Restoration Programmatic for the State of Washington
Specific Project Information Form

U.S. Army Corps of Engineers, Seattle District, Regulatory Branch

July 29, 2008 version

Use this form to notify the U.S. Army Corps of Engineers, Seattle District (Corps) of a proposed restoration project that falls within the range of the nine restoration activities considered by National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) during its Section 7 of the Endangered Species Act (ESA) consultation (NMFS Reference No. 2008/03598; USFWS Reference No. 13410-2008-F-0209). You may also use this form if your project slightly deviates from the description and scope of the nine project categories addressed in this consultation. However, should the resulting impacts exceed those considered in the NMFS and USFWS Biological Opinion you will need to consult individually (which generally takes longer) and potentially provide additional information. The Corps is responsible, in most cases, for ensuring that a project complies with the requirements of Section 106 of the National Historic Preservation Act.

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I GENERAL INFORMATION

A. Date: August 19, 2015 **Corps reference no.**: _____

B. Applicant name (same as in JARPA): Mark Palmer

Address City of Puyallup

333 South Meridian

Puyallup, WA, 98371

C. Agent Name (same as on JARPA): Charissa Young

Address: Natural Systems Design

1900 N. Northlake Way, Suite 211

Seattle, WA, 98103

D. Location(s) of activity:

Section: 32 Township: 20N Range: 4E

Latitude (xxx° xx' xx.x"): 47°10'18.50"N lat.

Longitude (xxx° xx' xx.x"): 122°19'9.75"W long

UTM: Zone 10, 551579.1 (Easting), 5224481.2 (Northing)

Waterbody: Upper Clarks Creek and Upper Clarks Creek Tributary

County: Pierce

ESU or IRU: Puget Sound (Chinook ESU, Steelhead DPS)

E. Project elements. In the table below, fill in the maximum length of each project element proposed and the number of structures where applicable. This information will be used by the Services for calculating your take exemption:

Action Category	**Project Length and Width where applicable**	**Number of Structures**
1. Fish Passage:		
a. Culvert Replacement and Relocation		
b. Retrofitting Culverts		
c. Culvert Removal		
d. Tidegate Removal		
e. Removal or Modification of Sediment Bars or Terraces		
f. Temporary Placement of Sandbags, Hay Bales and Ecology Blocks		
g. Construction of Structures to Provide Passage over Small Dams		
2. Installation of Instream Structures:		
a. Placement of Woody Debris *(Shown as "Bed Logs" on plan set)*	745 LF	Structures at 14 locations with a total of 46 pieces of wood
b. Placement of Live Stakes	-	-
c. Placement of Engineered Log Jams *(Shown as "Toe Structures" on plan set)*	Bank protection ELJ's (GCM 7.a): Length: 280' Width: 5'	14 bank protection ELJ's

Action Category	**Project Length and Width where applicable**	**Number of Structures**
d. Grade Control ELJs *(Shown as "Large Woody Matrices" on plan set)*	770 lineal feet. Structures consist of logs, stream cobble, and slash/vegetation	31 Grade control ELJ's: 15 are 22' wide 16 are 14' wide
e. Trapping Mobile Wood	Included in 2c. above	Included in 2c. above
f. Placement of Boulders		
g. Boulder Weirs and Roughened Channels *(Shown on plan set as "Brush Mattresses")* *Located at upper extent of mainstem.*	Roughened Channel (*no Boulder Weirs*): 10 lineal feet via "brush mattresses" consisting of stakes and vegetation 60 lineal feet of stream cobble (Roughened channel)	3 brush mattresses 1
h. Gravel Placement Associated with Structure Placement		
3. Levee Removal and Modification	-	
4. Side Channel/Off Channel Habitat Restoration and Reconnection	-	
5. Salmonid Spawning Gravel Restoration	-	
6. Forage Fish Spawning Gravel Restoration	-	
7. Hardened Fords and Fencing for Livestock Stream Crossings	-	
8. Irrigation Screen Installation and Replacement	-	
9. Debris and Structure Removal	-	

F. Description of the proposed work: [Describe the work to be accomplished including purpose, number and type of structures to be installed or constructed, construction materials and machinery to be used, and anticipated construction techniques to be employed. You may attach additional pages or, if completing this form by computer, expand the space below to provide this information. Attach maps or drawings to clearly illustrate the location, nature, and extent of the proposed work.]

Clarks Creek is designated as critical habitat for threatened Chinook Salmon and steelhead under the Endangered Species Act. No fish species are present in the project area since fish passage is blocked by a hatchery dam downstream of the project area. However, decreased habitat quality downstream of the hatchery dam due to sediment inputs from upstream is a primary concern for key fish species present: Salmon: Chinook, coho, chum, and trout: steelhead, bull, and cutthroat.

Upper Clarks Creek is experiencing substantial down-cutting and in-channel erosion of sediment from it banks and bed. The erosion of sediment in Clarks Creek is likely due to increased peak flows caused by urbanization and associated impervious surfaces. Additionally deforestation within the stream buffer contributes to unstable, saturated soils from lack of evapotranspiration, canopy interception, & root mass stability on slopes.

The watershed is continuing to urbanize, which will continue to increase peak flows and erosion in the drainage basin. County planners predict that impervious area will increase by 40% by 2020 as population grows.

Excess sediment is considered to be a primary cause for several factors negatively impacting salmonid habitat in the downstream portion of Clarks Creek:

- Dissolved oxygen (DO) concentrations are lower than state water quality standards for salmonid habitat. Concentrations of DO are likely reduced by the over-growth of western waterweed (*Elodea nutalli*) in Clarks Creek which is contributed to by sediment-bound nutrients (e.g. phosphorous & organic nitrogen) transported from erosion in upstream reaches. Western waterweed also physically reduces habitat for salmonids.
- High silt content deposited in downstream portions of Clarks Creek has limited adequate substrate for spawning habitat.
- State water quality criteria for fecal coliform bacteria is exceeded from sediment-bound fecal coliform.
- Puyallup Tribe hatchery operations have also been negatively impacted by sediment-laden water clogging hatchery screens and reduced dissolved oxygen concentrations which has resulted in incidents of inadequate water quality for rearing and returning salmon within the hatchery.

Clarks Creek is a state-impaired water body due to low dissolved oxygen and sediment. Low dissolved oxygen levels, excess fine sediment and sand, and the overgrowth of elodea (Elodea nuttalii) create conditions in Clarks Creek that harm fish and their supporting habitat, according to the TMDL Water Quality Improvement report and Implementation Plan. Clarks Creek and its tributaries also do not meet water quality standards for fecal coliform

Objectives:

- Reduce sediment production and transport from eroding channel banks and bed in the headwaters of Clarks Creek.
- Stabilize the 12-foot high headcut at the upper end of site
- Construct grade control and channel roughness elements in the incised segments of the stream
- Stabilize loose gravels sloughing from the valley wall in the incised channel segments;
- Increase in-channel flood storage capacity within Upper Clarks Creek and Upper Clarks Creek Tributary.

Brown and Caldwell produced a comprehensive study of the Clarks Creek Watershed that sought to identify primary sources of sediment and to develop a plan for reducing sediment from those sources. Upper Clarks Creek and Upper Clarks Tributary were identified as the two largest contributors of sediment and were prioritized for restoration to reduce bed and bank in-channel erosion. Key findings that are relevant to Upper Clarks Creek Channel and Bank Stabilization Project are:

- Geologic material in the project area is glacial outwash and till consisting of unstratified, silt, sand, gravel, and cobbles.
- An overlying unit of lacustrine deposits is located above the till and underlies a wetland complex on the plateau surface upstream of 23rd AVE SW.
- Historical channel incision linked to multiple factors including:
    - Base level lowering caused by channelization of Lower Puyallup River;
    - Clearance of mature forest within valley, adjacent hillslopes, and upland areas; and
    - Increased surface runoff due to land use changes.
- Upstream migration of headcut has lowered bed profile by 6-12 feet over the project reach.
- Initial downcutting delivered excess sediment to downstream reaches.
- Incision has triggered instability of adjacent hillslopes resulting in slope failure and delivery of mass wasting deposits to the valley bottom that are then mobilized by high flows and transported downstream.
- Average annual load estimates for Upper Clarks Tributary is approximately 45 tons/year and Upper Clarks Creek (within project area) is approximately 65 tons/year (total of 6100 tons of eroded material). Annual sediment loss values assume a constant rate between 1916 and 2012. Since land use has not stayed constant from 1916 to 2012, current annual erosion rates are likely substantially higher due to continued urbanization.

Proposal

The project area consists of 1400' of incised channel within Upper Clarks Creek and 800' of incised channel within Upper Clarks Tributary. The limit of project area is from 23rd Ave SW at the upstream extent to the confluence of Upper Clarks Creek and Upper Clarks Creek Tributary.

To meet the project goals, the design calls for of a series of sediment trapping structures to be installed along the banks, at specifically located toes, and within the channels and embedded into the stream bed. Structures are:

- 31 large woody matrices: bed stability & sediment capture, consist of embedded posts, LWM, root wads, cobble and slash
- 59 timber frame structures: vegetated bank stability & upland (landward) sediment capture. Made of logs, coir, and native plants
- 14 toe structures: vegetated toe stability & sediment capture, in order to establish native vegetation. Made of posts, LWM, and slash
- 46 bed logs
- 3 brush mattresses: bed aggradation & sediment capture for low energy areas. Made of slash, coir, stakes and natural rope.

The structures are intended to collect and trap sediment and to control and limit erosion, with the objective of stabilizing the Upper Clarks Creek watershed, thereby allowing fish habitat and water quality in the lower reached to recover.

With the exception of the timber frame structures and large woody matrix structures, whose upper extents will be installed above OHWM, all of the structures will be installed below OHW. As the large woody matrices trap sediment over time and aggrade the bed, more of the large woody matrix volume will be below the OHWM.

Methods:

Prior to installation, work areas will be temporarily dewatered according to state and federal protocols for non-fish-bearing reaches. Materials will be transported to the channel with a cable high-line system and high density plastic chutes to reduce surface erosion.

The project will add wood and streambed materials to stabilize approximately 2,200 feet of incised and eroding channel and banks. Logs, small woody materials (slash), and stream cobbles will be added to stabilize banks and streambed and to reduce incision. Work will be performed by machine with some hand labor. Large wood will be anchored behind log piles, existing trees and rocks. Large wood in timber frame (bank stabilization) structures will also be anchored with rebar pins and earth anchors above OHW. Logs will be grouped in configurations that limit downstream migration and weighted down with additional ballast logs. Large wood will also be combined with small woody material in large woody matrices and toe structures. Brush mattresses will be made of stakes, coir fabric, native brush, and manila rope. Installations will be designed to protect and stabilize eroding banks and streambed and will trap incoming sediment to reduce channel entrenchment and promote floodplain connectivity. Native plants will be added within bioengineered structures to increase bank stability.

Re-grading is not proposed and excavation will be strictly limited to that which is necessary to install stabilizing structures. Slash will be permanently installed within the tributary and mainstem work area between structures to protect the streambed from construction impacts.

Construction equipment for main stem and tributaries will be contractor's choice, but likely a majority of the work will be done with heavy equipment including a track-hoe, dump trucks (along old logging road access), generator, electric submersible pump (with fish screen), chainsaw, a highline cable system, and some hand work.

Material delivery to the staging areas at the *top* of slope will be by machine via temporary access roads on existing, historical road grade. Transport of the materials from the top of the slope to staging areas along the stream is anticipated to be performed using chutes and cable skylines. All bare surfaces will be covered with arborist wood chip mulch and replanted with site appropriate native species upon completion of the project.

G. Project timing:

Start date: summer 2016	**Start Date In-water Work: summer 2016**
End date: fall/winter 2016	**End Date In-water Work: Late summer 2016**

H. Anticipated cubic feet per second (CFS) of stream at time of construction: <2cfs

I. How much area do you propose to clear for temporary access?

In order to minimize erosion, temporary access will primarily be opened up along an existing former logging road grade (19,950SF). Approximate clearing in this zone will be less than the total area as there is a social trail that occupies ~25% of the road grade width. An estimate of clearing along the road grade is therefore 14,962 SF.

Two additional temporary access routes are proposed. Each will allow a machine access to the stream (the mainstem and the tributary). These routes will head down the slope. Combined SF of clearing for these routes is 4,725 SF.

All temporary access routes and staging areas will be re-planted with location appropriate native tree, shrub, and groundcover species during the approved planting window. All bare soils will be protected with arborist wood chip mulch or coir (900 series) within seven calendar days of project completion.

J. How many trees and what sizes will be felled for temporary access?

No more than 30 trees will be felled for temporary access. Access will be cut through invasive trees and shrubs first, then deciduous trees and shrubs. Conifers will be avoided. Cut trees will be incorporated into structures.

K. Will your temporary access traverse across slopes steeper than 30%?

Yes. The two access routes that access the channel will encounter slopes over 30%. The contract and specs will be written so that the contractor must limit the number of trips along

these routes. No materials will be allowed to be delivered along these routes. All bare soils will be covered to a depth of 6" with arborist woodchip mulch or with coir (900 series) within seven calendar days of project completion, and replanted with appropriate native species (within the planting calendar for Western Washington). .

L. How many temporary stream crossings do you propose? List all best management practices (BMPs) proposed to avoid and minimize impacts from stream crossings.

Due to the steep eroding stream banks, the majority of work will be performed from the dewatered stream bed. The machine will be small, likely a 100-series track-hoe with rubber tracks. The machine will work in one direction in order to minimize passes. On similar projects, this amounts to one pass up or down the stream bed. Materials will be shuttled to the channel via cabled high-lines and chutes to pre-determined and staked staging areas, so the machine will not be adding travel to access materials.

In softer stream bed areas within the tributary work area (mud, sediment with high organic content) layers of conifer boughs will be installed within the softer soils to minimize bed disturbance and disperse the machine's weight. The boughs will be left in place upon completion of the project to help stabilize the soils.

The project area is upstream of a known fish passage barrier so no potential spawning habitat will be impacted.

A Pollution, Spill, and Erosion Control Plan will be prepared and executed in order to prevent the accidental discharge of contaminants and to prevent and control erosion.

If high flow conditions that may cause siltation downstream are encountered, work will stop until flows subside

M. Culvert replacements: <u>N/A</u>

1. Append the applicable "Summary Form for Fish-Passage Design Data" that can be found in the WDFW Culvert Manual ((Bates et al. 2003) Appendix F).
2. Append maintenance plan that shows that culvert will be in design condition prior to each fish passage season.
3. If your project is in gradients 6 – 10 % and a bridge is not feasible, use stream simulation option and provide annual monitoring data of substrate, invert elevation, and channel form (elements of roughened channel: boulders, pools, low flow channel) including a picture prior to each migration season.
4. If your culvert is longer than 150 feet include tribal comments. If you discussed your design with WDFW, include WDFW comments or a record of your conversation with WDFW.
5. Are you increasing the amount of rip-rap. If so, by how much?
6. Describe how proper ecological functions (bedload movement, debris movement, flood flows) in addition to fish passage will be met.
7. If you are increasing the length or width of a road:
   a. Quantify the increased impervious surface created as a result of this activity.
   b. List measures that you propose to use to avoid impacts to resources and water quality.

Note: Permanent road improvements that result in increased traffic or development are not permitted under this PBA.

N. Rock grade control structures: How much combined rock is proposed for structures?

No rock grade control structures (boulder weirs, 2.g of the Restoration PBA) are proposed.

The project does propose to install stream cobble as part of the Grade Control ELJ's. The cobble is an integral part of the functional design of "large woody matrices" as proposed. Cobble will retain sediment, decrease stream energy, and increase water elevations. The use of cobble with large woody material and slash, in the arrangement proposed, is part of the "complex broad-crested structure that dissipates energy more gradually" as is allowed under the description in 2.d of the Restoration Programmatic.

Cobble is also proposed as a channel roughness measure within a deeply incised reach of the stream. The cobble will be low in profile and will not be arranged in a weir-type arrangement. The 60' reach in which it is proposed is deeply entrenched (over 10' deep and 3-4'wide) and it is impractical to place woody material of sufficient length. (2.g. of the Restoration PBA).

977 CY of stream cobble are proposed for the grade control ELJ's/large woody matrices.
+51 CY of stream cobble are proposed for the roughened channel.
1028 CY total.

O. Removal or modification of sediment bars or terraces: Has there been previous removal of sediment at this location? If yes when and how much? **N/A**

P. Side Channel/Off Channel Habitat Creation: N/A

1. Has a reach assessment or analysis been conducted for this project?
2 How many years will the project take to complete?
3. Demonstrate sufficient hydrology for a self-sustaining channel.

Q. Will you be isolating the work area? [Explain how your decision on working in the wet or dry, or partially isolation the area, will minimize impacts to salmonids.]

Yes. Reaches where work is occurring will be isolated. The least impactful method of installing the structures is to work from an isolated streambed. Given the steep and loose terrain, working from the stream banks would cause major short and long term erosion and sedimentation issues that would harm water quality and habitat. Procedures outlined in Appendix D of the PBA for Restoration Actions will be followed.

R. Give a maximum estimate for the duration and length of downstream turbidity impacts. The Services will use this estimate for giving you your take exemption. (During construction you will be monitoring downstream sedimentation every 20 min to verify/refine your given estimate**.)**

Due to the low flow anticipated during the summer construction window and the use of a pump bypass system and other erosion control BMPs, turbidity should not exceed 5 NTUs above

background as measured 100 feet downstream of the site for the majority of the construction period. It is possible that inadvertent discharges in excess of 5 NTUs might occur during site dewatering and re-watering. These discharges, if they occur, are expected be very short in duration (< 10 minutes) and low in magnitude (<25 NTUs) and work would cease until the values return to acceptable levels.

This project poses a low risk for affecting water quality. Water management, erosion, and sediment controls shall be implemented to minimize potential water quality impacts related to turbidity input.

S. Explain what equipment will generate noise above ambient levels and for what period during the day and for how many days.

Equipment used may include a small track hoe (100-series), dump trucks, generators, submersible electric pumps (with fish screen), and various hand tools operating singly or in combination. Work may be conducted between 7am and 7pm, but most commonly will occur between 7am and 6:30pm on weekdays. In channel work is anticipated to last up to 12 weeks. Planting would occur after October 1 (WSDOT standard spec) and could last up to 3 weeks. The bypass and pump(s) may operate 24 hours a day.

T. Please attach HPA or explain why you do not need one.

An HPA has been applied for and will be submitted as an addendum to this SPIF once it is issued by WDFW

U. If your project does not meet all of the criteria outlined in the PBA, but is a restoration action of similar scope and impacts, contact the Services with the project's description, conservation measures and reason(s) it may not currently fit under the PBA. Provide below any supporting conversations with NMFS and/or USFWS staff, including a list of the PBA criteria your project won't meet. This is a living document. We are continuously working on refining the proposed/covered actions and conservation measures.

1. For all action categories selected in section 1.E of this SPIF, the project will comply with all elements of the project description and the conservation measures.

2. The project will comply with all general conservation measures of the PBA.

3. The project will comply with all of the PBA's conservation measures frequently associated with restoration actions.

4. This project is not proposing any activities that are excluded under the PBA

II EFFECT DETERMINATIONS FOR FISH SPECIES USFWS & NMFS

Each project should have the appropriate effect determination. The PBA allows for No Effect (NE), Not Likely to Adversely Affect (NLAA), or Likely to Adversely Affect (LAA) determinations for listed species. Each determination must be adequately documented in this form. If you need assistance in determining the appropriate effect determination, consult the Corps, USFWS, and NMFS staff.

Check all currently listed evolutionarily significant units (ESUs) or Interim Recovery Units (IRUs) that may occur in the fifth field watershed where the project is located.

Endangered

___ Upper Columbia River Spring-run Chinook (*Oncorhynchus tshawytscha*)
___ Snake River Sockeye (*Oncorhynchus nerka*)
___ Upper Columbia River Steelhead (*Oncorhynchus mykiss*)

Threatened

___ Bull trout, Coastal/Puget Sound IRU *(Salvelinus confluentus)*
___ Bull trout, Columbia River IRU (*Salvelinus confluentus*)
___ Coho salmon, Lower Columbia River ESU (*O. kisutch*)
___ Chinook salmon, Lower Columbia River ESU (*Oncorhynchus tshawytscha*)
_X_ Chinook salmon, Puget Sound ESU (*Oncorhynchus tshawytscha*)
___ Chinook salmon, Snake River Spring/Summer-run ESU (*Oncorhynchus tshawytscha*)
___ Chinook salmon, Snake River Fall-run ESU (*Oncorhynchus tshawytscha*)
___ Chum salmon, Columbia River ESU (*Oncorhynchus keta*)
___ Chum salmon, Hood Canal summer ESU (*Oncorhynchus keta*)
___ Steelhead trout, Lower Columbia River ESU (*Oncorhynchus mykiss*)
___ Steelhead trout, Middle Columbia River ESU (*Oncorhynchus mykiss*)
_X_ Steelhead trout, Coastal/Puget Sound DPS (*Oncorhynchus mykiss*)
___ Steelhead trout, Snake River ESU (*Oncorhynchus mykiss*)

Designated

____ Critical habitat for Coastal/Puget Sound bull trout IRU
___ Critical habitat for Columbia River bull trout IRU
___ Critical habitat for Columbia River chum salmon ESU
___ Critical habitat for Hood Canal summer chum salmon ESU
___ Critical habitat for Lower Columbia River Chinook salmon ESU
___ Critical habitat for Upper Columbia River Spring-run Chinook salmon ESU
___ Critical habitat for Snake River Spring/Summer-run Chinook salmon ESU
___ Critical habitat for Snake River Fall-run Chinook salmon ESU
_X_ Critical habitat for Puget Sound Chinook salmon ESU
___ Critical habitat for Lower Columbia River steelhead trout ESU
___ Critical habitat for Upper Columbia River steelhead trout ESU
___ Critical habitat for Middle Columbia River steelhead trout ESU
___ Critical habitat for Snake River steelhead trout ESU

Lake Ozette Sockeye salmon are not covered by this programmatic at this time.

Directions: Use the Notes section under each question to document your rational and decision making process for presence or absence of the fish, and the effect determination.

FILL OUT THIS SECTION FOR EACH INDIVIDUAL ESU THAT OCCURS IN THE FIFTH FIELD WATERSHED

Effect Determination by Species:
ESU and critical habitat: Chinook salmon, Puget Sound ESU (*Oncorhynchus tshawytscha*)

1) Is the project in a fifth - field watershed that contains or has the potential to contain _Chinook salmon, Puget Sound ESU (*Oncorhynchus tshawytscha*)?

YES X If yes, list fifth field watershed, and go to question 2.
Fifth-field watershed: Upper Clarks Creek and Clarks Creek Tributary.

NO ___ If no, the project will have "No Effect" on: Chinook salmon, Puget Sound ESU (*Oncorhynchus tshawytscha*). Go to question 5. Notes:

_____

_____

2) Do the stream(s) in which impacts may occur contain suitable habitat for_Chinook salmon, Puget Sound ESU (*Oncorhynchus tshawytscha*)?
For bull trout use Tables 1 & 2 of Appendix A and/or the draft recovery plans (available at: http://www.fws.gov/pacific/bulltrout/recovery.html) and a distribution map the USFWS posted at http://www.fws.gov/westwafwo/index.html to determine if your project is within critical habitat for bull trout.
For other salmon you may use the NMFS critical habitat web page at http://www.nwr.noaa.gov/Salmon-Habitat/Critical-Habitat/CH-Maps.cfm determine if your project is within critical habitat.

YES X If yes, what type of habitat is present? Spawning X Rearing X Migratory Corridor X Not known ___ Go to Question 3.

NO ___ If no, the project will have "No Effect" on _Chinook salmon, Puget Sound ESU (*Oncorhynchus tshawytscha*)Go to question 5.

Notes: _____

_____

3) Approximately how far is the project from the nearest suitable habitat (in river miles, upstream or downstream) for _Chinook salmon, Puget Sound ESU (*Oncorhynchus tshawytscha*)?
The closest project structure is approximately 1,300' upstream of the Clarks Creek Fish Hatchery dam. The dam is a barrier to upstream migration.

Go to question 4.

Notes: _____

_____

4) Does the proposed activity have the potential to alter or affect the following indicators: temperature, sediment, chemical contamination/nutrients, physical barriers, substrate embeddedness, large woody debris, pool frequency, pool quality, off-channel habitat, refugia, wetted width/depth ratio, streambank condition, floodplain connectivity, peak/base flows, drainage network, disturbance history, function of riparian reserves, or disturbance regime?

YES _X_ If yes, briefly explain which habitat elements will be affected and indicate if the effects will be short term or long-term. For example, many activities will have increased levels of turbidity during project implementation, but are expected to result in long-term improvements to the target indicators. _Short term increases in turbidity may occur during construction. Long-term benefits to habitat quality within the project area will include a decrease in fine sediment transport, an increase in fine sediment capture, increase in bed roughness, an increase in woody debris and refugia, an increase in the wetted width to depth ratio, an improvement in stream bank stability and habitat function, and repair of riparian function. Replanting of the riparian area with native conifers, and shrubs will accelerate the restoration of buffer function in this reach. Benefits to downstream habitat (below the Hatchery dam, will include a decrease in fine sediment transport and recruitment which as covered what would otherwise be suitable spawning grounds, and an increase in water quality, primarily dissolved oxygen levels.

NO ___ If no, the project will have "No Effect" on _(insert species). Go to question 4.

Notes: -

5) Provide rationale for effect determination. _(From above) Short term increases in turbidity may occur during construction. Long-term benefits to habitat quality within the project area will include a decrease in fine sediment transport, an increase in fine sediment capture, increase in bed roughness, an increase in woody debris and refugia, an increase in the wetted width to depth ratio, an improvement in stream bank stability and habitat function, and repair of riparian function. Replanting of the riparian area with native conifers, and shrubs will accelerate the restoration of buffer function in this reach. Benefits to downstream habitat (below the Hatchery dam, will include a decrease in fine sediment transport and recruitment which as covered what would otherwise be suitable spawning grounds, and an increase in water quality, primarily dissolved oxygen levels.

Effect Determination: _NLAA_ Chinook salmon, Puget Sound ESU (*Oncorhynchus tshawytscha*)

Note: If you are dewatering an area, electroshocking in an area, or are doing major in-water work where listed salmonids are likely to be present during the work window, you will probably have a LAA effect determination.

Effect Determination by Species:
ESU and critical habitat: Steelhead trout, Coastal/Puget Sound DPS (*Oncorhynchus mykiss*)

1) Is the project in a fifth - field watershed that contains or has the potential to contain Steelhead trout, Coastal/Puget Sound DPS (*Oncorhynchus mykiss*)?

YES X If yes, list fifth field watershed, and go to question 2.
Fifth-field watershed: Upper Clarks Creek and Clarks Creek Tributary.

NO ___ If no, the project will have "No Effect" on Steelhead trout, Coastal/Puget Sound DPS (*Oncorhynchus mykiss*). Go to question 5. Notes:

_____

_____

2) Do the stream(s) in which impacts may occur contain suitable habitat for Steelhead trout, Coastal/Puget Sound DPS (*Oncorhynchus mykiss*)?
For bull trout use Tables 1 & 2 of Appendix A and/or the draft recovery plans (available at: http://www.fws.gov/pacific/bulltrout/recovery.html) and a distribution map the USFWS posted at http://www.fws.gov/westwafwo/index.html to determine if your project is within critical habitat for bull trout.
For other salmon you may use the NMFS critical habitat web page at http://www.nwr.noaa.gov/Salmon-Habitat/Critical-Habitat/CH-Maps.cfm determine if your project is within critical habitat.

YES X If yes, what type of habitat is present? Spawning X Rearing X Migratory Corridor X Not known ___ Go to Question 3.

NO ___ If no, the project will have "No Effect" on Steelhead trout, Coastal/Puget Sound DPS (*Oncorhynchus mykiss*) Go to question 5.

Notes: _____

_____

3) Approximately how far is the project from the nearest suitable habitat (in river miles, upstream or downstream) Steelhead trout, Coastal/Puget Sound DPS (*Oncorhynchus mykiss*)?
The closest project structure is approximately 1,300' upstream of the Clarks Creek Fish Hatchery dam. The dam is a barrier to upstream migration.

Go to question 4.

Notes: _____

_____

4) Does the proposed activity have the potential to alter or affect the following indicators: temperature, sediment, chemical contamination/nutrients, physical barriers, substrate embeddedness, large woody debris, pool frequency, pool quality, off-channel habitat, refugia, wetted width/depth

ratio, streambank condition, floodplain connectivity, peak/base flows, drainage network, disturbance history, function of riparian reserves, or disturbance regime?

YES X If yes, briefly explain which habitat elements will be affected and indicate if the effects will be short term or long-term. For example, many activities will have increased levels of turbidity during project implementation, but are expected to result in long-term improvements to the target indicators.

Short term increases in turbidity may occur during construction. Long-term benefits to habitat quality within the project area will include a decrease in fine sediment transport, an increase in fine sediment capture, increase in bed roughness, an increase in woody debris and refugia, an increase in the wetted width to depth ratio, an improvement in stream bank stability and habitat function, and repair of riparian function. Replanting of the riparian area with native conifers, and shrubs will accelerate the restoration of buffer function in this reach. Benefits to downstream habitat (below the Hatchery dam, will include a decrease in fine sediment transport and recruitment which as covered what would otherwise be suitable spawning grounds, and an increase in water quality, primarily dissolved oxygen levels.

NO ___ If no, the project will have "No Effect" on (insert species). Go to question 4.

Notes: _____

5) Provide rationale for effect determination. (From above) Short term increases in turbidity may occur during construction. Long-term benefits to habitat quality within the project area will include a decrease in fine sediment transport, an increase in fine sediment capture, increase in bed roughness, an increase in woody debris and refugia, an increase in the wetted width to depth ratio, an improvement in stream bank stability and habitat function, and repair of riparian function. Replanting of the riparian area with native conifers, and shrubs will accelerate the restoration of buffer function in this reach. Benefits to downstream habitat (below the Hatchery dam, will include a decrease in fine sediment transport and recruitment which as covered what would otherwise be suitable spawning grounds, and an increase in water quality, primarily dissolved oxygen levels.

Effect Determination: NLAA Steelhead trout, Coastal/Puget Sound DPS (*Oncorhynchus mykiss*)

Note: If you are dewatering an area, electroshocking in an area, or are doing major in-water work where listed salmonids are likely to be present during the work window, you will probably have a LAA effect determination.

III EFFECT DETERMINATIONS FOR LISTED TERRESTRIAL SPECIES

1. To determine which listed species may occur in the project area follow the steps below:
    a. Obtain a county species list from the USFWS web page.
    http://www.fws.gov/westwafwo/se/SE_List/endangered_Species.asp
    http://www.fws.gov/easternwashington/county%20species%20lists.htm
    b. Site-specific information of listed species occurrences in Washington State may be obtained from the Washington Department of Fish and Wildlife Priority Habitat and Species Program http://www.wdfw.wa.gov/hab/phspage.htm and from the Washington Department of Natural Resources Natural Heritage Program at http://www.dnr.wa.gov/nhp/.
    c. Remove species from the species list when habitat is not available for the species in the project area or "vicinity of activity" (generally 1 mile radius around the project site. The area that may be affected by any project impacts including noise and turbidity.)

2. When filling out the information below consider:
    Each project should have the appropriate effect determination. The PBA allows for NE or NLTAA determinations for terrestrial species, and NE, NLTAA or LTAA for aquatic species. Each determination must be adequately documented in this form. If you need assistance in determining the appropriate effect determination, request help from a Corps ESA Coordinator or the USFWS. The USFWS contact is Tom McDowell at 360-753-9426.

    a. For information on species biology, range and critical habitat use the USFWS web site: http://www.fws.gov/westwafwo/index.html
    b. Conservation Measures are listed in Appendix B
    c. If you do not implement all conservation measures related to the species present please explain.

LISTED TERRESTRIAL SPECIES

Please refer to the PBA for actions that may affect these species and conservation measures to protect terrestrial species. For information on the listed terrestrial and aquatic species that occur in Washington, visit the following website: ecos.fws.gov or contact the following FWS field offices:

Western Washington Office in Lacey:	(360) 753-6044	John Grettenberger
Central Washington Office in Wenatchee:	(509) 665-3508	Jessica Gonzales
Eastern Washington office in Spokane:	(509) 891-6839	Suzanne Audet

COASTAL ECOSYSTEMS

Listed Species: Brown Pelican (*Pelecanus occidentalis*), **Oregon silverspot butterfly (***Speyeria zerene hippolyta***), and Snowy Plover** (*Charadrius alexandrinus nivosus*)**:**

a) Will the activity occur in Grays Harbor, Wahkiakum, Pacific, Jefferson or Clallam Counties?
No Put NE under "Effect Determination" for these three coastal species.
Yes If yes go to b)

b) Will the activity alter sand islands or coastal dunes and meadows in Grays Harbor or Pacific County?

No Yes

If yes, contact the FWS office in Lacey for coordination.

c) Conservation Measures to be applied:

d) Effect Determination for coastal species and rationale:

NE, Work will not occur within coastal counties.

LOWER COLUMBIA

Listed species: Columbian white-tailed deer (*Odocoileus virginianus leucurus*)

a) Will the activity occur on islands or in the floodplain of the lower Columbia River (Wahkiakum and Cowlitz Counties) and include installing fence?

No Yes

If yes, apply conservation measures for the Columbian white-tailed deer

b) Effect Determination and rationale:

NE. No, work will not occur on islands or in the floodplain of the Lower Columbia R.

CARNIVORES and CARIBOU

1. Gray Wolf (*Canis lupus***) –** The range of the grey wolf includes the Blue Mountains, northeast Washington (Rocky Mountains) and the Cascade Mountains. There are no confirmed records of wolves west of the Cascade Crest and no documented den sites in the state.

2. **Grizzly Bear (***Ursus arctus horribillis***) –** The grizzly bear recovery plan identifies high alpine areas in the North Cascades (north of Interstate 90 to the Canadian border) as important for recovery of this species in Washington.

3. Canada lynx (*Lynx Canadensis***) -** This species occurs in high elevation forests (generally above 4,000 feet) in the North Cascades and northeast Washington.

4. The **woodland caribou (***Rangifer tarandus caribou*) occurs in high elevation forests (generally above 4,000 feet) in northeast Washington (Pend Oreille County).

a) Will the activity be conducted in or near mountain meadows or forest openings, high elevation forests, or ungulate wintering or calving sites in the geographic areas where these listed species may occur?

No Yes

If yes, apply the appropriate seasonal restrictions identified in the PBA to minimize disturbance

If you do not know whether your project will affect suitable habitat or feeding areas for these species, please contact the USFWS office in Spokane.

b) Effect Determination for these species and rationale. Document any supporting conversations with USFWS staff:

NE. Work will not occur in or near mountain meadows or forest openings, high elevation forests, or ungulate wintering or calving sites in the geographic areas where these listed species may occur.

Pygmy rabbit (*Brachylagus idahoensis***)**

1. The pygmy rabbit historically was found in dense, tall sagebrush areas east of the Columbia River (Douglas, Adams, Lincoln, Grant and Benton Counties).

a) Will the activity occur in native sagebrush areas of the central Columbia Plateau?
No Put NE under "Effect Determination" and proceed to next species.
Yes If yes, contact the USFWS.

d) Effect Determination and rationale:

NE, work will not occur native sagebrush areas of the central Columbia Plateau.

MATURE FORESTS in the CASCADE and OLYMPIC MOUNTAINS:

Marbled Murrelet (*Brachyramphus marmoratus*)
For information on the marbled murrelet, see http://www.fws.gov/pacific/marbledmurrelet/index.html

a) Are you within 50 miles of marine water?
No Put NE under "Effect Determination" and proceed to next species **Yes**

b) Is there suitable habitat (mature conifer-dominated forests over 80 years old) within 200 feet of the project vicinity?
No Yes Not known

c) Will the activity generate noise above ambient levels within 200 feet (1.0 mile if blasting, low-elevation aircraft operations, or pile driving) of potential suitable nesting habitat?
No Yes If yes, apply conservation measures to minimize disturbance.

d) Does the activity include low elevation operation of aircraft, pile driving, or blasting within 1 mile of suitable or occupied nesting or foraging habitat?
No Yes If yes, apply seasonal restrictions to minimize disturbance.

Activities in the marine environment that include pile driving or blasting may need to go through individual consultation. Contact the USFWS office in Lacey for specific restrictions related to underwater sound in marine areas.

e) Will the project affect suitable nesting habitat or designated critical for marbled murrelets? Activities that remove or kill trees with suitable platforms, remove suitable platforms, or reduce the suitability of the stand as nesting habitat are not covered under this PBA.

f) Notes:

g) Conservation Measures to be applied: **n/a**

h) Effect Determination and rationale:

NE, work will not in areas with suitable nesting habitat nor within 200' of suitable nesting habitat (mature conifer dominated forests over 80 years old).

Northern spotted owl (*Strix occidentalis caurina***)**
For information, including critical habitat designation see
http://ecos.fws.gov/speciesProfile/SpeciesReport.do?spcode=B08B

a) Is there suitable habitat (mature conifer forests over 80 years old) within 200 feet of the project vicinity?

No Put NE under "Effect Determination" and proceed to next species
Yes Not known

b) What type of forest habitat is present in the vicinity of the activity?
nesting or foraging habitat dispersal habitat designated critical habitat
none

d) Will the activity occur in nesting or foraging habitat?
No Yes If yes, apply seasonal operating restrictions to minimize disturbance.

e) Will the activity generate above ambient noise within 200 feet (1.0 mile if blasting, pile driving or aircraft operations) of suitable nesting habitat?
No Yes If yes, apply seasonal restrictions.

f) Will the activity occur in or remove trees from spotted owl designated critical habitat?
No Yes If yes, explain how/if this will affect the function of the stand.

g) Notes:

h) Conservation Measures to be applied:

i) Effect Determination for northern spotted owls:
Effect Determination for designated critical habitat for the northern spotted owl:

NE, work will not in areas with suitable nesting habitat nor within 200' of suitable nesting habitat (mature conifer dominated forests over 80 years old).

Listed Plants:
No herbicide use, mechanical vegetation management, or construction activities are permitted in areas that could support listed plants under this programmatic.

Information on these species can be found at: http://ecos.fws.gov, the Washington Department of Fish and Wildlife Priority Habitat and Species Program at (360)-902-2543 or their website at www.wdfw.wa.gov/hab/phspage.htm, or the Washington Department of Natural Resources Natural Heritage Program at (360) 902-1667 or their website at www.dnr.wa.gov/nhp/.

1. *Hackelia venusta* **(showy stickseed)** this species occurs in Chelan County, between 984 and 1,600 feet in elevation, in the Ponderosa Pine zone

2. *Lomatium bradshawii* **(Bradshaw's desert-parsley) –** this species occurs in wetlands, prairies and grasslands in Clark County

3. *Sidalcea oregana var. calva* **(Wenatchee Mountains checker-mallow) -** this species is found in the Peshastin Creek watersheds in Chelan County. Information on critical habitat for this species can be found at: http://ecos.fws.gov/docs/federal_register/fr3793.pdf

4. *Castilleja levisecta* **(golden paintbrush) -** this plant occurs in Island, San Juan, and Thurston Counties and is found in open grasslands, prairies, and grass dominated coastal bluffs.

5. *Howellia aquatilis* **(water howellia) –** this aquatic plant is found in and around seasonal wetlands in Mason, Pierce, Thurston, Clark, and Spokane Counties.

6. *Lupinus sulphureus ssp. kincaidii* **(Kincaids lupine) -** this plant occurs near Boistfort, Lewis County in native upland prairie habitat.

7. *Sidalcea nelsoniana* **(Nelson's checkermallow)-** this plant is found in wetlands, stream corridors, or wet prairies in Lewis or Cowlitz Counties.

8. *Silene spaldingii* **(Spalding's silene/catchfly)**– this plant is also associated with native prairies and occurs in Asotin, Lincoln, Spokane, and Whitman Counties.

9. *Spiranthes diluvialis* **(Ute ladies'-tresses)** – this plant grows on the margins of springs, wet meadows, floodplains, and riparian areas in Okanagon and Grant County

Please document conversations with USFWS staff and provide adequate information on botanical surveys and/or habitat analysis to support your effect determination.

Effect determination for listed plants:

NE, work will not occur in areas where populations of the above species (*Howellia aquatilis* included)exist.

IV SIGNATURE

I hereby verify that this work will comply with all applicable requirements of the above-referenced Biological Opinion should a Department of the Army authorization be issued for this work.

Certain categories of activities require the permittee to submit-post construction reports to the Corps and/or the Services. These reports are identified in the PBA. For projects deviating from PBA criteria, the Services may require additional post-construction reporting. These additional reports will be clearly identified and agreed upon by the Services and applicant during the coordination process. By signing this form, the applicant agrees to submit within the required time frame all applicable post-construction reports.

Signature of Applicant: _____ Date: 8/19/2015

Signature of Agent: _____ Date: 8/19/15

APPENDIX A: DEWATERING AND FISH CAPTURE PROTOCOL

Work to facilitate habitat restoration may occur in isolation from flowing waters or in flowing water depending on site conditions to minimize impacts to salmonids.

If bull trout or other listed salmonids could be present in the vicinity of the project use the following dichotomous key to determine which dewatering protocol and timing window you need to implement for your project. This key references information within the *Draft Recovery Plan for the Coastal-Puget Sound Distinct Population Segment of Bull Trout Volumes I and II* (USFWS 2004a; USFWS 2004b), and the *Draft Recovery Plan for the Columbia River Distinct Population Segment of Bull Trout* (USFWS 2002). http://www.fws.gov/pacific/bulltrout/recovery.html. If you have questions, contact the USFWS.

1. Is the project located within a documented or potential bull trout Local Population Area that is excluded from coverage under this programmatic consultation (see Table 1)?
    a. Yes – Dewatering in a documented or potential bull trout Local Population Area in eastern Washington is not covered under this programmatic consultation. Complete an individual section 7 consultation for the project. Please contact the USFWS office in Spokane or Wenatchee for assistance.
    b. <u>No – go to 2</u>

2. Is the project located within a water body where any listed salmonids are likely to be present? For specific bull trout areas where projects are permitted see Table 2.
    a. <u>Yes – go to 3</u>
    b. No - use "Protocol for Dewatering Outside High Likelihood Listed Fish Areas";

3. Is the stream flow at the time of project construction anticipated to be greater than or equal to 5 cubic feet per second **and** is the dewatered stream length (not including the culvert and plunge pool length, if present) greater than or equal to 33 ft?
    a. <u>No - use "Protocol for Dewatering Outside High Likelihood Listed Fish Areas": Protocol II</u>
    b. Yes - use "Protocol I Dewatering Within High Likelihood Listed Fish Areas"; and consult with a USFWS bull trout biologist staff on appropriate timing window.

<u>No portion of the project area is anticipated to have stream flows greater than or equal to 5 CFS.</u>

Table 1: Bull Trout Spawning and Rearing Areas that are Excluded from the Programmatic[1]
(Listed in order of WRIA number)

Management or Recovery Unit	Core Area	Spawning and Rearing Areas Excluded (no in-water work is permitted in these areas)
Umatilla-Walla Walla River Basin	**Walla Walla Core Area WRIA 32**	Mill Creek and tributaries
		Wolf Fork above Coates Creek
		N Fk Touchet and tributaries upstream of Wolf Fk confluence
		S Fk Touchet River and tributaries above Griffin Creek
Snake River Basin	**Asotin Creek**	N Fk Asotin Creek including Charley and Cougar Creeks – above confluence with Charley Cr
	Tucannon River **WRIA 35**	Tucannon River from confluence with Little Tucannon Upper Tucannon River and tributaries above confluence with Hixon Creek Cummings Creek
Middle Columbia River Basin	**Yakima River Core Area**	**WRIA 37** N and MFk Ahtanum Creek - above the confluence of S Fk S Fk Ahtanum Creek – above confluence with N Fk Ahtanum
		WRIA 38 Rattlesnake Creek – upstream of confluence with Naches River
		WRIA 39 Taneum Creek – upstream of Taneum Campground Upper Yakima – upstream of Lake Easton Dam Cle Elum River – upstream of confluence with Yakima River N Fk Teanaway – upstream of confluence with Yakima River
Upper Columbia River Basin	**Wenatchee River Core Area WRIA 45**	Upper Wenatchee and tributaries above confluence with the Chiwawa, including Nason Cr, Little Wenatchee, White and the Chiwawa Rivers
		Chiwaukum Creek and Icicle Creek– upstream from confluence with the Wenatchee River Ingalls Creek- upstream of confluence with Peshastin Creek
	Entiat River Core Area WRIA 46	Entiat River – above confluence with the Mad River
		Mad River – above confluence with Entiat River
	Methow River Core Area WRIA 48	Upper Methow tributaries - Lost River, Early Winters Cr, W Fk Methow, Goat Cr, and Wolf Cr Chewack River – upstream of Twentymile Cr
		Twisp River and tributaries above confluence of, and including, Little Bridge Creek
		Gold Cr – upstream of confluence with Methow River
Northeast Washington	**Pend Oreille River WRIA 62**	Le Clerc Creek – upstream of mouth

[1] Spawning and rearing areas on lands administered by the U.S. Forest Service or Bureau of Land Management are not listed because these lands are not included in this Programmatic

Table 2 List of streams and marine areas that important for bull trout recovery where in-water work is permitted

Management Unit	Bull Trout Areas
Olympic Peninsula - Marine	Hood Canal and independent tributaries Strait of Juan de Fuca and independent tributaries (includes Bell, Morse, Ennis, Siebert Creeks) Pacific Ocean and independent coastal tributaries (includes Goodman, Mosquito, Cedar, Steamboat, Kalaloch and Joe Creeks, Raft, Moclips and Copalis Rivers) Lower Chehalis River/Grays Harbor and independent Tributaries (includes Humptulips, Wishkah, Wynoochee and Satsop Rivers)
Olympic Peninsula - Freshwater	**Dungeness River** – mouth to RM 10 **Skokomish River** – mouth to head of Cushman Reservoir **Hoh River** – mouth to headwaters **Queets River** – mouth to headwaters **Quinault River** - mouth to headwaters
Puget Sound - Marine	All marine shorelines including North Puget Sound, Main Basin, Whidbey Basin, and South Puget Sound
Puget Sound - Freshwater	Samish River, Whatcom Creek, Squalicum Creek, Duwamish and lower Green River, and Lower Nisqually River including the Nisqually River estuary and McAllister Creek (FMO areas outside of core areas)
	Lake Washington including the following: lower Cedar River; Sammamish River; Lakes Washington, Sammamish, and Union; and Ship Canal
	Nooksack River – mouth to National Forest boundary (North and South Forks) **Skagit River** – mouth to National Forest boundary **Stillaguamish River** – mouth to headwaters of N Fork; Deer Creek – mouth to National Forest boundary; S Fork and Canyon Cr – mouth to National Forest boundary **Snohomish/Skykomish** – mouth to confluence of Skykomish and Snoqualmie Rivers; Pilchuck River; Snoqualmie River to falls; Tolt River; Skykomish River – mouth to National Forest boundary, including Sultan River, Woods Creek and Wallace River; S Fk Skykomish to National Forest boundary **Puyallup River** – mouth, including Mowich River, to National Park boundary; **Carbon River** – mouth to National Forest boundary; **White River** – mouth to National Forest boundary

Management Unit	Bull Trout Areas
Lower Columbia	**Lewis River** – mouth to RM 75 (Upper Falls), including Swift, Yale, and Mervin Reservoirs **Klickitat River** – mouth to confluence of W FK Klickitat
	Mainstems of the Columbia, Snake, Walla Walla, Pend Oreille, and Grande Ronde Rivers
Middle Columbia River Basin	**Ahtanum Creek** – mouth to confluence of N and S Forks **Naches River** – mouth to confluence of Little Naches and Bumping River **Tieton River** – mouth to Rimrock Lake **Yakima River** – mouth to Easton (RM 203) and Teanaway River
Upper Columbia River Basin	**Wenatchee River** – mouth to confluence of the Chiwawa; **Peshastin Cr** – mouth to confluence of Ingalls Cr; **Chewack River** – confluence with Wenatchee to RM 20; **Beaver Cr** – mouth to Blue Buck Cr **Entiat River** – mouth to confluence with Mad River **Methow River** – mouth to confluence of Lost River
Northeast Washington Pend Oreille River	**Pend Oreille River**; **Tacoma Cr** - mouth to Little Tacoma; **Small Creek** – mouth to forks; **Sullivan Creek** to and including Sullivan Lake
Walla Walla River Basin	**Touchet River** – mouth to forks; **S Fk Touchet River** – to confluence of Griffin Cr **N Fk Touchet** to Wolf Fork; **Wolf Fork** to confluence of Coates Cr **Mill Creek** and tributaries
Snake River Basin	Mainstem **Snake and Grande Ronde Rivers**; **Asotin Creek** – mouth to confluence of N Fk Asotin and Charley Cr; **Tucannon River** – mouth to confluence of Hixon Cr

Protocol I Dewatering Within High Likelihood Listed Fish Areas

A. Fish Capture – General Guidelines

1. Fish Capture Methods
    a. Minnow traps. Optional. Traps may be left in place prior to dewatering and may be used in conjunction with seining. Once dewatering starts, minnow traps should only be used if there is someone present to check the traps every few hours, and remove the traps once the water level becomes too low.
    b. Seining. Required. Use seine with mesh of a size to ensure entrapment of the residing ESA-listed fish and age classes.
    c. Sanctuary dip nets. Required. Use in conjunction with other methods as area is dewatered.
    d. Electrofishing. Optional. Use electrofishing only after other means of fish capture have been exhausted or where other means of fish capture are not be feasible. Applicants shall adhere to NMFS Backpack Electrofishing Guidelines (NMFS 2000).

2. Fish capture operations will be conducted by or under the supervision of a fishery biologist experienced in such efforts and all staff working with the capture operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.

3. The applicant must obtain any other Federal, State and local permits and authorizations necessary for the conduct of fish capture activities.

4. A description of any capture and release effort will be included in a post-project report, including the name and address of the supervisory fish biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions before and following placement and removal of barriers; the means of fish removal; the number and size of fish removed by species and age class; condition upon release of all fish handled; and any incidence of observed injury or mortality.

5. Storage and Release. ESA-listed fish must be handled with extreme care and kept in water at all times during transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever necessary to prevent the added stress of an out-of-water transfer. A healthy environment for non-ESA listed fish shall be provided by large buckets (five gallon minimum to prevent overcrowding) and minimal handling of fish. The water temperature in the transfer buckets shall not exceed the temperature of cold pool water in the subject stream. Retain fish the minimum time possible to ensure that stress is minimized, temperatures do not rise, and dissolved oxygen remains suitable. Release fish as near as possible to the isolated reach in a pool or area that provides cover and flow refuge.

B. Dewater Instream Work Area and Fish Capture

Fish screen. Except for gravity diversions that have gradual and small outfall drops directly into water, all water intake structures must have a fish screen installed, operated, and maintained in accordance with NMFS Guidelines (NMFS 1997; Chapter 11 in NMFS 2008).

The sequence for stream flow diversion will be:
Note: this sequence will take one 24-hour period prior to construction to complete (of which 12 hours are for staged dewatering with 6 hours overnight). We suggest you start in the morning the day before project construction is scheduled and leave the reach dewatered overnight according to instruction below.

1. Install flow conveyance devices (pumps, discharge lines, gravity drain lines, conduits, and channels), but do not divert flow.
2. Install upstream barrier. Allow water to flow over upstream barrier.
3. Install block net at upstream end of work area. Block nets will be checked every 4 hours, 24 hours a day. If any fish are impinged or killed on the nets they will be checked hourly.
4. Reduce flow over upstream barrier by one-third for a minimum of 6 hours.
5. Inspect as discharge is diminishing and in dewatered areas for stranded and trapped fish and remove them with sanctuary dip nets.
6. Reduce flow over upstream barrier by an additional one-third for a minimum of 6 hours.
7. Again, inspect dewatered areas for stranded and trapped fish and remove them with sanctuary dip nets.
8. Leave the project area in a stable, low flow (one third of flow) condition, overnight, allowing fish to leave the area volitionally.
9. In the morning, remove any remaining fish from the area to be dewatered using seines and/or hand held sanctuary dip-nets.
10. Divert upstream flow completely.
11. Install downstream barrier if necessary (only in low gradient, backwatered reaches).
12. If water remains within the work area; seine, dip net, and lastly electrofish (if using this technique), the project area until catch rates have reached no fish for 3 consecutive passes. Move rocks as needed to flush fish and effectively electrofish the work area.
13. If needed, pump water out of isolated pools within the project area to a temporary storage and treatment site or into upland areas and filter through vegetation prior to reentering the stream channel. Continue to seine, dip net and electrofish while pumping.
14. If fish continue to be captured, shut pump off before average water depths reach one foot. Continue to seine, dip net and electrofish until no fish are caught for 3 consecutive passes.
15. Pump dry and check substrate for remaining fish.
16. Continue to pump water from the project area as needed for the duration of the project.

The diversion structure is typically a temporary dam built just upstream of the project site with sand bags that are filled with clean gravel or stream/floodplain rock and covered with plastic sheeting. A portable bladder dam or other non-erosive diversion technologies may be used to contain stream flow. Mining of stream or floodplain rock can be used for diversion dam construction if it does not result in significant additional floodplain or stream disturbance. Often gravel has to be moved to key in logs in which case it makes sense to use this gravel for the diversion structure.

The temporary bypass system must consist of non-erosive techniques, such as a pipe or a plastic-lined channel, both of which must be sized large enough to accommodate the predicted peak flow rate during construction. In cases of channel rerouting, water can be diverted to one side of the existing channel.

Dissipate flow at the outfall of the bypass system to diffuse erosive energy of the flow. Place the outflow in an area that minimizes or prevents damage to riparian vegetation. If the diversion inlet is a gravity diversion and is not screened to allow for downstream passage of fish, place diversion outlet in a location that facilitates gradual and safe reentry of fish into the stream channel.

C. Rewater Instream Work Area

Remove stream diversion and restore stream flow. Heavy machinery operating from the bank may be used to aid in removal of diversion structures. Slowly re-water the construction site to prevent loss of surface water downstream as the construction site streambed absorbs water and to prevent a sudden increase in stream turbidity. Look downstream during re-watering to prevent stranding of aquatic organisms below the construction site.

All stream diversion devices, equipment, pipe, and conduits will be removed and disturbed soil and vegetation will be restored after the diversion is no longer needed.

Protocol II Dewatering Outside High Likelihood Listed Fish Areas

If bull trout or other listed salmonids are captured at any time during the dewatering process, immediately notify a USFWS bull trout biologist or NMFS biologist and obtain guidance to either continue to dewater and remove fish or stop activities and re-water the project site.

Normal guidance:

1. If you encounter listed fish at or prior to step 3 switch to Protocol I
2. If you encounter listed fish after step 3, continue to dewater and remove fish, paying close attention to presence of additional listed salmonids.

A. Fish Capture – General Guidelines

1. Fish Capture Methods
    a. Minnow traps. Optional. Traps may be left in place prior to dewatering and may be used in conjunction with seining. Once dewatering starts, minnow traps should only be used if there is someone present to check the traps every few hours, and remove the traps once the water level becomes too low.
    b. Seining. Required. Use seine with mesh of such a size to ensure entrapment of the residing ESA-listed fish and age classes.
    c. Sanctuary dip nets. Required. Use in conjunction with other methods as area is dewatered.
    d. Electrofishing. Optional. Use electrofishing only after other means of fish capture have been exhausted or where other means of fish capture are not be feasible. Applicants shall adhere to NMFS Backpack Electrofishing Guidelines.

2. Fish capture operations will be conducted by or under the supervision of a fishery biologist experienced in such efforts and all staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.

3. The applicant must obtain any other Federal, State and local permits and authorizations necessary for the conduct of fish capture activities.

4. A description of any seine and release effort will be included in a post-project report, including the name and address of the supervisory fish biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions before and following placement and removal of barriers; the means of fish removal; the number and size of fish removed by species; conditions upon release of all fish handled; and any incidence of observed injury or mortality.

5. Storage and Release. Fish must be handled with extreme care and kept in water to the maximum extent possible during transfer procedures. A healthy environment for the stressed fish shall be provided by large buckets (five gallon minimum to prevent overcrowding) and minimal handling of fish. The temperature of the water shall not exceed the temperature in large deep holding pools of the subject system. The transfer of any ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, to prevent the added stress of

an out-of-water transfer. Retain fish the minimum time possible to ensure that stress is minimized, temperatures do not rise, and dissolved oxygen remains suitable. Release fish as near as possible to the isolated reach in a pool or area that provides cover and flow refuge.

B. Dewater Instream Work Area and Fish Capture

Fish screen. Except for gravity diversions that have gradual and small outfall drops directly into water, all water intake structures must have a fish screen installed, operated, and maintained in accordance with the NMFS Guidelines (NMFS 1997; Chapter 11 in NMFS 2008).

The sequence for stream flow diversion would be as follows:

1. Install flow conveyance devices (pumps, discharge lines, gravity drain lines, conduits, and channels), but do not divert flow.
2. Install block net at upstream end or work area.
3. Seine and dip net through the entire project area in a downstream direction, starting at the upstream end; thereby moving fish out of the project area. Then, if necessary electrofish.
4. Install upstream barrier and divert upstream flow completely.
5. Capture any remaining fish using hand held dip-nets.
6. Install downstream barrier if necessary (only in low gradient backwatered reaches).
7. If water remains within the work area; seine and dip net, if necessary electrofish the project area until catch rates have reached no fish for 3 consecutive passes.
8. Pump water out of isolated pools within the project area to a temporary storage and treatment site or into upland areas and filter through vegetation prior to re-entering the stream channel. Continue to seine, dip net, or electrofish while pumping.
9. If fish continue to be captured, shut pump off before average water depths reach one foot. Continue to seine, dip net, or electrofish until no fish are caught for 3 consecutive passes.
10. Pump dry and check substrate for remaining fish and remove them.
11. Continue to pump water from the project area as needed for the duration of the project.

The diversion structure is typically a temporary dam built just upstream of the project site with sand bags that are filled with clean gravel or stream/floodplain rock and covered with plastic sheeting. A portable bladder dam or other non-erosive diversion technologies may be used to contain stream flow. Mining of stream or floodplain rock can be used for diversion dam construction if it does not result in significant additional floodplain or stream disturbance. Often gravel has to be moved to key in logs in which case it makes sense to use this gravel for the diversion structure.

The temporary bypass system must consist of non-erosive techniques, such as a pipe or a plastic-lined channel, both of which must be sized large enough to accommodate the predicted peak flow rate during construction. In cases of channel rerouting, water can be diverted to one side of the existing channel.

Dissipate flow at the outfall of the bypass system to diffuse erosive energy of the flow. Place the outflow in an area that minimizes or prevents damage to riparian vegetation. If the diversion inlet is a gravity diversion and is not screened to allow for downstream passage of fish, place diversion outlet in a location that facilitates gradual and safe reentry of fish into the stream channel.

C. Rewater Instream Work Area

Remove stream diversion and restore stream flow. Heavy machinery operating from the bank may be used to aid in removal of diversion structures. Slowly re-water the construction site to prevent loss of surface water downstream as the construction site streambed absorbs water and to prevent a sudden increase in stream turbidity. Look downstream during re-watering to prevent stranding of aquatic organisms below the construction site.

All stream diversion devices, equipment, pipe, and conduits will be removed and disturbed soil and vegetation will be restored after the diversion is no longer needed.

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