San Mateo Plain Groundwater Basin Assessment

Stakeholder Workshop #9

12 JULY 2018

COUNTY OF SAN MATEO
HEALTH SYSTEM

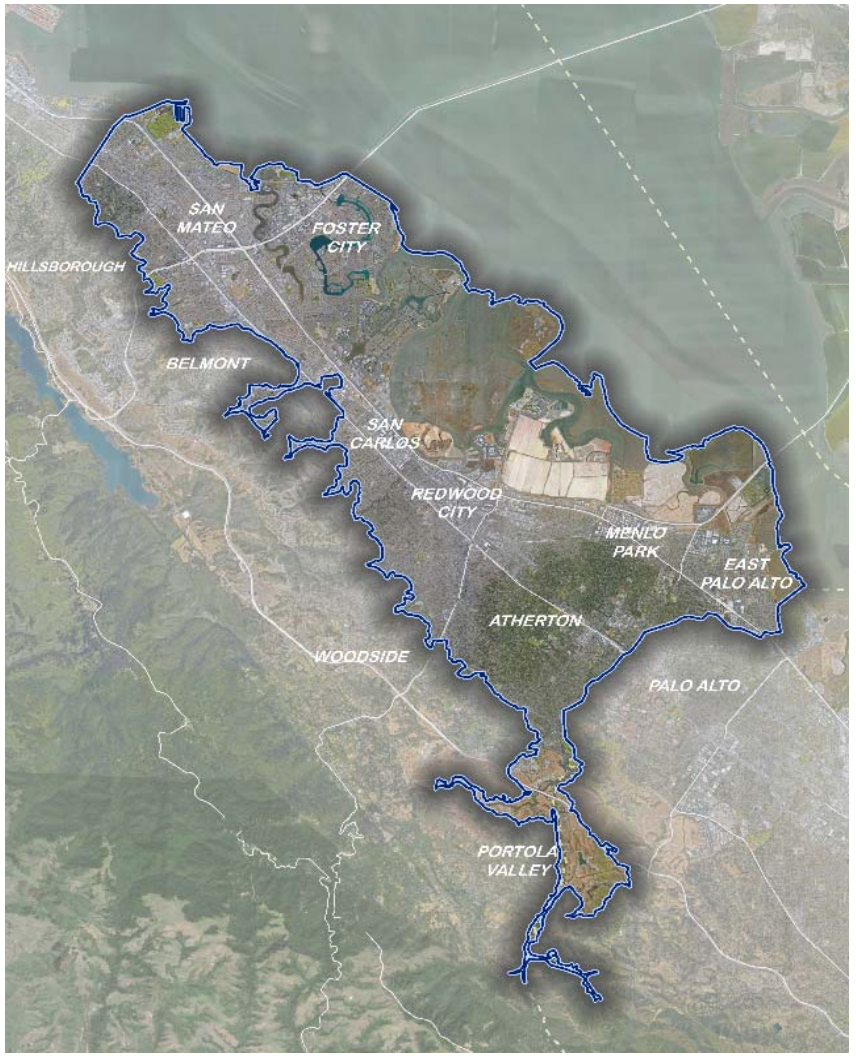
TODD GROUNDWATER

eki environment & water

HYDROFOCUS INC
Solutions for Land and Water Resources

MEETING OVERVIEW

- Introductions
- Project Overview & Results
- Project Discussion
- Project Wrap-Up
- CASGEM/SGMA Update



SAN MATEO PLAIN GROUNDWATER BASIN ASSESSMENT – FUNDED THROUGH MEASURE K AND OFFICE OF SUSTAINABILITY

- Project Objectives:
  - Increase Public Knowledge
  - Evaluate Hydrogeologic and Groundwater Conditions
  - Evaluate Risk of Undesirable Results
  - Potential Groundwater Management Strategies

SUPPORTED BY MEASURE K
LOCALFUNDS LOCALNEEDS
WWW.SMCGOV.ORG

OFFICE OF SUSTAINABILITY
COUNTY OF SAN MATEO

http://www.smcsustainability.org/smplain

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PROJECT OBJECTIVES & APPROACH

- Engaged Basin stakeholders
- Built on existing relationships to facilitate partnerships
- Positioned the Basin for funding opportunities
- Leveraged previously completed work

Increase Public Knowledge

Evaluate Hydrogeologic and Groundwater Conditions

Evaluate Risk of Undesirable Results due to Future Sea Level Rise, Climate Change, and Increased Groundwater Use

Develop Potential Groundwater Management Strategies

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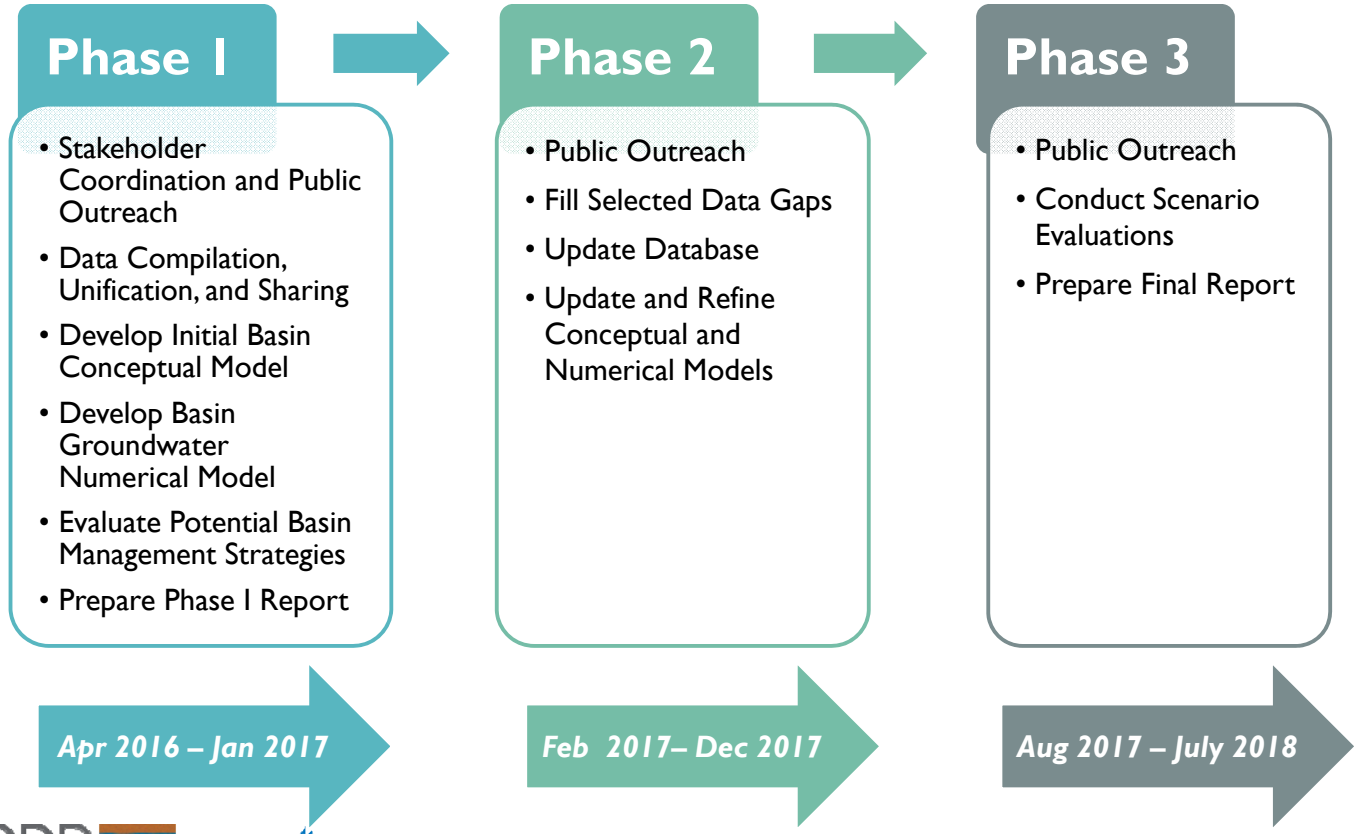
THE PROJECT WAS EXECUTED IN THREE PHASES



STAKEHOLDER OUTREACH

- Small group and one-on-one meetings
- Presentations to organizations and governing bodies
- Stakeholder workshops
- Website: http://www.smcsustainability.org/smplain
- Open Data Portal: http://data-smcmaps.opendata.arcgis.com/datasets?q=Groundwater&sort_by=relevance
- Preliminary Report: http://www.smcsustainability.org/download/energy-water/groundwater/Final-Phase-1-Report.pdf
- Public Review Draft Report: http://www.smcsustainability.org/download/energy-water/groundwater/Draft-SMP-GW-Assess-Rpt_June2018Rev2.pdf

Workshop #1 – 5/17/2016
Project Introduction and Overview

Workshop #2 – 9/7/2016
Basin Conceptual Model

Workshop #3 – 11/21/2016
Groundwater Flow Model

Workshop #4 – 12/6/2016
Basin Management Options

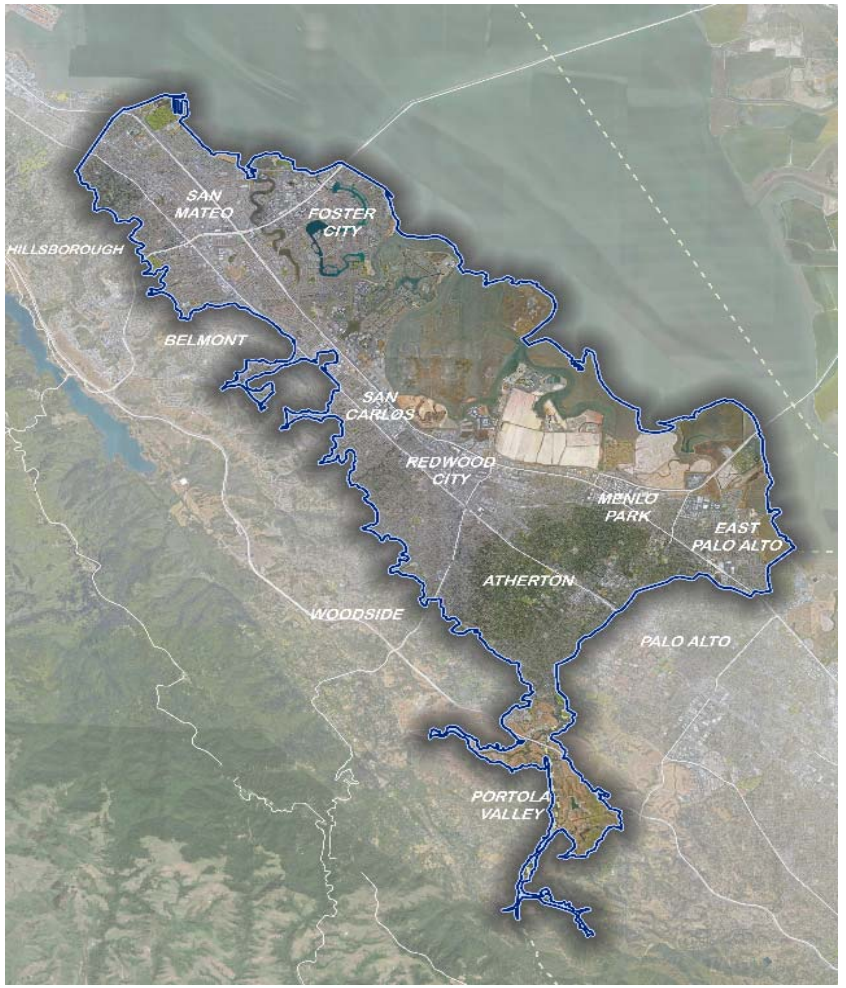
Workshop #5 – 1/31/2017
Phase 1 Results and Report

Workshop #6 – 8/17/2017
Phase 2 Progress and Phase 3 Planning

Workshop #7 – *11/9/2017*
Modeling Activities and SGMA Updates

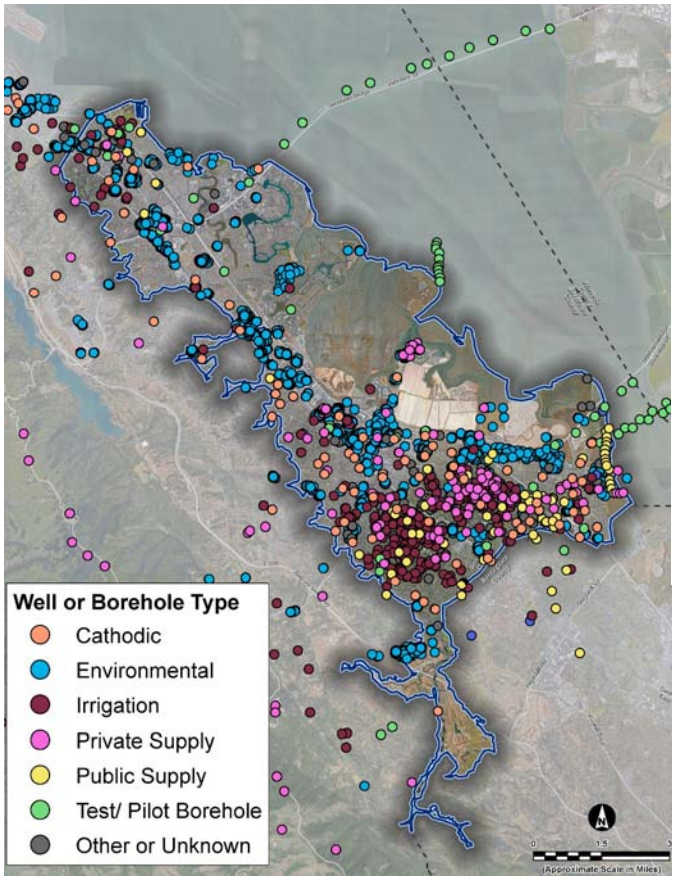
Workshop #8 – *4/17/2018*
Modeled Scenario Results

PROJECT OVERVIEW & RESULTS

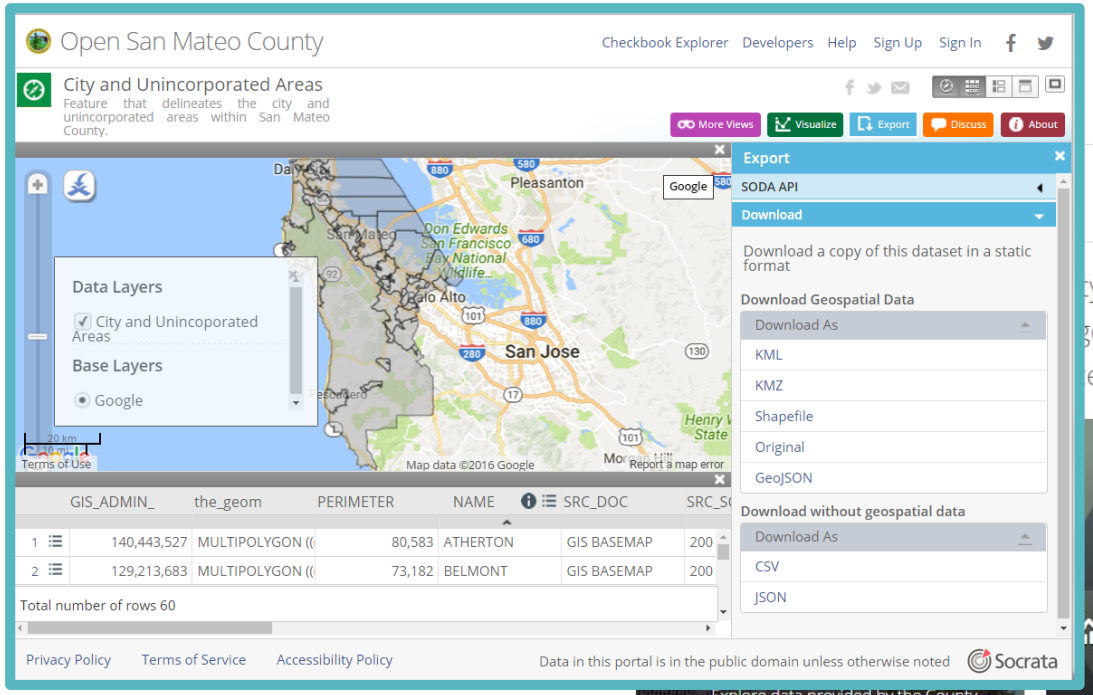


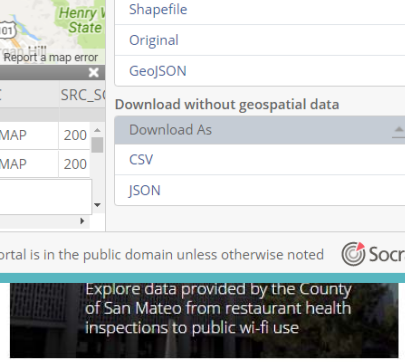
WELL DATA DATABASE

- Basin well data:
  - Over 3,700 well records
  - ~60,000 water level measurements from ~2,500 wells
  - ~500,000 water quality records from ~1,900 wells
- Additional records for wells outside, but near the Basin
- Filled data gaps with new measurements during Phase 2



“OPEN SAN MATEO COUNTY” DATA PORTAL





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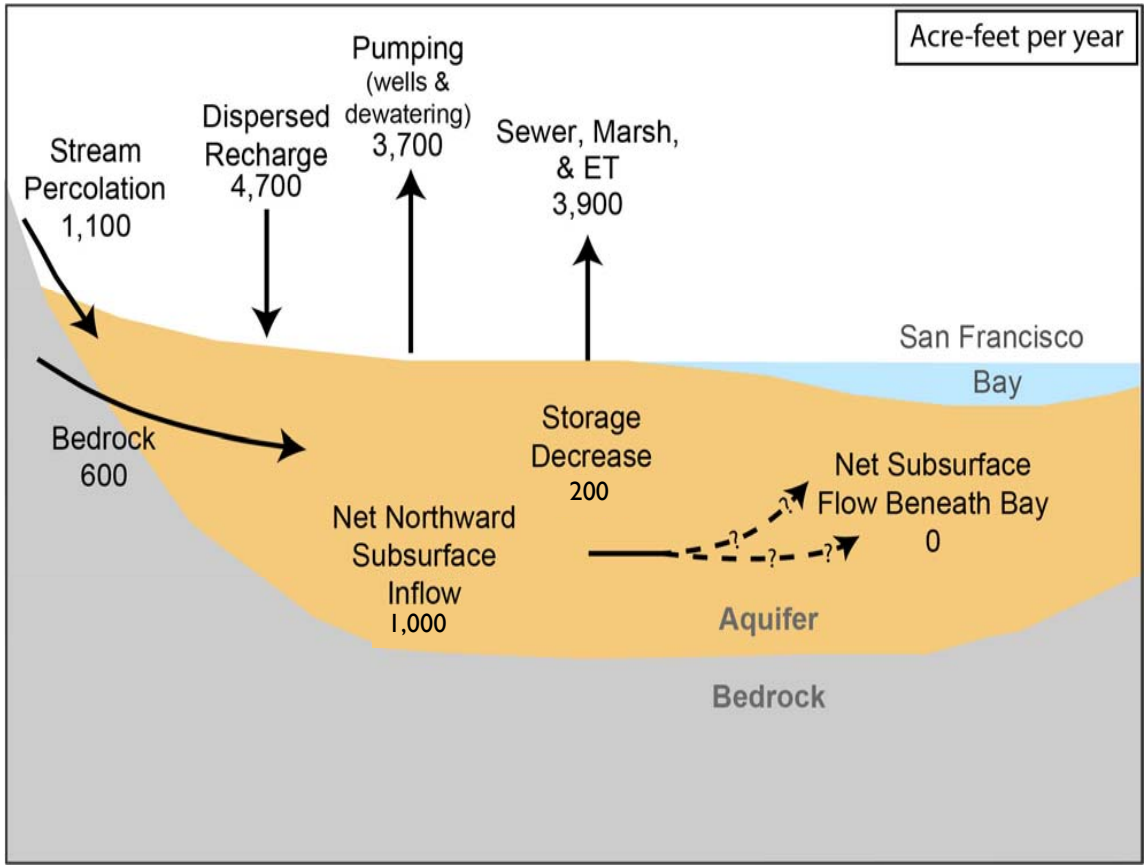
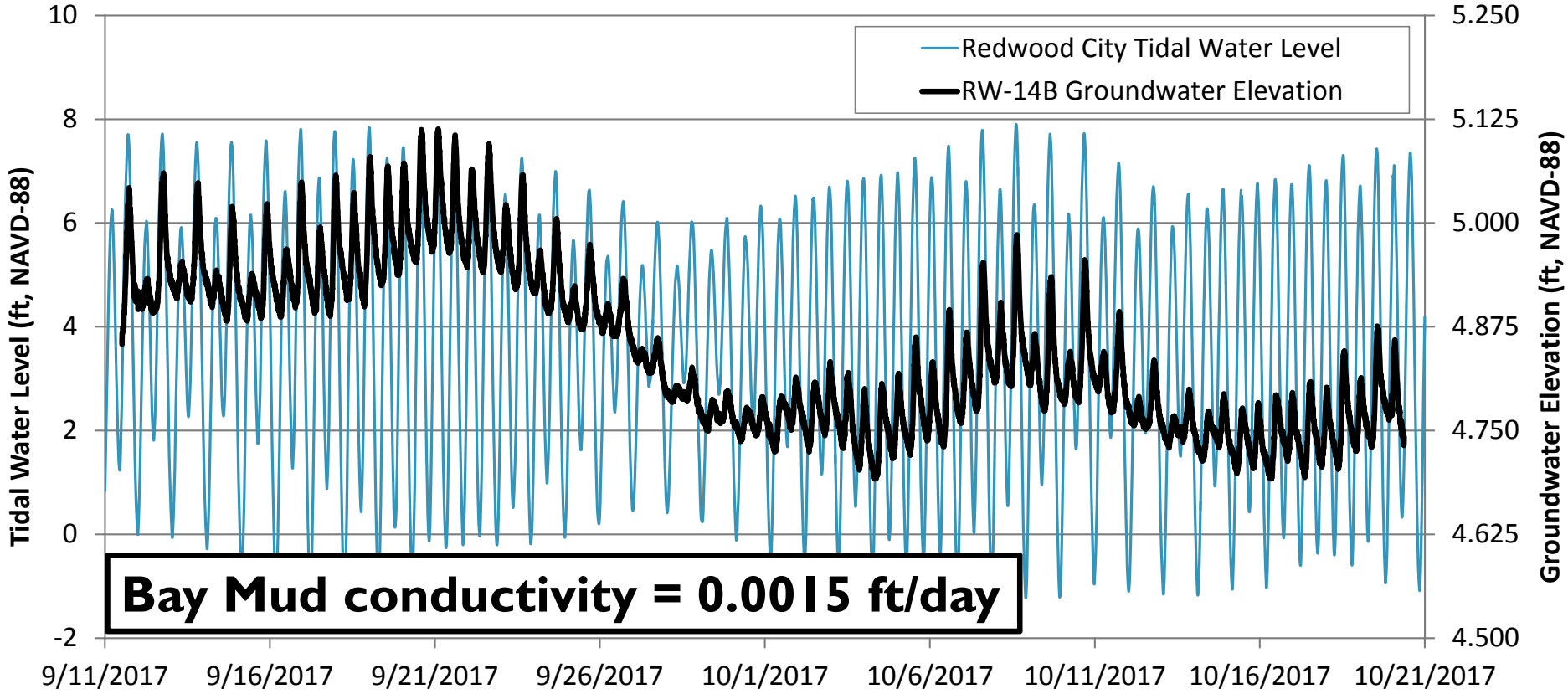
FIRST BASIN-WIDE WATER BALANCE

- Timeframe: 1984 – 2015
  - Includes wet and dry periods, but long-term average rainfall
- Total Inflows = **7,900 AFY**
- Total Outflows = **7,900 AFY**

➢ Basin is in balance



NEW INSIGHTS FROM TIDE AND MONITORING WELL DATA



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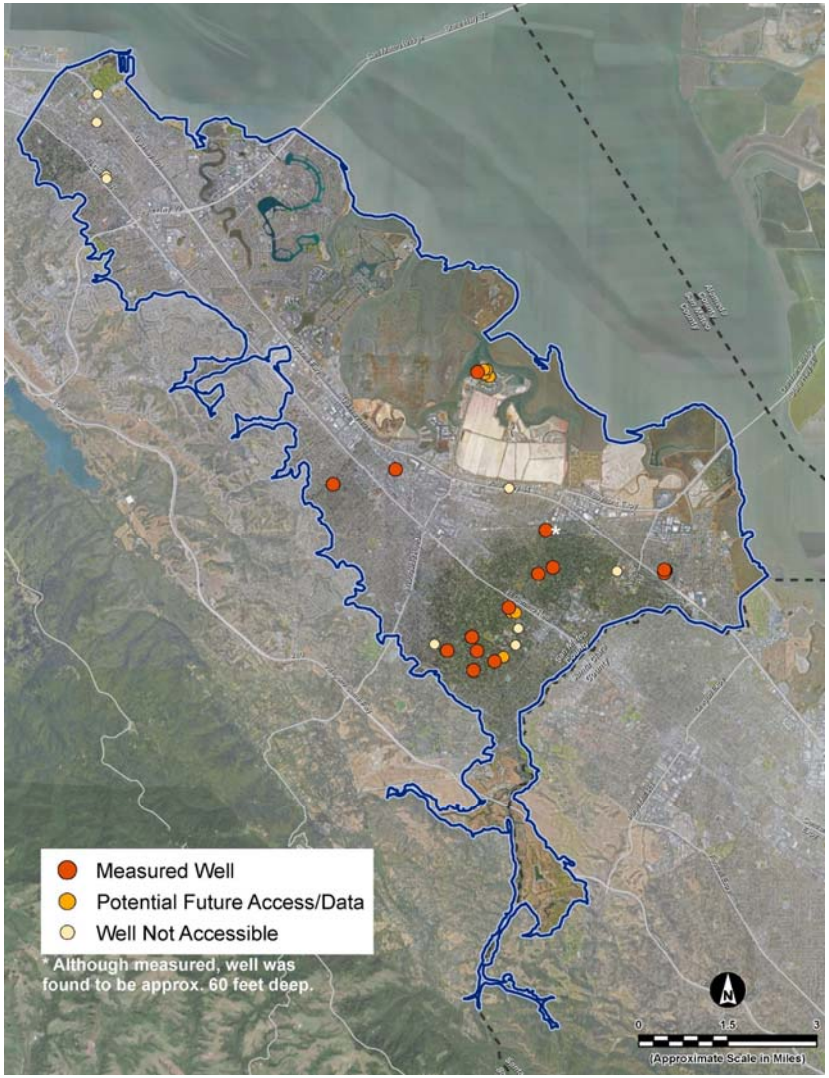
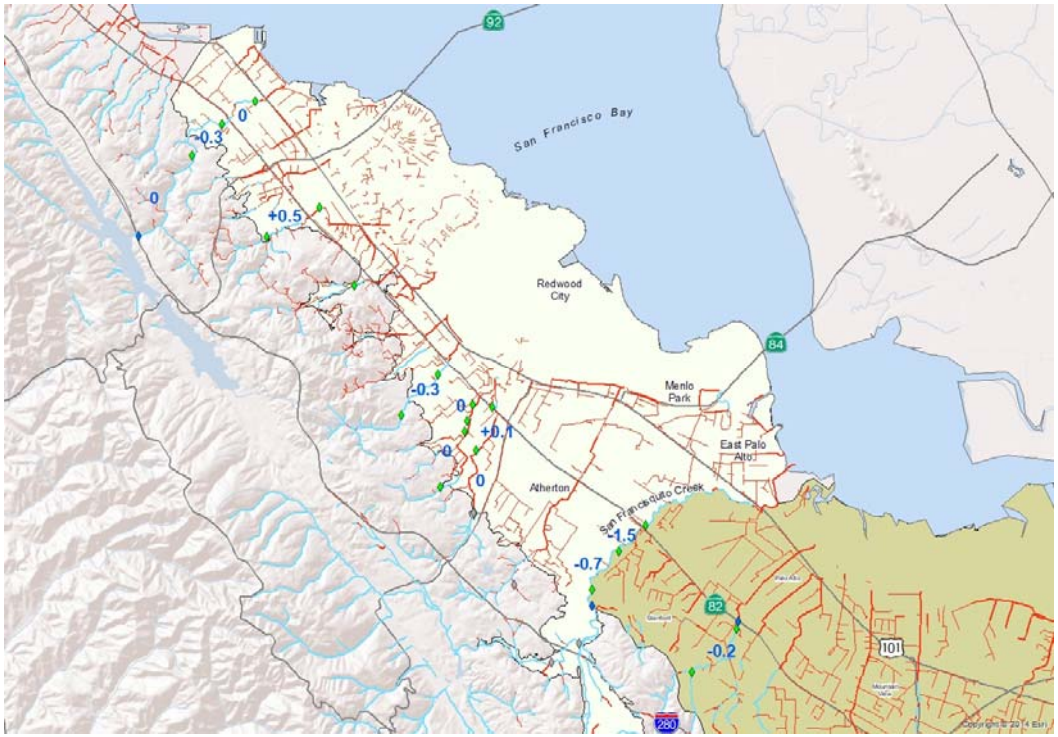
NEW INSIGHTS FROM 2017 DEEP WELL MEASUREMENTS

- County began with 74 potential deep wells identified
- Gained access to 35 wells on 27 sites
- Able to measure 16 wells (15 deep wells)
  - 8 residential
  - 5 municipal
  - 3 corporate-owned
- Access or data possible for 16 additional wells



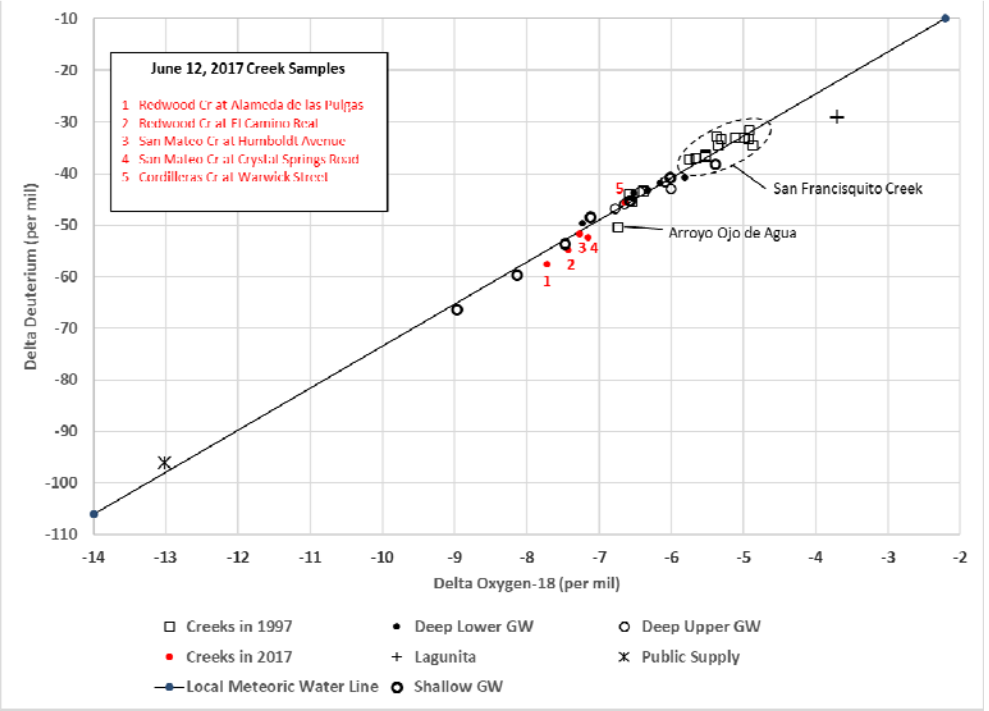
NEW INSIGHTS INTO FLOW GAINS & LOSSES FROM CREEK MEASUREMENTS

- First-ever study to quantify groundwater-surface water interactions across all Basin creeks
  - Flow rates and water quality at multiple locations along the creeks
  - Multiple sampling events
- Evaluated and quantified contributions from groundwater, Hetch Hetchy sytem releases, and surface water runoff
- Supported groundwater modeling and water budget estimates



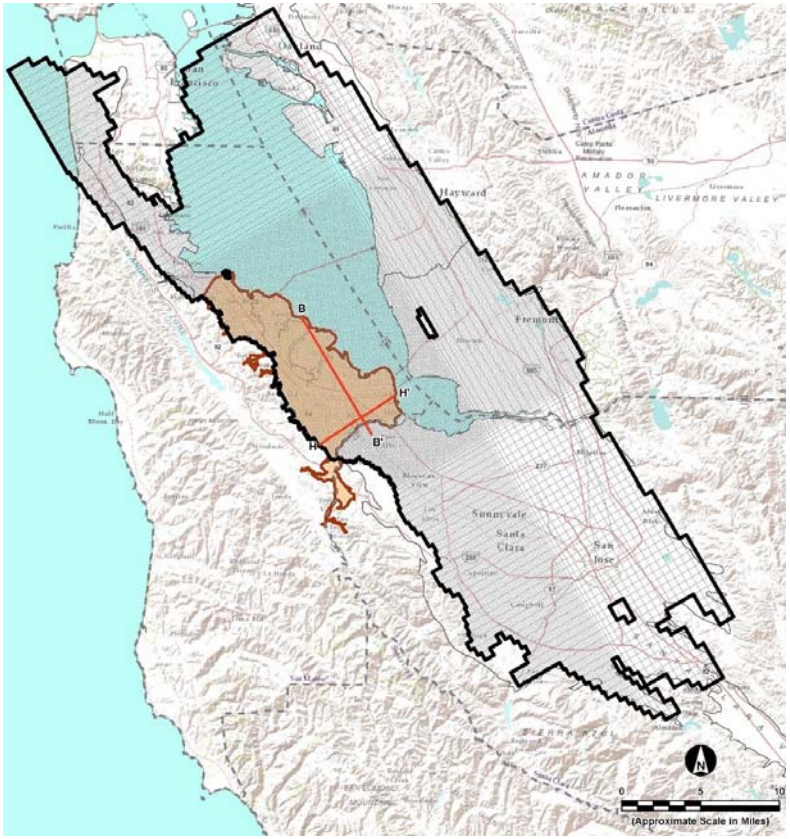
NEW INSIGHTS INTO GROUNDWATER SURFACE WATER EXCHANGE WITH ISOTOPE DATA

- Basin groundwater shows influences from multiple water sources
- Confirmed major sources of recharge include imported Hetch Hetchy water and precipitation
- Additional evidence to confirm groundwater – surface water interactions

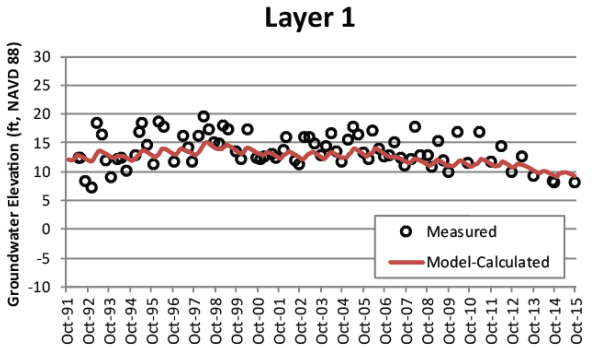


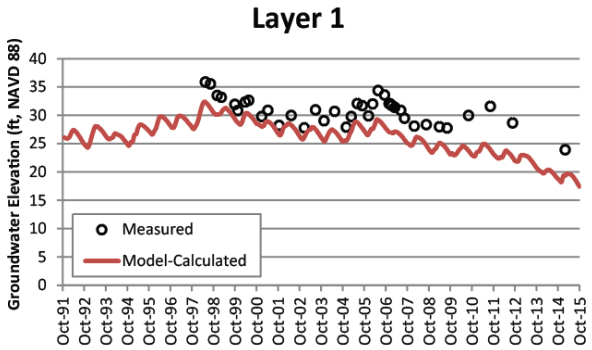
QUANTITATIVE GROUNDWATER MANAGEMENT TOOL

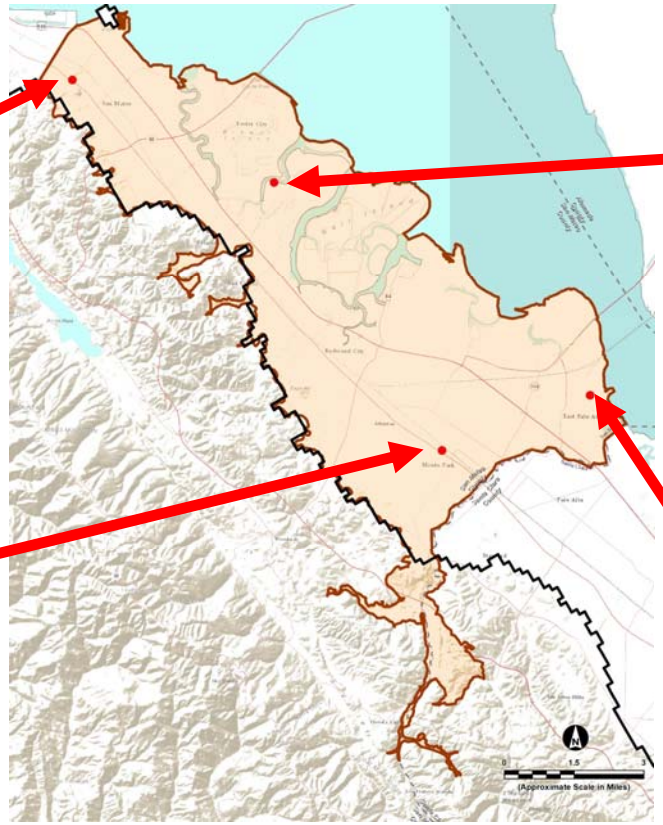
- San Mateo Plain Groundwater Flow Model (SMPGWM)
  - Physical Boundaries
  - 10 – 160 Acre Cell Size
  - Water-Levels (Bay/Ocean)
  - Specified Inflow (Recharge)
  - Specified Outflow (Pumping)

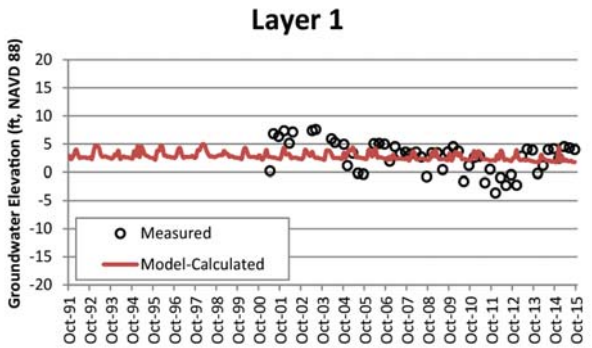


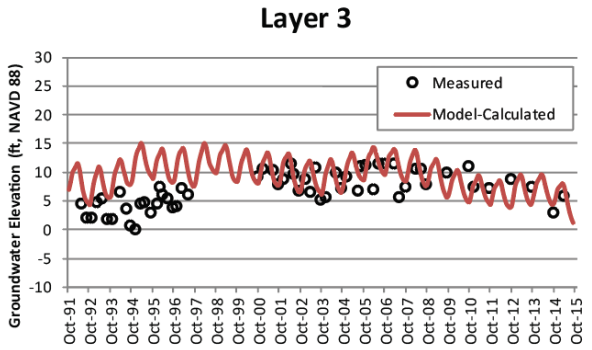
TWENTY-FIVE YEAR HISTORICAL BASE LINE 1990-2015





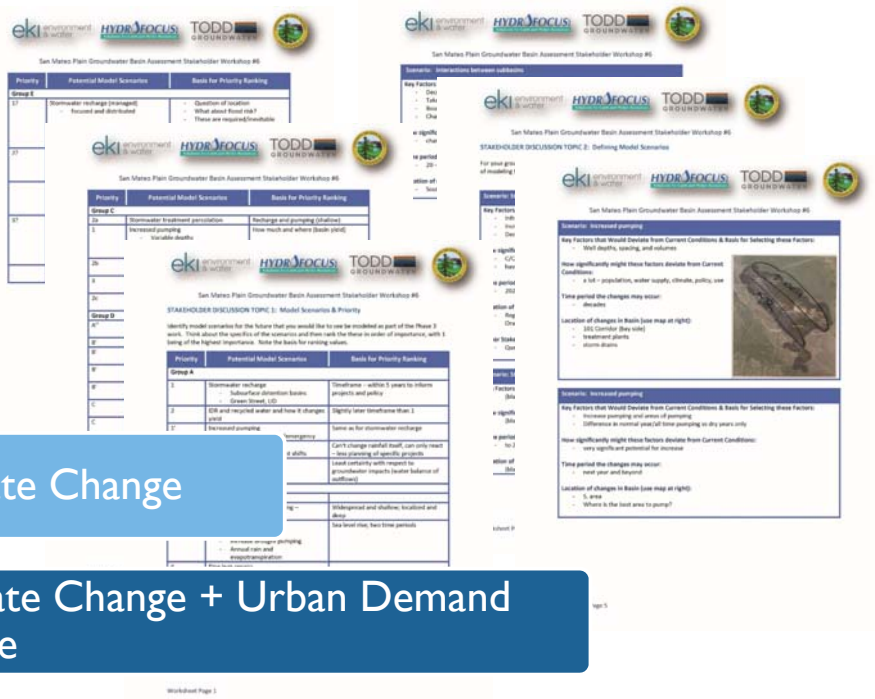






SCENARIO DEVELOPMENT AND ANALYSES

- Reflected input from two workshops
- Stepwise approach analyzed incremental effects
- Results reflect accumulation of effects and potential local changes to mitigate those effects



Baseline

Baseline + Climate Change

Baseline + Climate Change + Urban Demand Pumping Increase

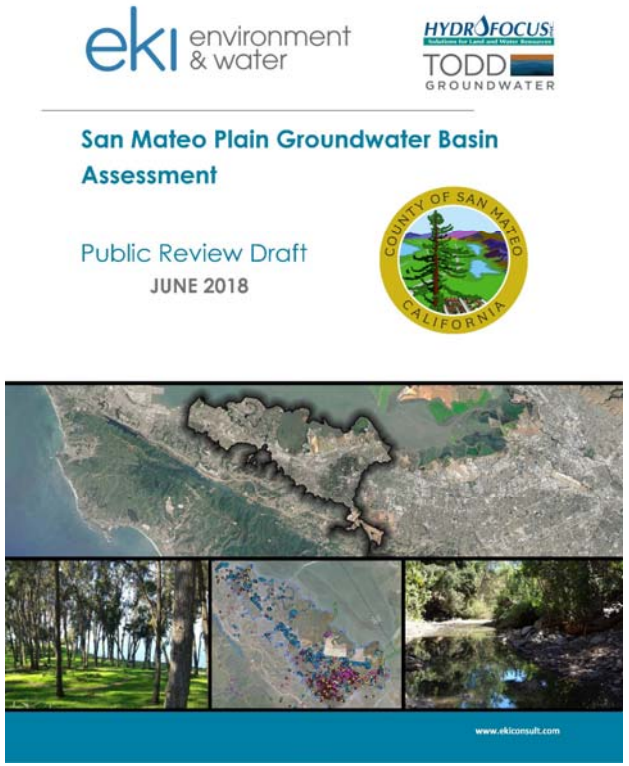
Baseline + Climate Change + Urban Demand Pumping Increase + Implementation of Recharge Projects

OVERALL SCENARIO MODELING CONCLUSIONS

- Projected climate change:
  - Minimal influence on groundwater recharge
  - Sea level rise was most influential on groundwater levels and the Basin water budget
- Increased groundwater use (pumping increases) are expected to increase subsurface inflow from Santa Clara Subbasin and from beneath San Francisco Bay
- Increased recharge partially mitigates drawdown from increased pumping
  - Low Impact Development (LID) likely provides modest increase in groundwater recharge
  - Greatest offset to pumping obtained by groundwater injection (IPR)

THIS WORK CAN EASILY BE LEVERAGED FOR FUTURE ACTIVITIES

- Foundation of a GSP
- Support development of a CASGEM network
- Support Salt and Nutrient Management Plan (SNMP) development



KEY ELEMENTS OF A SGMA GROUNDWATER SUSTAINABILITY PLAN (GSP)

1. **Introduction**
2. **Plan Area and Basin Setting**
   - Description of the Plan Area
   - Basin Setting
     - Hydrogeologic Conceptual Model
     - Current and Historical Groundwater Conditions
     - Water Budget Information
   - Management Areas (as Applicable)
3. **Sustainable Management Criteria**
   - Sustainability Goal
   - Measurable Objectives
   - Minimum Thresholds
   - Undesirable Results
   - Monitoring Network
4. **Projects and Management Actions to Achieve Sustainability Goal**
5. **Plan Implementation**
6. **References and Technical Studies**

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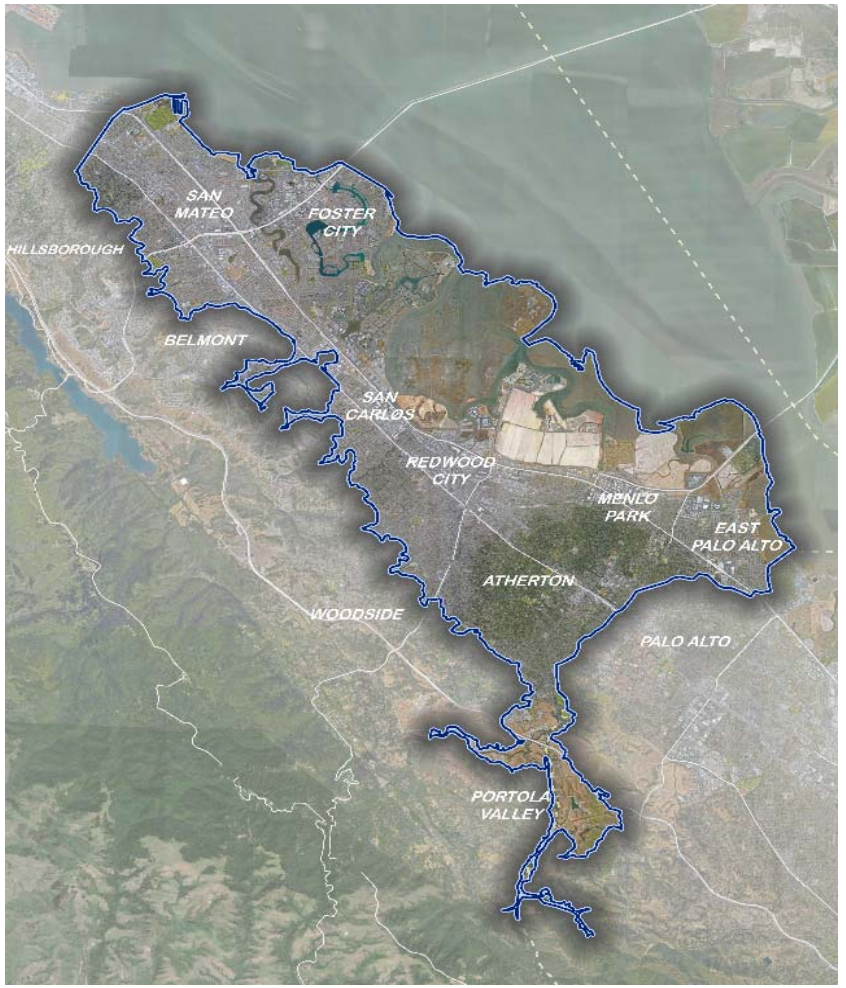
PROJECT DISCUSSION & BREAKOUT SESSION



SMALL GROUP BREAKOUT SESSION

- Topic 1 – Project Process
  - Think about the *non-technical* aspects of this Project: Project phasing, stakeholder meetings and other outreach, communications from the County, data and information sharing, etc.
  - What did you like and/or find most helpful about the process aspects of the Project?
  - What about the process could be improved for future multi-agency stakeholder projects in the County?

SMALL GROUP BREAKOUT SESSION

- Topic 2 – Groundwater Basin Assessment Report
  - Provide comments and feedback on the *technical* aspects of the Project and Report

1.0 Introduction	2.0 Basin Overview	3.0 Stakeholder Engagement
4.0 Review and Compilation of Available Data	5.0 Basin Water Quality Evaluation	6.0 Hydrogeologic Conceptual Model
7.0 Basin Water Balance	8.0 SMP Groundwater Flow Model (SMPGWM)	9.0 Evaluation of Risk of Potential Undesirable Results
10.0 Initial Evaluation of Basin Management Options	11.0 Scenario Evaluations Using the SMPGWM	12.0 Conclusion

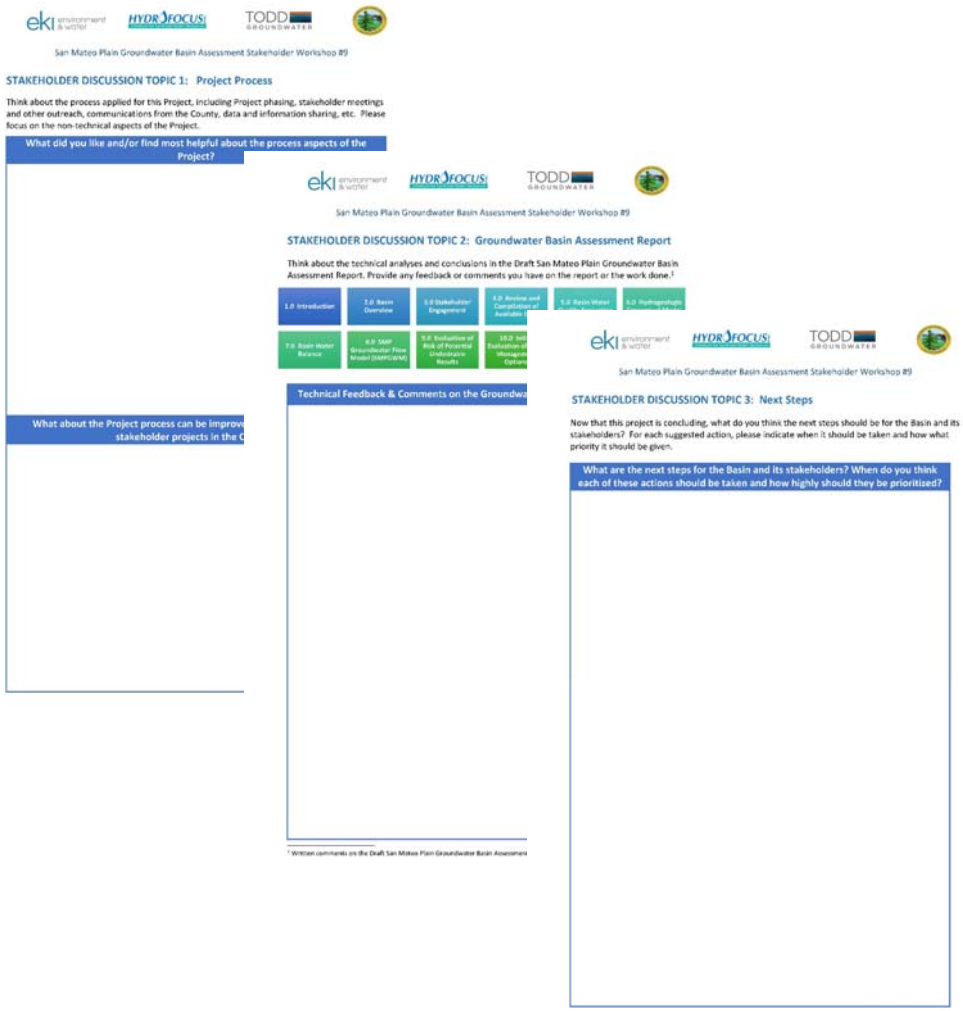
SMALL GROUP BREAKOUT SESSION

- Topic 3 – Next Steps
  - Now that this project is concluding, what do you think the next steps should be for the Basin and its stakeholders?
  - For each suggested action, please indicate when it should be taken and what priority it should be given.

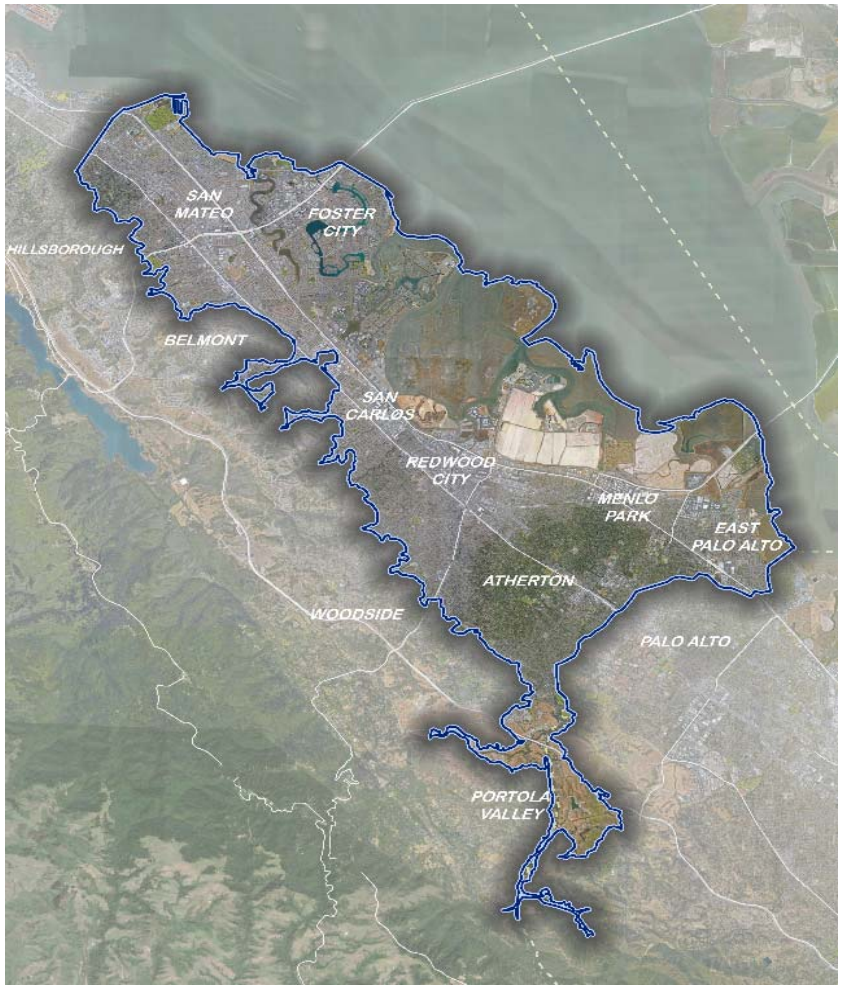
Action	Timeframe	Priority

SHARE OUT

- Topic 1 – Project Process
- Topic 2 – Groundwater Basin Assessment Report
- Topic 3 – Next Steps

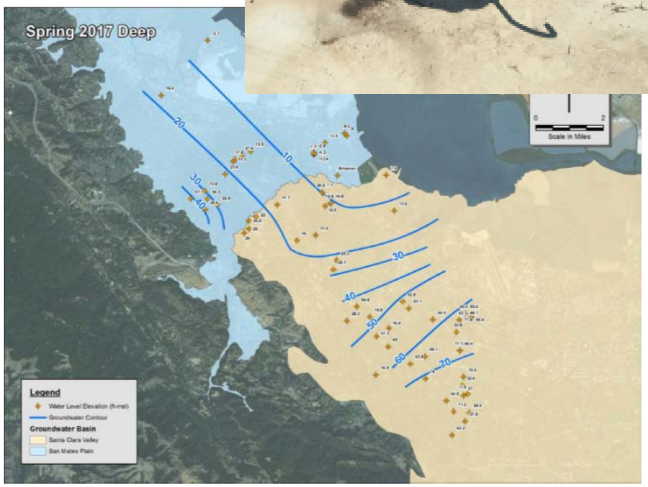


CASGEM & SGMA UPDATES



CALIFORNIA STATE GROUNDWATER ELEVATION MONITORING (CASGEM)

- Permanent, locally-managed program of regular monitoring to track seasonal and long term trends in groundwater elevations
- Collect or compile groundwater elevations, at least twice a year, and submit them to state's database
- Voluntary, but …



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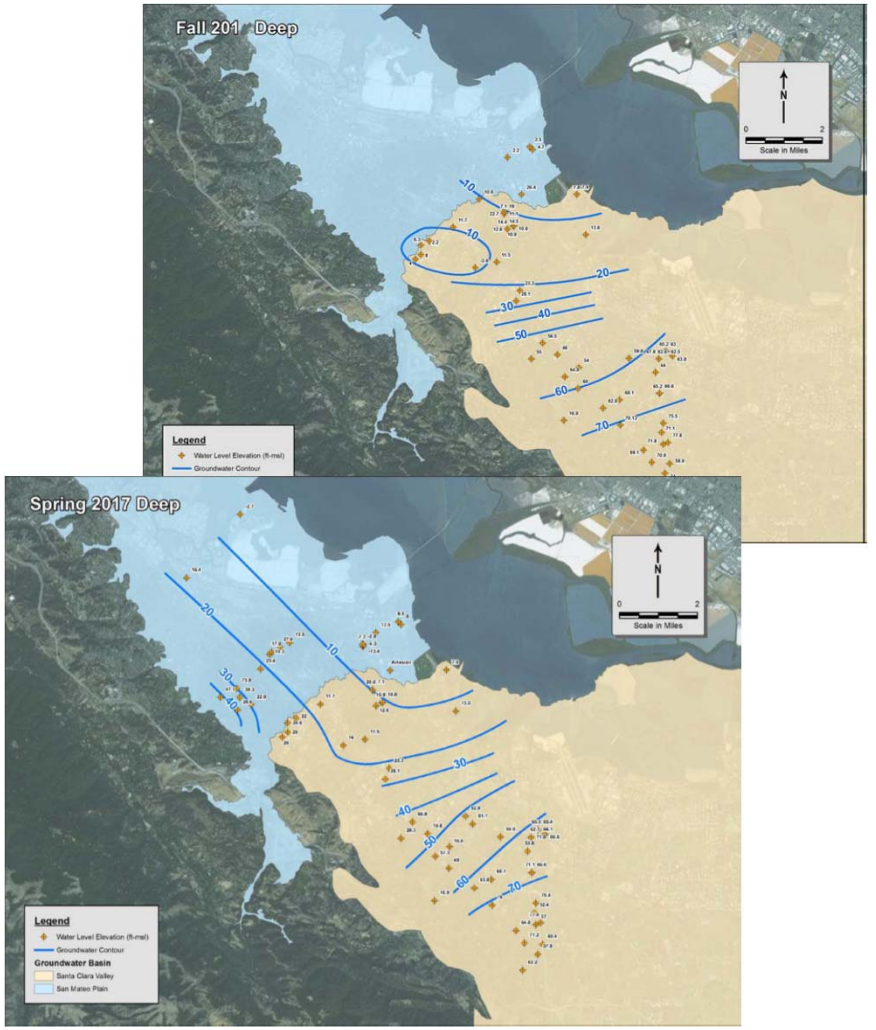
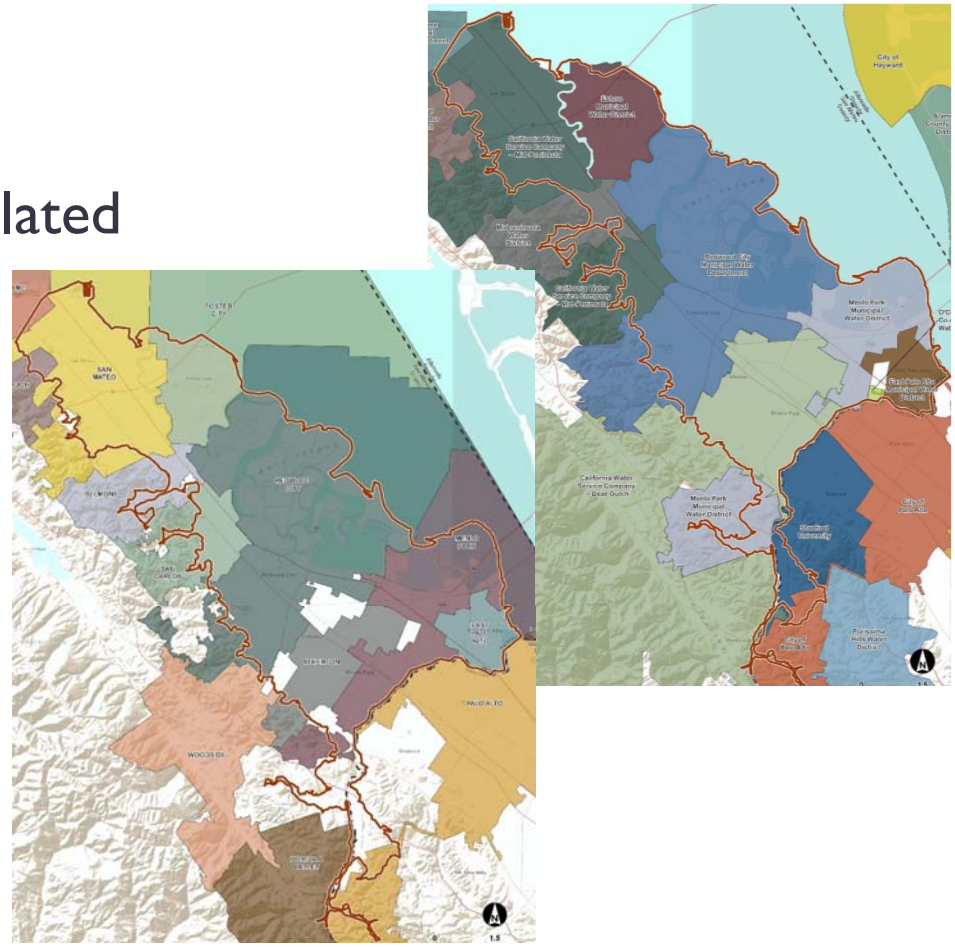
CASGEM BENEFITS

- Groundwater elevation information across the entire basin available publicly
- Eligible for state grants related to various types of water (storm water, recycled water, groundwater) projects



FAILURE TO PERFORM CASGEM MONITORING

- If no monitoring entity, local agencies ineligible for state funding for water-related projects through SWRCB, DPH, and DWR
  - Enforcement of this has been focused on high and medium priority basins

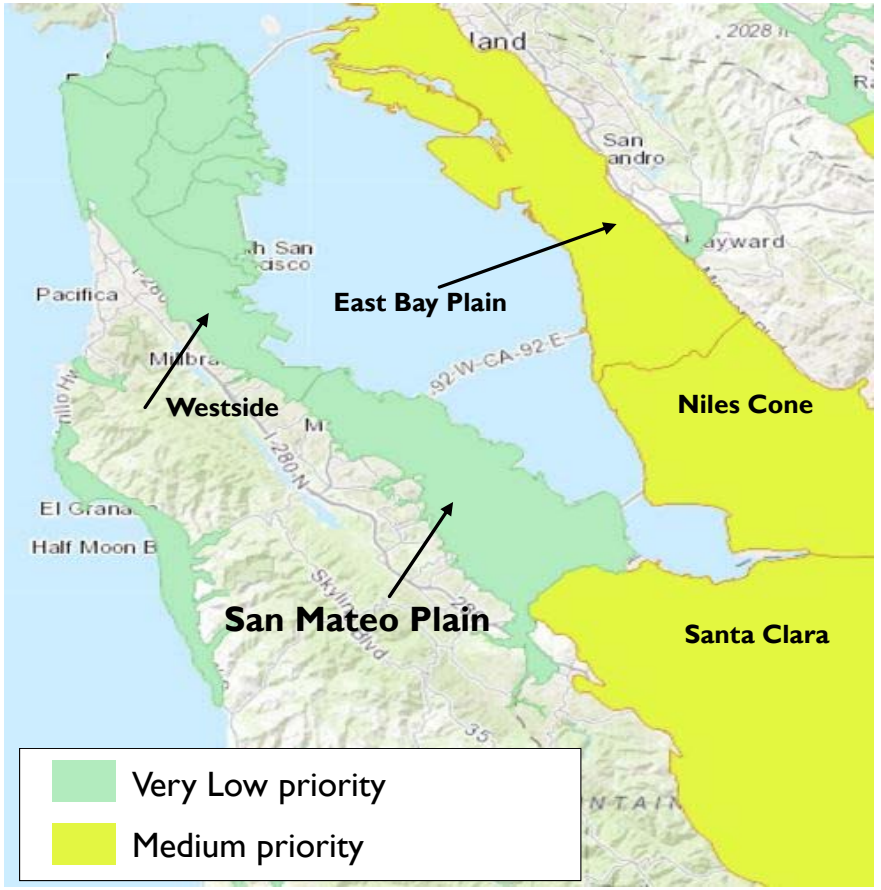


CASGEM MONITORING ENTITY MEETINGS

- County facilitated meetings on January 12 and June 21, 2018 of potential monitoring entities
- Initial monitoring plan ~$10,000, each agency collect their own groundwater levels
- Not all local entities need to participate;
  no participation then no say in implementation
- Better to start soon to be eligible for future funding opportunities (Props 1, 68, and 3)
- Poll of participation interest soon

SGMA PRIORITIZATION

- Basins ranked on population and growth, size, # wells and types, groundwater reliance, known impacts and other factors
- San Mateo Plain Subbasin was designated as '**Very Low**' priority in 2014



2018 PROPOSED SGMA PRIORITIZATION

- DWR Proposed 'Medium' priority for San Mateo Plain on May 18
- Groundwater usage greater than 2,000 AFY
- 60-day comment period through July 18
- DWR meeting in San Mateo June 5

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2018 PROPOSED SGMA PRIORITIZATION

- BAWSCA and San Mateo County Env Health comment letter with 21 other agencies June 15
- DWR extended comment period to August 20
- Final decision in November

2018 PROPOSED SGMA PRIORITIZATION

- GSA by November 2020 and GSP by November 2023
- Potential legislative cleanup for same 7 year GSP period as others
- County reviewing for factual issues
- Others preparing statewide, process-related comments

THANK YOU

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