California Water Plan Update 2009

Tulare Lake
Regional Report
Overview & Outline

2009 Regional Workshops

Integrated Water Management

Bulletin 150-09 - Department of Water Resources

Volume 3
Regional Reports

Public Review Draft
January 2009
Regional Report Outline

Setting

Relationship with other Regions

Current Water Conditions

Regional Planning & Management

Selected References

Looking to the Future
Relationship to other Regions
Tulare Lake Region

- 11 million acres, 11% of State land area.
- Kings, Kaweah, Tule and Kern River watersheds and tributaries.
- 41% of water supply is from groundwater; 35% of state’s groundwater use.
Tulare Lake Region

- The region includes all of Kings and Tulare counties and most of Fresno and Kern counties.
- 3 million irrigated acres.
- Conjunctive Use, Water Banking Important.
- Imported Water Supplies, SWP & CVP.
Managed Wetlands in Tulare Lake Region
Kern NWR: 6,792 acres (ac)
Pixley NWR: 310 ac
Mendota WA: 11,410 ac
Kern-Tulare County Private Gun & Duck Clubs: 2,463 ac

Both Mendota WA & Kern NWR refuge received CVPIA supplies in 2005 (amount varies from year to year):
Mendota WA: 26,730 acre-feet (af)
Kern NWR: 19,900 af
Pixley NWR & Kern Private Gun & Duck Clubs use groundwater.
Tulare Lake Region Water Supplies for 1998 to 2003 Water Years

<table>
<thead>
<tr>
<th>Year</th>
<th>Local Projects</th>
<th>Colorado Project</th>
<th>Federal Projects</th>
<th>State Project</th>
<th>Ground Water</th>
<th>Reuse &amp; Recycle</th>
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<td>2,175</td>
<td>1,048</td>
<td>6,120</td>
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Tulare Lake Region Applied Water Uses for 1998 to 2003 Water Years

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<th></th>
<th>Urban</th>
<th>Irrigated Agriculture</th>
<th>Managed Wetlands</th>
<th>Reg Delta Outflow</th>
<th>Instream Flow</th>
<th>Wild &amp; Scenic R.</th>
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<td>546</td>
<td>8,567</td>
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Tulare Lake Region Water Years 1998 through 2003 Applied Water Uses
URBAN POPULATION AND APPLIED WATER
1998 - 2003

WATER YEAR
- Population (1,000)
- Urban Applied Water (1,000 af)
PERCENTAGE CROP ACREAGE OF TOTAL STATE ACREAGE OF FIVE CROPS TULARE LAKE REGION

TOP FIVE IRRIGATED CROPS IN VALUE

Vineyard, Citrus (all), Almonds, Cotton, Pistachios

PRODUCED BY: CALIFORNIA AGRICULTURAL STATISTICAL INFORMATION SERVICE
## COUNTY RANKING OF AGRICULTURAL PRODUCTION IN CALIFORNIA

Counties with the highest total value and rank in California as of 2005:

<table>
<thead>
<tr>
<th>County</th>
<th>Value ($1,000)</th>
<th>Leading Commodities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresno</td>
<td>4,640,166</td>
<td>Grapes, Almonds, Milk, Tomatoes, Cattle and Calves</td>
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<tr>
<td>Tulare</td>
<td>4,360,854</td>
<td>Milk, Oranges, Cattle and Calves, Grapes, Alfalfa Hay and Silage</td>
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<tr>
<td>Kern</td>
<td>3,546,925</td>
<td>Almonds and By-products, Grapes, Milk, Citrus, Pistachios</td>
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<tr>
<td>Monterey</td>
<td>3,273,000</td>
<td>Lettuce, Strawberries, Wine Grapes, Spinach, Broccoli</td>
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<tr>
<td>Merced</td>
<td>2,388,058</td>
<td>Milk, Chickens, Almond Meats, Cattle and Calves, Sweet Potatoes</td>
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<td>Stanislaus</td>
<td>1,977,596</td>
<td>Milk, Almonds, Cattle and Calves, Chickens, Walnuts</td>
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<tr>
<td>San Joaquin</td>
<td>1,743,294</td>
<td>Milk, Grapes, Almond Meats, Tomatoes, English Walnuts</td>
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<tr>
<td>San Diego</td>
<td>1,531,307</td>
<td>Foliage Plants, Woody Ornamentals, Avocados, Bedding Plants</td>
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<tr>
<td>Kings</td>
<td>1,407,091</td>
<td>Milk, Cotton, Cattle and Calves, Pistachios, Alfalfa</td>
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<tr>
<td>Imperial</td>
<td>1,286,066</td>
<td>Cattle, Alfalfa, Leaf and Head Lettuce, Carrots, Livestock</td>
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</table>
STATE WATER PROJECT AGRICULTURAL DELIVERIES
TO THE TULARE LAKE REGION, 1968 - 2006
Currently four formalized Integrated Regional Water Management Plans in the Tulare Lake Region.

- Westside
- Upper Kings
- Poso Creek
- Kaweah Delta
IWRM Plan Highlights

- Increasing Water Supply Reliability
  - Conjunctive Water Management
    - Combining surface water storage and groundwater storage (groundwater banking).

- Integrated Flood Management
  - Flood Control and Water Detention
    - Storm water protection and groundwater recharge (control, capture and pond).
Conjunctive Water Management (Groundwater Banking)
Integrated Floodwater Management
(Control, Capture and Pond)
Regional Challenges

- **Water Supply Reliability - The Delta**
  - Delta Vision

- **Water Quality**
  - High-salinity groundwater
  - Nutrients and microbes

- **Poor Drainage In Western SJ Valley**

- **Groundwater, Sustainability**

- **Environmental Water Supply**
  - Fish flows and habitat
  - SJR Settlement/Restoration
Poor Drainage in the Western SJV

- The Bureau of Reclamation signed the Record of Decision for the San Luis Drainage Feature Re-evaluation Environmental Impact Statement.

- Under the selected alternative, a total of 194,000 acres would be retired. The alternative also includes:
  - drainage reduction measures,
  - collector systems,
  - drainage water reuse facilities,
  - treatment systems,
  - evaporation ponds, and
  - mitigation measures.
San Joaquin River Settlement

“To restore and maintain fish populations in good condition in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally-reproducing and self-sustaining populations of salmon and other fish as well as to reduce or avoid adverse water supply impacts to all of the Friant Division long-term contractors that may result from the Interim Flows and Restoration Flows by December 31, 2025.”
Regional Accomplishments

- **Agricultural Water Use Efficiency**
  - Agriculture water management plans
  - Public outreach and training

- **Urban Water Use Efficiency**
  - Urban water management plans
  - Memorandum of Understanding

- **Numerous Groundwater Management Plans**

- **Implementation of New Technologies**

- **Cross Valley Canal Expansion**

- **Lake Kaweah Enlargement Project**
Looking to the Future

- Kern County Water Agency
  Conjunctive Management Program
- Water Agency Exchanges and Transfers
- Kern County Water Agency Environmental Water Account Sales
- Optimization of Water Conveyance Systems
- Inter-regional Water Storage
- Drought Supply Agreements
- IRWMP
Regional Response Strategy
Example - Upper Kings River IRWMP

- **Reduce Water Demand**
  - Increase agricultural water use efficiency.
    - Mobile irrigation labs

- **Improve Water Quality**

- **Resource Stewardship**
  - Ecosystem protection and improvement
    - Kings River Fisheries Management Program
Looks Familiar

The Water Cycle

- Water storage in ice and snow
- Precipitation
- Snowmelt runoff to streams
- Infiltration
- Spring
- Freshwater storage
- Ground-water discharge
- Ground-water storage
- Water storage in the atmosphere
- Sublimation
- Evaporation
- Surface runoff
- Evapotranspiration
- Condensation
- Evaporation
- Water storage in oceans

U.S. Department of the Interior
U.S. Geological Survey
http://water.usgs.gov/eLearning/watercycle.html
Solution to Our Water Supply Problems
Agenda Item 10
Resource Management Strategies
Tulare Region
27 Resource Management Strategies
A Range of Choices

**Reduce Water Demand**
- Agricultural Water Use Efficiency
- Urban Water Use Efficiency

**Improve Operational Efficiency & Transfers**
- Conveyance – Delta
- Conveyance – Regional/Local
- System Reoperation
- Water Transfers

**Increase Water Supply**
- Conjunctive Management & Groundwater Storage
- Desalination – Brackish & Seawater
- Precipitation Enhancement
- Recycled Municipal Water
- Surface Storage – CALFED
- Surface Storage - Regional/Local

**Improve Flood Management**
- Flood Risk Management

**Improve Water Quality**
- Drinking Water Treatment and Distribution
- Groundwater/Aquifer Remediation
- Matching Quality to Use
- Pollution Prevention
- Salt & Salinity Management
- Urban Runoff Management

**Practice Resource Stewardship**
- Agricultural Lands Stewardship
- Economic Incentives (Loans, Grants, and Water Pricing)
- Ecosystem Restoration
- Forest Management
- Land Use Planning & Management
- Recharge Areas Protection
- Water-Dependent Recreation
- Watershed Management
Regional Response Strategy
Example - Upper Kings River IRWMP

- Reduce Water Demand
  - Increase agricultural water use efficiency.
    - Mobile irrigation labs

- Improve Water Quality

- Resource Stewardship
  - Ecosystem protection and improvement
    - Kings River Fisheries Management Program
Regional Report Contact Information

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