

Memorandum for Record

April 8, 2024

Subject: Tier 1 Antidegradation Evaluation for Lower Granite, Little Goose, and Lower Monumental Dams: Stilling Basin Sediment Removal (USACE Walla Walla District)

Introduction

This memorandum documents the Tier 1 antidegradation evaluation conducted by the Dredged Material Management Program (DMMP) agencies (U.S. Army Corps of Engineers, Washington Departments of Ecology and Natural Resources, and the U.S. Environmental Protection Agency) for work being proposed by the USACE Walla Walla District.

Project Description

The Lower Granite (river mile (RM) 107.5), Little Goose (RM 70.3), and Lower Monumental (RM 41.6) dams on the Snake River are concrete gravity structures with earthfill abutment embankments constructed between 1969 and 1975 (Figure 1). The dams serve multiple purposes including navigation, hydropower generation, fish passage, and recreation. The three dams include stilling basins, which are located on the downstream side of the spillways and are designed to reduce the velocity and turbulence of the water flow as well as protecting the dams from erosion and undermining.

Sediment accumulates in the stilling basins and is primarily composed of clean, rounded river cobbles with trace amounts of other debris, such as sunken driftwood. Cobbles range in size from 1 to 30 inches in diameter (See Figures 2, 3, and 4). Sediment removal from these basins is necessary for inspection and assessment of potential damage, as their current condition is unknown. Since their last clearance in 2002, significant debris accumulation has hindered necessary surveys to ensure their structural integrity.

The proposed work will be conducted by the USACE Wall Walla District and is scheduled to take place from December 15, 2024, to March 30, 2025, and additionally from December 15, 2025, to March 30, 2026. The removal process will involve various techniques, including clamshell dredging and diver-assisted sediment removal. Excavated materials will be disposed at designated deep-water sites along the Snake River using a split-hull scow. During the initial phase, materials from Lower Monumental and Lower Granite dams are proposed to be transported and placed at the Swift Bar Disposal Site (RM 96). This sequencing is due to availability of the site and logistics of equipment moving between the dams. Material from Little Goose Dam will be disposed at the Joso Disposal Site located between Lower Monumental and Little Goose Dams (RM 57). This site will only be accessible during the second phase of proposed work. Table 1 summarizes the project details.

Table 1. Project Summary: Lower Granite, Little Goose, and Lower Monumental Dams Stilling Basins

Dam	River Mile Location	Approximate Dredging Volume (Cubic Yards)	Disposal Site
Lower Granite	107.5	8,000	Swift Bar (River Mile 96)
Little Goose	70.3	28,000	Joso (River Mile 57)
Lower Monumental	41.6	150	Swift Bar (River Mile 96)

Tier 1 Evaluation

Available data were obtained and reviewed by the Dredged Material Management Office (DMMO) to evaluate the project location's sediment chemical quality and understand whether sources of contamination could have historically impacted or currently be impacting the project site. The following resources were reviewed to conduct this evaluation:

1. **Previous studies, suitability determinations or antidegradation assessments conducted by DMMO or other agencies.** No previous assessments have been conducted specifically at the dam stilling basins. Relevant recent evaluations performed within the Snake River system are summarized below:

Snake/Clearwater Federal Channel and Port Maintenance

In April of 2020, a suitability determination was issued for maintenance dredging of the Snake River Federal Navigation Channel, encompassing the Ports of Clarkston and Lewiston, the confluence of the Snake and Lewiston Rivers, and the Ice Harbor Dam Lock Approach. Samples were collected at both the Port and river confluence locations. Chemical exceedances related to 4-methylphenol occurred at the Port of Clarkson Crane Dock and Cruise Dock dredged material management units (DMMUs). Although screening level exceedances in chemical analysis results do not necessarily indicate toxicity to benthic organisms, they did signal the need for additional biological testing to inform decision-making regarding the safe placement of proposed dredged sediments in water. Bioassays were conducted on the triggered samples and passed all DMMP guidelines. All project sediments were deemed suitable for open-water disposal. The disposal target for this project was Bishop Bar within the Lower Granite Reservoir (RM 118). Suitable material was to be used to create a shallow-water habitat bench to support juvenile salmonids.

Included in this evaluation was the lock approach channel at the Ice Harbor Dam. Ice Harbor Dam (RM 10) is located 30 miles downstream from Lower Monumental Dam. This channel, located on the downstream side of the navigation lock entrance, experiences interference with navigation caused by riverbed cobbles pushed into the lock approach by vessels and water flow. No sampling was required during this round of testing based on a Tier 1 evaluation. This material was considered suitable regardless of volume due to its cobbly nature. The cobbly sediment encountered at the Ice Harbor lock approach is likely similar to that being entrained in the upper dam stilling basins.

Ice Harbor Dam Upstream Navigation Floating Guidewall Anchor Sediment Removal

A suitability determination was issued in February 2020 for the Ice Harbor Dam (RM 10) Floating Guidewall Cable Replacement Project. Proposed dredging was being explored to facilitate anchor cable replacement for a floating guidewall located on the upstream side of the dam. Approximately 2,000 cubic yards (cy) of sediment had accumulated on top of the cable anchor. Two sediment samples were collected and analyzed and resulted in no DMMP Screening Level (SL) or Bioaccumulation Trigger (BT) exceedances for the freshwater chemicals of concern (COCs). The sediment was deemed suitable for open-water disposal in the Snake River. The dredging process would expose the concrete anchor structure, but no new sediment surface would be revealed. Since the surficial sediment was suitable for disposal, any sediment exposed during the project would be assumed to also be in compliance with the State of Washington anti-degradation standard.

2. **Ecology’s Environmental Information Management (EIM) Database.** A search was conducted to look at chemical or biological data within the vicinity of the project locations (Figure 1). Between 2000 and 2011, five studies were found that assessed sediment chemistry along the Snake River corridor. No freshwater Sediment Management Standard (SMS) exceedances were observed in the data that was available.

3. **Ecology’s “What’s in My Neighborhood” Site Cleanup Database.** A search was conducted to look at historical and active cleanup sites near the project locations (Figure 2). Three completed cleanup sites are located within 2 miles of the dam locations and are all under a “no further action” classification. An additional completed site is located between Lower Granite and Little Goose dams. None of the cleanup sites involved the river strata directly. A summary of the sites within the vicinity of the dam locations are summarized in Table 2 below.

Table 2. Cleanup Site Summary

Cleanup Site Name	Contaminants of Concern	Matrix	Status	Date Completed	Proximity to
Lower Monumental Dam Dump Site	Metals and Asbestos	Soil	NFA	2011	Lower Monumental Dam
Union Pacific Railroad, Kahlotus	Petroleum	Soil	NFA	2012	Between Lower Granite and Little Goose Dams
Boyer Park and Marina	Petroleum	Soil and Groundwater	NFA	2011	Lower Granite Dam
Lower Granite Lock and Dam	Petroleum	Soil	NFA	2011	Lower Granite Dam

NFA = No Further Action

4. **Ecology’s Spill Map.** A search was conducted to look at spills within the last 8 years within 0.5 mile of the project locations (Figure 3). Petroleum spills have been reported at the locations of three dams ranging from 1 to 1,000 gallons. The contaminants released to the water were more likely to float than sink to the bottom in the flowing Snake River system. The cobble composition of the material within the stilling basins is relatively inert and unlikely to have significantly bound to oils, if exposed.

Table 3. Spill Summary

Location	Spill Type	Volume Spilled (gallons)	Volume to Water (gallons)	Volume Recovered (gallons)	Date of Incident
Lower Monumental Dam	Grease	1	1	1	12/16/2015
Little Goose Dam	Hydraulic Oil	5	5	5	4/21/2016
Lower Monumental Dam	Lube Oil/Motor Oil	100	100	0	11/6/2016
Lower Granite Dam	Oily Water Mixture	1	1	0	12/11/2016
Lower Granite Dam	Unknown	1	1	0	12/18/2016
Lower Monumental Dam	Lube Oil/Motor Oil	1	1	0	1/30/2017
Lower Monumental Dam	Lube Oil/Motor Oil	1,000	1,000	0	8/2/2017
Lower Monumental Dam	Lube Oil/Motor Oil	150	150	0	12/13/2017
Lower Granite Dam	Hydraulic Oil	5	5	0	2/7/2018
Lower Granite Dam	Hydraulic Oil	20	20	0	8/21/2018
Upstream from Little Goose Dam; Train Incident	Diesel/Marine Gas Oil	200	200	0	2/21/2019
Little Goose Dam	Hydraulic Oil	35	35	0	1/15/2020
Lower Granite Dam	Oily Water Mixture	1	1	0	3/15/2020
Little Goose Dam	Hydraulic Oil	3	3	3	8/16/2022
Little Goose Dam	Hydraulic Oil	600	600	0	10/23/2022

Invasive Species

Based on the Washington Department of Fish and Wildlife (WDFW) aquatic invasive species website (WDFW, n.d.) the presence of New Zealand mud snails (NZMS) has not been positively identified in the Snake River including the areas associated with the three dams. The dredging of material associated with the three dam sites and disposal within the Snake River system does not present a risk of inadvertent spreading of NZMS beyond its current range.

No Test Determination

Based on the Tier 1 evaluation, the DMMP agencies have determined that no sampling and testing are required for this project. There are no active cleanup sites in the vicinity. Recent reported spills in the vicinity of the dams are unlikely to have impacted the quality of the project sediments.

The DMMP agencies do not manage any specific open-water disposal sites in the Snake River. The project proponent must coordinate with appropriate resources agencies, as necessary, regarding the acceptability of the final selected placement method and location for the dredged material.

This determination does not constitute final agency approval of the project. During the public comment period that follows a public notice, resource agencies and the public will provide input on the overall project. A final decision will be made after full consideration of public input.

Debris Management

Best management practices (BMPs) will be required to remove any anthropogenic debris (e.g. submerged wood, metal, or concrete) encountered during dredging and to dispose of this debris appropriately.

Antidegradation Determination

The leave surface is constructed material and thus not subject to an antidegradation evaluation.

References

- DMMP, 2020a. Determination Regarding the suitability of proposed dredged material from the Ice Harbor Dam upstream navigation floating guidewall cable replacement project (CENWW-PPL-C 2019-0104). Evaluated under Section 404 of the Clean Water Act for unconfined open-water disposal in the Snake River. Prepared by the Dredged Material Management Office, U.S. Army Corps of Engineers – Seattle District for the Dredged Material Management Program, February 10, 2020.
- DMMP, 2020b. Determination on the suitability of proposed dredged material from Lower Snake/Clearwater River maintenance dredging for open-water disposal in the Snake River or at an approved beneficial use or upland site. Prepared by the Dredged Material Management Office, U.S. Army Corps of Engineers – Seattle District for the Dredged Material Management Program, April 30, 2020.
- DMMP 2021. *Dredged Material Evaluation and Disposal Procedures (User Manual)*. Dredged Material Management Program, updated July 2021.
- Ecology's EIM Database Search: <https://apps.ecology.wa.gov/eim/search/default.aspx>
- Ecology's What's in My Neighborhood Search: <https://apps.ecology.wa.gov/neighborhood/>
- Ecology's Spill Incidents Database: <https://ecology.wa.gov/Spills-Cleanup/Spills/Spill-preparedness-response/Responding-to-spill-incidents/Spill-incidents>
- Washington Department of Fish and Wildlife. (n.d.) New Zealand mud snail (*Potamopyrgus antipodarum*). Retrieved February 27, 2024, from <https://wdfw.wa.gov/species-habitats/invasive/potamopyrgus-antipodarum#desc-range>

Figure 2: Survey Image of Stilling Basin Accumulation at Little Goose Dam



Sediment materials to be removed at Little Goose.

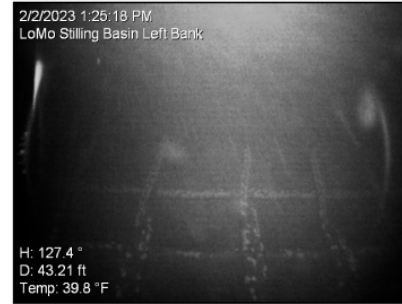
Figure 3: Survey Images of Stilling Basin Accumulation at Lower Monumental Dam



F1 DRAWING-10



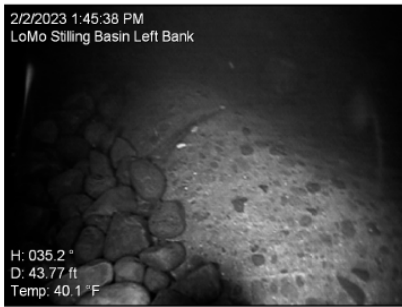
F6 PHOTO: MATERIAL IN ERRODED CONCRETE



F11 PHOTO: EXPOSED REBAR



F16 PHOTO: EXPOSED REBAR CAGE AND HOOK



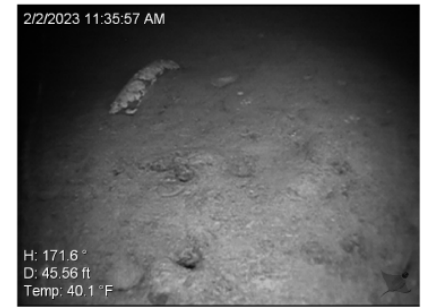
A1 PHOTO: ROCKS AGAINST CONCRETE



A6 PHOTO: TYPICAL MATERIAL TO REMOVE



A11 PHOTO: EXPOSED REBAR CAGE



A16 PHOTO: EXPOSED REBAR HOOK

Figure 4: Survey Images of Stilling Basin Accumulation at Lower Granite Dam



F1 PHOTO: TYPICAL COBBLES
SCALE: 1"=1' FULL SIZE



F6 PHOTO: MATERIAL AGAINST CONCRETE
SCALE: 1"=1' FULL SIZE



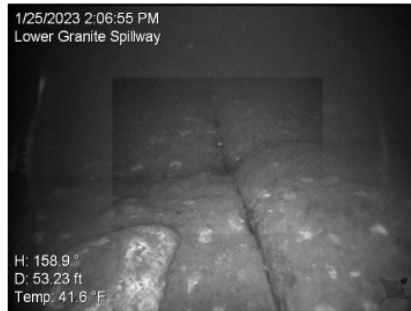
F11 PHOTO: TYPICAL MATERIAL TO REMOVE
SCALE: 1"=1' FULL SIZE



F16 PHOTO: DRIFTWOOD AND COBBLES
SCALE: 1"=1' FULL SIZE



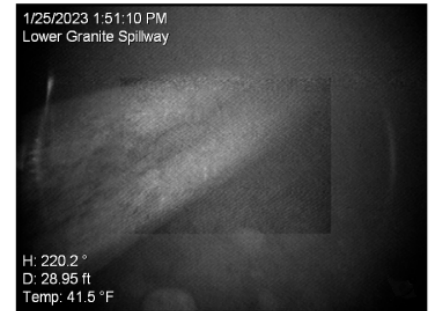
A1 PHOTO: LARGE ROCK
SCALE: 1"=1' FULL SIZE



A6 PHOTO: ERODED CONCRETE JOINTS
SCALE: 1"=1' FULL SIZE



A11 PHOTO: MATERIAL WITHIN CONCRETE JOINT
SCALE: 1"=1' FULL SIZE



A16 PHOTO: SUBMERGED DRIFTWOOD
SCALE: 1"=1' FULL SIZE

Figure 5: EIM Data Search

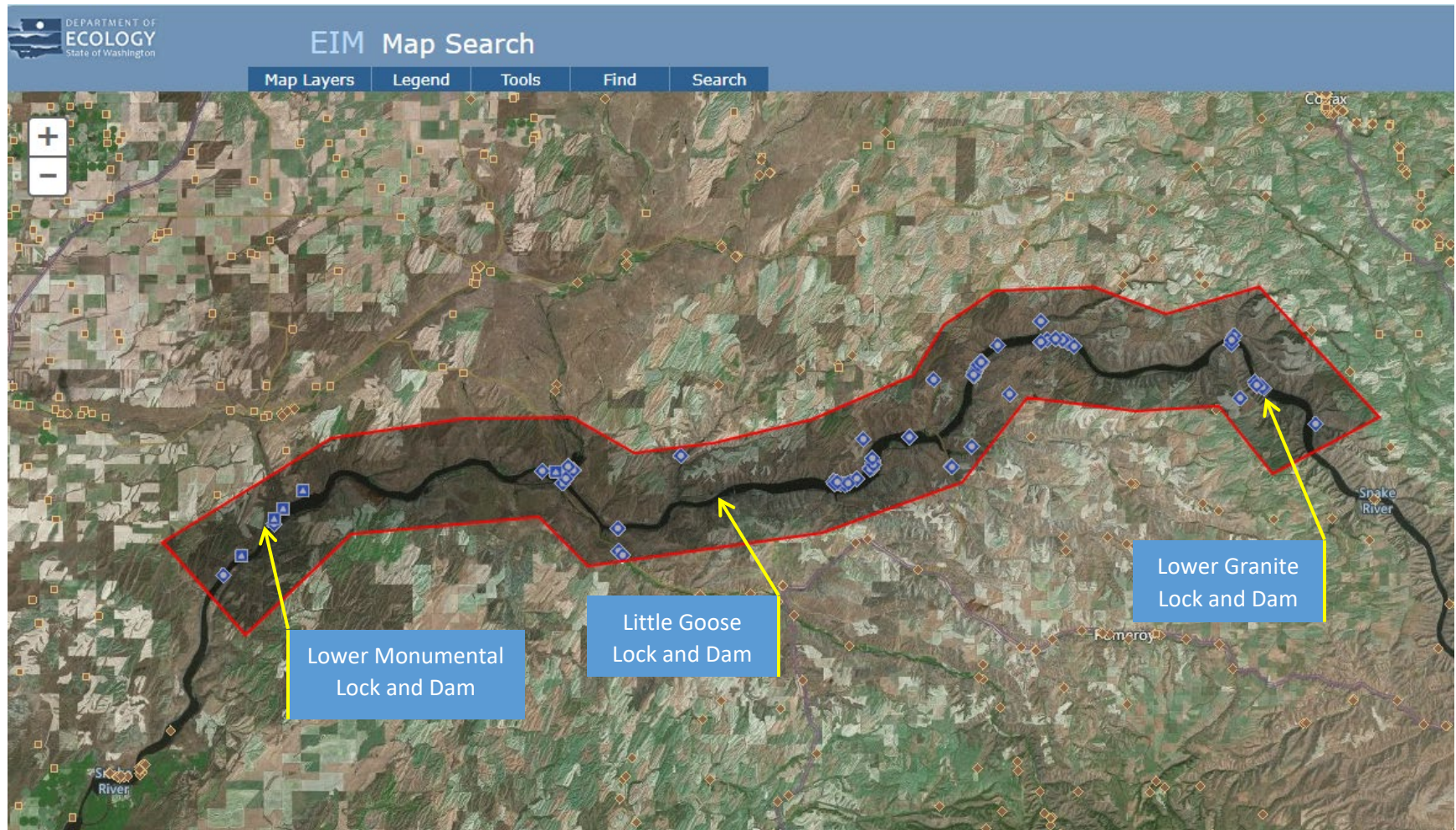


Figure 6: What's in My Neighborhood Cleanup Sites

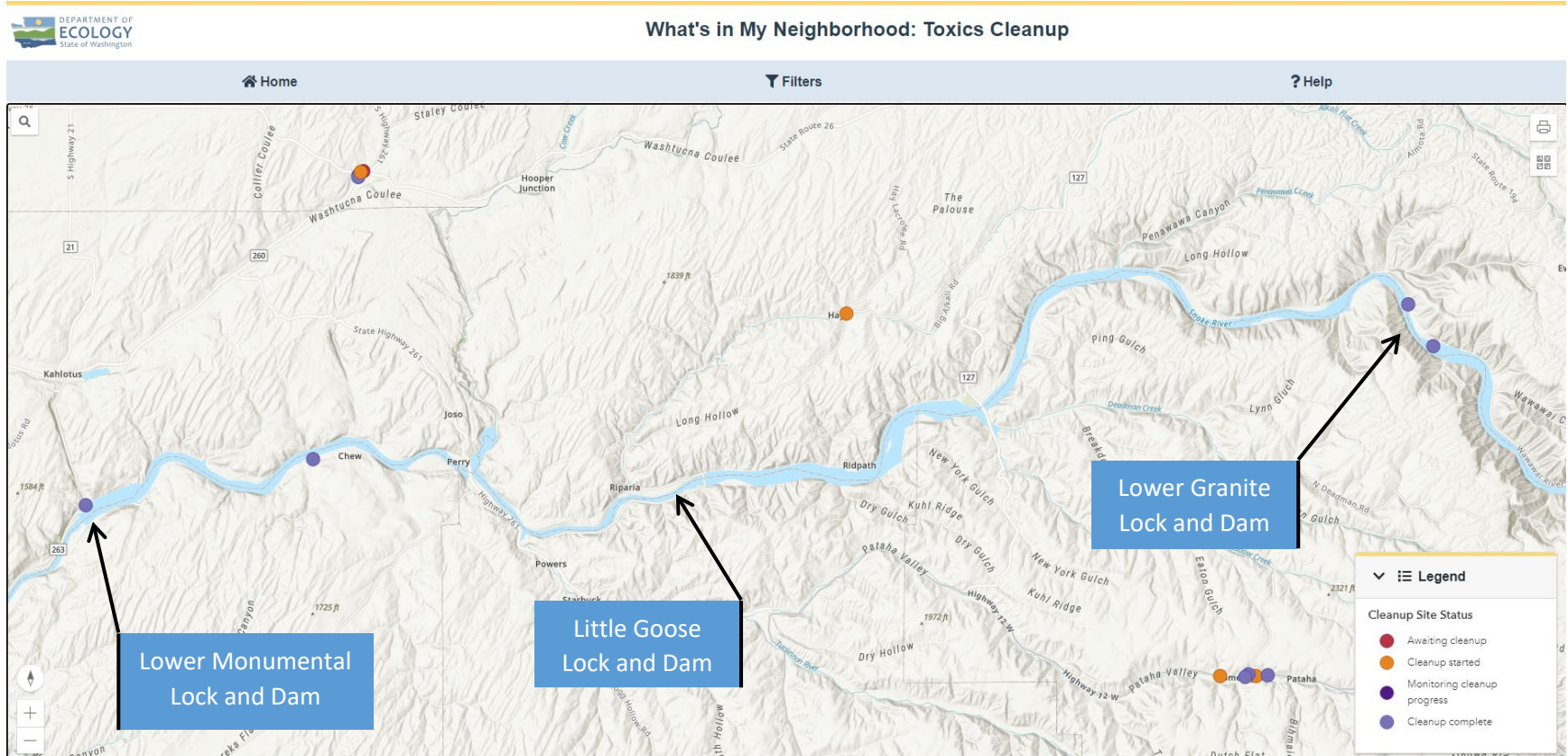
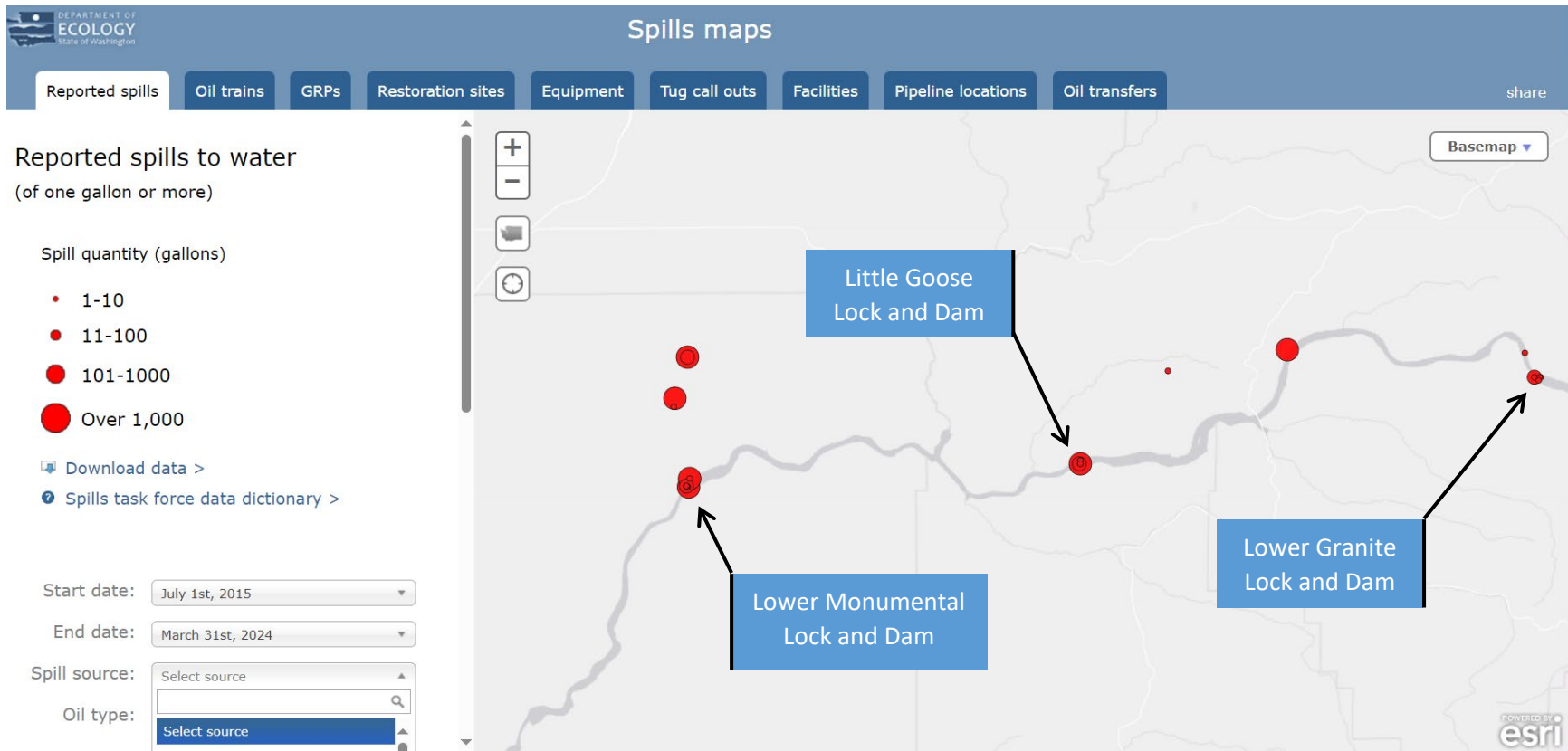


Figure 7. Ecology's Spills Database



Agency Signatures

The signed copy is on file in the Dredged Material Management Office, Seattle District U.S. Army Corps of Engineers

Date Brian Hester – U.S. Army Corps of Engineers, Seattle District

Date Sarah Burgess – U.S. Environmental Protection Agency, Region 10

Date Laura Inouye, PhD. – Washington State Department of Ecology

Date Shannon Soto – Washington State Department of Natural Resources

Copies Furnished:

- USACE Walla Wall District
- DMMP agencies
- DMMO File