SAN MATEO PLAIN GROUNDWATER BASIN ASSESSMENT

STAKEHOLDER WORKSHOP#4

DECEMBER 6, 2016

Erler & Kalinowski, Inc.

TODD GROUNDWATER

HYDROFOCUS INC.
Solutions for Land and Water Resources

PRESENTATION OVERVIEW

- Introductions
- Project Overview
- Review of Stakeholder Outreach to Date
- Summary of Basin Management Options
- Breakout Session
- Round Table Discussion

SAN MATEO PLAIN GROUNDWATER BASIN ASSESSMENT

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

http://green.smcgov.org/san-mateo-plain

THE PROJECT IS BEING EXECUTED IN THREE PHASES

Phase 1

- Stakeholder Coordination and Public Outreach
- Data Compilation, Unification, and Sharing
- Develop Initial Basin Conceptual Model
- Develop Basin Groundwater Numerical Model
- Evaluate Potential Basin Management Strategies
- Prepare Phase I Report

Apr 2016 – Jan 2017

Phase 2

- Public Outreach
- Fill Selected Data Gaps
- Update Database
- Update and Refine Conceptual and Numerical Models

Jan 2017 – Dec 2017

Phase 3

- Public Outreach
- Conduct Scenario Evaluations
- Prepare Final Report

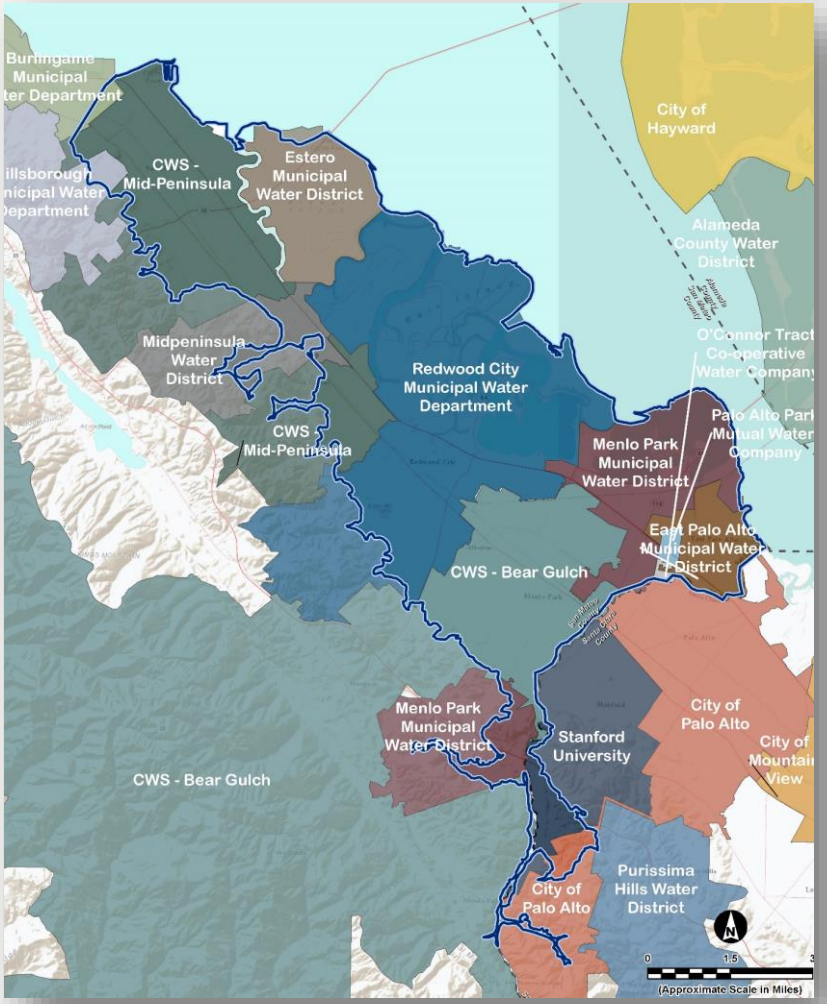
Sep 2017 – Apr 2018

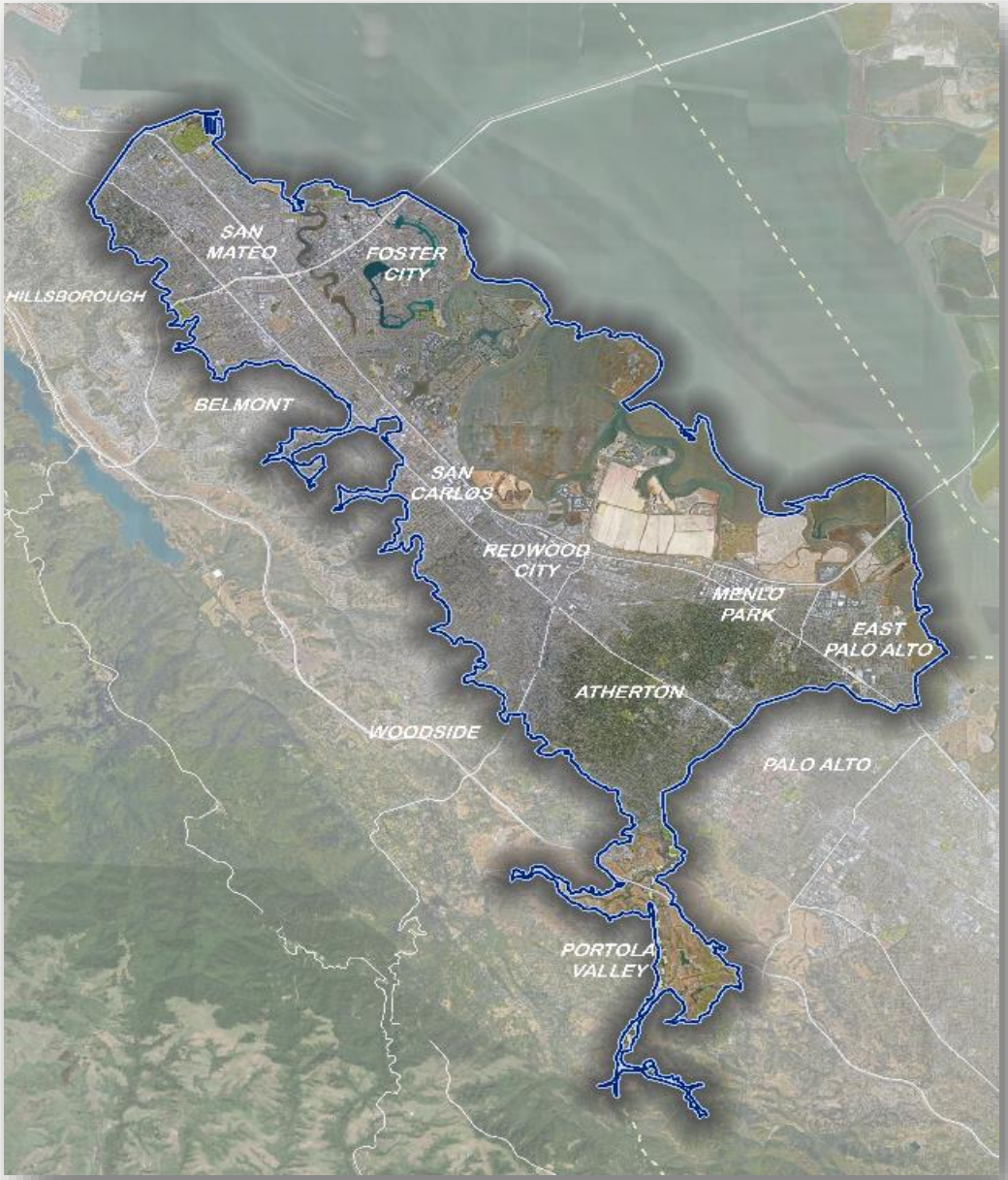
STAKEHOLDER WORKSHOPS IN PHASE 1

- ***Workshop #1***
  - May 17, 2016
  - Project Introduction and Overview
- ***Workshop #2***
  - September 7, 2016
  - Basin Conceptual Model
- ***Workshop #3*** –
  - November 21, 2016
  - Groundwater Flow Model
- ***Workshop #5*** *(forthcoming)*
  - *Jan / Feb 2017*
  - *Phase 1 Report & Phase 2 Planning*

ON-GOING STAKEHOLDER OUTREACH

- Small group and one-on-one meetings
- Presentations to organizations and governing bodies
- Stakeholder workshops
- Website: http://green.smcgov.org/san-mateo-plain
- Open Data Portal





GROUNDWATER MANAGEMENT

BACKGROUND

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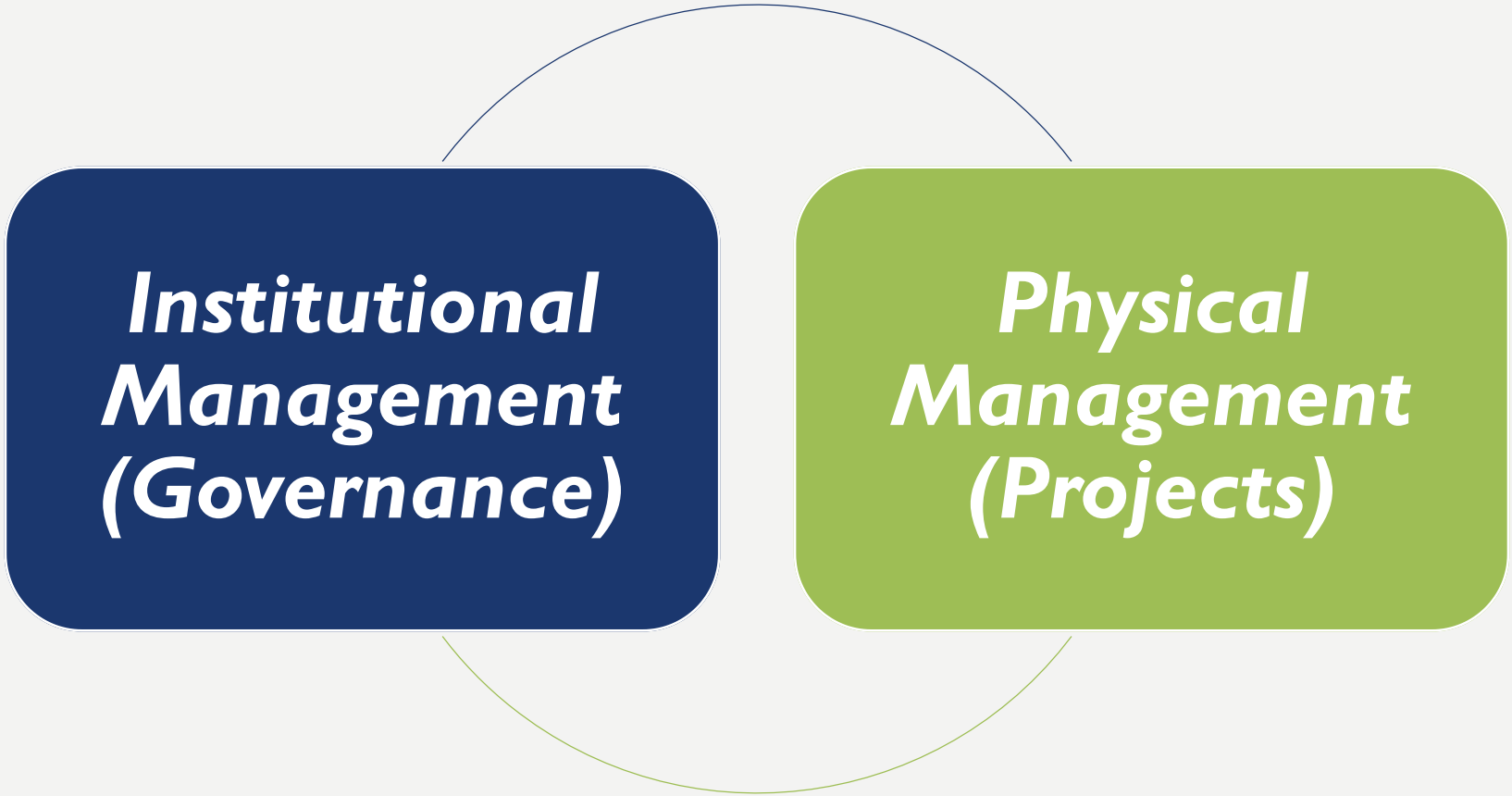
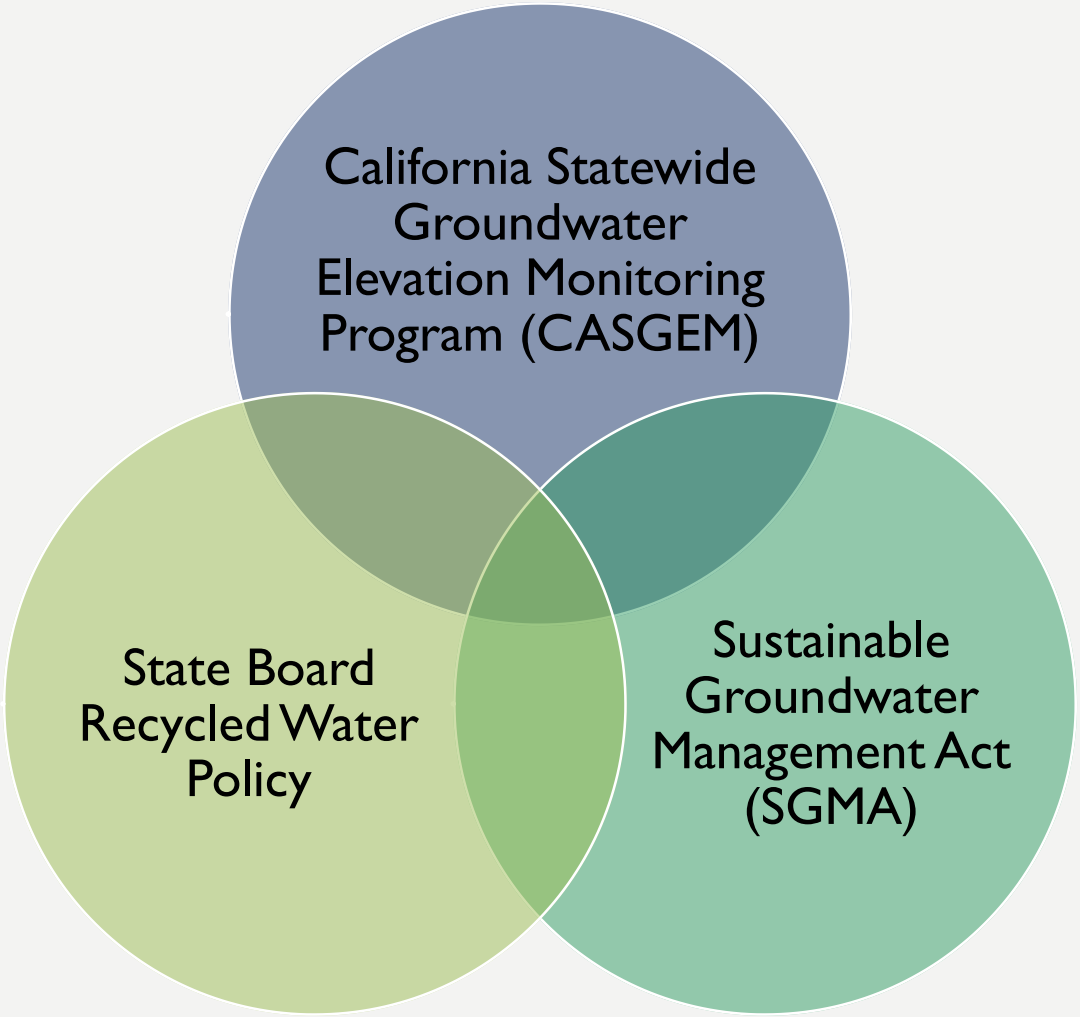
WHY CONSIDER GROUNDWATER MANAGEMENT?

- History of undesirable results within Basin
- Prolonged and historic drought
- Potential future compliance with Sustainable Groundwater Management Act (SGMA)
- Increased demands and rising Hetch-Hetchy costs are driving interest in groundwater production
- Balance groundwater use and protection of the resource

COMPONENTS OF GROUNDWATER MANAGEMENT

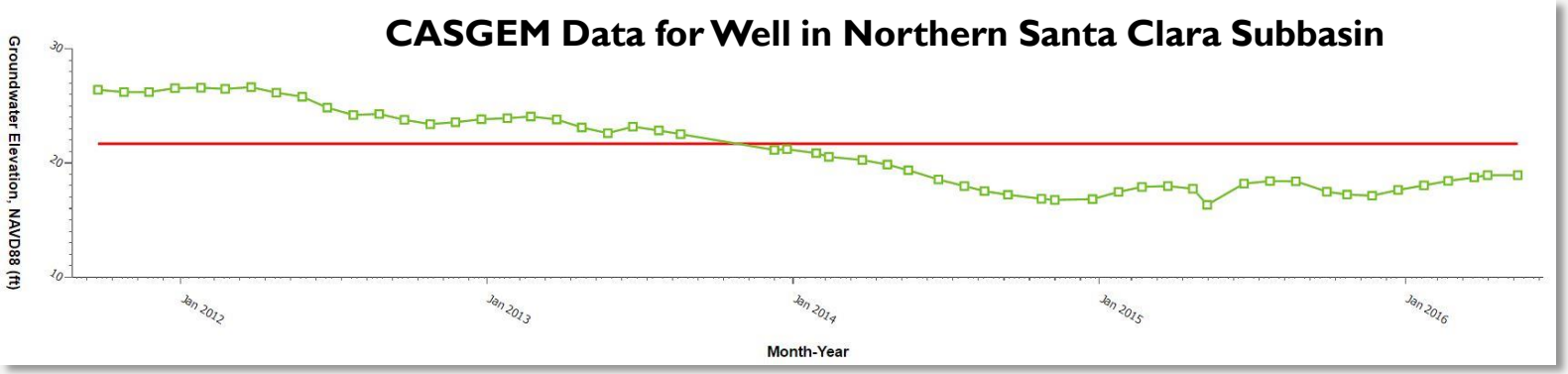


EXISTING STATEWIDE FRAMEWORKS



CASGEM COMPLIANCE

- California Statewide Groundwater Elevation Monitoring (CASGEM) Program
  - Track seasonal and long-term trends in water levels
  - Basins monitored by “Monitoring Entities”
- Compliance required for certain state funding



- Possible Monitoring Entities: agencies implementing IRWM plan, County, voluntary cooperative

RECYCLED WATER POLICY

- State Board implements a Recycled Water Policy, revised in 2013
- Salt and Nutrient Management Plans (SNMPs) required for all groundwater basins
- In order to implement recycled water projects within the Basin, a SNMP will need to be prepared

Image source: http://38.106.4.17/Home/ShowImage?id=3563

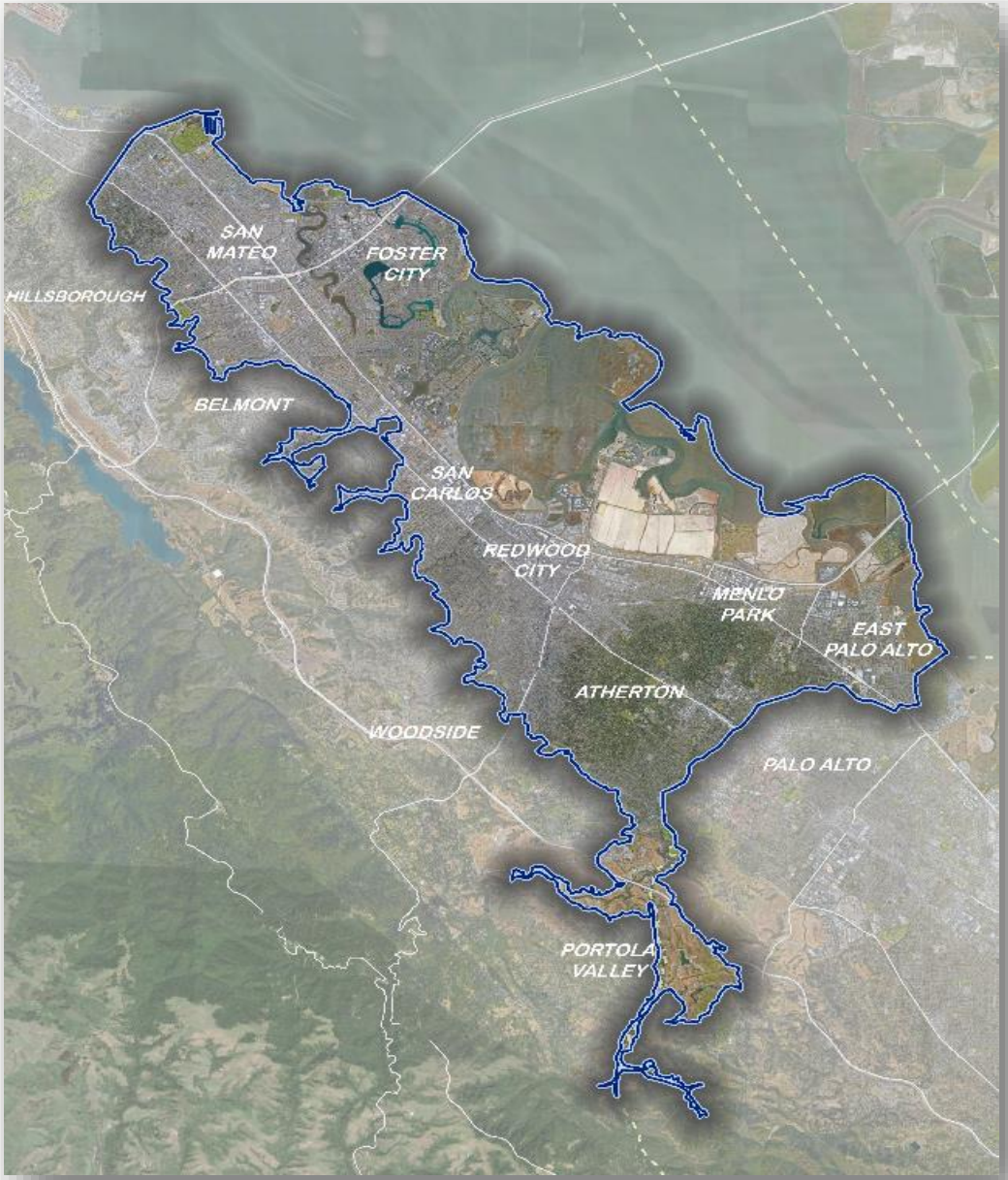
SUSTAINABLE GROUNDWATER MANAGEMENT ACT

- ‘Medium’ and ‘High’ priority basins must comply with SGMA
- Groundwater Sustainability Agencies (GSAs)
- Groundwater Sustainability Plans (GSPs)
- Sustainability within 20 years of GSP adoption

Form GSA	• Two years following reprioritization • 30 June 2017
Prepare GSP and begin implementation	• Five years following reprioritization • *Critically Overdrafted* – 31 January 2020 • *All Others* – 31 January 2022
Achieve sustainability	• 20 years following GSP adoption • *Critically Overdrafted* – 2040 • *All Others* – 2042

RELEVANCE OF SGMA TO BASIN

- Basin is not currently required to comply with SGMA
  - Designated as 'Very Low' priority by DWR in 2014
  - Based upon groundwater usage that was less than DWR's 2,000 AFY threshold
  - If Basin had exceeded threshold, it would have been a 'Medium' priority basin
- Basin may have to comply with SGMA in the future
  - Basin could be re-prioritized in 2017*
  - Analysis will include updated groundwater use data



CURRENT GROUNDWATER MANAGEMENT

LOCAL AND STATEWIDE

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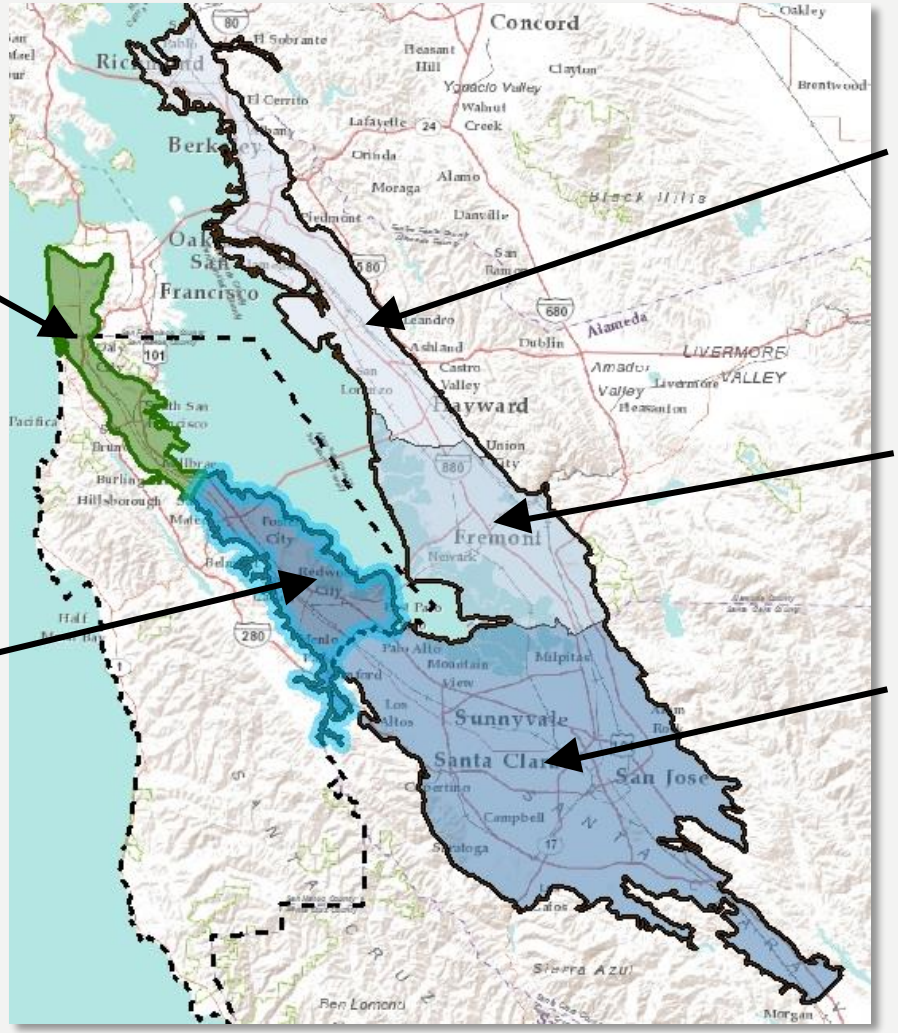
CURRENT MANAGEMENT IN THE BASIN

- San Mateo County
  - Implements well ordinance covering permitting, construction, and abandonment
  - Oversees groundwater remediation
- San Francisquito Creek Area Resolutions
  - Recognize the important role of groundwater management in the region
  - Adopted by seven entities in the southern portion of Basin and northern portion of Santa Clara Subbasin
- East Palo Alto
  - Adopted Groundwater Management Plan (GWMP) within City limits in 2015

SUMMARY OF GOVERNANCE OPTIONS

"Unmanaged"	• May be smaller, local management efforts (City Ordinances for well permitting, GWMP)
Voluntary Management	• GWMP, MOU, "self-adjudication" • Single entity or multiple entities
SGMA	• GSA, GSP • Single entity or multiple entities
Special Act District	• Created by act of legislature, typically to solve an issue • Single entity with broad authorities
Adjudication	• Lengthy, costly legal process generally reserved for overdrafted basins • Single entity (Watermaster)

GROUNDWATER IS ACTIVELY MANAGED IN ADJACENT BASINS



Westside Basin

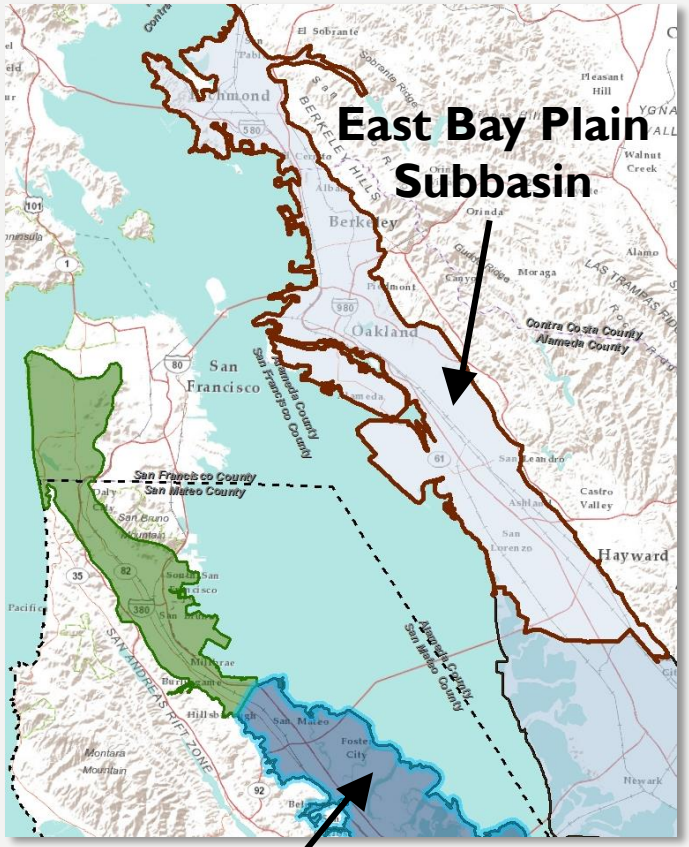
East Bay Plain Subbasin

Niles Cone Subbasin

San Mateo Plain Subbasin

Santa Clara Subbasin

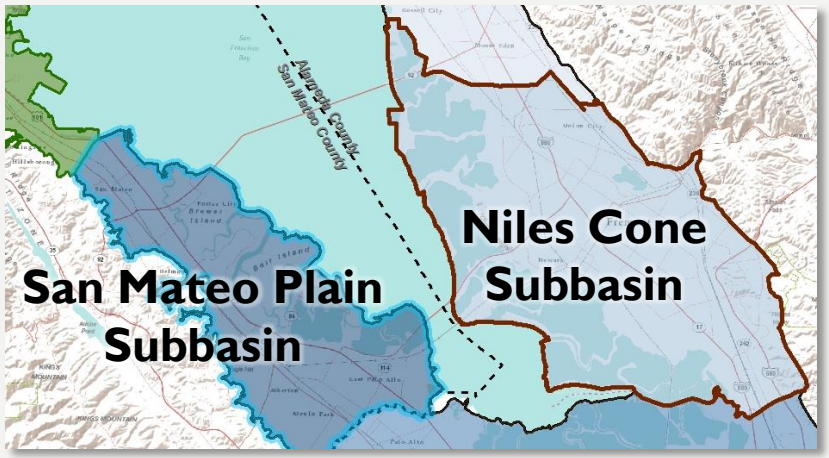
EAST BAY PLAIN SUBBASIN



- Medium priority basin
- Management Agencies
  - East Bay MUD
  - City of Hayward
- Current Management
  - *2013 South East Bay Plain GWMP*
- Future Management
  - EBMUD formed GSA in August 2016
  - Hayward presumed to form GSA for service area
  - EBMUD/Hayward to develop GSP

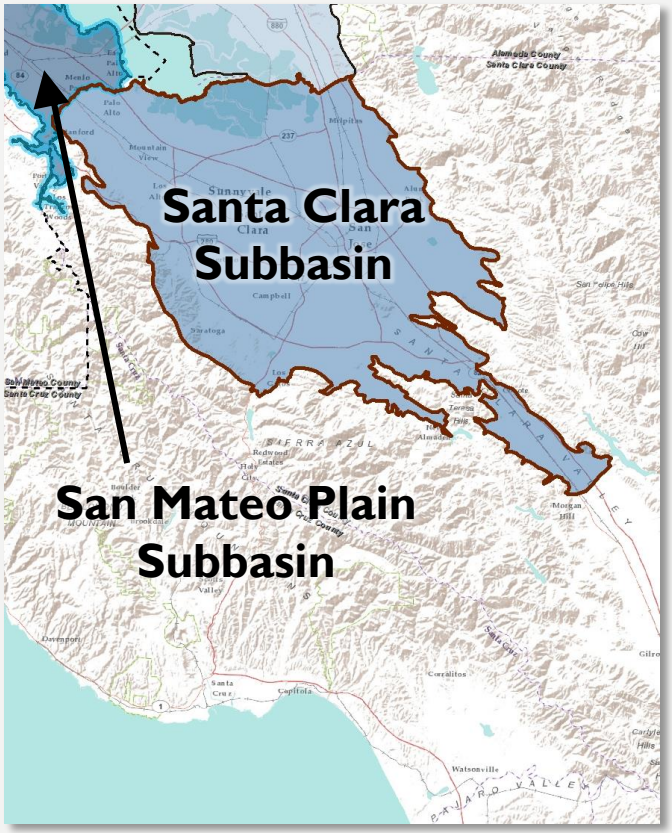
NILES CONE SUBBASIN

- Medium priority basin
- Alameda County Water District (ACWD)
  - Special Act District
  - Exclusive management agency



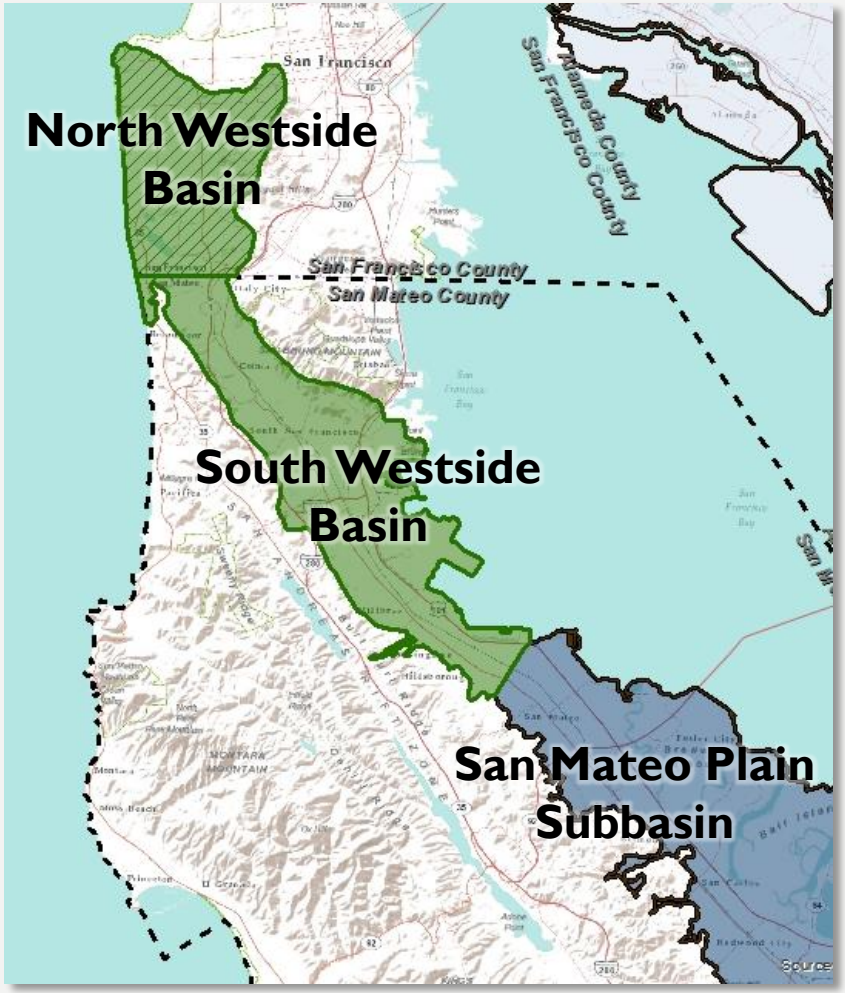
- Current Management
  - *2001 Groundwater Management Policy*
  - Managed recharge
  - Aquifer Reclamation Program
- Future Management
  - ACWD formed GSA in November 2016
  - ACWD pursuing Alternative Plan / GSP

SANTA CLARA SUBBASIN



- Medium priority basin
- Santa Clara Valley Water District (SCVWD)
  - Special Act District
  - Exclusive management agency
- Current Management
  - *2016 SCVWD GWMP*
  - Managed recharge
  - Groundwater production charges
- Future Management
  - SCVWD formed GSA in May 2016
  - Submitting 2016 GWMP as Alternative Plan

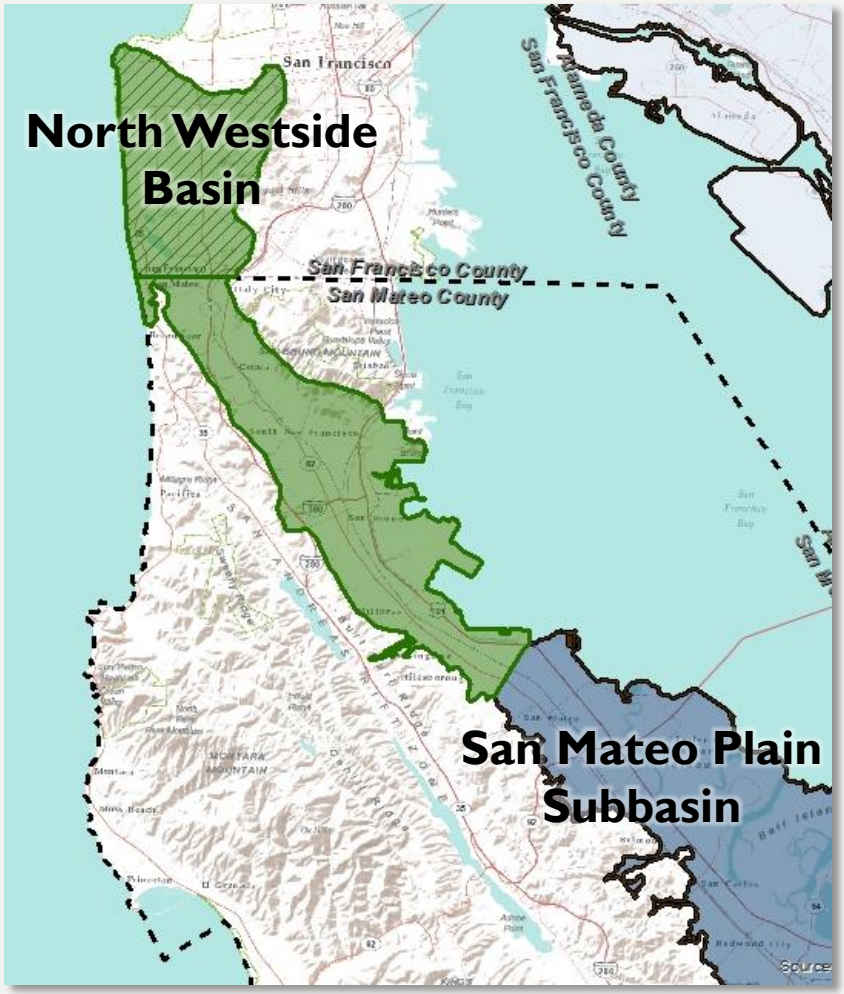
WESTSIDE BASIN



- Adjacent Basin to north
- Very Low priority basin
- Informally split into two management areas
  1. North Westside Basin
  2. South Westside Basin

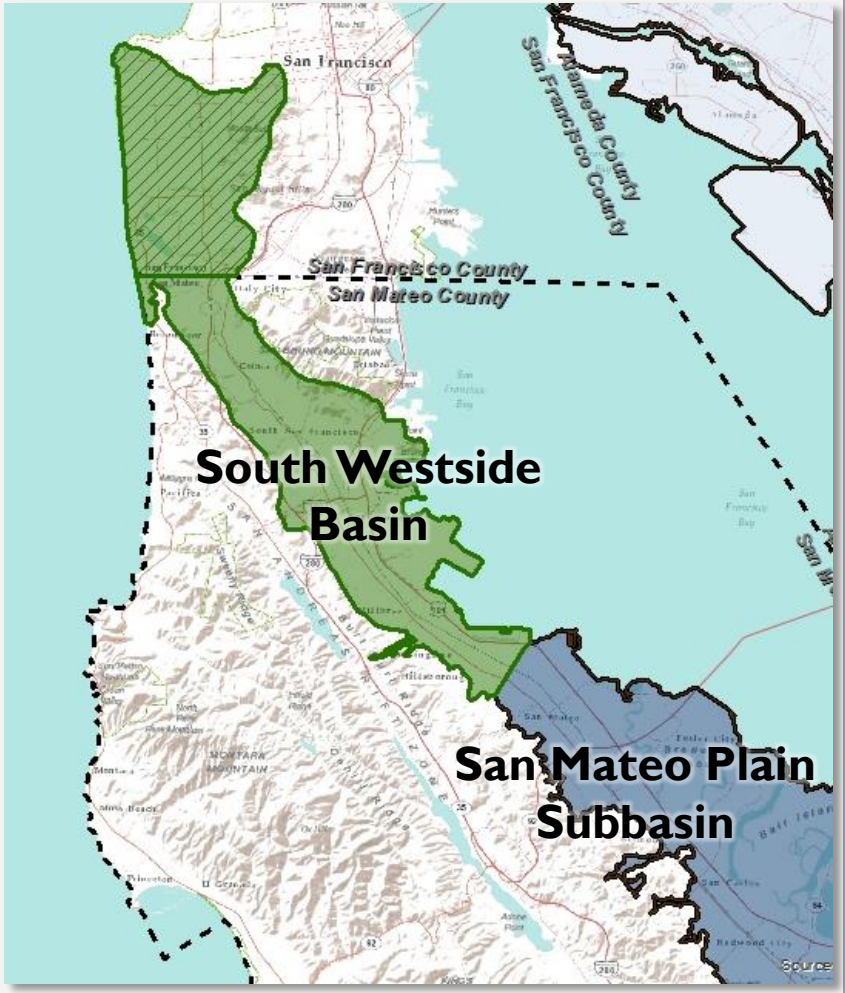
NORTH WESTSIDE BASIN

- Very Low priority basin
- Managed by SFPUC pursuant to *2005 North Westside Basin GWMP*
- Future Management
  - SFPUC formed GSA in March 2015
  - Transitioning 2005 GWMP into GSP

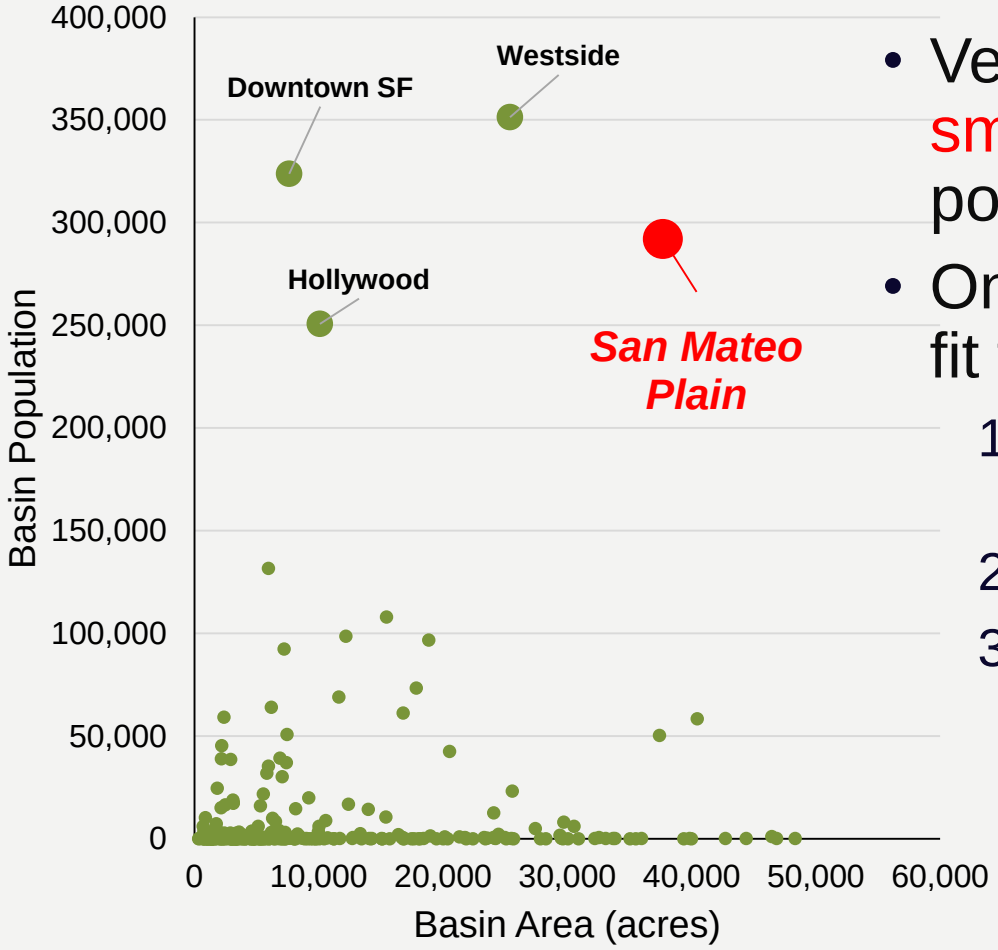


SOUTH WESTSIDE BASIN

- Very Low priority basin
- Management Agencies
  - SFPUC
  - Westside Basin Partners (San Bruno, Daly City and Cal Water)
- Current Management
  - *2012 South Westside Basin GWMP*
  - Groundwater Storage and Recovery Project
  - Self-imposed pumping limitations
- Future Management
  - Exploring GSA options
  - Transitioning 2012 GWMP into GSP



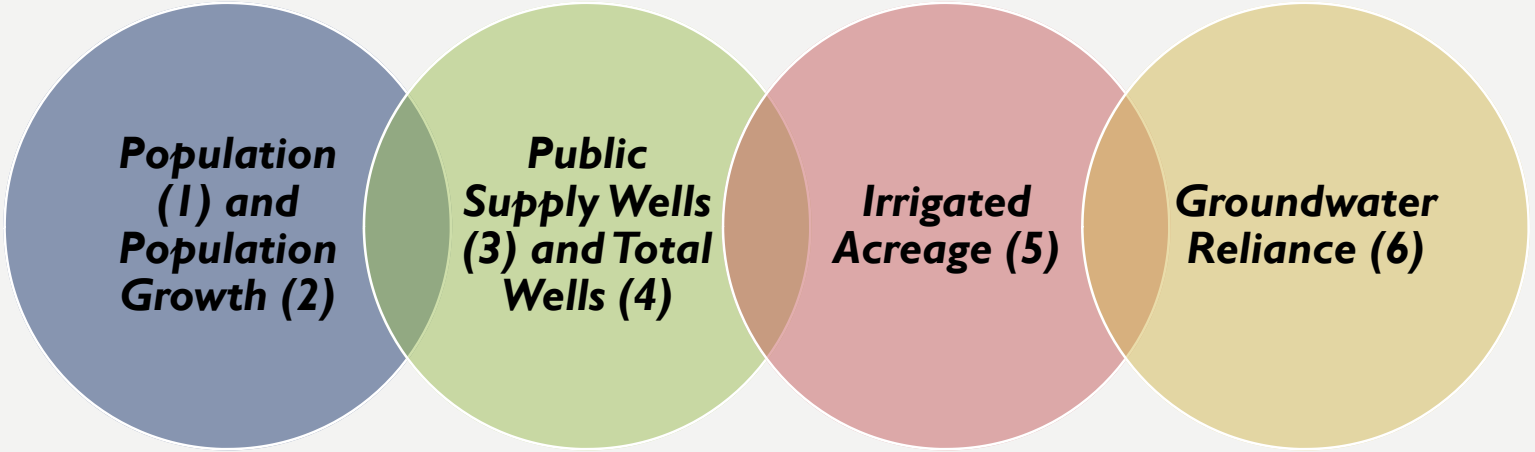
SAN MATEO PLAIN IS UNIQUE IN TERMS OF SIZE AND POPULATION



- Very Low priority basin with small acreage and large population
- Only three other CA basins fit these criteria:
  1. Downtown SF – Little to no groundwater use
  2. Hollywood – Inland basin
  3. Westside – Best analog under these two conditions to San Mateo Plain

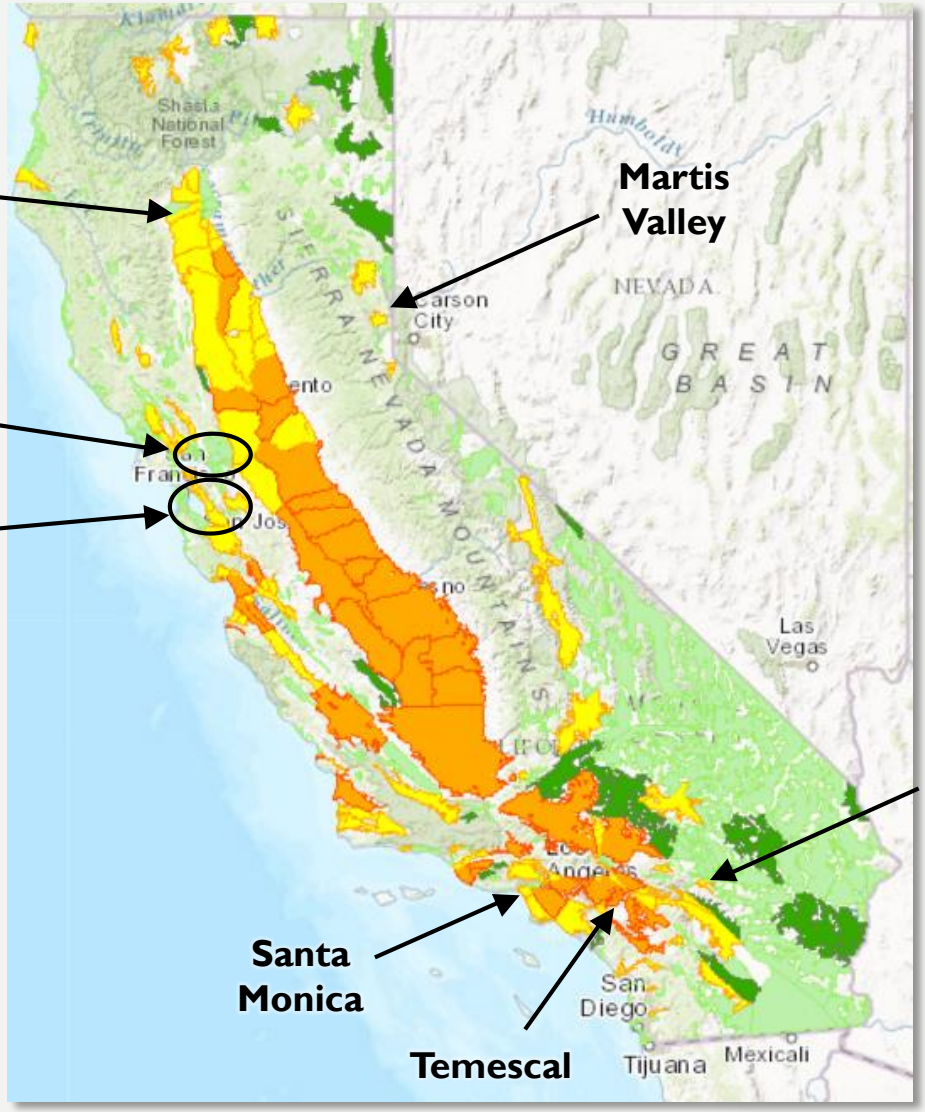
IDENTIFYING OTHER BASINS SIMILAR TO SAN MATEO PLAIN

- Evaluated CASGEM ranking criteria of all 515 groundwater basins to identify basins with similar characteristics to San Mateo Plain
- "Similarly used" basins selected based on CASGEM criteria



Based on 2014 CASGEM prioritization data

"SIMILARLY USED" BASINS ARE GEOGRAPHICALLY DISPERSED



Bowman

Martis Valley

- Ygnacio Valley
- Pittsburg Plain
- San Mateo Plain
- East Bay Plain
- Livermore Valley

Warren Valley

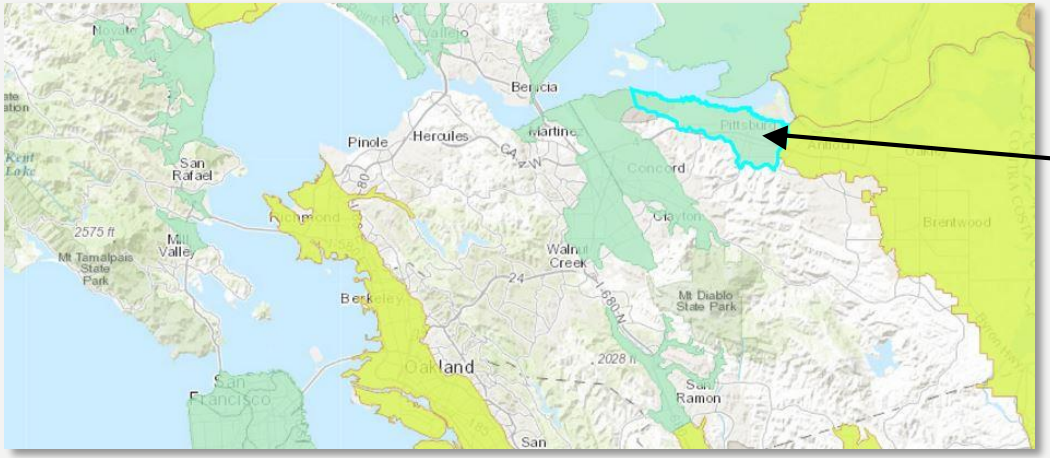
Santa Monica

Temescal

GROUNDWATER MANAGEMENT IN "SIMILARLY USED" BASINS

Basin	Subbasin	CASGEM Priority Ranking	GSA Formation	GSP Preparation
Very Low Priority Basins (SGMA not Required)				
Ygnacio Valley	--	Very Low	Not required	Not required
Pittsburg Plain	**--**	**Very Low**	**Not required**	**Not required**
Multiple Entities with Groundwater Interest				
Santa Clara Valley	East Bay Plain	Medium	Multiple Entities*	GSP
Martis Valley	**--**	**Medium**	**Multiple Entities**	**Alternative**
Exclusive Agency, Single Entity, Adjudicated				
Livermore Valley	--	Medium	Exclusive*	Alternative
Coastal Plain of Los Angeles	Santa Monica	Medium	Single Entity*	GSP
Redding Area	Bowman	Medium	Exclusive	GSP*
Upper Santa Ana	Temescal	Medium	Single Entity*	GSP*
Warren Valley	--	Medium	Adjudicated	Adjudicated

PITTSBURG PLAIN BASIN



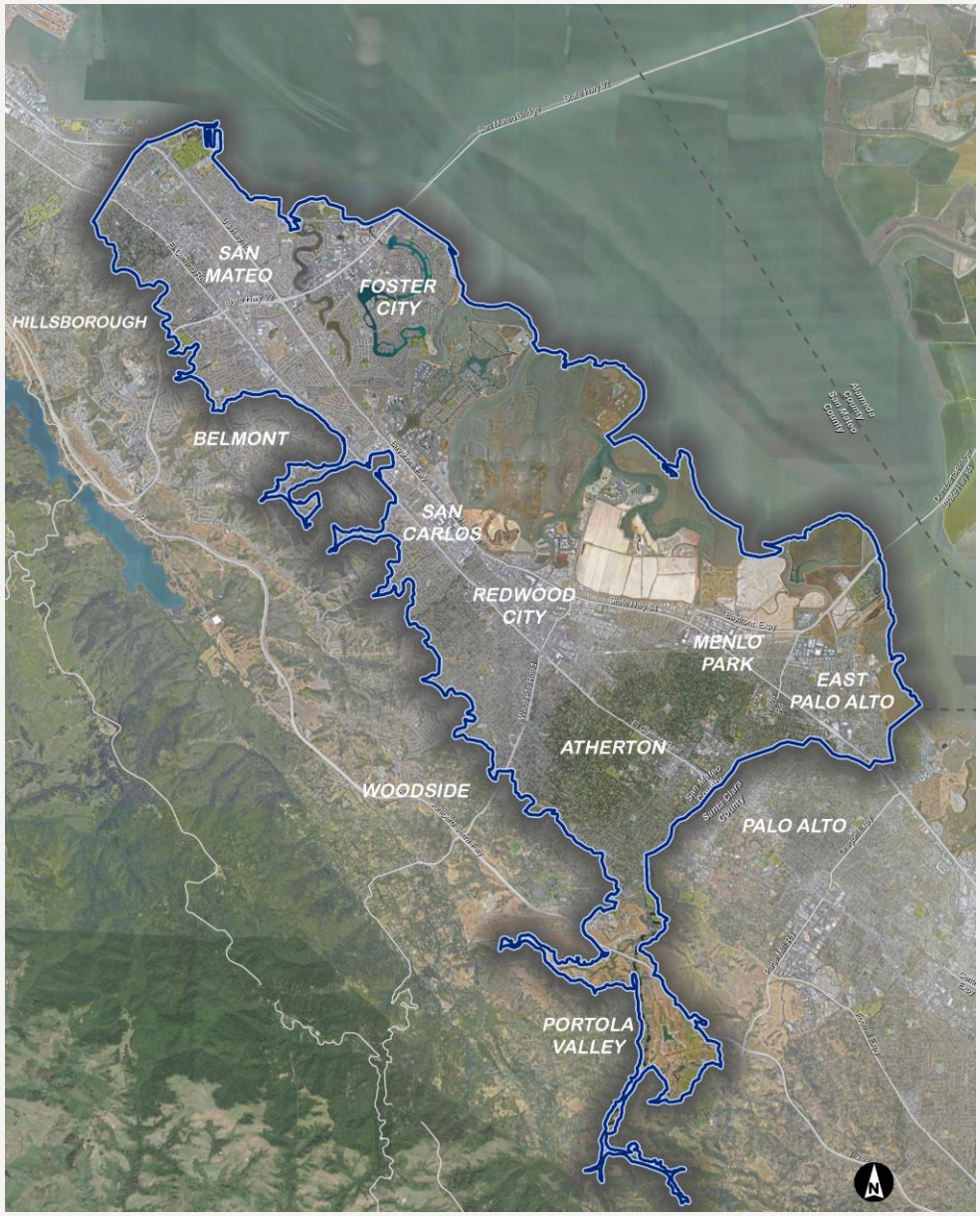
- Very Low priority basin
  - Did not meet 2,000 AFY groundwater use threshold in 2014
  - City of Pittsburg is only major user of groundwater (~1,500 AFY)
  - GWMP prepared by City of Pittsburg in 2012
- Relevant recommendations of Contra Costa County 2015-16 Grand Jury Report on groundwater
  - Form Groundwater Advisory Council
  - Determine basin capacity and available storage
  - County should encourage water districts to form GSAs for low/very low priority basins

MARTIS VALLEY BASIN

- Medium priority basin underlying Truckee
- GWMP prepared in 2013 by Placer County WA, Northstar CSD, Truckee Donner PUD
- Collective effort to pursue an Alternative Plan
  - Counties (Placer, Nevada)
  - Town of Truckee
  - GWMP agencies

TAKE-AWAYS

- Groundwater is actively managed in each of the adjacent basins
- Additional state-wide examples
  - Very Low priority basins
  - Similar water supply portfolio
  - Multiple entities with an interest in groundwater
- Provide context for evaluating management potential in the San Mateo Plain Basin



POTENTIAL GROUNDWATER MANAGEMENT OPTIONS

SAN MATEO PLAIN

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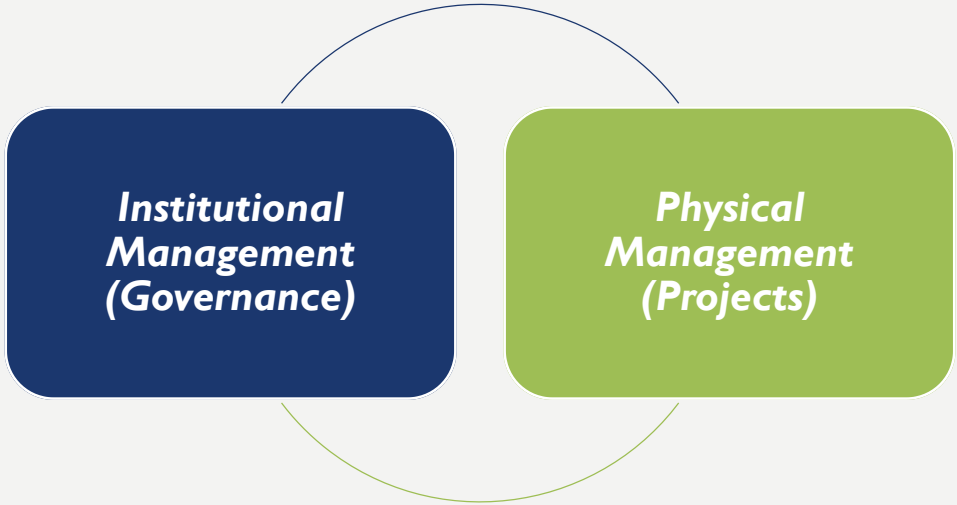
OVERVIEW



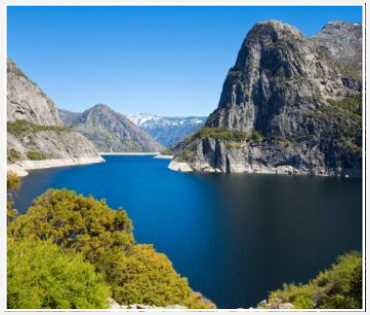
- Potential groundwater management options developed as part of TM4 / Phase 1 Report
  - Intended to present a full “envelope” of possible projects
  - Realistically, some management options/projects may have limited potential within the Basin
- Feasibility of implementing certain options will be further explored in Phase 2

SEVERAL ASPECTS OF BASIN MANAGEMENT WERE EVALUATED

- *Water sources*
- *Delivery methods*
- *Recharge projects*
- *Pumping regulation*
- *Groundwater quality projects*

SEVERAL WATER "SOURCES" CAN BE USED TO AUGMENT RECHARGE

Hetch-Hetchy Water



- SFPUC is sole wholesale supplier in Basin
- High quality source
- Limited by cost and availability

Recycled Water

- Anticipated supply from three WWTPs
- Limited by demands, infrastructure costs, regulatory constraints

Stormwater

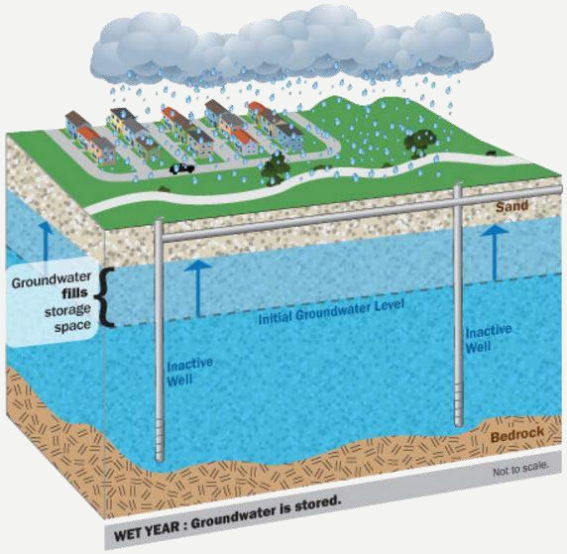
- Large portion of stormwater is conveyed directly to Bay
- C/CAG SMCWPPP

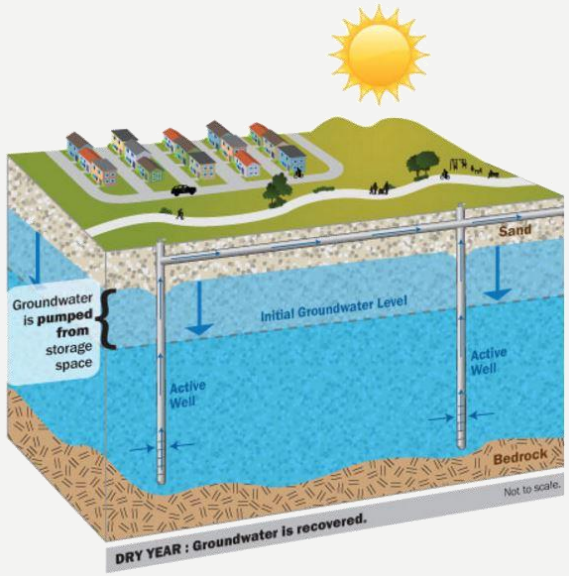
Water Conservation

- Reducing potable water demands decreases groundwater demand

CONJUNCTIVE USE / IN-LIEU RECHARGE

- Coordinated use of surface water and groundwater
  - In wet years, surface water is used “in-lieu” of groundwater, allowing groundwater to recharge
  - In dry years, groundwater is used to meet demands
- Numerous examples exist in nearby basins
  - GSR Project in Westside Basin
  - SCVWD in Santa Clara Subbasin
  - ACWD in Niles Cone Subbasin
  - Zone 7 in Livermore Valley Basin





Source: SFPUC, 2016, http://sfwater.org/bids/projectDetail.aspx?prj_id=309

MANAGED RECHARGE

In-Stream Recharge

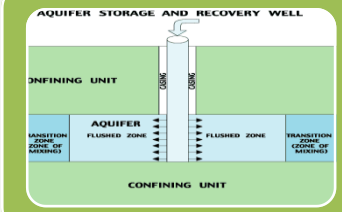
- "Un-line" streams / enhance recharge
- ACWD, SCVWD

Stormwater Recharge

- Redirect storm flows to pervious soils
- Coordination with C/CAG SMCWPPP
- ACWD

Percolation Ponds

- ASR / IPR / DPR
- Requires favorable geology
- ACWD, SCVWD



Subsurface Injection

- ASR / IPR / DPR
- SCVWD, Palo Alto*

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GROUNDWATER PRODUCTION REGULATION

Pumping Charges

- Incentivize efficient use
- Provide revenue for recharge projects
- SCVWD, ACWD

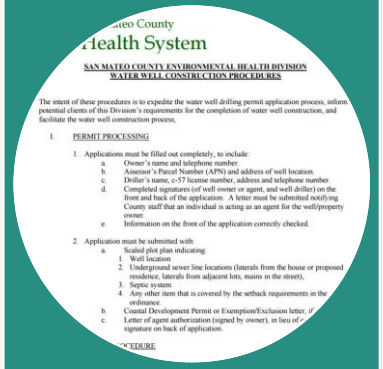
Pumping Restrictions

- Quotas via "self-adjudication"
- Well "buy-back" programs
- Westside Basin Partners, Zone 7

MAINTENANCE OF GROUNDWATER QUALITY

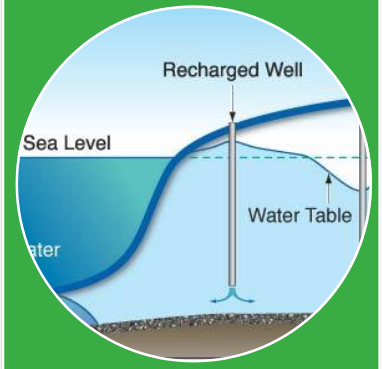
Well Monitoring Program

- Water levels and quality
- Triggers and thresholds



Well Ordinance Revision

- Cross-contamination between aquifers
- ACWD revision in March 2015



Saltwater Intrusion Prevention

- Monitoring ("sentry" wells)
- Mitigation (injection/desal)
- ACWD

Wellhead Protection Program

- Minimize risk of conduits for contamination
- ACWD, SCVWD, EBMUD

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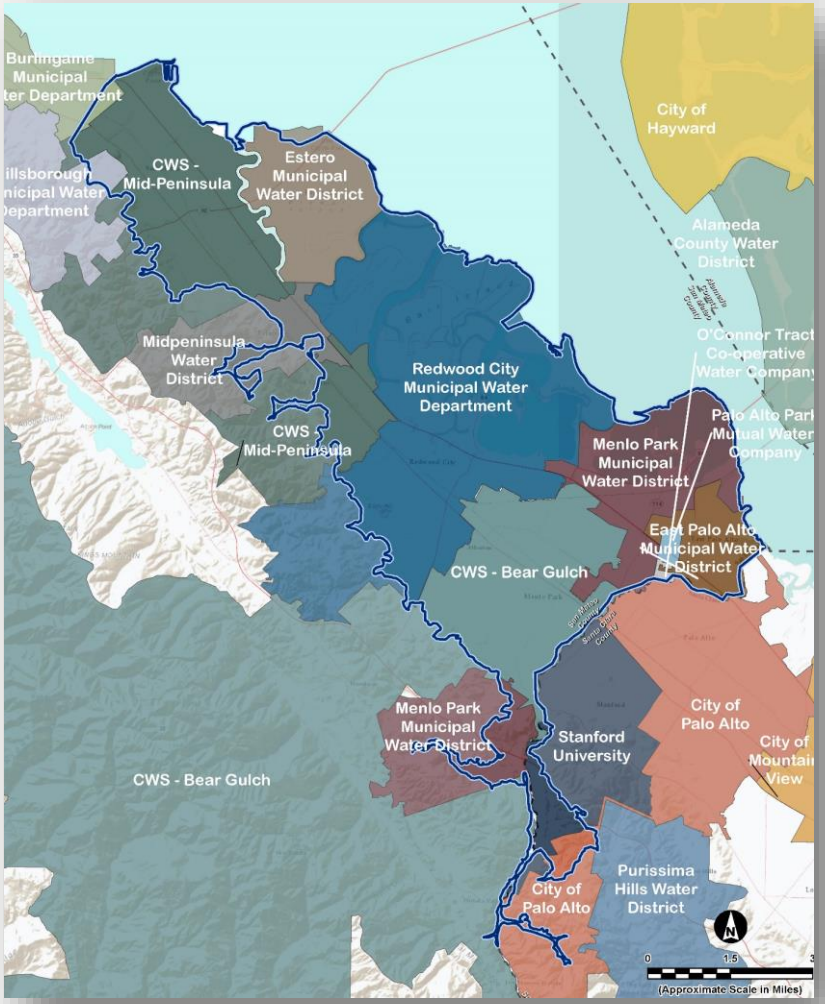
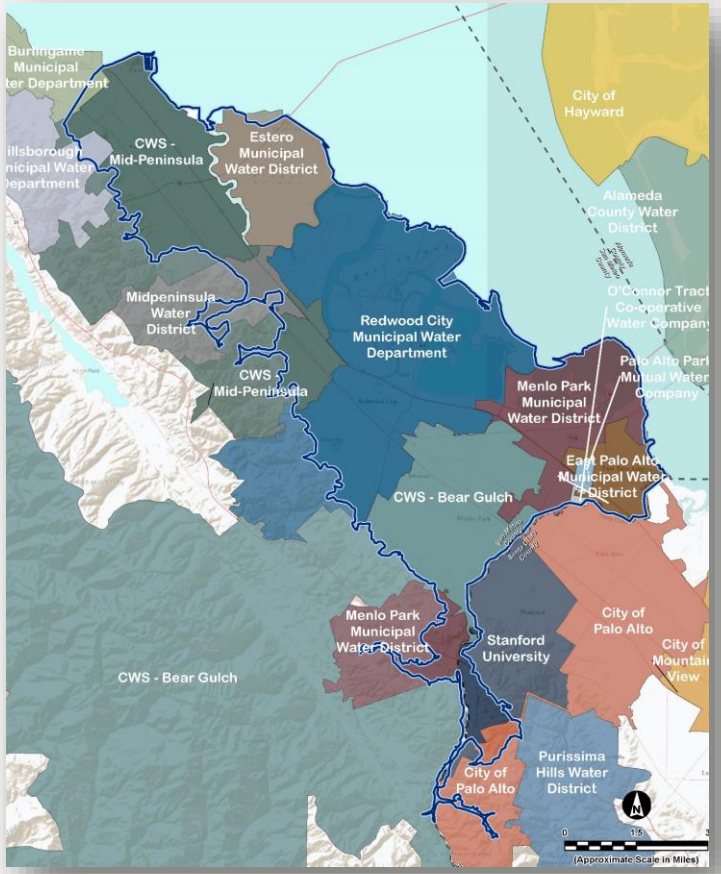
INSTITUTIONAL FRAMEWORKS CAN SUPPORT SUCCESS

- Multiple water suppliers overly the Basin
- Currently no framework to implement Basin-wide groundwater projects
- Projects can benefit from economies of scale
- State funding is often more accessible to projects that demonstrate a coordinated approach by multiple stakeholders



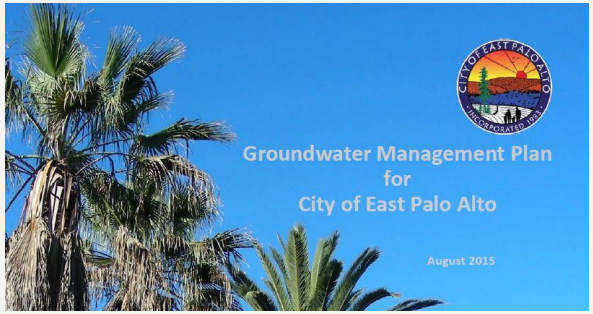
THERE ARE 43 GSA-ELIGIBLE ENTITIES IN THE BASIN

- Cities and towns (13)
- Water districts, agencies, and suppliers (9)
- Mutual water companies and utilities regulated by CPUC (4)
- Counties (2)
- Wastewater agencies (12)
- Other entities (3)



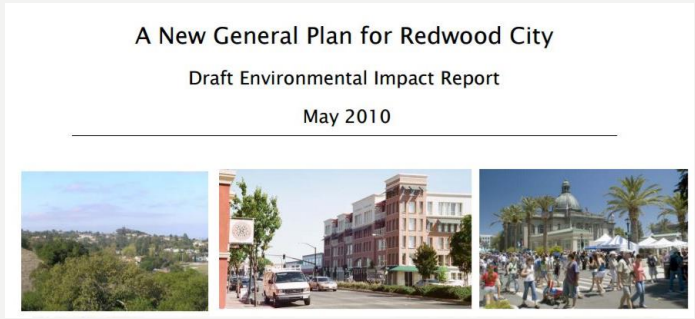
**** Some entities overlie only a small portion of the Basin***

STATUS QUO



- Local GWMPs

- County oversight of well permitting and groundwater remediation



- "As-needed" environmental review

OPTIONS FOR MORE FORMALIZED GOVERNANCE / MANAGEMENT

Advisory / Technical Committee

- Facilitates implementation of regional or Basin-wide studies/projects
- Provides framework to obtain funding (e.g. CASGEM compliance, IRWMP projects)

Coordinated Agencies

- Regional coordination through MOU / MOA or JPA
- Development of Basin-wide Management Plan
- Example: Westside Basin Partners in South Westside Basin

SGMA Framework

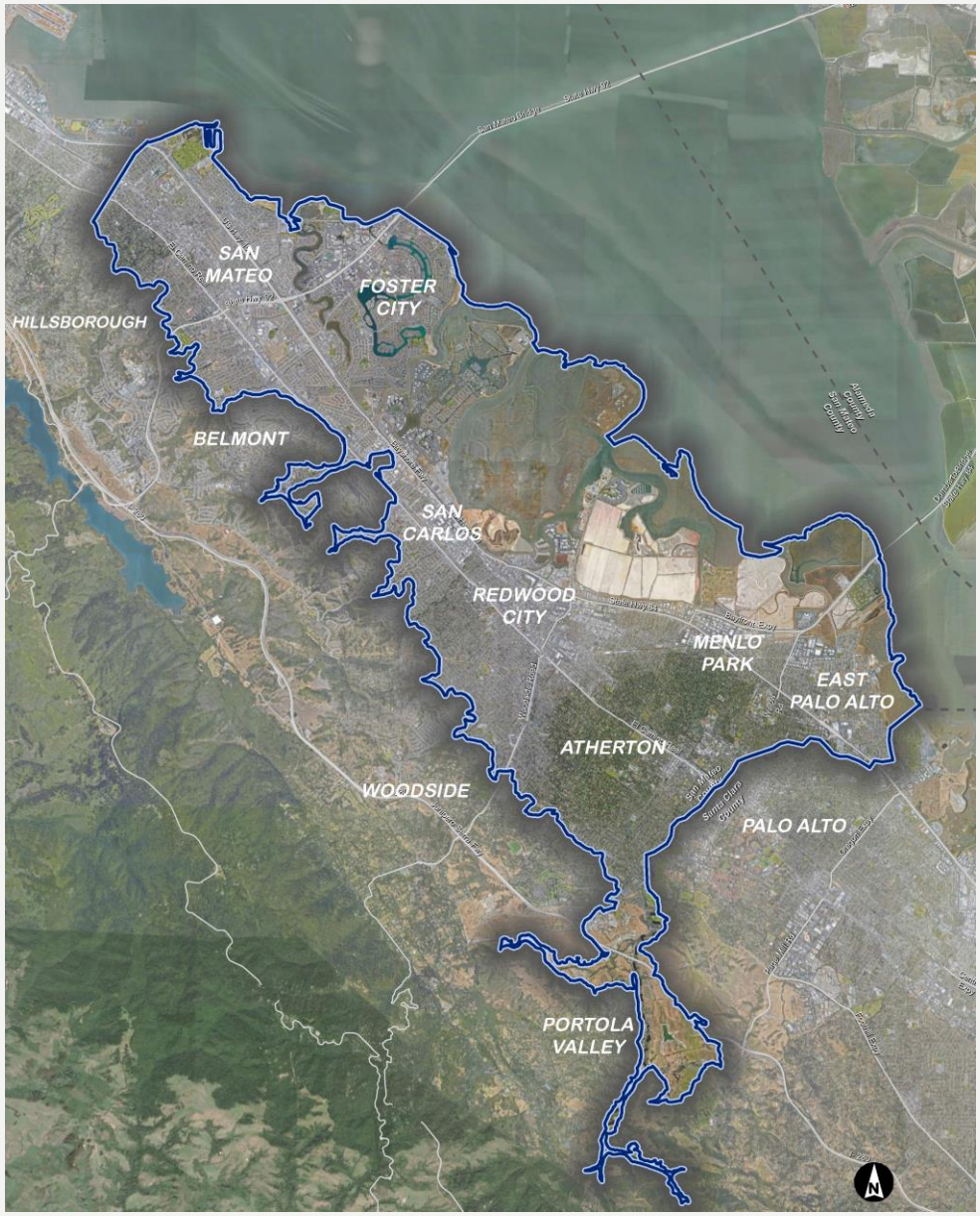
- If re-prioritized, there are many GSA-eligible entities within the Basin
- Basin could comply with SGMA through multiple GSAs / GSPs or a single, coordinated GSA / GSP

CONCLUSION

- Basin has historically experienced undesirable results (e.g., subsidence, salt water intrusion)
- Basin has since recovered and is now in stable condition
- Groundwater management could prevent undesirable results from occurring again, even as groundwater development increases
- Many opportunities exist to collaborate on multi-benefit, regional projects
- Projects will continue to be evaluated through the stakeholder outreach process

NEXT STEPS

- Phase 1 Report
  - Stakeholder Workshop #5 – Jan / Feb 2017
- Phase 2 – 2017
  - Technical Investigations
  - Continued Stakeholder Engagement
- Phase 3 – 2018
  - Final Report



BREAKOUT SESSION

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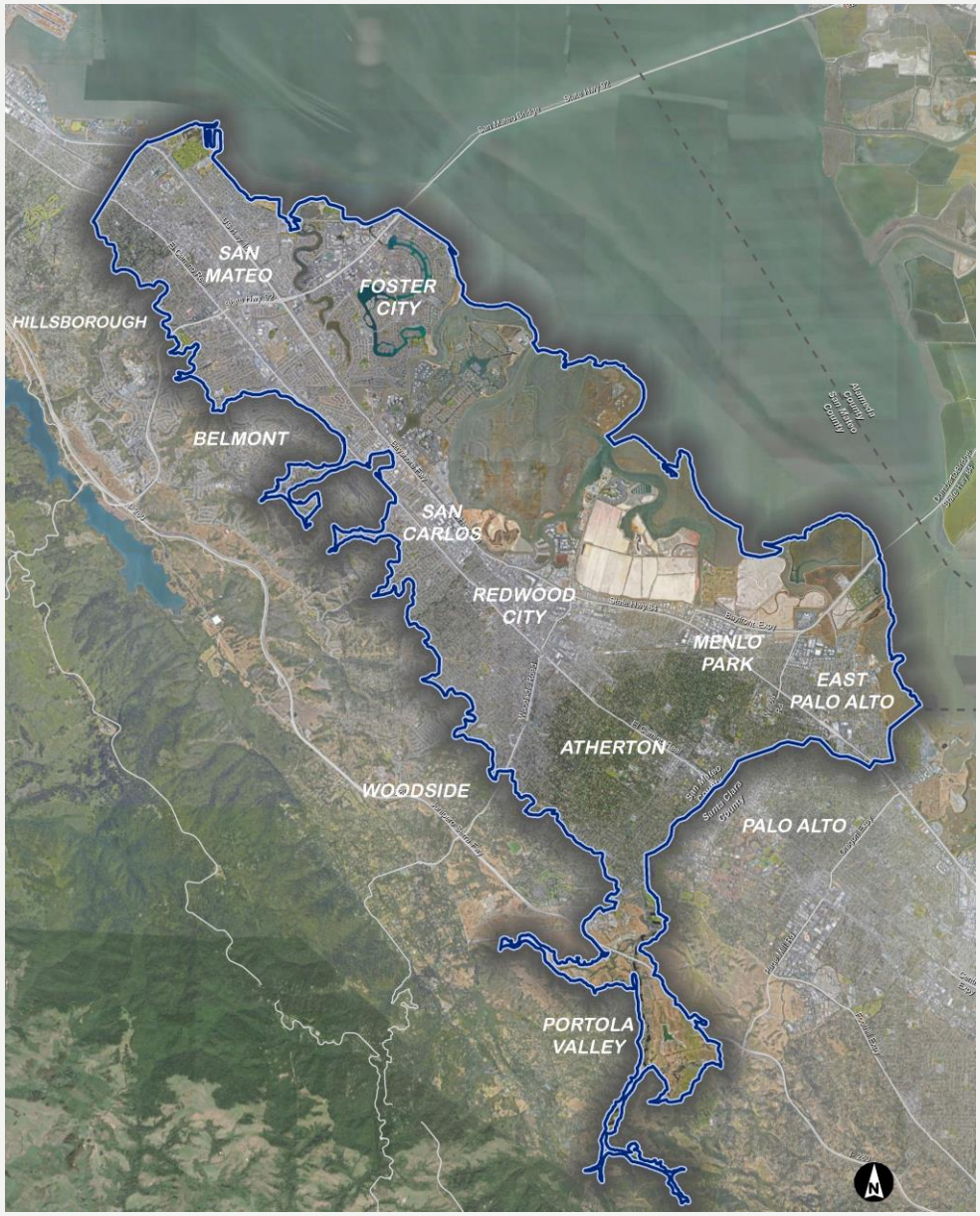
BREAKOUT SESSION TOPICS

- What do you think are the most important issues to focus on when we think about "groundwater management options"?

- Do you envision groundwater management occurring within the Basin?
  - What potential actions or options seem feasible to you?
  - What actions or options should be prioritized?
  - What limitations do you believe exist?



ROUND TABLE DISCUSSION

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ROUND TABLE DISCUSSION

- Groundwater management options
- Potential partnerships
- Potential funding opportunities