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!

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

- Steady groundwater levels since the late 1970’s indicate a current balance
- Well is screened to ~ 800 ft below ground surface
Steady Groundwater Levels Indicate a Current Balance

- “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

- 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
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- **Overview of the Sustainable Groundwater Management Act (SGMA)**
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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
Local agencies implement GSPs and achieve sustainability 2040-2042

Local agencies form groundwater sustainability agencies (GSAs) 2017

Local agencies adopt groundwater sustainability plans (GSPs) 2020-2022
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

Evaluate and learn
- Periodically review overall management program
- Report findings and recommendations of evaluation
- Evaluate management effectiveness

Adjust
- Adjust management actions and arrangements to enhance effectiveness

Plan
- Determine management objectives
- Define key desired outcomes
- Identify performance indicators
- Develop management strategies and actions

Do
- Establish monitoring programs for selected performance indicators
- Implement strategies and actions to achieve objectives
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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

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

![Graph showing historical demands and future projections.](image-url)

- **2008 Study Demands**
- **2014 Study Demands**

### Graph Details:
- **Y-axis**: Million Gallons Per Day
- **X-axis**: Years (1986-2036)

**Key Points**:
- Historical demands show a trend with fluctuations.
- The 2008 demand study projects a steady increase over time.
- The 2014 demand study indicates a lower projection compared to 2008.

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**Legend**:
- **Historical Demands**
- **2008 Demand Study**
- **2014 Demand Study**
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: 117 mgd
- Other Sources: 168 mgd

2040 Supply Sources, Drought Year (20% System-wide Shortage)
- Anticipated SFPUC Purchases: 117 mgd
- Other Sources: 124 mgd
- Reliability Shortfall: 43 mgd
Solutions: Review of Supply Projects was Comprehensive

- **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
Planning for Brackish Desal Project Continues

- 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
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
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
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)
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
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
Groundwater Management for East Palo Alto

Kamal Fallaha, PE
Public Works Director/City Engineer

Iris Priestaf, PhD
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
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
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?

- 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

- 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