Sustainable Groundwater Management in California

CA Department of Water Resources
Presentation Overview:

- Why is Groundwater Important
- Achieving Sustainable Groundwater Management
- Tribal Participation in SGMA
- Technical and Financial Assistance
Why is Groundwater Important

• The state’s groundwater storage capacity is more than 10 times that of all surface reservoirs.
• 85% of Californians depend on groundwater for at least part of their drinking water.
• About 5 million acres of farmland in California are irrigated with Groundwater – more in drought years.

<table>
<thead>
<tr>
<th>Reservoir Capacity</th>
<th>Groundwater Basin Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUMULATIVE CAPACITY</td>
<td>1.3 billion</td>
</tr>
<tr>
<td>New Melones Dam (1979)</td>
<td>850 million acre-feet</td>
</tr>
<tr>
<td>Don Pedro (1971)</td>
<td>Total storage capacity in California’s 515 groundwater basins</td>
</tr>
<tr>
<td>Oroville Dam (1968)</td>
<td></td>
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<tr>
<td>New Exchequer and San Luis (1967)</td>
<td></td>
</tr>
<tr>
<td>20 million</td>
<td></td>
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<tr>
<td>Trinity Dam (1962)</td>
<td></td>
</tr>
<tr>
<td>10 million</td>
<td></td>
</tr>
<tr>
<td>Shasta Dam (1945)</td>
<td></td>
</tr>
<tr>
<td>Lake Almanor (1927)</td>
<td></td>
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</table>
Groundwater Supply in California 2005-10 Average

The Tulare Lake region is the largest user of groundwater.

The Central Coast region is the most groundwater dependent.
Why is Groundwater Important

- Groundwater is the State’s savings account that is used during droughts and regulatory restrictions.

**Three Waves of Drought in 21st Century California**

- Normal Year GW Use = 40%
- Drought Year GW Use = 60%

![Graph showing three waves of drought in California from 2000 to 2015](image)
Adverse Impacts
Critically Overdrafted Groundwater Basins
Achieving Sustainable Groundwater Management
California Water Action Plan

Action 6: Expand water storage capacity and improve groundwater management
## Sustainable Groundwater Management Act of 2014

<table>
<thead>
<tr>
<th>Framework</th>
<th>Local’s Role</th>
<th>State’s Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Applicability</td>
<td>• Establish GSA</td>
<td>• Develop guidance or rules</td>
</tr>
<tr>
<td>• Definitions</td>
<td>• Powers &amp; Authorities</td>
<td>• Provide Technical and Planning</td>
</tr>
<tr>
<td></td>
<td>• Sustainability Plans</td>
<td>Assistance</td>
</tr>
<tr>
<td></td>
<td>• Deadlines</td>
<td>• State Evaluation and Assessment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• State Intervention</td>
</tr>
</tbody>
</table>
Phases to Achieve Sustainable Groundwater Management

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realignment of Basins and Establishment of Basin Governance</td>
<td>Development and Adoption of Groundwater Sustainability Plans (GSPs)</td>
<td>Initial Management through Water Budgets</td>
<td>Sustainable Groundwater Management</td>
</tr>
</tbody>
</table>
Undesirable Results

- Lowering of GW Levels
- Reduction of GW Storage
- Seawater Intrusion
- Water Quality Degradation
- Land Subsidence
- Depletion of Interconnected Streams
Groundwater Sustainability Plans Required for All High and Medium Priority Basins
SGMA Milestones for Success

Groundwater Sustainability Agencies
• Formation by June 30, 2017
• Only local agencies can be GSAs

Groundwater Sustainability Plans
• January 31, 2020 for critically overdrafted basins
• January 31, 2022 for all other high and medium priority basins
• Multiple GSPs in a basin must coordinate

Groundwater Sustainability
• 20-year implementation period
• 50-year planning horizon
Status of GSA Formations

http://water.ca.gov/groundwater/sgm/gsa_map.cfm

Note: Not all posted GSA areas are shown on map. Updated 02/10/2017.
Status of GSA Formations

http://water.ca.gov/groundwater/sgm/gsa_table.cfm

- 154 separate GSA notices have been submitted as of January 20, 2017
- 75 have overlap in one or more basins that must be resolved
- 59 are “Exclusive GSAs” in one or more basins
- 88 basins have GSAs
- 57 basins are high- or medium-priority
- 31 basins are low- or very-low priority
- 30 counties have GSAs
DWR SGM Accomplishments

Identify Basins Subject to Critical Conditions of Overdraft
- Evaluation due 2015-2016
- Completed (January 2016)

Develop Emergency Regulations - Basin Boundary Revisions
- Regulations due January 1, 2016
- Regulations Completed (November 2015)

Develop Emergency Regulations - (Groundwater Sustainability Plans)
- Regulations Completed June 2016

Update Basin Prioritization
- Used existing - January 2015
- Re-prioritization following basin boundary revisions in 2017

Groundwater Sustainability Agency Formation
- Complete Notifications and No Overlapping GSAs
  (Due June 30, 2017)

Facilitation Services
- 26 areas served

Water Available For Recharge
- Published January 2017
GSP Regulation Articles

1. Introductory Provisions
2. Definitions
3. Technical and Reporting Standards
   1. Monitoring Protocols
   2. Data and Reporting Standards
   3. Data Management System
4. Procedures
   1. Information Provided by the Department
   2. Reporting Provisions
   3. Initial Notification
   4. Comments
   5. Withdrawals or Amendments
5. Plan Content
   1. Administrative Information
   2. Basin Setting
   3. Sustainable Management Criteria
   4. Monitoring Networks
   5. Projects and Management Actions
6. Department Evaluation and Assessment
7. Annual Reports and Periodic Evaluations
8. Interagency Agreements
9. Adjudicated Areas and Alternatives
2016 Final Basin Boundaries

<table>
<thead>
<tr>
<th>Type</th>
<th>% of Request</th>
<th>Approval Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific</td>
<td>39%</td>
<td>62%</td>
</tr>
<tr>
<td>Jurisdictional</td>
<td>44%</td>
<td>72%</td>
</tr>
<tr>
<td>Combination</td>
<td>15%</td>
<td>88%</td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th># Requests</th>
<th># Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRO</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>NCRO</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>SCRO</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>SRO</td>
<td>21</td>
<td>13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Basins</th>
<th>2003</th>
<th>2016</th>
<th>Net Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Area (Million acres)</td>
<td>39.639</td>
<td>39.613</td>
<td>-0.026</td>
</tr>
</tbody>
</table>
In all triggering events, intervention is the result of a failure by the locals to create a GSA, or to adopt and adequately implement a GSP.

### State Water Resources Control Board Intervention “Backstop”

<table>
<thead>
<tr>
<th>After</th>
<th>Cause of Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 30, 2017</td>
<td>No GSA</td>
</tr>
<tr>
<td>Jan. 31, 2020</td>
<td>In critically overdrafted basins, no GSP or GSP is inadequate</td>
</tr>
<tr>
<td>Jan. 31, 2022</td>
<td>In other basins, no GSP or GSP is inadequate and basin is in long-term overdraft</td>
</tr>
<tr>
<td>Jan. 31, 2025</td>
<td>GSP is inadequate and significant depletions of interconnected surface waters</td>
</tr>
</tbody>
</table>
Tribal Participation in SGMA
SUSTAINABLE GROUNDWATER MANAGEMENT PROGRAM - TRIBAL ADVISORY GROUP

**Northern California**
- Scotts Valley Band of Pomo Indians
- Big Valley Band of Pomo Indians
- Redwood Valley
- Habematolel Pomo of Upper Lake
- Karuk Tribe
- Pit River Tribes
- Susanville Indian Rancheria
- Yurok Tribe

**Central California**
- Big Sandy Rancheria of Western Mono Indians
- Table Mountain Rancheria of California
- Santa Ynez Band of Chumash Indians
- Cortina Rancheria Band of Wintun Indians of California
- Colusa Indian Community
- Estom Yumeka Maidu Tribe of the Enterprise Rancheria
- Coyote Valley Band of Pomo Indians
- Tule River Indian Tribe
- Tuolumne Band of Me-Wuk Indians

**Adjudicated Basin**
- Bishop Paiute Tribe

**Southern California**
- Morongo Band of Mission Indians
- Rincon Band of Luiseno Indians
- Barona Band of Mission Indians
- Chemhuevi Indian Tribe
TRIBAL PARTICIPATION IN GSP AND GMP

The Act provides that the federal government or any federally recognized Indian Tribe may voluntarily agree to participate in the preparation or administration of a groundwater sustainability plan or groundwater management through a joint powers authority or other agreement with local agencies in the basin.

However, this discretion is left entirely up to the Tribe or federal interest:

“A participating tribe shall be eligible to participate fully in planning, financing, and management under this part, including eligibility for grants and technical assistance, if any exercise of regulatory authority, enforcement, or imposition and collection of fees is pursuant to the tribe’s independent authority and not pursuant to authority granted to a groundwater sustainability agency under this part.”

Water Code §10720.3
TRIBAL PARTICIPATION IN GSP AND GMP

Water Code §10720.3

- Federally recognized Tribes may participate through a Joint Powers Agreement or other agreement with local agencies in the basin.

- Participating Tribes are eligible to conduct planning, financing, and management under SGMA, including eligibility for grants and technical assistance.

- Exercise of regulatory authority, enforcement, or collection of fees needs to be pursuanta to the Tribe’s authority and not pursuant to the authority granted under SGMA.

- Federally reserved water rights to groundwater shall be respected in full.
SGMA IMPLEMENTATION ISSUES IDENTIFIED BY TRIBAL OUTREACH

- Does the Sustainable Groundwater Management Act apply to federally recognized Tribes?
- Does SGMA apply to non-federally recognized Tribes?
- What is a joint powers authority (JPA)?
- Can a Tribe choose to be a Groundwater Sustainability Agency *(GSA)* or exercise the powers of a GSA using the authorities provided by SGMA?
- Does SGMA affect tribal water rights?
- What opportunities are there for tribal governments to provide input during SGMA implementation?
- Do local authorities have an understanding of what is “Tribal Law”?
- Do local authorities have an understanding of what is “Tribal Land”?

*Tribes are exempt from creating a groundwater sustainability agency (GSA) but are encouraged to participate in local management and creating their own groundwater sustainability plans.*
GROUNDWATER LEGISLATION TIMELINE
DWR TRIBAL ENGAGEMENT

Consultation (ongoing)
- Individual Consultation with Tribes

TAG Meetings (ongoing)
- Groundwater Tribal Advisory Group Meetings

Regional Meetings
- Tribal Regional Workshops
  - Feb 2015 Regional Workshops
  - April 2015 Regional Workshops
  - May 2015 Regional Workshops
  - April 2016 Regional Workshops
  - May 2016 Regional Workshops
  - Spring 2017 Regional Workshops

2015
2016
2017
2018
2020-2022

DWR Action
SWRCB Action
Tribal Engagement Action

SGMA Milestone
Public Meeting/Workshop
Tribal Meeting/Workshop
Tribal Advisory Group Meeting
Meeting To Be Determined

GSA  Groundwater Sustainability Agency
GSP  Groundwater Sustainability Plan
BB  Basin Boundary
BMPs  Best Management Practices

*Tribal Policy Advisor website: http://www.water.ca.gov/tribal/
*Government to government consultation has been conducted beginning in 2014.
Technical and Financial Assistance
Most groundwater basins today lack sufficient data and analytical tools to fully evaluate SGMA undesirable results.

GSAs will require up to 20 years to complete a monitoring network and management options to sustainably manage groundwater.
DWR’s Sustainable Groundwater Management Program

- Provide Statewide Planning Assistance
- Assist State and GSA Alignment and provide Financial Assistance
- Provide Interregional Assistance
- Develop a Framework for Sustainable Groundwater Management
- Provide Statewide Technical Assistance
Strategic Vision and Framework for Data and Tools

Comprehensive water budgets and water reliability maps support integrated water management

Data Collection by DWR

Data Reporting by local agencies (e.g. CASGEM, SGMA, UWMP)

Enterprise Data Management by DWR
Proposed SGMA Technical Assistance

**DWR Technical Assistance**

- **Education**
  - SGMA 101
  - Webinars

- **Data and Tools**
  - **Statewide Datasets**
  - Tools
  - Models

- **Provide Assistance**
  - Technical Services
  - “In-Kind Services”

**GSP Development**

**DWR GSP Evaluation**
BMPs and Guidance Documents

**Best Management Practices (BMPs)**
- BMP 1: Monitoring Protocols, Standards, and Sites
- BMP 2: Monitoring Networks and Identification of Data Gaps
- BMP 3: Hydrogeologic Conceptual Model
- BMP 4: Water Budget
- BMP 5: Modeling

**Guidance Documents**
- Preparation Checklist for GSP Submittal
- GSP Annotated Outline
- Engagement with Tribal Governments
- Establishing Sustainable Management Criteria
- Stakeholder Engagement and Communication
Water Available for Groundwater Replenishment

Simple Hydrograph

4. Water Available Information and Estimates
WAFR Information and Estimates by Hydrologic Region

Central Coast Hydrologic Region

Water Balance

Surface Water Information and WAFR Estimate

Groundwater Information and WAFR Estimate

Note: For each regional graphic, scale is maintained within the graphic. To improve visibility, scale is not retained between regions.
Bulletin 118 – Interim Update 2016

Contents:
- Forward by DWR Director Mark Cowin
- Introduction
- Critically Overdrafted Basins
- Basin Boundary Revisions
- Basin Prioritization (2017 amendment)
- B-118 Next Steps (Comprehensive Update 2020)
Local Assistance

Facilitation Support Services

26 areas
~$1.5 million committed by DWR
Proposition 1 Overview
Administered by DWR

• Chapter 7 Regional Water Reliability,
  • $510M Integrated Regional Water Management
  • $100M Water conservation & water use efficiency

• Chapter 9 Water Recycling
  • $100M Desalination & advanced treatment technology

• Chapter 10 Groundwater Sustainability
  • $100M Groundwater Planning

• Chapter 11 Flood Management
  • Administered by DWR and the Central Valley Flood Protection Board
  • $295M Reduce risk of levee failure & flooding in the Delta
  • $100M Statewide flood management
Next Steps
DWR’s Upcoming Program Implementation

- Develop BMPs
- Update Bulletin 118
- Proposition 1 Funding PSPs
- Water Available for Replenishment

- Data Management Framework
- Regional Water Budget Support
- Update Well Standards
- GSA Technical Support
Questions

When properly managed, groundwater resources will help protect communities, farms, and the environment against the impacts of prolonged dry periods and climate change.

California Water Action Plan 2014

DWR: http://www.water.ca.gov/groundwater/

SWRCB: http://www.waterboards.ca.gov/water_issues/programs/gmp/