

# Projects and Management Actions

Santa Ynez Basin - EMA

July 22, 2021



# Topics of Discussion

- Discuss recommendations for projects and management actions to address the estimated annual 1,800 AFY deficit.
- Identify the correct list, sequencing, and implementation schedule.

# Projects and Management Actions - SGMA

## §354.44 Projects and Management Actions

(a) Each Plan shall include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.

(c) Projects and management actions shall be supported by best available information and best available science.

(d) An Agency shall take into account the level of uncertainty associated with the basin setting when developing projects or management actions.

# THE PROJECTS AND MANAGEMENT ACTIONS ARE DESIGNED TO ACHIEVE A NUMBER OF OUTCOMES INCLUDING:

- Achieve EMA sustainability within 20 years of plan adoption.
- Develop projects and management actions that benefit all uses and users of groundwater.
- Develop funding for GSA operation. Funds will also be used for future EMA monitoring, and the implementation of projects and management actions that are identified by the GSA to be appropriate.
- Provide controls and incentives to manage groundwater pumping within limits so that the EMA is operated within its sustainable yield on a long-term basis.

# Tiered Implementation Approach

- Implement initial management actions immediately after submittal of the GSP. Monitor EMA groundwater conditions and consider increasingly intensive management actions if SMC's approach minimum thresholds and / or undesirable results are observed based on established criteria.

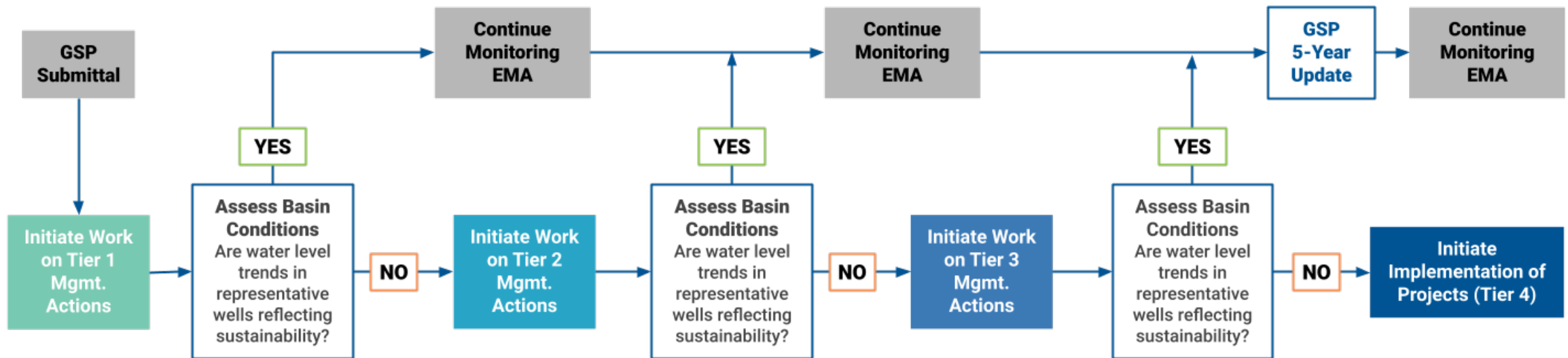
**Tier 1** – Initiate Work within 1-Year of GSP Submittal

**Tier 2** – Initiate Work within 3-Years of GSP Submittal

**Tier 3** – Initiate Work within 5-Years of GSP Submittal (if necessary)

**Tier 4** – Projects considered for implementation if lower tiered management actions are proving insufficient.

# Implementation Sequence



# Tier 1 – Initiate w/in 1-yr of GSP Submittal

## ADDRESS DATA GAPS

- Expand Monitoring Well Network in the EMA to Increase Spatial Coverage and Well Density.
- Perform Video Surveys on Wells in the Representative Well Network to Confirm Well Construction.
- Install Shallow Piezometers in Alamo Pintado Creek and Zanja de Cota Creek within Groundwater Dependent Ecosystem (GDE) Area.
- Review/Update Water Usage Factors and Crop Acreages and Update Water Budget.
- Survey and Confirm Potential GDEs in the EMA.

# Tier 1 – Initiate w/in 1-yr of GSP Submittal

## GROUNDWATER PUMPING FEE PROGRAM

- Develop funding for GSA operation. Funds will also be used for future EMA monitoring, and the implementation of projects and management actions that are identified by the GSA to be appropriate. The following potential fee structures may be considered:
  - Per Parcel Fee.
  - Parcel Fee and Groundwater Extraction Based Fee.
  - Parcel Tax.
  - Fee on Measured Groundwater Extraction.
  - Fee on Estimated Groundwater Extraction.
  - Member Agency Funding.



# Tier 1 – Initiate w/in 1-yr of GSP Submittal

## WELL REGISTRATION AND METER INSTALLATION PROGRAM

- The measurement alternatives and data processing methods to be evaluated may include the following:
  - Utilization of Power Records to Correlate Energy Usage with Volume of Water Pumped.
  - Conventional Mechanical or Magnetic Flow Meters.
  - Smart Meter Technology.
- To verify that the volume of groundwater pumped from domestic wells is accurately accounted for in the EMA water budget estimates, the GSA may develop a system for de *Minimis* pumpers to measure and certify what they extract.

# Tier 1 – Initiate w/in 1-yr of GSP Submittal

## WATER USE EFFICIENCY PROGRAMS

- Enhanced efficient irrigation / best management practices.
- Irrigation audits and delivery of technical support for optimizing water use.
- Development of new weather stations and automated data for landowners using frost protection.
- Conversion to non-water intensive methods for frost protection.
- Increased use of soil amendments (organic compost) to improve health of soils, plant health, and reduce water use.
- More optimal irrigation practices by monitoring crop water use with soil and plant monitoring devices and tie monitoring data to evapotranspiration (ET) estimates.
- Conversion from high water demand crops to lower water demand crops.
- Use satellite spectral / remote sensing data to refine irrigation practices.

GSA may collaborate with other entities including the Cachuma Resource Conservation District (CRCD), USDA NRCS Conservation Technical Assistance Program (CTA), and the CalPoly Irrigation Training and Research Center (ITRC).  
Water Use Efficiency Programs go “hand-in-hand” with the well metering program.

# Tier 1 – Initiate w/in 1-Year of GSP Submittal

TIER 1 MANAGEMENT ACTIONS	TIER LEVEL	REQUIRED PERMITS	PUMPING REDUCTION OUTCOME RELIABILITY	ESTIMATED IMPLEMENTATION COST	BENEFIT : COST RATIO
<b>ADDRESS DATA GAPS</b>					
Expand / Infill Monitoring Well Network	1	SB County, if new well	N/A	\$20,000 - \$40,000	High
Perform Video Surveys in Representative Wells to Confirm Well Construction	1	None	N/A	\$75,000 - \$125,000	High
Install Shallow Piezometers in Alamo Pintado Creek & Zanja de Cota Creek GDE Area	1	SB County, CDFW	N/A	\$50,000 - \$100,000	High
Review / Update Water Usage Factors & Crop Acreages and Update Water Budget	1	None	N/A	\$20,000 - \$40,000	High
Survey and Investigate Potential Groundwater Dependent Ecosystems in the EMA	1	None	N/A	\$10,000 - \$30,000	High
<b>GROUNDWATER PUMPING FEE PROGRAM</b>	1	Prop 26 / 218	Moderately Reliable	\$100,000 - \$200,000	Moderate - High
<b>WELL REGISTRATION AND METER INSTALLATION PROGRAM</b>	1	None	Moderately Reliable	\$75,000 - \$150,000	Moderate - High
<b>WATER USE EFFICIENCY PROGRAMS</b>	1	None	Moderately Reliable	\$50,000 - \$125,000	Moderate - High

# Tier 1 PMA – Objectives and Benefits

## Groundwater Pumping Fee Program

- The primary purpose of the program will be to provide a source of funding for GSA operations and EMA future monitoring. Funding may also be used for the development and implementation of management actions and potentially future projects.
- In 2018, there was an estimated 7,329 acres of irrigated cropland in the EMA with a corresponding water demand of approximately 14,545 AFY. Assuming a groundwater pumping fee program would result in a 5% reduction in EMA-wide agricultural pumping on an annual basis, the resulting benefit would be approximately 725 AFY.

# Tier 1 PMA – Objectives and Benefits

- Well Registration and Meter Installation Program
  - Studies have shown that the installation of meters on wells can directly result in reduced groundwater pumping by 10% or more. Assuming the meter installation program achieves 5% reduction in pumping, the resulting benefit would be approximately 725 AFY.
- Water Use Efficiency Programs
  - The implementation of water use efficiency and best management measures have been shown to reduce water usage by up to 20% or more. Assuming EMA-wide implementation of these programs achieves a 10% reduction in pumping, the resulting benefit would be approximately 1,450 AFY.

# Tier 2 – Initiate w/in 3-yrs of GSP Submittal

## VOLUNTARY CONVERSION AND FALLOWING PROGRAMS

- The initial phase would be to develop a program framework to address the following:
  - Guidelines for maintaining water rights on land that is temporarily fallowed.
  - Development of a framework for incentivizing landowners to voluntarily fallow.
  - Develop and implement an incentive framework for conversion from irrigated agriculture to dry land farming.
  - Evaluation of future land use alternatives.
  - Insure avoidance of unintended consequences from unmanaged fallowed land.
  - Identification of land restoration goals.
  - Identify land management, inspection, and enforcement procedures.
  - Consider programmatic and/or project-based CEQA review.

# Tier 2 – Initiate w/in 3-Years of GSP Submittal

TIER 2 MANAGEMENT ACTIONS	TIER LEVEL	REQUIRED PERMITS	PUMPING REDUCTION OUTCOME RELIABILITY	ESTIMATED IMPLEMENTATION COST	BENEFIT : COST RATIO
VOLUNTARY CONVERSION AND FOLLOWING PROGRAMS	2	None	Highly Reliable	\$75,000 - \$150,000	Moderate - High

# Tier 2 PMA – Objectives and Benefits

## Voluntary Conversion and Fallowing Programs

- In 2018, there was an estimated 7,329 acres of irrigated cropland in the EMA with a corresponding water demand of approximately 14,545 AFY. A voluntary conversion or fallowing program involving 10% of the irrigated cropland would result in a benefit of approximately 1,450 AFY.



# Tier 3 – Initiate w/in 5-yrs of GSP Submittal If Necessary

## GROUNDWATER BASE PUMPING ALLOCATION (BPA) PROGRAM

- Per SGMA, any limitation on extractions by the GSA “shall not be construed to be a final determination of rights to extract groundwater from the basin or any portion of the basin” (CWC, Section 10726.4(a)(2)).
- Supplemental conditions may be placed on new wells/production.
- Groundwater Base Pumping Allocation (BPA) Program may include the following general components:
  - Re-estimation of the EMA sustainable yield, on a periodic basis,
  - Determination of pumping allocation amounts (i.e. groundwater extraction credits) for each pumper.
  - Pumping allocation reduction recommendations over the implementation period to reach the estimated sustainable yield by 2042.

# Tier 3 – Initiate w/in 5-yrs of GSP Submittal If Necessary

## GROUNDWATER EXTRACTION CREDIT MARKET & TRADING PROGRAM

- Groundwater Extraction Credit (GEC) Market and Trading Program to provide pumpers increased flexibility in utilizing their annual allocations.
- Enable voluntary temporary and permanent transfer of allocations between parties, through an exchange of GEC.
- Prevent unintended consequences and potential gaming of the system.
- Program may include spatial limitations.

# Tier 3 – Initiate w/in 5-Years of GSP Submittal if Necessary

TIER 3 MANAGEMENT ACTIONS	TIER LEVEL	REQUIRED PERMITS	PUMPING REDUCTION OUTCOME RELIABILITY	ESTIMATED IMPLEMENTATION COST	BENEFIT : COST RATIO
GROUNDWATER BASE PUMPING ALLOCATION PROGRAM	3	None	Highly Reliable	\$75,000 - \$150,000	Moderate - High
GROUNDWATER EXTRACTION CREDIT MARKETING & TRADING PROGRAM	3	None	Highly Reliable	\$150,000 - \$200,000	Moderate - High

# Tier 4 – Projects (only if Necessary)

- To Be Considered For Implementation Under Scenarios In Which Lower Tiered PMA's Are Proving Insufficient.
  - Distributed Storm Water Managed Aquifer Recharge (DSW-MAR) Basins.
  - WWTF Recycled Water & Reuse In-lieu Of GW Pumping Or Indirect Potable Reuse (City of Solvang, Los Olivos CSD, Santa Ynez CSD, Santa Ynez Band of Chumash Indians).
  - Precipitation Enhancement Program.
  - Conjunctive Use - Managed Aquifer Recharge (MAR) Projects Using Imported Water.
  - In-lieu Recharge Projects To Deliver Unused And Surplus Imported Water To Offset Groundwater Extractions.
  - Aquifer Storage & Recovery Projects.
- GSA has no near-term plans to initiate construction of any specific project, for the purposes of achieving EMA sustainability. There may be interest in proceeding with the study, planning, preliminary design / engineering, and permitting phases for a limited number of projects that are identified by the GSA for potential future consideration.

# TIER 4 – Projects (only if necessary)

TIER 4 PMA - NON - PRIORITY PROJECTS	TIER LEVEL	REQUIRED PERMITS	PUMPING REDUCTION OUTCOME RELIABILITY	ESTIMATED IMPLEMENTATION COST	BENEFIT : COST RATIO
DISTRIBUTED STORM WATER MANAGED AQUIFER RECHARGE (DSW-MAR) BASINS (IN-CHANNEL & OFF-STREAM BASINS)	4	SB County, USACOE, DWR, CA F&W, CEQA	Highly Variable	>1,000,000	Low - Moderate
WWTF RECYCLED WATER & REUSE IN-LIEU OF GW PUMPING OR INDIRECT POTABLE REUSE ( CITY OF SOLVANG, LOS OLIVOS CSD, SYCSD, SANTA YNEZ CSD, SANTA YNEZ BAND OF CHUMASH INDIANS)	4	SB County, Waterboard, DWR, ACPB, CEQA	Moderately Reliable	>\$5,000,000	Low
PRECIPITATION ENHANCEMENT PROGRAM	4	SB County, CEQA	Highly Variable	>\$200,000	Moderate
CONJUNCTIVE USE - MANAGED AQUIFER RECHARGE (MAR) PROJECTS USING IMPORTED WATER	4	SB County, Waterboard, DWR, CEQA	Moderately Reliable	>\$1,000,000	Low - Moderate
IN-LIEU RECHARGE PROJECTS TO DELIVER UNUSED AND SURPLUS IMPORTED WATER TO OFFSET GROUNDWATER EXTRACTIONS	4	SB County, DWR, Waterboard, USACOE, CA F&W, DOD, CEQA	Highly Variable	>\$5,000,000	Low - Moderate
AQUIFER STORAGE & RECOVERY PROJECTS	4	SB County, Waterboard, DWR, CEQA	Highly Variable	>\$5,000,000	Low - Moderate

# Questions and Discussion

Thank you!

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