

# Groundwater Reliability Partnership for the San Mateo Plain Sub-basin



October 19, 2015

## BAWSCA

“A multicounty agency authorized to plan for and acquire supplemental water supplies, encourage water conservation and use of recycled water on a regional basis.”

*[Bay Area Water Supply and Conservation Agency Act, AB2058(Papan-2002)]*

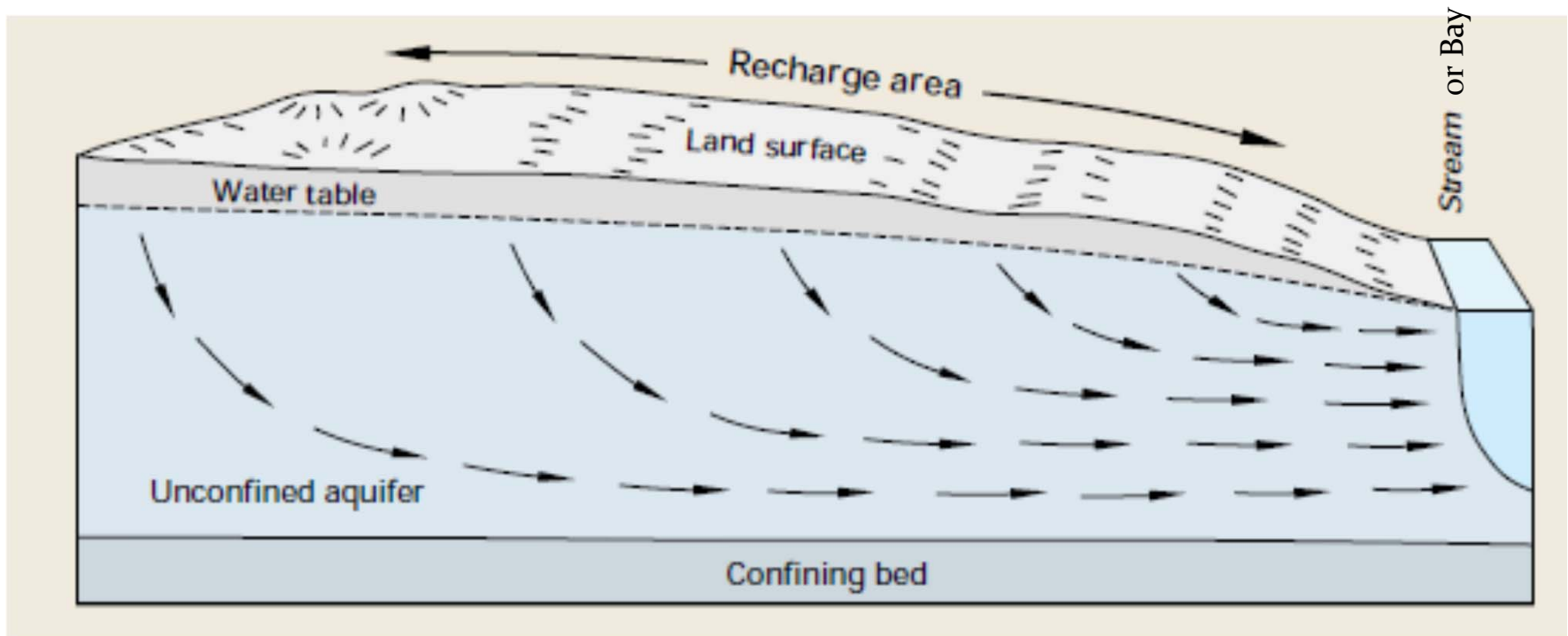


# Welcome!

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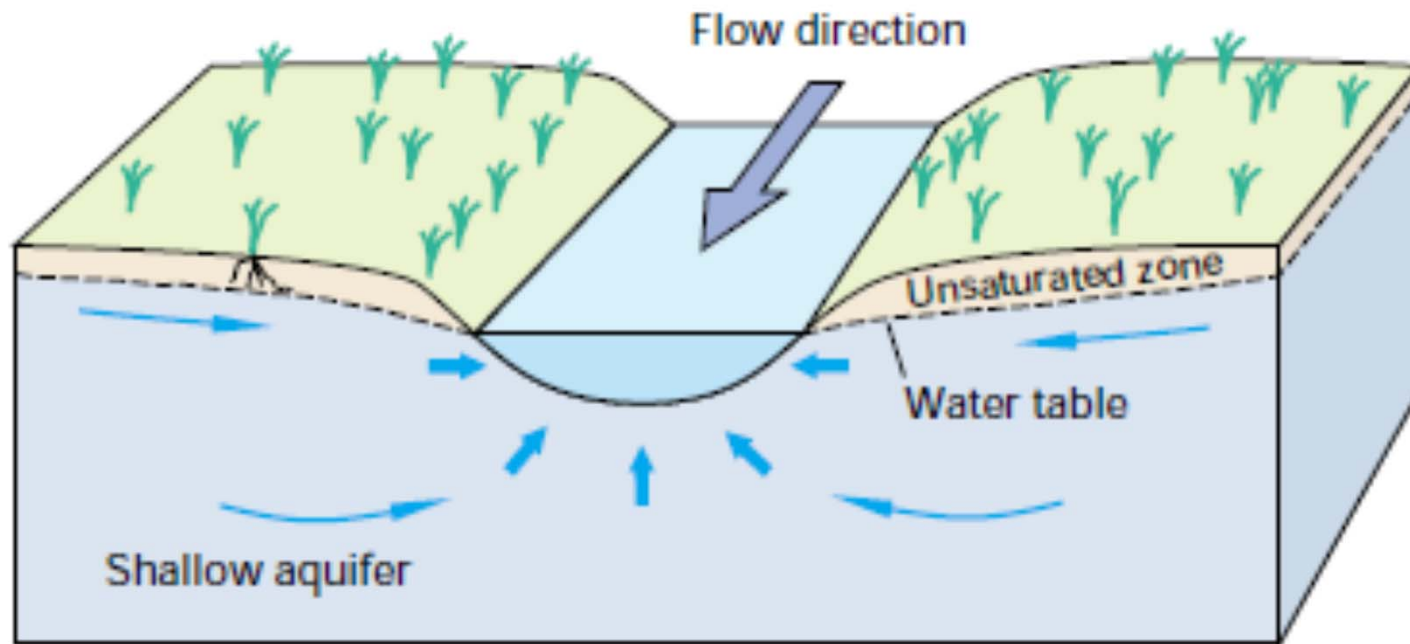
- Agenda for today's meeting:
  - Welcome and Introductions
  - Overview of Groundwater and the San Mateo Plain Sub-Basin
  - Overview of the Sustainable Groundwater Management Act (SGMA)
  - Review of Current Efforts in the San Mateo Plain Sub-basin
  - Discussion of potential goals for a Groundwater Reliability Partnership
  - Next Steps

# What is a Groundwater Basin?



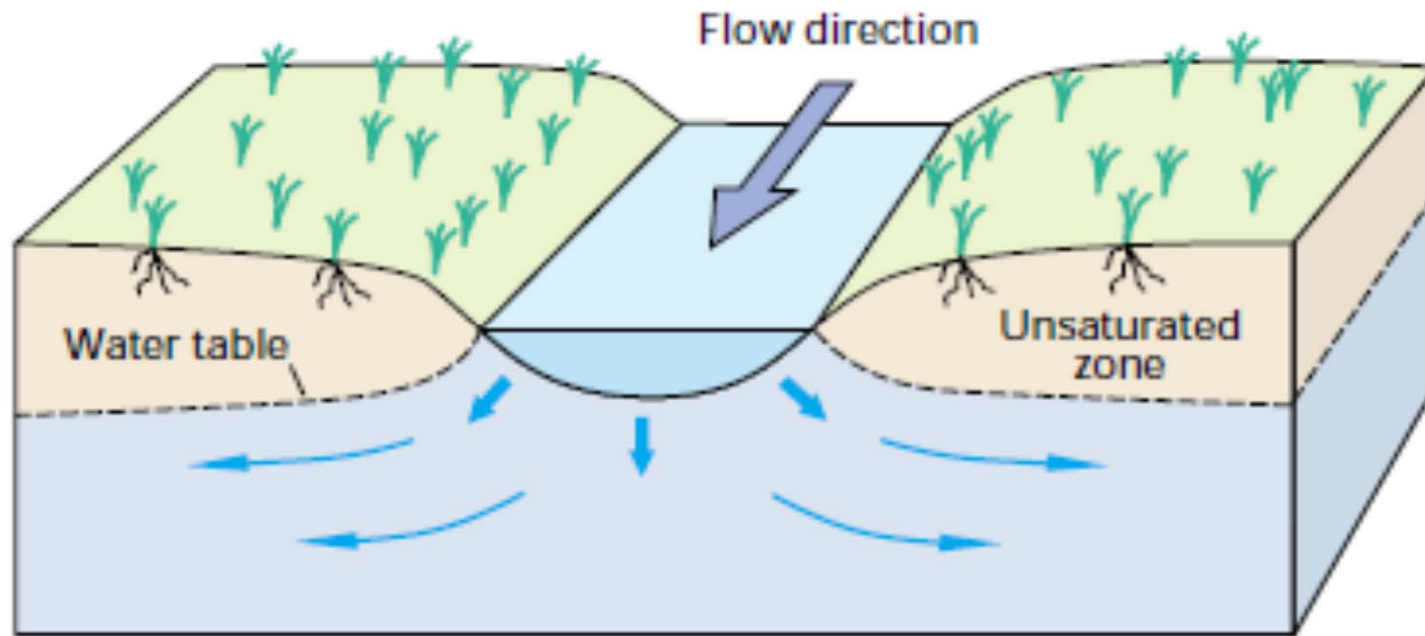
# How Does Groundwater Interact with Surface Water?

- Gaining stream



# How Does Groundwater Interact with Surface Water?

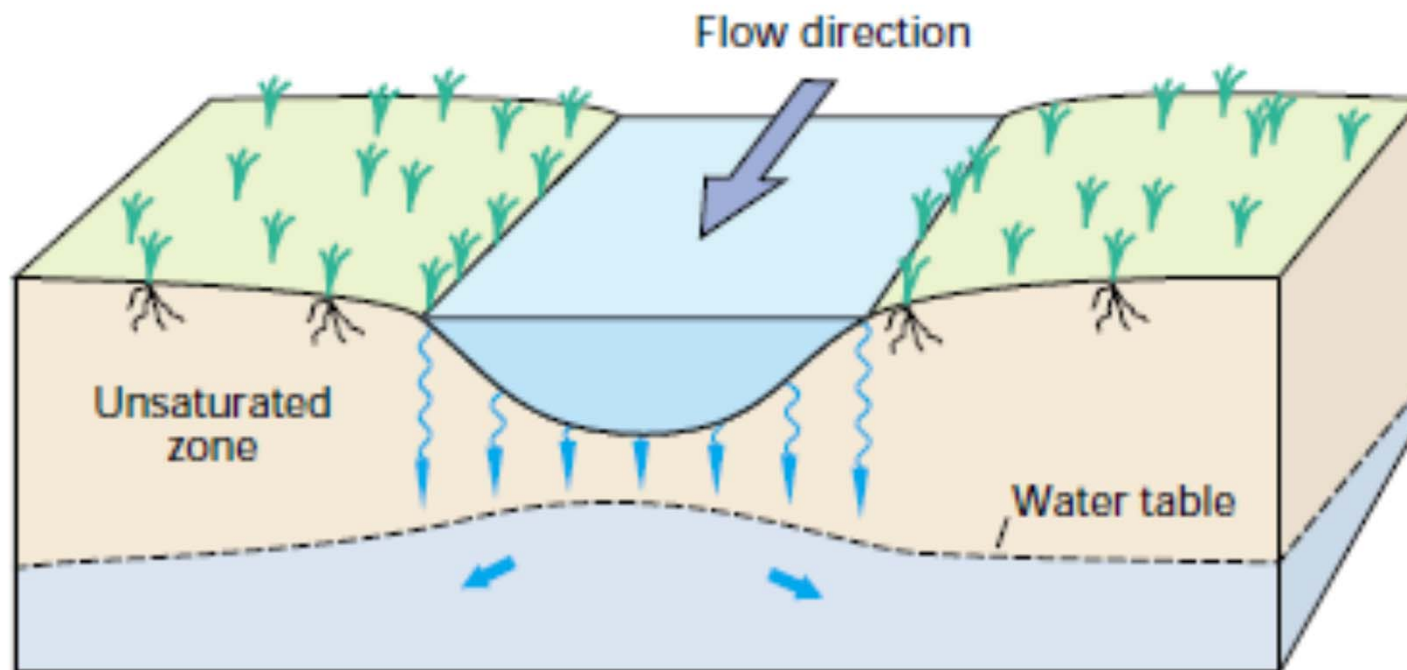
- Losing stream





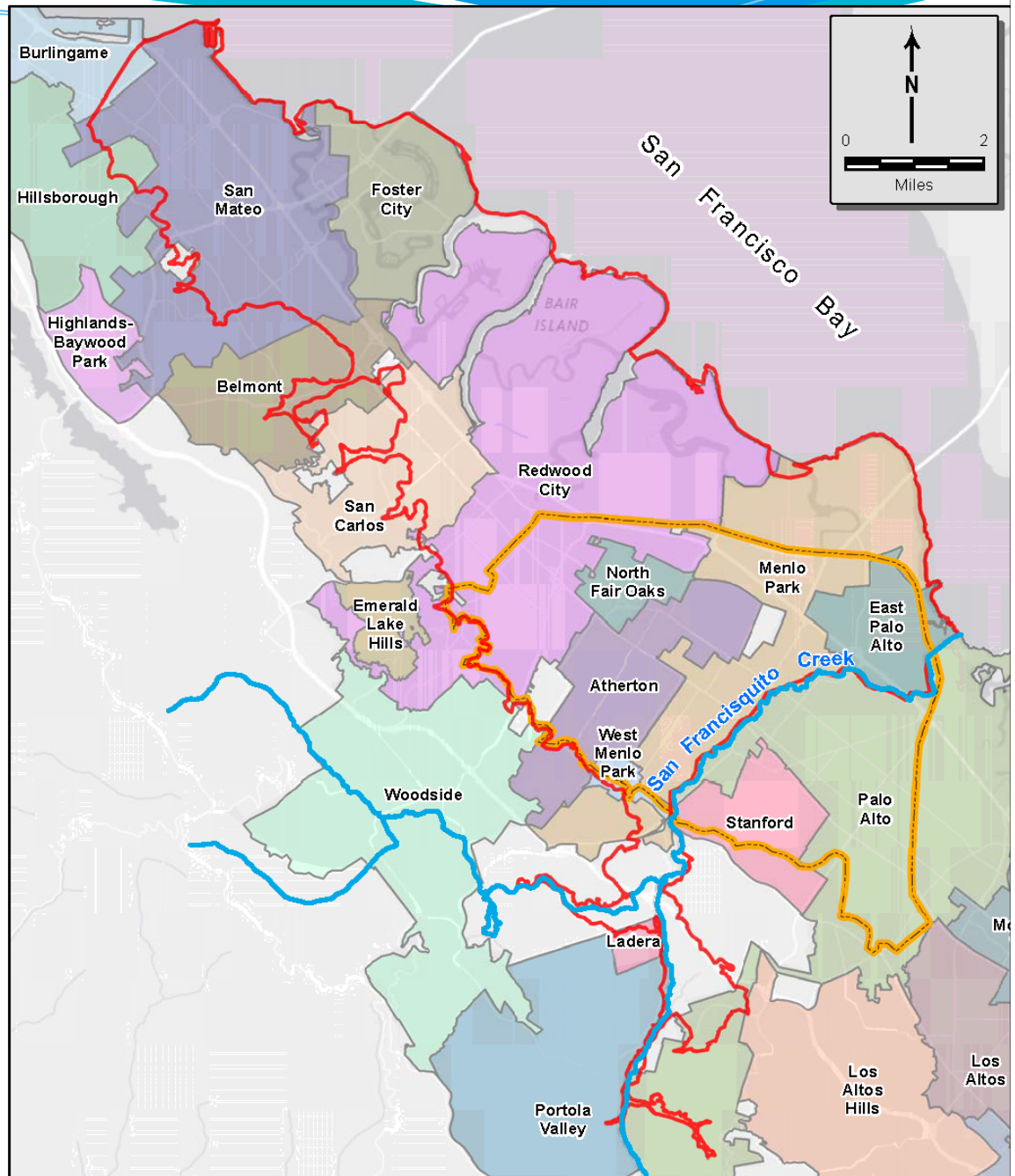
# How Does Groundwater Interact with Surface Water?

- Disconnected stream



# Where is the San Mateo Plain Sub-basin?

- Many cities and communities overlie the basin
- Many water agencies overlie the basin
- The USGS defines a different basin: the San Francisquito Cone



# What Basins are Adjacent to the San Mateo Plain Sub-basin?

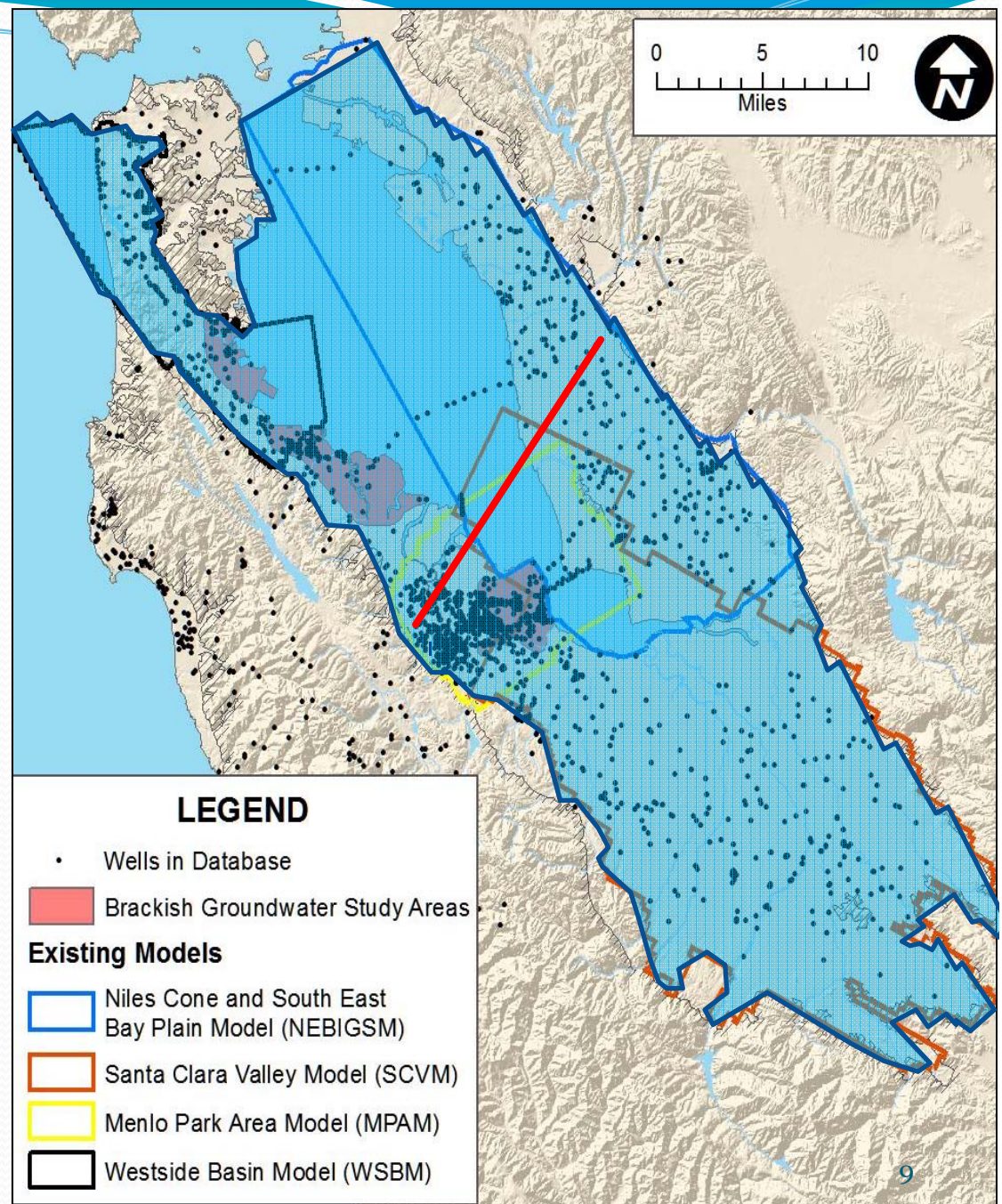
- San Mateo Plain Sub-basin is a part of the Santa Clara Valley Basin
  - Santa Clara
  - Niles Cone
  - East Bay Plain
- Degree of connectivity between all sub-basins not well understood



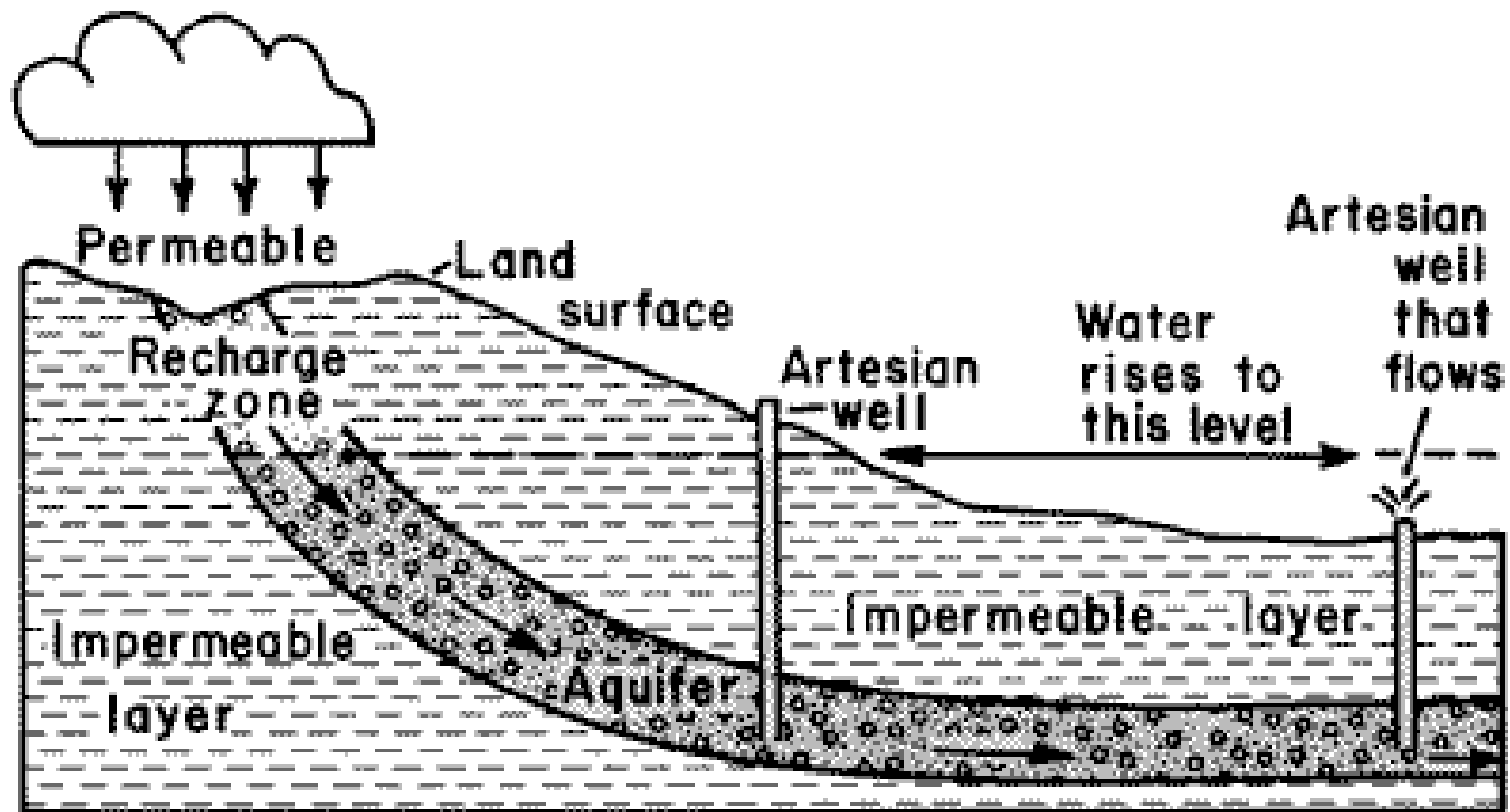


# What is Known about the San Mateo Plain Sub-basin?

- Historical well and other data
- Existing groundwater models
- Provides understanding of how Basin functions

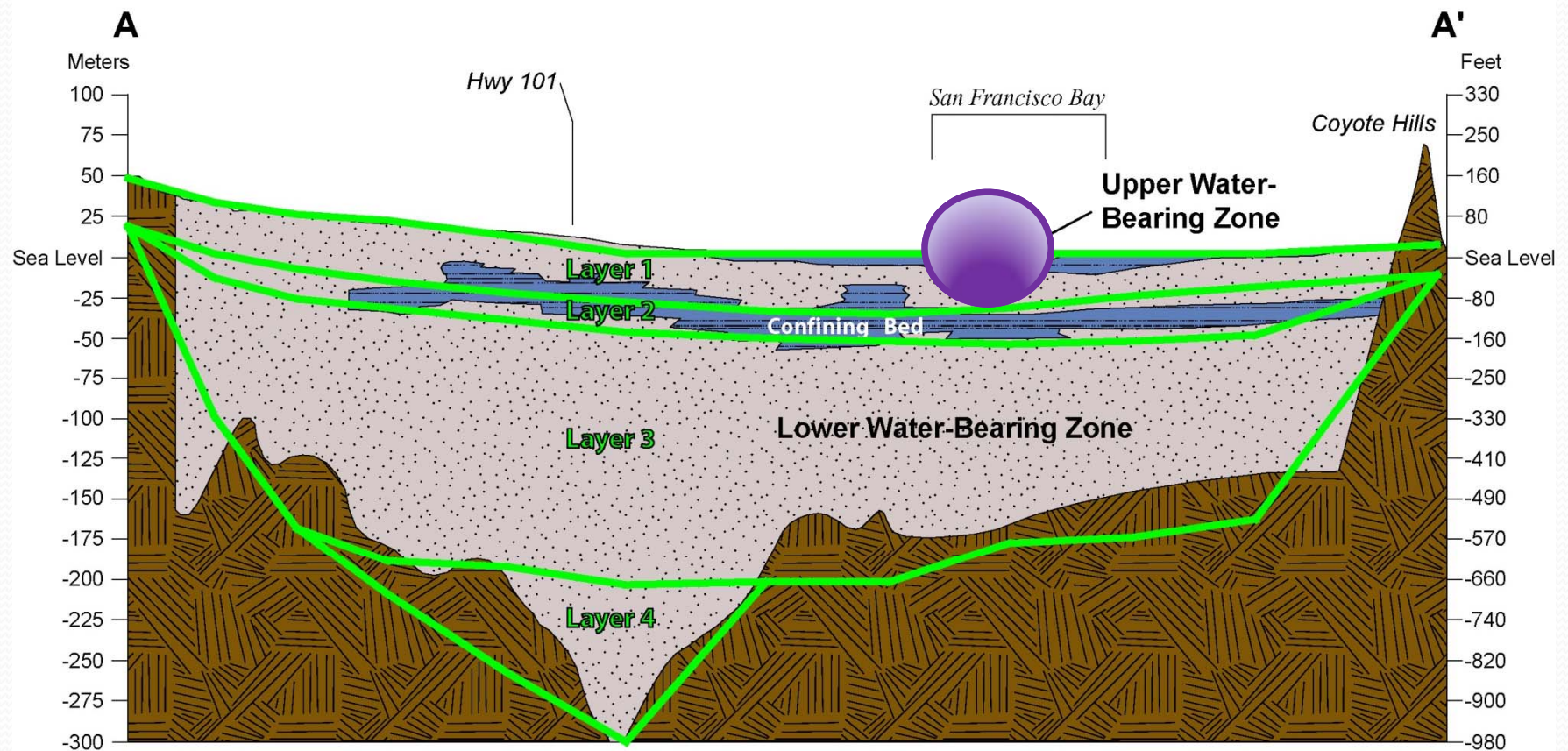


# Where does Recharge Occur in a This Basin?





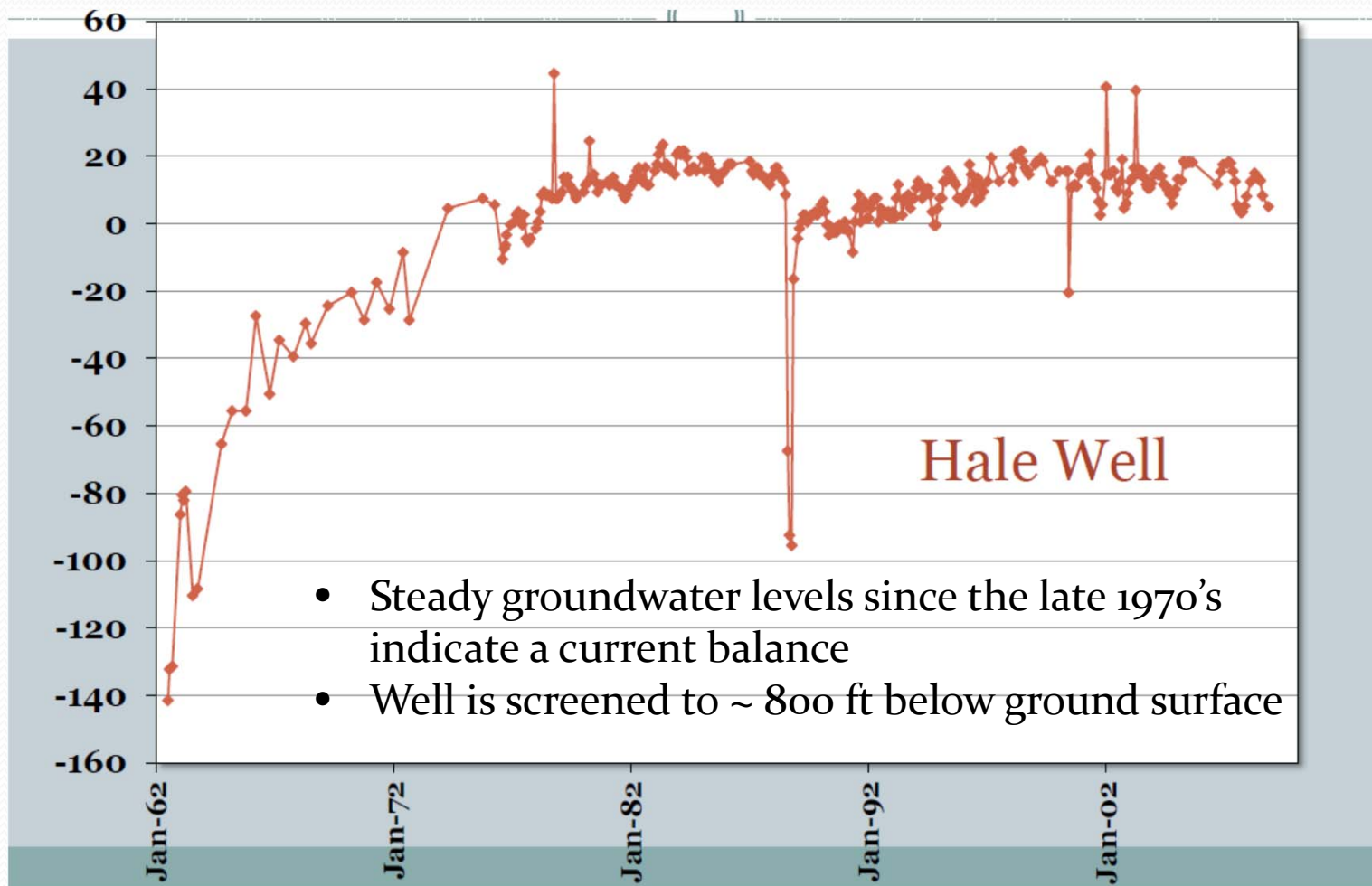
# San Mateo Basin's Deep Aquifer is Recharged in West



***Geologic Cross Section of Basin***

0 1 2 Miles  
Vertical Exaggeration 20x

# San Mateo Plain Sub-basin: In Balance





# Steady Groundwater Levels Indicate a Current Balance

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- “Water balance” is one measure of a groundwater basin’s condition
  - “Basin Input” - “Basin Output” = Change in Basin storage
- Basin inputs include rainfall and irrigation recharge, recharge from creeks, pipeline leakage
- Basin outputs include baseflow to creeks, pumping, evapotranspiration
- Balance flows to Bay
- BAWSCA’s Strategy Groundwater Model provides some estimates on different components of the water balance

# Groundwater Legislation Driving Statewide Conversation

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- Sustainable Groundwater Management Act and this historic drought has brought groundwater issues to the forefront
- All basins as defined by the California Department of Water Resources (DWR) have been ranked and prioritized
- San Mateo Plain Sub-basin is a very low priority basin
  - High and medium priority basins are required to create Groundwater Sustainability Plans
  - No action required for very low priority basins



# Agenda

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# The Sustainable Groundwater Management Act (SGMA)

and  
The San Mateo Plain Subbasin

Iris Priestaf, PhD





# Purpose of SGMA

- To establish and maintain sustainable groundwater management in California groundwater basins
- To support management at the local or regional level
- To authorize the State to be a backstop



# What is sustainability?



“Sustainable yield”

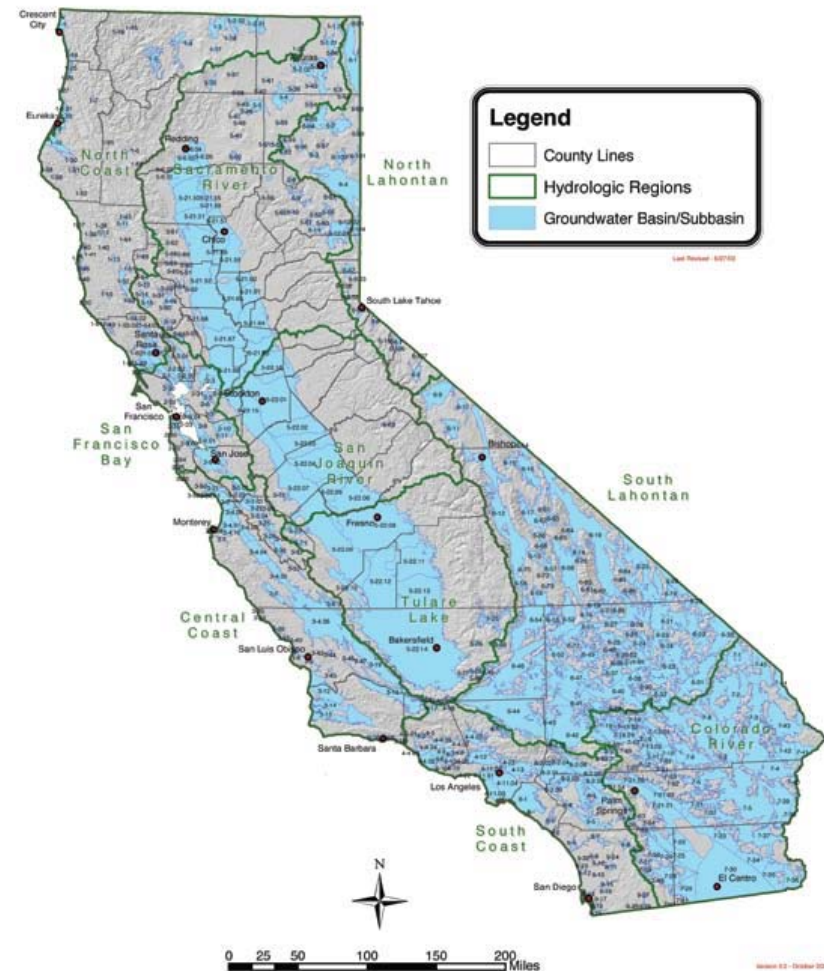
maximum long-term quantity of water that can be withdrawn annually without causing *an undesirable result*

- lowering of groundwater levels
- reduction of groundwater storage
- seawater intrusion
- degraded water quality
- land subsidence
- surface water depletions with adverse impacts on beneficial uses

*Significant and unreasonable*

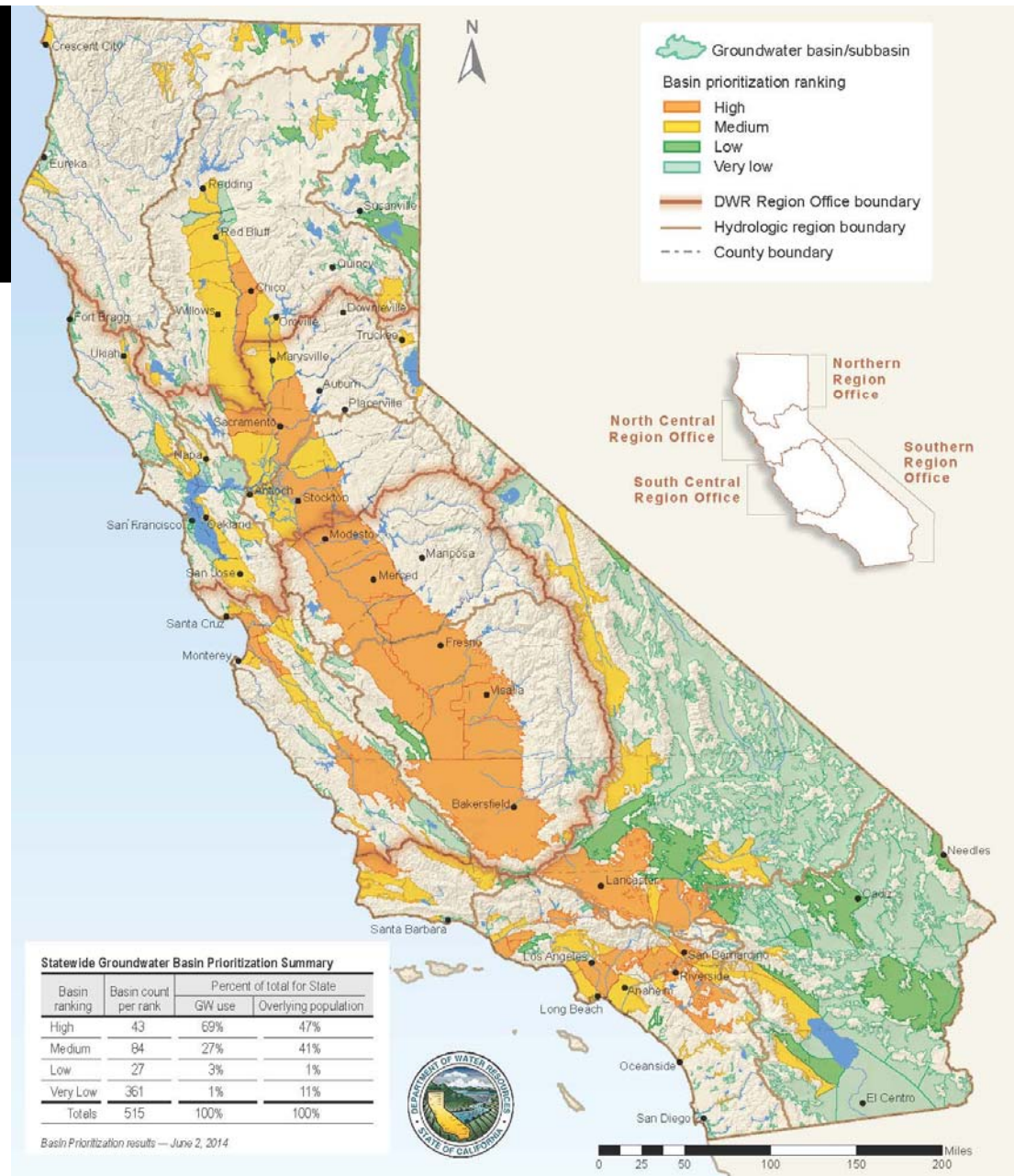
# Which groundwater basins?

- Bulletin 118 basins (515)
- CASGEM priority ranking
  - Population
  - Population growth
  - Public supply wells
  - Total wells
  - Irrigated acreage
  - Reliance on groundwater
  - Impacts on groundwater
  - Other information



# Which basins?

- Required for high and medium priority basins
- Encouraged for low and very low priority basins
- San Mateo Plain Subbasin is a very low priority basin
- In the future, DWR will regularly re-assess basin boundaries and priorities

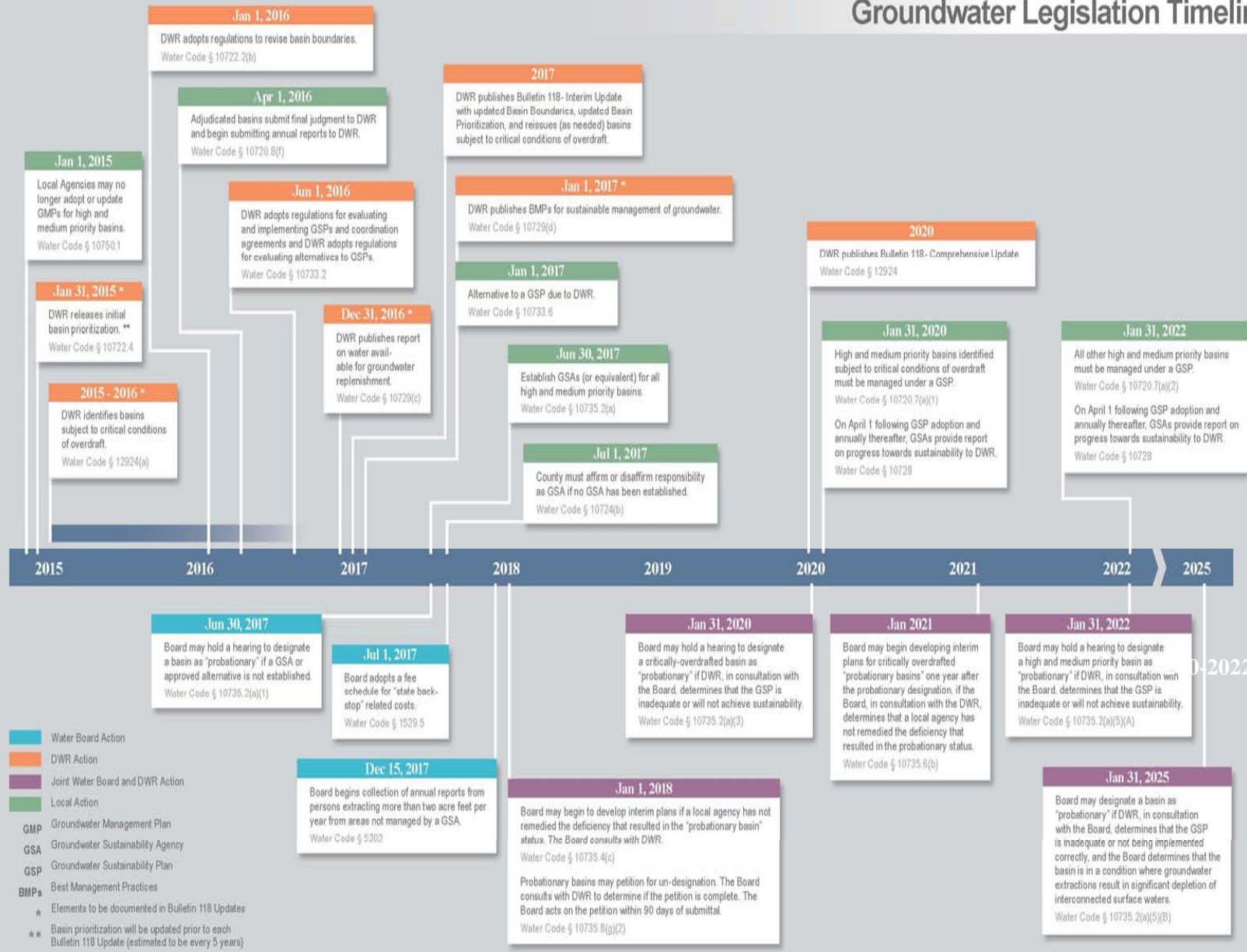




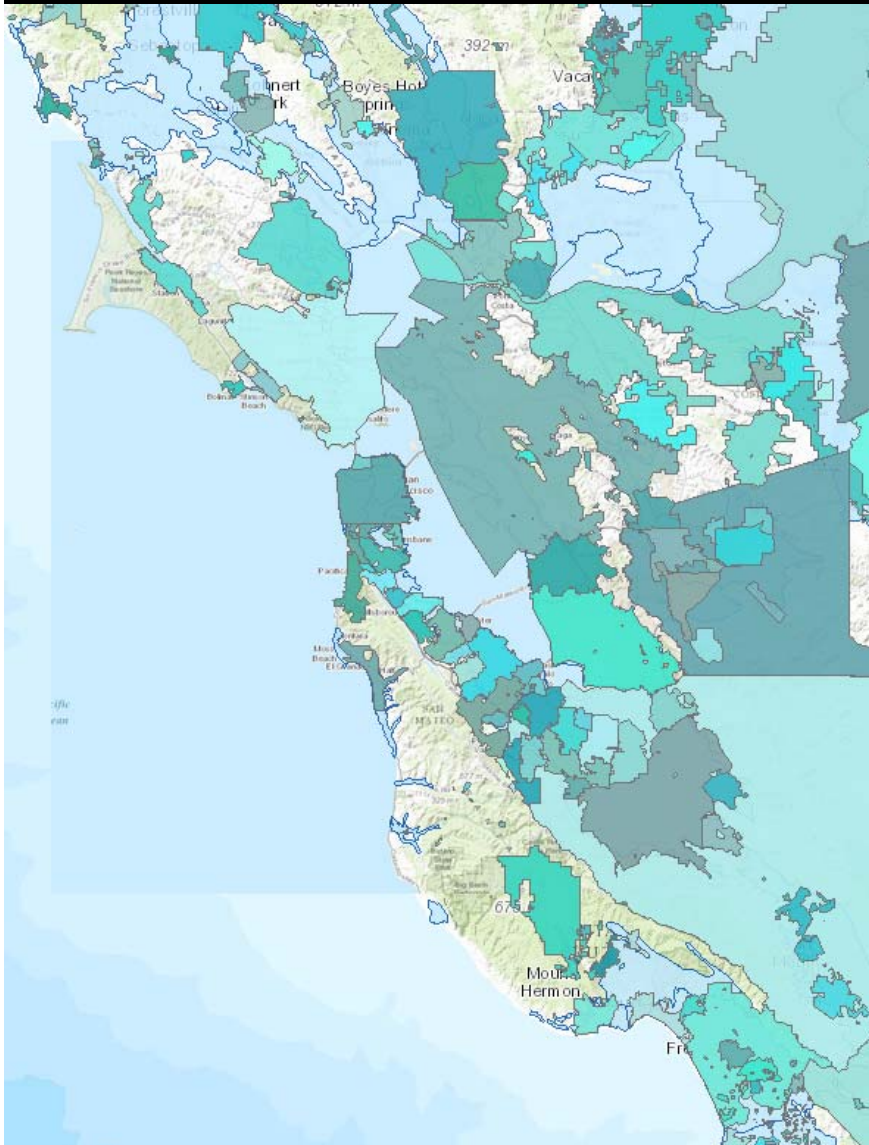
# Steps to Sustainability



# Groundwater Legislation Timeline

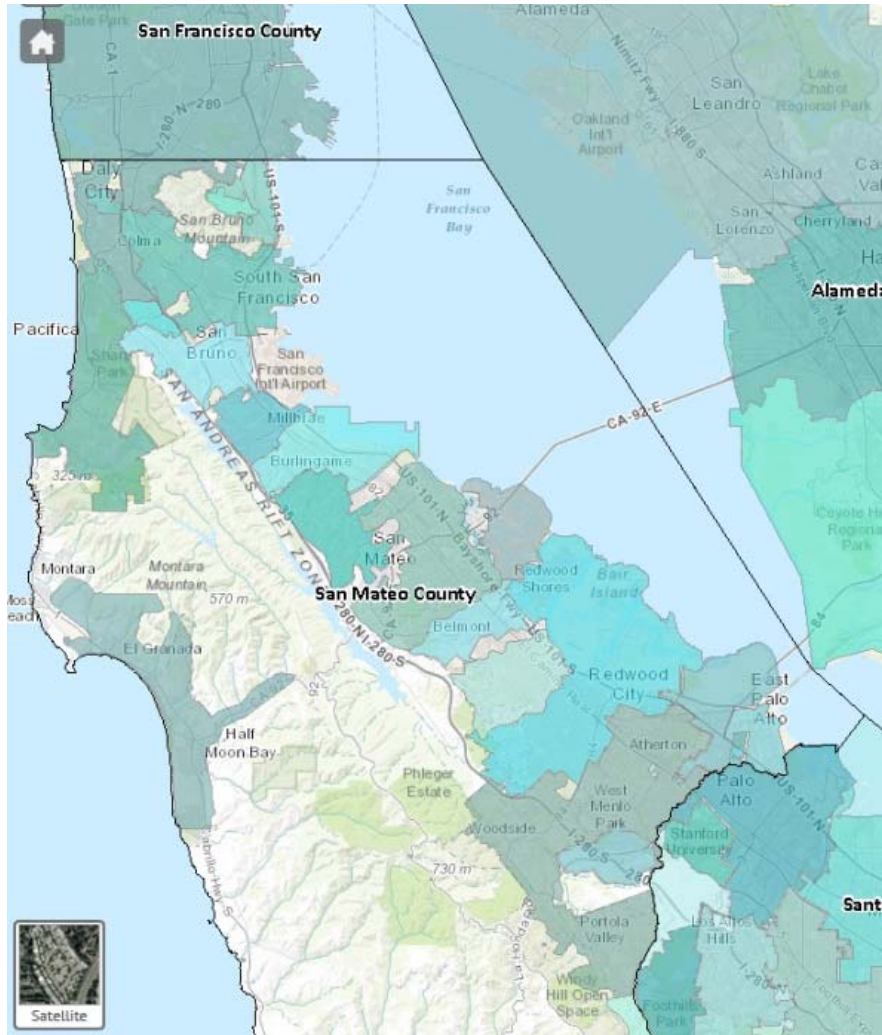


# What is a GSA?



- A local agency overlying a groundwater basin
- A local agency with water supply, water management or land use responsibility
- Counties are the default GSA in “unmanaged” areas
- Some are deemed exclusive GSAs (e.g., ACWD, SCVWD)
- Water companies can participate in a GSA

# How can GSAs form?



- A local agency may elect to be a GSA
- Multiple agencies may form a GSA (e.g., JPA)
- Can be more than one GSA in basin, but GSPs in a basin must be coordinated:
  - Use same data and methodologies
  - Coordination agreement
  - GSPs jointly submitted to DWR
  - GSPs evaluated for effects on adjacent basin sustainability



# Groundwater Sustainability Plans (GSPs)



## Build on AB3030/SB1938

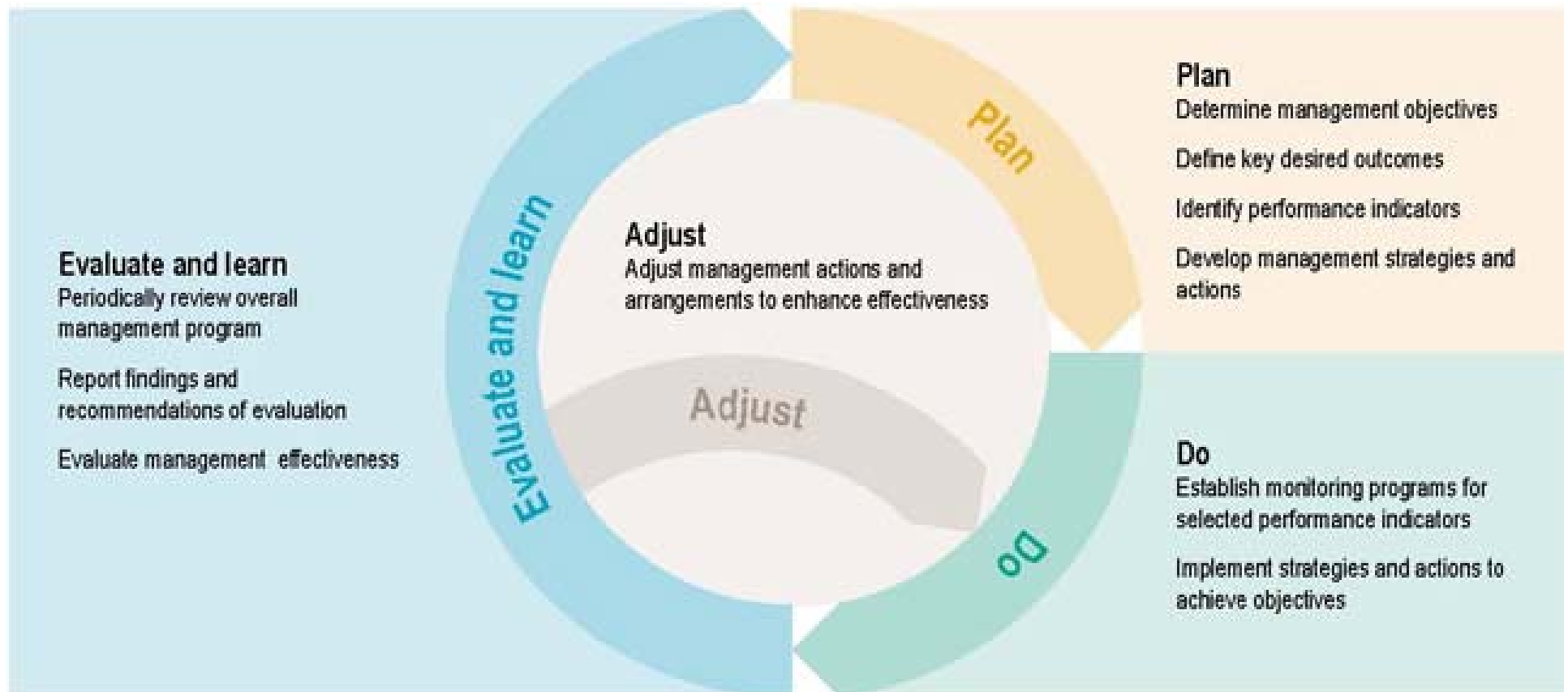
- Defined process of hearings + outreach
- Technical requirements
- Management components
- Basin Management Objectives
- Agency coordination
- Monitoring program and protocols
- Implementation plan and reporting

# However, GSPs...

- Are no longer voluntary for medium/high priority basins
- Must define measurable objectives that will reach sustainability
- Must define milestones for compliance
- Are subject to State review and backup
- Provide local agencies with tools and powers (e.g., regulate groundwater pumping)



# GSP Implementation involves Adaptive Management





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  - **BAWSCA's Strategy and Brackish Groundwater**
  - **San Mateo County's Groundwater Assessment Plan**
  - **East Palo Alto's Groundwater Management Plan**
  - **Others**
- Discussion of potential goals for a Groundwater Reliability Partnership
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# BAWSCA's Strategy

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In 2009, BAWSCA embarked on the Long-Term Reliable Water Supply Strategy to:

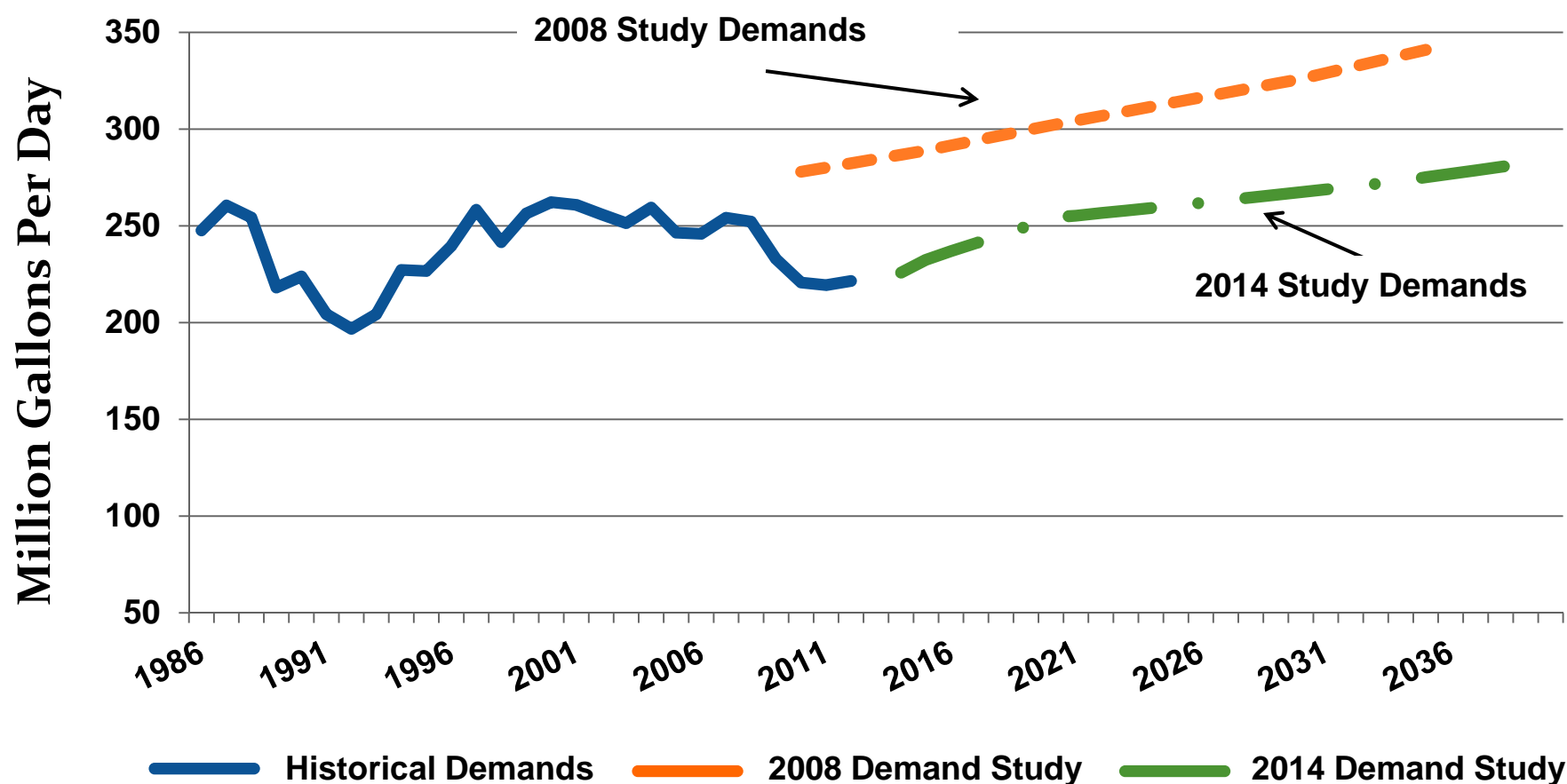
- **Determine the Water Supply Problem**

*When, where, and how much additional water is needed in normal years and dry years.*

- **Develop Solutions**

*Identify specific water supply management projects for implementation.*

# Significant Finding: Demands 20% Lower Than Previous Estimates

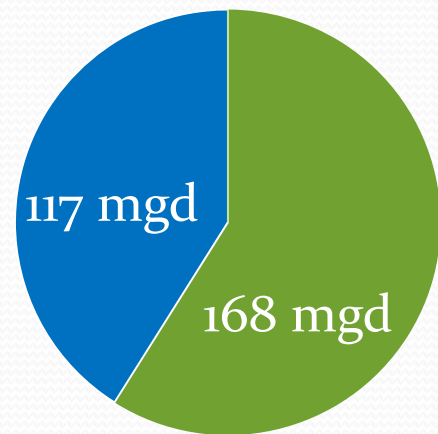




# The Problem: Drought Year Shortfall

Recent studies confirm need to focus on dry-year supplies (e.g., transfers, groundwater storage)

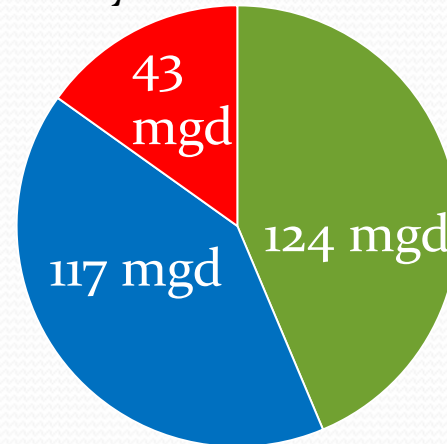
2040 Supply Sources, Normal Year



■ Anticipated  
SFPUC Purchases

■ Other  
Sources

2040 Supply Sources, Drought Year  
(20% System-wide Shortage)



■ Reliability  
Shortfall

# Solutions: Review of Supply Projects was Comprehensive

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- **Phase I** – identified 65+ projects with potential regional benefits, outlined an evaluation process and criteria to assess projects
- **Phase IIA** – refined list of projects to 17, identified near-term opportunities
- **Phase II Final** – presented refined project list of 10, full analysis of supply projects against objectives

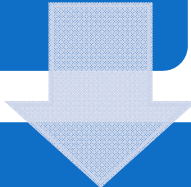
*Note: Agencies may have other supply projects, but did not want to include them in the Strategy*

# Groundwater Model: Evaluated Brackish Groundwater Supply

Found a limited potential to develop a “new” high-quality groundwater supply



Work identified brackish groundwater aquifers western portion of the Bay

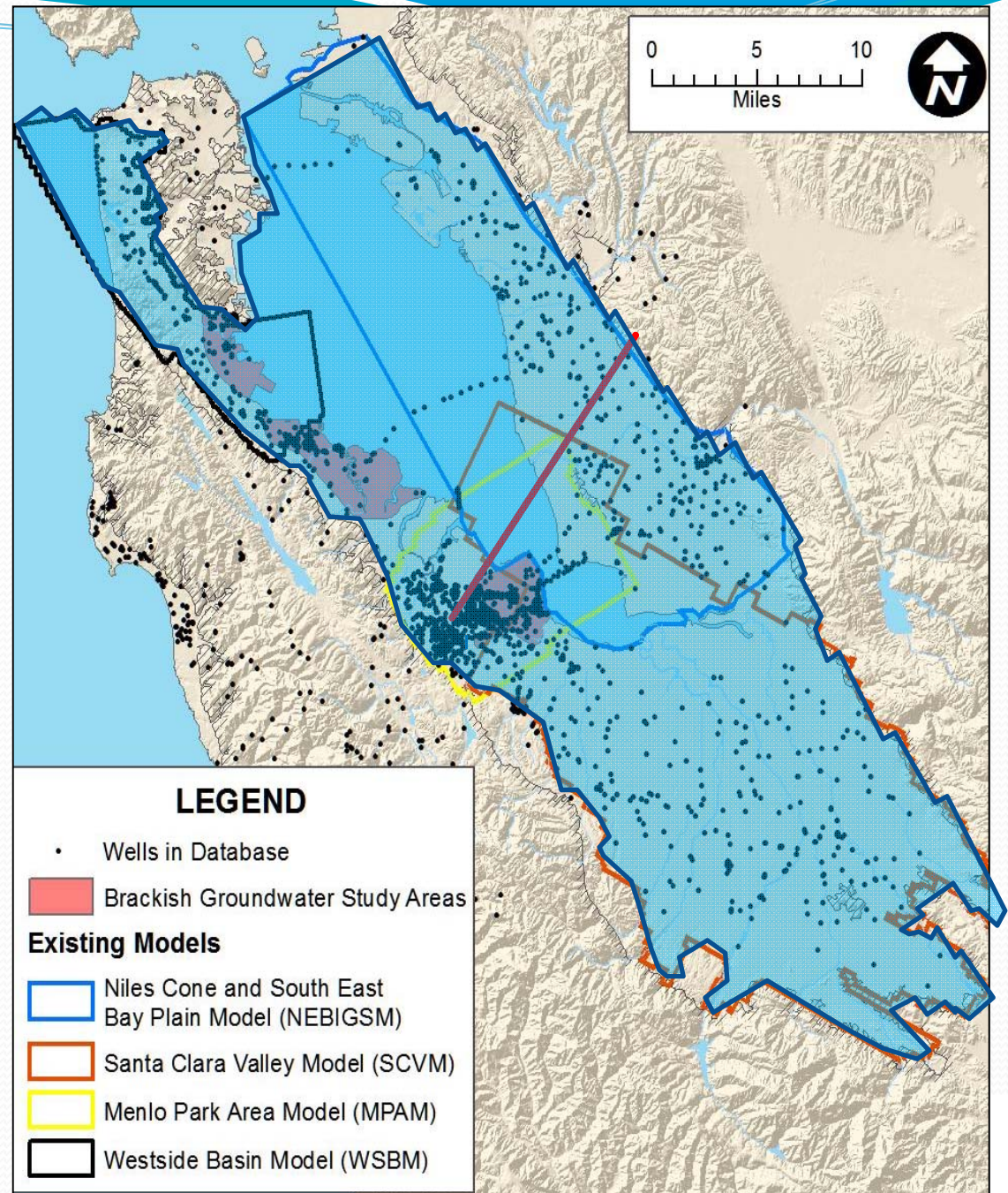


Created the Strategy Groundwater Model to evaluate potential for brackish desalination



# Strategy Groundwater Model: A Useful Tool for Others

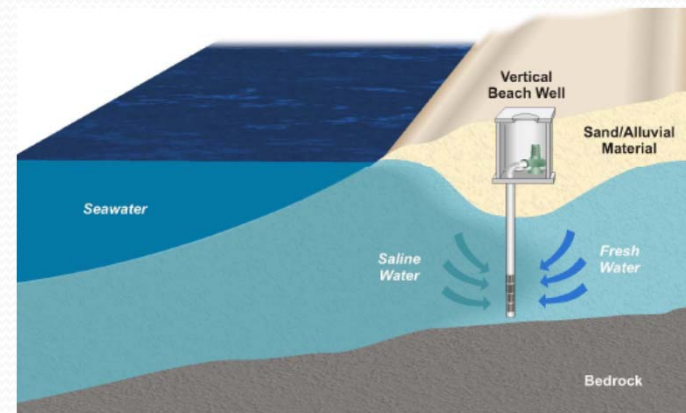
- Regional model
- Uses information from 4 existing groundwater models
- Can be updated with additional data
- SGM is available for use for Basin studies



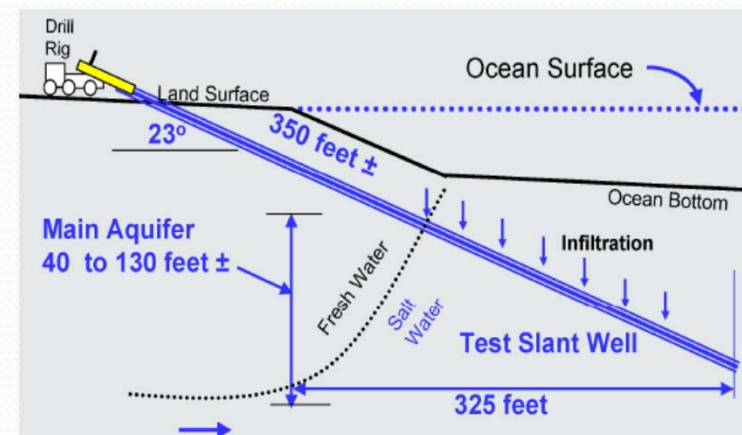


# Brackish Desalination Offers Additional Benefits

- Brackish desalination involves use of groundwater wells
- Horizontal or slant wells under the Bay offer benefits:
  - fewer impacts to other users
  - less environmental impacts



Vertical Brackish Wells



Horizontally Directionally Drilled Well Illustration

# Planning for Brackish Desal Project Continues

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- Groundwater aquifer test to:
  - Estimate potential yield, while minimizing impacts
  - Provide data on source water quality
- BAWSCA partnered with Cal Water to submit brackish desal project to the DWR regional grant program
  - Project was not funded, but could be resubmitted for future opportunities
- Cal Water seeking local matching funds from State Public Utilities Commission in their next rate case



# San Mateo County's Involvement in Groundwater

- Provided oversight of groundwater contamination sites, in conjunction with RWQCB, DTSC, and USEPA, since early 1990s
- Well permitting authority throughout County, except City of Daly City
- Facilitated South Westside Basin Partners groundwater monitoring program
- Provide drinking water for County Service Areas

Environmental Health Services

Heather Forshey, Director

Charles Ice, Groundwater Protection Program Lead



**COUNTY OF SAN MATEO**  
**HEALTH SYSTEM**

# Issues with Groundwater From County's Perspective

- 8 out of the last 9 years have had below average rainfall causing severe drought
  - Drought Task Force
- Increased attention and use of groundwater within the County
  - Conjunctive use, desalination, emergency and additional water supply wells, sea level rise impacts
- Passage of Sustainable Groundwater Management Act
  - Potential for CASGEM reprioritization in 2 out of 9 Very Low basins/sub-basins, land use agency

Environmental Health Services

Heather Forshey, Director

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**COUNTY OF SAN MATEO**  
**HEALTH SYSTEM**

# County's Approach to San Mateo Plain Sub-Basin

- Gather as much information as possible
  - Technical, Legal, Jurisdictional
- Interact with all interested parties
  - BAWSCA, Sustainable San Mateo, CHARG, SCVWD, ACWD, Westside Basin Partners, cities, and water utilities
- Not assume any management role in but also stay involved in all discussions regarding groundwater

Environmental Health Services

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Charles Ice, Groundwater Protection Program Lead



**COUNTY OF SAN MATEO**  
**HEALTH SYSTEM**



# County's Actions in San Mateo Plain Sub-Basin

- Measure A Letter of Intent (January 2015)
  - Joint submittal from Environmental Health and Office of Sustainability
- Revised Groundwater Assessment Plan for San Mateo Plain (September 2015)
  - Presented draft to BAWSCA members August 2015
- Request for Proposal (October 2015)

Environmental Health Services

Heather Forshey, Director

Charles Ice, Groundwater Protection Program Lead



**COUNTY OF SAN MATEO**  
**HEALTH SYSTEM**

# County's Objectives for Assessment of San Mateo Plain Sub-Basin

- Assess the groundwater resources, current usage, and current condition
  - Evaluate the hydrogeologic and groundwater conditions of the entire sub-basin
  - Evaluate surface water and groundwater interactions in the sub-basin
  - Evaluate threats to the sub-basin quality and quantity
  - Assess recharge areas

Environmental Health Services

Heather Forshey, Director

Charles Ice, Groundwater Protection Program Lead



**COUNTY OF SAN MATEO**  
**HEALTH SYSTEM**

# County's Objectives for Assessment of San Mateo Plain Sub-Basin

- Describe all of the various groundwater management strategies available and identify all GSA-eligible and non-GSA-eligible agencies and various interested stakeholder groups
- Identify long-term strategies to sustainably manage groundwater resources through local policies and cooperative relationships

Environmental Health Services

Heather Forshey, Director

Charles Ice, Groundwater Protection Program Lead



**COUNTY OF SAN MATEO**  
**HEALTH SYSTEM**





# Groundwater Management for East Palo Alto



**Kamal Fallaha, PE**  
**Public Works Director/City Engineer**

**Iris Priestaf, PhD**

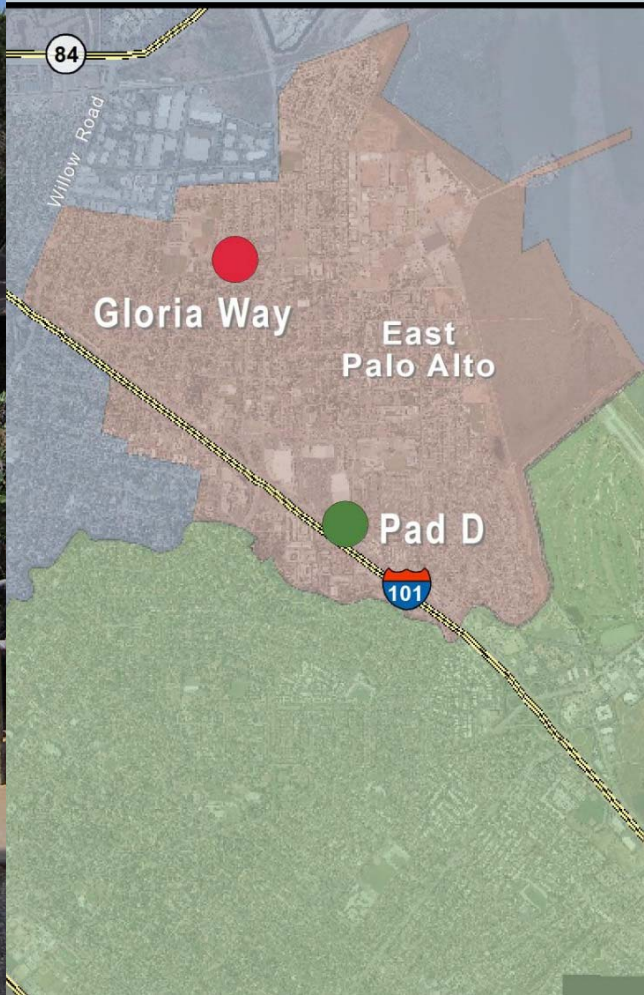
**TODD**   
GROUNDWATER

# Why Groundwater?

- City depends solely on SFPUC supply
- Supplies are not adequate for growth
- City lacks storage
- Opportunities for recycled water, conservation are limited
  - Groundwater provides supply
  - Groundwater also provides storage



# City Wells

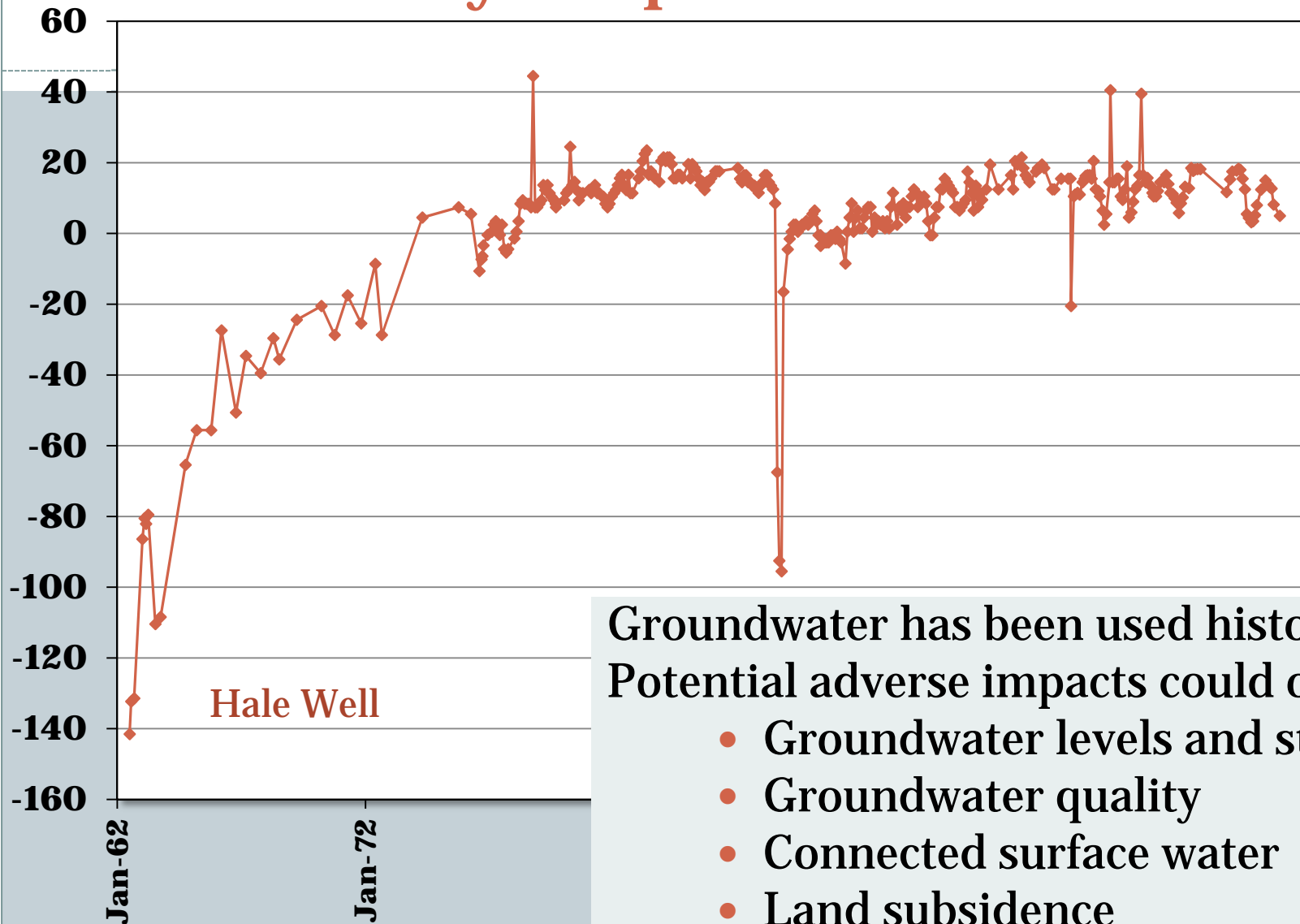


City plans to  
develop 1,120 afy

- Gloria Way
- Pad D Test



# Why Prepare a GWMP?



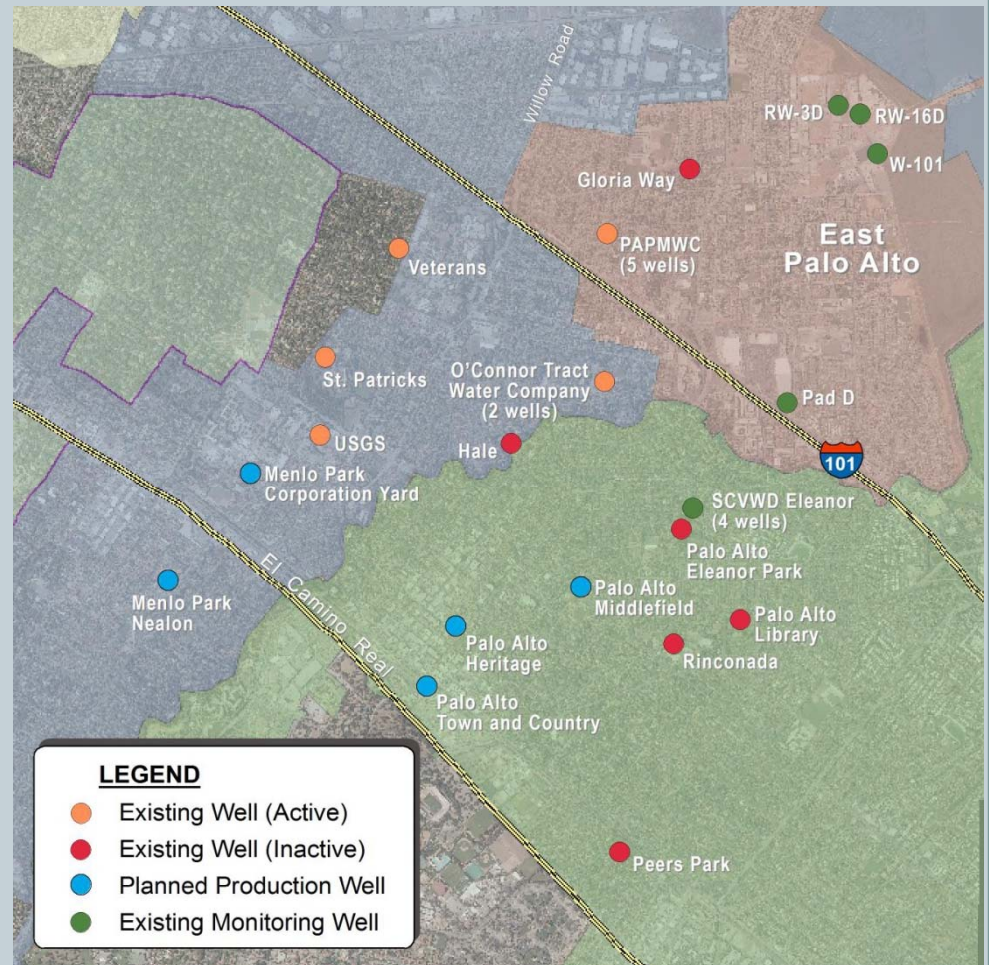
Groundwater has been used historically.  
Potential adverse impacts could occur:

- Groundwater levels and storage
- Groundwater quality
- Connected surface water
- Land subsidence

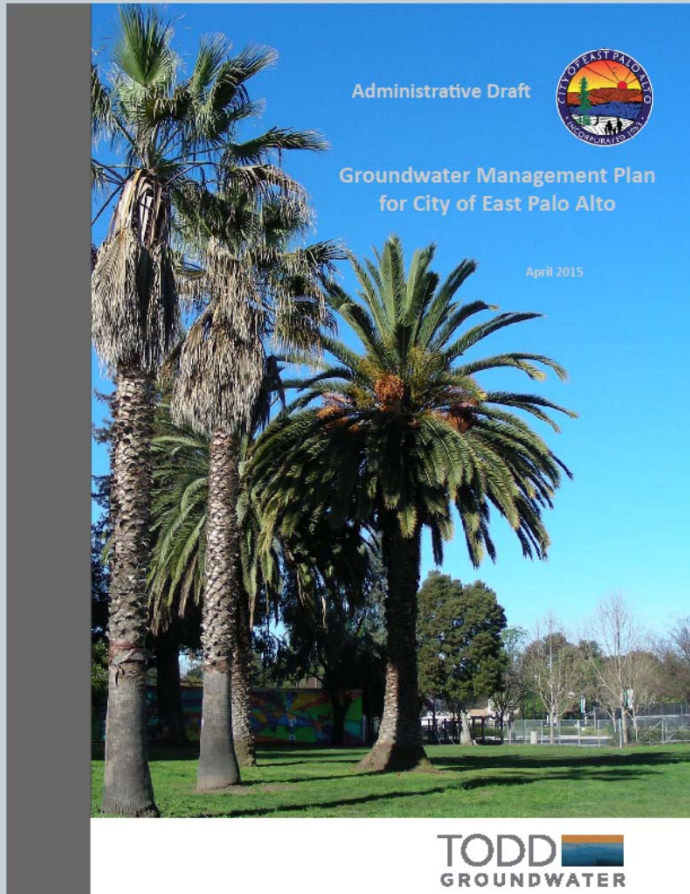
# City Approach

The City is committed to:

- Monitoring
- Managing cooperatively
- Operating City wells within sustainable yield



# Groundwater Management Plan



## GWMP summarizes:

- ✓ management context
- ✓ physical setting
- ✓ groundwater conditions
- ✓ goals and issues
- ✓ management objectives
- ✓ actions
- ✓ implementation



# A Public Process

Outreach  
Workshops  
Website  
Draft GWMP

GWMP slated for adoption  
October 20, 2015



#### General

The City completed the Gloria Way Water Well Production Alternatives Analysis and Water Security Feasibility Study in November 2012, which recommended that the City to: (i) move forward with design of a manganese removal treatment system for the existing Gloria Way Well; (ii) further evaluate and test for additional potential well sites; and (iii) develop a groundwater management and monitoring plan.

The City intends to reactivate Gloria Way Well upon construction of a well head treatment facility to address removal of manganese, a secondary drinking water contaminant. As part of the reactivation process, State law requires the City to adopt a Groundwater Management Plan. The development of the Groundwater Management Plan is a collaborative and open process. A copy of the Stakeholder Outreach Plan can be found in the link below.

#### Stakeholder Outreach Plan

##### 1st Workshop

- Invitation Letter to Stakeholder
- Invitation Letter to Citizens Advisory Panel
- Invitation Letter to Agencies
- Agenda
- Presentation
- Handouts
- Workshop Summary

##### 2nd Workshop

- Announcement
- Agenda
- Presentation
- Handouts
- Workshop Summary

##### 3rd Workshop

- Announcement
- Draft GWMP
- Draft GWMP Appendices
- Agenda
- Presentation
- Handouts
- Workshop Summary

##### Groundwater Management Plan

- GWMP
- GWMP Appendices



# Basin Management Objectives



1. Maintain acceptable groundwater levels
2. Avoid subsidence
3. Protect groundwater quality
4. Integrate groundwater/surface water management
5. Improve understanding of groundwater system
6. Promote regional management

# Management Plan Components



- Stakeholder Involvement
- Monitoring Program
- Groundwater Sustainability
- Groundwater Protection
- Coordinated Planning and Management

# Monitoring Program Components

- Groundwater levels, quality, pumping
- Surface water data
- Climate data
- Land subsidence
- Tidal data



- Data management
- Data analysis
- Reporting





# Groundwater Sustainability



## Conjunctive use

- Complete Gloria Way Well + start pumping
- Proceed with Pad D well
- Collaborate to document wells + pumping
- Seek funding for a groundwater model
- Seek funding to support conjunctive use



# Groundwater Sustainability

Collaborate for recharge, replenishment, conservation

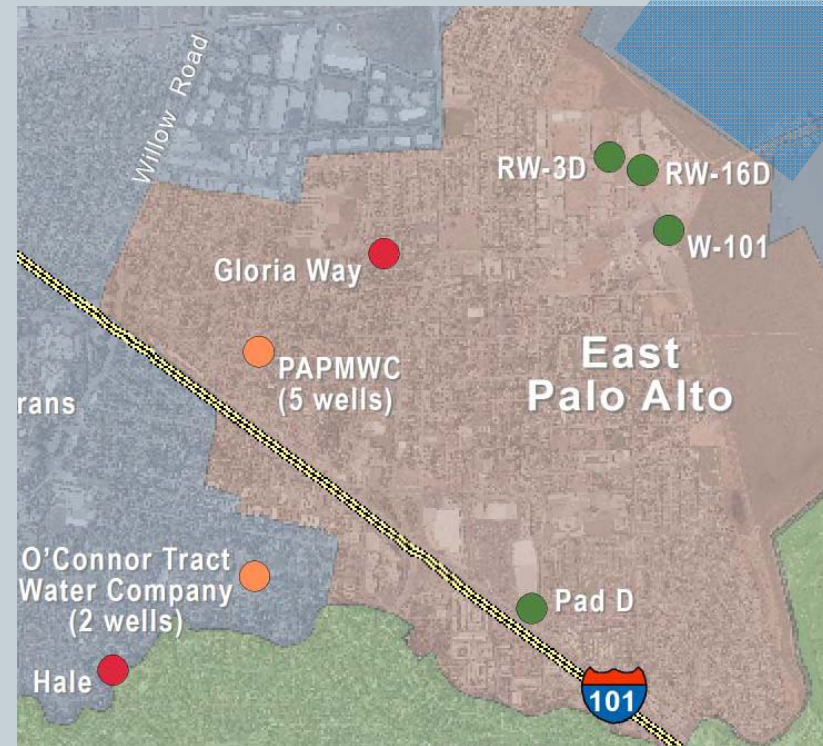
- Evaluate + protect sources and areas
- Identify opportunities for managed aquifer recharge
- Protect creek benefits
- Encourage recycled water and gray water



# Groundwater Protection

## Saltwater control

- Identify potential sentry wells
- Seek funding for additional sentry wells



# Coordinated Planning and Management



Coordination with planning agencies  
Relationships with State + Federal agencies  
Collaboration for regional planning





# Thank you





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# What are Some Potential Goals for the Partnership?

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- Increased understanding of the hydrology and geology of the Basin
- Serving as a forum for sharing information among all stakeholders
- Continued sustainable use of the Basin to maintain groundwater quality and quantity





# Next Steps

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- Refine goals
- Draft resolution for adoption by stakeholders
- Potential agenda items for future meetings:
  - Updates on ongoing studies and projects in the Basin
  - Updates on the Sustainable Groundwater Management Act
  - Information about adjacent basins