

RECLAMATION

Managing Water in the West

Accounting for Lower Colorado River Water

IBWC Citizens Forum
April 24, 2019



U.S. Department of the Interior
Bureau of Reclamation

Lower Colorado Regional Office

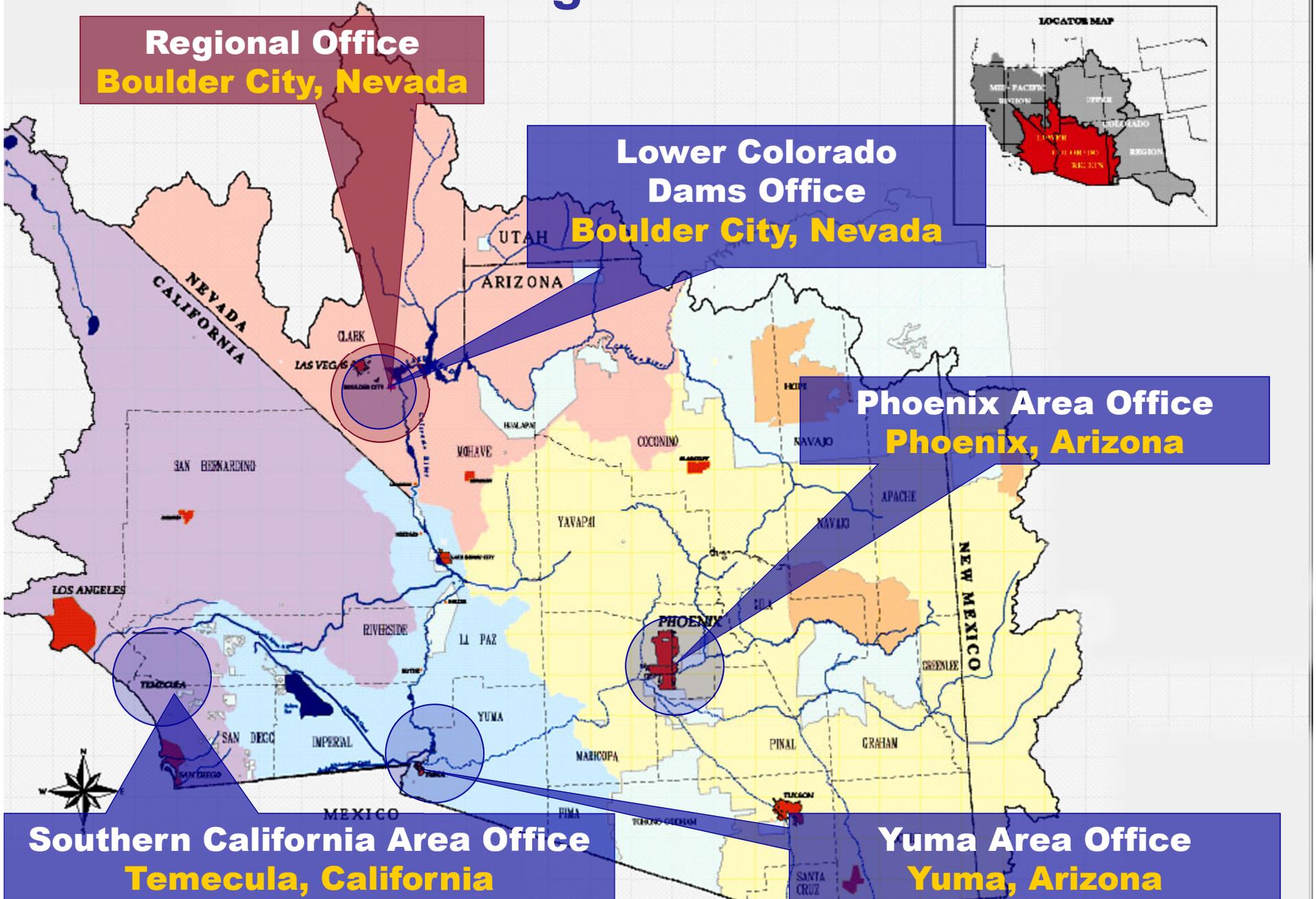
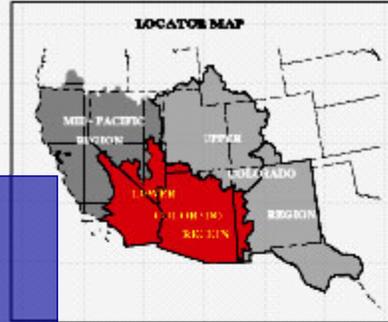
Regional Office
Boulder City, Nevada

Lower Colorado Dams Office
Boulder City, Nevada

Phoenix Area Office
Phoenix, Arizona

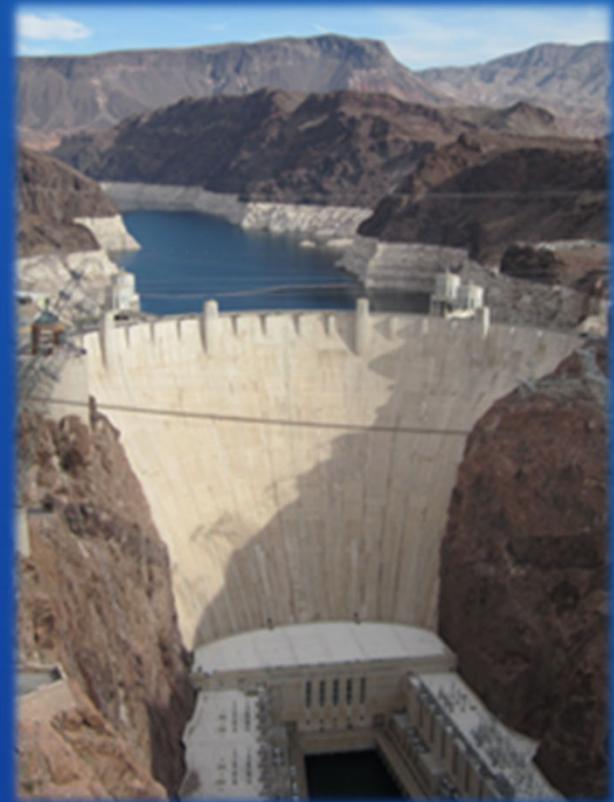
Southern California Area Office
Temecula, California

Yuma Area Office
Yuma, Arizona



Presentation Outline

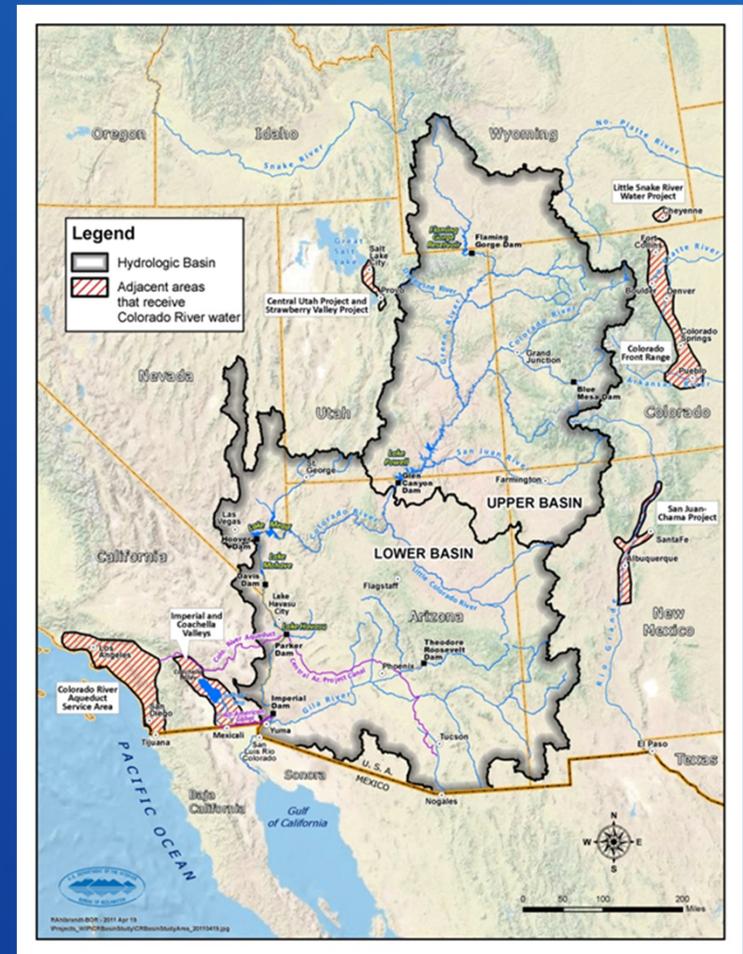
- Mandates for Colorado River Water Accounting
- Overview of the Water Accounting Process
- General Accounting Principles
- Water Accounting Report
- Yuma Area Accounting
- Questions



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Colorado River Water Accounting

- The Secretary is required to account for and report Colorado River water use pursuant to applicable Federal law
 - 1964 Supreme Court Decree
 - Colorado River Accounting and Water Use Report (“Decree Accounting”)
 - Official record of diversions, returns and consumptive use
 - Lower Basin Mainstream
 - 1968 Colorado River Basin Project Act
 - Consumptive Uses and Losses Report
 - Upper and Lower Basins



Overview of Consolidated Decree

Consolidated Decree of the United States Supreme Court in *Arizona v. California*, 547 U.S. 150 (2006)

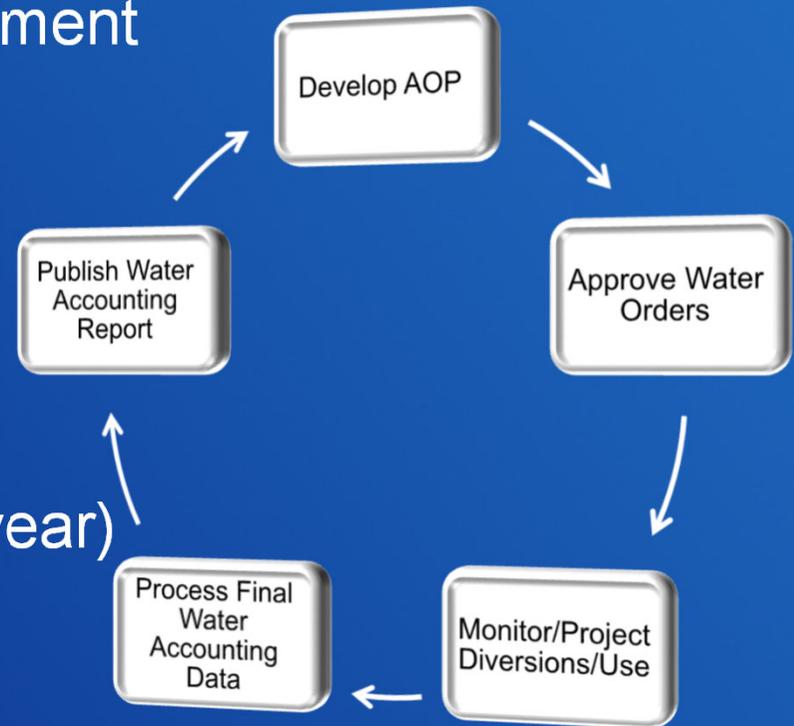
- Defines terminology
- Provides guidance on Secretarial authority
- Confirms State apportionments
- Requires annual reporting of diversions, returns, and consumptive use of Colorado River water

State apportionments based on consumptive use

- AZ – 2,800,000 AF
- CA – 4,400,000 AF
- NV – 300,000 AF

Accounting Process & Chronology

- Annual Operating Plan development
 - Surplus, Normal, Shortage
- Water order approvals
 - Pursuant to 43 CFR Part 417
 - Review/approve water orders
- Forecasting (real-time, end-of-year)
 - Monitoring of diversion and use
- Water Accounting
 - Official accounting for the diversion/use of Colorado River water



Water Order Approval Process

- Marks beginning of the accounting year
 - Review/approve IOPP and ICS Plans
 - Collect water-user provided schedules
 - Estimate schedules for those who don't provide schedules
- The schedules provided by water users form the basis for the daily forecast
- Approved amounts create a baseline to determine potential overruns
- Approved orders and monthly schedules are also used for river operations planning and modeling

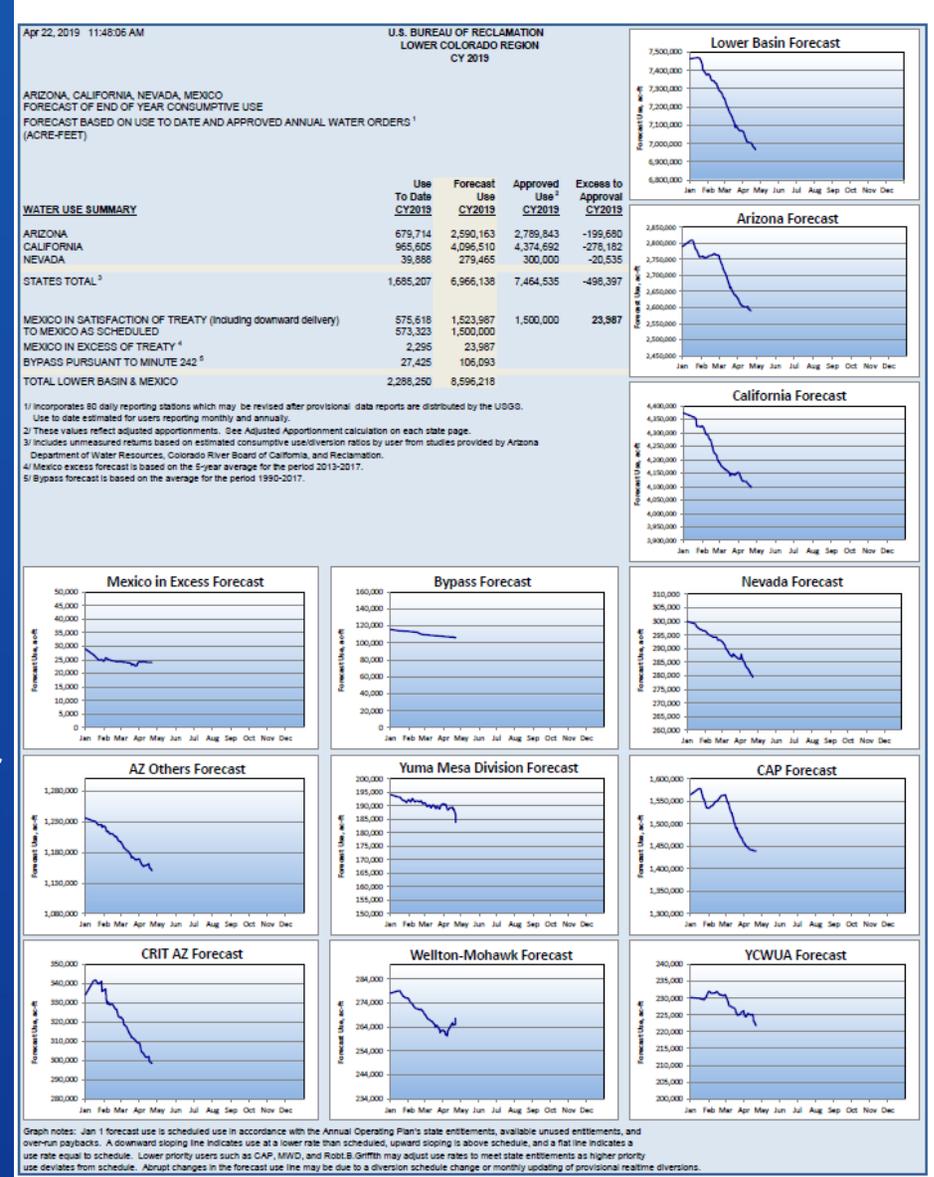
Water Use Forecasting



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Real-Time Forecast

- Approximately 85 gaging sites provide real-time data
 - AZ – 96% : CA – 99% : NV – 90% 98% of total Lower Basin
- Real-time data uploads to the Hydrologic Database (HDB) and is available for the daily forecast
- Daily forecast estimates end of year diversion/use
- Reclamation and water users monitor for potential overruns
 - Provides timely information needed to adjust use during the year
- Allows Junior Priority holders to adjust pumping to match available supply



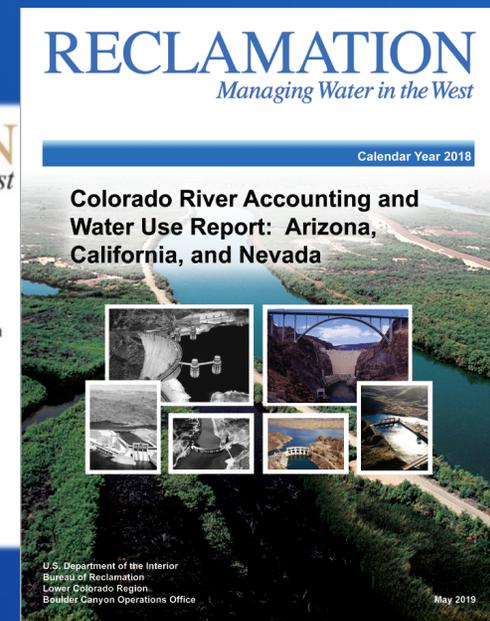
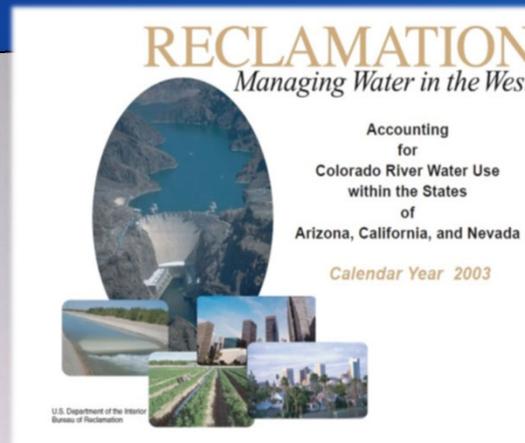
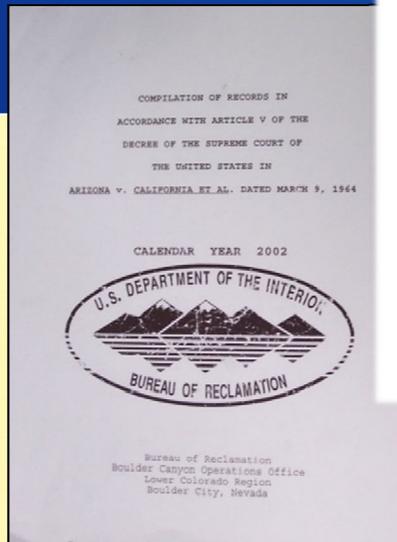
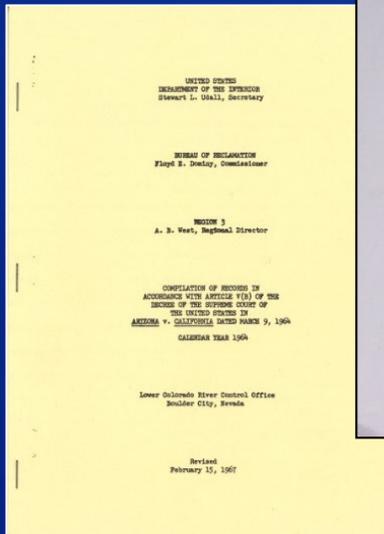
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Water Accounting

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Annual Water Accounting Reports

- The report has been published for each year since 1964
- Available on the web at:
<http://www.usbr.gov/lc/region/g4000/wtracct.html>



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Water Accounting Report

- Required by Article V of the Consolidated Decree to prepare and maintain (or provide on an annual basis) complete, detailed, and accurate records of:
 - V(A) Releases through regulatory structures (DAMS)
 - V(B) Diversions, returns, and consumptive uses by user and state
 - V(C) Water ordered but not diverted
 - V(D) Deliveries to Mexico
 - V(E) Gila and San Francisco River diversions for the benefit of the Gila National Forest
- Reports additional information, not required by the Decree

Article V(B): Diversions, Returns, and Consumptive Use

Article V(B) – Data of diversions, return flows (measured and unmeasured), and consumptive use by diverter by state



Article V(B) data provides the base data needed for further supplemental accounting

General Accounting Principles

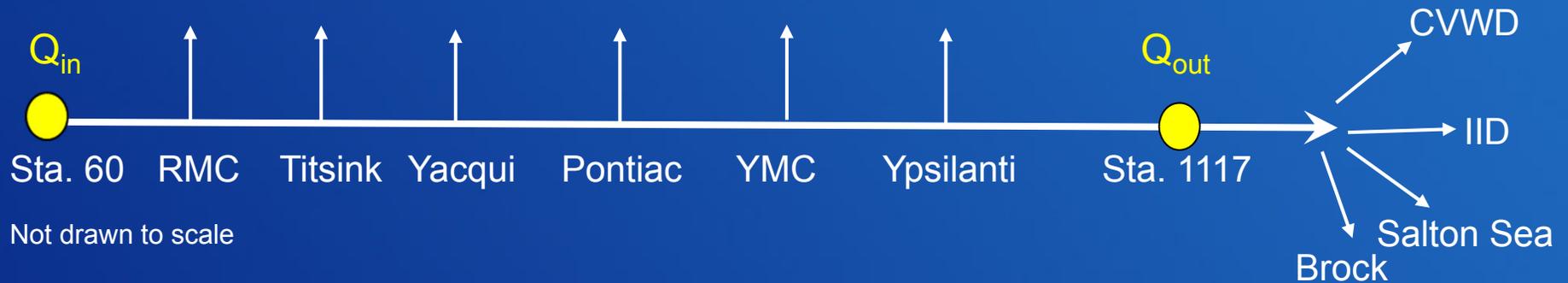
- $\text{Consumptive use} = \text{Diversions} - \text{sum of Measured \& Unmeasured Returns}$
- Water is considered a Colorado River diversion at the point where the water leaves the River
- All known diversions are accounted against a state's apportionment
 - No diversions are free from accounting; Federal, Local or Tribe
 - Diversions are charged to the place of use – not the place of diversion

Diversions

- Gaging sites provide real-time diversion and return flow data; most are operated by the USGS, Reclamation and IBWC
 - Additional sites reported by water users
- For shared canals, such as the AAC deliveries from the canal must be converted to diversions from the river (at Imperial Dam)
 - Diversion to a District is calculated



Canal Loss Distribution - AAC



Method for calculating a user's diversion at the river

- Where Diversion is equal to deliveries from AAC plus share of Canal Loss
 - Losses due to seepage, evaporation, and ET
- Total Canal Loss = $Q_{in} - Q_{out}$
 - Q_{in} is the flow into the AAC from Imperial Dam, measured at Sta. 60
 - Q_{out} is sum of deliveries from the AAC, including the flow at Sta. 1117

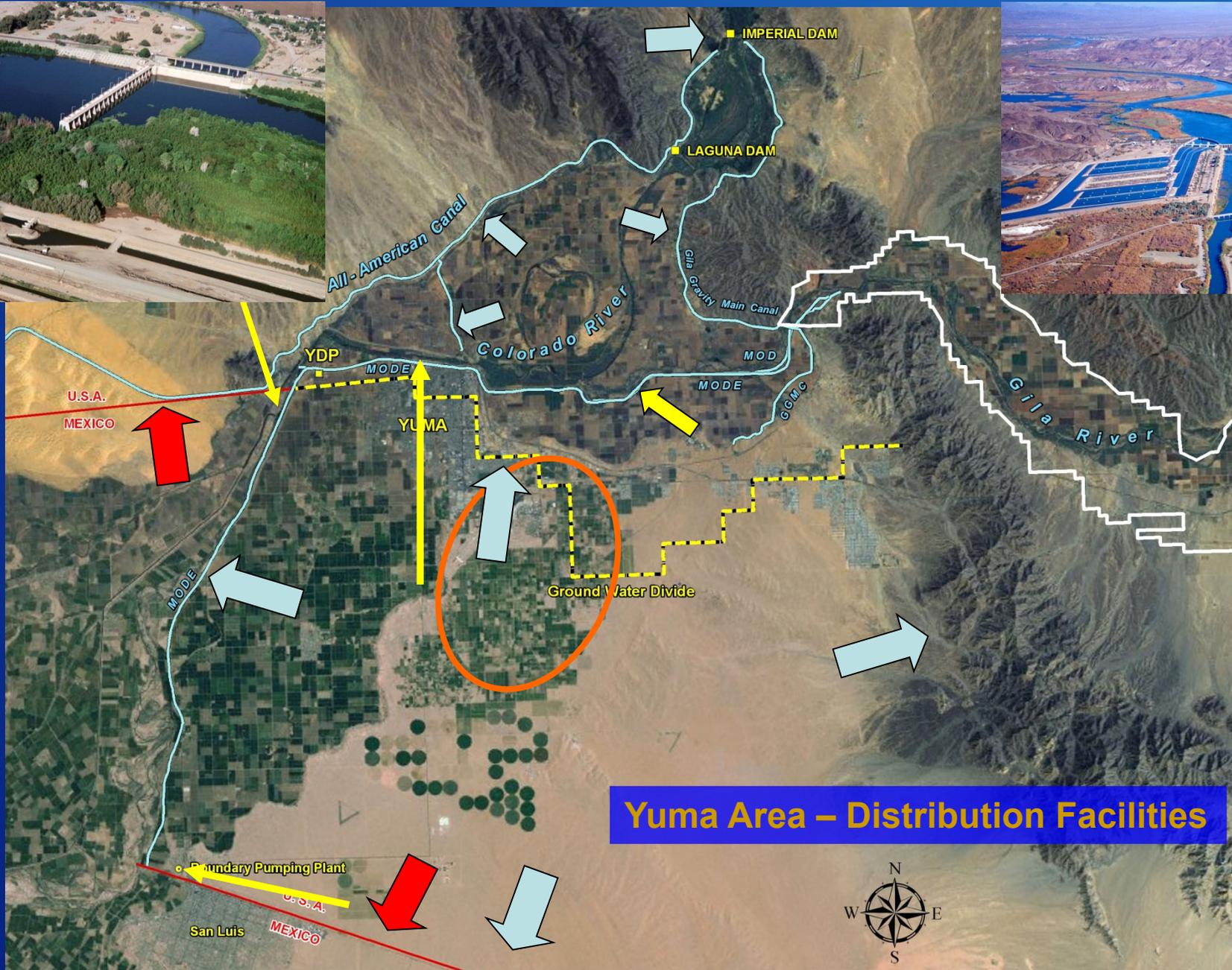
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Return Flows

- Defined as returns of Colorado River water available for consumptive use in the United States or in satisfaction of the Mexican treaty obligation
- Returns are credited to the user and to the state
 - Measured Returns: Drainage returning through measurable conveyances
 - Unmeasured Returns: Generally ground water flow to the River, calculated using factors applied to the user's diversion

Yuma Area Accounting

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Yuma Area – Distribution Facilities

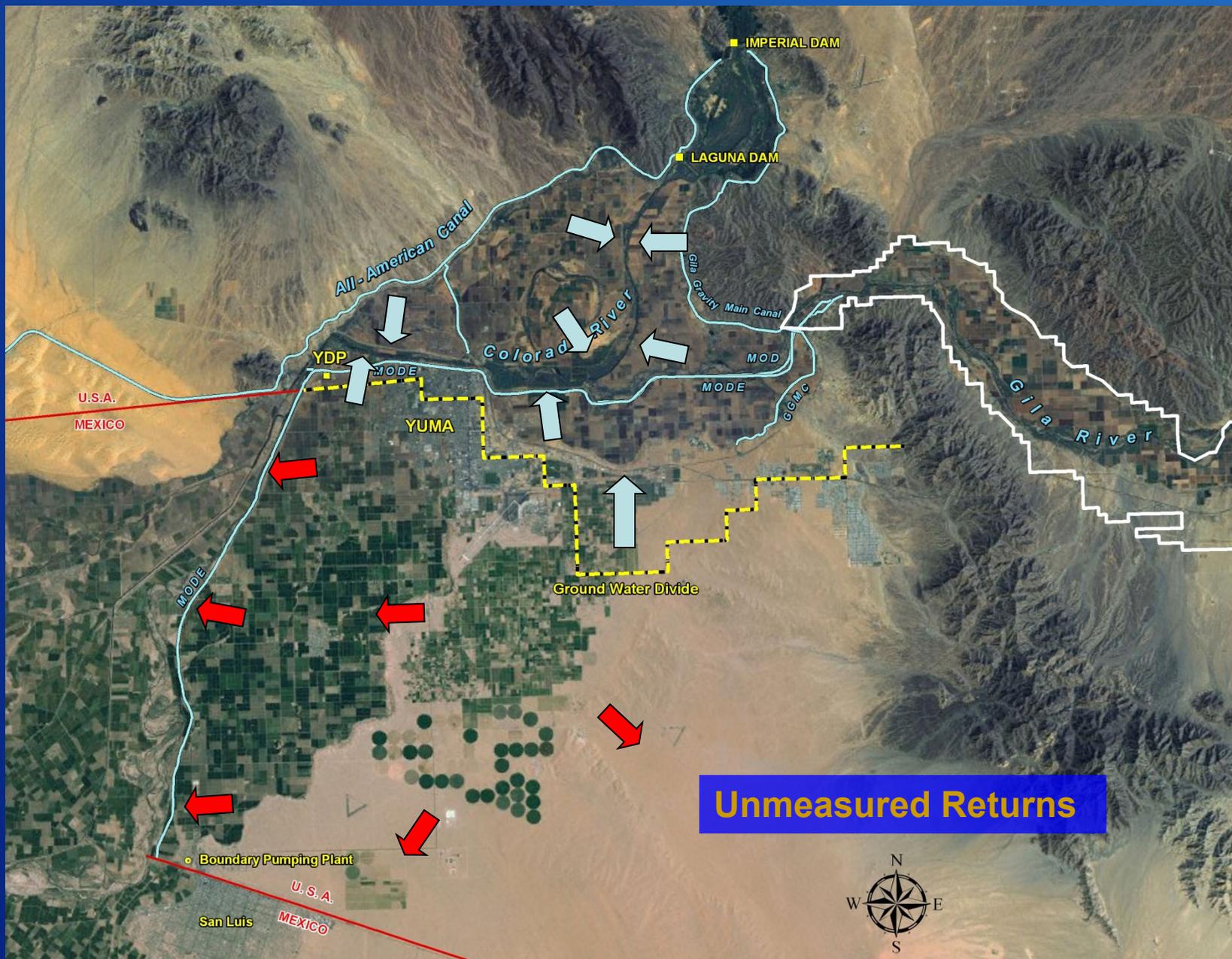
Surface Diversions

- 98% of water used in Yuma area is delivered as surface water
- Most surface diversions originate as deliveries from the AAC, Yuma Main Canal or GGMC
- As noted earlier, deliveries from these shared canals must be converted to diversions from the river
- Roughly 2% of the diversions are from wells and pumps

Measured Returns

- Examples
 - 242 Wellfield
 - Yuma Mesa Conduit
 - Main Outlet Drain (MOD)
 - Cooper Lateral
 - Yuma Valley Main Drain
 - Drainage Pump Outlet Canals (DPOCs)
 - AAC and GGMC losses





Unmeasured Returns

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Questions?

Thank you

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