

Reservoir Sediment Management & Analysis for Engineers

Exercise – Sumner Dam, New Mexico

University of Kansas
LEEP2 Building – Room G415
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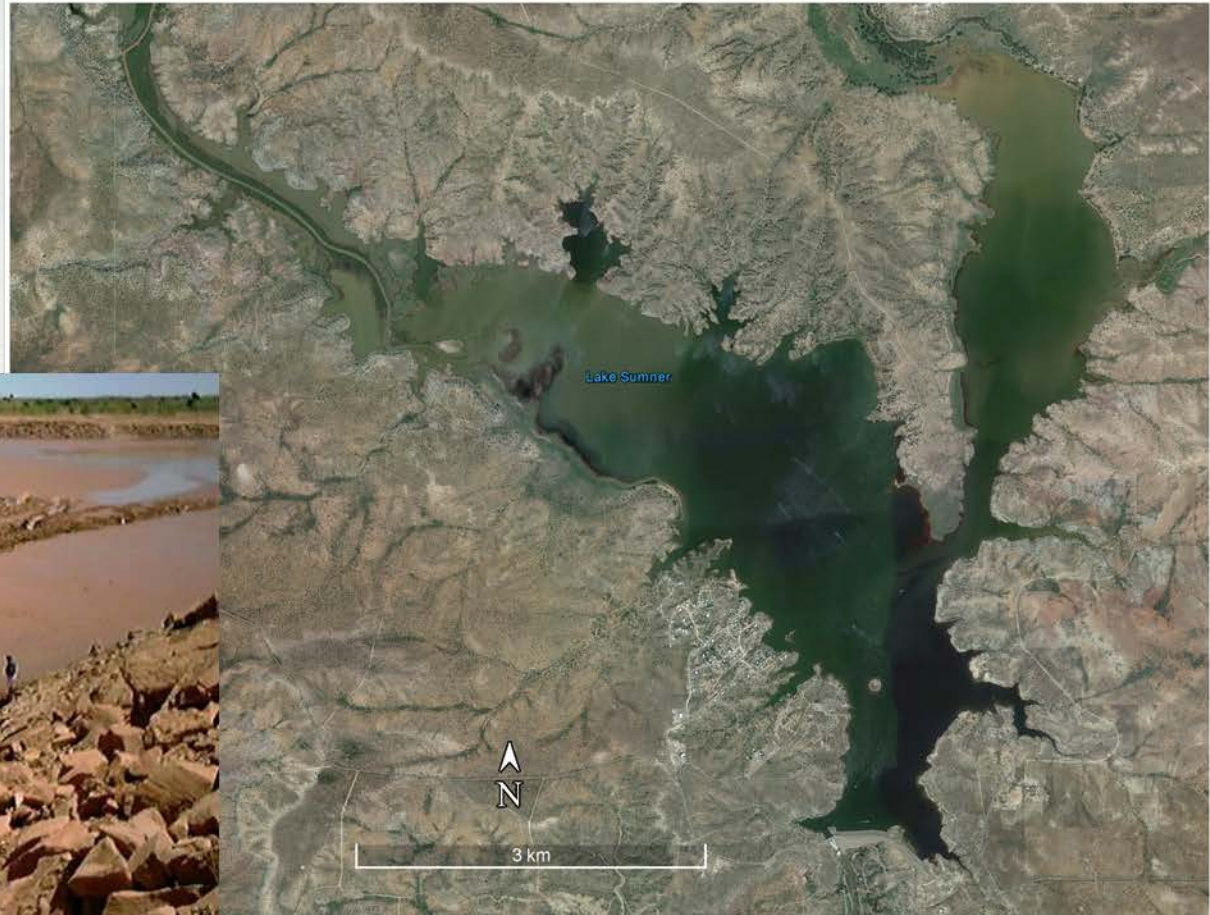


Introduction

- Problem: Design a sediment management strategy to maximize reservoir life and allow for continued hydropower and irrigation water supply. The plan should include:
 - 1) Method of sediment management
 - 2) Necessary changes to dam and outlets
 - 3) Frequency and approximate timing of the activity
 - 4) Estimated impacts to water supply, hydropower, and other reservoir uses. If drawdown flushing is used, example impacts include how long hydropower will be off line, how long the reservoir will be drawdown, and how much water is used in the flush
 - 5) Qualitative description of other downstream impacts or other ancillary impacts.
 - 6) Estimate of cost and benefits of sediment management activities, and
 - 7) Description of impacts associated with not performing sediment management



Background



Background

- Located on the Pecos River about 270 kilometers southeast of Albuquerque, New Mexico. Lake Sumner operate as principal features of the Carlsbad Project that supplies irrigation water for about 100 square kilometers within Carlsbad Irrigation District. Along with irrigation water, the lake and dam provide flood control, river regulation, and recreational benefits.
- Original capacity was 193 million cubic meters, but 68 million cubic meters (35%) was lost to sediment deposition in the 38 years after storage began (1935-1973).



Background

- The upstream watershed has an area of 11,380 square kilometers, a mean annual precipitation of 40 centimeters, and a mean elevation of 1,875 meters. Approximately 9,710 square kilometers (85%) of the watershed is considered to be sediment contributing.

