Structural/Operational Changes

Cle Elum Pool Raise

Basin Study Task 4.5

Cle Elum Lake Pool Raise

- Summary
  - Increase maximum water surface elevation (WSE) at Cle Elum Lake 3 feet (from 2240' to 2243') – additional volume approx. 14,300 AF
  - Modify spillway gates with stiffened flashboards
  - Protect 8,300 feet of shoreline from erosion
  - Acquire 56 acres + of land

Cle Elum Lake Pool Raise South Cle Elum Lake

- No change in dam height
- Current max elevation: 2240’ (green line)
- New max elevation: 2243’ (pink line)
- New shoreline protection needed(red area)
- Parcels highlighted: within new max elevation and/or shoreline protection (non-federally owned)

Cle Elum Lake Pool Raise
North Cle Elum Lake

- Current max elevation: 2240’ (green line)
- New max elevation: 2243’ (pink line)
- Parcels highlighted: within new max elevation (non-federally owned)

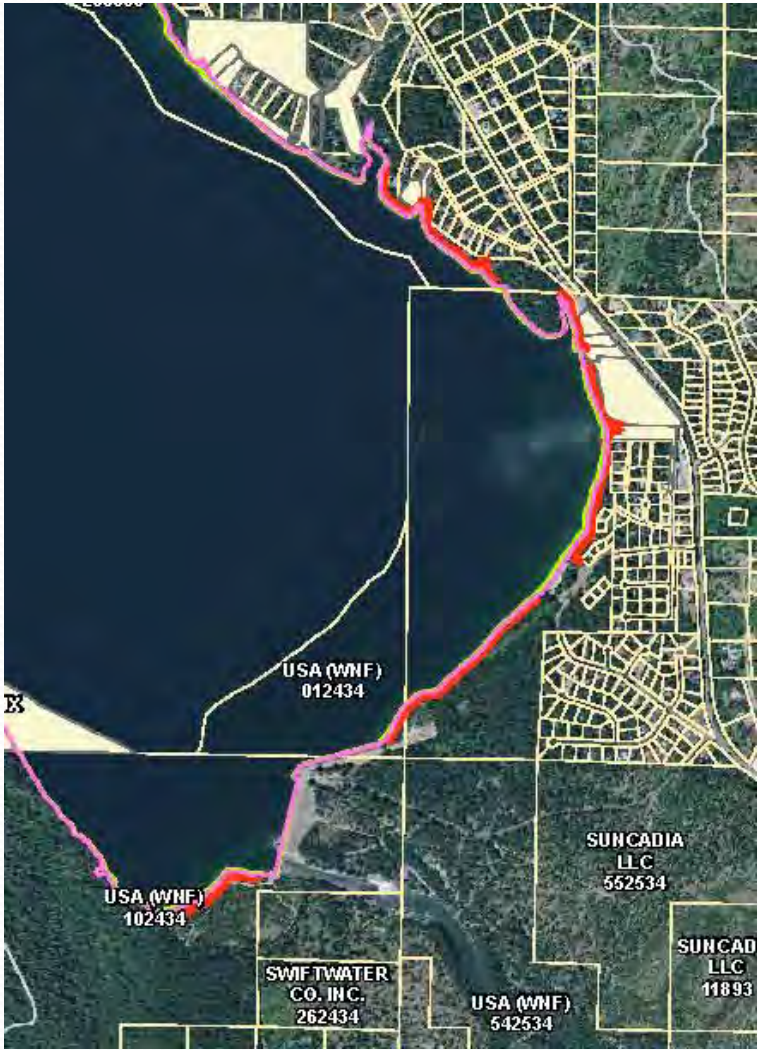
Cle Elum Lake Pool Raise

- Estimated current surface area (2240'): 4,747 ac
- Estimated future surface area (2243'): 4,811 ac
- Estimated increase in volume capacity: 14,340 AF

Note: Values estimated using GIS and LIDAR data from Reclamation

Cle Elum Lake Pool Raise Shoreline Protection

- 2000 Reclamation report
  - New shoreline protection to extend to 2250' at areas of erosion concern (red lines)
  - 50,000 CY riprap placement
  - 38,000 CY bedding placement
  - 143,000 CY shoreline excavation
- Extent of required shoreline protection is probably over-estimated. Quantities will be scaled down for cost estimate.



Cle Elum Pool Raise
Radial Gate Modifications

- 2000 Reclamation Cost Estimate
  - Fabrication of 5 stiffened flashboards
    - 3 feet high, 37 feet wide, ¼ inch thick
    - Additional 8 inches height to act as splashboard
    - Fabricated weight = 2,500 lbs for each flashboard

Cle Elum Lake Pool Raise Upstream Inundation

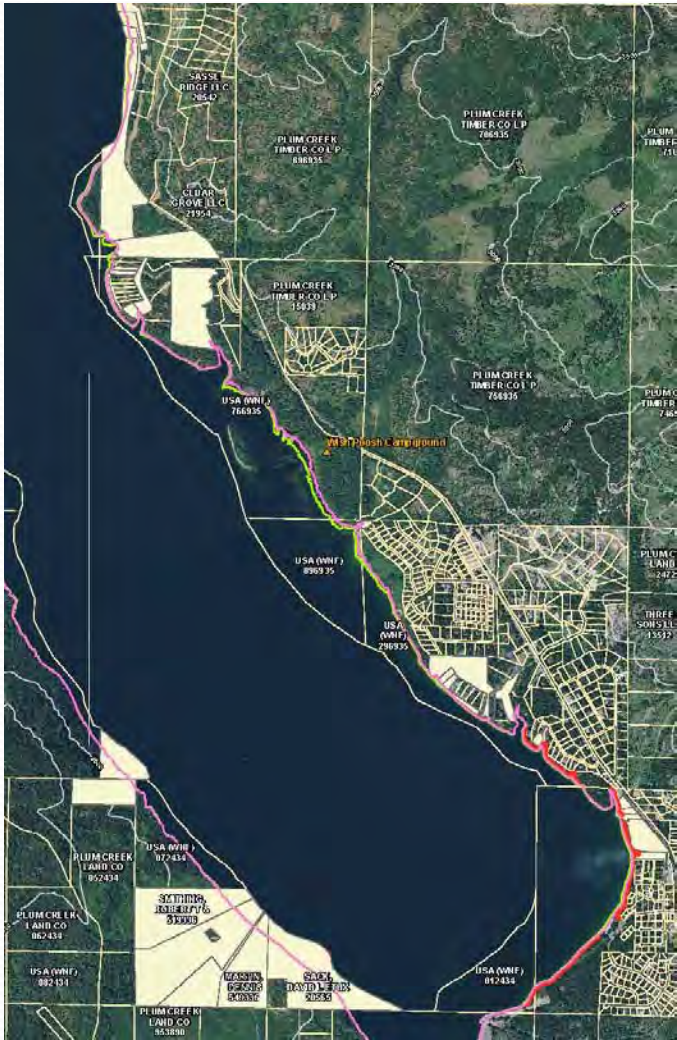
- 2000 Reclamation Cost Estimate
  - Included cost to replace USFS bridge as worst-case scenario
- LIDAR data shows pool raise does not reach bridge location
  - Assume no need to include bridge replacement

Cle Elum Pool Raise Land Acquisition

- 2000 Reclamation Cost Estimate
  - Detailed estimate prepared for portions of Sections 2 & 4, T20N, R14E & Section 34, T21N, R14E
    - Most serious shoreline erosion occurs in subdivided areas, and those areas most likely to be significantly affected by pool raise
    - 25 parcels, 24.5 acres within take line
  - Non-detailed estimate prepared for remainder of shoreline
    - 8 different sections
    - Assumed to be timber land
    - 300-foot take line assumed
    - 15 parcels, 140.2 acres within 300-ft take line

Cle Elum Pool Raise Land Acquisition

- GIS Analysis
  - Overlay parcels over contour data and shoreline protection location
  - Calculated non-federal acreage affected
  - 34 parcels affected, total area of parcels = 415.6 acres
  - 55.6 acres below proposed max WSE and/or shoreline protection up to 2250



Cle Elum Pool Raise Other Costs

- Potential Cost Items identified but not estimated
  - NEPA/Environmental Compliance
  - Cultural Resources
  - Recreation
  - Replacement of Campground facilities
    - Wish Poosh Campground
    - Cle Elum River Campground

Cle Elum Lake Pool Raise

- Use of Water
  - Legislation authorized project with water to be used for fish benefits

Project Challenges

- Impacts to property including erosion protection, property acquisition
- Recreational impacts
- Erosion protection along lake will be difficult to permit and construct

Next Steps

- Confirm quantities and develop cost estimates
- Define use of additional water stored

Disclaimer

- Results discussed today are working drafts
- Data and calculations are still being checked and results may be updated