Abiquiu Reservoir
Present and Future

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Presentation Overview

- Background
  - Abiquiu Reservoir Data/Purpose
- ABCWUA Usage
  - DWP Permit Conditions/Agreements
  - How Abiquiu will be used to meet OSE Conditions
  - Early Operation
  - Long Term

Abiquiu Background

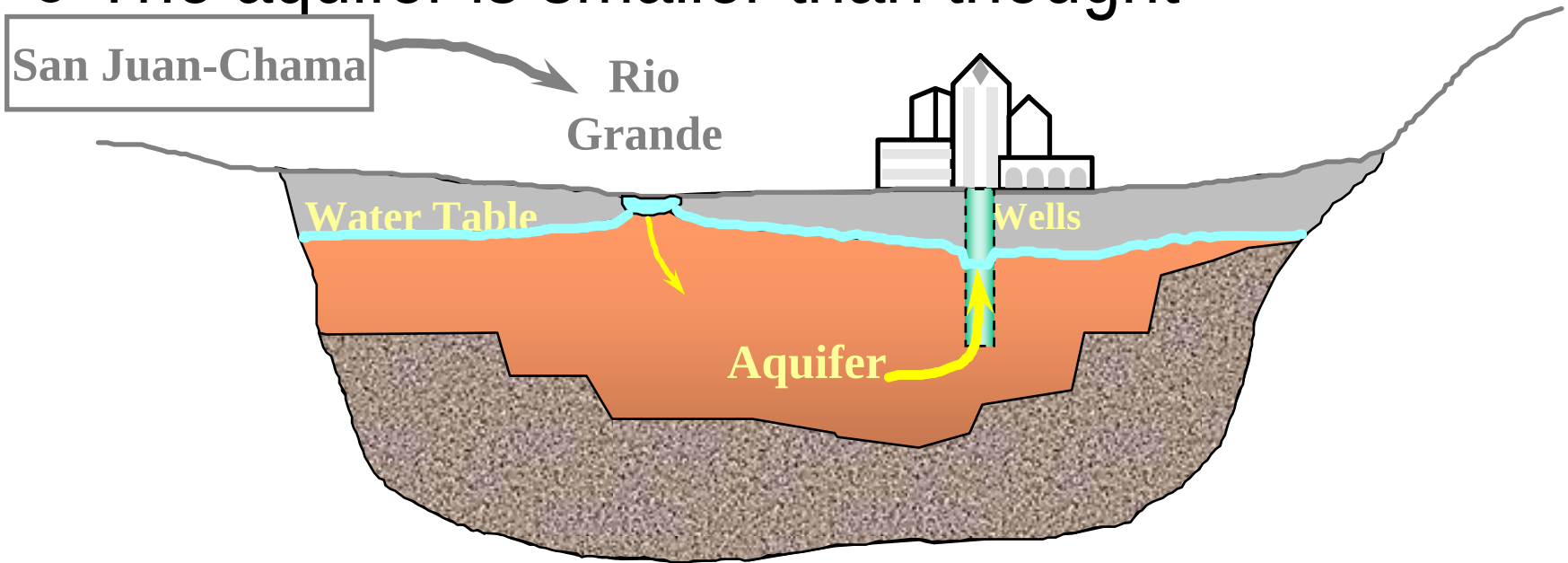
- Stats
  - Constructed by COE in 1963
  - Total *Potential* Storage – 1,500,000 ac-ft
  - Flood Control Storage – 545,000 ac-ft
  - Congress Authorized SJC Storage (1981) – 200,000 ac-ft *(within the Flood Control Storage Volume)*
  - ABCWUA SJC Capacity – 170,900 ac-ft
- Purpose
  - Designed and operated for flood and sediment control
  - Generally operated at below 200,000 ac-ft

Abiquiu Background, cont.

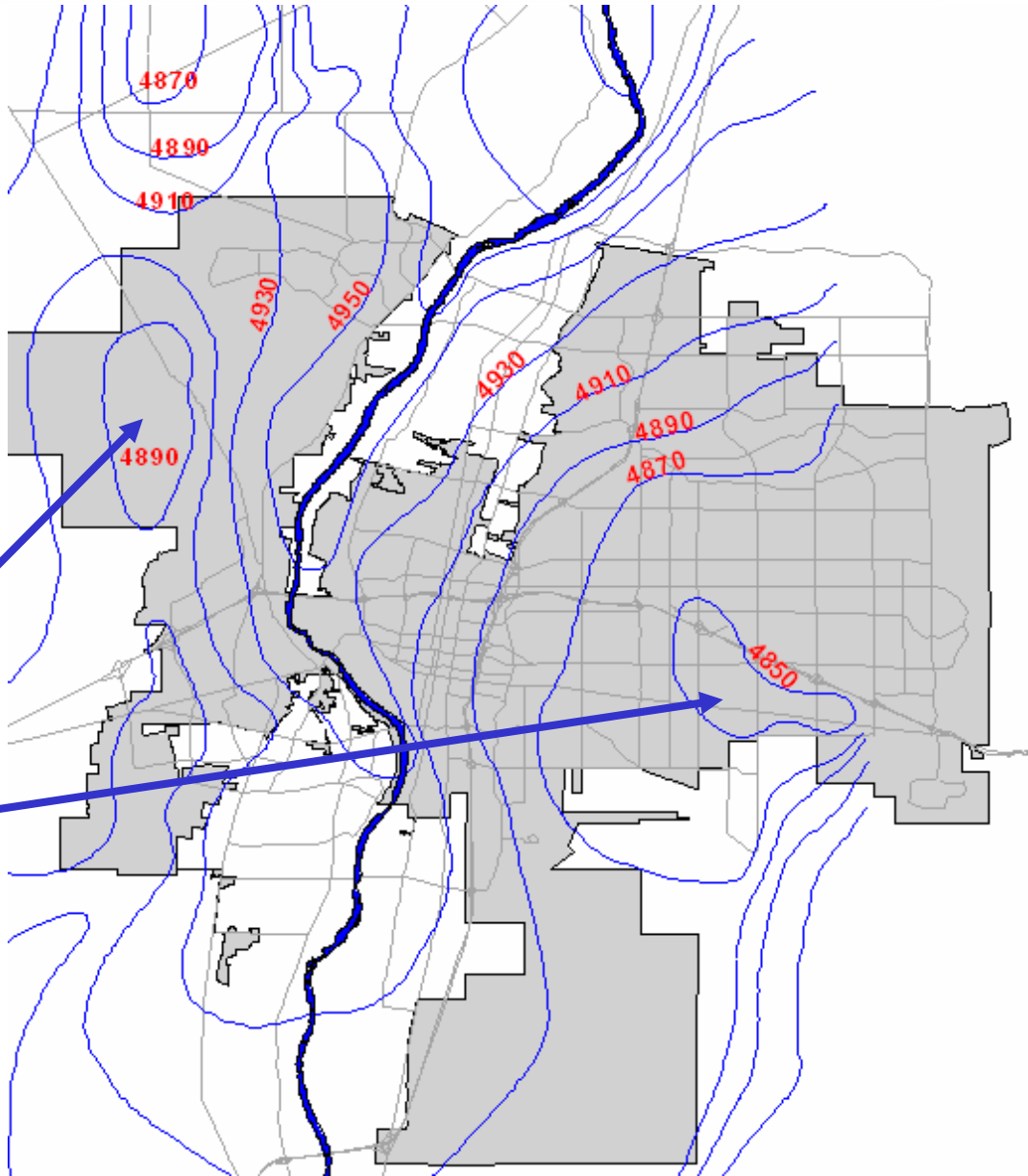
- Potential Storage
  - The reservoir *could* be operated to accommodate additional storage but there are obstacles including:
    - NEPA process required to store native Rio Grande water
    - Native storage will be subject to the Rio Grande Compact
    - Property located in right of way

Problems with the 1960s Plan

- The Rio Grande does not re-supply the aquifer to extent previously thought
- The aquifer is smaller than thought

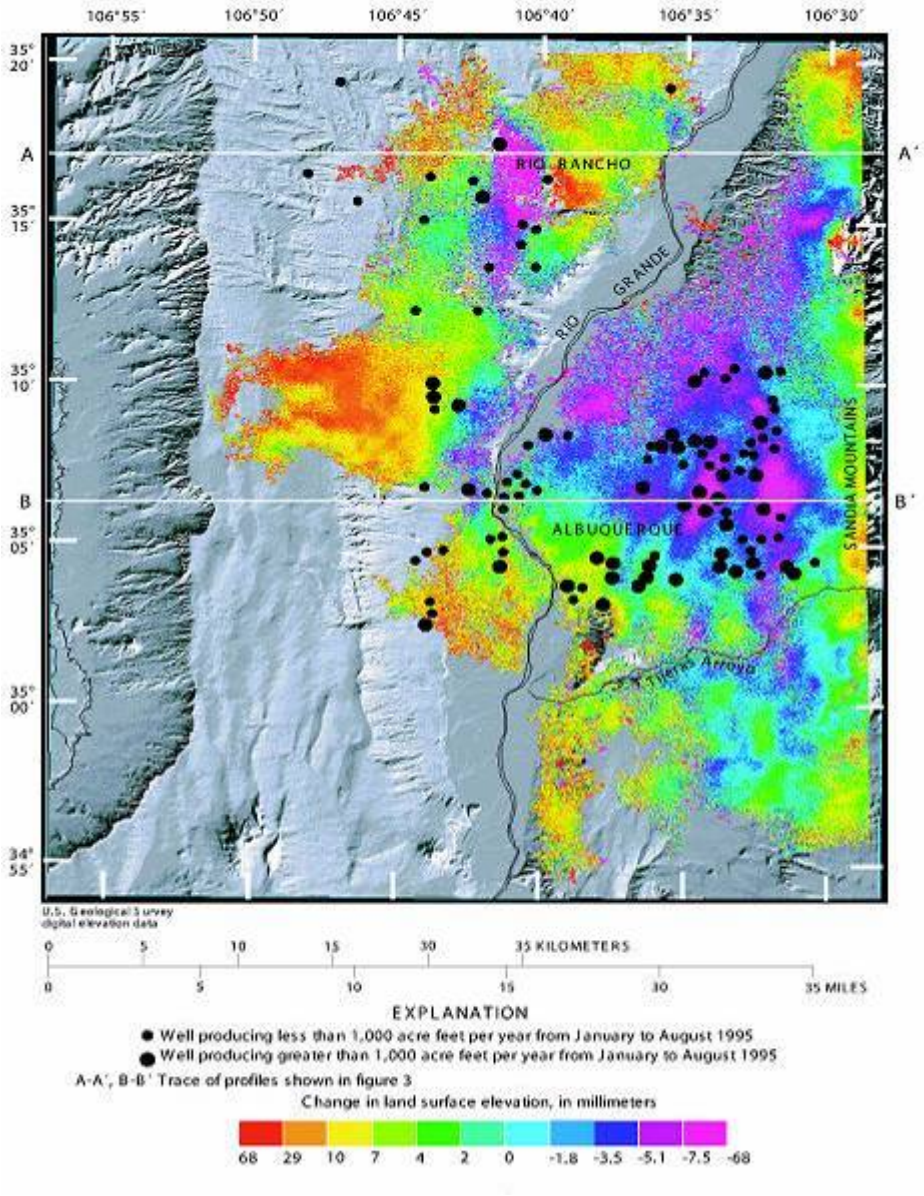


Albuquerque Ground-Water Levels Show Huge Declines

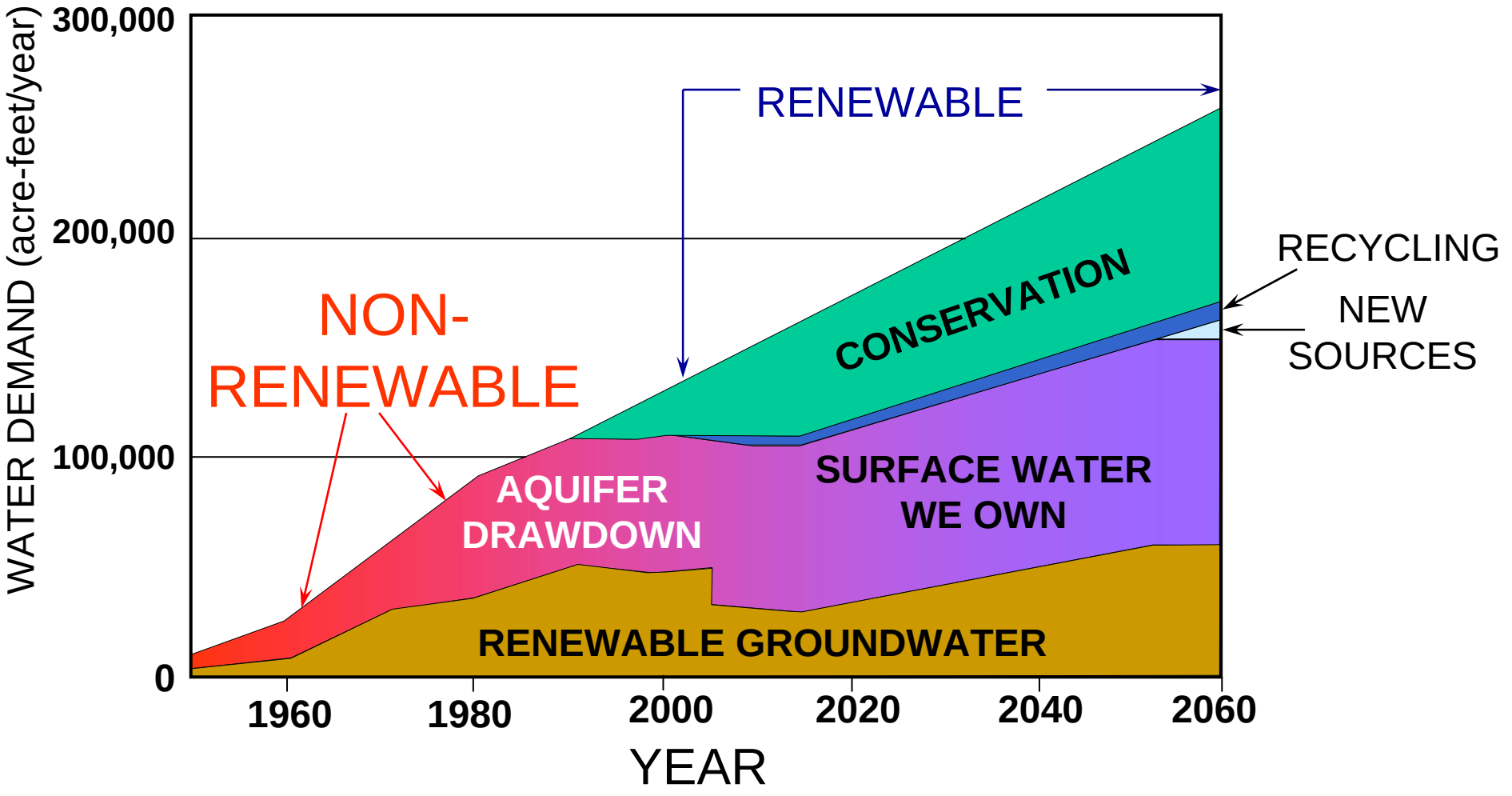


Pumping Cone of Depression in 2002

USGS - Land Surface Subsidence Estimate

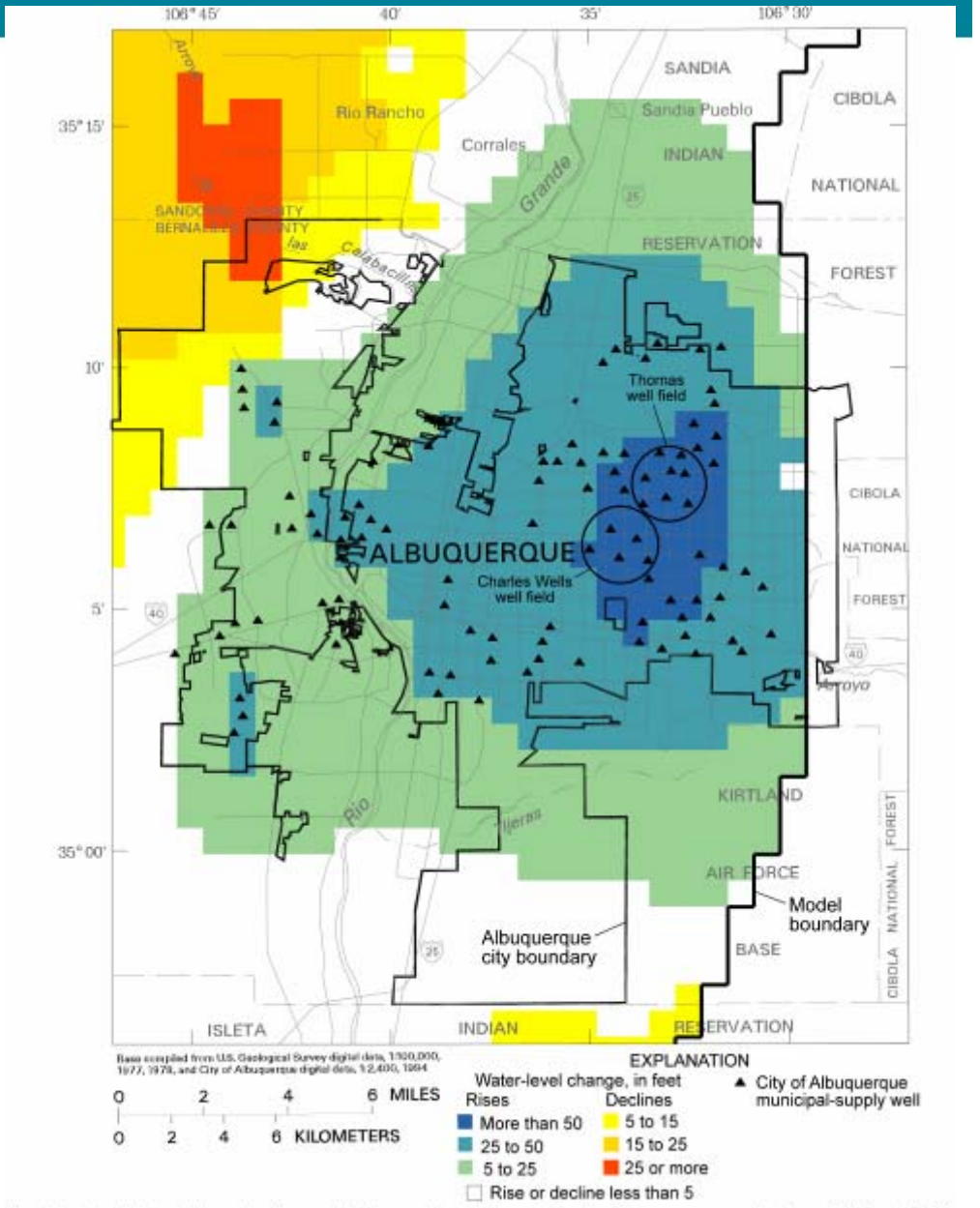


WATER RESOURCES STRATEGY IMPLEMENTATION



Restoration of Water Levels

- Water-Level Change from 2000 through 2040



Simulated water-level change in the production zone (model layer 5) in the Albuquerque area between 2000 and 2040.

OSE Permit Conditions

- Required to be at or below 175 gpcd prior to first diversion
- Required to be at or below 155 gpcd 20 years after first diversion
- Required to have water stored to offset the residual effects of historic pumping
  - OSE Permit requires 130,000 ac-ft in storage prior to diversion
  - To ensure sufficient reserves, the Authority will fill Abiquiu prior to diversion – *Abiquiu storage is essential to meet permit conditions and keep the river whole*

Agreements and Potential Payback

- Storage Space
  - USBR "Supplemental Pool – 20,000 ac-ft of space for supplemental water (expires this year)
    - could do short term leases of space with payment in water
  - RGSM Settlement – 30,000 ac-ft of space, if available
  - MRGCD – 50,000 ac-ft of space, if available (requires NEPA if native)
- Payback from Previous Agreements/Borrowing
  - 2000 Agreed Order
    - MRGCD – owes 22,500 ac-ft – payback period: 2007-2016
  - 2000 Supplemental Order
    - USBR – owes ~15,000 ac-ft
  - 2002 Settlement Agreement
    - MRGCD – owes 70,000 ac-ft – payback period: 2007-2021

What Storage is Required?

- In any year, the Authority cannot use Rio Grande water in excess of its water rights
  - Diverted Amount + Pumping Effect – Return Flow – Rio Grande Rights – DWP releases - *Additional SJC Releases from Storage* <= 0
    - Diverted Amount ~ Annual allotment of SJC
    - Pumping Effect – calculated based on historic pumping
      - in the early years of the DWP diversion, despite a dramatic reduction in pumping, pumping induced effects on the river remain high due to the large amount of historic drawdown
      - these effects may result in additional SJC releases greater than 20,000 ac-ft in the first years of diversion and will gradually diminish as the drawdown cone is filled

What Storage is Required?, cont.

- Storage at the beginning of the year must be sufficient to provide 1) DWP release and 2) required Additional SJC releases
- Because the DWP will use all annual SJC water each year, sufficient water must be in storage *in advance of diversion* to offset evaporation and to meet the Additional SJC Releases
  - The Authority will fill Abiquiu prior to diversion to meet permit requirements and establish reserves
- Additional SJC Releases were calculated as part of the OSE Permitting Process to be about 100,000 ac-ft (when paybacks from agreements are released directly rather than stored). This calculation was based on an assumed hydrology. The actual requirement will be calculated on a year to year basis from actual pumping over time.
  - Actual releases will be calculated, but could be higher or lower depending on actual pumping and hydrologic conditions
- In addition, the Authority would like to keep about 50,000 ac-ft in reserve…

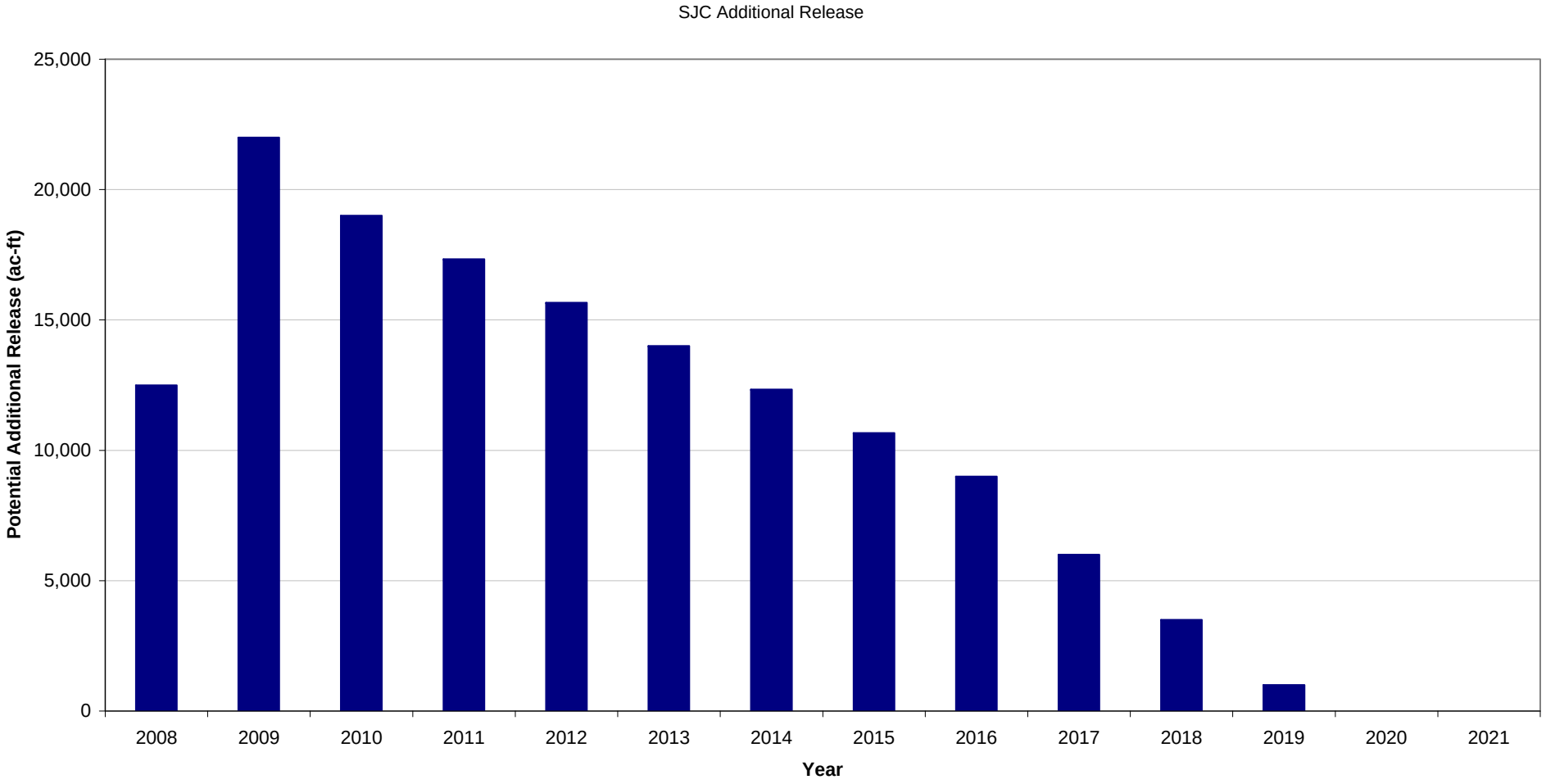
Preparing for Diversion

- Current Authority storage in Abiquiu
  - ~125,000 ac-ft
- Annual inflow to Abiquiu
  - ~47,200 (w/ losses incurred)
- Annual Release
  - leases - ~1,800 ac-ft
  - NI-25 (nonpotable) – ~2,000-3,000 ac-ft
- *Abiquiu will be effectively full in 2006 or early 2007*

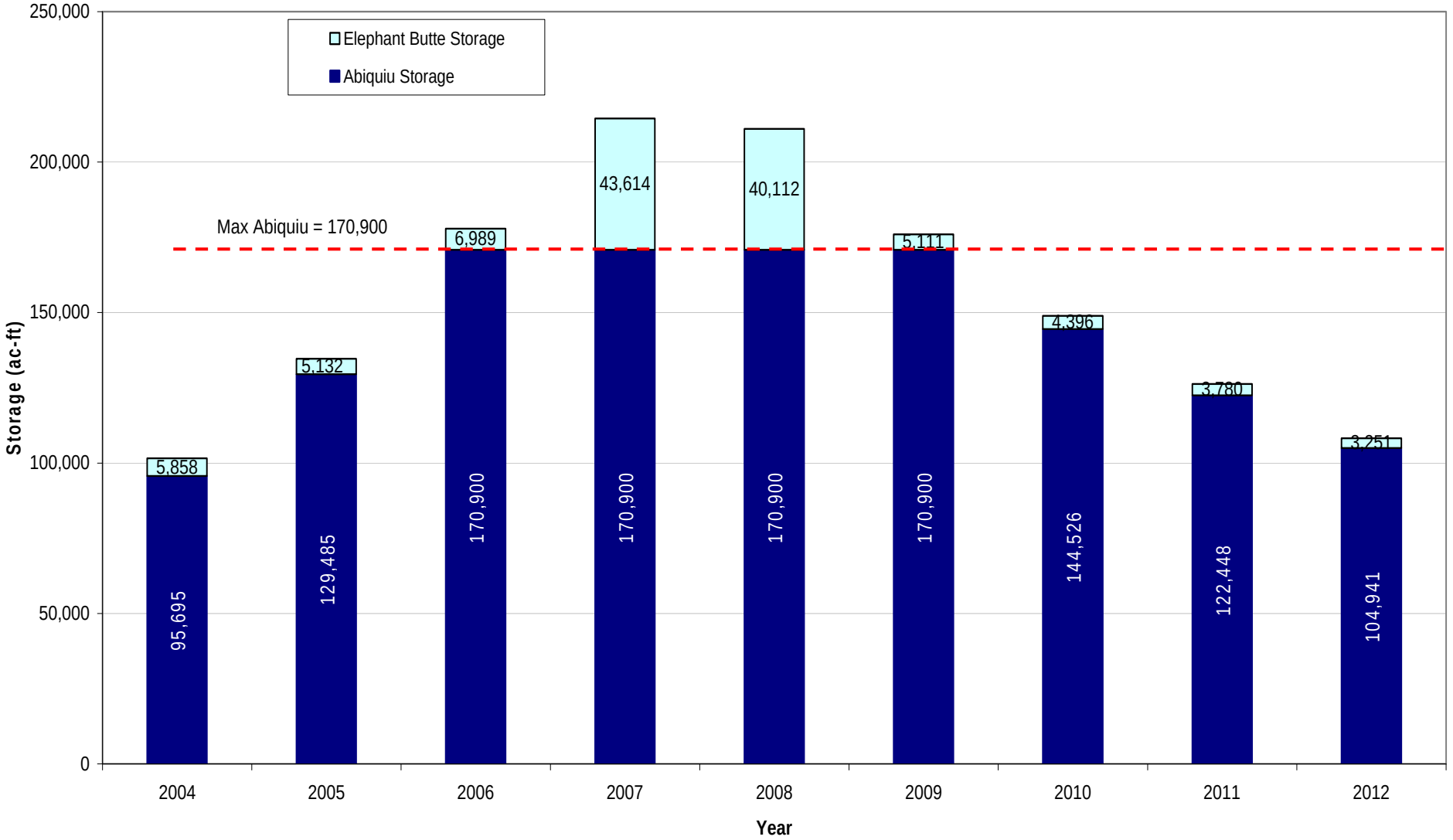
Early DWP Operation

- Maintain sufficient storage and reserves to meet offset obligations and provide a factor of safety for drought
  - DWP releases will be constant at about 66 cfs
  - Additional SJC releases will vary from year to year
    - The volume of additional SJC releases will likely go down over time- diminishing to zero in about 20 years
    - Releases related to the Rio Grande Compact will be coordinated with the OSE/ISC to maximize benefit
    - Releases related to effects on MRGCD may be exchanged with owed water

Potential SJC "Additional" Releases



ABCWUA Potential Storage



Long-Term Operation – Storage essential to meet needs

- The Authority will attempt to maintain at least a 50,000 ac-ft reserve (i.e. be one year ahead of need)
- Drought years – Under the current permit, the DWP must cease diversion when flows in the Rio Grande reach a certain low flow threshold. Storage space will be required to hold SJC water not released due to drought conditions.
- Non-potable – Currently, the non-potable project is supplied with stored SJC water

Summary and Conclusions

- Authority storage in Abiquiu is required to meet permit conditions and keep the river whole
- Authority storage will be at more than two-thirds capacity in first 10 years of the DWP
- Authority storage will be used to provide long-term reserves and supply the non-potable project
- Depending on payback schedule, significant storage could be required hold water paid back to the Authority from previous agreements
- Agreements are in place to optimally use any available storage over time.
- Additional space could be created by expanding Abiquiu, but a number of issues would need to be resolved to complete