

FINDING OF NO SIGNIFICANT IMPACT
Sediment Retention Structure (SRS) Spillway Raise Project
Mount St. Helens Sediment Management for Flood Risk Reduction

Based upon the Environmental Assessment (EA) prepared for this project, I find that the proposed action would not significantly affect the quality of the human environment and that an Environmental Impact Statement is not required. This Finding of No Significant Impact (FONSI) is based on the Sediment Retention Structure (SRS) Spillway Raise Project EA, which has been independently evaluated by the U.S. Army Corps of Engineers, Portland District (Corps).

Any human action has the potential for minor to moderate or even severe impacts and consequences. This EA and FONSI have listed all of the important considerations of the proposed project and their environmental impacts. These impacts, both individually and cumulatively, are *NOT SIGNIFICANT* as “significant” has been defined by NEPA law, regulations, and case law.

Introduction

The May 18, 1980 catastrophic eruption of Mount St. Helens dramatically altered the hydraulic and hydrologic regimes of the Cowlitz and Toutle River valleys. Ash fall and lateral blast from the eruption produced immediate and long-term effects on the hydrology of the Toutle watershed by changing its land cover and runoff characteristics. The excessive amount of sediment produced by the eruption and its aftermath was deposited downstream in the lower Toutle, Cowlitz, and Columbia rivers. The rapid influx of sediment reduced the channel capacities of the rivers affected. This left the communities of Castle Rock, Lexington, Kelso, and Longview with the potential for major flooding even with normal runoff.

As part of the effort to maintain flood risk reduction benefits to the communities along the lower Cowlitz River, the Corps is proposing to raise the spillway of the existing sediment retention structure (SRS) by up to 10 feet to increase its sediment storage capacity. The SRS is a single-purpose structure that consists of an earth and rock fill embankment dam, an outlet works, and an ungated spillway excavated in rock. The SRS was constructed from 1987 to 1989 at river mile 13.2 on the North Fork Toutle River for the single purpose of trapping sediment eroding from the debris avalanche on Mount St. Helens. Sediment from the debris avalanche is transported through the North Fork Toutle River, mainstem Toutle River, and into the lower 20 miles of the Cowlitz River. As sediment accumulated behind the SRS, the rows of outlet works pipes were buried and closed. Since 1998, all flow passes over the spillway, which allows more sediment to deposit in the lower Cowlitz River.

The Proposed Action

The purpose of the proposed action is to increase the sediment storage capacity of the SRS. This action is needed to increase the efficiency of sediment deposition above the SRS and decrease the volume of sediment available for deposition in the lower Cowlitz River. After construction, the existing SRS provided a sediment trapping efficiency of approximately 92%. All flow now passes over the spillway and the trapping efficiency of the SRS has been reduced to approximately 31% and is dropping. Erosion and sediment movement into the North Fork Toutle River and downstream into the Cowlitz River continues to be significant and unpredictable. Regional rains and flooding since 2003 have mobilized large amounts of sediment from the Mount St. Helens debris avalanche. This trend is a result of increased sedimentation of the Toutle Subbasin from sediments being passed through the SRS in greater amounts. Raising the SRS spillway up to 10 feet in the summer of 2012 or 2013 is necessary in order to reduce the volume of sediment that is depositing in the lower Cowlitz River and increasing flood risks.

The features of the proposed action include a roller-compacted concrete (RCC) structure up to 10 feet in height and founded on rock, and low flow channel/plunge pool excavated in rock from the new RCC structure to the existing spillway crest to maintain and improve downstream fish passage conditions. This action does not preclude the potential for volitional upstream fish passage in the future. The entire project will be constructed on Corps' property.

RCC Structure. The RCC structure will be constructed up to 10 feet in height. The downstream end of the RCC structure will be located approximately 300 feet upstream of the existing spillway crest elevation. The average width of the structure is approximately 500 feet and the length is approximately 100 feet. The structure will be built directly on top of a relatively flat basalt bedrock shelf. There is currently a thin amount of sediment (about 3 feet, 20,000 cubic yards) that will be removed prior to construction. Removed sediment may be used in the contractor's cofferdam system or disposed of in disposal area in the sediment plain immediately upstream of the SRS. The RCC berms will be constructed on the downstream slope. The berms will be 1.5 feet high in the vicinity of the low flow channel. The low flow channel is designed to maintain a minimum 1 foot of water depth at a minimum flow rate of 140 cubic feet per second. The total volume of RCC to be used is approximately 15,000 cubic yards. The RCC will likely be mixed in a batch plant set up on top of the dam. Aggregate for the RCC will come from an off-site commercial location and needed water will come from groundwater. Placement rates for past RCC projects of similar size generally ranged from 2,000 to 3,000 cy per day. At these rates, the proposed RCC structure could be built in about 2 weeks.

Rock Excavation. Rock excavation will occur from the downstream toe of the RCC structure to the existing crest of the spillway to maintain and improve downstream fish passage conditions. Rock will be excavated by mechanical methods (no blasting). A short (50 feet), wide (300 feet) plunge pool will be excavated immediately downstream of the RCC structure in line with the low flow channel. A low flow channel about 400 feet long will be excavated in the rock from the plunge pool to the existing crest of the spillway. The purpose of the low flow channel is to safely and swiftly convey fish across about 400 feet of level terrain and prevent stranding that would otherwise occur. The channel will be approximately 40 feet wide at the bottom and at least 5.5 feet deep with 2:1 side slopes. The approximate volume of rock excavation is 9,000 cubic yards. Excavated rock will be stockpiled for future use in disposal sites located on grassy upland areas downstream of the dam.

River Management During Construction. River diversion will occur within the spillway. The temporary water diversion will be implemented under the criteria for Nationwide Permit (NWP) 33 (*Temporary Construction, Access, and Dewatering*). All General and Region Conditions associated with NWP 33 will be followed such as the maintaining aquatic life movement, removal of temporary fills, and implementing a post-construction vegetation restoration plan. In order to maintain downstream aquatic life movement, we will require: (1) maintenance of a minimum continuous flow in the spillway of 140 cfs (to provide continuous flow in the river), and (2) maintenance of a minimum flow depth of 1 foot from the upstream extent of the contractor's operations to the existing spillway crest (for potential downstream fish passage occurring during the in-water work window). The contractor will be required to submit a river diversion plan meeting the performance-based requirements.

The following approach is provided to demonstrate that river diversion may be accomplished meeting performance-based requirements. A combination cofferdam/construction access road may be built from the existing access road coming down the spillway approach pier to the right wall of the spillway, upstream of the new RCC structure footprint. The cofferdam/road would have a temporary culvert system through it on the left side to pass the river flow. With the river diverted

down the left side of the RCC structure footprint, the right half of the RCC structure, including the low flow channel, would be constructed in the dry. The cofferdam/road upstream of the finished right half of the RCC structure would be removed. Flow through the culvert system would then be reduced, building a pool, until flow is both through the culvert system on the left and through the low flow channel of the RCC structure on the right, maintaining the minimum continuous flow in the spillway. Once there is flow over the low flow channel, the culvert system would be closed entirely so that the left half of the RCC structure could be constructed in the dry. Throughout this process, temporary features, such as sandbags, may be required in the upstream/downstream direction to contain flow from the cofferdam/road to the existing spillway crest, maintaining the minimum flow depth of 1 foot. Several approaches may be used for cofferdam/road construction including, for example, sediment berms or Hesco Baskets filled with sediment.

Post-construction Conditions. Upon completion of the spillway raise, a pool will be created in the sediment plain upstream of the SRS. Over time, sediment will deposit in the pool and it will fill to the spillway crest height. Total volume of the flat water pool will be approximately 2 million cubic yards. Over time, the reservoir will fill with sediment with the North Fork Toutle flowing through it. The time period for this to occur is estimated at 1 to 5 years. Flows over the new spillway will be concentrated through the 250-foot wide main channel of the new RCC structure. Modeling predicts that a 10-foot spillway raise would increase total trapping of sediment above the SRS by about 15 million tons.

Public Input

Mount St. Helens coordination meetings were held in August and December 2011, at which the SRS spillway raise project was discussed. State, federal and local agencies and members of the public attended these meetings. The February 2012 draft EA and draft FONSI were published for a 30-day public and agency review on February 27, 2012 to receive public input. All public input and requests for information were considered, and in response, the Corps published a revised draft EA for public review on May 11, 2012. No new information was received by the Corps during the 15-day public comment period of the revised draft EA.

Final Determination

The Corps is required to make every effort to fulfill all statutory authorized project purposes and directions provided by the Congress in the project authorization documents. Under authority of Public Law 84-99, the Corps immediately responded to the Mount St. Helens disaster with dredging of the rivers and emergency levee improvements. Congress authorized interim protection measures in 1983 (Public Law 98-63) for the Corps to maintain at least 100-year protection along the Cowlitz River until an overall solution was in place. Long-term sediment control facilities were constructed under Supplemental Appropriations Act of August 15, 1985 (Public Law 99-88). The Corps was authorized to construct and operate a SRS near the confluence of the Toutle and Green rivers. The Corps was directed by Congress to maintain an authorized level of protection (LOP) for four communities along the Cowlitz River (Castle Rock, Lexington, Kelso, and Longview) that is not less than described in the 1985 Decision Document. The Water Resources Development Act of 2000 authorized the Corps to maintain these LOPs through the end of the Mount St. Helens project planning period, which is 2035. In addition, the Committee on Transportation and Infrastructure of the United States House of Representatives adopted the following Resolution on September 24, 2008 that authorized the Corps to investigate modifications to flood damage reduction for the Coweeman River and levee.

The Corps recognizes that in fulfilling the authorizations, the Corps needs to assess the whether the impacts of a project rise to the level of "significantly affecting the human environment" (40 CFR 1508.27). Following is the checklist from (1) to (10):

- (1) Impacts that may be both beneficial and adverse. Beneficial impacts include a reduction in downstream sediment transport and maintenance of required levels of protection for communities located along the lower Cowlitz River. Reduction in downstream sediment transport may temporarily improve conditions at the Fish Collection Facility (FCF) that result from excessive sediment deposition at the facility. Adverse effects are largely temporary and are a result of short term inundation and subsequent deposition of sediment on wetland habitats. The impacts are considered temporary because the impacted areas are expected to recover quickly following infill and recolonize with same or similar vegetation within one to two years following the project.
- (2) Public health and safety: The SRS spillway raise project will have no direct impact to public health and safety, however, raising the spillway will reduce sediment transport and deposition in the lower Cowlitz River and will assist in maintaining the authorized level of flood risk reduction benefits to the communities of Castle Rock, Lexington, Kelso, and Longview, Washington.
- (3) Unique characteristics of geographical area (such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas): The SRS is located at river mile 13.2 on the North Fork Toutle River, 30.5 miles above the mouth of the Toutle River in Washington State. The sediment plain above the SRS is characterized by highly braided and mobile stream network with shallow flow. Through the course of the winter season, surface water can be seen covering a large portion of the sediment plain. During the low flow summer months, channel mobility reduces and the reduction in flow results in less surface water. The sediment plain is finest in composition and flattest in slope immediately upstream of the SRS. There are no unique natural features in the project area that stand out compared to the surrounding environment.
- (4) Are effects on quality of human environment highly controversial: The effects of the activities are well understood. The purpose of the project is to maintain flood risk reduction benefits to lower Cowlitz communities and is within the authority and expertise of the Corps. There is disagreement on the scope of the action, however, with many of the comments received during the public comment period requesting actions that do not meet the purpose and need for the project and are outside the scope of this analysis. The spillway raise project does not limit or preclude potential environmental enhancement measures or future sediment management actions.
- (5) Are the risks highly uncertain or unique or unknown: No highly uncertain, unique, or unknown risks to the human environment were identified during the analysis of the preferred alternative. Construction techniques and features are typical for this type of project and evaluation of sediment transport was standard and routine.
- (6) Future Precedents: Currently, the Corps is investigating long-term sediment management measures to maintain the authorized LOPs for the communities on the lower Cowlitz River through the year 2035. The proposed up to 10-foot spillway raise project described in this revised EA is an interim measure required to maintain flood risk reduction benefits in the near term. Once a long-term sediment management plan is complete, it is likely additional actions will be required and may include, among a suite of potential alternatives, incremental raises of the SRS spillway up to a total height of 30 feet, grade-building structures in the SRS sediment plain, dredging of the Cowlitz River, and/or raising the entire SRS structure.

The spillway raise project does not limit or preclude future potential fish and wildlife habitat enhancement measures or future sediment management actions.

- (7) Cumulative Impacts: The cumulative effects analysis in this EA considered the effects of implementing the proposed action in association with past, present, and reasonably foreseeable future Corps' and other parties' actions in and adjacent to the project area. These actions primarily relate to the long-term management of sediment, restoring fish passage, and fish and wildlife habitat. The potential cumulative effects associated with the proposed action were evaluated with respect to the 1984 Environmental Impact Statement and to each of the resource evaluation categories in this EA and no cumulatively significant, adverse effects were identified.
- (8) National Register of Historic Places and other historical and culturally significant places: The SRS spillway raise project will have no effect on any historic properties. In consultation with the National Marine Fisheries Service (NMFS), it was determined that the preferred alternative was not likely to adversely affect fish species considered culturally important in the region.
- (9) Endangered Species Act (ESA): A Biological Assessment was prepared for the proposed action for species under the jurisdiction of the NMFS. The Corps of Engineers completed section 7 consultation with the NMFS and received a Letter of Concurrence that the proposed Spillway Raise Project is not likely to adversely affect ESA-listed species under their jurisdiction. The Corps determined that there will be no effect to ESA-listed species under the jurisdiction of the U.S. Fish and Wildlife Service. Finally, the additional accumulation of sediment will occur entirely within the existing project footprint and will not result in expansion beyond that envisioned during the original project development.
- (10) Other Legal Requirements for the protection of the environment: There is no anticipated violations of any other federal, state, or local law imposed for the protection of the environment.

The Corps is required to make every effort to fulfill all statutory authorized project purposes following the balance of purposes and other directions provided by the Congress in the authorization documents. The Corps is also required to take into account other legal mandates such as the Endangered Species Act and the Clean Water Act. As noted in the EA, the proposed action is not likely to adversely affect ESA-listed steelhead and coho salmon or their designated critical habitat. Impacts to water quality are expected to be minor and of limited duration during construction.

Date: 29 JUN 2012

Signed: John W. Eisenhauer
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Colonel, Corps of Engineers
District Commander

