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

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: DEPT OF ECOLOGY Received AUG 31 2015 CENTRAL REGION OFFICE
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]
Nason Creek Upper White Pine Floodplain Reconnection Project

Part 2–Applicant

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

2a. Name (Last, First, Middle)			
Kaputa, Mike			
2b. Organization (If applicable)			
Chelan County Natural Resources Department			
2c. Mailing Address (Street or PO Box)			
316 Washington Street Suite 401			
2d. City, State, Zip			
Wenatchee, WA 98801			
2e. Phone (1)	**2f.** Phone (2)	**2g.** Fax	**2h.** E-mail
(509) 667-6584	( )	( )	Mike.Kaputa@co.chelan.wa.us

[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@ora.wa.gov.

Part 3–Authorized Agent or Contact

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)			
Hadersberger, Jennifer Goodridge			
3b. Organization (If applicable)			
Chelan County Natural Resources Department			
3c. Mailing Address (Street or PO Box)			
316 Washington Street Suite 401			
3d. City, State, Zip			
Wenatchee, WA 98801			
3e. Phone (1)	**3f.** Phone (2)	**3g.** Fax	**3h.** E-mail
(509) 667-6682	(509) 860-1022	( )	Jennifer.hadersberger@co.chelan.wa.us

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)			
Rivera, Jeff			
4b. Organization (If applicable)			
US Forest Service			
4c. Mailing Address (Street or PO Box)			
600 Sherbourne			
4d. City, State, Zip			
Leavenworth, WA 98826			
4e. Phone (1)	**4f.** Phone (2)	**4g.** Fax	**4h.** E-mail
(509)548-2553	( )	( )	jrivera02@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
- ☐ 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]

Nason Creek RM 13.3 – 13.8

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

Near Merritt, WA

5d. County [help]

Chelan County

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

¼ Section	Section	Township	Range
	4 and 5	26 North	16 East

47.786865 N latitude / 120.863889 W longitude

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

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

Section 4 Tax lot 210000 and Section 5 Tax lot 110000

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

Figure 1 depicts parcel boundaries of the stream restoration project and shows the location of the following adjacent landowners:

Name	Mailing Address	Tax Parcel # (if known)
Rahn Redd	PO Box 909, Leavenworth, WA 98826	26 North 16 East Section 5 Tax lot 120100
Britt Dudek	1324 S. Hills Drive, Wenatchee WA 98801	26 North 16 East Section 4 Tax lot 210500
BNSF Railroad	2454 Occidental Avenue So Ste 2D Seattle, WA 98134	
ıicheal Alberg	800 Shale Pit Rd, Ellensburg, WA 98926	26 North 16 East Section 4 Tax lots 140100 & 140500

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

Floodplain wetland

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

Nason Creek

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 site contains the following plant communities: upland forest and shrubby areas, wetland forest, wetland scrub-shrub, wetland herbaceous/open water, and disturbed herbaceous plants within the powerline corridor.

Upland forested areas are present to the north, south, east, and west of the wetland. Dominant species within the upland forest include Doug fir (*Pseudotsuga menzisii*), grand fir (*Abies grandis*), vine maple (*Acer circinatum*), snowberry (*Symphoricarpus albus*), false lily of the valley (*Maienthemum dilatatum*), and twisted stalk (*Smilacina stellata).*

Wetland forested areas (~5.8 acres) are dominated by black cottonwood (*Populus balsamifera*), hawthorne (*Crategus douglassii*), vine maple (*Acer circinatum*), red osier dogwood (*Cornus sericea*), false lilly of the valley (*Maienthemum dilatatum*), and twisted stalk stalk (*Smilacina stellata).* Forested areas include two small patches of quaking aspen on site which total less than 1.5 acres. The western portion of the wetland contains a scrub-shrub plant community dominated by hardhack (*Spirea douglassii*). Other wetland shrub species on site include red osier dogwood (*Cornus sericea*), willow (*Salix spp.*), hawthorne (*Crategus douglassii*), and twinberry *(Lonicera involurata*). Wetland herbaceous communities on site consist of open water mixed with herbaceous species such as reed canarygrass (*Phalaris arundinaceae*), skunk cabbage (*Lysichiton americanum*), small fruited bulrush (*Scirpus microcarpus*), and mannagrass (*Glyceria sp.*).

Conditions within the powerline corridor consist of a mix of pasture species and native shrubs. Dominant upland species located within the powerline corridor include thimbleberry (*Rubus parviflorus*), elderberry (*Sambucus racemosa* and *S. nigra*), snowberry (*Symphoricarpus albus*), buckbrush (*Ceanothus velutinus*), vine maple (*Acer circinatum*), blue wild rye (*Elymus glaucus*) and pasture grasses.

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

The site consists of public forest land with an easement for the Chelan Public Utility District (CPUD) powerlines. Figure 1 depicts parcel boundaries with landowner names overlaid on an aerial photograph. The aerial photograph labels the location of the stream restoration project. This graphic also labels nearby infrastructure including the CPUD powerline corridor, BPA powerline corridor, BNSF railway, White Pine road and Hwy 2.

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

Land use on adjacent parcels primarily consists of public forest land as visible in the aerial photograph included as Figure 1; all Figures are included in Appendix A. Figure 1 also labels adjacent private lands owned by Rahn Redd (single residence and outbuildings), Britt Dudek (this parcel contains the knife shop and cabins), and Micheal Alberg (undeveloped).

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

The Chelan Public Utility District McKenzie Beverly powerlines cross through the project area. There are currently 8 wooden power poles numbered 52/5, 52/6, 52/7, 52/8, 52/9, 52/10, 52/11, and 53/1 within the project area (Figure 2). The McKenzie to Beverly powerline is a 115kV power distribution line. It runs from CPUD Generation facilities to the top of Stevens Pass where it connects to the Puget Sound Energy transmission line, into the Seattle Grid system. Along the way it serves the Burlington Northern Cascade Tunnel, Stevens Pass Ski resort and other residential services. It consists of wooden poles in H-frame and/or 3 pole angle and dead-

end configurations. Within the project area, this powerline is authorized under easement which was obtained prior to USFS ownership. The easement is 100 feet wide and allows for construction of a second transmission line in this corridor.

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

From Hwy 2, turn south on White Pine road. Turn left under the Chelan PUD utility lines to access the site. Engineering Plan Sheet 1 of the 60% plan set (Appendix B) provides a vicinity map.

Part 6–Project Description

6a. Briefly summarize the overall project. You can provide more detail in 6b. [help]

The Upper White Pine Floodplain Reconnection Project will remove anthropogenic site impacts (levee and infrastructure) to restore floodplain connectivity, channel migration processes, and improve in-stream aquatic habitat in Nason Creek (between RM 13.3 – 13.85). Within the project area, Nason Creek is artificially confined by two rip-rap lined levees that protect the CPUD powerlines on river left and the BNSF railroad on river right. Channelization has created an entrenched, incised channel which results in habitat simplification and disruption of natural stream channel processes such as floodplain inundation rate, channel migration, sediment deposition patterns, and large wood recruitment. These impacts have reduced the quantity, quality, and access to stream, wetland, and off-channel habitats within the project area. This project proposes to remove approximately 0.5 mile of the river left levee and to restore stream channel meanders to increase sinuosity and reduce confinement. These actions will increase the flood prone area by 10 - 27 acres (2 year to 100 year event, respectively). This project will also add large woody material to increase pool quality and quantity and will increase the availability of off-channel rearing. Increasing access to floodplain and off-channel habitat for ESA listed juvenile steelhead and spring Chinook will improve rearing (feeding/foraging) and refugia from high water flows and predators. In order to accommodate restoration actions, six Chelan PUD power poles will be removed and that section of transmission line will be re-located to White Pine road.

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

Nason Creek contains the following Evolutionary Significant Unit (ESU) anadromous fish species listed for protection under the Endangered Species Act (ESA): Upper Columbia River spring Chinook salmon (*Oncorhynchus tshawysha*), Upper Columbia River steelhead (*Oncorhynchus mykiss*), and Columbia River bull trout (*Salvelinus confluentus*). The Upper Columbia spring Chinook and steelhead Recovery Plan (Upper Columbia Salmon Recovery Board 2007) identifies actions for recovery of ESA listed fish species. Appendix H of the Recovery Plan, the Biological Strategy, identifies Nason Creek as the top priority sub-watershed for stream habitat restoration actions in the Wenatchee basin. Several assessments and reports have been written to document existing conditions and anthropogenic impacts in Nason Creek in order to develop stream habitat restoration actions to increase the productivity and survival of ESA listed species in Nason Creek. This section summarizes the following documents that were used to develop the purpose and need for the proposed project and copies of these reports are included on a DVD provided with the JARPA:

- Salmon Steelhead and Bull Trout Habitat Limiting Factors, Wenatchee Watershed (Andonaegui 2001)
- Nason Creek Focused Watershed Action Plan (USFS 2008)
- Tributary Assessment (Bureau of Reclamation 2008)
- Upper White Pine Reach Assessment (Bureau of Reclamation 2009)
- Nason Creek Subreach Unit Prioritization (ICF International 2009)
- Nason Creek Upper White Pine Reach Restoration Plan (USFS Enterprise TEAMS and Interfluve 2013)

In Nason Creek, the largest impact on stream habitat has been from human activities occurring outside of the main channel. The construction of roads, highways, and railroads has resulted in the reduction in natural habitat-forming processes, the disconnection of off-channel habitats and floodplains, and an increase in instream sedimentation. In the lower 14 miles, infrastructure has disconnected about 30% (300 acres) of floodplain habitat from Nason Creek (USBR 2009). Thus, the Recovery Plan has identified reconnection of peripheral and transitional habitat (floodplain, wetland, and off-channel habitat) in Nason Creek as the highest priority ecological concern or limiting factor to be addressed in this sub-watershed. Levee removal has been identified as the Tier 1 action or strategy to address this ecological concern.

The 2009 BOR Reach Assessment identified disconnected floodplain habitat (DOZ-1) on site (Figure 3). When all potential projects in the lower 14 miles of Nason Creek were evaluated, reconnection of the Upper White Pine DOZ-1 floodplain wetland ranked moderate to high priority for reconnection of isolated habitat when biological benefit, social feasibility, construction feasibility and cost were considered (Table 1; all Tables are included in Appendix A after the Figures). The projects that had the highest biological benefit scores for reconnecting isolated habitat were LWP DIZ-1 and LWP DIZ-2. The Lower White Pine BNSF re-connection project (LWP DIZ-2) was constructed in 2013. The Lower White Pine upstream connection (LWP DIZ-1) project is currently being evaluated with preliminary design information. This leaves the Upper White Pine DIZ-1 and DOZ-1 floodplain reconnection projects as the next highest priority projects for re-connection of isolated habitat in Lower Nason Creek.

Comparison of aerial photographs from 1949 and current site conditions (Figure 4) documents anthropogenic site impacts. In the 1950's-1960's the BNSF railroad was re-located to the north and Nason Creek was also re-aligned north resulting in channelization, loss of stream sinuosity, and disconnection of floodplain habitat. The material excavated during channel re-location was likely discarded to the north and south to form levees that protect the BNSF railroad and CPUD powerlines. These levees were lined with imported rip-rap. This historic aerial photograph also documents agricultural activities in the floodplain wetland with indication that the tributary streams were ditched through this area.

Today, Nason Creek is artificially confined by two rip-rap lined levees (from RM 13.3-14) that protect the CPUD powerlines on river left and the BNSF railroad on river right (Figure 5). Channelization has created an entrenched, incised channel (Figure 6) which results in habitat simplification as well as disruption of natural stream channel processes such as floodplain inundation rate, channel migration, sediment deposition patterns, and large wood recruitment. These impacts have reduced the quantity, quality, and access to stream and off-channel habitats. At low flows, only about 1 percent of the habitat area in Nason Creek consists of side channels and off-channel habitat (USFS 2008). At the reach scale (RM 12-14), infrastructure has disconnected >30% (42 acres) of the floodplain area (USBR 2009). Steelhead fry emerging from nearby redds and spring Chinook yearlings have limited rearing and refugia in this reach under current conditions. Infrastructure constraints that limit floodplain connectivity are visible in an oblique aerial photograph (Figure 7).

Nason Creek is Major Spawning Area for spring Chinook salmon and steelhead. Nason Creek is also a stronghold for coho and it is a feeding and migration corridor for bull trout with limited bull trout spawning in the upper reaches. Steelhead, spring Chinook, coho, and bull trout use the project area for holding, migration, and rearing, however, there is no spawning in the project area. Spring Chinook and steelhead spawning occurs near the downstream limits of the project area near RM 13.3-13.4, however, not within the straightened section of mainstem from RM 13.45-14 (Figures 8 and 9, respectively). Approximately 38% of spring Chinook and 57% of steelhead spawning is located in the reach immediately below the project area (~RM 8 to 14) (according to spawning data collected by Chelan PUD).

These impacted site conditions described above will persist into the future and are likely to continue to affect ESA-listed species if no action is taken to reverse these impacts. Restoration project implementation will also assist Federal Action Agencies in working toward meeting tributary habitat commitments contained in the 2008 Federal Columbia River Power System Biological Opinion (NMFS 2008).

A restoration plan (included on the DVD) was developed to evaluate several restoration alternatives for this site through an evaluation of geomorphic, hydraulic, and ecological processes. Appendix C includes the text from the Restoration Plan which was basically an Alternatives Analysis. Table 2 provides a short, succinct summary of the alternatives evaluated and a short description of why the proposed design has been selected. Project design and selection of the preferred alternative have been aimed to reduce and minimize impacts to existing site conditions and this is further described in Section 7a of this JARPA text below. A separate alternatives analysis was prepared for the powerlines through the project area and those findings are summarized in two memorandums included on the DVD.

The purpose of the restoration project is to reconnect floodplain and enhance off-channel habitats for rearing and refuge for juvenile spring Chinook and steelhead during the high-flow season in Nason Creek. Nason Creek has a high potential to increase salmonid abundance and productivity; therefore, the restoration of ecosystem function through the reconnection of off-channel habitats and floodplain is a high priority. Providing rearing habitat during high flow conditions is important so that juvenile fry that emerge from redds are not prematurely

flushed downstream.

Since Nason Creek has been disconnected from large areas of floodplain and side channel habitat, rearing habitat is limited during high flow and winter conditions. Access to this habitat would be improved under proposed conditions. This area has submerged and overhanging vegetation and structure to provide cover for juvenile fry rearing while providing refuge from high flows in the mainstem. Photos in Figure 10 depict vegetated conditions in the floodplain wetland.

Project development and this purpose and need statement have focused on restoration of stream habitat for ESA listed species since that has been the funding source for project development and ESA listed species recovery is the regulatory driver for project implementation. That said, this is a habitat restoration project aimed at removing historic anthropogenic site impacts, such as levee construction and stream channelization which will restore floodplain connectivity, increase flood storage, and restore channel migration processes.

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: Levee removal, stream channel re-location to restore floodplain connectivity and channel migration zone, and stream habitat enhancement.

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.

Levee removal and stream channel re-alignment involves several interrelated actions including: 1) re-routing the existing Chelan PUD powerlines to a location out of the existing floodplain, 2) realigning the straightened mainstem channel into a new meandering alignment (RM 13.45 to 13.7), and 3) removing 0.5 mile of the left-bank levee. Sheet 4 in Appendix B provides an overview of the proposed project. The remaining 60% design engineering plan sheets in Appendix B provide more details about the project as explained in the summary text below. For more detailed design information, please see the 60% design report included on the DVD.

A segment of the existing CPUD powerlines will be relocated out of the project area. This includes the portion of the powerlines between approximately RM 13.25 and 13.95 and includes 6 towers. The powerlines will be relocated up to White Pine Road and will reconnect downstream near RM 13.25. Removal of these powerlines will allow for channel realignment, levee and riprap removal, and will enhance long-term channel migration and floodplain processes. Assessment of powerline relocation alternatives has been conducted by Chelan County and summarized in a technical memorandum (HDR 2012 on DVD) that should be consulted for additional information. The powerline re-location design is at the 100% design plan stage and bid documents for materials procurement will be prepared upon completion of NEPA. Powerline re-location vegetation removal and

construction will avoid earthwork in wetlands and waterways. The location of tributaries and silt fences that will be placed around tributaries is depicted on Sheet 8 of the plan set.

Approximately 1,500 feet of Nason Creek will be re-aligned north of the existing channel between RM 13.7 and 13.45. The channel will have pool-riffle habitat and large wood placements. Excavated material from the new alignment will be placed in the existing channel segment to be abandoned. The re-alignment also includes creating a new backwater alcove within the abandoned channel segment and creating a connector channel to ensure fish and hydrologic connectivity to the existing culvert under the railroad.

The channel re-alignment work will all occur within the 100-year floodplain and will involve excavation (using hydraulic excavators) of existing ground to proposed channel dimensions and grade. The channel re-alignment takes advantage of floodplain depressions and channel scars, while also minimizing impacts to existing perched wetland habitats. The channel re-alignment will involve levee removal along river-left at the upstream and downstream connection points; near RM 13.7 and RM 13.45, respectively. The inlet bed elevation of the proposed channel will be raised approximately 4 feet to achieve desired gradient and to increase floodplain connectivity. This will create a pool in the main channel upstream of RM 13.7. Over time, this pool will naturally fill with bedload transported from upstream, at which point a more uniform profile will develop through the upstream connection point. The channel profile matches existing grade in the channel at the outlet connection point. The average gradient of the proposed channel bed is 0.44%.

The proposed channel planform, profile, and cross-section geometry is based on numerous data sources and is further described in the 60% Design Report (Interfluve 2015 on DVD). In summary, the channel planform, cross-section, and profile geometry is based on reference to numerous sources including: 1) geometry of the historical channel, 2) geometry of the upstream reference reach, 3) geometry of adjacent upstream and downstream channel segments, 4) the geometry needed to achieve floodplain connection objectives, 5) the geometry needed to achieve sediment competency through the site, and 6) the geometry needed to address erosion and flood risks to nearby infrastructure. The design geometry was achieved through multiple iterations of channel geometry and modeling using 1-D and 2-D models. As designed, the proposed channel provides continuity of stream width, depth, flow velocity, and shear stress from upstream segments, through the project reach, and into downstream reaches.

The proposed design includes lining the bed of the new channel with a layer of coarse bedload (primarily gravels and cobbles with some small boulders) and construction of fabric encapsulated soil (FES) lifts and large wood placements along the banks in order to achieve desired channel stability. This is based on the presence of highly erodible soils that were found during the soils test pits. Providing initial stability is especially important over the short-term, when sediment equilibrium processes will favor erosion of the channel due to the sediment trapping that will initially occur in the mainstem pool upstream of RM 13.7. Once the upstream pool fills, equilibrium sediment processes are expected to become established within the restored reach. The new channel, which by that time would be expected to have mature streambank vegetation, will then be able to naturally adjust in response to dynamic sediment erosion and deposition processes.

The need to line the bed of the new channel was determined through sediment mobility analysis based on the soil types found in the test pits and the hydraulic model output. A bed size gradation for the imported material was selected to achieve bed stability over a range of potential flood volumes. It is assumed that a portion (nearly half) of the in situ bed material that is over-excavated for placement of the liner material can be sorted and re-used in the bed. The placed streambed material will extend beneath the lowest FES lift to provide vertical stability for some degree of lateral channel migration.

FES lifts are proposed for select locations where stream energy would result in significant erosion of channel banks over the short-term. This primarily occurs along the outside of the bends and in straight segments of the new channel. The inside of bends, which are expected to be deposition zones (bars), are not included for FES lift treatment. In general, based on bank heights, it is anticipated that 3 tiers of 1 foot tall lifts would be required, but this could be adjusted based on site conditions and will be further determined as part of final design. The FES lifts will be filled with a mix of salvaged or imported cobble, gravel, and topsoil. The lower tiers will have a greater amount of cobble and gravel than the top lift, which will have a greater percentage of topsoil in the mix in order to support riparian plantings. The FES lifts will be constructed using a combination of hydraulic excavators and hand crews. Temporary wooden forms will be used in the process of constructing the lifts.

Large wood will be incorporated into the banks as partially-buried toe logs beneath the FES lifts and as placements along the surface of the banks. Wood placements will provide immediate habitat cover and complexity, and will also help provide initial stability within the newly constructed channel, which will be prone to erosion following construction. The intent of the bank treatments that use FES lifts combined with large wood is to provide for initial stability following construction but to allow for long-term deformation (including channel migration at natural rates) once riparian vegetation becomes established. These treatments avoid the use of boulders or ferrous anchoring that could potentially affect the rates of long-term channel deformation. Wood placements will occur using hydraulic excavators.

At the inlet of the channel re-alignment, a ballasted log jam will be constructed within the upstream end of the existing channel fill. This log jam will be used to stabilize the fill and to divert water into the new channel alignment. The log jam will also provide habitat complexity and cover for salmonids in the newly created pool upstream of the channel inlet. The log jam will be anchored via the partial burial of key log members into the channel fill. Boulders salvaged from the existing riprap bank along the river-left (north) side of the existing channel will be used as ballast within the backfill of the jam. This channel boundary is designed to be stable over the long term in order to prevent the encroachment or reoccupation of the existing channel by Nason Creek.

At the outlet of the channel re-alignment, where the new channel enters back into the existing channel, a log jam will be constructed on river-right to protect the downstream portion of the fill between the culvert connector channel and the existing riprap bank along the railroad prism. This jam will be constructed to provide for long-term stability at this location, and will be configured similar to the log jam at the inlet.

The upstream end of the existing channel backfill will have a sloped grade that diverts flood waters away from the railroad corridor and back towards the new channel. Fill along the railroad is designed to be above the 100 year flood elevation, which transitions down to a lower grade closer to the new channel. Fill material placed in the existing mainstem is expected to be primarily the sandy loam observed in the soils pits and will require moisture control, restrictions on thickness of lifts, and controlled compaction. Two buried boulder obstructions are proposed to be constructed within the channel fill. One is located at the upstream end of the fill, adjacent to the log jam, and one is located approximately midway through the fill where the new meander channel extends/bends to the south. These are designed to resist the potential for lateral erosion of the new channel to the south, back into the existing alignment along the railroad embankment. These will be constructed using salvaged boulders from the existing riprap bank along the river-left (north) side of the existing channel. The surface of the fill material will be treated with erosion control and/or floodplain roughness measures to reduce the risk of erosion of the placed material (details to be determined).

Removal of the lowest portion of the left-bank levee near RM 13.37 will increase activation of a relic channel meander. The project construction will not modify the existing beaver dams. The proposed depth of excavation of the inlet berm matches the extrapolation of the relic meander thalweg profile. Currently, the channel receives surface flow from the upstream end only above the 10-year event. Removal of the levee will provide for activation of the channel at the annual event. A log jam proposed near the apex of the split flow channel entrance will help stabilize the bank following excavation of the levee plug and will also encourage scour at the channel inlet to help maintain flow into the high flow channel. Wood placements will be secured using partial burial into banks and bracing against vertical wood pilings.

A small backwater alcove (~100' long) will be constructed along river-right of the re-aligned channel to add structural complexity. In the mainstem of Nason Creek, an access channel will maintain the hydrologic connection to the historic channel through the existing culvert under the railroad tracks near RM 13.46. Wood will be placed in both the backwater alcove and access channels to provide habitat complexity and cover. Wood will consist of single pieces and small accumulations of wood. Wood placements will be secured using partial burial into banks and bracing against vertical wood pilings. FES lifts will be placed along the margins of the backwater alcove and access channels to provide temporary soil stability until planted riparian vegetation can establish.

Approximately 2,500 feet of the existing left-bank (north) levee will be removed. The levee removal extends from approximately RM 13.33 to RM 13.8. This accounts for the portions of the levee that impact floodplain inundation rates up to the 100-year flood event. Levee removal will include removing the levee prism down to

existing floodplain elevation, except at the connection points for the new channel and the reconnected high flow channel, where additional material will be removed to activate these channels. The levee is currently forested, however, trees are less than 50 years old dating back to the construction of the levee in the late 1950s/early 1960s. These trees will be removed as necessary to facilitate levee removal. Trees greater than 12" dbh will be removed with rootwads attached and incorporated into the project area as floodplain roughness wood.

Riprap will be removed along the river-left (north) bank through the project area. The primary anticipated benefits of riprap removal are to enhance channel margin habitat and to restore longterm geomorphic function (e.g. lateral channel dynamics and migration). The riprap removal encompasses approximately 2,500 feet of channel. This action extends from approximately RM 13.33 to RM 13.8 although the riprap is discontinuous in the downstream portion. The riprap downstream of the new channel outlet (RM 13.33 to 13.44) will be fully removed. Within the channel fill (RM 13.44 to 13.68), the riprap will be salvaged as required for construction of the buried obstructions or will otherwise be buried in place. Riprap at the channel inlet will be removed down to the elevation of the new constructed bed elevation. Upstream of the inlet (RM 13.69), riprap on the upper bank will be removed down to the elevation of the 2-year flood event.

All areas disturbed for construction (~ 5 acres) plus the existing CPUD powerline corridor (> 5 acres) will be re-vegetated with native species. The 60% plan set contains a draft re-vegetation plan (Sheets 42-43) which will be revised in the final plan set with additional input from USFS. In addition to re-vegetation, small woody debris salvaged from onsite will be used to increase floodplain roughness. The wood will consist of brush, slash, and small trees up to 15 inches diameter. This material is intended to mimic the downed wood and organic matter that naturally occurs in floodplains. The floodplain roughness wood treatment will include dispersal of brush, slash, and wood chips to facilitate re-vegetation efforts by decreasing invasive plant establishment and improving soil moisture content.

The stream restoration contractor will also remove the sheet piling that protects existing powerpole 52/6 on the south bank of Nason Creek. The sheet piling will be cut at the ground surface. Rock and dirt uphill from the sheet pile will be removed and the ground will be re-contoured to match adjacent grades. All work will be done in the dry (above water). Any existing rock that lines the bank below the sheet pile as well as upstream and downstream of the sheet pile will remain on site.

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.

The following table provides an overview of the project schedule:

Task	Who	Deliverable	Timeline
Local, State, Federal Permitting for earthwork in wetlands/waterways	CCNRD	JARPA submittal and Local, State, Federal authorizations	August 2015 - February 2016
Construction Agreement	CCNRD-CPUD	Interlocal Agreement 2	August 2015
NEPA completion	USFS	Special Use Permit	September 2015
Powerline material procurement	CPUD	Powerline materials	Fall 2015 - June 2016
Powerline corridor clearing	CCNRD	Salvaged trees and cleared corridor	Spring 2016
Stream Restoration Final Design	Interfluve	Final Design plans and specs	Fall 2015-Spring 2016
Powerline re-location	CPUD	Re-located powerlines	Summer 2016
Stream restoration Phase 1	CCNRD	New channel excavation, construct FESL's, place wood and plants in new channel	Summer 2017
Stream Restoration Phase 2	CCNRD	Levee removal, introduce flows to new channel, channel backfill	Summer 2018

Note that the work sequence on Sheet 7 of the 60% plan set will be revised in the final plan set to incorporate these changes:

1. Split construction into two seasons with Steps 1-8 in 2017 and Steps 9-22 in 2018.
2. In water work period (Steps 9-15) would be stated as July 1-August 15.
3. Pull cofferdams after October 15.

Appendix D to this JARPA includes a construction sequence schedule.

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

The 60% design engineer cost estimate for stream restoration construction is ~1.6 million.

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

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

☒ Yes ☐ No ☐ Don't know

Project design has been funded by US Bureau of Reclamation

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 project has been designed to avoid and minimize wetland impacts. The following text describes six ways hat the project has avoided and minimized wetland impacts:

1. Alternative sites evaluated
   US Bureau of Reclamation has evaluated floodplain re-connection opportunities in the lower 14 miles of Nason Creek. At low flows, only about 1 percent of the habitat area in Nason Creek consists of side channels and off-channel habitat (USFS 2008). Infrastructure has disconnected about 30% of floodplain from the lower 14 miles of Nason Creek (BOR 2009). Opportunities to re-connect disconnected floodplain in the lower 14 miles of Nason Creek are limited, however, they are documented in the five Reach and Tributary Assessment reports prepared by US Bureau of Reclamation (2 are included on the DVD and the remainder of these Nason Creek Assessment reports are available online at http://waconnect.paladinpanoramic.com/Project/290/10747). Figures 3, 11, 12, and 13 summarize the findings in these 5 BOR Assessments and they depict floodplain re-connection opportunities in Lower Nason Creek.

   Table 1 (Appendix A) lists the prioritization of potential floodplain re-connection projects in Lower Nason Creek. After evaluation of all potential projects in the lower 14 miles of Nason Creek, reconnection of the Upper White Pine DOZ-1 floodplain wetland ranked moderate (3) for biological benefit, however, it ranked as the highest priority for reconnection of isolated habitat subreach units when biological benefit, social feasibility, construction feasibility and cost were considered (ICF 2009 report on DVD). In addition, the two projects that ranked higher for biological benefit (LWP DIZ-1 and LWP DIZ-2), have been implemented or are in progress.

   In summary, potential floodplain re-connection projects have been evaluated in the lower 14 miles of Nason Creek. The purpose and need statement (Section 6b) explains why floodplain re-connection is a high priority action for salmon recovery in the Wenatchee basin. This Upper White Pine floodplain re-connection site is the next highest remaining floodplain re-connection opportunity in Lower Nason Creek.

2. Alternative restoration designs considered
   USFS TEAMS, Interfluve, USBR, CCNRD, and US Forest Service staff worked together to draft a Restoration Plan (USFS TEAMS and Interfluve 2012) that identified restoration opportunities and

alternative project designs through an evaluation of geomorphic, hydraulic, and ecological processes. Table 2 provides a short, succinct summary of the alternative restoration designs evaluated. The text, graphics, and Appendix A of the Restoration Plan (88 pages) is included as Appendix C of this JARPA. A copy of the entire Restoration Plan (180+ page document) is provided on the DVD. The preferred alternative selected removes anthropogenic impacts and restores the historic stream bed elevation to restore floodplain connectivity functions on site.

3. Channel location
The proposed channel re-location was designed to restore stream sinuosity based upon sinuosity ratios documented in the reference reach and to occupy existing historic channel meander scars in the floodplain. Then, the alignment was further modified (adjusted south and radius of curvature adjusted) to avoid and minimize wetland impacts in the following ways:
   - Minimize tree removal – by adjusting the channel alignment so that the majority of the new channel is located under the existing powerline corridor, the proposed channel re-location minimizes removal of native trees and shrubs in the wetland. Most of the vegetation in the powerline corridor and channel re-location area is dominated by herbaceous and shrubby species.
   - Occupy lower quality wetland area - by adjusting the channel alignment so that the majority of the new channel is located under the existing powerline corridor, the proposed channel re-location minimizes excavation in the scrub-shrub, forested, and open water wetland communities. The majority of the channel re-location is located in wetland areas that have been disturbed by the existing powerline corridor annual vegetation maintenance and access road.
   - Avoid excavation in surface water ponded areas - by avoiding the excavation in the surface water ponded area, the project has minimized indirect impacts to surface water levels in the ponded part of the wetland. The water levels in the ponded part of the wetland are controlled by the elevation of the downstream beaver dam complex, whereas groundwater levels under the powerlines follow Nason Creek hydrology. For a more complete description of site hydrology, please review the memorandum summarizing ground and surface water data collection (App. E and Section 7b).
   - Reduce the area and volume of excavation in wetland. The channel re-location alignment was slightly adjusted to reduce wetland impacts.

4. Temporary access –
Temporary access will follow existing access routes and equipment will travel through upland areas to access the lowest levee breach area. Inorganic fill material will not be imported for equipment access. There is an existing CPUD maintenance road that extends from White Pine road to beyond pole 52/8. If needed, wood chips created from on-site clearing will be placed on the existing access road to facilitate equipment access. If additional stability is needed, temporary construction mats, log decks, or road plates will be used in select areas. Plan sheet 7 depicts site access and Figure 14 depicts temporary (and permanent) work impacts to wetlands.

5. Trees removed will remain on site
Trees will be removed from approximately .23 square feet of forested wetland. All trees removed from wetland will remain on site as floodplain roughness wood. Even the limbs or very small trees will be chipped and remain on site as mulch to facilitate native plant re-vegetation. Using wood chips as mulch will reduce weed establishment by reducing the amount of light reaching the soil surface and it facilitates establishment of native trees and shrubs installed by holding soil moisture around the base of the plants.

6. Best Management Practices
Section 8a below lists Best Management Practices that will be implemented during construction to avoid and minimize impacts to wetlands and waterways. That section also includes a list of mitigation measures that have been incorporated into project design and construction to maximize project benefits to aquatic systems and to avoid and minimize impacts to sensitive areas.

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

☒ Yes ☐ No ☐ Don't know

There will be temporary disturbance and excavation in wetland. The area and type of impacts are quantified in Table 7h below. This section describes direct, indirect, and temporary wetland impacts.

Direct Wetland Impacts –

Channel re-location will result in 1.46 acres of excavation in existing wetlands (Figure 15). The wetland impact polygons were overlaid with the vegetation mapping (see wetland report) and the majority of the wetland impacts are located within the disturbed vegetation area in the existing powerline corridor (1.03 acres). The proposed channel excavation extends a little bit north of the existing powerline corridor and excavation of the new channel will result in 0.23 acres of earthwork in forested wetland and .2 acres of earthwork in scrub-shrub wetland. Photos 7-9 in the Wetland Report (Appendix F) depict the disturbed wetland conditions under the powerline corridor.

Indirect Wetland Impacts –

CCNRD evaluated potential indirect wetland impacts of the project, specifically the potential impact of channel relocation on wetland hydrology. This was performed through hydraulic modeling and through surface and ground water monitoring data collected on site. This section summarizes those findings.

Hydraulic modeling

Existing and proposed channel and floodplain hydraulics were simulated using both 1-dimensional (1-D) and 2-dimensional (2-D) modeling systems. The 1-D modeling was completed using HEC-RAS (v 4.1.0) and the 2D model was completed using SRH-2D (v 3.0). HEC-RAS was utilized to inform design criteria as well as to set the downstream boundary condition for the SRH-2D model simulations, which consisted of a water surface elevation.

The model geometry was developed using topographic and bathymetric data obtained through surveys completed by Inter-Fluve in September 2013. Survey data was supplemented with 2007 LiDAR data in select locations. Model geometry was extracted from existing conditions topography. The model covers approximately RM 12.1 through 14.4. In order to include downstream effects on project reach hydraulics in the model, 6,290 feet of subreaches 3-5 (RM 12.1-13.3), located downstream of this project area, are included. Several increments of low flow discharges as well as floods with recurrences of 1.01-, 2-, 5-, 10-, 25-, 50-, and 100-years were modeled. The model for the project reach was integrated into existing models developed for downstream reaches. For a more complete description of the hydraulic modeling effort and to see the complete results, please see the 60% design report (DVD). This section describes the 2D modeling results that depict increased floodplain inundation under proposed conditions.

Levee removal and stream channel re-location is anticipated to elevate water levels in the floodplain wetland and adjacent upland areas. The hydraulic model predicts that during the 2 year storm event, floodwaters from Nason Creek will inundate an additional 10.7 acres of the floodplain wetland (Figure 16). In addition, floodwaters from Nason Creek will inundate 1.37 acres of upland during the 2 year storm event. Therefore, we anticipate increased water levels in the floodplain during high water events as a result of this project.

Ground and surface water data

CCNRD has monitored ground and surface water levels on site since 2011. A description of the data collection methods and results is attached (Appendix E). This investigation was focused on evaluating the effect of stream channel relocation on wetland and groundwater hydrology. Given that the proposed re-located channel bed will be ~3' higher than the existing stream bed, we expect groundwater levels in the floodplain to rise. This increase in groundwater stage will be greatest in upstream areas where the change in bed elevation is greatest between existing and proposed conditions. The increase in groundwater elevation is expected to increase the extent of floodplain wetlands, especially during dry periods when contributions from hillslope tributaries are minimal. At other times, there is expected to be no impact on wetlands. Figure 17 depicts this situation graphically with well and station locations shown in Figure 1 of Appendix E. The following information will help reviewers evaluate Figure 17.

1. The x axis (horizontal) depicts river mile or the east-west transect through the project area. Manual measurements of groundwater data were recorded in Wells 1-5 along this transect in 2011 and 2012. In 2014-2015, eight continuous data loggers were placed on site to record ground and surface water elevations. Along this east-west transect, the location of Stations 2 and 6 were

close to well 1 and Station 7 was near well 3.

2. The y axis (vertical) documents elevation. Thus, the height of the bars records the range in groundwater elevation recorded for each station. Different years are represented in different colors and the colors (or elevations) somewhat overlap from year to year.
3. The black lines depict the existing flows in Nason Creek: the existing base flow (dotted) and the annual high flow (dash-dot).
4. The red lines depict proposed modeled flows in Nason Creek: the proposed modeled base flow (dot) and the proposed modeled annual high flow (dot-dash).

The following text summarizes the conclusions from the analysis of Figure 17.

- There is seasonal and annual variation in ground water elevation data, including natural seasonal drawdown and recharge of the ground water table and inter-annual variation. In 2011, data collection started later than in 2012 and 2011 was a drier year than 2012, 2014, and 2015.
- Proposed base and high flows will be as much as 4 to 5 feet higher than existing conditions, which varies depending on location. This is due to the elevated bed in the re-located channel. The proposed channel bed has been elevated to increase floodplain connectivity between the mainstem and adjacent floodplain habitat, and to better mimic the bed elevation of the historical channel prior to re-location by the railroad in the 1950s/60s. This will charge rather than drain ground and surface water levels in the adjacent wetland.

Another key finding from the analysis of ground and surface water data is that the surface water in the ponded part of the wetland, which is primarily sourced from hillslope tributaries, remains fairly constant over the summer drawdown period (Figure 2 Appendix E). This is because surface water levels are controlled by the downstream beaver dam located at the southeast end of the wetland. The six perennial tributaries contribute approximately 3-6 cfs to the wetland. So water levels in the wetland remain relatively constant and do not follow daily or seasonal water level fluctuations in Nason Creek. This project will not remove the beaver dam control at the downstream end of the wetland.

In summary, we do not anticipate indirect impacts to wetland hydrology as a result of this project. The elevated and re-located stream bed is expected to increase groundwater levels rather than drain them. The project will not alter the beaver dam at the downstream end of the wetland which currently controls surface water elevations in the open water portion of the wetland. And we anticipate increased water levels in the floodplain during high water events. Thus, this project will restore natural floodplain wetland hydrologic functions with elevated water levels during high water conditions and likely increased area of wetted areas in the floodplain during other flow conditions as a result of increasing floodplain groundwater levels.

The County and US Forest Service have developed a monitoring plan (included on the DVD) that will include data collection in surface and groundwater wells to compare pre- and post project hydrologic conditions on site. The monitoring will span a 10 year period with at least 2 pre-project construction visits and up to 4 post-project site visits. Monitoring is being funded by BPA and US Bureau of Reclamation. Monitoring will be conducted by Tetra-Tech (through the BPA Action Effectiveness Monitoring Program), CCNRD, and USFS staff.

Temporary Wetland Impacts -

Unavoidable temporary wetland impacts would occur during installation of the bank treatments in the re-located channel and associated with floodplain wood placement (Figure 14). Placement of the buried log jams along the banks of the re-located channel will temporarily disturb 0.48 acres of wetland. Disturbance actions include temporary trenching, back-fill, and re-grading the area to match original and adjacent grades. The areas above the bank wood will be re-planted with native trees and shrubs once the wood installation is completed. Placement of large wood for floodplain roughness will temporarily disturb 0.23 acres of wetland during piling installation and soil disturbance from equipment installing the wood. All of the floodplain wood installation areas will be restored to original grade to match adjacent elevations and re-planted following wood installation.

Evaluation of Overall Environmental Impacts

US Forest Service has prepared an Environmental Assessment (EA) to evaluate the overall environmental impacts associated with this stream restoration project. US Forest Service resource specialists (Interdisiplinary Team) evaluated potential direct effects, indirect effects, and cumulative impacts to the following resources: botany, recreation, wildlife, fisheries, hydrology, aquatic habitat, water quality, soil resources, scenery, cultural and historic resources, and watershed conditions. In summary, US Forest Service Staff concluded that any direct, indirect, and cumulative impacts are mitigated by the overall aquatic habitat benefits and by the design criteria or mitigation measures (pages 12-20 of the EA) incorporated into this stream restoration project. This EA was circulated for public comment in mid-June and the 30 day public comment period closed in mid-July 2015. There were no public comments on the EA. Please review the complete EA for more detailed information. A copy of the EA is included on the DVD and it is available online at www.fs.fed.us/nepa/nepa_project_exp.php?project=40732.

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

☒ Yes ☐ No ☐ Don't know

Figure 18 depicts a 200' wetland buffer around Nason Creek and the floodplain wetland. Buffer impacts resulting from the stream restoration are approximately 4.37 acres. Buffer impacts resulting from the powerline relocation corridor clearing will range from 5.5 – 11 acres. The polygon in Figure 18 depicts 11 acres of impact, however, it depicts a 200' wide powerline relocation corridor. Trees will only be cleared from a 100' wide corridor and hazard trees will be removed from an additional 50' on either side of the 100' wide cleared corridor. The following measures have been incorporated into this project to mitigate impacts from tree removal within buffer areas:

- The existing cleared area in the powerline corridor is approximately 60' wide and 3594' long (including the pole across Nason Creek at the downstream end). Cessation of vegetation maintenance in this area will result in ~ 5 acres of riparian forest re-vegetation.
- Trees removed within 300' of Nason Creek will remain as down wood on the ground. Trees to remain as down wood will need to meet final specifications provided by USFS for species and diameter to minimize invasion and spread of invasive beetles.
- All in-stream large wood for the Upper White Pine project will be salvaged from the powerline re-location corridor.
- A tree survey of the powerline re-location corridor will be completed this summer to identify the species, size, and quantity of wood in the powerline re-location corridor. All coniferous trees >12" DBH that are not used for the Upper White Pine restoration project, will be available for sale and use in other restoration projects. CCNRD will secure as much wood as possible from this project for use in Entiat 2016-2017 restoration projects.
- Hazard trees removed will likely be topped and remain as standing snags for habitat whenever possible.
- Trees removed from the levee will remain on site as floodplain roughness wood. Slash and small diameter trees removed from the levee will be chipped and used on site as mulch to facilitate the success of native re-vegetation efforts.

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

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

☒ Yes ☐ No

The wetland delineation report attached (Appendix F) provides a detailed description of the wetland habitat located within the project area. In summary, the project area contains a 25 acre depressional wetland located north of the levee and south of White Pine road. Prior to construction of this levee and re-location of Nason Creek to it's current location, this wetland would have been a riverine wetland lying within the active floodplain of Nason Creek. Note the historic floodplain channel meander scars visible in the LIDAR map (Figure 2 in the Wetland Report). The wetland would have been periodically inundated by overbank floods from Nason creek. This floodplain connectivity would have been the major environmental factor structuring the wetland ecosystem and controlling functions such as water levels, nutrient flux, sediment dynamics, vegetation, and timing of wetland inundation and drawdown. The wetland boundary is also depicted on Sheet 8 of the plan set.

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

The wetland delineation report (Appendix F) contains a Wetland Rating form. This section of the JARPA further describes existing wetland conditions. Under current conditions, this wetland no longer receives overbank flooding from Nason Creek at a sufficient frequency (i.e., greater than once every 50 years) to be considered a riverine wetland according to the *Washington State Wetland Rating System for Eastern Washington* (Hruby 2007). Seasonally elevated groundwater levels and surface flows from the tributary streams impound within the wetland due to the levee and beaver dams that were able to be constructed near the outlet once the levee was constructed. Surface water ponding occupies approximately 30% of the total wetland area, primarily near the downstream southeast end because this area is actively dammed by beavers.

Ground and surface water data was collected manually in 2011 and 2012 and with continuous data loggers in 2014-2015. The methods and data collected are summarized in a memo attached in Appendix E. Figure 2 in that memo documents the relatively constant inundated (surface water) conditions in stations 3, 4, and 5 and fluctuation in the groundwater table documented in stations 1 (mainstem), 2, 6, 7, and 9. Stations 2, 6, 7, and 9 (in the powerline corridor) follow the daily and seasonal water level fluctuations documented in Nason Creek (Station 1) whereas stations 3, 4, and 5 remain constant since those water levels are controlled by the downstream beaver dam.

The wetland supports palustrine forested (PFO), scrub-shrub (PSS), and emergent (PEM) Cowardin communities, as well as areas of permanent inundation (PUB), and is considered a depressional hydrogeomorphic (HGM) classification under the guidance of the *Washington State Wetland Rating System for Eastern Washington* (Hruby 2007) (Table 1).

Table 1. Wetland Characteristics

Wetland	HGM Class	Cowardin Class	Acreage	Category
Floodplain wetland	Depressional	PUB and PEM 10.37 acres	25.17 acres	Category 2
		PSS 8.99 acres		
		PFO 5.81 acres		

Areas with prolonged inundation remain unvegetated and they are bordered by emergent wetlands dominated by reed canarygrass (*Phalaris arundinaceae*) with some native emergent such as mannagrass (*Glyceria spp.*) and skunk cabbage (*Lysichiton americanum*). Scrub-shrub vegetation north of the powerlines is dominated by hardhack (*Spirea douglassii*) and near the powerlines by red osier dogwood (*Cornus sericea*), hawthorne (*Crategus douglassii*), and crab apple (*Malus fusca*). Forested wetland areas contain black cottonwood (*Populus balsamifera*), western red cedar (*Thuja plicata*), quaking aspen (*Populus tremuloides*), and doug fir (*Pseudotsuga menziesii*). Emergent wetland areas located within the powerline corridor are primarily dominated by non-native herbaceous species with some red osier dogwood and hardhack.

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 described above in Section 7b, the project will result in 1.49 acres of direct impact (channel excavation and levee removal), 0.71 acres of temporary impacts, and indirect impacts to wetlands are not anticipated.

Direct Impacts

A wetland mitigation plan has not been prepared for this habitat restoration project because direct impacts to wetland resulting from stream channel excavation are anticipated to be self-mitigated by the overall aquatic habitat benefits of the proposed restoration project.

The project benefits are summarized here:

- Levee and rip-rap removal (2,500' or 0.5 mile) –

  This action removes the man-made levee that was constructed in the late 1950's to early 1960's. This

levee confines Nason Creek to its current location and severs the floodplain wetland connectivity that would naturally occur between the mainstem of Nason creek and the floodplain wetland on site.

- Restoration of floodplain wetland connectivity to Nason Creek -

  Levee removal and channel re-location will re-connect the floodplain wetland to the mainstem of Nason Creek. This will increase floodplain inundation by ~12 acres during the 2 year event. This makes the total floodplain wetland acreage connected at the 100 year event 28 acres. Increased flood storage area will increase the flood storage functions provided by the wetland. Wetland functions improved will include floodwater storage, retention, and slow release. This provides flood storage functions that are valued by the community because of the potential reduction of floodwater damage to property and infrastructure downstream of the project area. Increasing floodwater storage functions in the wetland also provide biological benefits such as groundwater re-charge to increase base flows during dry periods and reduced flow velocity which facilitates sediment deposition and reduces erosive forces. As sediments deposit in floodplain wetlands during flood events, these sediment particles may have nutrients bound to them which can restore nutrient cycle processes in the floodplain wetland.

- Restoration of natural channel migration processes-
  Currently, Nason Creek is locked in place by two rip-rap lined levees. The bed is incised (Figure 6) and channel migration is not likely to occur under current conditions. Levee removal and channel re-location will restore natural lateral channel dynamics to the floodplain area. Channel migration scars visible in the LIDAR (Figure 2 Wetland Report) indicate that Nason Creek formerly migrated throughout this floodplain. This project will restore that natural channel migration pattern and restore floodplain functions associated with channel migration patterns. These functions include the long-term creation and maintenance of floodplain wetlands (e.g. abandoned oxbows) as well as functions such as recruitment of large wood, recruitment of spawning gravels, establishment of riparian vegetation, and the creation of new instream habitat features such as pools and riffles.

- Improved wetland hydrology and increased wetland area

  Channel re-location will increase floodplain inundation and increase the amount of wetland area inundated during the 2 year event by 10.7 acres (Figure 16). In addition, 1.37 acres of existing upland areas will now be inundated during the 2 year event. Over time, this is expected to increase the amount of wetland area on site by approximately 1.37 acres.

- Benefits to ESA listed fish species
  - High flow refugia

    Re-connecting Nason Creek to the floodplain wetland will provide high flow rearing habitat for juvenile salmonids. When the floodplain wetland is inundated and connected to Nason Creek, fish will have access to valuable foraging habitat and cover provided by emergent vegetation.
  - Instream habitat improvements

    The project will increase instream complexity through the addition of large woody material (332 logs, 129 w/rootwads), improved variability in bed substrate material size, increased number of pools (from 1 to 7), increased stream sinuosity (from 1 to 1.1), and improved spawning habitat (spawning is currently not present in the project area).

Temporary Impacts

All areas with temporary impacts will be restored following construction disturbance. Wetland areas with temporary earthwork will be re-graded so that the final grade matches pre-construction elevations and the contours match adjacent areas. All temporary disturbed areas will be re-planted with native trees and shrubs per the planting plan depicted on Plan Sheets 42-43.

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

N/A

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 are (sq. ft. or acres)
Channel excavation	Floodplain wetland	Depressional Category 2	1.46 acres	Permanent	Self-mitigating aquatic habitat benefits described in Section 7f above	
Levee removal	Floodplain wetland	Depressional Category 2	0.03 acre	Permanent	This action removes artificial levee fill from wetland. See Section 7F for description of benefits	
Placement of buried log jams	Floodplain wetland	Depressional Category 2	0.48 acres	Temporary	Re-grade to original grade and re-vegetate	
Placement of large wood for floodplain roughness	Floodplain wetland	Depressional Category 2	0.23 acres	Temporary	Re-grade to original grade and re-vegetate	

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]

Wetland fill is not proposed as part of this project.

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]

The re-located stream channel will require 1.46 acres of excavation in wetland area (Figure 15). The total volume of material excavated for the stream channel re-location is 24,080 cubic yards, however, not all of this material will come from wetland areas. A portion of the excavated material (15,680 cubic yards) will be placed in the mainstem of Nason Creek as backfill for the channel re-location. The remainder of the excavated material will be placed back into the re-located channel banks as stream bed sub-grade and incorporated into the fabric encapsulated soil lifts. Soil sampling on site (conducted in 2014) indicates that the excavated material consists of silty sands. A 40,000 – 60,000 lb class excavator will be used to remove material for the re-located channel excavation. Excavated material will be loaded into a 30 cubic yard off-road hauler to drive the material to the on-site temporary stockpile area. A 4 cubic yard front end loader will be used to remove the material from trucks and/or form the temporary stockpile area. Pumps and hoses will be used for de-watering. A smaller class excavator will be used to build the fabric encapsulated soil lifts. A D4 size class bulldozer will be used for site grading.

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

Plan sheets 5, 9, 13-16, 18-21, 25, 27, 29-30, and 31-36 depict the location of Ordinary High Water in plan and section view. Figure 15 depicts the location of earthwork proposed below Ordinary High Water.

The following best management practices will avoid and minimize impacts to waterways:

- Work and access areas will be isolated by orange construction fence to limit staging, vegetation removal, earthwork, and stockpile activities to the designated areas.
- In-water work will occur during the approved in-water work period (July 1 – August 8) and in-water work will not commence until flows in Nason Creek have dropped below 400 cfs.

- Any turbid water resulting from excavation for the habitat structures will be pumped into the upland area west of the wetland for infiltration.
- Any turbid water resulting from excavation for the placement of the deflector jam will be pumped further downstream into the side channel (which should be mostly dry when the inlet is closed off) for infiltration prior to release into Nason Creek.
- All work below Ordinary High Water will be completed by August 8.
- Equipment shall be clean of mud, dirt, and other material that could temporarily degrade water quality.
- Construction equipment will be limited to the minimum access and construction footprint required for the construction
- The contractor will prepare a detailed spill prevention control and countermeasures plan which will identify all the contingencies in the event of an accidental spill of any hazardous material.
- Equipment will be refueled in a designated area with absorbent pads in place and spill containment equipment present to reduce the potential for contaminants to reach the water should any spill or leakage occur.
- All equipment used below OHW will replace all hydraulic fluid systems with 'biodegradable' vegetable oil or other fish-friendly materials as authorized by WDFW.
- All heavy equipment will be inspected prior to operating each day during project construction. All heavy equipment shall be deemed clean and free of external oil, fuel, or other potential pollutants prior to operating and performing construction activities, particularly in water work.
- The contractor will have at least one employee designated as the Erosion and Spill Control Lead who is responsible for installing and monitoring erosion control measures and maintaining spill containment and control equipment.
- Project construction will be in compliance with the general conservation measures and conservation measures specific to improving secondary channels as outlined in the BPA HIP III programmatic ESA consultation. Final engineering plan sheets will include a sheet listing these conservation measures.
- In-water work will cease if there is an active redd within 300' of work areas.
- Turbidity (water clarity) will be measured and recorded (in NTU's) using a turbidimeter. The turbidimeter will be calibrated once a week and samples will be taken at least twice a day. Samples will be collected 100' upstream and 300' downstream of each work area to document that any sediment released from the site does not increase stream turbidity levels. Readings will be consistent with the following DOE water quality standards:

During salmon spawning, rearing and migration (August 1 – September 15) turbidity shall not exceed:

- 5 NTU over background when the background is 50 NTU or less; or
- A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.

During salmon rearing and migration (July 15 – July 31) turbidity shall not exceed:

- 10 NTU over background when the background is 50 NTU or less; or
- A 20 percent increase in turbidity when the background turbidity is more than 50 NTU.

In addition to those Best Management Practices listed above, the following mitigation measures have been specified by US Forest Service in the Environmental Assessment and will be followed to improve the aquatic benefit of this project and to avoid and minimize environmental impacts:

- Design constructed structures to mimic naturally occurring log jams in terms of overall size and shape.
- Use a variety of sizes of logs in each structure to avoid a uniform look.
- Overall size needs to be in scale with naturally occurring log jams.
- The pattern of logs in the constructed structures should be as varied as possible, avoiding a parallel pattern or angular shape.
- Avoid blunt-cutting ends of logs in constructed structures.
- Vertical members needed for structural stability should be varied in size and height. Flush-cut most. If vertical height is needed for structural stability, place the members in a random-looking pattern, vary the height as much as possible, and avoid blunt-cut ends/tops.
- Utilize methods to secure large wood placements to appear as natural as possible, avoid using cables or try to minimize viewing of the cables. Use non-reflective materials in structures.
- Ensure that none of the structures will interfere with the free-flowing nature of the river (i.e. catching logs and eventually spanning the river at any point).

- Use weed-free straw and mulch for all projects, conducted or authorized by the Forest Service, on National Forest System Lands.
- All disturbed soil would be revegetated (except the travel way on surfaced roads) in a manner that optimizes plant establishment for that specific site. Native plant materials are the first choice in revegetation for restoration and rehabilitation where timely natural regeneration of the native plant community is not likely to occur. Under no circumstances will nonnative invasive plant species be used for revegetation.
- Remove all mud, dirt, and plant parts from all off-road or in-water equipment or structures before moving into project area. Cleaning must occur off National Forest lands.
- When equipment is moving from one portion of project area that is weed infested to another portion that is weed free, it would be required to be cleaned as described above. A District Noxious Weed Coordinator or District Botanist would provide locations of weed-infested treatment units on project maps.
- Spoils from project activities with weed infestations will be dispersed or disposed of in consultation with District invasive plant specialist.
- An ESC (Erosion and Sediment Control) plan will be developed for the project. The ESC shall include elements that define the implementation schedule of ESC elements, Clearing limits and extent of ESC elements, recorded keeping requirements, and inspection and monitoring requirements.
- Erosion prevention and control methods shall be used as necessary during and immediately after project implementation to minimize loss or displacement of soils and to prevent delivery of sediment into waterbody. These may include, but are not limited to, operational techniques, straw bales, silt fencing, erosion control blankets, temporary sediment ponds, and/or immediate mulching of exposed areas. Disturbed ground with the potential to deliver sediment into waterbodies shall be revegetated or protected from surface erosion by seeding, mulching, or other methods prior to the fall rainy season.
- Contractor shall provide a Spill Control and Containment Plan for the management of any hazardous materials used or stored on site. The Spill Control and Containment Plan shall include procedures for the notification of applicable authorities.
- Contractor shall provide and have on hand necessary materials and tools to contain and control any potentially hazardous spills.
- Fuel and hazardous chemicals will be stored in a staging area outside of the Nason Creek floodplain and riparian reserve. Fueling of equipment shall occur outside of the floodplain and riparian reserve.
- All equipment used for instream work will be cleaned of petroleum accumulations, soil, plant material, and have leaks repaired prior to entering the project area.
- Equipment shall be inspected daily for fluid leaks before leaving staging areas and thoroughly cleaned as necessary to prevent contamination of waterbodies.
- No cabling will be used to anchor LWD along banks or in log jams within the channel.
- Sensitive areas, staging areas, and construction limits will approved by District personnel prior to implementation.
- Large wood, topsoil, and native material displaced during construction will be stockpiled in designated areas for use during site restoration.
- Trees felled in powerline right of way not used for project elements will be used to meet Large Wood riparian objectives.
- Dewatering and re-watering will be accomplished in a manner that will minimize sediment input, and impacts to fish. Measures needed to accomplish dewatering, re-watering, diversions, sediment management, and fish rescue will be itemized in the project design plans and will meet ARBO II guidelines.
- Construction areas will be isolated from stream channels and fish bearing water. Fish trapped within the isolated area will be captured and released per the Aquatic Restoration Activities Biological Opinion (ARBO II) guidelines.
- Soil reinforcement earthwork and excavation will be completed in the dry.
- Surface fertilizer will not be applied within 50 ft. of any water body.
- A Forest Service Fisheries or Watershed staff will perform implementation monitoring on a routine basis during ground disturbing or instream work phases. Post-project monitoring will occur as described in ARBO II.
- Apply Aquatic Restoration Biological Opinion (ARBO) II design criteria and general provisions

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

☒ Yes ☐ No

The project will involve earthwork below the OHW of Nason Creek. Levee removal, new channel excavation, and channel backfill will occur below the OHW of Nason Creek. See the summary of earthwork area and cubic yards in Table 8e below.

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

The stream restoration project is a self-mitigating project as described in Section 7f above. Coordination with US Forest Service fisheries biologists, WDFW staff, USFWS staff, NOAA fisheries staff and Janine Castro with the Regional Restoration Team have indicated support for the proposed restoration project benefits to aquatic habitat in Nason Creek. See the more detailed description of agency coordination efforts that have occurred as part of the restoration project design; summarized below in Sections 9a, 9l, and Appendix H of this JARPA.

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]

N/A

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
Channel excavation	Nason Creek	Below OHW	Permanent	360 cy	0.09 acres
Levee removal	Nason Creek	Below OHW	Permanent	420 cy	0.12 acres
Channel backfill	Nason Creek	Below OHW	Permanent	24,800 cy	2.40 acres

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]

Channel backfill will consist of on-site materials removed from the newly excavated stream channel and the levee. Mainstem channel backfill material will consist of silty sands removed from the levee and channel excavation areas north of the levee. Channel backfill will also include re-use of the rip-rap that is currently lining the the south face of the levee. Rip rap (1467 cy) will be placed as buried obstructions in the backfilled portion of the mainstem to prevent flows from re-occupying the current straightened section of mainstem.

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]

Channel excavation and levee removal equipment and equipment used for temporary stockpile will be the same as the description in Section 7J above. A 40,000 – 60,000 lb class excavator will be used to re-load stockpiled material into a 30 cubic yard off-road hauler. The off-road hauler will drive and dump the material into the channel after the area has been isolated with cofferdams and de-fished.

Part 9–Additional Information

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
USFS Resource Specialists: Cindy Raekes and Richard Vacirca, Fisheries, Matt Karrer, Hydrology Don Youkey, Wildlife Lindsey Smith, Cultural Resources	Mick Mueller, NEPA Interdisciplinary Team Lead	(509) 548-2550	USFS staff have been part of the project design team for this project since 2010. USFS participates in monthly design team meetings and they completed the Environmental Assessment in summer 2015.
USFWS	Karl Halupka	(509) 665-3508	See summary of ESA consultation in Section 9l below.
NOAA	Justin Yeager	(509) 925-2618	
WDFW	Amanda Barg	(509) 888-8004	10-24-13 site visit and follow up meetings on 12-9-13, 6-13-14, 10-31-14, and 4-22-15
DOE	Andrea Jedel	(509) 454-4260	5-15-14 and summer 2014 site visits
US ACOE	Tim Erkel	(206) 316-3166	10-24-13 and 5-15-14 site visits, and 6-9-14 conference call

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

Nason Creek is on the 303d list for Temperature

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.

Lower Nason Creek (White Pine to the mouth) HUC #170200110602

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 #.

WRIA 45

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

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/BusinessPermits/Topics/ForestPracticesApplications/Pages/fp_watertyping.aspx for the Forest Practices Water Typing System.

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

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

This project will clear more than 5 acres of vegetation, thus a NPDES permit or State Waste Discharge General Permit will be required from DOE. Thus, construction and maintenance actions will be consistent with the requirements of the Stormwater Management Manual for Eastern Washington (DOE 2004). Best Management Practices (BMP's) will be aimed at source control (preventing sediment from entering waters) and flow control (reducing the rate, frequency and/or flow duration of storwater surface runoff).
At a minimum, the following BMP's will be implemented:

- The contractor will be required to develop a construction stormwater pollution prevention plan (Plan) that describes the erosion control measures that will be implemented to prevent sedimentation that could impact downstream water quality.
- Vegetation clearing limits will be surveyed and flagged in the field prior to vegetation removal.
- Construction access routes will be included in the Plan
- Shrub removal within 15' of Tributaries 1-6 and adjacent to the wetland will be minimized within the powerline re-location corridor to provide infiltration and shade functions to aquatic habitats.
- Engineering Plan Sheet 8 depicts the location of possible de-watering discharge locations.
- Engineering Plan Sheet 8 depicts the location of silt fence within the project area. At a minimum, silt fence will be installed:
  - North of the re-constructed channel between earthwork areas and the wetland
  - At the southeast end (downhill side) of the soil stockpile area
  - At the base of the levee removal areas east and west of the channel backfill area (to prevent spoils from levee removal entering Nason Creek)
- Within the powerline re-location corridor, erosion control fence (or similar equivalent erosion control prevention measures) will be installed in the following areas to prevent sediment from entering wetlands and waterways during construction (See also Plan Sheet 8):

Proposed Pole #	Erosion Control
52/5	Erosion control measures will be installed to the north, east, and west to prevent sediment from entering Nason Creek
52/6	Erosion control measures will be installed to the west to prevent sediment from entering the wetland and Tributary 1
52/7	Erosion control measures will be installed to the east and south to prevent sediment from entering the wetland and Tributary 2
52/10	Erosion control measures will be installed to the south to prevent sediment from entering Tributary 5
52/13	Erosion control measures will be installed to the north and east to prevent sediment from entering Tributary 6

- Engineering Plan Sheets 10 and 11 depict the erosion control details.
- Some of the vegetation cleared will be chipped and remain on site as mulch to cover disturbed soils.

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]

Visiting the site today, it may look pristine and unaltered with the exception of the CPUD powerlines that travel through the project area. However, there have been several anthropogenic alterations on site and in the project area. In the 1949 aerial photo (Figure 3 Wetland Report), the floodplain wetland appears farmed and the tributaries appear to flow through the wetland area via linear channelized ditches. In addition, the southeast portion of the wetland may have been excavated; in the 1942 WSDOT maps (Figure 5 Wetland Report), this

area is noted as a fish pond and swimming pool across the road from the White Rock Springs resort. Comparison of the stream alignment in the 1949 and current aerial photographs depict the channelization of Nason Creek through the project area. In the late 1950's to early 1960's the BNSF railroad and CPUD powerlines were re-located and Nason Creek was channelized to flow through two rip-rap lined levees for approximately 1 mile through the project area.

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

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

☒ Yes ☐ No

USFS staff Lindsey Smith and Powys Gadd have completed cultural resource and historic surveys on site. USFS (landowner) is the federal nexus and lead agency for Section 106 consultation. Section 106 consultation has been completed; the APE maps and MOU are attached in Appendix G. The DVD contains a pdf file with the 34 pages (16 letters) of cultural resources correspondence between US Forest Service, the State (SHPO/DAHP), and the tribes (Yakama Nation and Colville Confederated Tribes). A copy of the cultural resources report is available upon request, however, USFS asked that it not be made publicly available.

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]

The project area contains the following species listed under the federal Endangered Species Act:

- Upper Columbia River Spring Chinook (*Oncorhynchus tshawytscha*) (Endangered)
- Upper Columbia River steelhead (*Oncorhynchus mykiss*) (Threatened)
- Bull trout (*Salvelinus confluentus*) (Threatened)
- Northern spotted owl (*Strix occidentalis*) (Threatened)

This reach of the Nason Creek supports steelhead and Chinook habitat for migration, adult holding, spawning and rearing. There is also spotted owl habitat in the vicinity of the powerline re-location corridor.

US Forest Service as the landowner is the federal nexus and lead agency for ESA consultation. Here is a summary of ESA consultation meetings and coordination to date:

- **10-24-13** Site visit with USFS, County, USBR, NOAA, WDFW, USFWS Introduced project to WDFW, USFWS, and NOAA
- **11-15-13** Meeting with USFS, County, and USBR to discuss the ESA consultation and permitting process
- **12-9-13** Meeting at USFS where NOAA called in, USFWS and WDFW were present in addition to County, USBR, and USFS staff. Agreed Project Area 2 would require a BA and the County sub-contracted with Interfluve to draft a BA
- **6-13-14** Meeting with County, USBR, WDFW, and NOAA Presented the 30% design (Alternative D Table 2) and NOAA asked for a project with more biological benefit and indicated support for mainstem fill
- **10-31-14** Meeting with County, USBR, WDFW, USFWS, and NOAA where we presented the 3 meander alternative ("Go Big" Alternative Table 2). Agency staff were supportive of this project concept.
- **3-26-2015** Pre-level 1 ESA consultation meeting with USFWS, NOAA, and USFS staff. Agency staff determined that the stream restoration project elements should fit under the ARBO II programmatic consultation, however, powerline re-location will require a BA and formal consultation for impacts to spotted owl habitat and vegetation removal in riparian reserves of ESA listed fish species.
- **4-22-15** 60% design review meeting and discussion of in-water work window with WDFW, NOAA, USFWS, and USFS staff.
- **May 2015** Submittal of draft BA to USFWS and NOAA fisheries. USFS also provided project information to the Regional Review Team (RRT = Janine Castro and others) to verify programmatic ESA consultation coverage. Preliminary response from the RRT attached (Appendix H).
- **June 2015** USFWS provided comments on the draft BA and NOAA staff indicated they would not have time to review the draft BA so they requested a re-submittal that incorporates USFWS comments.
- **July 2015** Final wildlife BA provided to USFWS
- **August 3, 2015,** Final fisheries BA provided to USFWS and NOAA.

The next steps in ESA consultation include final confirmation from the RRT that the restoration project elements are consistent with the intent of the ARBO II programmatic consultation; final BA review by NOAA and USFWS; and preparation of a Biological Opinion (BO) by USFWS and NOAA. A level 1 meeting between USFWS, NOAA, and USFS may be needed to finalize the conditions of the BO.

The Environmental Assessment prepared by USFS included the following summary of ESA temporary, short and long term impacts:

Due to the presence of spring Chinook, steelhead and bull trout in the action area, this project is likely to adversely affect all species. Short term effects which elevate stream temperatures and turbidity will likely occur. Those primary constituent elements of critical habitat that relate to water quality will be impacted in the short-term. Based on the above discussion, the proposed action is likely to adversely affect Upper Columbia River spring Chinook, Upper Columbia River steelhead, and Columbia River bull trout and their critical habitat.

Over the short-term this project has beneficial components that are overshadowed by the adverse components. The proposed action will result in increased instream LWD; higher quality pool habitat; renovated off channel habitat; restored floodplain connection; decreased roading; and reduced W:D ratio.

Over the long-term, this project has additional beneficial effects that include: improved riparian reserve condition and decreases in stream temperature primarily attributed to increasing canopy cover and streambank revegetation.

Stream restoration impacts to ESA listed species will be covered by the US Forest Service programmatic consultation ARBO II. Impacts to ESA listed species associated with powerline re-location will be covered by Biological Opinions issued by USFWS and NOAA.

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]

In addition to the species listed above, the following Priority Species are present near the site:

- Mule deer (*Odocoileus hemionus hemionus*) breeding occurrence and breeding area
- Gray wold (*Canis lupis*) Occurrence
- Rainbow trout (*Oncorhynchus mykiss*) occurrence/migration
- Westslope cutthroat (*Oncorhyncus clarki lewisi*) occurrence/migration

The WDFW PHS web site is the source for the information listed above.

Part 10–SEPA Compliance and Permits

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 Chelan County (lead agency). The expected decision date is Fall 2015.

☐ 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. NEPA is being completed by USFS

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

LOCAL GOVERNMENT

Local Government Shoreline permits:

☐ Substantial Development ☐ Conditional Use ☐ Variance

X Shoreline Exemption Type (explain): This project meets the criteria for a Shoreline Exemption under WAC 173-27-040 (o)(i)(C) because it is designed to improve fish habitat

Other City/County permits:

☐ Floodplain Development Permit ☒ Critical Areas Ordinance – see exemption above

STATE GOVERNMENT

Washington Department of Fish and Wildlife:

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

Effective July 10, 2012, 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 #_____
Attach check made payable to Washington Department of Fish and Wildlife.

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.**

Nason Creek has not been deemed jurisdictional per DNR to date.

Washington Department of Ecology:

☒ Section 401 Water Quality Certification

This project will most likely qualify for a Nationwide Permit 27 for stream restoration. Therefore, the DOE water quality certification may be covered under a statewide programmatic agreement between DOE and US Army Corps of Engineers.

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. _____ (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)

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.

Authorized Agent Printed Name	Authorized Agent Signature	Date
Jennifer Hendershenger	Jennifer Hendershenger	8-21-15

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.

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. 08/2013

List of Appendices and Additional Information

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Figure 8: Spring Chinook Spawning map
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Figure 15: Earthwork in Waterways
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Figure 17: Water Level Elevations - Existing and Proposed
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Table 1: Floodplain Restoration Prioritization in Nason Creek
Table 2: Alternatives Analysis Summary

Appendix B: Engineering Design Plan Sheets 1-43
Appendix C: Alternatives Analysis (Restoration Plan)
Appendix D: Construction Sequence
Appendix E: Ground and Surface Water Monitoring Data
Appendix F: Wetland Delineation Report
Appendix G: Cultural Resources APE Map and MOU
Appendix H: ESA Consultation Status Email

Documents included on the DVD:

- Salmon Steelhead and Bull Trout Habitat Limiting Factors, Wenatchee Watershed (Andonaegui 2001)
- Nason Creek Focused Watershed Action Plan (USFS 2008)
- Tributary Assessment (Bureau of Reclamation 2008)
- Upper White Pine Reach Assessment (Bureau of Reclamation 2009)
- Nason Creek Subreach Unit Prioritization (ICF International 2009)
- Nason Creek Upper White Pine Reach Restoration Plan (USFS Enterprise TEAMS and Interfluve 2013)
- 60% Engineering Design Report (Interfluve 2015)
- Powerline Re-location Alternatives Analysis Memorandum (Initial March 2012 and Final July 2012 by HDR)
- Environmental Assessment (US Forest Service 2015)
- Cultural Resources Correspondence Letters
- Monitoring Plan