WASHINGTON STATE
Joint Aquatic Resources Permit Application (JARPA) Form[1,2] [help]

USE BLACK OR BLUE INK TO ENTER ANSWERS IN THE WHITE SPACES BELOW.

US Army Corps of Engineers ®
Seattle District

AGENCY USE ONLY

Date received: August 1, 2016

Agency reference #: _____

Tax Parcel #(s): _____

Part 1–Project Identification

1. Project Name (A name for your project that you create. Examples: Smith's Dock or Seabrook Lane Development) [help]
Mill Pond Dam Removal

Part 2–Applicant

The person and/or organization responsible for the project. [help]

2a. Name (Last, First, Middle)			
Cauchy, Mark			
2b. Organization (If applicable)			
Pend Oreille County Public Utility District No. 1			
2c. Mailing Address (Street or PO Box)			
PO Box 190			
2d. City, State, Zip			
Newport, WA 99156			
2e. Phone (1)	**2f.** Phone (2)	**2g.** Fax	**2h.** E-mail
(509) 447-3137	(509) 447-9331	(509) 447-5824	mcauchy@popud.org

Part 3–Authorized Agent or Contact

[1]Additional forms may be required for the following permits:

- If your project may qualify for Department of the Army authorization through a Regional General Permit (RGP), contact the U.S. Army Corps of Engineers for application information (206) 764-3495.
- If your project might affect species listed under the Endangered Species Act, you will need to fill out a Specific Project Information Form (SPIF) or prepare a Biological Evaluation. Forms can be found at http://www.nws.usace.army.mil/Missions/CivilWorks/Regulatory/PermitGuidebook/EndangeredSpecies.aspx.
- Not all cities and counties accept the JARPA for their local Shoreline permits. If you need a Shoreline permit, contact the appropriate city or county government to make sure they accept the JARPA.

[2]To access an online JARPA form with [help] screens, go to http://www.epermitting.wa.gov/site/alias__resourcecenter/jarpa_jarpa_form/9984/jarpa_form.aspx.

For other help, contact the Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or help@oria.wa.gov.

Person authorized to represent the applicant about the project. (Note: Authorized agent(s) must sign 11b of this application.) [help]

3a. Name (Last, First, Middle)			
Armstrong, John			
3b. Organization (If applicable)			
Seattle City Light			
3c. Mailing Address (Street or PO Box)			
PO Box 34023			
3d. City, State, Zip			
Seattle, WA 98124-4023			
3e. Phone (1)	**3f.** Phone (2)	**3g.** Fax	**3h.** E-mail
(206) 684-3798	(206) 684-3798	(206) 686-4589	john.armstrong@seattle.gov

Part 4–Property Owner(s)

Contact information for people or organizations owning the property(ies) where the project will occur. Consider both **upland and aquatic** ownership because the upland owners may not own the adjacent aquatic land. [help]

☒ Same as applicant. (Skip to Part 5.)

☐ Repair or maintenance activities on existing rights-of-way or easements. (Skip to Part 5.)

☐ There are multiple upland property owners. Complete the section below and fill out JARPA Attachment A for each additional property owner.

☐ Your project is on Department of Natural Resources (DNR)-managed aquatic lands. If you don't know, contact the DNR at (360) 902-1100 to determine aquatic land ownership. If yes, complete JARPA Attachment E to apply for the Aquatic Use Authorization.

4a. Name (Last, First, Middle)			
Attn: Kate Day, Hydropower Coordinator			
4b. Organization (If applicable)			
United States Department of Agriculture, US Forest Service			
4c. Mailing Address (Street or PO Box)			
765 South Main Street			
4d. City, State, Zip			
Colville, WA 99114			
4e. Phone (1)	**4f.** Phone (2)	**4g.** Fax	**4h.** E-mail
(509) 447-684-7230	Kate Day Karen Nooney (509) 684-7189)	( )	kday@fs.fed.us knooney@fs.fed.us

Part 5–Project Location(s)

Identifying information about the property or properties where the project will occur. [help]

☐ There are multiple project locations (e.g. linear projects). Complete the section below and use JARPA Attachment B for each additional project location.

5a. Indicate the type of ownership of the property. (Check all that apply.) [help]

☐ Private

☒ Federal – Sullivan Creek Project FERC Project No. 2225-015 Licensee: Pend Oreille County Public Utility District No. 1

☐ Publicly owned (state, county, city, special districts like schools, ports, etc.)

☐ Tribal

☐ Department of Natural Resources (DNR) – managed aquatic lands (Complete JARPA Attachment E)

5b. Street Address (Cannot be a PO Box. If there is no address, provide other location information in 5p.) [help]

Pend Oreille County Public Utility District No. 1

5c. City, State, Zip (If the project is not in a city or town, provide the name of the nearest city or town.) [help]

PO Box 190 Newport, WA 99156

5d. County [help]

Pend Oreille

5e. Provide the section, township, and range for the project location. [help]

¼ Section	Section	Township	Range
NE 1/4	25	39 North	43 East
NW 1/4	30	39 North	44 East

5f. Provide the latitude and longitude of the project location. [help]

- Example: 47.03922 N lat. / -122.89142 W long. (Use decimal degrees - NAD 83)

48.856852 N lat / -117.299969 W long

5g. List the tax parcel number(s) for the project location. [help]

- The local county assessor's office can provide this information.

No Parcel Numbers for land within the project area. The Mill Pond dam is within the FERC boundary. A portion of the project will occur on USDA-Forest Service Colville National Forest land.

5h. Contact information for all adjoining property owners. (If you need more space, use JARPA Attachment C.) [help]

Name	Mailing Address	Tax Parcel # (if known)
Carol J Merrill	Po Box 235 Metaline Falls, WA 99153-0235	443930139001 and 443930138002
David A Hubert	18703 E Miner Rd Mead, WA 99021-7705	443930100001
Mark A Stepper	21105 W Mallard Bay Ln Cheney, WA 99004-7925	443930100002
Brad W Larson and Don W Larson	242 Clark Creek Ln Metaline Falls, WA 99153-9721	443930519001 (jointly owned) and 443930409001 (Brad W. Larson, sole ownership)

See list of adjoining additional property owners in Attachment C

5i. List all wetlands on or adjacent to the project location. [help]

In a wetland survey performed by Touchstone EcoServices in 2011, twenty-eight jurisdictional wetlands, totaling 18.9 acres, were identified within the project vicinity. These include palustrine emergent, scrub-shrub, and forested wetlands, as well as lacustrine shoreline fringe wetlands. Wetland characteristics are fully discussed in the Touchstone EcoServices (2011) report, and all wetlands are labeled and mapped (see JARPA Sheets 2 through 11 for locations of existing wetlands). City Light will be re-surveying wetland J in early August 2016 and the results of that survey will be submitted as an appendix to this application in September of 2016. Wetland J (estimated at 11.87 acres in the Touchstone EcoServices Report), is located in the broad basin to the southeast of Mill Pond. Though the hydrology of this wetland may be influenced by surface water levels in the pond during the winter and spring runoff, examination of summer aerial photographs clearly indicate this is a riverine wetland. As such, it is likely that portions of the wetland will persist following dam removal as Sullivan Creek will continue to contribute to surface and probably subsurface flows into this wetland.

5j. List all waterbodies (other than wetlands) on or adjacent to the project location. [help]

Two primary waterbodies are within the project area: the free-flowing reaches of Sullivan Creek, located at the upstream and downstream ends of the project, and the Mill Pond. Sullivan Creek is a DNR Type F stream. Mill Pond, formed by impoundment of Sullivan Creek by the Mill Pond dam, is classified as a Shoreline of the State.

5k. Is any part of the project area within a 100-year floodplain? [help]

☒ Yes ☐ No ☐ Don't know

5l. Briefly describe the vegetation and habitat conditions on the property. [help]

The dominant vegetation community of the land surrounding Sullivan Creek is mapped as Northern Rocky Mountain Mesic Montane Mixed Conifer Forest (USGS, 2010). The riparian zone of the stream is generally intact, but is disturbed in some areas by roads. Based on a site reconnaissance conducted by Touchstone EcoServices (2011), upland habitat within the study area is comprised primarily of mature coniferous forest dominated by western red cedar. Other tree species in these forests include Douglas-fir, western hemlock, western larch, grand fir, paper birch, and mountain alder. The understory is relatively open and is populated by saplings of the above-named trees and includes shrubs such as snowberry, oceanspray, thimbleberry, and mountain maple. A small area of forest off the south bank of Sullivan Creek had recently been logged. While the same species found in the mature forest also occur in this area, the harvested forest is much younger with less tree cover.

Narrow benches along the Sullivan Creek stream banks situated upstream of Mill Pond support shrub and grassy areas. Shrub habitat is dominated by Sitka alder and red-twig dogwood, with less frequently occurring snowberry, peafruit rose, whitebark raspberry, thimbleberry, western serviceberry, Sitka willow, and Pacific willow and tree saplings. The grassy areas are dominated by reed canarygrass, but also include several aster species, Canada thistle, and bentgrass species. Several sedge species also occur in areas where the soil is saturated or inundated.

Deciduous forest is dominant on the sediment depositional areas where Sullivan Creek enters Mill Pond. Sitka alder, mountain alder, and black cottonwood comprise the tree layer, with several willow species in the understory. These depositional floodplains also include areas dominated by grasses and/or sedges and are braided with exposed gravel and cobble. Scattered forested, scrub-shrub, and emergent wetlands occur along the benches at the base of steep slopes along the Sullivan Creek and Mill Pond shorelines, and on the sediment depositional areas.

5m. Describe how the property is currently used. [help]

The Mill Pond dam is located within the Colville National Forest. The dam historically maintained the water surface elevation of Mill Pond at approximately 2,520 feet NAVD 88. In 1973, the gates were removed from the top of the dam, creating an open spillway and establishing the current elevation of approximately 2,512 feet NAVD 88. The current area of the impoundment is approximately 63 acres.

The Mill Pond and the surrounding uplands are used primarily for recreational activities including boating, fishing, hiking, and camping. Mill Pond dam does not currently perform hydroelectric functions or provide flood protection.

The Mill Pond Campground, managed by the USDA Forest Service, Colville National Forest (CNF), is located on the south end of Mill Pond. The campground is open seasonally (April to October).

Fishing for cutthroat trout, rainbow trout, kokanee, and other species occurs from small boats, the shoreline of the lake, and at upstream reaches of Sullivan Creek.

Boating on Mill Pond includes small boats with electric motors, kayaks, and canoes.

Hiking trails near the project area include the South Mill Pond Trail #550, a 0.7-mile trail that follows the south shore of Mill Pond to where Sullivan Creek enters the reservoir and the Pond Flume Trail (#520), a 0.6-mile interpretive loop trail that crosses the existing dam. I and E signs provide descriptions of historic structures.

5n. Describe how the adjacent properties are currently used. [help]

The majority of the property adjacent to the project area is owned and managed by the Forest Service- CNF. A number of private residences (see Attachment C) are located to the east of Mill Pond Campground along Sullivan Lake Road. A volunteer fire station is also located in this area.

5o. Describe the structures (above and below ground) on the property, including their purpose(s) and current condition. [help]

The primary structure at the project site is the concrete Mill Pond dam constructed in 1921. The dam is located at the north end of Mill Pond and impounds water from Sullivan Creek. The Mill Pond dam consists of a 134-fot-long, 55-foot high concrete dam 100 feet downstream of an inundated log crib dam; with an 850-foot-long, 10-foot-high earthen berm; and a 63-acre reservoir (Mill Pond). The dam site also has an 8-foot wide pedestrian bridge crossing just south of the dam structure.

The fully submerged log crib dam, constructed in 1909 by the Inland Portland Cement Company, is located just south of the larger concrete dam. The log crib dam is approximately 50 feet tall and 65 ft. across.

The CNF Mill Pond Campground provides 10 campsites that feature picnic tables, fire pits, tent pads, drinking water and garbage disposal stations, and vault toilets. Another vault toilet is located at the upper parking lot near the dam.

Several trails and I&E signage are also present within the project area (see 5m above).

5p. Provide driving directions from the closest highway to the project location, and attach a map. [help]

From the town of Metaline, Washington, drive north on Highway 31 (International Selkirk Loop). Continue north for approximately 3 miles, taking a sharp right and continuing on Highway 31 crossing the Pend Oreille River immediately before entering Metaline Falls, Washington. Continue on Highway 31 (also called Leheigh Avenue) through the town driving generally east and crossing Sullivan Creek. At 3.1 miles from start, take a slight right onto Old Sullivan Lake Road/Sullivan Lake Road. Continue on Sullivan Lake Road for another 3 miles. A turnoff to the Mill Pond dam is on the right (south). A gravel road (approximately 0.25 mile) leads to the parking lot for dam access.

Part 6–Project Description

6a. Briefly summarize the overall project. You can provide more detail in 6b. [help]
This is a habitat restoration project. The primary project purposes include the following: (1) restore natural riverine ecosystem structure and functions to Sullivan Creek in the Mill Pond reach; and (2) improve habitat availability, connectivity, and quality for native fish populations in the Sullivan Creek watershed. The project entails the demolition/removal of the concrete dam and the submerged log crib dam, channel and upland grading, channel restoration, sediment management, recreational improvements, upland restoration, monitoring and supplemental planting, and adaptive management.

Recreational and Interpretive/Educational Amenities

Approximately 1.7 miles of new trail would be created in the vicinity of the new Sullivan Creek channel that would result from dam removal. An extension of the trail on the south side of the reservoir (toward Sullivan Creek near the CNF campground) and the replacement of the pedestrian bridge over the creek would link the trail segments on the north and south sides of the reservoir. This would create a loop around the restored reservoir bed once completed.

New interpretive displays addressing the history, culture and ecology of the area would be installed near the current dam site, at the CNF Mill Pond Campground, and at vantage points along the new trails. A public shelter with picnic tables would be added at the former concrete dam site. Following project completion, the campground area used for staging for construction purposes would be restored and new bear proof boxes for camper food storage would be added.

Dam Removal Design Elements

The primary design elements and associated work scope, as described in detail in 6E, include the following:

- Mobilization and establishment of staging areas, site access, and site controls (late summer of 2017);
- Install the in-stream habitat measures (completed either during/concurrent dam removal in the spring of 2018 or prior to in the fall of 2017);
- Simultaneously removing the log crib and concrete dams using conventional demolition equipment (scheduled to coincide with the fall 2017 releases from Sullivan Dam upstream and the 2018 spring run-off event);
- Dam removal in fall 2017 is scheduled and controlled to optimize sediment (delta and pond sediments) transport and floodplain development via natural and enhanced stream flows;
- Promote the erosion and transport of the delta sediments through mechanical inducement (excavate and manage starter channels and possibly sediment jetting) as well as the installation of engineered log jams (ELJs);
- Erosion and transport of pond sediments (muck) will be promoted with the use of sediment jetting to maximize the amount of these sediments removed from the reservoir area (during and immediately following dam removal and reservoir drawdown);
- Grade the former reservoir area to design concept grades (summer and early fall of 2018);
- Conduct restoration of the pond area including installation of the ELJs, plantings, and seeding (summer and fall of 2018);
- Install the recreational facilities and trails, new pedestrian bridge over Sullivan Creek near campground, and the replacement bridge over Sullivan Creek at west end of project area (fall of 2018);
- Restore staging areas and access roads (fall of 2018); and
- Implement compliance and effectiveness monitoring using the results for adaptive management purposes, in consultation with the Fish and Aquatic Work Group (FAWG).

6b. Describe the purpose of the project and why you want or need to perform it. [help]

In March of 2013 The Federal Energy Regulatory Commission (FERC) ordered Public Utility District No.1 of Pend Oreille County (District) to Surrender the operating license for the Sullivan Creek Hydroelectric Project (FERC Project No. 2225) under certain conditions. One of those conditions is the removal of Mill Pond dam, located approximately 3 miles upstream from the mouth of Sullivan Creek and within the FERC boundary for the Sullivan Creek Project.

Through an Interlocal Agreement between Seattle City Light (Seattle) and the District, executed in March 2010, and as a condition of Settlement Agreements for both the Surrender of the Sullivan Creek License and the Relicensing of Boundary dam, Seattle agreed to remove Mill Pond dam and restore the Mill Pond/Sullivan Creek vicinity pursuant to the Mill Pond Decommissioning Plan. Seattle will perform this work as an agent of the District for the time period when the facilities and area are subject to the District's Sullivan Creek Project License. Upon FERC's determination that the work required by the Mill Pond Dam Decommissioning Plan has been completed, FERC will terminate its jurisdiction over the Mill Pond dam area under the Sullivan Creek Project license. Seattle's license for the Boundary Dam will then require Seattle to monitor, adaptively manage and maintain the Mill Pond dam site throughout the term of the Boundary Project License.

The Interlocal Agreement is included as part of the Boundary Hydroelectric Project Relicensing Settlement Agreement, and links the District's surrender of the Project License and Seattle's Mill Pond dam removal to the relicensing of Seattle's Boundary Hydroelectric Project (FERC Project No. 2144), to provide significant resource benefits through the removal of Mill Pond dam, sediment management, channel restoration, and monitoring activities at the restored stream channel site.

The primary project purposes include the following: (1) restore natural riverine ecosystem structure and functions to Sullivan Creek in the Mill Pond reach; and (2) improve habitat availability, connectivity, and quality for native fish populations in the Sullivan Creek watershed.

The dam removal and associated Sullivan Creek restoration work will provide the following benefits:

- Increase quantity and quality of habitat for native salmonids;
- Restore native vegetation in the former reservoir bed;
- Restore natural processes of downstream transport of coarse sediment and large woody debris (LWD) to the lower portions of Sullivan Creek; and
- Enhance salmonid habitat downstream of the dam through reduced summer water temperatures and increases in water velocity in the area of the former Mill Pond.

6c. Indicate the project category. (Check all that apply) [help]

☐ Commercial ☐ Residential ☒ Institutional ☐ Transportation ☒ Recreational
☐ Maintenance ☒ Environmental Enhancement

6d. Indicate the major elements of your project. (Check all that apply) [help]

☐ Aquaculture	☐ Culvert	☐ Float	☐ Retaining Wall (upland)
☐ Bank Stabilization	☒ Dam / Weir	☐ Floating Home	☐ Road
☐ Boat House	☐ Dike / Levee / Jetty	☐ Geotechnical Survey	☐ Scientific Measurement Device
☐ Boat Launch	☐ Ditch	☒ Land Clearing	☐ Stairs
☐ Boat Lift	☐ Dock / Pier	☐ Marina / Moorage	☐ Stormwater Facility
☐ Bridge	☒ Dredging	☐ Mining	☐ Swimming Pool
☐ Bulkhead	☐ Fence	☐ Outfall Structure	☐ Utility Line
☐ Buoy	☐ Ferry Terminal	☐ Piling/Dolphin	
☒ Channel Modification	☐ Fishway	☐ Raft	

☒ Other: I &E signage; bridge replacement and trail Improvements.

6e. Describe how you plan to construct each project element checked in 6d. Include specific construction methods and equipment to be used. [help]

- Identify where each element will occur in relation to the nearest waterbody.
- Indicate which activities are within the 100-year floodplain.

Fish Salvage

The Settlement Agreement requires fish salvage prior to construction. A Fish Salvage Plan is under development and will be finalized and approved in consultation with regulatory agencies in advance of dam removal activities.

Mobilization and Establishment of Staging Areas and Site Access

Beginning in late summer of 2017, mobilization will occur to support dam removal, upstream slope stabilization work, channel and floodplain restoration, and revegetation.

A primary staging area will be established at Highline Road, southeast of Mill Pond (see Sheets C-1 and C-3 of the 60% Design Plans), about 2,000 feet from Mill Pond. The staging area, occupying approximately 56,000 square feet, will be security fenced and contain office facilities, fuel storage and a fueling station, equipment and material laydown area, and marshalling area for construction crews, as well as a storage yard for the logs used for instream habitat and bank protection. With the exception of weeds, no vegetation is currently established on the Highline Road staging area site, which has been used as a staging area for CNF projects. Minimal grading will be required. Weed control will be performed prior to establishing the staging area.

A secondary staging location will be set up on the access road to the Mill Pond dam, about 240 feet from Mill Pond (see Sheets C-1 and C-3 of the 60% Design Plans). This will require about 7,000 square feet of clearing of upland vegetation in the upper parking lot. This smaller staging area (approximately 8,700 square feet) will contain a small job trailer and minimal parking facilities. As part of mobilization, project controls will be established including road signage, temporary facilities, barricades, fencing, and erosion and sediment control Best Management Practices (BMPs). After project completion, a covered shelter with four picnic table and a fireplace will be constructed along the edge of the parking area with about 8 parking spaces including handicap access.

The existing berm leading from the dam south to the historical site of the old mill will be graded to match the new pedestrian bridge to meet accessible trail standards.

Dam Removal

To prepare the system for sediment transport, the existing log crib dam will be removed concurrent with removal of the concrete dam. This will reduce obstructions to downstream sediment transport, and will provide working room for the removal of the pedestrian bridge girder and concrete dam. The log crib structure will be

systematically removed using both a shore-based crane equipped with a clamshell and a barge-mounted excavator. Removal will begin with mobilizing barges and associated support equipment. The barges are constructed using modular floats that fasten together to create a water-borne working platform and are secured with 18- to 20-inch diameter hollow piles (spuds) raised and lowered hydraulically from the barge. After assembling the excavator-barge, a landing will be constructed to safely load the excavator, and a 140-ton conventional lattice-boom crane and clamshell will be positioned on the work pad adjacent to the dam location (see Sheets D-1 and D-2 of the 60% Design Plans). Initially, the log crib dam removal will be conducted on the river-left portion of the dam, which will be notched to create a channel near the previous stream thalweg to promote sediment transport. Rock fill within the crib dam may be used to extend the work platform and construct a temporary road on the right bank of the reservoir, which will be reclaimed post-construction with a new native-soil based path as part of the new trail system. If structurally sound, log crib components will be salvaged for re-use during construction of the steam channel and floodplain habitat and slope stabilization structures. If the wood does not meet engineering requirements for the ELJs, then it will be used as habitat features scattered in the habitats adjacent to the stream or disposed of in an approved facility. The sequence and relationship of log crib and concrete dam removal are shown in Sheets D-3 and D-4 of the 60% Design Plans.

The concrete dam removal is scheduled to begin late September 2017 and overlap with removal of the log crib dam. The dam structure will be removed with an excavator-mounted hydraulic impact hammer. The excavator will begin working from a floating work barge on the upstream side of the dam, with concrete debris directed to fall into the forebay upstream of the dam (see Sheet D-1 of the 60% Design Plans). The debris will collect at the upstream base of the dam and will be removed and properly disposed of as the demolition progresses. After the dam removal has progressed to a stage where there is sufficient work area on the crest of the dam, the excavator will be removed from the barge and instead will be positioned to work directly on the dam crest.

Debris restraint netting will be installed prior to dam removal. Dam materials that do not fall into the forebay will be captured in this supported, debris containment net and cantilevered framing system securely attached to the downstream concrete face, which will move down the face of the dam as demolition progresses. The debris netting will be periodically brought to shore by the crane and emptied before being replaced in position and reused to capture more debris. All concrete dam debris will be removed from the site, hauled off-site by dump trucks, and disposed of at a county-approved upland facility. After installing the debris restraint system, the pedestrian bridge girder will be deconstructed and removed.

Complete dam removal will occur in stages that are coordinated with sediment management activities upstream. The dam removal rate and corresponding reservoir drawdown rate will be adjusted to maximize sediment transport, minimize potential risks associated with both downstream and upstream features, and accommodate the actual flow conditions encountered during this time period. Assuming typical fall flow conditions and releases from Sullivan Lake, the schedule assumes approximately 8 weeks for removal of both dams and corresponding sediment transport activities.

Deconstruction at the dam will result in the removal of approximately 2,500 cubic yards of concrete over an area of approximately 5,000 square feet, as well as the log crib dam, which has an approximate area of 7,500 square feet (the volume of the crib dam is unknown).

Sediment Transport and Management

Hydraulic and sediment transport analyses indicate that the fine alluvium stored in Mill Pond will move as wash load within the reservoir and continue downstream to the Pend Oreille River. However, other indicators show that entrenchment of a single-thread channel is likely without some active sediment management. Therefore, to restore an unconfined channel, sediment evacuation is supplemented by the following methods:

- ELJs will be strategically placed to encourage the lateral migration of flows to enhance sediment mobilization.
- Multiple starter channels will be excavated on the surface of the delta (see Sheet RS-1 of the 60%

Design Plans).

- Concurrent with the removal of the concrete dam, water jets will be used to wash sediment from the new floodplain alignment, small tributaries, and areas susceptible to long-term erosion into the flow path of the newly forming stream channel.

Sediment thickness varies from less than 5 feet around the fringe of the reservoir to over 15 feet deep in the delta area. The reservoir sediment is composed of delta deposits, of which 93% are sand or finer (8 mm), and pond-bottom deposits of which 97% are silt or finer (<0.25 mm) (Icicle Creek Engineers, Inc., 2011). The muck and fine sediment are transportable in the water column, while the coarser sand, gravel, and cobble would travel in the stream as bedload. The completed models and formula computations all predict that Sullivan Creek has the sediment capacity throughout the range of flows during dam removal to move reservoir sediments through the system.

Using a reference reach analysis, the modeled cross sectional area of the new channel and 100-year floodplain (see Sheets RS-5 to RS-8 of the 60% Design Plans) would occur with the mobilization and transport of approximately 362,000 cubic yards of delta and pond-bottom deposits. However, the mobilization of sediment, specifically the larger deltaic sediments, will depend on actual stream flows during the fall of 2017 and spring of 2018, following dam removal in fall 2017. For example, for a 50th percentile flow year (with a 25-day period of flows over 400 cfs), Sullivan Creek has the modeled capacity to move between 30,000 and 73,000 tons of deltaic sediment. However, if actual flows following dam removal are low (25th percentile flow with flows exceeding 300 cfs for about 20 days in the year), the stream would only have capacity to move between 7,000 and 19,000 tons of deltaic sediments. Even without maximum mobilization of deltaic sediments, modeling indicates sufficient capacity for the stream to move most or all of the pond muck out of the project area, with mobilization totals of at least 440,000 tons of pond muck in a 25th percentile flow scenario (see the *Sediment Assessment, Stabilization, and Management Plan* 2016 [Sediment Management Plan]). However, these numbers are based on the theoretical stream capacity, which in turn relies on a number of modeling assumptions. The project team's best estimate of the amount of total sediment (all grain sizes) mobilized using both passive (erosion) and active sediment management measures within the reservoir is approximately 385,000 to 435,000 tons.

The sediment jetting and grading efforts will focus on achieving the desired stream channel and 100-year floodplain. Based on hydraulic modeling, it is estimated that additional volumes of pond and delta sediment may be removed from the lower benches outside of the floodplain using a combination of mechanical grading and sediment jetting. Additional sediment removal efforts will continue through the peak flow season to maximize the removal of additional sediments outside of the final floodplain. Additional information on sediment mobilization, transport, and fate is provided in the attached Sediment Management Plan,

Sediment Fate

The sediment response and fate will vary substantially between various locations within, upstream, and downstream of the reservoir. Channel down-cutting of 3 to 5 feet is predicted through the lower end of the reservoir, and down-cutting of 5 to 12 feet is predicted through the upper end of the reservoir. Individual cross-sections of the model have mildly erratic oscillations, which are related to how HEC-6 computes flow velocity over broad, laterally flat sediments; these will be addressed in the model refinement as the design nears 100% in 2017.

Upstream of the Mill Pond delta, the channel bed is predicted to down cut 1 to 2 feet, with up to 1 foot of down-cutting at the Sullivan Lake Road bridge. Downstream of the dam, an evaluation of the stream power was performed, looking at the shear stress (lbs/sf) at 300 cfs to estimate the potential for aggradation. Areas with shear stress less than 2 lbs/sf, particularly at approximately RM 2.5 and RM 0.3, may tend toward aggradation at flows less than 300 cfs. Cross-sections at potentially aggrading reaches will be monitored as part of the project. Some sediments will be transported the entire length of Sullivan Creek and at the confluence with the Pend Oreille River is predicted to distribute into Boundary Reservoir; however, there is some uncertainty in the amount of aggradation based on actual Boundary Reservoir levels at the time of dam removal.

During the winter of 2017, the project will include monitoring of channel conditions at downstream sites on

Sullivan Creek, where the higher potential for stream aggradation could potentially threaten infrastructure (e.g., roads or utilities). If the results of the monitoring indicate a risk of infrastructure failure, the project will identify and implement measures for ameliorating the identified risk. Any such actions would occur in full consultation with the Corps and other regulatory agencies and would comply with all federal, state, and local permit conditions and approvals.

Downstream of Mill Pond, Sullivan Creek will experience high levels of sediment as the dam is lowered and the accumulated sediment is mobilized. Fine sediment will be carried into the Pend Oreille River. Coarser gravel and cobble will be deposited in the less steep regions of Sullivan Creek and re-transported and re-deposited as the stream returns to a more natural sediment transport regime.

Starter Channels

To facilitate sediment movement and development of a functional stream channel and floodplain, the project will excavate two starter channels on the surface of the delta. The starter channels will be approximately 40 feet wide and graded into the delta prior to dam removal (see Sheet RS-3 of the 60% Design Plans). Total excavation work will be limited in scope, simply clearing paths in the vegetation to provide a low-flow location on the delta through which flows will be routed and have access to underlying sediments. The slash generated will be stockpiled and re-used within the final in-stream log structures, or chipped for mulch during restoration. Material excavated to create the starter channels will be mechanically moved downstream into the lower delta where it will be stockpiled in specific locations across unvegetated portions of the delta, with placement intended to allow the stream to recruit that material into the channel as the reservoir is lowered and the starter channels entrench through deltaic sediments. In addition, approximately 5,000 cubic yards of the excavated material from the delta will be used as fill in the upstream slope stabilization structures along the right (north) bank.

Each channel will be allowed to cut down in approximately 2-foot increments before switching flow to the other channel. Adjacent banks will be cut down by water jetting as needed to supplement the stream-driven erosion of deltaic sediments to start forming a floodplain concurrent with channel formation.

To maximize deltaic sediment removal as the stream channels migrate downward through the delta channel, flow will be monitored and adjusted between the starter channels using an excavator. The excavator will be staged in the delta area during the reservoir drawdown and will install sediment-filled bulk bags to close alternating channels to route flows back and forth between them.

Starter ELJs

Starter ELJs (Layer 1 of the Type 1 ELJs) will be installed in the delta area prior to and during dam removal to provide hard points against which stream flows can work to scour sediment adjacent to the structure (see Sheet RS-11 of the 60% Design Plans). The Type 1 ELJ is also designed to be self-settling to accommodate changes in bed elevation as the delta re-grades. If peak flows are limited during the year of dam removal, the starter ELJs may also be installed via barge during reservoir drawdown on the forward-moving sediment wedge. Following sediment removal, the Type 1 ELJs will be stabilized with posts and additional wood added to create a stable structure (see Sheet RS-12 of the 60% Design Plans). The ELJs will also increase water elevations to enhance floodplain connectivity, introduce hydraulic and bed texture complexity, create pools, and provide hard points for floodplain forest development.

Based on the anticipated stream flows during the controlled lowering of the reservoir, deltaic sediment will be re-mobilized several times as material is moved from the delta into the lower portions of the pond and downstream of the dam. During this process, the channel will take different paths depending on where the delta reestablished itself. The project includes the use of wood placements such as self-settling logjams (Layer 1 of the Type 1 ELJ) and mechanical erosion using sediment jetting to ensure that the emerging channel is not located where it could create future erosion problems, such as destabilizing the hill slope below the hiking trail along the north side of the reservoir.

Sediment Jetting

Beginning in the fall of 2017/early spring of 2018, the equipment and personnel to initiate sediment removal and grading will be mobilized. Sediment jetting operations are anticipated to begin after the first 15 feet of the concrete dam is removed. This stage of dam removal will expose pond sediments in the uppermost portions

of the reservoir. The following equipment will be employed during the sediment jetting phase:

- One barge-mounted excavator equipped with a pressure jetting system mounted on the arm of the excavator. This configuration will enable the water jetting flows to be directed at the surface sediments as well as submerged sediments. This equipment will be used during reservoir lowering in the fall of 2017, when water levels allow for barge deployment.
- A second barge-mounted jetting system may be deployed if needed to access more difficult to reach areas.
- Two shore-based jetting systems. These systems will focus on areas where potential long-term erosion conditions could persist, such as in known tributaries and identified watershed areas. Sediment flows will be directed from the terraces and benches toward the stream channel. These systems are moved around the perimeter of the reservoir using lightweight, low ground pressure equipment. This equipment will be used when the reservoir is drawn down to a level that is too low for barges to function (starting during dam removal and again in the spring of 2018, if necessary).

Typical sediment jetting configurations are depicted in Sheet C-5 of the 60% Design Plans. Sediment jetting efforts will continue through each stage of dam removal and will generally work from upstream to downstream. Barge-based jetting efforts will continue as long as there is sufficient draft to safely operate our equipment. It is anticipated that land-based sediment jetting will continue through the spring 2018 as adaptive management techniques are employed to evaluate areas susceptible to ongoing sediment erosion.

The pump discharge nozzles will allow flows to be directed both above the water surface at exposed sediments, as well as under the water level to move the pond sediments into suspension and promote out-migration of the muck while the reservoir is lowered. As the reservoir lowers, the flows are directed up on the lower terraces to wash the muck from areas identified to have high erosion potential. Sediment jetting may also be used on the delta sediments to promote the creation of floodplain grading topography along the channel margins. Sediment jetting may be used along the lower delta to limit the creation of terraces by the sediment washing down-valley from the delta. Sediment jetting will cease once native or original soils are observed and when the apparent high erosion potential sediments have been removed.

Final Grading

Once the high spring flows recede (likely in June), the site will be surveyed to record post-dam removal topography. The level of mechanical intervention necessary to develop the 100-year floodplain will be determined by comparing the proposed design surface to the current topography. The survey will include identifying the channel thalweg elevations and widths, channel sinuosity, and the range of floodplain widths, elevations, and slopes. Mechanical intervention will likely include finalizing the grading of channels and floodplain area, placing the excavated material into the flowing stream for transport downstream. The input rate will vary depending on stream flows, and temporary stockpiles may be accumulated in July and August until stream flow increases with fall irrigation flows (from the upstream Sullivan Lake dam) and transport capacity increases sufficiently to keep the materials in suspension through the down-channel reach. Other grading will include rounding off break points at the edge of sediment down-cutting, cutting back slopes to ensure stability (with final slopes more gentle than the angle of repose), and creating an undulating topography on the upper delta by installing shallow angle pools and mounds using locally balanced cut and fill. Sheet RS-5 of the 60% Design Plans shows the final grading plan, although this may be adjusted somewhat based on actual site conditions after drawdown and spring runoff.

Restoration of Instream Complexity

The Type 1 and Type 2 ELJs are designed to remain stable and provide habitat complexity as the channel adjusts over time, and as sediment and large wood enter the upstream end of the site and pass downstream through the channel complex over time. Within the reservoir, the log structures will promote healthy channel conditions, using the energy of flood flows to scour pools and back up water levels to engage floodplain surfaces. The 74 Type 1 and Type 2 ELJs installed throughout the restoration site will suit the diverse range of conditions anticipated; the conceptual placement of the structures is shown on the drawings, with structures

spaced between 50 and 200 feet apart on average (see Sheet RS-11 of the 60% Design Plans). The structure designs and locations may be adjusted during the design development process to integrate Seattle's comments and accommodate the final construction considerations. The logs within the structures will emulate upstream reference reach conditions for LWD elevations, with some logs buried within the bed, others protruding into the channel and interacting with base flows, and some within the upper zone of the channel and providing overhead cover and low-velocity refuge during storm flows.

Type 1 ELJs

The Type 1 ELJs will generally serve as apex jams to split flow between the main channel and side channels, with the secondary intent of providing instream habitat diversity in the lower channel segment, which may have bedrock outcrops. The initial structure design consists of three rootwad logs connected to six stream boulders for sufficient ballast for stability (see Sheet RS-12 in the 60% Design Plans). Once the sediment is evacuated from the reservoir and the structures are moved to their final locations, additional wood will be added to the structures to increase their complexity and habitat value, and two posts will be installed to provide stability with a safety factor. This batter post design will allow the logs within the structure to adjust vertically to accommodate local scour or evacuation of remaining sediment. The posts are installed with a track hoe-mounted pile driver capable of installing at angles up to 45 degrees. If unyielding substrate is encountered, the piles will be excavated, placed, and backfilled. If large boulders or bedrock outcrops are encountered, a Type 1 ELJ is installed with sufficient ballast to achieve stability at the 25-year flow. Slash collected through the clearing process will be integrated into the ELJ structures.

Type 2 ELJs

The Type 2 ELJs will provide in-stream flow resistance and habitat diversity, as the flow resistance will increase channel sinuosity within the floodplain corridor and retain incoming small and large wood. The structures will be semi-porous, with high interstitial volume for in-water refuge and will be stable even if the stream banks or stream bed below the structure adjusts, as the logs within the structures can settle between the batter posts to accommodate changing bed or bank elevations. Sixty Type 2 ELJs will be constructed throughout the stream corridor (see Sheet RS-13 of the 60% Design Plans).

The Type 2 ELJ design is a post-stabilized structure with no mechanical anchors. Wood is held in place through weaving of the logs between three posts initially installed and pinned in place, with two posts installed in a batter-post arrangement to trap the wood from floating away. At each Type 2 ELJ site, the sediment is removed as necessary during final grading so that less than 4 feet of sediment remains at the initial driving of posts. Logs are excavated minimally into any remaining sediment to create the structure. Slash collected through the clearing process is integrated into the ELJs. The batter post design allows the logs within the structure to adjust vertically to accommodate local scour or evacuation of remaining sediment. The posts will be installed with a trackhoe-mounted pile driver capable of installing at angles up to 45 degrees. If unyielding substrate is encountered, the piles will be excavated, placed, and backfilled. If large boulders or bedrock outcrops are encountered, a Type 1 ELJ is installed with sufficient ballast to achieve stability at the 25-year flow.

Riparian, Wetland, Floodplain, and Upland Restoration

Restoration will include a strong foundation of vegetation that is suited to the physical-ecological conditions of the post-dam removal conditions. This initial installation will facilitate vegetation establishment and set the site on a trajectory to developing and maintaining vegetation communities.

During review of the existing data and discussions among team specialists, it quickly became apparent that, while we can plan for the landscape results of the dam removal, there is some uncertainty regarding the exact post-dam removal landforms that will follow initial channel adjustments. Flexibility and adaptive management are key elements of the planting strategy, and will allow re-vegetation to match the detailed topographic outcomes that cannot be fully predicted from model results. The vegetation restoration plan is based on relevant landscape position (i.e., active channel, riparian, floodplain, wetland, and upland), with a planting palette of native plants that will enhance the natural ecological functions and appropriate faunal components of each zone.

Plant Delivery

The vegetation restoration plan for the site includes plant collection and propagation conducted prior to project construction using local sources of cuttings and seed collections, live-stake collection, and plant salvage. Seed collection will commence in spring through fall of 2016 to allow for two seasons of seed collection, and propagation and cutting of willow and dogwood will occur during the winter of 2016–2017 to provide planting stock to be grown over the spring-summer for planting in fall of 2018.

Revegetation and Planting Plan
The planting plans are shown on Sheets RL-1 to RL-5 of the 60% Design Plans. The planting plan and planting palette were developed using future site topography as predicted by the sediment transport and elevation modeling analysis and anticipated sediment jetting, mechanical removal, and grading plan.

A total of 68 acres of vegetation is anticipated to be planted. Planting zones are based on landscape position and ecological function and include forest fringe, upland forest, floodplain forest, riparian, and wetland zones. Woody and herbaceous planting would begin in the fall to ensure plant establishment. All seeds and plant stock will be collected locally as approved by the Forest Service-CNF. Seed and plant stock would be inoculated with mycorrhiza to aid in establishing root growth. The installation of pioneer species focuses primarily on live-stakes of dogwood, willow, and container or bare-root plantings of Sitka alder. This phase will include preliminary upland plantings with primarily shrubs and early successional trees. The preliminary planting plan uses a flexible design model that, pending a detailed evaluation of post-dam removal site conditions, will be used to develop a final planting plan. A complete discussion of proposed revegetation planning, including details on design and ecological roles of each zone, is provided in the *Mill Pond Dam Removal Project – Vegetation and Aquatic Restoration and Monitoring Plan* (ESA, 2016) attached.

A weed control plan is being developed. This includes initial weed suppression prior to and immediately following dam removal, woody planting with species to match site conditions, integration of grass/forb seeding with our woody planting in the fall, and a weed management plan that focuses on early detection and eradication. Seattle is working with FERC to develop a long-term monitoring and weed control plan for the length of the new license term.

Upstream Habitat Improvements

Upstream of the delta, six Type 5 and four Type 4 ELJ structures (Sheets RS-20 and RS-21 in the 60% Design Plans) will be installed to provide additional fish habitat within the project area. Sheets RS-18 and RS-19 in the 60% Design Plans show the location of these structures. In-water work will be required, and these structure components will be placed using helicopters and field-fitted into final position. All woody material will be pre-staged at the Highline Road staging area and the work carefully coordinated to minimize flight time and disturbance of wildlife, including all timing restrictions for Endangered Species Act terrestrial animals as presented in the project's Biological Opinion and any updated regulatory guidance. Helicopter fly time will occur over approximately 2 days.

Recreation Improvements and Interpretive/Educational (I&E) Amenities

The Mill Pond Dam Project will incorporate recreational trails and I&E signage focusing on the history of Mill Pond (see JARPA Sheet 12). Specifically, the project will rework the access to the historic mill site, which is currently accessed by the berm adjacent to the dam. The existing 5-foot wide pedestrian bridge will be demolished and removed prior to dam removal and will be properly disposed of at a county approved upland facility. Once dam removal is complete, a new 130-foot long, 8-foot-wide Americans with Disability Act (ADA) compliant bridge span structure will be installed in the same location as the old bridge. The bridge will include protective handrails with treated timber decking as the travel surface bolted to the main steel members. The bridge will be transported to the job site in multiple segments to allow for economical transport and safe offloading. The bridge will employ bolted connections at the joint seams. The bridge will be supported by using a portion of the dam abutments and by forming and pouring cast-in- place, reinforced concrete abutment extensions at each end to accommodate the additional bridge width. The bridge will be placed on the abutments by a crane.

A new trail bridge will also be constructed at the east end of the Mill Pond Campground (see Sheet RL-6 of the 60% Design Plans), in the same approximate location where a temporary crossing will be constructed to

access the upstream slope stabilization sites (a separate project for which a separate JARPA has been submitted). The new pedestrian bridge will be constructed in fall 2018. The bridge will have a span of 160 feet and be 5 feet in width. Of the 800 square feet of total bridge area, approximately 500 square feet will be overwater. Two bridge abutments will be installed, which will be cast-in-place concrete. Both bridge abutments will be located outside the ordinary high water mark (OHWM) of Sullivan Creek; however, the north abutment may be located within the newly re-established 100-year floodplain. The bridge deck will be located above the elevation of the 100-year flood event.

In addition, a new trail will be constructed along the south side of Mill Pond tying into the new campground pedestrian bridge and creating a continuous loop around Mill Pond (see Sheets RL-6 to RL-11 of the 60% Design Plans). A new trail segment is also anticipated within the restored landscape, providing a lower trail on the north side from the dam site to the campground. A covered viewing station at the Mill Pond Campground will be constructed, as will new and improved I & E signage. Bear boxes to protect food storage will also be added to the Mill Pond Campground.

Construction Equipment

The project will utilize a variety of commonly used heavy construction equipment including cranes, excavators, bull dozers, and trucks. A complete list of construction equipment, listed by major project activity, follows:

Dam Removal

(1) - Crane with clamshell –	Grove HL150T or Link-belt HC 238
(1) - All-Terrain Forklift –	CAT TH460B
(1) - Excavator –	Komatsu PC390 with hammer
(1) - Loader –	Komatsu WA 500
(2) - Articulated Truck –	Komatsu HM300
(1) – Dozer -	CAT D6K LGP

Sediment Jetting

(1) – Excavator -	CAT 312
(2) – 6" Trash Pump	Godwin HL135M or HL150M
(2) – 8" Trash Pump	Godwin HL200M
(1) – Excavator	Komatsu PC78

Restoration - Structures

(1) - Excavator -	Komatsu PC390
(1) - Excavator -	Komatsu PC300
(2) - Articulated Truck -	Komatsu HM300
(2) - Side Dump Tractor/Trailer	Various
(1) – Excavator	Komatsu PC200
(1) – Excavator	CAT 325
(1) – Hydraulic Hammer/Driver	MKT V-5

Restoration Grading

(2) – Dozer	CAT D6K LGP
(1) – Excavator	Komatsu PC200
(1) – Excavator	CAT 325
(2) – Track Truck	Komatsu CD110

6f. What are the anticipated start and end dates for project construction? (Month/Year) [help]

- If the project will be constructed in phases or stages, use JARPA Attachment D to list the start and end dates of each phase or stage.

Start date: August 2017 End date: December 2019 ☐ See JARPA Attachment D

6g. Fair market value of the project, including materials, labor, machine rentals, etc. [help]

$15,000,000.00

6h. Will any portion of the project receive federal funding? [help]

- **If yes**, list each agency providing funds.

☐ Yes ☒ No ☐ Don't know

Part 7–Wetlands: Impacts and Mitigation

☒ Check here if there are wetlands or wetland buffers on or adjacent to the project area. (If there are none, skip to Part 8.) [help]

7a. Describe how the project has been designed to avoid and minimize adverse impacts to wetlands. [help]

☐ Not applicable

The nature of the project requires unavoidable effects to project area wetlands, as the man-made reservoir is drained and restored to a natural riverine environment that is self-sustaining and provides an overall higher level of ecological processes and functions. A complete discussion of project impacts, including specific alterations of ecological function, is provided in the *Mill Pond Dam Removal Project – Vegetation and Aquatic Restoration and Monitoring Plan*. See JARPA Sheets 2 through 17 for a comparison of pre-project and post-project wetland conditions, including those wetlands that will persist under future conditions.

Although wetland effects cannot be avoided, the project will implement BMPs during construction to prevent erosion and sedimentation, and minimize other indirect or incidental wetland impacts in areas not affected by reservoir drawdown (e.g., access roads or staging areas). BMPs are included in Section 8 below.

7b. Will the project impact wetlands? [help]

☒ Yes ☐ No ☐ Don't know

7c. Will the project impact wetland buffers? [help]

☒ Yes ☐ No ☐ Don't know

7d. Has a wetland delineation report been prepared? [help]

- **If Yes**, submit the report, including data sheets, with the JARPA package.

☒ Yes ☐ No

See the attached wetland delineation report (Touchstone EcoServices, 2011).

7e. Have the wetlands been rated using the Western Washington or Eastern Washington Wetland Rating System? [help]

- **If Yes**, submit the wetland rating forms and figures with the JARPA package.

☐ Yes ☒ No ☐ Don't know

This is a restoration project that will remove a dam and its artificial reservoir, restoring the ecological functions of the stream, riparian habitat, corresponding floodplain, and adjacent upland habitat. The overall change in ecological functions is described in the *Mill Pond Dam Removal Project – Vegetation and Aquatic Restoration and Monitoring Plan.*

7f. Have you prepared a mitigation plan to compensate for any adverse impacts to wetlands? [help]

- **If Yes**, submit the plan with the JARPA package and answer 7g.

- **If No, or Not applicable**, explain below why a mitigation plan should not be required.

☐ Yes ☐ No ☒ Not applicable

As the overall project is a restoration project to restore aquatic functions, no compensatory mitigation is proposed to offset the loss of wetlands resulting from dam removal activities. A complete discussion of the overall ecological benefits to ecological functions, including analysis of specific project-induced changes to individual functions is provided as part of a project no-net loss evaluation is provided in the *Mill Pond Dam Removal Project – Vegetation and Aquatic Restoration and Monitoring Plan.*

7g. Summarize what the mitigation plan is meant to accomplish, and describe how a watershed approach was used to design the plan. [help]

The project does not require a mitigation plan; however the *Mill Pond Dam Removal Project – Vegetation and Aquatic Restoration and Monitoring Plan* documents a watershed approach as applied to the restoration project. The plan documents the specific restoration actions and benefits of the dam, including restoration and sediment and LWD transport; restoration of floodplain and riparian habitat (including 68 acres of planting); and reestablishment of riverine functions toward a natural, pre-dam condition. A watershed approach was implicitly incorporated as the project will directly benefit the ecosystem within and downstream of the project site, within the larger Sullivan Creek watershed.

7h. Use the table below to list the type and rating of each wetland impacted, the extent and duration of the impact, and the type and amount of mitigation proposed. Or if you are submitting a mitigation plan with a similar table, you can state (below) where we can find this information in the plan. [help]

Activity (fill, drain, excavate, flood, etc.)	Wetland Name[1]	Wetland type and rating category[2]	Impact area (sq. ft. or Acres)	Duration of impact[3]	Proposed mitigation type[4]	Wetland mitigation area (sq. ft. or acres)
Drain	Multiple (Wetlands H; J; M through R; T through X; Z; LS; and fringe wetlands)	Multiple (PEM, PSS, PFO, PAB, PUB, L2AB, L2UB)	17.6 acres *	Permanent	Restore natural stream course and watershed functions	No direct mitigation - restore natural stream course and watershed functions

* This estimate represents a worst case scenario. It assumes the complete loss of Wetland J (11.87 acres), which is located in the broad basin to the southeast of Mill Pond. Although the hydrology of this wetland may be influenced by surface water levels in the pond during the winter and spring runoff, examination of summer aerial photographs clearly indicates that this is a riverine wetland. As such, it is likely that portions of the wetland will persist following dam removal as Sullivan Creek will continue to contribute to surface and probably subsurface flows into this wetland. In addition, the wetland receives seasonal inputs from discharge springs along the toeslope of the southwest boundary. During summer months, the wetland appears to receive hydrologic inputs from numerous active seepages along the southeastern boundaries (TES, 16). Additional wetland habitat will likely form in the floodplain and adjacent to the new channel, but it is not possible to quantify this new landscape in advance. The extent to which wetlands are lost will be evaluated based on monitoring over a period of 15 years following dam removal.

City Light will be re-surveying wetland J in early August 2016 and the results of that survey will be submitted as an appendix to this application in September of 2016.

See Attachment 1 and Touchstone EcoServices (2011) for details on the habitat type(s) and water regime(s) of individual delineated wetlands, and the *Mill Pond Dam Removal Project – Vegetation and Aquatic Restoration and Monitoring Plan* for details on restoration and a watershed function analysis.

[1] If no official name for the wetland exists, create a unique name (such as "Wetland 1"). The name should be consistent with other project documents, such as a wetland delineation report.
[2] Ecology wetland category based on current Western Washington or Eastern Washington Wetland Rating System. Provide the wetland rating forms with the JARPA package.
[3] Indicate the days, months or years the wetland will be measurably impacted by the activity. Enter "permanent" if applicable.

[4] Creation (C), Re-establishment/Rehabilitation (R), Enhancement (E), Preservation (P), Mitigation Bank/In-lieu fee (B)

7i. For all filling activities identified in 7h, describe the source and nature of the fill material, the amount in cubic yards that will be used, and how and where it will be placed into the wetland. [help]

Not applicable as impacts to wetlands from the project are associated with changes in hydrology, not placement of fill.

7j. For all excavating activities identified in 7h, describe the excavation method, type and amount of material in cubic yards you will remove, and where the material will be disposed. [help]

Not applicable as impacts to wetlands from the project are associated with changes in hydrology, not excavation.

Part 8–Waterbodies (other than wetlands): Impacts and Mitigation

In Part 8, "waterbodies" refers to non-wetland waterbodies. (See Part 7 for information related to wetlands.) [help]

☒ Check here if there are waterbodies on or adjacent to the project area. (If there are none, skip to Part 9.)

8a. Describe how the project is designed to avoid and minimize adverse impacts to the aquatic environment. [help]

☐ Not applicable

Due to the nature of the proposed project (dam removal), the majority of the negative effects due to sediment mobilization and downstream transport cannot be avoided or minimized. However, the project will include monitoring for unstable slopes and head-cuts, with monitoring both downstream channel conditions, as well as downstream turbidity (see the *Sediment Management Plan).*

Although wetland impacts cannot be avoided, the project will include the implementation of BMPs during construction to prevent erosion and sedimentation, and minimize other indirect or incidental impacts in aquatic areas. BMPs from the U.S. Fish and Wildlife Service Biological Opinion (2012) for the Sullivan – Boundary Projects are listed in Attachment 7. These will be implemented, as applicable, in accordance with the final design parameters, the scope of the construction plans, and other regulatory requirements and approvals.

8b. Will your project impact a waterbody or the area around a waterbody? [help]

☒ Yes ☐ No

8c. Have you prepared a mitigation plan to compensate for the project's adverse impacts to non-wetland waterbodies? [help]

- **If Yes**, submit the plan with the JARPA package and answer 8d.
- **If No, or Not applicable,** explain below why a mitigation plan should not be required.

☐ Yes ☐ No ☒ Not applicable

As the overall project is a restoration project to restore aquatic functions, no compensatory mitigation is proposed to offset the loss of wetlands resulting from dam removal activities. A complete discussion of the overall ecological benefits to ecological functions, including an analysis of specific project-induced changes to individual functions is provided in the *Mill Pond Dam Removal Project – Aquatic and Vegetation Restoration and Monitoring Plan.*

8d. Summarize what the mitigation plan is meant to accomplish. Describe how a watershed approach was used to design the plan.

- If you already completed 7g you do not need to restate your answer here. [help]

The project does not require a mitigation plan; however the *Mill Pond Dam Removal Project – Vegetation and Aquatic Restoration and Monitoring Plan* documents a watershed approach as applied to the restoration project. The plan documents the specific restoration actions and benefits of the dam, including restoration and sediment and LWD transport, restoration of floodplain and riparian habitat (including 68 acres of planting), and reestablishment of riverine functions toward a natural, pre-dam condition. A watershed approach was implicitly incorporated as the project will directly benefit the ecosystem within and downstream of the project site, within

the larger Sullivan Creek watershed.

8e. Summarize impact(s) to each waterbody in the table below. [help]

Activity (clear, dredge, fill, pile drive, etc.)	Waterbody name[1]	Impact location[2]	Duration of impact[3]	Amount of material (cubic yards) to be placed in or removed from waterbody	Area (sq. ft. or linear ft.) of waterbody directly affected
Drain	Mill Pond	Entire reservoir	Permanent	N/A	63 acres
Sediment mobilization from natural and mechanical means (e.g., jetting)	Sullivan Creek	Sullivan Creek in current reservoir bed and downstream of dam.	Temporary	Estimated sediment mobilized from natural & active sediment removal and transported down-stream between 450,000 and 800,000 CY	About 5 miles of stream length
Fine sediment transport/deposition	Pend Oreille River	At confluence with Sullivan Creek	Temporary	The majority of fine sediments will be transported downstream through Sullivan Creek and are expected to be transported into the Pend Oreille River (Boundary Reservoir)	The square foot area of the Pend Oreille River that may be temporarily affected by fine sediment is unknown.

[1] If no official name for the waterbody exists, create a unique name (such as "Stream 1") The name should be consistent with other documents provided.
[2] Indicate whether the impact will occur in or adjacent to the waterbody. If adjacent, provide the distance between the impact and the waterbody and indicate whether the impact will occur within the 100-year flood plain.
[3] Indicate the days, months or years the waterbody will be measurably impacted by the work. Enter "permanent" if applicable.

8f. For all activities identified in 8e, describe the source and nature of the fill material, amount (in cubic yards) you will use, and how and where it will be placed into the waterbody. [help]

No fill material will be placed within the OHWM of Sullivan Creek as part of the project. Dredging is limited to natural and man-made scour that will occur during and following dam removal.

8g. For all excavating or dredging activities identified in 8e, describe the method for excavating or dredging, type and amount of material you will remove, and where the material will be disposed. [help]

Sediment mobilization will occur by both natural means (scour) as well as mechanical means (sediment jetting, heavy equipment, etc.). However, all sediment will be moved on-site (either mobilized in the water column or graded on-site). No off-site disposal of sediment will occur.

Part 9–Additional Information

Any additional information you can provide helps the reviewer(s) understand your project. Complete as much of this section as you can. It is ok if you cannot answer a question.

9a. If you have already worked with any government agencies on this project, list them below. [help]

Agency Name	Contact Name	Phone	Most Recent Date of Contact
U.S. Army Corps of Engineers	Dale J. Jordan	(206) 316-3967	July 20, 2016
Washington State Department of Ecology	Jacob McCann	(509) 329-3584	July 20, 2016
Washington State Department of Fish and Wildlife	Jeff Lawlor	(509) 892-1001 ext. 321	July 21, 2016
USDA Forest Service – Colville National Forest	Kate Day	(509) 684-7230	July 21, 2016
U.S. Fish and Wildlife Service	Erin Britton-Kuttel	(509) 893-8029	July 20, 2016
Pend Oreille County	Andy Huddleston	(509) 447-6462	July 20, 2016

9b. Are any of the wetlands or waterbodies identified in Part 7 or Part 8 of this JARPA on the Washington Department of Ecology's 303(d) List? [help]

- **If Yes,** list the parameter(s) below.
- If you don't know, use Washington Department of Ecology's Water Quality Assessment tools at: http://www.ecy.wa.gov/programs/wq/303d/.

☒ Yes ☐ No

Portions of the project area, including the majority of Mill Pond (approximately 2,300 linear feet of the upper reservoir) and a 1.3-mile reach of Sullivan Creek upstream of Mill Pond, are 303(d) listed for Category 5 exceedances of dissolved oxygen.

The reach of the Pend Oreille River immediately upstream and downstream of the mouth of Sullivan Creek is 303(d) listed for Category 5 exceedances of temperature, pH, and tissue PCBs. Although not located within the project area, this reach will likely experience sediment transport or deposition from accumulated sediments behind the Mill Pond dam released during dam removal.

9c. What U.S. Geological Survey Hydrological Unit Code (HUC) is the project in? [help]

- Go to http://cfpub.epa.gov/surf/locate/index.cfm to help identify the HUC.

The project is located in USGS HUC 8th Field 17010216

9d. What Water Resource Inventory Area Number (WRIA #) is the project in? [help]

- Go to http://www.ecy.wa.gov/services/gis/maps/wria/wria.htm to find the WRIA #.

The project is located in WRIA 62 – Pend Oreille Watershed

9e. Will the in-water construction work comply with the State of Washington water quality standards for turbidity? [help]

- Go to http://www.ecy.wa.gov/programs/wq/swqs/criteria.html for the standards.

☐ Yes ☐ No ☒ Not applicable

The Washington State Department of Ecology is in the process of developing a waiver of water quality standards for the dam removal project, similar to what was used for other recent dam removal projects in the Pacific Northwest.

9f. If the project is within the jurisdiction of the Shoreline Management Act, what is the local shoreline environment designation? [help]

- If you don't know, contact the local planning department.
- For more information, go to: http://www.ecy.wa.gov/programs/sea/sma/laws_rules/173-26/211_designations.html.

☐ Rural ☐ Urban ☒ Natural ☐ Aquatic ☐ Conservancy ☐ Other _____

9g. What is the Washington Department of Natural Resources Water Type? [help]

- Go to http://www.dnr.wa.gov/forest-practices-water-typing for the Forest Practices Water Typing System.

☒ Shoreline ☒ Fish ☐ Non-Fish Perennial ☐ Non-Fish Seasonal

Mill Pond is typed by WDNR as a Type S (shoreline). Sullivan Creek (within, upstream, and downstream of the project) is typed as a Type F (fish).

9h. Will this project be designed to meet the Washington Department of Ecology's most current stormwater manual? [help]

- **If No**, provide the name of the manual your project is designed to meet.

☒ Yes ☐ No

9i. Does the project site have known contaminated sediment? [help]

- **If Yes**, please describe below.

☐ Yes ☒ No

9j. If you know what the property was used for in the past, describe below. [help]

During the pre-contact era the site was used for hunting, fishing, and ceremonial purposes by the native peoples. In 1909, the Inland Portland Cement Company began construction of the Sullivan Creek Hydroelectric Project, beginning with the construction of Sullivan Lake dam and the subsequent construction of Mill Pond dam on Sullivan Creek (a log crib dam prior to the construction of the concrete dam). The original Sullivan Creek Hydroelectric Project was developed to generate electricity for concrete production and supplied electricity to the town of Metaline Falls. After building Mill Pond dam, the concrete company constructed a sawmill at the west end of the Mill Pond to provide lumber for the construction of the concrete plant and a 6'x9' wooden flume. The 2.5-mile flume channeled the water from the Mill Pond dam down to a reservoir, and from there the water dropped 450 feet through a 3-foot diameter pipe to a generating plant on Sullivan Creek that was located just upstream from the confluence with the Pend Oreille River. In 1956, the powerhouse was shut down because of maintenance problems with the wooden flume that conveyed water from Mill Pond to the powerhouse. At that time, it was decided to terminate operations because cheaper electricity was available from Bonneville Power Administration (BPA).

9k. Has a cultural resource (archaeological) survey been performed on the project area? [help]

- **If Yes**, attach it to your JARPA package.

☒ Yes ☐ No

The District, as the lead for cultural resource compliance for the Mill Pond Dam Removal and Restoration Project, recently completed field surveys in the project area to supplement the information that was in the combined Boundary Project relicensing and the Sullivan Project decommissioning FEIS (FERC, 2011). Recreational improvements, construction elements in the revised dam removal methods, and the overall restoration plan required investigation of a limited number of additional sites. These surveys were completed in the spring of 2016, and no cultural resources were observed. The District is now in the process of completing a supplemental Cultural Resources Report for the project in coordination with the Washington State Department of Archaeology and Historic Preservation (DAHP).

9l. Name each species listed under the federal Endangered Species Act that occurs in the vicinity of the project area or might be affected by the proposed work. [help]

Four federally listed ESA species, all under the jurisdiction of the U.S. Fish and Wildlife Service (FWS), potentially occur within the project area. These include bull trout (*Salvelinus confluentus*), listed as threatened; Canada lynx (*Lynx canadensis*) and grizzly bear (*Ursus arctos*), both listed as threatened; and woodland caribou (*Rangifer tarandus caribou*), listed as endangered.

A Biological Assessment (BA) was prepared for the surrender of the Sullivan Creek Project in 2010 (Seattle and the District, 2011). Based in part on this BA, a Biological Opinion (BiOp) was developed by the U.S. Department of Interior (FWS, 2012), through the FWS. The BiOp addresses the effects of numerous activities associated with the surrender of the Sullivan Creek Project, including the removal of Mill Pond dam. Because the construction methods for the removal of Mill Pond dam have changed, the District requested reinitiation of Section 7 consultation. A Supplemental Biological Assessment (SBA) was developed by Seattle and the District (2016) to identify and evaluate any changes in effects to ESA listed species due to the revised construction methods. The primary difference in the construction is the mobilization of sediment downstream to restore the natural sediment transport regime. This will have some additional effects to bull trout but it is anticipated that the additional effects would not change the overall conclusions of the BA.

Bull trout in downstream reaches of Sullivan Creek will be temporarily affected by a large input of sediment following dam removal. Currently, there are no local populations and no known spawning occurs. The number of bull trout within the Boundary Reservoir is low. Twenty bull trout have been caught, observed, or sampled in the Boundary Reservoir since the early 1980s: 3 within the reservoir, 15 within Sullivan, Slate and Sweet Creeks or their delta regions, and 2 in the Box Canyon tailrace. (BiOp 124-125, 211) Bull trout are only known to utilize the lower reaches of Sullivan Creek near the confluence with the Pend Oreille River. In the long term, bull trout will benefit from a natural sediment and LWD transport regime, which is anticipated to increase the quantity and quality of habitat in lower Sullivan Creek.

Activities associated with dam removal, including potential helicopter placement of wood in upper Sullivan Creek, would be of short duration and spatially limited to the flight corridor. A temporary increase in noise and human presence due to dam removal was determined in the FWS BiOp to be insignificant to the Canada lynx, grizzly bear, and woodland caribou. The FWS concluded that dam removal "may affect, but is not likely to affect" the Canada lynx, grizzly bear, and woodland caribou (BiOp 5-9). It is not anticipated that this determination would change due to the revised methodology for removal of Mill Pond dam.

The FWS will issue a revised BiOp for the project based on the SBA provided by the District.

9m. Name each species or habitat on the Washington Department of Fish and Wildlife's Priority Habitats and Species List that might be affected by the proposed work. [help]

The Washington Department of Fish and Wildlife's Priority Habitats and Species database (WDFW, 2016) indicates that PHS wildlife species and habitats within the project area include breeding areas for the common loon (*Gavia immer*), regular concentration areas for elk (*Cervus elaphus*), grizzly bear occurrence, and communal roosts for Townsend's big-eared bat (*Coryorhinus townsendii*) and big-eared bat (*Eptesicus fuscus*). PHS aquatic species include rainbow trout (*Oncorhynchus mykiss*), westslope cutthroat trout (*O. clarkii lewisi*), and kokanee (*O. nerka*). Other PHS habitats include lake, riverine, and freshwater forested/shrub wetland habitats. Downstream of the project site, bull trout in Sullivan Creek are on the PHS list.

Aquatic species in Mill Pond and downstream may be temporarily negatively affected by a large input of sediment following dam removal or entrainment downstream. However, long-term habitat would be improved for these species, both within and downstream of the project site. Terrestrial species will benefit from the restored riparian, floodplain, and upland habitats adjacent to the restored creek.

Temporary increases in noise and human presence due to dam removal may temporarily disturb any PHS wildlife species that may be present, although long-term habitat for these species will be improved due to the restoration of the system to an ecologically self-sustaining riverine system with functioning floodplain and riparian habitats. Overall ecological function of the area will be improved due to the riverine restoration at the project site.

Part 10–SEPA Compliance and Permits

Use the resources and checklist below to identify the permits you are applying for.

- Online Project Questionnaire at http://apps.oria.wa.gov/opas/.
- Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or help@oria.wa.gov.
- For a list of addresses to send your JARPA to, click on agency addresses for completed JARPA.

10a. Compliance with the State Environmental Policy Act (SEPA). (Check all that apply.) [help]

- For more information about SEPA, go to www.ecy.wa.gov/programs/sea/sepa/e-review.html.

☐ A copy of the SEPA determination or letter of exemption is included with this application.

☒ A SEPA determination is pending with Seattle City Light (lead agency). The expected decision date is Winter 2016.

☐ I am applying for a Fish Habitat Enhancement Exemption. (Check the box below in 10b.) [help]

☐ This project is exempt (choose type of exemption below).

☐ Categorical Exemption. Under what section of the SEPA administrative code (WAC) is it exempt? _____

☐ Other: _____

☐ SEPA is pre-empted by federal law.

10b. Indicate the permits you are applying for. (Check all that apply.) [help]

LOCAL GOVERNMENT

Local Government Shoreline permits:

☐ Substantial Development ☒ Conditional Use ☐ Variance

☐ Shoreline Exemption Type (explain): _____

Other City/County permits:

☐ Floodplain Development Permit ☒ Critical Areas Ordinance

STATE GOVERNMENT

Washington Department of Fish and Wildlife:

☒ Hydraulic Project Approval (HPA) ☐ Fish Habitat Enhancement Exemption – Attach Exemption Form

You must submit a check for $150 to Washington Department of Fish and Wildlife, unless your project qualifies for an exemption or alternative payment method below. **Do not send cash.**

Check the appropriate boxes:

☐ $150 check enclosed. Check # A check for $150.00 will be mailed under separate cover.
Attach check made payable to Washington Department of Fish and Wildlife.

☐ My project is exempt from the application fee. (Check appropriate exemption) _____

- ☐ HPA processing is conducted by applicant-funded WDFW staff.
  Agreement # _____
- ☐ Mineral prospecting and mining.
- ☐ Project occurs on farm and agricultural land.
  (Attach a copy of current land use classification recorded with the county auditor, or other proof of current land use.)
- ☐ Project is a modification of an existing HPA originally applied for, prior to July 10, 2012.
  HPA # _____

Washington Department of Natural Resources:

☐ Aquatic Use Authorization

Complete JARPA Attachment E and submit a check for $25 payable to the Washington Department of Natural Resources. **Do not send cash.**

Washington Department of Ecology:

☒ Section 401 Water Quality Certification

FEDERAL GOVERNMENT

United States Department of the Army permits (U.S. Army Corps of Engineers):

☒ Section 404 (discharges into waters of the U.S.) ☐ Section 10 (work in navigable waters)

United States Coast Guard permits:

☐ Private Aids to Navigation (for non-bridge projects)

Part 11–Authorizing Signatures

Signatures are required before submitting the JARPA package. The JARPA package includes the JARPA form, project plans, photos, etc. [help]

11a. Applicant Signature (required) [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities, and I agree to start work only after I have received all necessary permits.

I hereby authorize the agent named in Part 3 of this application to act on my behalf in matters related to this application. MC (initial)

By initialing here, I state that I have the authority to grant access to the property. I also give my consent to the permitting agencies entering the property where the project is located to inspect the project site or any work related to the project. _____ (initial)

MARK CANCLY	Mark Cancly	7/25/16
Applicant Printed Name	Applicant Signature	Date

11b. Authorized Agent Signature [help]

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities and I agree to start work only after all necessary permits have been issued.

John Armstrong	John Armstrong	07/21/16
Authorized Agent Printed Name	Authorized Agent Signature	Date

John Armstrong
Manager, Boundary Relicensing Division
Seattle City Light

11c. Property Owner Signature (if not applicant) [help]

Not required if project is on existing rights-of-way or easements.

I consent to the permitting agencies entering the property where the project is located to inspect the project site or any work. These inspections shall occur at reasonable times and, if practical, with prior notice to the landowner.

Property Owner Printed Name	Property Owner Signature	Date

18 U.S.C §1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than 5 years or both.

If you require this document in another format, contact the Governor's Office for Regulatory Innovation and Assistance (ORIA) at (800) 917-0043. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341. ORIA publication number: ENV-019-09 rev. 09/2015

References

ESA (Environmental Science Associates). 2016. Vegetation and Aquatic Restoration and Monitoring Plan: Mill Pond Dam Removal 60 percent Design Plan Set. Prepared for Seattle City Light. May 2016.

ESA (Environmental Science Associates), Natural Systems Design, and Envirocon. 2016. Sediment Assessment, Stabilization, and Management Plan: Mill Pond Dam Removal Project. Prepared for Seattle City Light.

FERC (Federal Energy Regulatory Commission). 2011. Final Environmental Impact Statement, Application for Hydropower License for the Boundary Hydroelectric Project FERC Project No. 2144-038, Washington and Application for Surrender of Hydropower License for the Sullivan Creek Project, FERC Project No. 2225-015, Washington. September 2011. Prepared by Office of Energy Projects.

FWS (U.S. Fish and Wildlife Service). 2012. Biological Opinion for the Boundary and Sullivan Creek Projects, Commission Docket Nos. P-2144-038 and P-2225-15, Pend Oreille River, Pend Oreille County, Washington. 13410-2011-F-0199. June 19, 2012. 65 pp.

Icicle Creek Engineers, Inc. 2011. Report, Geotechnical Engineering Services, Geotechnical Investigation and Slope Stability Evaluation, Mill Pond Dam Decommissioning, Pend Oreille County, Washington. Prepared for Seattle City Light, Seattle, WA.

Seattle (Seattle City Light) and the District (Public Utility District No. 1 of Pend Oreille County). 2011. Biological Assessment: Boundary Hydroelectric Project (FERC Project No. 2144).

Seattle (Seattle City Light) and the District (Public Utility District No. 1 of Pend Oreille County). 2016. Draft Supplemental Biological Assessment: Boundary Hydroelectric Project (FERC Project No. 2144) and Sullivan Creek Project (FERC Project No. 2225). May 2016.

Touchstone EcoServices. 2011. Final wetland delineation report, Mill Pond Dam removal and stream restoration project, Pend Oreille County, Washington. Prepared for Seattle City Light by Touchstone EcoServices, Shoreline, WA.

USGS (U.S. Geological Survey). 2010. Gap Analysis Program. Accessed 5/1/01 at http://gapanalysis.nbii.gov/.

WDFW (Washington State Department of Fish and Wildlife). 2016. Priority Habitat and Species database. Olympia, Washington. Available online at: http://wdfw.wa.gov/mapping/phs/.

Attachments Included in JARPA Submittal

- JARPA Sheets (Sheets 1 through 17):
  - Sheet 1: Vicinity Map Sheet
  - Sheet 2: Existing Conditions Sheet Key
  - Sheets 3–11: Existing Conditions Sheets
  - Sheet 12: Recreation Improvements
  - Sheet 13: Proposed Conditions Sheet Key
  - Sheets 14–17: Proposed Conditions Sheets

- JARPA Form Attachments
  - JARPA Form Attachment C: Contact Information for Adjoining Property Owners
- Attachments (Numbered 1 through 7):
  - Attachment 1: Mill Pond Dam Removal Project - Summary Table of Existing and Estimated Post-Project Wetland Conditions
  - Attachment 2: 60 Percent Design Plans for Mill Pond Dam Removal Project
  - Attachment 3: Mill Pond Dam Removal and Sullivan Creek Restoration Project - 404(b)(1) Alternatives Analysis
  - Attachment 4: Mill Pond Dam Removal Project Sediment Assessment, Stabilization, and Management Plan
  - Attachment 5: Mill Pond Dam Removal; Vegetation and Aquatic Restoration and Monitoring Plan
  - Attachment 6: Draft Supplemental Biological Assessment: Boundary Hydroelectric Project (FERC Project No. 2144) and Sullivan Creek Project (FERC Project No. 2225)
  - Attachment 7. Conservation Measures or Best Management Practices from the USFWS Biological Assessment, 2012
  - Attachment 8. Cultural Resources – Section 106 Compliance
- Supporting Documentation
  - Touchstone EcoServices. 2011. Final wetland delineation report, Mill Pond Dam removal and stream restoration project, Pend Oreille County, Washington. Prepared for Seattle City Light by Touchstone EcoServices, Shoreline, WA.