
GWA
EASTERN SAN JOAQUIN
GROUNDWATER AUTHORITY
GWA Advisory Committee
November 14, 2018

Agenda

EASTERN SAN JOAQUIN GROUNDWATER AUTHORITY

- Approval of October Meeting Minutes
- Projects and Management Actions
  - Workshop Results and Follow Through
  - Project Review
  - Project Portfolios
- Water Quality Thresholds and Monitoring Network
- Monitoring Network and TSS Wells
- December Agenda Items

Projects and Management Actions

Project Locations

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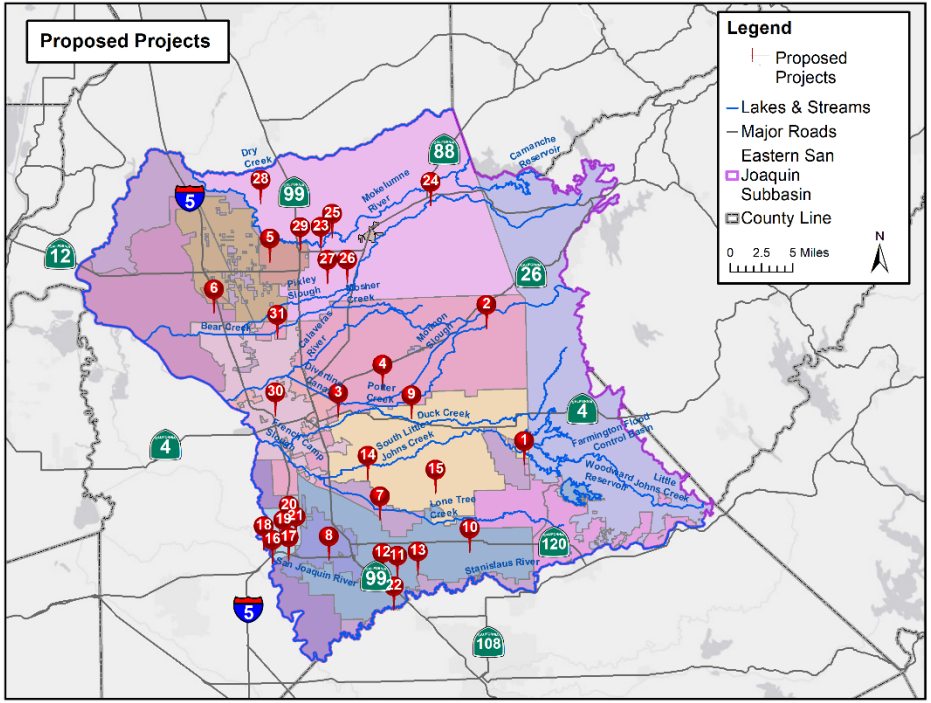

31 Proposed Projects Received To-Date

1 – Farmington Dam Repurpose Project
2 – Lake Grupe In-Lieu Recharge
3 – Raw Water Reliability and Recharge
4 – SW Implementation Expansion
5 – SW Facility Expansion & Delivery Pipeline
6 – White Slough WPCF Expansion
7 – Recycled Water Transfer to Agriculture
8 – Demand Management Measures
9 – Water Transfers to SEWD and CSJWCD
10 – Increase Nick DeGroot SW Deliveries
11 – City of Escalon Wastewater Reuse
12 – South San Joaquin Stormwater Reuse
13 – Pressurization of SSJID Facilities
14 – BNSC Intermodal Facility Recharge Pond
15 – CSJWCD Capital Improvement
16 – Recycled Water Program Expansion
17 – LAS-3 Percolation Basin
18 – Conjunctive Use of GW and SW
19 – UWMP Water Conservation
20 – NPDES Phase 2 MS4 Compliance
21 – Water Meter Improvements
22 – City of Ripon Surface Water Supply
23 – Cal Fed GW Recharge Project
24 – Mokelumne River Loss Study
25 – North System Modernization
26 – PDA Banking
27 – South System Modernization
28 – Tracy Lakes GW Recharge
29 – Winery Recycled Water
30 – Advanced Metering Infrastructure
31 – Mobilizing Recharge Opportunities

Projects Received – Part 1 of 3

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Project #	Project Description	Submitting GSA	Category
1	Farmington Dam Repurpose Project	SEWD	Recharge
2	Lake Grupe In-Lieu Recharge	SEWD	Recharge
3	Raw Water Reliability and Recharge	SEWD	Recharge
4	SW Implementation Expansion	SEWD	SW Supply
5	SW Facility Expansion & Delivery Pipeline	City of Lodi	SW Supply
6	White Slough WPCF Expansion	City of Lodi	Recycling
7	Recycled Water Transfer to Agriculture	City of Manteca	Recycling/Transfers
8	Demand Management Measures	City of Manteca	Conservation
9	Water Transfers to SEWD and CSJWCD	SSJ GSA	Transfers
10	Increase Nick DeGroot SW Deliveries	SSJ GSA	SW Supply
11	City of Escalon Wastewater Reuse	SSJ GSA	Recycling

Highlighted projects included in baseline

Projects Received – Part 2 of 3

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Project #	Project Description	Submitting GSA	Category
12	South San Joaquin Stormwater Reuse	SSJ GSA	Stormwater
13	Pressurization of SSJID Facilities	SSJ GSA	Conservation
14	BNSC Intermodal Facility Recharge Pond	CSJWCD	Recharge
15	CSJWCD Capital Improvement Program	CSJWCD	SW Supply
16	Recycled Water Program Expansion	City of Lathrop	Recycling
~~17~~	~~LAS-3 Percolation Basin~~	~~City of Lathrop~~	~~Recharge~~
18	Conjunctive Use of GW and SW	City of Lathrop	SW Supply
19	City of Lathrop UWMP Water Conservation	City of Lathrop	Conservation
20	NPDES Phase 2 MS4 Compliance Program	City of Lathrop	Stormwater
21	Water Meter Improvements	City of Lathrop	Conservation
22	City of Ripon Surface Water Supply	SSJ GSA	SW Supply

Highlighted projects included in baseline

Projects Received – Part 3 of 3

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Project #	Project Description	Submitting GSA	Category
23	Cal Fed GW Recharge Project	NSJWCD	Recharge
24	Mokelumne River Loss Study	NSJWCD	Accounting
25	North System Modernization	NSJWCD	SW Supply
26	PDA Banking	NSJWCD	SW Supply
27	South System Modernization	NSJWCD	SW Supply
28	Tracy Lakes GW Recharge	NSJWCD	Recharge
29	Winery Recycled Water	NSJWCD	Recycling/Recharge
30	Advanced Metering Infrastructure	City of Stockton	Accounting
31	Mobilizing Recharge Opportunities	San Joaquin County	Recharge

Project 10: Increase Nick DeGroot Water Treatment Plant SW Deliveries

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Submitting GSA: South San Joaquin GSA
Other Participating Agencies: N/A
Project Size: 2,015 AF per year (Escalon)
Project Costs: $8,789,00 Capital Cost; $250,000 Annual O&M
Planning Horizon: 2023

Project Description: SSJID provides drinking water to the cities of Manteca, Lathrop, Tracy, and eventually Escalon. Because the plant is underutilized in its current phase, increasing plant demand for SW will reduce reliance on GW. Two potential projects to increase plant capacity are: construction of turnout facilities to bring SW to City of Escalon (fulfilling their contract entitlements) and to City of Ripon (not currently part of the South County Water Supply Project).

Project 23: Cal Fed Groundwater Recharge Project

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Submitting GSA: North San Joaquin Water Conservation District
Other Participating Agencies: N/A
Project Size: 1,000 AF per year (possible expansion)
Project Costs: $50,000 per year
Planning Horizon: Currently operated on a small scale with plans to expand

Project Description: This project would use an existing CAL FED pumping station to deliver water to vineyards during dormant season for groundwater recharge.

Project 24: Mokelumne River Loss Study

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Submitting GSA: North San Joaquin Water Conservation District
Other Participating Agencies: N/A
Project Size: N/A
Project Costs: $100,000+
Planning Horizon: 2025

Project Description: This study would assess reaches of the Mokelumne River downstream of Camanche Reservoir to better understand and account for losses due to percolation, evaporation, and riparian ET to inform management actions and SGMA basin accounting.

Project 25: North System Modernization

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Submitting GSA: North San Joaquin Water Conservation District
Other Participating Agencies: N/A
Project Size: 4,000-6,000 AF per year
Project Costs: $3-11M Capital Costs; $100,000 Annual O&M
Planning Horizon: 2020-2025

Project Description: This project would repair, upgrade and modernize the North System Pump and Distribution System to facilitate delivery of 4,000 to 6,000 AF per year of SW to farmers in-lieu of GW pumping. Water would come from NSJWCD Permit 10477 supplies, which are available in about 55% of years.

Project 26: PDA Banking

EASTERN SAN JOAQUIN GROUNDWATER AUTHORITY

Submitting GSA: North San Joaquin Water Conservation District
Other Participating Agencies: EBMUD
Project Size: 3,000-6,000 AF dry years; 8,000 AF wet years
Project Costs: $1-2M Capital Costs; $100,000 Annual O&M
Planning Horizon: 2020-2025

Project Description: NSJWCD would obtain additional SW supplies from EBMUD, to deliver to farmers along NSJWCD South System in-lieu of pumping groundwater. EBMUD would receive a banking credit equal to no more than 50% of the recharged water, which could be withdrawn at a future date in the form of pumped groundwater, subject to conditions and an export permit from the County.

Project 27: South System Modernization

EASTERN SAN JOAQUIN GROUNDWATER AUTHORITY

Submitting GSA: North San Joaquin Water Conservation District
Other Participating Agencies: N/A
Project Size: 10,000-12,000 AF
Project Costs: $3-15M Capital Costs; $100,000 Annual O&M (funded)
Planning Horizon: 2018-2023

Project Description: This project would repair, upgrade, and modernize the South System Pump and Distribution System to facilitate delivery of 10,000 to 12,000 AF per year of SW to farmers in-lieu of GW pumping. Water would come from NSJWCD Permit 10477 supplies, which are available in about 55% of years.

Project 28: Tracy Lakes Groundwater Recharge

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Submitting GSA: North San Joaquin Water Conservation District
Other Participating Agencies: N/A
Project Size: 2,000-4,000 AF per year
Project Costs: $2.3M Capital Costs; $80,000 Annual O&M (funded)
Planning Horizon: Operations began in 2018

Project Description: A new pump station on the Mokelumne River pumps water available under Permit 10477 into South Tracy Lake. Some water is allowed to percolate for recharge and other water is diverted by adjacent farmers for irrigation to accomplish in-lieu recharge.

Project 29: Winery Recycled Water

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Submitting GSA: North San Joaquin Water Conservation District
Other Participating Agencies: N/A
Project Size: 500-1,000 AF per year (possible expansion)
Project Costs: $1-2M Capital Costs; $100,000 Annual O&M (funded)
Planning Horizon: 2022-2027

Project Description: This project would blend NSJWCD Permit 10477 water with wastewater from winery(ies), delivering blended water for irrigation to accomplish in-lieu recharge or putting water into recharge ponds to accomplish direct groundwater recharge.

Project 30: Advanced Metering Infrastructure

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Submitting GSA: City of Stockton
Other Participating Agencies: N/A
Project Size: In development
Project Costs: In development
Planning Horizon: To be implemented over next several years

Project Description: This project would apply advanced metering infrastructure to water meters in the City of Stockton Service Area. Improved technology would increase efficiency and decrease costs associated with manual reading. Additional benefits beyond cost savings include improved leak detection and demand-side water conservation.

Project 31: Mobilizing Recharge Opportunities

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Submitting GSA: San Joaquin County
Other Participating Agencies: ESJ GWA
Project Size: In development
Project Costs: In development
Planning Horizon: To be implemented over next several years

Project Description: This project would put in place a framework to quickly mobilize and take advantage of recharge opportunities (e.g., Eight Mile Road ponds, existing storm ponds, lake features, temporary flood easements, etc.) The project would provide access to funding to expedite recharge projects as opportunities arise. Additional governance and budgetary controls would need to be developed.

Project and Management Actions – Workshop Results and Follow Through

Question 1: Completeness of Projects List

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Is this preliminary project list complete as a starting point for developing the GSP implementation plan? Somewhat (52%), Yes (26%), No (22%)

What's missing?

- ***Discussion of NSJWCD projects***
- Discussion of projects in baseline
- Basin-scale fallowed lands program
- More stormwater capture and grey water uses
- Projects that provide drinkable water to contaminated water users
- Water banking programs
- Hybrid of proposed projects

Question 2: Range of Project Types

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Does this list reflect a wide enough range of project types to be considered for the implementation plan? Yes (56%), Somewhat (32%), No (12%)

Additional suggested projects include:

- Projects upstream of overdraft areas rather than downstream solutions
- Direct benefits to areas of depression
- Conservation projects (farm improvements demonstration)
- Recharge ponds and field flooding
- Large storage projects
- Water rights modifications

Question 3: Consistency with Regional Values

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Are the projects in the preliminary list consistent with regional groundwater values? Somewhat (52%), Yes (44%), No (4%)

Why not?

- ***Feasibility and affordability concerns***
- Not enough information provided
- Heavy reliance on SW supply projects may increase vulnerability

Question 4: Addressing All 6 Sustainability Indicators

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Are there any sustainability indicators that are not adequately addressed through the preliminary projects list? No (41%), Somewhat (33%), Yes (26%)

Which sustainability indicators are not addressed?

- ***Water Quality***
- Depletion of interconnected surface waters and GDEs

Question 5: Reducing Demand or Increasing Supply

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Which do you feel is more important to achieving sustainability, reducing total demand or increasing surface water supply to meet projected demands? Equally Important (42%), Increasing SW Supply (39%), Reducing Demand (19%)

What considerations should be made?

- Affordability
- Unpredictable variation in hydrology (drought) and regulatory conditions
- Projected future demands

Question 6: Significant Concerns on Any Projects

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Are there any projects in the preliminary list with which you have significant concerns? No (44%), Yes (37%), Somewhat (19%)

Which projects?

- High cost/volume projects
- Recycled water programs
- Projects that rely on landowner expenditure
- Projects that rely on additional surface water supplies from Calaveras River
- Localized projects

Question 7: Fatal Flaws

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Are there any projects on the preliminary list with “fatal flaws you are aware of that would preclude them from being able to be implemented within the SGMA timeframe”? Somewhat (38.5%), No (38.5%), Yes (23%)

Which projects?

- Those with higher costs
- Projects with funding, costs, permitting challenges
- Large scale projects (but these would make a good longer-term projects)

Question 8: Small or Large Projects?

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Should the GSP implementation plan include a small number of large projects or a large number of small/medium projects? Large number of small/medium projects (87.5%), Small number of large-sized projects (12.5%)

Others?

- Include a mix of both
- Whichever is most cost-effective and feasible
- Prioritize projects with biggest GW gain and regional benefit

*General consensus that costs, location, feasibility, and benefit are more important that size. Overall support for a mix of sizes.

Question 9: Targeting DAC Benefits

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Should the implementation plan include projects targeting disadvantaged communities (DAC) benefits even if they are not the most cost-effective options for overall regional sustainability? Yes (60%), No (40%)

Comments:

- ***Projects should be developed to align with grant funding***
- This is more important for water quality benefits
- Project accommodation to deepen wells or provide alternate water sources would be beneficial

Follow Through

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Based on the feedback received in last month's polling activity, projects will be packaged into preliminary project portfolios.

Project Review

Projects and Management Actions Will Be Used to Meet Overdraft

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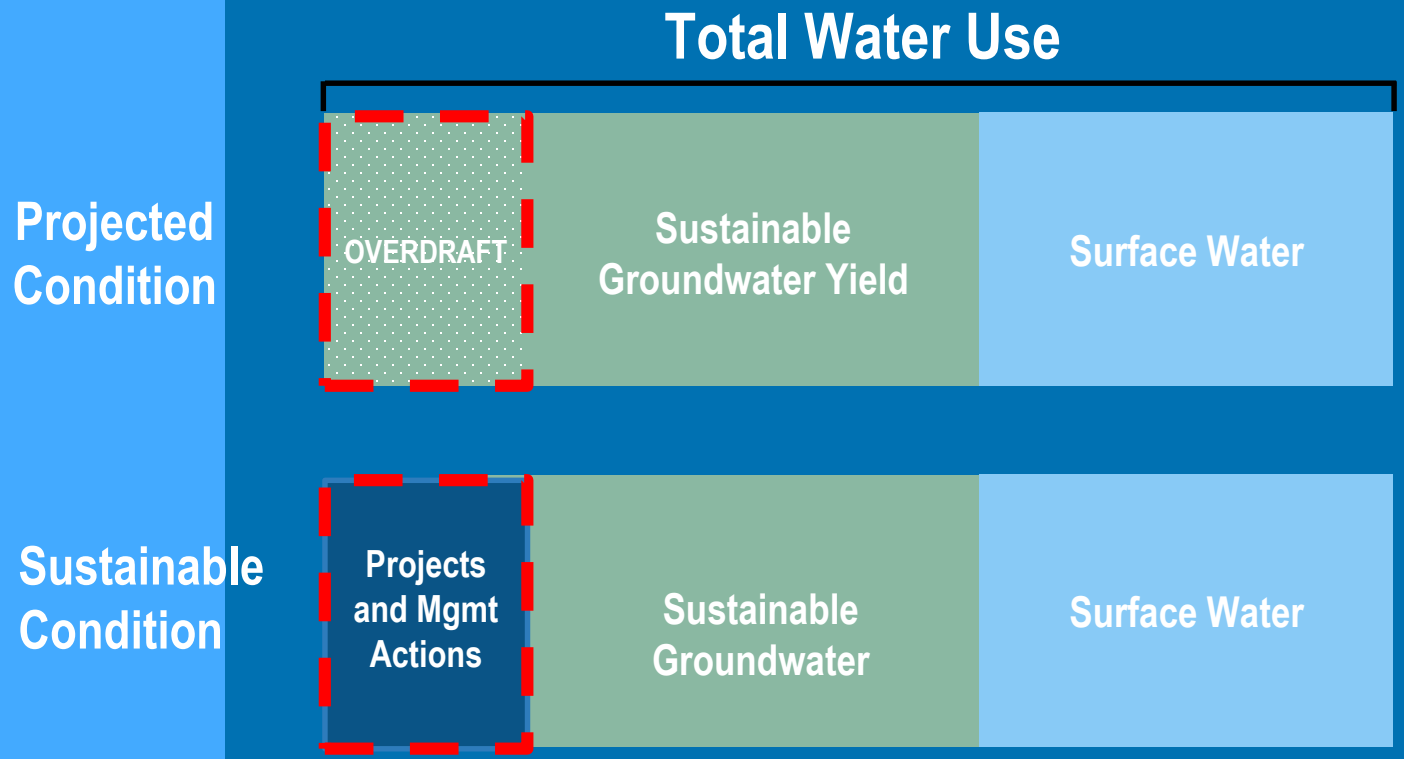

Pathway to Project Implementation

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★ **We are here**

STEP 1

Approaches
- Regional-Scale Projects
- Subregional-Scale Projects
- GSA-Scale Projects

Project OR portfolio of projects that provide regional benefit – e.g., one large transfer OR a series of small, geographically diverse projects (or a combination)

STEP 2

Funding
- Regional Funding
- GSA Funding

Start at regional scale

STEP 3

Implementation
- Regional JPA
- Subregion GSAs

Project/Portfolio Development Process

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1. Assess Projects
2. Identify portfolio themes that meet need
3. Evaluate and compare projects
4. Refine/optimize selected portfolios
5. Undesirable Results
   - Next steps = GSA-scale projects

Project Review

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Projects were reviewed using the criteria developed by the Advisory Committee:

1. Implementability
2. Location / Proximity to Area of Overdraft
3. Cost per Volume Water Savings
4. Environmental Benefit / Impact
5. Disadvantaged Community Benefit
6. Water Quality Impact (Positive or Negative)

Project Review: Implementability

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Each project was assessed in the context of possible implementation challenges:

- Technical complexity
- Regulatory complexity
- Institutional complexity
- Public outreach & acceptance

Project Review: Implementability

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Scoring Guidance:

- 1 = Surmountable but major issues in all four categories
- 2 = Issues in three categories
- 3 = Issues in two categories
- 4 = Issue in one category
- 5 = No known issues in any category

Project Review: Location

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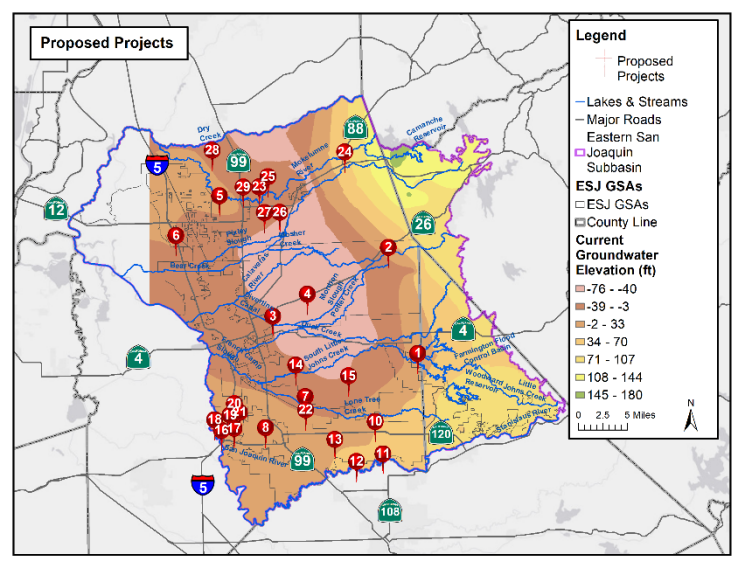
- Region(s) of beneficial water savings were identified for each project
- Project locations were compared to the Q4 2017 groundwater elevations



Project Review: Location

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Scoring Guidance:

- 1 = Project benefits area with no known groundwater elevation issues
- 2 = Majority of benefit in area with no known elevation issues
- 3 = Project benefits both areas with and without known elevation issues
- 4 = Majority of benefits in area with known elevation issues
- 5 = Project located above cone of depression

Project Review: Cost per Volume Water Savings

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Cost per volume was calculated for each project using available estimates for:

- Capital costs
- Annual operations & maintenance costs
- Project life
- Annual water savings

Cost estimates ranged from $5/AF to $1500/AF.

Project Review: Cost per Volume Water Savings

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Scoring Guidance:

- 1 = > $500/AF
- 2 = ≤ $500/AF
- 3 = ≤ $200/AF
- 4 = ≤ $50/AF
- 5 = ≤ $10/AF

Project Review: Environmental Benefit / Impact

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Environmental impacts, both positive and negative, were considered for each project based on:

- Proposed location
- Environmental conditions in the area
- Construction requirements for project
- Whether potential adverse impacts could be mitigated
- Any ecosystem or other environmental benefits resulting from the project

Project Review: Environmental Benefit / Impact

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Scoring Guidance:

- 1 = Potential significant unavoidable adverse environmental impacts
- 2 = Potential significant adverse environmental impacts that could be mitigated to less than significant
- 3 = Potential environmental impacts less than significant
- 4 = No identified adverse environmental impacts
- 5 = Beneficial environmental impacts with no adverse effects

Project Review: Disadvantaged Community Benefit

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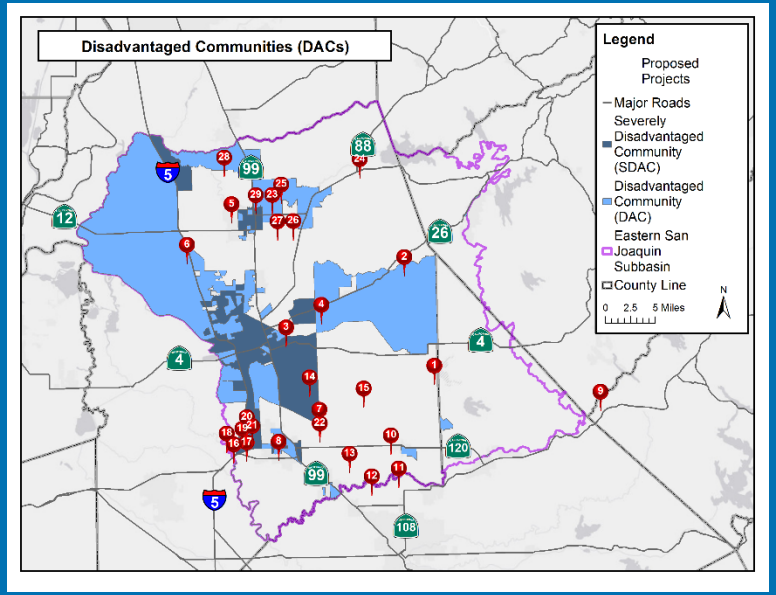
- Many projects would at least partially benefit DAC regions, while others may only provide indirect benefits to these areas



Project Review: Disadvantaged Community Benefit

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Scoring Guidance:

- 1 = Indirect benefits to DAC areas
- 2 = Majority of benefit in areas without DACs
- 3 = Benefit in areas with and without DACs
- 4 = Majority of benefit in areas with DACs
- 5 = All benefits directly accrue to DACs

Project Review: Water Quality

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- Potential impacts, both positive and negative, on water quality were assessed for each project
- Effects that may threaten water quality thresholds were given particular consideration
- Compounds analyzed using the Water Board's GeoTracker tool included: TDS, gas & diesel, synthetic organics, and other constituents of concern

Note: Projects were screened to avoid areas identified as having potential to create or worsen a plume

Project Review: Water Quality

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Scoring Guidance:

- 1 = Negatively impacts basin water quality and threatens thresholds
- 2 = Negatively impacts water quality but does not threaten thresholds
- 3 = No change in water quality
- 4 = Improves water quality in an area with no known water quality issues
- 5 = Improves water quality in an area of known water quality issues

Project Portfolios

Preliminary Project Portfolios

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Preliminary portfolios have been developed to package projects most in line with these criteria:

- Cost-Effectiveness
- Regional Diversity
- Minimized Infrastructure
- Environmental Benefit
- DAC Benefit
- Impact on Cone of Depression
- Fast Implementation
- Small-Volume Projects
- Large-Volume Projects

Water Quality Thresholds and Monitoring Network

Salinity Meeting Recap

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- GSAs impacted by water quality issues have developed an initial approach to establishing thresholds for salinity (City of Manteca, City of Stockton, City of Lodi, City of Lathrop, Cal Water, and San Joaquin County)
- The Advisory Committee will discuss the outcomes of this meeting and make a recommendation to the Board

Salinity Meeting Recap

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Objective #1: Discuss Minimum Threshold for Salinity

Objective #2: Establish Monitoring Well Network

Minimum Thresholds

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Recommended Approach to Establish a Minimum Threshold Values for Salinity:

600 mg/L

A single 600 mg/L threshold basin-wide will be protective of agricultural uses and urban landscaping tolerances

**reflects input from agricultural interests on the Groundwater Sustainability Workgroup*

TDS Values Compared to Proposed Threshold

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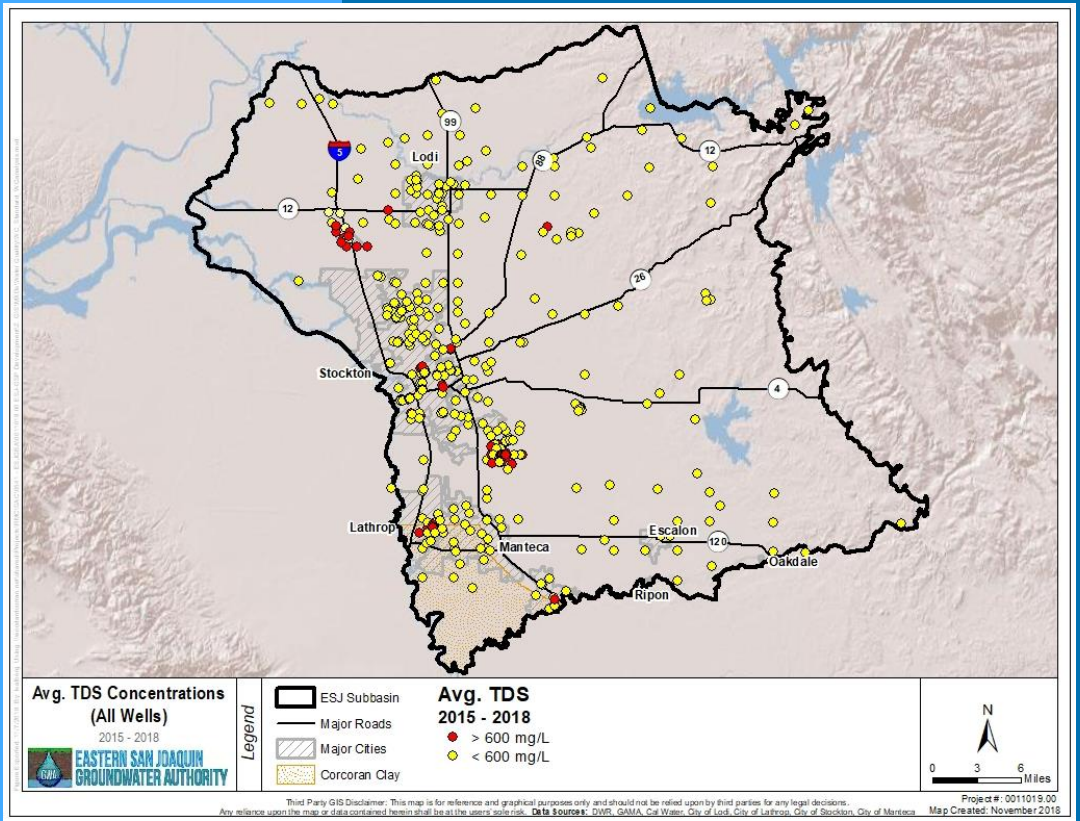

Minimum Threshold – 600 mg/L

Note: Wells currently >600 mg/L are not considered undesirable result

Meeting Outcomes – Monitoring Network

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- Focus will move away from the concept of monitoring a salinity “front”
- GSAs identified wells for inclusion in the water quality monitoring network
- Network will emphasize monitoring in areas that do not currently have degraded water quality

Monitoring Network

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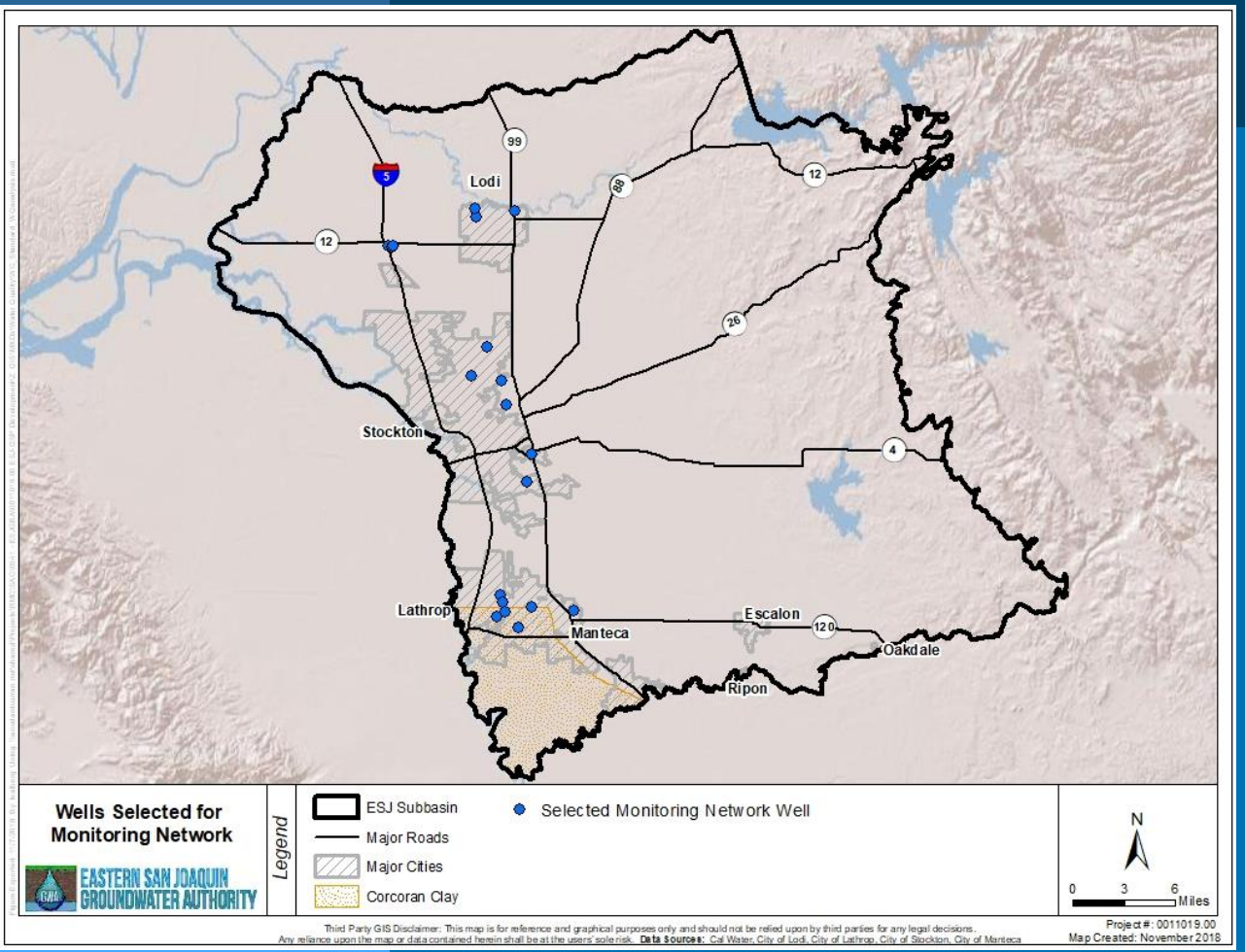
Network Composed of Wells from:

- Cal Water
- City of Lodi
- City of Lathrop
- City of Manteca
- City of Stockton



Selected Monitoring Network Wells

Monitoring Network and TSS Wells

Technical Support Services (TSS) Funding Update

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- *Review:* TSS funding will provide funding to construct monitoring wells in areas where data gaps exist
- The next step in the application process is to select ~3 wells to propose for funding
- Today we will discuss areas where data gaps exist and locations to prioritize for TSS funding

Purpose of Analysis

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1) Integrate datasets
2) Identify data gaps in monitoring network
3) Prioritize data gaps for TSS funding application

Integrating Datasets

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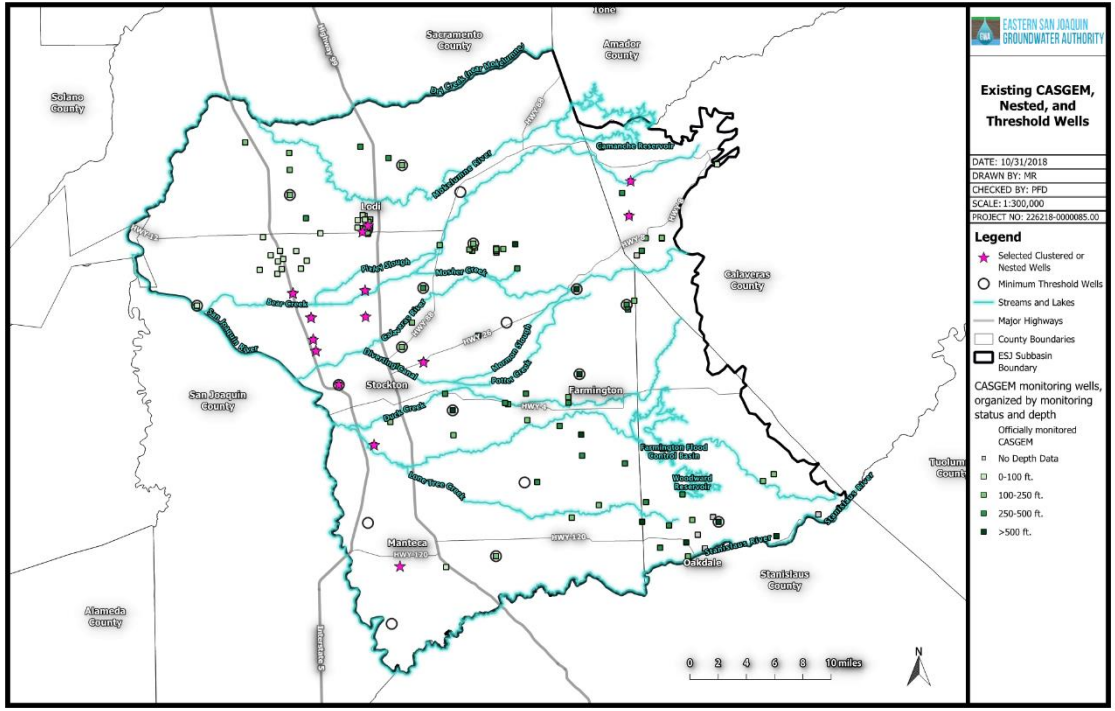

Integrating datasets allows us to leverage existing monitoring wells

- CASGEM wells
- Minimum Threshold wells
- USGS multi-completion wells
- Other multi-completion wells

SGMA Monitoring Well Requirements

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In submitting data, certain well characteristics must be known: latitude/longitude coordinates, ground surface elevation, total well completion depth, and screened interval depth(s)

Each groundwater level measurement must:

- Be made under **static conditions**
- Include the **distance from ground surface to reference point** (access tube, mark on casing, etc.)
- Include the **distance from reference point to water surface**
- Include the **current use** of the well (domestic, irrigation, industrial, municipal, monitoring)
- Be provided in **electronic format**

Identifying Data Gaps

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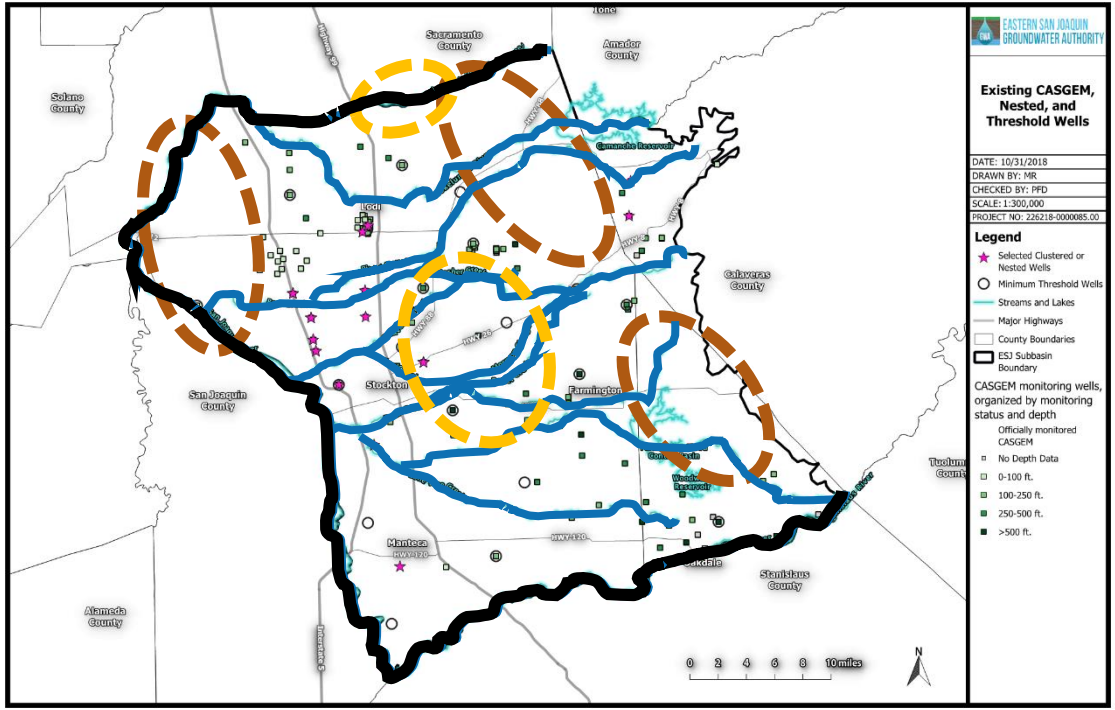

What is considered a data gap?

1) Areas with limited data
2) Areas of high data needs
   - Near streams
   - Near boundaries
   - Near pumping depressions
3) Areas without multi-completion wells

Filling the Data Gaps

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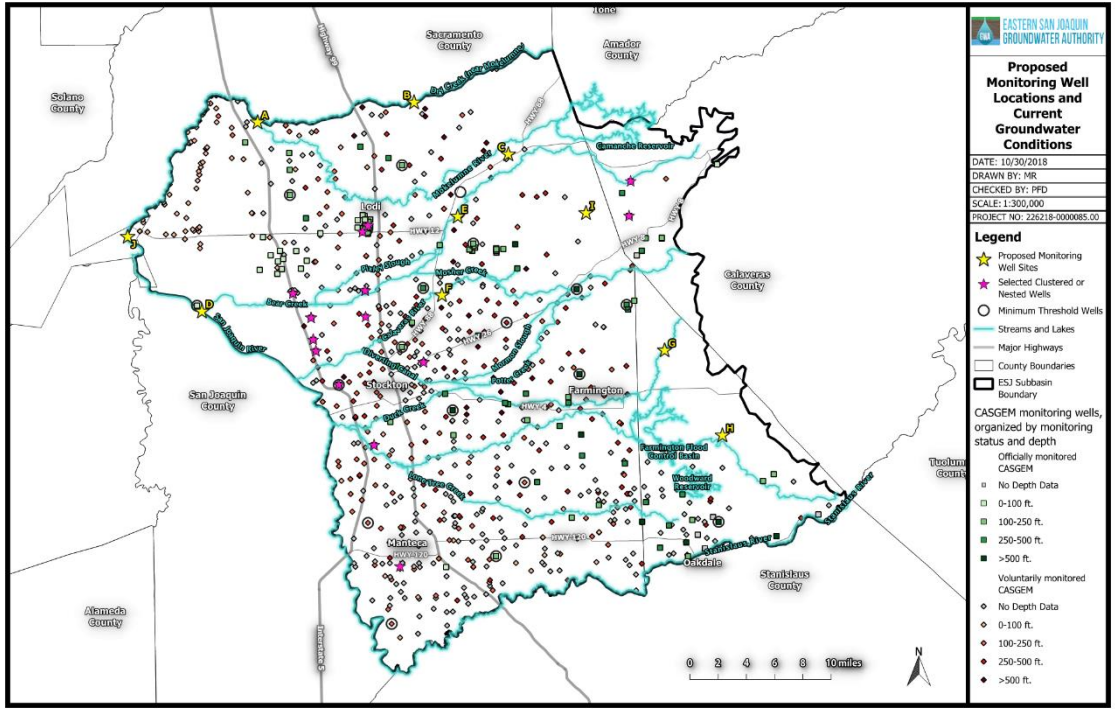
★: **Proposed Monitoring Well Sites**



Data gaps can be filled by:

1) Leveraging existing wells
2) Constructing new wells
   - TSS funding
   - Future grant funding
   - GSA funding

3 Locations Have Been Identified as Priorities for TSS Wells

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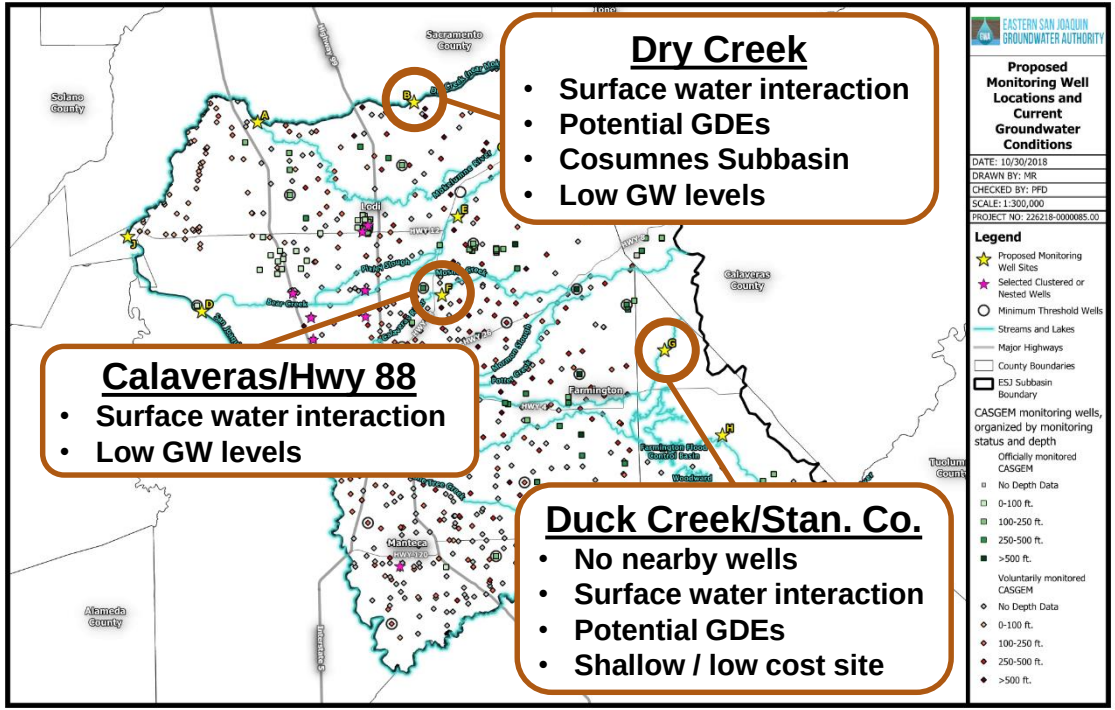

These locations are recommended based on their ability to assess sustainability and support future projects

Next Steps

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- Action Item: Recommend to the Board to authorize the Basin Coordinator (Brandon Nakagawa) to submit a TSS application for the three identified well locations

December Agenda Items

December Agenda Items

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- Projects and Management Actions
- Monitoring Networks


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November 14, 2018

Backup Slides

3 Recommended Locations

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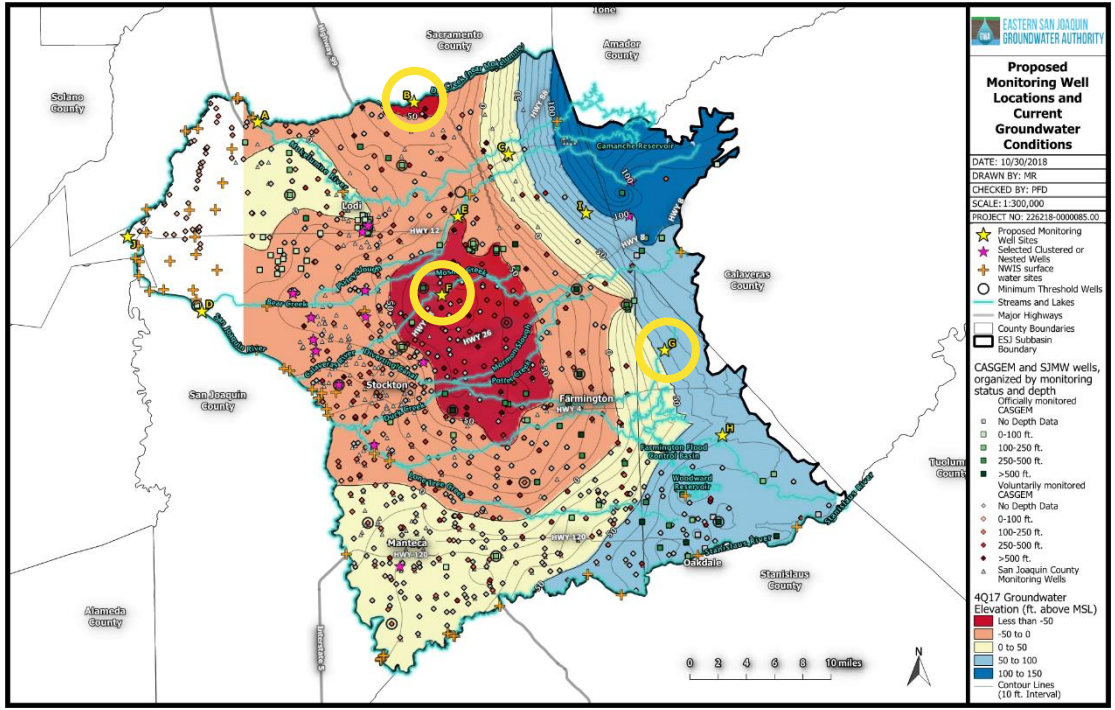
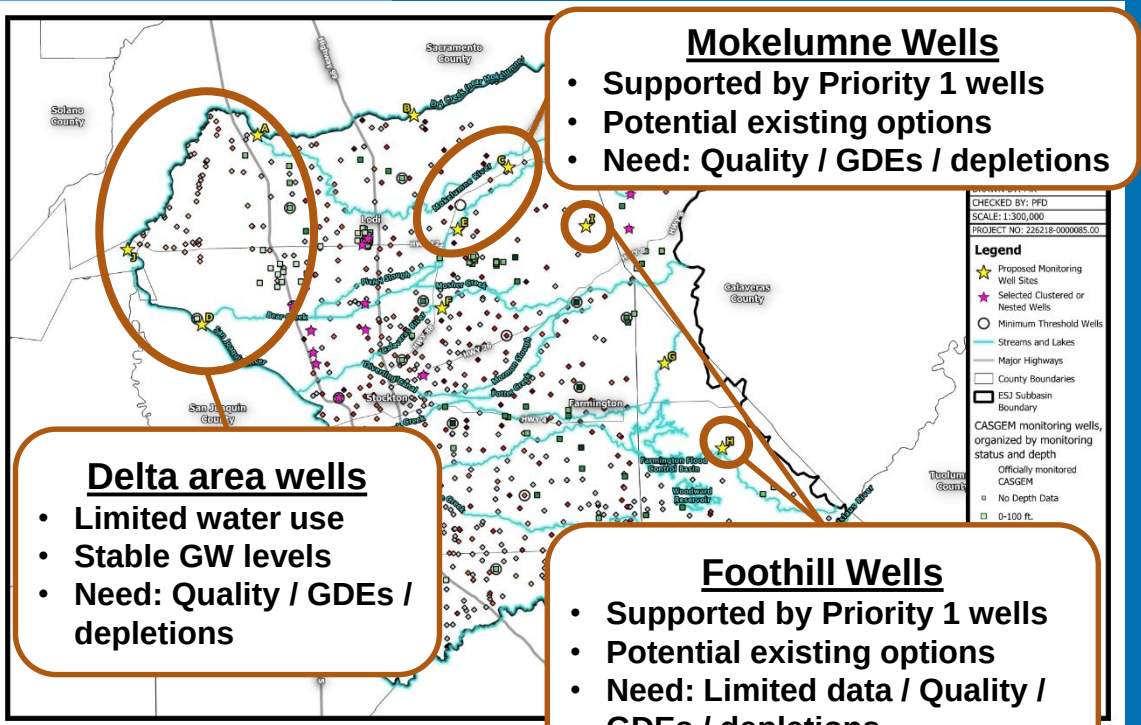


Selected sites address areas with

- Low groundwater levels
- “Straight contours,” indicating insufficient data

Second Tier of Priority Monitoring Well Locations

EASTERN SAN JOAQUIN GROUNDWATER AUTHORITY



Mokelumne Wells

- Supported by Priority 1 wells
- Potential existing options
- Need: Quality / GDEs / depletions

Delta area wells

- Limited water use
- Stable GW levels
- Need: Quality / GDEs / depletions

Foothill Wells

- Supported by Priority 1 wells
- Potential existing options
- Need: Limited data / Quality / GDEs / depletions

The second tier of monitoring well locations will be refined through the GSP process

Select Wells – City of Lodi

EASTERN SAN JOAQUIN GROUNDWATER AUTHORITY

Well Name	Well Depth (ft.)	3-Year TDS Average (2015 – 2018) (mg/L)
#5	230	135
#7	422	120
#11R	465	120

Select Wells – City of Lathrop

EASTERN SAN JOAQUIN GROUNDWATER AUTHORITY

Well Name	Well Depth (ft.)	3-Year TDS Average (2015 – 2018) (mg/L)
#7	300	316.25
#8	273	370
#9	300	321.25
#10	275	325

Select Wells – City of Manteca

EASTERN SAN JOAQUIN GROUNDWATER AUTHORITY

Well Name	Well Screens (ft.)	3-Year TDS Average (2015 – 2018) (mg/L)
#15	81 – 181	300
#16	80 – 180	0
#17	97 - 197	0

Select Wells – City of Stockton

EASTERN SAN JOAQUIN GROUNDWATER AUTHORITY

Well Name	Screen Depths (ft.)	3-Year TDS Average (2015 – 2018) (mg/L)
10R	177 – 277	322
28	178 – 278	350
SSS8	177 - 277	370

Select Wells – Cal Water

EASTERN SAN JOAQUIN GROUNDWATER AUTHORITY

Well Name	Screen Depths (ft.)	3-Year TDS Average (2015 – 2018) (mg/L)
119-075-01	176 – 276	300
119-059-01	169 – 269	250
119-069-01	180 - 280	190