Lucky Friday Mine
Mullan, Idaho

Mine Tailings Impoundment Structure (MTIS) No. 4

Topics of Presentation:

**Considerations & Criteria Incorporated Into The Design**
- Impoundment Geometry
- Geotechnical Concerns (Downstream Construction Method and Slope stability)
- Capacity (Stage-Storage Curve)
- Environmental Protections (Liner Materials and Groundwater Monitoring, Stormwater Runoff and Return Water Management)

**Photos From Construction and Commissioning the Impoundment**

**Pool Water Management Strategies: Design versus Operational Needs - Dichotomy of perspectives**.
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No. 4 Impoundment Geometry
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No. 4 Impoundment Geometry
Design Considerations and Criteria

Capacity

Stage-Storage Relationship
• Tailings Capacity
• Water Balance
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Stage-Storage Relationship
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Design Considerations and Criteria

Capacity - Water Balance

Tailings pumped to the impoundment in a slurry of variable solids content. +
Precipitation falling directly in the footprint of the impoundment. +
Evaporation to atmosphere. –
Decanted water or underdrain water removal . –
• Some water is unavailable for removal because of capillary pressures and surface tension within the pore spaces of the fine grained material.

If the results of the Stage-Storage Relationship, cost benefit analysis and water balance
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Design Considerations and Criteria

Capacity - Conclusion

• Evaluate Stage-Storage Relationship
• Perform Cost Benefit Analysis based on projected life of Impoundment.
• Create a Water Balance model and determine if impoundment will have deficit of water or surplus.
• If surplus, refine cost Benefit Analysis to include budgetary cost of treatment facility to allow discharge into the environment.

If the results of the se evaluations are acceptable, the design advances to creation of Construction documents and subsequent construction of the facility.
Environmental Protections
• Liner Materials
• Leak Monitoring Program
• Groundwater Monitoring, and
• Stormwater Runoff.

Design Considerations and Criteria
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No. 4 Impoundment Env. Protections
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No. 4 Impoundment Env. Protections
Stockpile the Soil
A Good Foundation
Raising Embankment
Lining Begins 2009
Chasing Down The Subgrade Crew
Into Everyone’s Life A little Rain Must Fall
2010 Crews Hit The Ground Running
Drainpipe Goes In
Completed Sept. / Commissioned Oct.
Questions???

THANK YOU