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The following paragraph appears on page 16 of the EIS:

"Smaller floods would not trigger reservoir operation and their associated flows would pass through the open FRE facility conduits. During these smaller flood events, water would be impounded in portions of the temporary reservoir when the natural flow of the river is greater than the capacity of the dam's conduits but not large enough to trigger FRE facility operation. The Applicant's revised design indicates that backwater/ponding upstream of the dam is expected from flows greater than 9,500 cfs."

I was curious as to how many events have occurred over the past 35 years where flow rates greater than 9,500 cfs would have flooded the reservoir area of an existing dam without triggering closure of the flood gates, i.e. when the flowrate at Grand Mound was under the 38,800 cfs trigger point for closing the gates. I also was curious how many times the Grand Mound flowrate was over the 38,800 cfs trigger point.

I discovered that in the past 35 years there have been 17 events at the dam site where the flowrate was over 9,500cfs. In 7 of those events, the flowrate at Grand Mound exceeded 38,800 cfs and if the dam existed at that time, would have resulted in gate closure. The other 10 events had a dam flowrate of over 9,500 cfs which would have caused water to backup into the reservoir without closing the floodgates, ie, the Grand Mound flowrate was below 38,800 cfs.

Remember that the dam site flowrate can be obtained by multiplying the Doty Gauge flowrate by 0.7. This is necessary to account for all the water from the 12 creeks which enter the Chehalis river between the proposed dam site and the Doty gauge (a distance of about 6 miles).

Below are my findings which need to be placed into the draft EIS because high flows are the source of impacts to the environment which need to be addressed in this draft EIS.

EVENT 1: In 2022, Jan6, the dam flowrate reached 12,950cfs.
The Grand Mound peak flowrate on Jan8 reached 51,200 which would have triggered closure of the gates.

EVENT 2: In 2019, Dec20, the dam flowrate reached 11,060cfs.
The Grand Mound peak flowrate on Dec 22 reached 26,900cfs, so the gates would have remained open.

EVENT 3: In 2017, Feb9, the dam flowrate reached 9,660cfs.
The Grand Mound peak flowrate on Feb10 reached 30,800 cfs, so the gates would have remained open.

EVENT 4: In 2015, Nov17, the dam flowrate was also 9,660cfs.
The Grand Mound peak flowrate on Nov 19 reached 29,200, so the gates would have remained open.

EVENT 5: In 2012, Nov19, the dam flowrate reached 15,610cfs.

The Grand Mound peak flowrate on Nov21 reached 26,900cfs, so the gates would have remained open.

EVENT 6: In 2009, Jan8, the dam flowrate was 13,790cfs.
Since the Grand Mound flowrate on Jan8 was 50,000cfs, the flood gates would have been closed.

EVENT 7: In 2007, Dec3, the dam flowrate exceeded 44,170cfs.
Since the Grand Mound flowrate on Dec4 reached 79,100cfs which would have closed the gates.

EVENT 8: In 2006, Jan30, the dam flowrate reached 11,730cfs.
The Grand Mound flowrate on Jan31 reached 36,700cfs, so the gates would have remained open.

EVENT 9: In 2001, Nov14, the dam flowrate was 9,730cfs.
The Grand Mound peak flowrate occurred on Nov15 at 22,900cfs, so the gates would have remained open.

EVENT 10: In 2001, Dec16, the dam flowrate reached 12,270cfs.
The Grand Mound peak flowrate occurred on Dec18 at 23,000cfs, so the gates would have remained open.

EVENT 11: In 1999, Feb24, the dam flowrate reached 11,410cfs.
The Grand Mound peak flowrate on Feb25 reached 34,900cfs, so the gates would have remained open.

EVENT 12: In 1996, Feb8, the dam flowrate reached 18,620cfs.
The Grand Mound peak flowrate on Feb9 reached 73,500cfs which would have closed the gates.

EVENT 13: In 1996, April 23, the dam flowrate reached 16,240cfs.
The Grand Mound peak flowrate on April 24 reached 31,200cfs, so the gates would have remained open.

EVENT 14: In 1994, Dec20, the dam flowrate reached 10,710cfs.
The Grand Mound peak flowrate on Dec 21 reached 35,700cfs, so the gates would have remained open.

EVENT 15: In 1990, Jan9, the dam flowrate reached 18,970cfs.
The Grand Mound peak flowrate on Jan11 reached 53,800cfs which would have closed the gates.

EVENT 16: In 1990, Feb10, the dam flowrate reached 7,070cfs.
The Grand Mound peak flowrate on Feb11 reached 40,300cfs which would have closed the gates.

EVENT 17: In 1990, Nov24, the dam flowrate reached 13,860cfs.
The Grand Mound peak flowrate on Nov25 reached 40,300cfs which would have closed the gates.

Over the span of 35 years there were 17 events where water would have backed up in the reservoir and inundated lower logging roads. In 7 of those events the floodgates would have been closed; in 10 of those events the floodgates would have been open.

The environmental consequences of water backing up into the reservoir 17 times in 35 years need to be addressed in the draft EIS for the decision makers to determine if proper mitigation has occurred. One looming impact is that when the gates remain open, there is no control to the draw-down. The uncontrolled draw-down rips the edges of the reservoir with much greater energy than the controlled drawdown after the gates have been closed. This impact is never described in the EIS, and needs to be addressed.

When the gates remain open and the flow exceeds 9,500 cfs, there is a question of greater turbulence and swirling forces at the opening of the gates. It is not clear that the draft EIS takes this turbulence into consideration. And it is not clear that the screens which were designed to keep large logs from jamming the floodgates can take turbulent forces greater than routine filling of the reservoir when the gates are closed and the screens are protected by deeper water filling up the reservoir. The stress cracking of screens may not occur in the first few years, but after several years of intense pounding, eventual failure of the screens may lead to a plugging of the floodgates by flood debris. The typical response from design engineers is to brush this risk off. But metal cracking does occur with age and eventually screen failure will happen, especially when exposed to repeated stress events.

The draft EIS must contain a more detailed analysis of the impacts of keeping the gates open when the flowrates exceed 9,500 cfs. One obvious impact is more frequent flooding of lower logging roads and more costly repairs of those roads. 17 events in 35 years averages out to 1 event every 2 years, not the fantasy 7 year cycle sprinkled throughout the draft EIS.

Decision makers beware!!!