative wells) sampled in WY 2022.

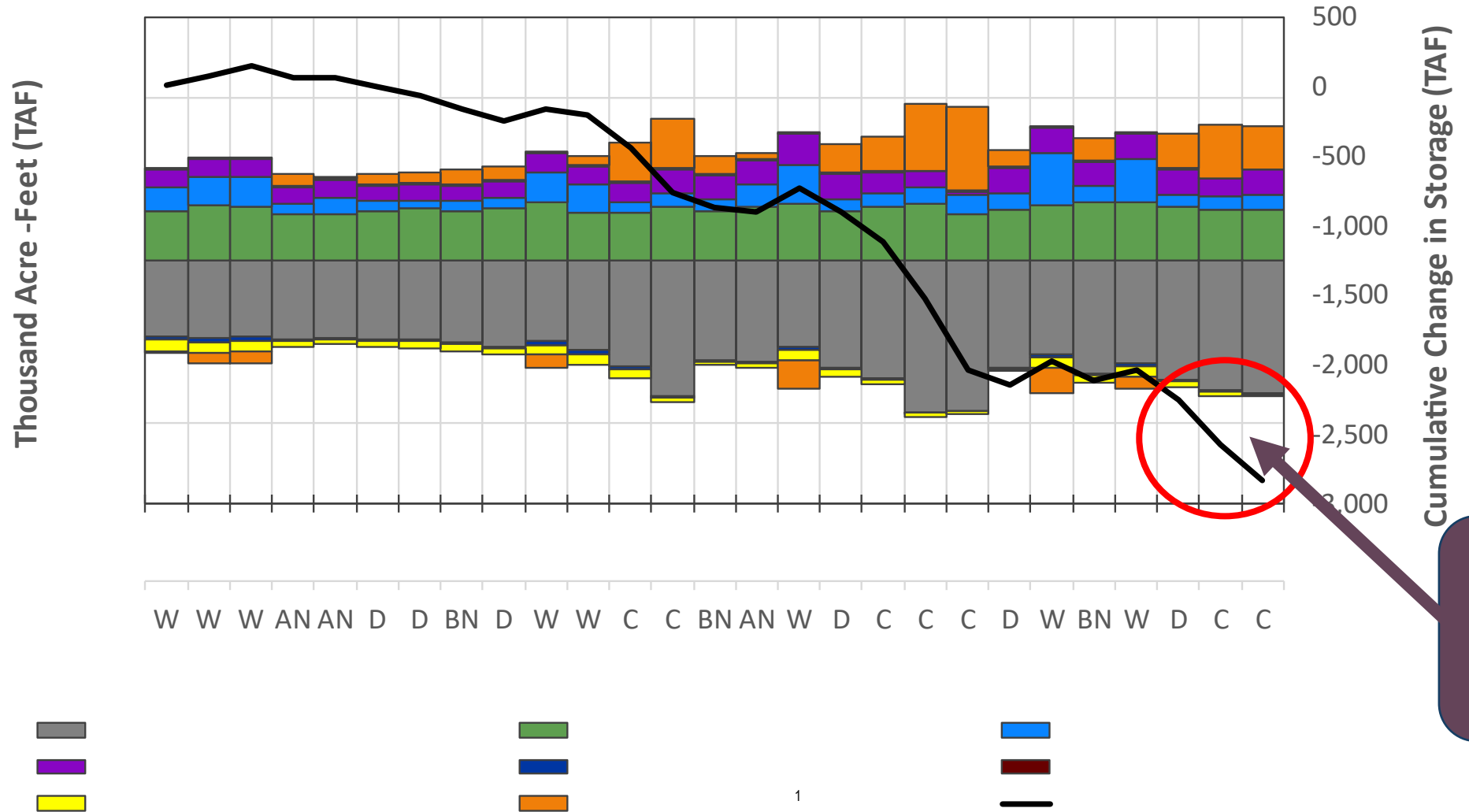
All likely to exceed MT, but be within 2025 IM.

Water Quality Update

- Correlation exists between Electrical Conductivity (EC) and Total Dissolved Solids (TDS)
- Conversion factor developed to estimate TDS based on EC using local data
- WY 2022 Annual Report describes that TDS estimated via EC will be used in GSP reports when TDS is not available



Change in Storage



Third year of storage decrease



Demand Reduction Discussion

Image courtesy: Veronica Adrover/UC Merced

Merced Irrigation-Urban GSA

- Two major actions taken in 2022:
 - Adoption of groundwater allocation 3.3 AF/AC for period of April 1, 2023-December 31, 2025
 - Adoption of well registration policy for **all** wells within the GSA, specific deadlines based on well type.
 - Developed well registration portal to facilitate registration process.
- Additional rules, regulations, and enforceable policies being finalized.
- Participating as pilot partner in development of Groundwater Accounting Platform with EDF and Water Data Consortium.
 - Platform will allow for tracking various water sources, and will give users access to water use information that will allow them to make more informed decisions.
- Pilot Flood-MAR project

Image courtesy: Veronica Adrover/UC Merced

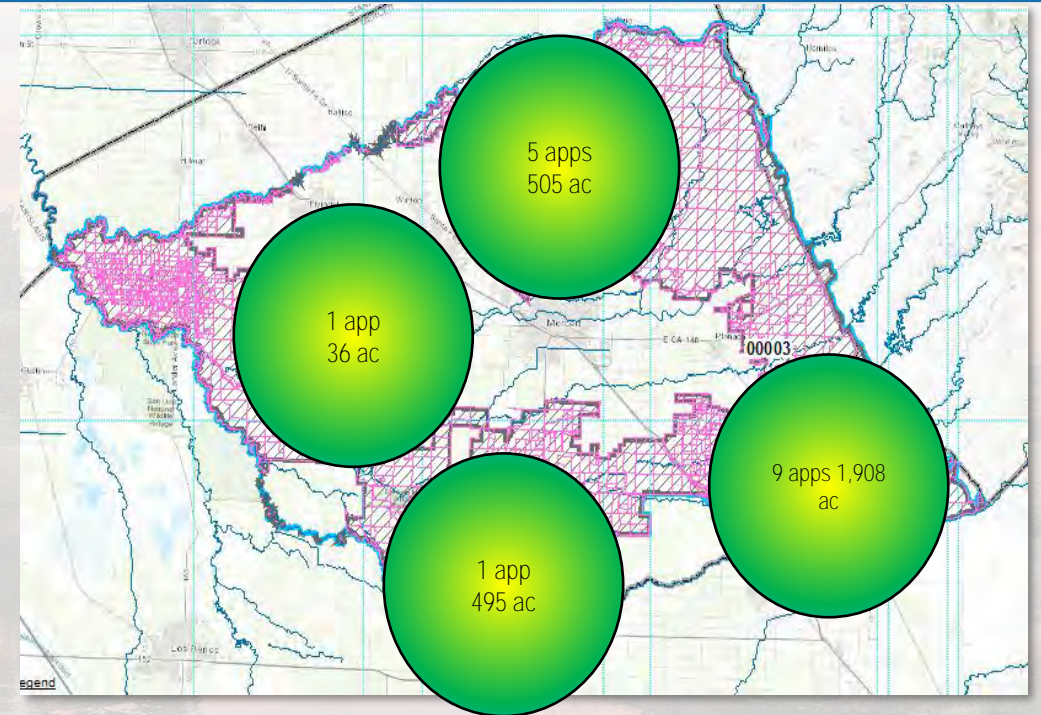
MSGSA Two Phased GSP Implementation Approach Update

- Phase 1 – 2021-2025
 - Land Repurposing Program
 - Increased surface water usage
 - Parcel Based Water Budgets
- Phase 2 – 2026 and beyond
 - Groundwater Allocation Program

Image courtesy: Veronica Adrover/UC Merced

Phase 1 – Land Repurposing Program

- **MSGSA Land Repurposing**
 - Program developed in 2022
 - First round applications selected and contracts in process of execution
 - 16 applications selected
 - Range of 3-5 year projects
 - Cumulative water saved: 7,263 AFY
 - Total annual cost: \$1,438,002
 - Avg. cost of savings: \$198/AFY



Summary of accepted LRP applications, by area within MSGSA

Image courtesy: Veronica Adrover/UC Merced

Phase 1 – Other items

- Additional Surface Water Usage
 - MSGSA Water Year 2023 Recharge Framework and Registration Form
 - Available at www.mercedsubbasingsa.org
- Parcel Based Water Budgets
 - EDF/Water Data Consortium Water Accounting Platform Pilot Project

Image courtesy: Veronica Adrover/UC Merced

Phase 2 – Groundwater Allocation Program

- Strategic Planning Ad Hoc Committee created to make recommendations to the Board
- Recommendations communicated at the monthly GSA meetings to the Board and public
 - Written recommendations posted on the GSA website (www.MercedSubbasinGSA.org)
- Public outreach
 - Technical Advisory Committee
 - Public workshops
 - Feedback can be in person in meetings or communicated via email at contact@mercedsubbasingsa.org

Image courtesy: Veronica Adrover/UC Merced

TIWD GSA-1

TIWD GSA-1 is utilizing the following strategies for demand reduction...

- Shifting cropping patterns for about 20% of the district acreage from summer to winter crops (tomatoes and cotton to onions and garlic, for instance)
- More efficient utilization of storage and pump infrastructure to minimize system losses of applied water
- Design of and planning for upgraded and new infrastructure to curtail applied water needs

Image courtesy: Veronica Adrover/UC Merced



Grant Updates

Image courtesy: Veronica Adrover/UC Merced



Prop 68 Planning Grant (May 2020 – Mar 2023)

Merced Subbasin GSP Development Project for Addressing Critical Data Gaps

- New dual completion (2 casings) monitoring well for above Corcoran and below Corcoran aquifer
- Total anticipated depth: ~400'
- Scheduled for construction March 2023

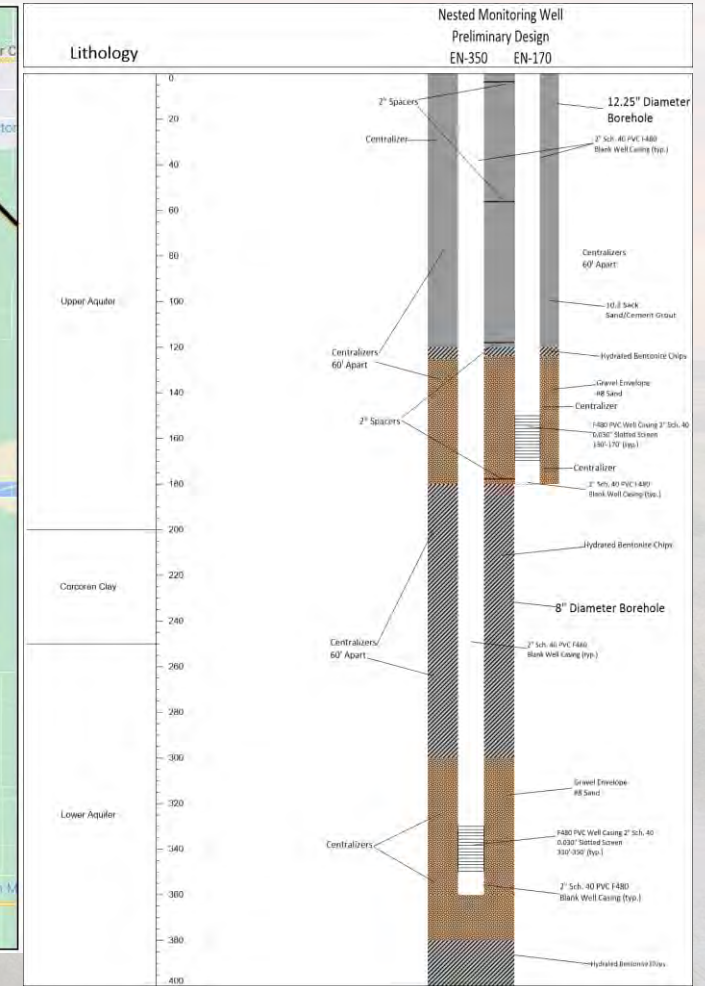
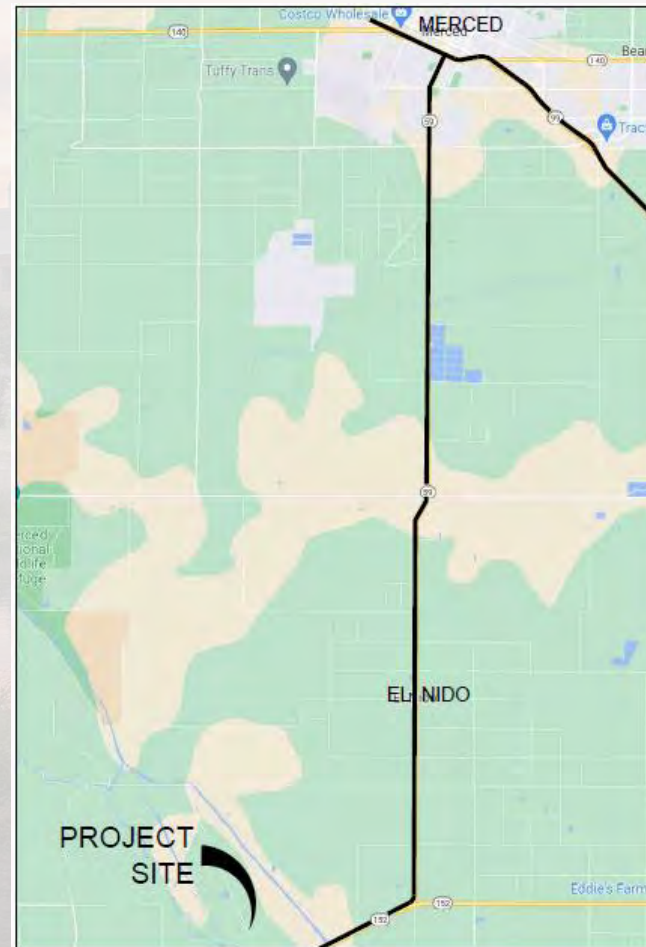


Image courtesy: Veronica Adrover/UC Merced

Prop 68 Implementation Grant (Aug 2021 – Apr 2024)

- **El Nido Conveyance System Improvements Project**
 - Four siphons in Merced ID's El Nido Canal System replaced in spring 2022.
 - Designed to increase conveyance capacity at end of system by 40 cfs.
- **LeGrand-Athlone Water District Intertie and Recharge Project (Phase 1)**
 - Currently in design, and working through permitting processes.



Image courtesy: Veronica Adrover/UC Merced

Prop 68 Implementation Planning & Projects Grant Round 1 (Jun 2022 – Jun 2025)

- Grant agreement executed in October 2022.

Component 1: Grant Administration

Component 2: LeGrand-Athlone Water District Intertie Canal - Phase 2

Component 3: Merced Subbasin Integrated Managed Aquifer Recharge Evaluation Tool (MercedMAR)

Component 4: Vander Dussen Subsidence Priority Area Flood-MAR Project

Component 5: Vander Woude Storage Reservoir

Component 6: Filling Data Gaps Identified in Data Gaps Plan

Component 7: Amsterdam Water District Surface Water Conveyance and Recharge Project

Component 8: GSP Project 31: Crocker Dam Modification

Component 9: G Ranch Groundwater Recharge, Habitat Enhancement & Floodplain Expansion Project – Planning & Implementation

~~Component 10: Merquin County Water District (MCWD) Sustainable Yield Management Plan and Plan Implementation~~

Component 11: Buchanan Hollow Mutual Water Company Floodwater Recharge Project

Component 12: Turner Island Water District (TIWD) Water Conservation

Component 13: TIWD Shallow Well Drilling

Image courtesy: Veronica Adrover/UC Merced

Prop 68 Implementation Planning & Projects Grant Round 2

- Application submitted December 2022 for \$18.4M across 7 projects
- DWR received 82 Applications totaling \$780M. Draft award list expected mid-2023

Merced Irrigation-Urban GSA Pilot, Small-Scale Recharge Projects	\$1,850,000 requested; involves investigating, designing, and implementing four types of small-scale recharge projects in collaboration with private landowners. The tasks involve environmental and permitting, siting and design, construction of pilot projects, developing a monitoring plan, and outreach and engagement.
Lone Tree Mutual Water Company Storage and Recharge Reservoir	\$5,308,500 requested; will construct a regulating reservoir and recharge spreading ground. Tasks include environmental compliance, contract services, site preparation and construction of the reservoir and recharge grounds, monitoring, and public outreach.
Merced Subbasin GSA Water Platform Development	\$340,000 requested; will consist of designing a platform and water accounting system including incorporating evapotranspiration data and creating a portal for landowner use. The platform will be enhanced based on user feedback.
Merced Irrigation-Urban GSA Well Registration and Extraction Measurement Program	\$5,134,000 requested; will consist of environmental compliance and design, bidding, and construction of up to 400 flow meters and up to 400 telemetry units throughout MIUGSA. A Well Registration Portal will be developed. The Component also includes stakeholder outreach for landowners interested in installing flow meters and monitoring to identify areas of improvement.
La Paloma Mutual Water Company G Ranch Groundwater Recharge, Habitat Enhancement, and Floodplain Expansion – Phase II (Construction)	\$2,610,000 requested; involves constructing groundwater recharge ponds on the G Ranch property. Tasks involve contract services, construction administration, construction, monitoring, and outreach. Construction will be based on design and environmental compliance previously completed.
La Paloma Mutual Water Company Bear Creek Ranch Groundwater Recharge, Habitat Enhancement, and Floodplain Expansion – Phase I (Planning)	\$750,000 requested; involves planning for the groundwater recharge ponds on Bear Creek Ranch. Tasks include obtaining long-term access agreements, preparing CEQA documentation, acquiring permits, preparing complete design and specifications, monitoring groundwater levels, and conducting public outreach meetings.
Lone Tree Mutual Water Company and Sandy Mush Mutual Water Company Shallow Well Investigation and Construction in the Subsidence Area	\$2,195,000 requested; involves conducting a geotechnical investigation to determine the best locations to drill shallow monitoring and production wells, followed by obtaining access agreements and preparing environmental compliance and permitting documentation. Well drilling tasks include contract services, construction administration, and implementation. Component 8 also includes developing a monitoring plan and outreach.



Public Comment

Image courtesy: Veronica Adrover/UC Merced





Next Steps

Image courtesy: Veronica Adrover/UC Merced



What's coming up next?

- Adjourn to next meeting: expected May 2023

Image courtesy: Veronica Adrover/UC Merced