



July 20, 2022

Spirit Lake Outlet Tunnel is being repaired

The eruption of Mount St. Helens in 1980 resulted in a massive debris avalanche and pyroclastic flow causing sweeping changes to the watershed. The eruption delivered approximately 3 billion cubic yards of sediment into the Toutle, Cowlitz, and Columbia rivers, killed 57 people, and drastically changed the physical and socio-economic landscape. The eruption material formed a natural dam that blocked the outlet of Spirit Lake, where it had previously flowed into the North Fork Toutle River. Blown-down timber that entered the lake resulted in a floating log mat that still occupies about 25 percent of the lake surface. A catastrophic break of the blockage by high water in Spirit Lake could release more than 300,000 acre-feet of water and 2.4 billion cubic yards of sediment, rivaling the devastating mudflows of the 1980 eruption (NASEM 2017).

In 1982, at the direction of the President and the Federal Emergency Management Agency, the U.S. Army Corps of Engineers (the Corps of Engineers) in consultation with the Forest Service, responded to the potential threat of a catastrophic breach or overtopping of the debris avalanche by establishing an interim pumping station in the southwest corner of Spirit Lake. This temporary measure to stabilize the lake level included a barge-mounted pumping facility, a (*Editor: very long two-hour circuitous access road and trail-built-into-road across the Monument*) from Windy Ridge (two miles southeast of the avalanche, NOT via the direct old outlet path) (across the debris avalanche), workshops and short-term housing, and an area for storage of thousands of gallons of fuel.

To assess possible lake-level control measures, the Corps of Engineers completed an environmental impact statement in April 1984. The selected alternative was the current tunnel through Harry's Ridge, which drains Spirit Lake water into South Fork Coldwater Creek, a tributary of the North Fork Toutle River.

As the agency responsible for managing the Mount St. Helens National Volcanic Monument, the Forest Service also operates and maintains the aging tunnel system. Despite the overall success of the existing tunnel, major repairs in 1995, 1996, and 2016 required extended closures of the tunnel gate and outlet flow, which allowed the lake to rise to the maximum safe operating level.

During its nearly 35-year lifespan, the tunnel infrastructure for controlling the water level of Spirit Lake has deteriorated due to age. A rock heave from external pressures in portions of the tunnel has reduced capacity and demonstrates an increased risk of failure (NASEM 2017, Grant et al. 2017). *Editor: The floor of the originally 11-ft. tunnel has risen about five feet.* There is currently no secondary outflow or spillway to serve as a back-up if the existing tunnel fails to function.

In response to the need, identified above, the Gifford Pinchot National Forest Supervisor has analyzed alternatives to enhance protection to the communities downstream of Spirit Lake, increase safety for agency maintenance personnel, and reduce the risk of economic hardship to the region as a result of a breakout flood from Spirit Lake. Two important actions toward satisfying these goals are: (1) obtain geotechnical subsurface drilling data to more accurately determine and predict safe conditions for existing and possible future alternate systems to control water levels in Spirit Lake; and (2) replace the tunnel intake gate structure to improve lake level management, safety, and monitoring (inspection) of the gate.

To meet these two goals the Forest Service has proposed to:

- Replace the intake gate structure of the spirit lake tunnel;
- Reconstruct portions of National Forest System Road 99;
- Construct temporary access roads, staging areas, and a barge loading facility;
- Conduct geotechnical investigation and core sampling within the debris blockage; and
- During and after the project there will be stabilization and rehabilitation activities.

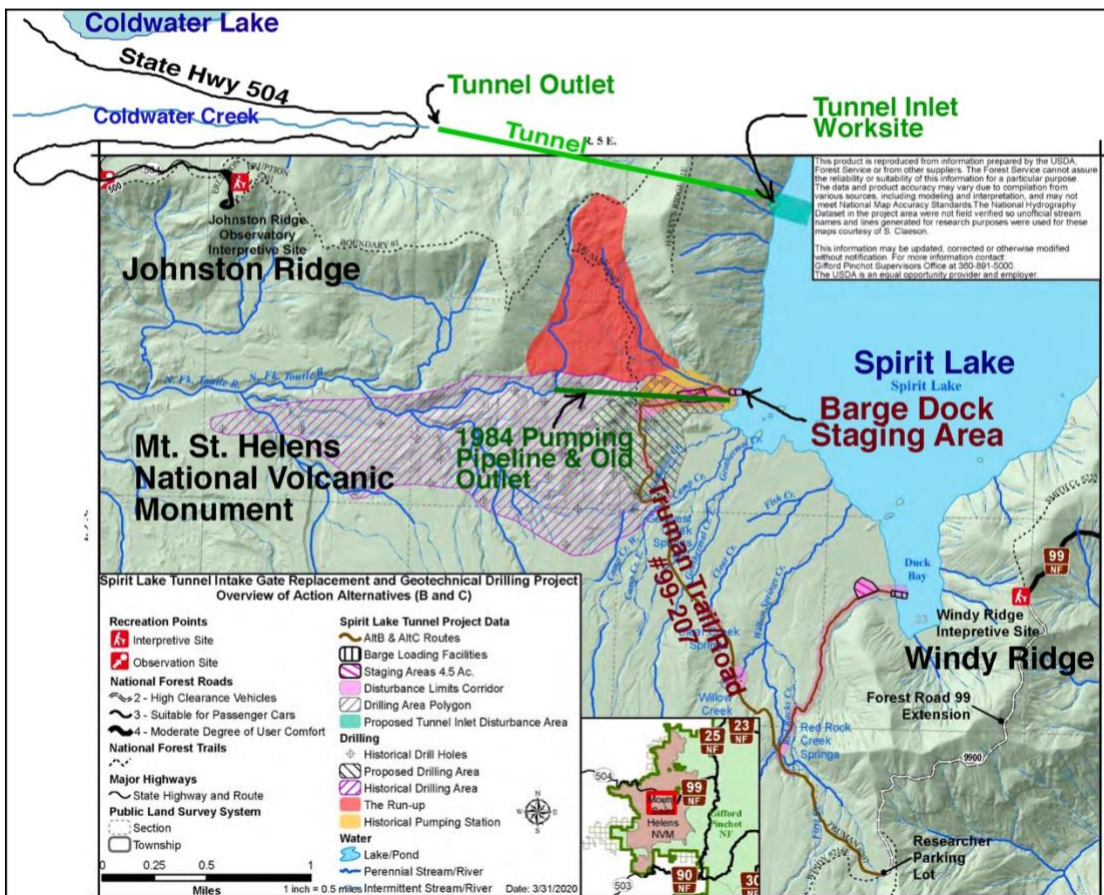
The Spirit Lake tunnel is currently the only way for water to leave Spirit Lake and has a tunnel intake gate structure to control water flow.

Finding of No Significant Impact

The Spirit Lake Tunnel Intake Gate Replacement and Geotechnical Drilling Project Decision Notice/Finding of No Significant Impact and Environmental Assessment, and related project information is available at: <https://www.fs.usda.gov/project/?project=57259>.

Mar. 28, 2022: I have reviewed and considered the environmental assessment and documentation included in the project record, and I have determined that the Spirit Lake Tunnel Intake Gate Replacement and Geotechnical Drilling Project (the project) selected alternative (Alternative B – Windy Ridge to Pump Station) would not have a significant effect on the quality of the human environment.

Excerpted from USFS online files.



Read this week's Bible Readings on page 6 which includes Jesus teaching us, "Ask, and it will be given you; Search, and you will find; Knock, and the door will be opened for you." Luke 11:9

Dave Bunting, July 18, 2022
Credits in links below items.
See these columns on my blog daverant.com

