

Data Submitted (UTC 11): 10/28/2025 11:26:42 PM

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Comments: A lot of work went into your analysis, impressive.

Concerning Alternative 7

Assuming the inlet of the open channel will be 3400'; How will "...flow in this channel be fully regulated by the new pressure tunnel. For instance, during flood events, the majority of lake outflows would be routed through the pressure tunnel, while only the flows necessary to support habitat, fish passage, and the long-term functionality of the channel would be released through the surface outlet." (page 43 of draft EIS) given the tunnel maximum discharge is 1000 cfs (page 33 of draft EIS) with the annual peak inflow of 1500 cfs and the flood of record of 2800 cfs?

Concerning dropping Alternative 6 from consideration

I believe some of the decisions behind dropping this alternative are based on highly conservative analysis/design assumptions for some of the following reasons:

1)Cutslope backslope ratio. In Figure 2.2-8 on page 38 of the draft EIS one calculates a backslope ratio of 2.5H to 1V (22 degrees), a very flat ratio that even includes 20-foot wide benches (page 36 notes the backslope will be 2H to 1V). These cutslope backslope ratios are not commonly used in highway or forest service construction, they are commonly steeper. If a stability analysis on the cutslopes was performed the results are not addressed in the draft EIS. This relatively flat backslope dramatically increases the amount of excavation and thus the cost and time to construct the project.

2)Amount of potential sediment from the alternative resulting in a major impact on soils and risk. Table 2.4-1 in the draft EIS, under key factor 3.10 Sediment Transport, notes that alternative 6 will release an estimated 1.7 million tons of sediment each year during construction and 0.6 million tons of sediment per year thereafter. That equates to approximately 1,300,000 CY per year during construction and 444,000 CY per year thereafter (I assumed 100 pounds per cubic foot as a unit weight; note page 258 says 2900 tons per cubic yard but it should be 2900 pounds per cubic yard). The erosion rates shown in in Table 5-1 in Appendix D gives predicts 20,000 to 30,000 CY during construction and 50,000 to 100,000 CY after construction, again, what is the justification for the conservative increase? The erosion rates from Appendix D even appear high since 1) the overall cutslope is 22 degrees and will be vegetated and the channel will be stabilized at cost of \$17,054/linear foot. From what I read in the draft report, the sediment yield rates were established using sediment yields from the Loowit Channel and Toutle River just downstream of the open channel outlet. Loowit Channel has numerous vertical cutbanks immediately adjacent to the water channel and almost no vegetation. The North Fork of the Toutle River for the first third of the mile above the junction with Truman Channel has very little vegetation and a couple vertical cutbanks adjacent to the water channel, nothing like the constructed open channel situation. As noted above the open channel will have gentler vegetated side slopes and will have a stabilized channel which should greatly reduce the sediment yield. So the amount of sediment that will be delivered to the system for alternative 6, in my opinion, is a very conservative analysis.

On page 256 of the draft EIS is says that 10% of the excavated material or 1.7 million tons of material will erode each year of construction. What is the basis for this amount knowing that it will take 10 years to construct the project? This implies that equivalent to 100% of the excavated material (11 million cubic yards) will be eroded away at year 10, the last year of construction.

I did not see addressed in the draft EIS and supporting documents:

1)How sure/confident are you that past tunnel issues (i.e. heave in the tunnel) will not continue into the future with each tunnel alternative?

2)What is the design life of the tunnel options? Any tunnel option will have an end period where the tunnel will require substantial repair or replacement at a cost and that cost should be factored into the costing analysis as

well as the cost for periodic maintenance for the tunnel and access road system.

Lastly, if any of the options that include a tunnel is chosen, the Forest Service should transfer to the Corps of Engineers the jurisdiction of the Spirit Lake Outflow Facility. The Forest Service does not have the knowledge, nor expertise to perform the operation, management, or maintenance. This should be treated like all other major dam projects like those found on the Willamette National Forest along the Willamette River since this is a major high hazard "dam" with a human-made outlet control device.

Note:

Appendix D above refers to Appendix D (Feasibility Study of Outflow Options) of the Spirit Lake Outflow Safety Improvement Project - Draft Environmental Impact Statement, dated August 2025.