

LRG - BINATIONAL SOLUTION TO ASSURE 1944 TREATY COMPLIANCE AND BETTER PREDICTABILITY/RELIABILITY IN FUTURE WATER DELIVERIES

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Excellence through teamwork

PRESENTATION OVERVIEW

- IBWC Mission
- Treaty Basics
- Present Delivery Status
- Science and Technology
future role in Treaty
compliance



Rio Grande below Anzalduas



MISSION OF THE COMMISSION

➤ International Boundary & Water Commission

- U.S. Section
- Mexican Section

➤ Provides binational solutions to issues related to treaties

- Boundary demarcation
- **Ownership of water**
- Sanitation
- Water quality
- Flood control



SHARING OF RIO GRANDE WATERS

Water shared in accordance with 1944 Water Treaty

- Utilization of Water of the Colorado and Tijuana Rivers and of the Rio Grande (Treaty series 994, 1946)
- Commission Minutes such as Minute No. 234

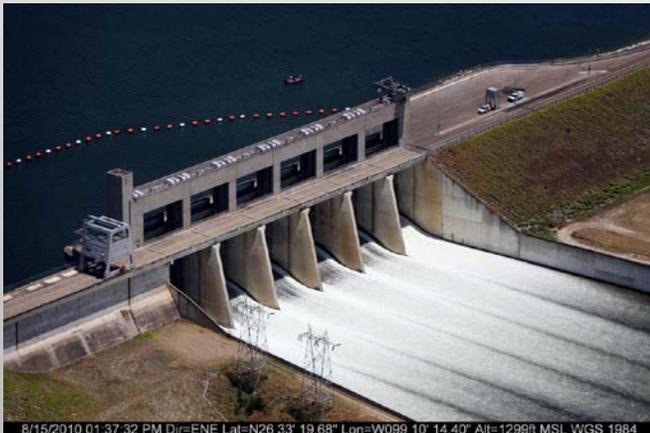


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TREATY SERIES 994
UTILIZATION OF WATERS OF THE COLORADO AND TIJUANA RIVERS AND OF THE RIO GRANDE
+
TREATY BETWEEN THE UNITED STATES OF AMERICA AND MEXICO
Signed at Washington February 3, 1944.
AND
PROTOCOL
Signed at Washington November 14, 1944.
Ratification advised by the Senate of the United States of America April 18, 1945, subject to certain understandings. Ratified by The President of the United States of America November 1, 1945, subject to said understandings. Ratified by Mexico October 16, 1945. Ratifications exchanged at Washington November 8, 1945. Proclaimed by the President of the United States of America November 27, 1945, subject to said understandings. Effective November 8, 1945.
UNITED STATES GOVERNMENT PRINTING OFFICE WASHINGTON : 1946

TREATY GEOGRAPHY

- U.S. and Mexico share waters of the Rio Grande
 - From Fort Quitman, Texas
 - To Gulf of Mexico
- Two International Reservoirs for water supply and flood control
 - Amistad (4,040 MCM, 6,181 MCM)
 - Falcon (3,264 MCM, 3,883 MCM)



Falcon Reservoir 2010



Amistad Reservoir 2010

1944 Treaty – Rio Grande Basin



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MEXICAN TRIBUTARIES OF THE RIO GRANDE

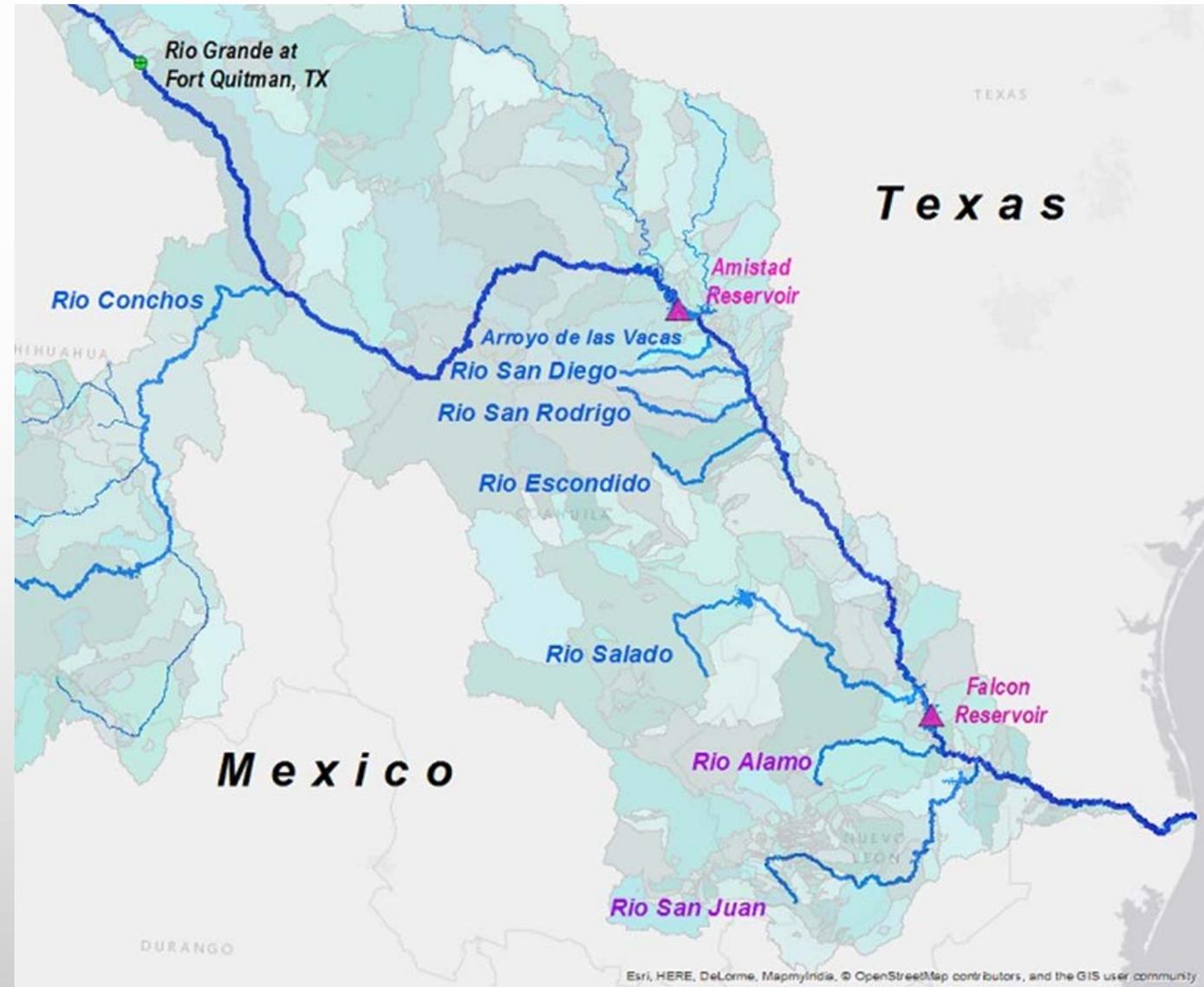
Treaty allocates 1/3 of the flow that reaches the Rio Grande to the United States from six-named Mexican Tributaries

➤ Six-Named Tribs.

- Rio Conchos
- Arroyo de las Vacas
- Rio San Diego
- Rio San Rodrigo
- Rio Escondido
- Rio Salado

➤ Two additional Mexican Tributaries below Falcon reservoir (100% Mexican Water)

- Rio Alamo
- Rio San Juan



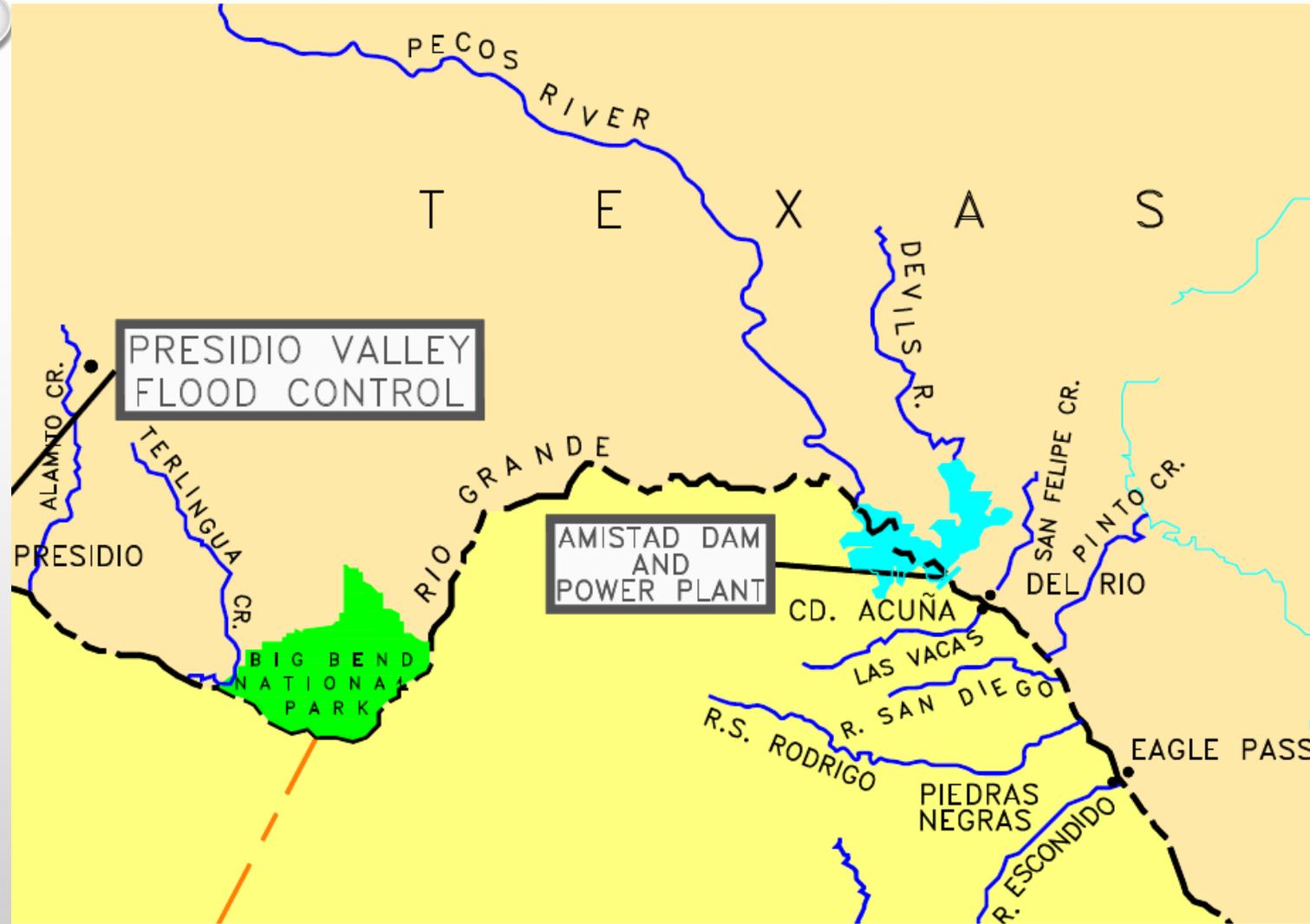
Rio Grande Watershed



U.S. TRIBUTARIES OF THE RIO GRANDE

Treaty allocates 100% of the flows that reaches the Rio Grande from the following water sources to the United States:

- Pecos River
- Devils River
- Good-enough Spring
- Alamito Creek
- Terlingua Creek
- San Felipe Creek
- Pinto Creek



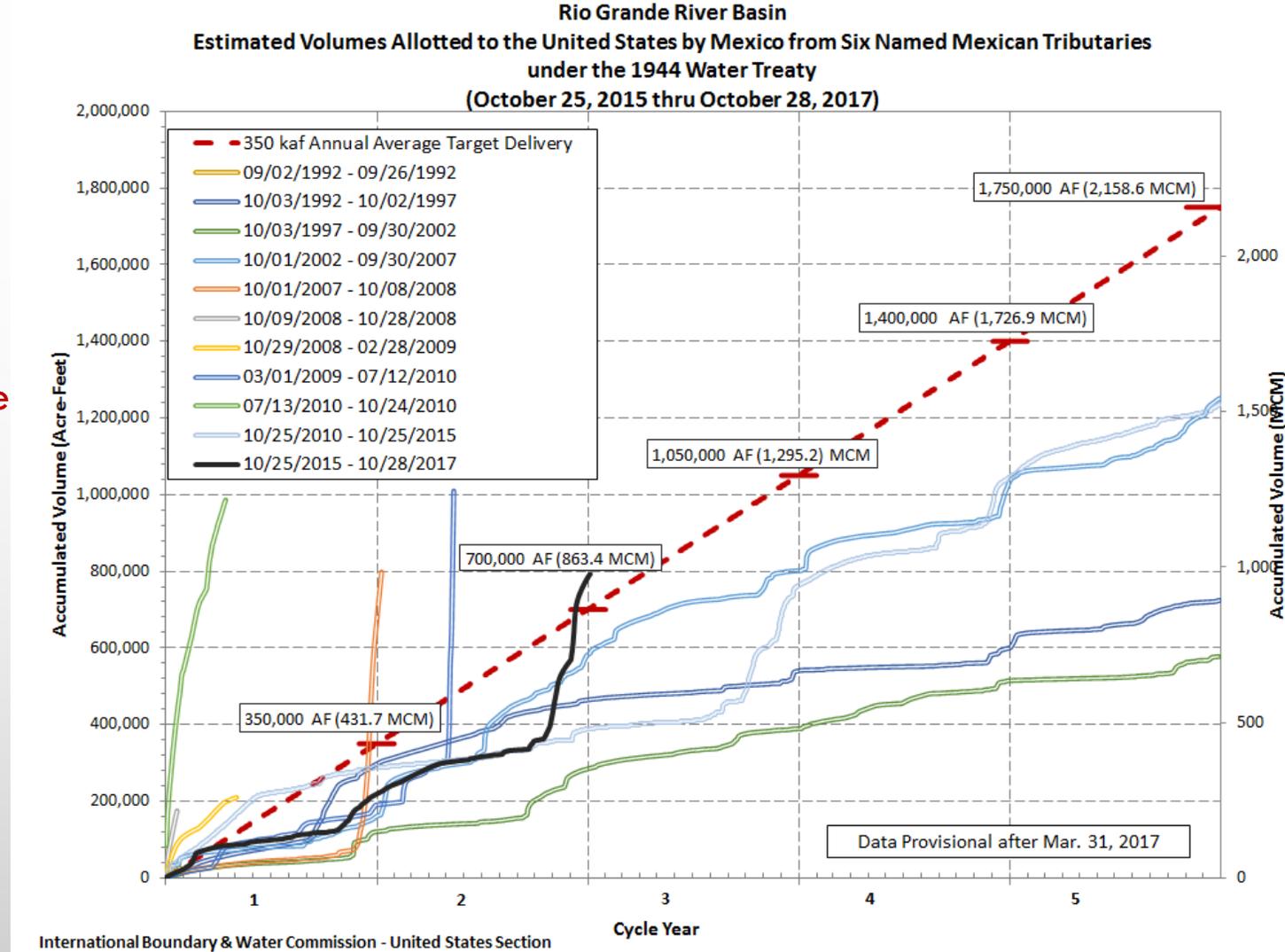
U.S. Tributary locations



TREATY DELIVERY TERMS

➤ Article 4 of 1944 Water Treaty

- **One-third** of the flow reaching the Rio Grande from six (6) **named tributaries** is allotted to the United States.
- the 1/3 share to the US...”shall not be less, as an **average amount in cycles of five consecutive years, than 350,000 acre-feet (431,721,000 cubic meters) annually**”
- **“Extraordinary drought”** clause - any delivery deficiencies existing at end of cycle, must be made up in following five-year cycle.
- If **U.S. conservation pool fills** in both Amistad and Falcon, **cycle terminates**, all debits paid.



Past ten, five-year cycles
 (About half end early and other half end in debt)

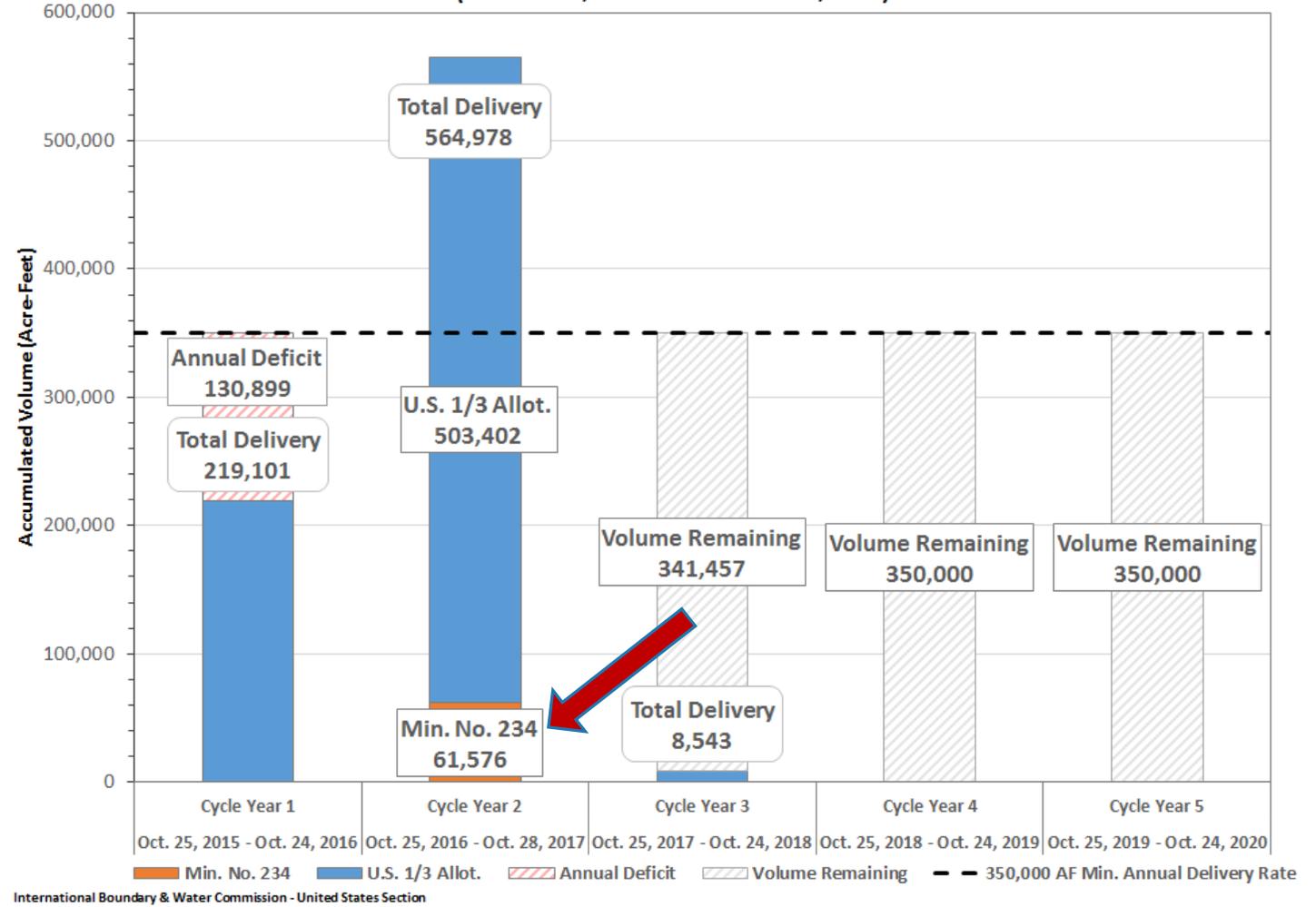


MINUTE NO. 234 – GREATER SHARE

➤ “In the event of a deficiency in a cycle of five consecutive years in the minimum amount of water allotted to the United States from the said tributaries, the deficiency shall be made up in the following five-year cycle, together with any quantity of water which is needed to avoid a deficiency in the aforesaid following cycle, by one or a combination of the following means:”

- Deliver more water from the tributaries
 - Deliver to the US some of Mexico’s share of tributary water
 - Transfer of Mx water at the international reservoirs
- Mexico used this provision to provide an additional 61,576 acre-feet from the Rio Conchos this delivery year.

Rio Grande River Basin
Estimated Volumes Allotted to the United States by Mexico under the 1944 Water Treaty
(October 25, 2015 thru October 28, 2017)



Present five-year cycle status



REVIEW OF PRESENT CYCLE

➤ Cycle Year One

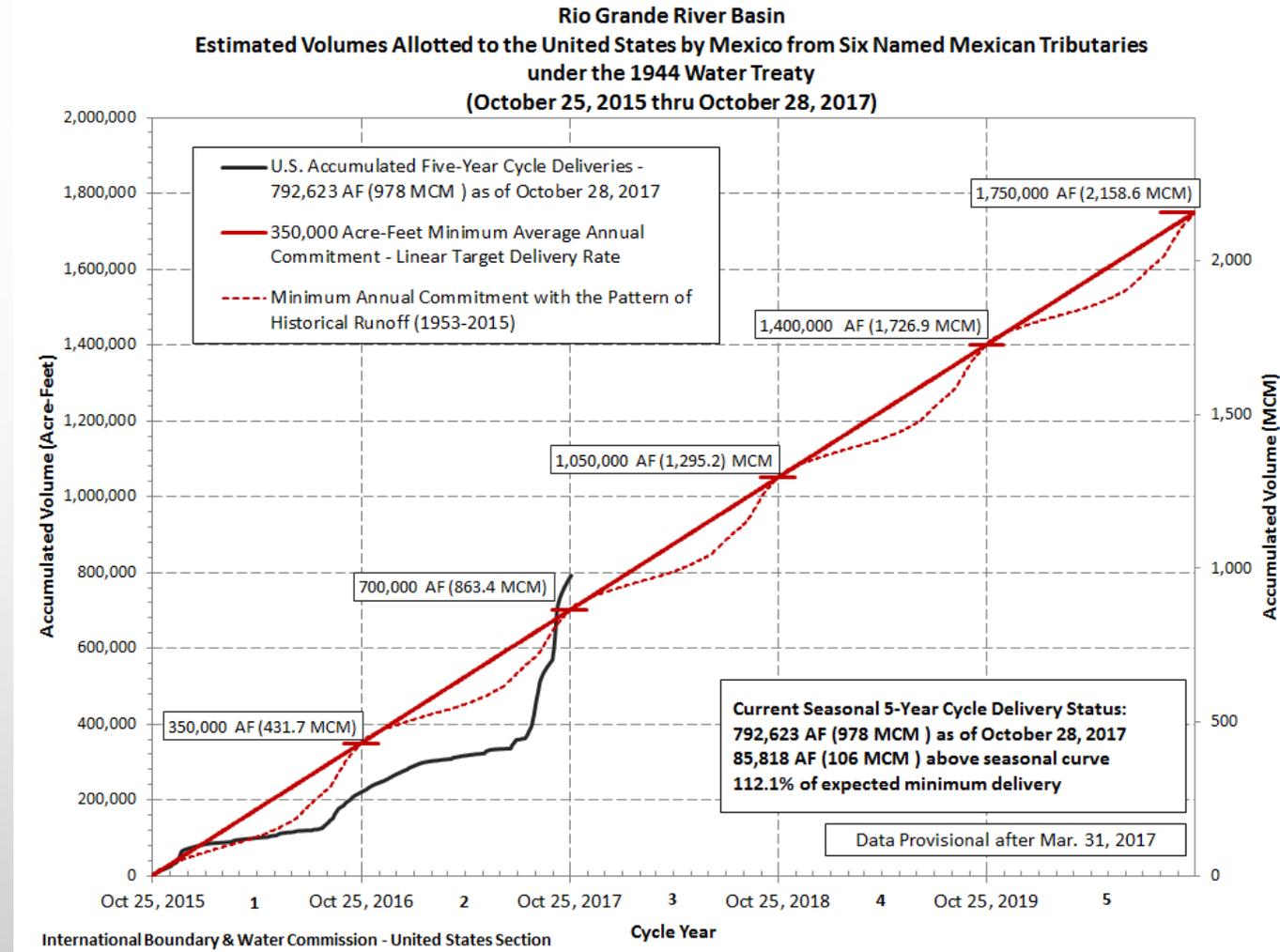
- Total Delivery of 219,101 acre-feet
- Annual Deficit 130,899 acre-feet

➤ Cycle Year Two

- Total Delivery of 564,978 acre-feet
 - In April, Mexico released water from La Fragua reservoir resulting in approximately 2,000 acre-feet to U.S.
 - Using Minute No. 234, Mexico increased U.S. allocation from 33% to 50% from August 20th thru September 30th.
 - Mexico continues to release water from Luis L. Leon with objective to bring reservoir to **80%** of conservation.
 - Appreciable flood flows from Rio Salado.

➤ Total five-year cycle deliveries to date...

792,623 acre-feet



Present five-year cycle status



TREATY COMPLIANCE ASSURANCE

➤ Establishment of Binational Technical and Policy Teams

- IBWC (U.S. and Mexican Sections)
- CONAGUA – Federal Mexican Water Entity
- Texas Commission on Environmental Quality
- Texas Water Development Board
- Texas Political Representation

Primary Objective of Binational Team

- ✓ Use science to develop better operational policy; thus assuring compliance with the 1944 Water Treaty and improving predictability/reliability in water deliveries to users in both countries.

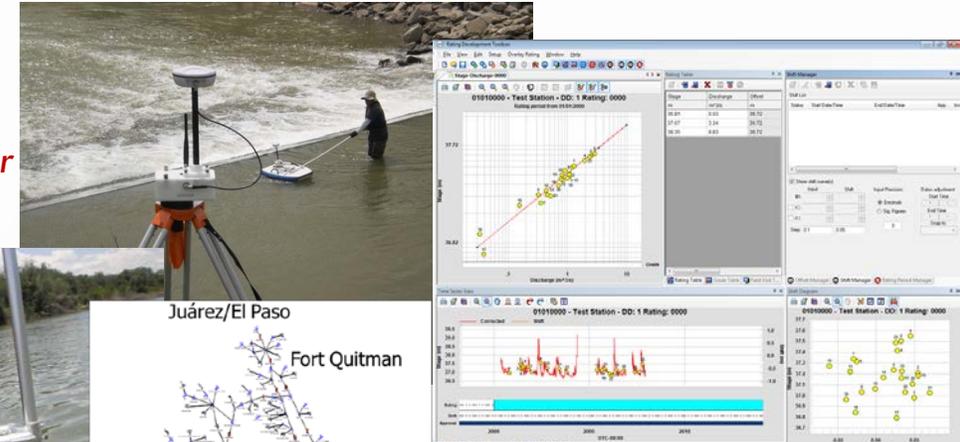


October 19th Meeting of Binational Policy Group



NEW TOOLS TO SUPPORT TREATY COMPLIANCE

Acoustic Doppler Current Profiler (ADCP Technology)



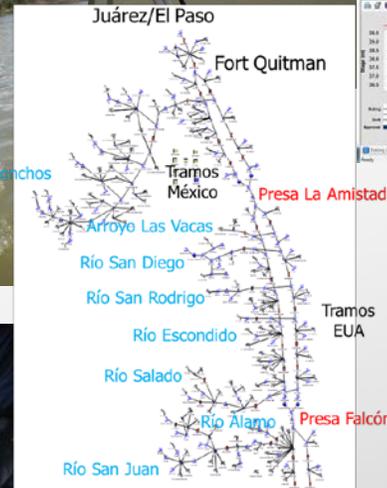
Better Basin Management Using Science and Technology

- Binaltional RiverWare Model
 - Improve binational water management
 - Analyze basin operations and compliance strategies
 - Review/Improve allocation policies.
 - Assure Treaty Delivery Requirements

- New Technologies in Stream Measurement Field
 - Database Management Software - Aquarius
 - New water measurement tools
 - ✓ Acoustic Doppler Technology
 - ✓ Bank operated equipment
 - ✓ Non contact sensors (radar)



ADCP on River Boats



RiverWare Modeling

AQUARIUS Time Series Mgt.



Remote Controlled Boats with ADCP



Cableway Measurement Systems



Radar water level sensors



PRESENTATION CONCLUSION

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Questions?



Rio Grande below Anzalduas

