Howard A. Hanson Dam
Additional Water Storage Project

Section 902 Post Authorization Change Validation Study – Fish Passage

King County, Washington

APPENDIX G

PUBLIC INVOLVEMENT

Final Integrated Validation Report and

Supplemental Environmental Impact Statement

US Army Corps of Engineers®
Seattle District

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1 Introduction

This document responds to comments received on the Howard A. Hanson Dam (HAHD) Additional Water Storage Project (AWSP) Draft Validation Report/Supplemental Environmental Impact Statement (VR/SEIS) by the U.S. Army Corps of Engineers (Corps or USACE). As part of the public outreach efforts and for compliance with the National Environmental Policy Act, the Corps published a "Notice of Intent (NOI) to Prepare a Supplemental EIS" in the Federal Register on September 20, 2021. On November 19, 2021, the Corps released the Draft VR/SEIS for public review. Documents were made available for public review on the Corps' website: https://www.nws.usace.army.mil/Missions/Environmental/Environmental-Documents/.

The public comment period was open for 45 days from November 19, 2021 through January 4, 2022. The Corps received two comment submittals through electronic mail; these two comment letters came from the Washington Department of Fish and Wildlife (WDFW) and the Environmental Protection Agency (EPA). These two letters are provided in their entirety following the documentation of the Corps' responses to the public comments.

2 Public Comments and Responses

Commenter	General Theme	Comment	Response to Comment
WDFW	Debris Management	WDFW has concerns about the ability of the fixed multiport collection structure design to adequately handle debris. To remedy this, the USACE has proposed a tiered approach to achieve the following objectives: 1) reduce the debris load arriving at the MIS, 2) reduce the chance of clogged screens using additional debris handling features, 3) provide access to each horn for manual screen cleaning if needed, and 4) provide a robust alternative full flow bypass system for maintaining fish passage during unforeseen or infrequent circumstances. WDFW supports these objectives, and we agree with the USACE that the exact configuration of this tiered system will need to be analyzed further during pre-construction, engineering, and design phases of the project.	Thank you for the comment. The Corps is planning to conduct a Debris Study during the pre-construction, engineering, and design phase and will continue coordinating with the natural resources agencies on design configurations to determine the appropriate level of debris management.
WDFW	Fish Collection Efficiency	To gather the necessary feedback for adjusting project operations, the Monitoring and Evaluation Plan in the 1998 Report (Section 2.6.1) strongly recommends specific measures for monitoring juvenile fish rearing and migration through the constructed project and lower river for up to five years and that up to 13 years could be justified.	The Corps intends to use Appendix F of the 1998 EIS as an initial framework for the updated Monitoring and Adaptive Management Plan. The Corps has developed a comprehensive list of monitoring and evaluation studies to be implemented during the pre-construction, engineering, and design phase to inform design refinements as well as a post-construction monitoring and adaptive management plan framework. At the outset of the pre-construction, engineering, and design phase, both pre- and post-construction monitoring plans will be developed. The Final VR/SEIS includes Appendix E, Monitoring and Adaptive Management Plan Framework, for reference.
WDFW	Fish Collection Efficiency	WDFW strongly supports the recommended Monitoring and Evaluation Plan and believes implementation of this Plan is necessary for addressing fish collection efficiency and survival criteria described in the [biological opinion] BiOp.	Thank you for the comment. The Corps intends to use Appendix F of the 1998 EIS as an initial framework for the updated Monitoring and Adaptive Management Plan. Please see Appendix E, Monitoring and Adaptive Management Plan Framework, in the Final VR/SEIS for updates.
WDFW	Steep Slope Survivability	The USACE recognizes that the water velocities in the proposed steep slope pipe system exceed the National Marine Fisheries Service (NMFS) fish passage criteria. Given this velocity exceedance, it will be important that the bypass is designed so the velocities are decelerated gradually before discharging to the tailrace, so exposure of fish to shear will be minimized.	Thank you for the comment. The design of the steep slope pipe will include a horizontal pipe long enough in distance before the exit so that velocities are decelerated to acceptable limits for fish survival before discharging into the tailrace. Velocities in the Green Peter steep bypass exceeded 50 ft/s and decelerated gradually in the horizontal pipe to 8-10 ft/s before discharging into the river. The Corps is using data and lessons learned from the studies at Green Peter to inform the HAHD steep slope bypass design.
WDFW	Fish Predation	…the Monitoring and Evaluation Plan in the 1998 Report (Section 2.6.1) strongly recommends specific measures for monitoring of juvenile fish rearing and migration through the constructed project. The monitoring data will be important for effectively evaluating fish survivability through the project, including predation that can occur for a distance downstream of the fish bypass exit.	The Corps intends to use Appendix F of the 1998 EIS as an initial framework for the updated Monitoring and Adaptive Management Plan. Please see Appendix E, Monitoring and Adaptive Management Plan Framework, in the Final VR/SEIS for updates.
WDFW	Fish Predation	WDFW recommends considering alternative methods for downstream collection monitoring. The river velocities in the tailrace and below should be considered to avoid or minimize harm to migrating fry and parr. One option to consider is a pond at the downstream end to allow juveniles to acclimate before entering the river and to provide an opportunity for accurate juvenile passage data to be collected.	Thank you for your comment and recommendation for a recovery pond. The Corps is considering alternatives for post construction fish passage and survival monitoring, including monitoring all sizes of downstream migrating juvenile fish. Installation of a recovery pond downstream of HAHD is one option under consideration to facilitate post-passage monitoring.
WDFW	Coordination	The USACE has conducted workshops and technical meetings with WDFW, tribes, and stakeholders to gather input on issues raised [in this comment letter]. As the USACE continues with the pre-construction, engineering, and design phases of the project, WDFW requests the continuation of these meetings to foster an inclusive process in the review and development of critical design features.	The Corps recognizes the regional and national importance of restoring ESA-listed salmonids and fully intends to coordinate with regional agencies and experts to maximize the likelihood of success of the project. The coordination that was initiated in late 2020 will continue throughout the pre-construction, engineering, and design phase as well as during post-construction monitoring and evaluation of success.

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EPA	Schedule	EPA encourages the Corps, in all processes and functions, including associated NEPA documents, to prioritize meeting the Project Development Milestones laid out in Appendix A of National Marine Fisheries Services' (NMFS) 2019 [BiOp] for [HAHD].	The Corps has set an aggressive schedule to complete the agency's required process of conducting a "Section 902 Validation Study" with the first goal of completing the Validation Report and Supplemental EIS, followed by having a signed Director's Report in time to include the project in the Water Resources Development Act (WRDA) of 2022. Pending authorization and funding subsequent to WRDA, the Corps would schedule the project's pre-construction, engineering, and design phase milestones to meet the Project Development Milestones laid out in Appendix A of the NMFS 2019 BiOp for HAHD.
EPA	Coordination	EPA encourages the Corps to continue working with stakeholders and incorporating feedback when making ongoing and future decisions on design, modeling, performance standards, monitoring, and adaptive management to optimize success for downstream fish passage.	The Corps recognizes the regional and national importance of restoring ESA-listed salmonids and fully intends to coordinate with regional agencies and experts to maximize the likelihood of success of the project. The coordination that was initiated in late 2020 will continue throughout pre-construction, engineering, and design phase as well as during post-construction monitoring and evaluation of success.
EPA	Monitoring and Adaptive Management	EPA recommends the FSEIS include a robust monitoring and adaptive management strategy for the downstream fish passage facility, given the limited examples of similar steep slope systems and studies in the Northwest.	The Final VR/SEIS includes Appendix E, Monitoring and Adaptive Management Plan Framework. The Corps intends to use Appendix F of the 1998 EIS as an initial framework for the updated Monitoring and Adaptive Management Plan and has developed a comprehensive list of monitoring and evaluation studies to be implemented during the design phase to inform design refinements of the fish passage facility as well as a post-construction monitoring and adaptive management plan framework. At the outset of the pre-construction, engineering, and design phase, both pre- and post-construction monitoring plans will be fully developed in detail with input from natural resources agencies, interested Tribes, and the non-federal sponsor.
EPA	Monitoring and Adaptive Management	Include an environmental inspection and mitigation-monitoring program to ensure compliance with all mitigation measures and assess their effectiveness.	Please refer to Appendix E, Monitoring and Adaptive Management Plan Framework included in the Final VR/SEIS. The fish passage facility is both an RPA and RPM promulgated through the NMFS 2019 BiOp which evaluated both the increased pool elevation of the AWSP and the continued operation of HAHD. All other compensatory mitigation for the project has been completed. The Corps will coordinate with natural resources agencies during the design phase to include avoidance and minimization measures in the plans and specification for construction of the fish passage facility to maximize environmental protection.
EPA	Monitoring and Adaptive Management	Describe the monitoring program and how it will be used to ensure program adjustments are made to meet environmental objectives throughout the life of the project.	Please refer to Appendix E, Monitoring and Adaptive Management Plan Framework, included in the Final VR/SEIS.
EPA	Monitoring and Adaptive Management	Consider how ongoing environmental monitoring results from other comparable downstream fish passage facilities may apply to this project and discuss implications for Howard A. Hanson Dam. Section 2.6.2 of the DSEIS identifies the Corps Portland District has one project, the Green Peter Dam, where a steep pipe bypass has been constructed and another, Cougar Dam, where a steep pipe bypass has been considered in an alternatives study.	The Corps will use lessons learned, study designs, and results from studies conducted by other Corps Districts to inform the post-construction monitoring and studies for HAHD. The Corps' Portland District has conducted numerous fish passage and survival studies, including studies to evaluate the bypass at Green Peter dam, which will inform monitoring at HAHD. The Corps Portland District did not develop specific studies to evaluate a steep bypass at Cougar Dam because alternatives for fish passage are still under consideration.
EPA	Delayed Downstream Fish Passage Construction	… the DSEIS does not account for the extended delay in construction of the fish passage facility and the temporal impacts to aquatic organisms and habitat that would have benefited from the completed project. EPA recommends the FSEIS address the long-term temporal impacts to aquatic organisms and habitat and consider measures that could mitigate the temporal effects.	Text was added to the Final VR/SEIS to describe how the Corps is addressing temporal impacts: As an interim measure prior to construction of the fish passage facility, the Corps has initiated implementation of RPA 2 in the NMFS 2019 BiOp, which is a change to operations between October 15 and February 28 each year to reduce outflow rates at the dam to a maximum of 5,000 cfs during most moderately high inflow events. The Corps is proposing to continue this water management regime through the required period until the fish passage facility is operational. The effect of the operational change would have measurable increases in salmon egg survival to the migrant fry lifestage in river reaches below the dam. Increasing survival through the fry lifestage has benefits to the overall population numbers as well as providing benefits to other aquatic organisms that feed on juvenile salmon at each lifestage.

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EPA	Delayed Downstream Fish Passage Construction	The project site includes a temporary cofferdam on the left bank of the river just upstream of, and connected to, the dam. The temporary cofferdam has been in place since at least 2011 when the project was placed on hold. Given the length of time this temporary structure has been in place, EPA recommends the FSEIS assess impacts to aquatic habitat resulting from the long-term duration of having this in place and quantify those ongoing effects.	Please see the new paragraph added to section 3.9.1, Affected Environment, in the Fish section of the Final VR/SEIS. The Corps considers this alteration to be a minor effect to the overall lengthy shoreline of the reservoir. It was not considered as important habitat for fish prior to its construction and has not undergone further disturbance since its installation. Based on the scale of the reservoir, any ongoing effects of the altered shoreline of the cofferdam can be considered negligible.
EPA	Delayed Downstream Fish Passage Construction	EPA recommends the FSEIS address how the extended construction delay impacts the project's expected public benefits in having permanent downstream fish passage in place around 2008/2009 as originally planned in the 1998 Additional Water Storage Project EIS. EPA recommends the updates to expected public benefits include consideration of the affected and interested Tribes and communities with Environmental Justice concerns.	A new paragraph appears in section 5.13 of the Final VR/SEIS to discuss activities in the years between initially projected completion date and new target completion date.
EPA	Aquatic Resources: Impacts to Waters of the U.S.	Include an estimated footprint of the proposed excavation and installation in the left bank below the ordinary high water mark for the purpose of installing the open box-like structure at the proposed outlet in the river for the fish release transport pipe exit. Quantify an estimated size of impact versus only stating "The outlet will be a large pipe with a supporting crib wall, which will be a small footprint on the left bank."	The construction footprint below ordinary high water is approximately 46,000 square feet (1 acre) and roughly 500 feet of riverbank. This area includes the outfall stilling basin, scour pool, outfall pipe for the fish, plunge pool, and access along the left bank to the plunge pool. Text was added to section 3.6.3 of the Final VR/SEIS to describe the impact and post-construction condition.
EPA	Aquatic Resources: Impacts to Waters of the U.S.	Disclose if stabilization of the stream bank opposite the tunnel outlet is proposed and could impact riparian areas and/or waters below the ordinary high water mark. Estimate the area of impact and potential effects from vegetation removal (in addition to solely addressing aesthetics).	The bank opposite of the proposed outlet tunnel is already an armored riprap slope for the HAHD's outlet works. The slope will need to be regraded in the area of the proposed outlet works to blend in with the proposed construction. No additional stabilization is expected on the right bank of the river.
EPA	Aquatic Resources: Impacts to Waters of the U.S.	Provide additional information on potential impacts associated with the vegetation removal associated with the temporary access road (e.g., size, impacts to waters or riparian area).	In addition to work below ordinary highwater, there is an estimated 110,000 square feet (2.5 acres) of impacts on the left bank for access road improvements, drainage improvements, and hillside stabilization. The left bank of the river in this area has significant drainage issues that continue to cause erosion of the hillside. These issues require stabilization (grading and drainage improvements) to prevent damage to the proposed facility. This area is largely a steep hillside that was cleared and stabilized for dam construction and operations. The Corps will replant as much of the area as possible around the area that must be stabilized for erosion protection. Please see sections 3.6.3 and 3.9.3 of the Final VR/SEIS for updated information on potential impacts associated with vegetation removal.
EPA	Aquatic Resources: Impacts to Waters of the U.S.	Include additional information to more accurately characterize "short term" as it relates to potential impacts on fish, crustaceans, mollusks, and other aquatic organisms in the food web, to allow for an accurate evaluation of the impacts anticipated on these organisms from construction.	Please see section 3.6.3 of the Final VR/SEIS for additional information on short-term effects to aquatic organisms from potential water quality changes.
EPA	Aquatic Resources: Impacts to Waters of the U.S.	Given the proposal to remove mature trees and shrubs at the tunnel outlet site, identify opportunities to plant additional appropriate native vegetation nearby to improve riparian function that will be impacted from these actions (e.g., shading, erosion). Limiting revegetation to the non-hardened area at the site of impact will result in an overall net loss. Commit to these mitigation measures.	The Corps agrees it is important to have no net loss to areas of vegetated riparian zones. A paragraph was added to section 3.6.3 of the Final VR/SEIS to commit to replacing trees and shrubs at a 5-to-1 ratio to mitigate for the temporal loss of mature vegetation. Sites for planting will be identified during design phase.

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EPA	Aquatic Resources: Impacts to Waters of the U.S.	Clarify if site clean-up and restoration will specifically apply to any waters. For example, where waters are impacted during the original construction of the sedimentation ponds, clarify if restoration is proposed to return them to pre-construction conditions.	Any aquatic areas disturbed by construction would be cleaned up and restored immediately after that phase of construction is complete according to the Care and Diversion of Water Plan to be developed during design phase. After all construction is complete, final site clean up and restoration will include ensuring all aquatic areas disturbed by construction have been returned to pre-construction conditions. This final site restoration will include decommissioning and removal of the sedimentation ponds with revegetation of the hill where they lie. The Corps has been continually cleaning the hill of invasives and will continue to do so. Trees and grasses continue to take over in their place. The Corps will ensure all new plantings will consist of native species. A new paragraph has been added to section 3.6.3 of the Final VR/SEIS.
EPA	Aquatic Resources: Impacts to Waters of the U.S.	Identify mitigation measures, including any compensatory mitigation required under the Clean Water Act, to avoid, reduce, and mitigate impacts to Waters of the U.S.	Section 3.6.3 of the Final VR/SEIS has been expanded to provide information about avoiding and minimizing impacts to waters of the U.S. A comprehensive Care and Diversion of Water Plan as well as an Environmental Protection Plan will be required documents under the construction contract. Construction oversight staff will have responsibility for ensuring the contractor adheres to the plans.
EPA	Water Quality: Short-term and Temporary Effects	The DSEIS states that "Construction of the [fish passage facility] would have short-term and minor effects to water quality in the short section of river below [Howard A. Hanson Dam] downstream for up to approximately 1 mile…" EPA recommends the FSEIS clarify and expand on the assessment of "short-term," as construction is proposed for three to four years and will occur in certain areas throughout most of the year. The statement is vague and does not allow for an accurate assessment of potential impacts.	Section 3.6.3 of the Final VR/SEIS has been revised to be clearer about what is meant by short-term and minor effects.
EPA	Water Quality: Short-term and Temporary Effects	EPA recommends the FSEIS provide additional information on what constitutes a "temporary" effect; especially considering the temporary cofferdam has been in place for at least 10 years	Section 3.6.3 of the Final VR/SEIS has been revised to be clearer about what is meant by temporary effects.
EPA	Water Quality: Turbidity	EPA recommends the FSEIS clarify if it is possible to release water from the lowest port (which is located at a similar elevation as the turbidity pool) to ameliorate temperatures without releasing turbid water…	The conceptual design process to this point has not included an evaluation of the multiport collector's ability to operate for temperature management benefits. Although temperature management is not included as a criterion in the 2019 BiOp, the Corps can investigate potential for operational strategies to ameliorate water temperatures. The Corps recognizes the potential for the fish passage facility to improve downstream water quality while still optimizing safe juvenile passage, and the viability of such an operation will be studied in pre-construction engineering and design phase. Although the lowest port is within the elevation of the turbidity pool, the dam's 19-foot tunnel is below this elevation and would be open at the same time. Therefore, operating the lowest port of the FPF has only minimal risk of adding turbidity to water releases. Text has been added to section 3.6.3 to clarify the potential for water temperature management.
EPA	Water Quality: Turbidity	EPA recommends the FSEIS provide additional information on the Corps practice of "gradually lower[ing] the reservoir to achieve a reduction in total quantity of sediment that has accumulated on the upstream side of the dam until a noticeable increase in discharge turbidity is observed." Providing this information would be beneficial for assessing potential impacts to water quality by understanding the frequency in which sediment clearing operations occur and whether there is any turbidity monitoring which occurs during this process beyond visual observations.	The following text has been added to Section 3.6.1: "Except for passing high turbidity flows during and shortly after flood events, sediment clearing operations are rare, with the most recent occurring circa 2006. Reservoir drawdown operations occur every year, however, to meet low flow augmentation demands in July-October and to reach a flood control pool of roughly elevation 1,075 feet. The drawdown to the flood control pool elevation is slow and deliberate, as the "turbidity pool" elevation can vary slightly from year to year. Careful monitoring of discharge turbidity occurs as the reservoir approaches empty."

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EPA	Water Release Management and Fish Habitat	Clarify if there will be anticipated increased use by rearing fish (outmigrants) in the reach below dam if juveniles successfully out-migrate. If so, this could increase the importance of this reach as fish habitat for juveniles as they move downstream towards the ocean.	The Corps anticipates that Chinook and coho juveniles would migrate relatively quickly through this reach of river alternating between feeding and migrating, but would not set up residence in the reach. Steelhead, however, may spend substantial time rearing in this reach during their juvenile and subadult freshwater phase. Pink salmon would migrate downstream the fastest of the salmonids without spending time for rearing. This reach of river has highly functioning habitat, so outmigrating fish would be expected to be successful in this reach. This section of the river between dams is protected from development due to being part of the source of drinking water supply; therefore, its quality as salmon habitat is expected to remain unchanged. Text has been added to section 3.9.3 of the Final VR/SEIS to discuss this river reach.
EPA	Water Release Management and Fish Habitat	Clarify if it is anticipated that further consideration for fish habitat will come to the fore in the downstream reach. If so, discuss if any changes in discharge regime management are anticipated.	Fish habitat in the 3.5-mile reach of river between HAHD and TPU's diversion dam is in good condition and is considered high quality habitat. The Corps is unlikely to propose changes to the water management regime based on effects to this reach of river due to greater area of considerations throughout the lower watershed for the water control regime. The Corps plans to continue following the established Water Control Manual and to continue coordinating with the Green River Water Management Coordination Committee for practices and guidance regarding resources in the watershed below HAHD.
EPA	Endangered Species Act	EPA recommends the FSEIS include an update and/or the outcome of consultation with the USFWS under Section 7 of the ESA.	The Corps received a final Biological Opinion from USFWS on February 3, 2022. Section 5.2 of the Final VR/SEIS has been updated with this information.
EPA	Tribal Coordination and Consultation	EPA recommends clarifying in the FSEIS if the Confederated Tribes and Bands of the Yakama Nation have treaty-protected natural resource interests within the scope of this project.	The Confederated Tribes and Bands of the Yakama Nation have adjudicated fishing rights to usual and accustomed grounds and station in the study area, but they have not responded to any project notices since at least 2011. The Corps provided information to Yakama Nation on this fish passage facility project according to protocol for consultation with Tribes with treaty-protected rights. The Final VR/SEIS has been updated to clarify the status of coordination with these tribes. In addition, the Corps added a sentence to section to 3.11 of the Final VR/SEIS regarding Tribal Treaty Resources. The Corps also added a paragraph to section 5.12 regarding consultation with the Native American Tribes with usual and accustomed grounds and stations in the study area.
EPA	Tribal Coordination and Consultation	EPA encourages the Corps to consult with the Tribes and incorporate feedback from the Tribes when making decisions regarding the project. EPA recommends the FSEIS describe the issues raised during the consultations and how those issues were addressed.	Text was added in section 6.2 of the Final VR/SEIS to list the concerns raised by the Muckleshoot Indian Tribe during the Validation Study phase. The Tribe's concerns are related to design phase activities and post-construction monitoring; therefore, the Corps will address these concerns as they arise in future study activities.
EPA	Construction-related Emissions	EPA recommends the FSEIS include a discussion of construction-related air pollutants and potential exposure of these pollutants to any nearby populations, including workers at the dam. EPA recommends including a discussion of measures to be taken to minimize air quality impacts on the local environment and decrease exposure of construction-related emissions and dust.	Section 5.5 of the VR/SEIS has been updated with a discussion of construction-related air pollutants and measures to minimize air quality impacts.
EPA	Hazardous, Toxic, and Radioactive Waste	The Table of Contents for the DSEIS references an Appendix E for hazardous, toxic, and radioactive waste, noting the FSEIS will include this appendix which was not provided in the DSEIS. The DSEIS does not include any information on hazardous, toxic, and/or radioactive waste as it relates to this project. EPA recommends that the FSEIS, in addition to including the missing appendix, clarify if the project may result in impacts associated with any hazardous, toxic, and radioactive waste, and if so, include the appropriate assessment of effects, applicable state and federal requirements, and proposed mitigation measures to address the impacts.	The Final VR/SEIS has updated the list of appendices and has now included the HTRW report as an appendix to Appendix B Engineering. A Remediation Biologist for the Corps has prepared an Environmental Condition of Property Report and Phase I Environmental Site Assessment for the proposed construction support sites that would be used during construction of the AWSP fish passage facility. This specialist found one of the sites had a documented fuel spill in the past, but it has been cleaned up and there are no further actions required there. The other sites have no record of any environmental release or disposal of hazardous materials. Please see section 3.3 in the VR/SEIS for a new paragraph discussing HTRW and Appendix B for the full report regarding HTRW.