

Case Studies in Reclamation

Reservoir Sediment Management & Analysis for Engineers

June 2018, Lawrence, KS, USA

Presented by

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Black Canyon Dam Payette River, Idaho

Built in 1924

Irrigation diversion and
hydropower

Penstock at Ele 2472 ft

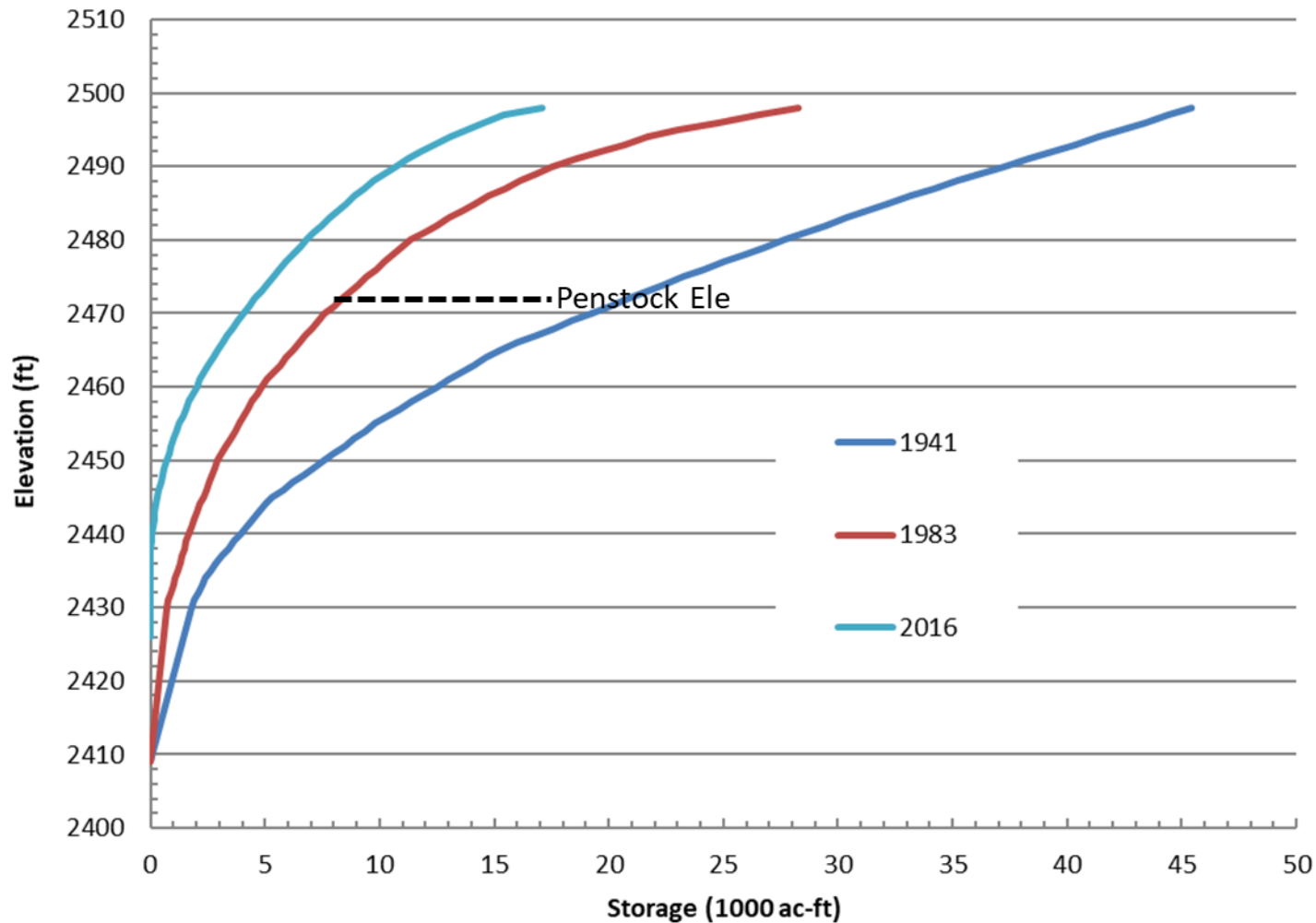
Boat ramp filled in

Black Canyon Reservoir

Montour Wildlife Management Area –
Previously part of Montour

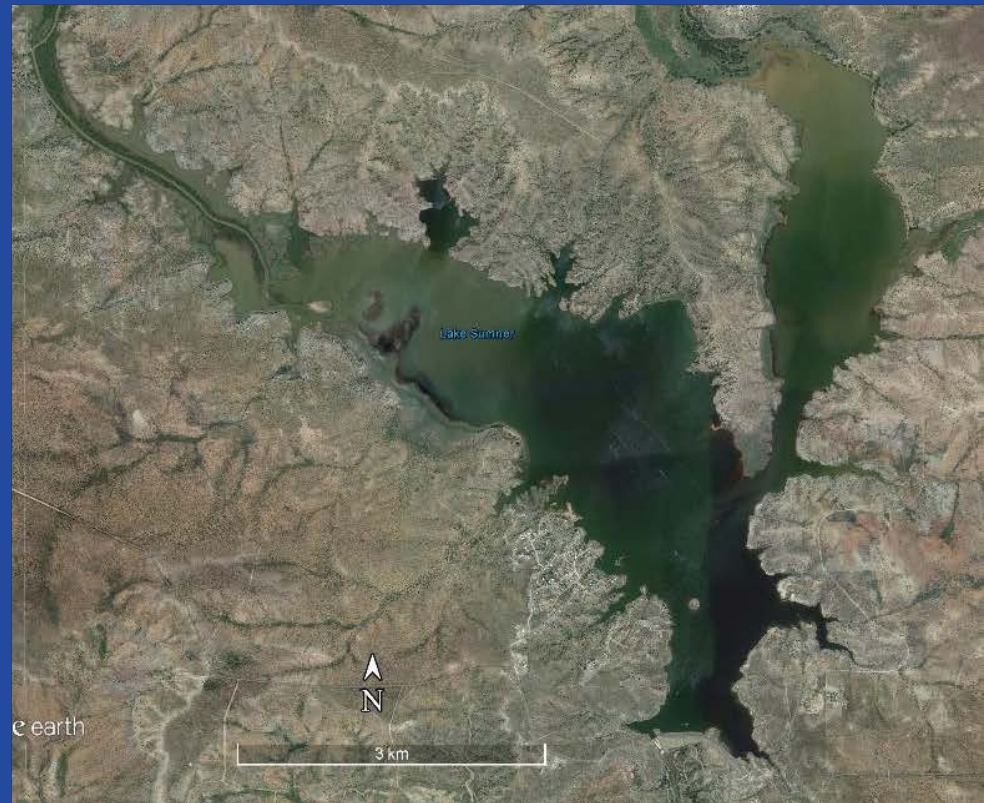
Approximately 17,000 acre-ft
remaining of an original 45,000

Black Canyon Storage Loss

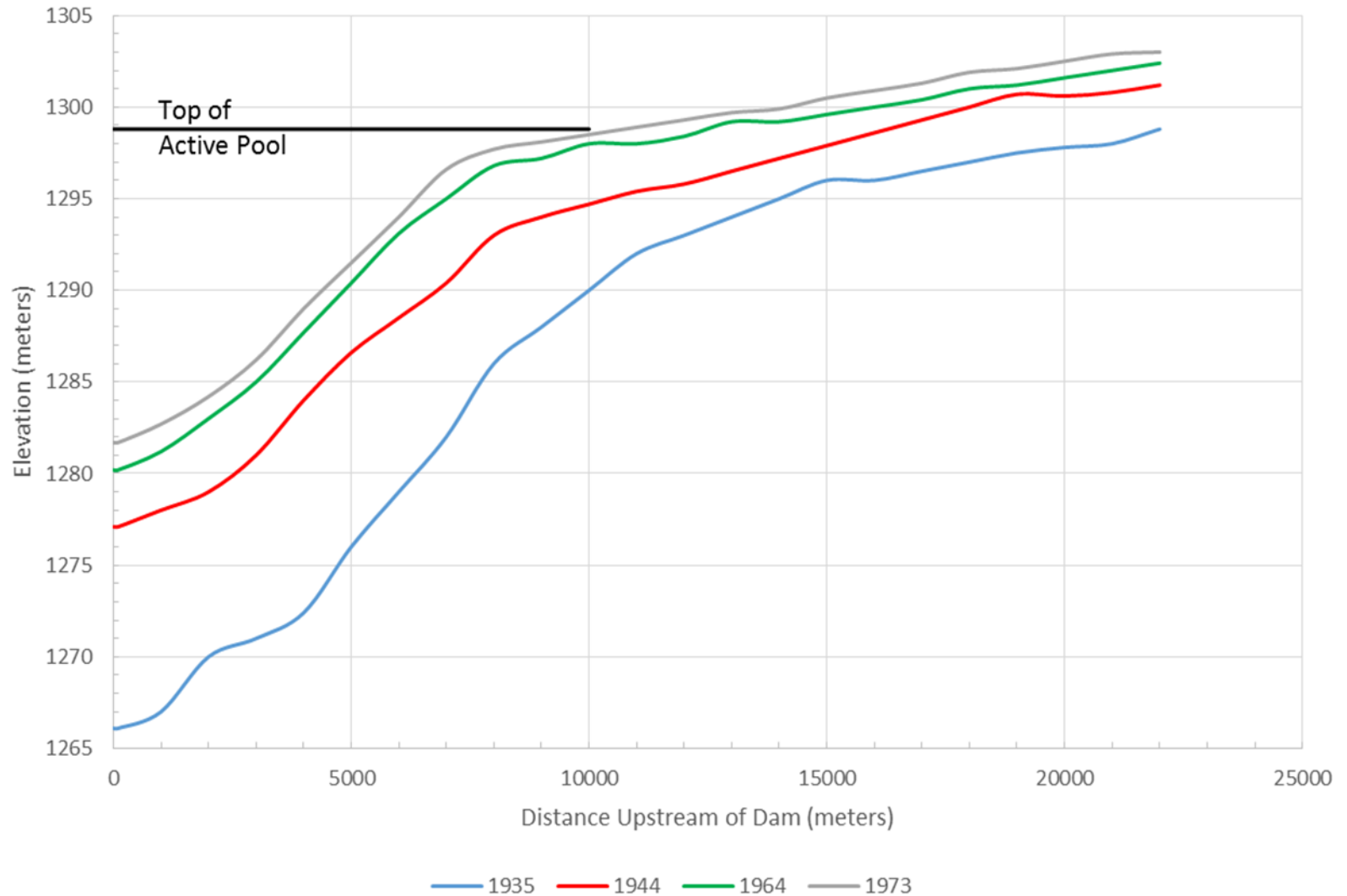


Sumner Dam

- Zoned Earthfill Embankment, 164 ft high
- Located in NM on Pecos River
- Completed in 1937
- Primarily used for irrigation
- Constructed with a capacity of about 100,000 acre-ft, and now about 50% full of sediment
- Sedimentation Rate slowed with construction of upstream dam in 1979 (Santa Rosa Dam)

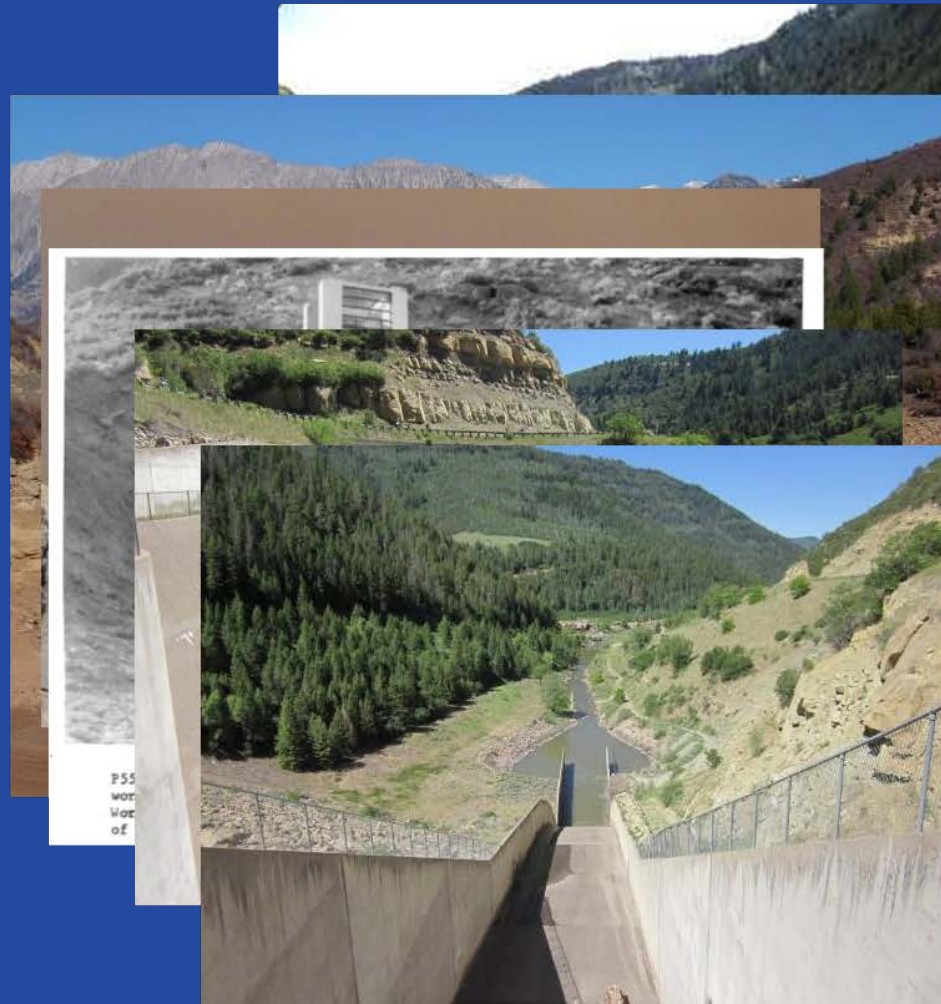


Storage Loss – Bed Profile



Paonia Dam, CO

- Zoned Earthfill Embankment
- Dam Completed – 1962
- Outlet Works
 - Right Abutment
 - Square Intake Tower
 - Tunnel
 - Twin HP Gates
- Spillway
 - Uncontrolled Ogee Crest and Open Chute
- Common Outlet/Spillway Stilling Basin



Paonia Dam
Paonia, Colorado USA
Built in 1962

Paonia Reservoir

Intake tower was constructed 18 m
above bed



Currently mechanically excavating
sediment to keep intake clear of
debris and sediment

Project Goals

- **Outlet Works Rehabilitation**
 - Repair the damaged intake structure
 - Modify the OW to allow for full range of operations
- **Sediment Management**
 - Maintain water supply for users
 - Minimize reservoir storage loss
 - Manage debris
 - Minimize abrasion
 - Minimize downstream impacts

Paonia Dam



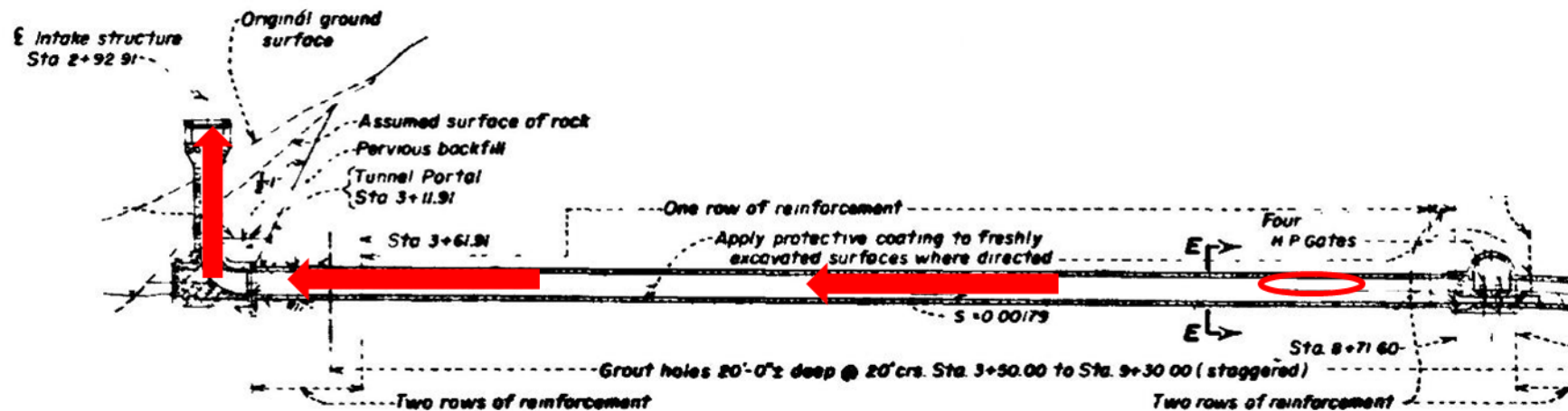
Paonia Dam

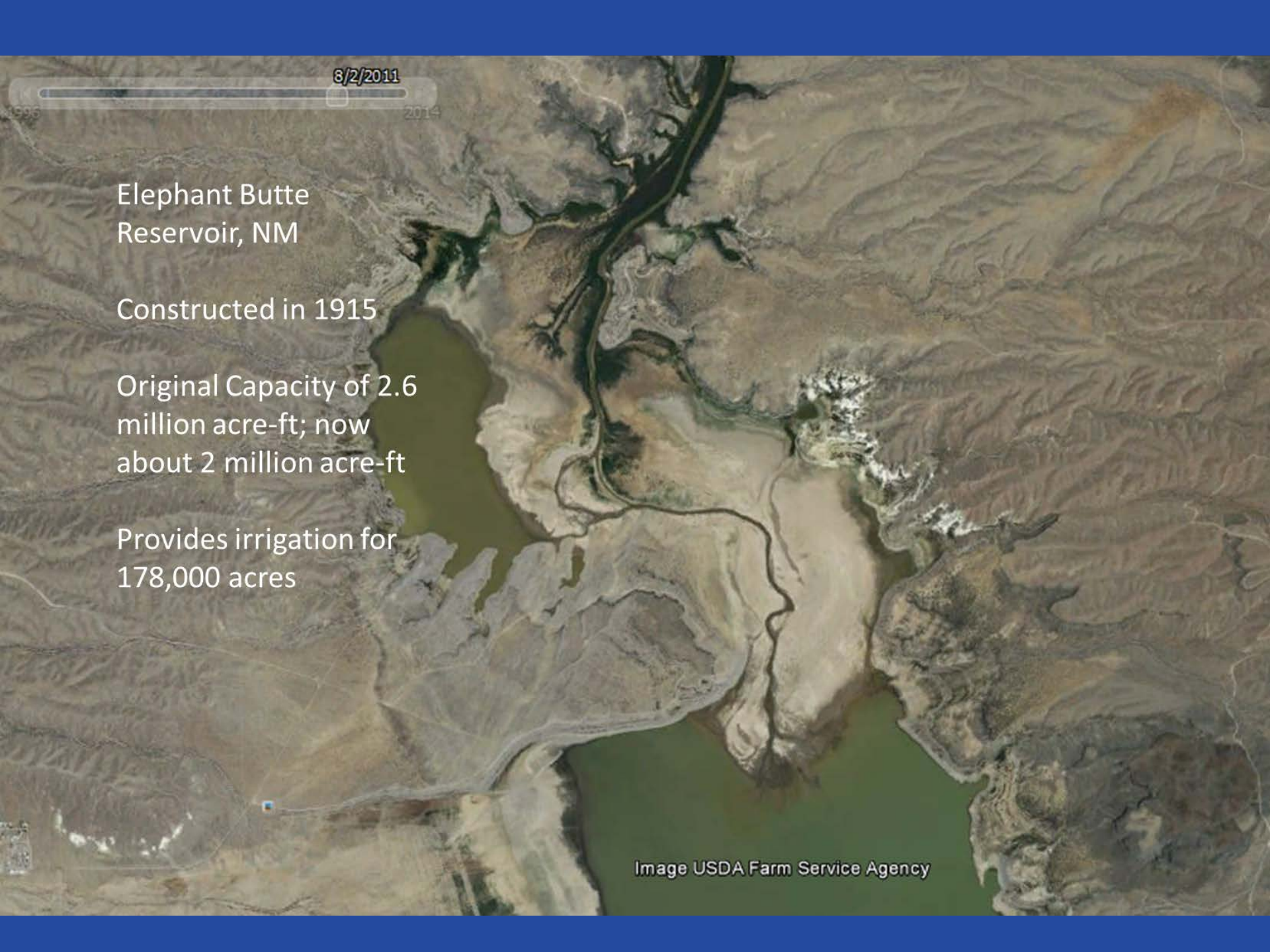


Paonia Dam



Paonia Dam





8/2/2011

1996 2014

Elephant Butte Reservoir, NM

Constructed in 1915

Original Capacity of 2.6
million acre-ft; now
about 2 million acre-ft

Provides irrigation for
178,000 acres

Image USDA Farm Service Agency

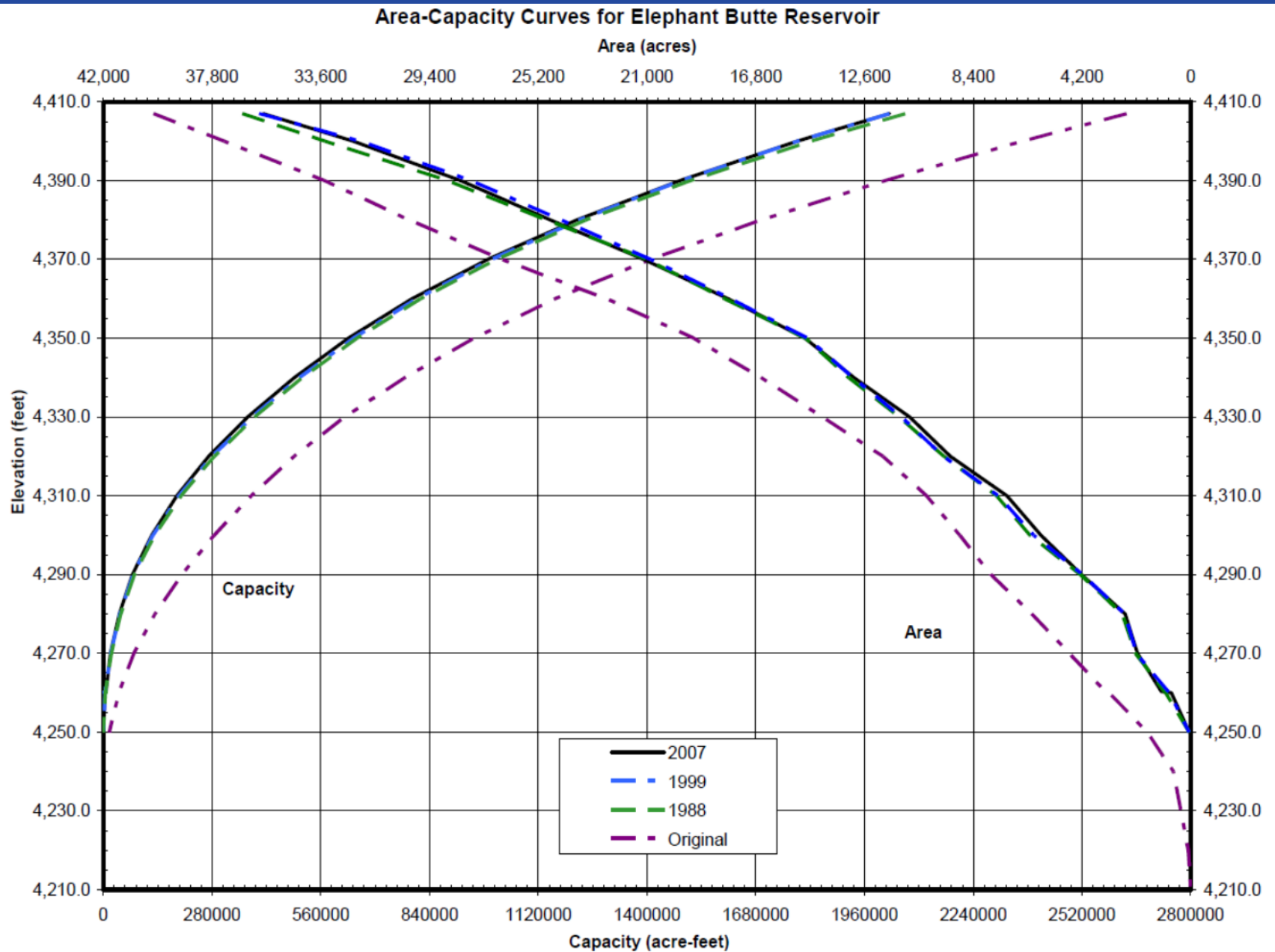


Figure 96 - Elephant Butte Reservoir Area and Capacity Plots

10 yr Moving Average Flow on Middle Rio Grande at Various Stream Gages

