RECLAMATION

Managing Water in the West

Methods to replace or recover the bypass flow including the YDP

Public Consultation Process

U.S. Department of the Interior
Bureau of Reclamation

Agenda

- Introductions
- Purpose of Public Process
- Background
- Bypass Flow Recovery or Replacement Methods
- Additional Input & Follow-Up Activities

RECLAMATION

Welcome

- **Larry Walkoviak**
  Deputy Regional Director
- **Jim Cherry**
  Area Manager
- **John Johnson**
  Project Manager
- **Bob Walsh**
  Public Affairs Officer
- **Support Resources**
  Bonnie Roper, Reclamation
  Tetra Tech
  HJA Consulting

RECLAMATION

Purpose of the public consultation process

- To solicit information about potential methods to recover or replace the bypass flow.
  - Additional information and view points about methods that have already been suggested.
  - New methods not yet proposed.
- Analyze and evaluate potential methods.
- Information will be used in formulating future decisions. No federal action has been proposed.

RECLAMATION

Requirements for water deliveries to Mexico

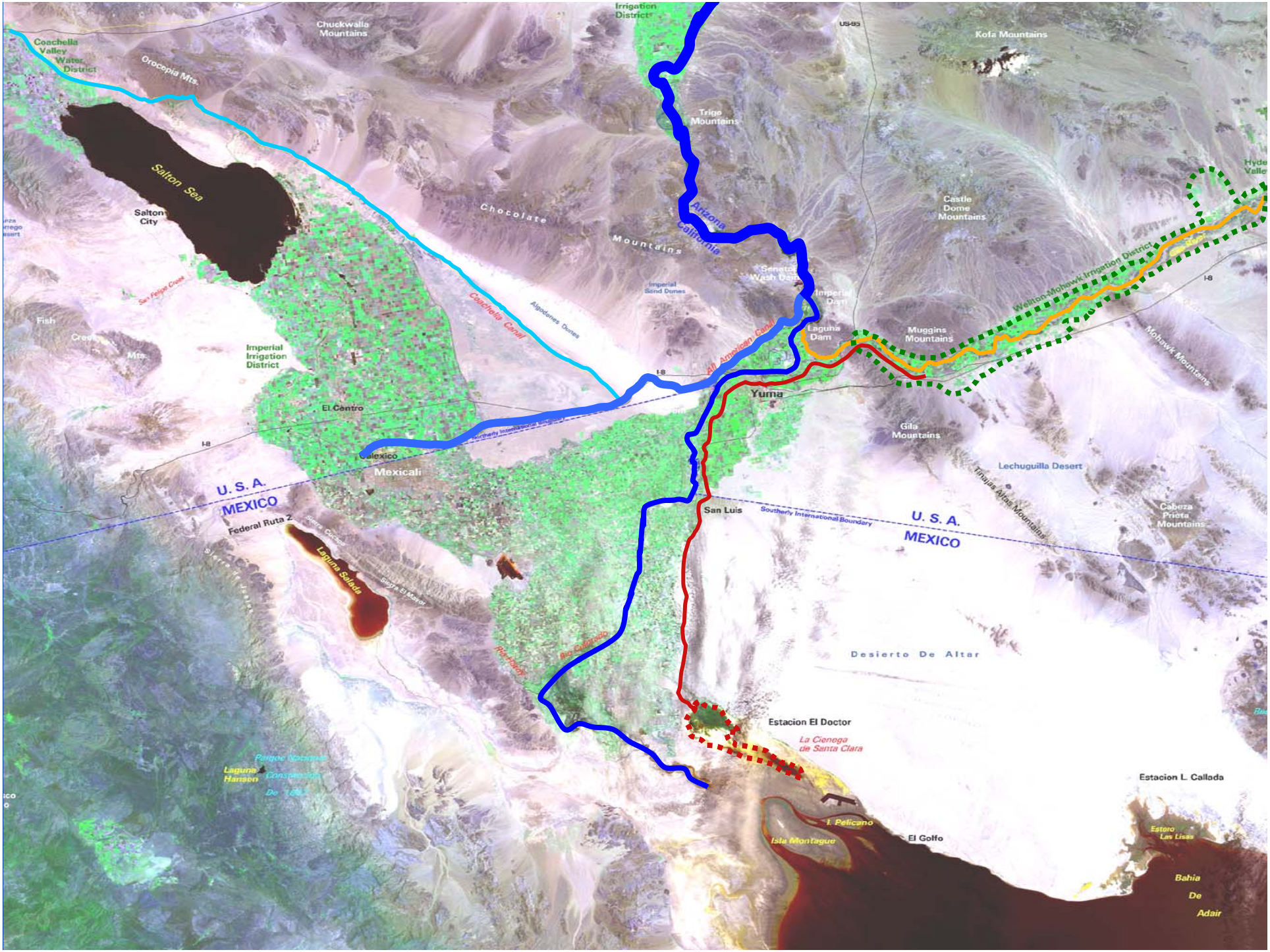
- Treaty of 1944 with Mexico requires delivery of 1.5 million acre-feet annually, but originally contained no water quality requirements.
- In the 1960's agricultural return flows from Wellton-Mohawk reaching the Colorado River substantially increased the salinity of U.S. water deliveries to Mexico.
- Treaty Minute 218 in 1965 and Minute 242 in 1973 addressed Mexico's water quality concerns.

RECLAMATION

Federal actions to meet salinity requirements

- To meet the water quality requirements several federal actions were taken including construction of the MOD, MODE and bypass drain.
- Collectively these conveyances take saline irrigation return flows from Wellton Mohawk, bypass the River and deliver it to the Cienega de Santa Clara in Mexico.
- The bypass flow is not counted towards the 1.5 million acre-feet annual water delivery requirement. The bypass flow averages about 108,000 acre-feet annually.

RECLAMATION


Coachella Valley Water District
Orocopia Mts.
Chuckwalla Mountains
Irrigation District
US-93
Kofa Mountains
Trigo Mountains
Salton Sea
Salton City
Chocolate Mountains
Arizona
California
Castle Dome Mountains
Hyde Valley
Senator Wash Dam
Imperial Sand Dunes
Imperial Dam
Laguna Dam
Muggins Mountains
Welton-Mohawk Irrigation District
I-8
Mohawk Mountains
San Felipe Creek
Fish Creek Mts.
Coachella Canal
Algodones Dunes
All American Canal
Imperial Irrigation District
El Centro
Yuma
Gila Mountains
Lechuguilla Desert
Northerly International Boundary
Calexico
Mexicali
U. S. A.
MEXICO
Federal Ruta 2
San Luis
Southerly International Boundary
Tinajas Altas Mountains
Cabeza Prieta Mountains
Sierra Cucapa
Laguna Salada
Sierra El Mayor
Rio Colorado
Desierto De Altar
Estacion El Doctor
La Cienega de Santa Clara
Parque Nacional
Laguna Hanson
Estacion L. Callada
I. Pelicano
Isla Montague
El Golfo
Estero Las Lisas
Bahia De Adair

Bypass flow requires like releases from system storage

- With completion of the bypass drain in 1977 water began flowing to the Cienega.
- Since then water quality requirements for Mexico have been met primarily by continuing to bypass Wellton-Mohawk flows to the Cienega.
  - This requires releases of a like amount of water from Colorado River system storage.
  - Current drought and projected long term water demand in the basin heightens concern about this demand on the system storage.

RECLAMATION

Methods for recovering or replacing the bypass flow

- Various types of methods have been proposed to address this concern by recovering or replacing the bypass flow.
  - Operation of the YDP
  - Forbearance program
  - Capturing excess flows to Mexico
  - Advanced irrigation techniques
  - Snowpack enhancement
  - Vegetation management
  - Institutional framework changes
  - Combination approach - Quality for quantity
  - Combination approach - YDP / Cienega Workgroup alternative

Operation of the YDP

- **The YDP was constructed to recover (desalinate) the majority of bypass flow.**
  - **YDP sits adjacent to the MODE. It is designed to receive some of the bypass flow and remove the dissolved salts.**
  - **Clean product water is returned to the River and makes up part of the annual delivery requirement to Mexico.**
  - **Removed salts are mixed with remaining water in the bypass drain and travels to the Cienega.**
- **Quantity and quality of flow to the Cienega would depend on how the YDP is operated.**

Forbearance program

- **Establish agreements with entities holding Colorado River contracts to forego the exercise of water rights.**
  - **Participation would be solicited and entirely voluntary.**
  - **Agreements for a set period of time (e.g. one year). No long terms purchase of water or water entitlements would occur.**
  - **Limitations on amount any contractor could forbear.**
  - **Price would be negotiated.**
  - **Protection provided lower priority water rights through first right of purchase.**
- **Result is additional water left in storage in Lake Mead**

RECLAMATION

Capturing excess flows to Mexico

- **Regulatory water storage on the lower Colorado River is constrained.**
  - **Additional storage capacity would reduce excess flows to Mexico when they exceed 1.5 million acre-feet annually.**
  - **Could take the form of expanding the capacity of existing reservoirs or establishing small new reservoirs.**
- **Groundwater in the vicinity of the Mexican border has a natural hydraulic gradient sloping towards Mexico. Added groundwater recovery could serve as replacement water for the bypass flow.**

RECLAMATION

Advanced irrigation techniques

- **Farmers or districts could be paid to implement irrigation techniques that result in water savings to offset the bypass flow.**
- **Such techniques are not widely used in this region due to their expense. Examples include:**
  - **Automated control equipment**
  - **Bubbler, drip or spray irrigation**
  - **In district or farm regulatory storage**
  - **Additional ditch lining**
  - **Spill interception system**

RECLAMATION

Snowpack Enhancement

- Some parties have suggested cloud seeding be considered as a potential method of increasing water supply on the Colorado River system.
- Seeding nuclei are dispersed by ground based equipment or aircraft.
- Colorado River basin has over 20 million acres above 8,000 feet in elevation.

RECLAMATION

Vegetation management

- Colorado River Basin Act of 1968 authorized the study and implementation of measures to augment and salvage Colorado River flows.
- There is significant non-native vegetation, primary salt cedar along the lower reaches of the River.
- It has been suggested that large scale and systematic removal of non-native vegetation may increase the availability of River water for other uses.

Institutional changes

- Possible institutional changes include Treaty modification and inter-basin water exchanges.
- Negotiations with Mexico might be opened with the goal of including water provided to the Cienega in the 1.5 million acre-foot annual water delivery requirement.
- Inter-basin water exchanges to facilitate water transfers between areas experiencing high water supply years and those areas with supply short falls.

RECLAMATION

Quality for quantity

- The YDP could be used to produce potable water. Northern Mexico has a critical need for additional potable water.
- Three major components to this combination approach are:
  - Abundant Yuma area ground water to supplement or replace bypass flow feed water for the YDP.
  - Part of the bypass flow returns to the River.
  - Potable water provided to Mexico and the U.S. Mexico trades potable water for a reduction in quantity of water the U.S. must deliver.

RECLAMATION

YDP / Cienega Workgroup alternative

- Central Arizona Water Conservation District organized a workgroup with the goal of reaching consensus about operating the YDP and preserving the Cienega. Group consisted of major Arizona water users and environmental advocacy groups.

- Consensus report published in April 2005.
  - Report suggests a combination of 11 specific recommendations.
  - Chief spokespersons indicate workgroup found common ground – a path forward to operate the YDP and preserve the Cienega.

RECLAMATION

Providing additional input and staying informed

- **Additional information about potential methods to recover or replace the bypass flow can be submitted in writing to Reclamation:**

  Bureau of Reclamation
  Attention: Mr. John Johnson
  P.O. Box 61470
  Boulder City, Nevada 89006
  E-mail: bypass@lc.usbr.gov

- **Website has been established for this public consultation process:**

  - **www.usbr.gov/lc/region/programs/bypass.html**

RECLAMATION