Colorado River Hydrologic Region
Regional Water Conditions

- Flow Diagrams
- Water Balances
- Supplemental Data Tables
- Narratives
- Water Quality
- Flood Management
- Watersheds and Ecosystems

(California Water Plan Update 2009, Vol. 3, Regional Reports Pgs 11-8 to 11-15)
Relationship with other Regions

- All-American Canal
- Colorado River Aqueduct
- State Water Project
Colorado River Region Setting

COLORADO RIVER HYDROLOGIC REGION

State Water Project Flow in TAF

<table>
<thead>
<tr>
<th>Year</th>
<th>1988</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>156</td>
<td>101</td>
<td>24</td>
</tr>
</tbody>
</table>

Some Statistics
- Area - 19,962 square miles (12.6% of State)
- Average annual precipitation - 5.7 inches
- Year 2005 population - 711,000
- 2030 population projection - 1,166,550
- Total reservoir storage capacity - 620 TAF
- 2005 irrigated crop area - 659,000 acres

South Coast Region Colorado River Aqueduct Flow in TAF

<table>
<thead>
<tr>
<th>Year</th>
<th>1988</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,081</td>
<td>1,296</td>
<td>1,250</td>
</tr>
</tbody>
</table>

Inflow From Mexico Flow in TAF

<table>
<thead>
<tr>
<th>Year</th>
<th>1998</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>182</td>
<td>166</td>
<td>155</td>
</tr>
</tbody>
</table>

Colorado River Flow in TAF

<table>
<thead>
<tr>
<th>Year</th>
<th>1998</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4,986</td>
<td>5,349</td>
<td>5,197</td>
</tr>
</tbody>
</table>
Colorado River Hydrologic Region
Setting

- Home to over 711,000 people
- 4 Counties
- 12.6 percent of the state's land area
- Imports water from the Colorado River
- Contains the Salton Sea, a critical link on the international Pacific Flyway
- Agriculture accounts for a majority of land use at 659,000 acres
- Year-round agriculture
- Home to 48 Native American Indian Tribes

(California Water Plan Update 2009, Vol. 3, Regional Reports Pgs 11-1 to 11-8)
Colorado River Regional Water Planning & Management

- Presently represented by 4 planning efforts
  - Mojave Water Agency
  - Coachella Valley Regional Water Management Group
  - Salton Sea (underway)
  - Borrego WD (underway)
Colorado River Hydrologic Region
Portfolio Data - Supply

<table>
<thead>
<tr>
<th>Year</th>
<th>Local Projects</th>
<th>Colorado River</th>
<th>State Water Project</th>
<th>Groundwater</th>
<th>Reuse and Recycle</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>7</td>
<td>3,905</td>
<td>156</td>
<td>387</td>
<td>147</td>
<td>4,602</td>
</tr>
<tr>
<td>1999</td>
<td>7</td>
<td>3,723</td>
<td>109</td>
<td>397</td>
<td>150</td>
<td>4,386</td>
</tr>
<tr>
<td>2000</td>
<td>6</td>
<td>4,053</td>
<td>101</td>
<td>416</td>
<td>151</td>
<td>4,727</td>
</tr>
<tr>
<td>2001</td>
<td>4</td>
<td>3,947</td>
<td>24</td>
<td>409</td>
<td>153</td>
<td>4,537</td>
</tr>
<tr>
<td>2002*</td>
<td>0</td>
<td>3,969</td>
<td>24</td>
<td>400</td>
<td>337</td>
<td>4,730</td>
</tr>
<tr>
<td>2003*</td>
<td>0</td>
<td>3,738</td>
<td>44</td>
<td>476</td>
<td>276</td>
<td>4,534</td>
</tr>
</tbody>
</table>

* Preliminary, subject to revision
Colorado River Hydrologic Region
Portfolio Data – Water Use

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002*</th>
<th>2003*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urban</strong></td>
<td>700</td>
<td>586</td>
<td>684</td>
<td>607</td>
<td>540</td>
<td>609</td>
</tr>
<tr>
<td><strong>Irrigated Agriculture</strong></td>
<td>3,870</td>
<td>3,768</td>
<td>4,013</td>
<td>3,900</td>
<td>4,161</td>
<td>3,895</td>
</tr>
<tr>
<td><strong>Management Wetlands</strong></td>
<td>32</td>
<td>31</td>
<td>30</td>
<td>30</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4,602</td>
<td>4,385</td>
<td>4,727</td>
<td>4,537</td>
<td>4,730</td>
<td>4,534</td>
</tr>
</tbody>
</table>

*Preliminary, subject to revision
Colorado River Hydrologic Region

Water Supply

- **Colorado River**
  - Agriculture demand met through Colorado River water
  - Meets most of the urban demand in the Imperial Valley

- **Groundwater**
  - Used primarily for urban demands in the region

- **Recycled Water**
  - Used in Coachella Valley for non-potable uses

- **State Water Project**
  - Resources are obtained through exchange agreements
  - Morongo Basin Pipeline

*(California Water Plan Update 2009, Vol. 3, Regional Reports Pgs 11-8 to 11-12)*
Flood Management is Incorporated in the CWP Update 2009

1969 RIVERSIDE COUNTY FLOOD

1969 RIVERSIDE COUNTY FLOOD

BRAWLEY RESIDENTIAL DEVELOPMENT

Historic Floods

Flood Hazards

IMPERIAL COUNTY COURTHOUSE

Governance

Risk Management

TAHQUITZ CANYON
Colorado River Hydrologic Region
Flood Management Report Content

Setting

- Colorado River Hydrologic Region has the lowest annual precipitation in California
- With the exception of the Colorado, New, and Alamo rivers, all natural streams are ephemeral
- Flash floods and debris flows result from short-duration, high intensity rainfall from summer monsoonal thunderstorms or winter storms
- Many streams have steep channel slopes and little vegetation

Historic Floods

Colorado River Hydrologic Region
Flood Management

- Flood Governance
  - Major agencies involved in the planning and response to flood disasters include the Federal Emergency Management Agency, U. S. Army Corps of Engineers, Department of Water Resources, Office of Emergency Services, and select County Departments
Colorado River Hydrologic Region
Flood Management

Flood Risk Management

- **Structural Approaches**—Construction of Wide Canyon Dam, Deep Canyon and Palm Valley stormwater channels, Whitewater River channelization, and debris detention basins
- **Land Use Management**—
  - Most streams with flood control infrastructure have been designated floodways, and development, within floodways, is regulated through ordinances
  - Collaboration among federal, state, and communities through the National Flood Insurance Program
- **Disaster Preparedness, Response, and Recovery**—
  - State, federal, and local agencies are responsible for the preparation, response, and recovery from natural disasters
  - Local agencies are the first responders to flood events. When their resources are exhausted, the State (DWR, OES) can provide assistance, followed by federal agencies (USACE, FEMA)
Colorado River Hydrologic Region
Flood-Related Challenges

- **Facilities and maintenance**
  - Lack of ability to carry 1% probability flow in Whitewater River
  - Some localized flooding adjacent to the Salton Sea

- **Coordination and regulation**
  - Alluvial fan flooding issues in Riverside, Imperial and San Bernardino Counties

- **Floodway mapping**
  - Additional floodplain mapping needed in Imperial and Riverside Counties
Colorado River Hydrologic Region Accomplishments

- Canal Linings
- Water Transfer
- Groundwater Storage
- Water supplies
- Water Quality
- Flood Control
- Quantitative Settlement Agreement

Colorado River Hydrologic Region
Key Issues and Challenges

- Environmental
  - Colorado River threatened and endangered species
    - Colorado pikeminnow, razorback sucker, humpback chub and bonytail chub
  - Citizens Congressional Task Force on the New River
  - Treated and untreated flow from Mexico through the New River to Salton Sea
    - New treatment facility in the Mexicali Valley sends treated water southward through the Rio Hardy river

(California Water Plan Update 2009, Vol. 3, Regional Reports Pgs 11-25 to 11-26)
Colorado River Hydrologic Region
Key Issues and Challenges Cont’d.

- **Water Quality**
  - Salton Sea
  - Concerns about perchlorate in Colorado River water and presence of hexavalent chromium in water wells in near Needles
  - Increasing levels of salinity and nitrates in groundwater

- **Water Supply**
  - Fort Mojave Indian Tribe, Fort Yuma-Quechan Indian Tribe and Colorado River Indian Tribes are pursuing additional water rights based on boundary lands claims
Agenda Item 10
Part 1
Scenarios
Agenda Item 10
Part 2
Resource Strategies
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 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

Improve Flood Management
- Flood Risk Management
Colorado River Hydrologic Region
Water Management Responses

- A mix of 25 Strategies being implemented in this region
  - Table 11-8, Pg 11-20 of Regional Report
- Some examples of strategies being used today
  - Water conservation
  - Ecosystem Restoration
  - Water recycling
  - Urban Water Management Plans and Groundwater Management Plans

(California Water Plan Update 2009, Vol. 3, Regional Reports Pgs 11-19 to 11-21)
Colorado River Hydrologic Region
Planning for the Future

- **Salton Sea**
  - Restoration and stabilization efforts/alternatives
- **New delivery system in Coachella Valley**
- **Land Fallowing/On-Farm and delivery system improvement in Imperial Valley**
- **Additional storage and operation flexibility**
- **Landscape Water Conservation**
- **Desert Landscape Workshops**

Regional Report Contact Information

DEPARTMENT OF WATER RESOURCES
SOUTHERN REGION

Mark Stuart
marks@water.ca.gov

Vern Knoop
vernk@water.ca.gov

Dave Inouye
davidi@water.ca.gov