# **BIG SPRINGS ENHANCEMENT PROJECT BIG SPRINGS CREEK, LEMHI COUNTY, IDAHO PREFINAL (80% DESIGN) DRAWINGS**

# **PREPARED FOR:**

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# PROJECT GOAL:

Improve bank, channel and riparian conditions to address shade and habitat in areas where existing channel geometry and riparian vegetation is impaired.

# **PROJECT OBJECTIVES:**

- Maximize short-term and long-term riparian and shade conditions to address established shade targets
- Reduce the channel width to a more appropriate geometry (Big Springs Creek ~15 feet)
- Improve thermal refuge by increasing the frequency and magnitude of self-maintaining pools

# **DESIGN COMPONENTS:**

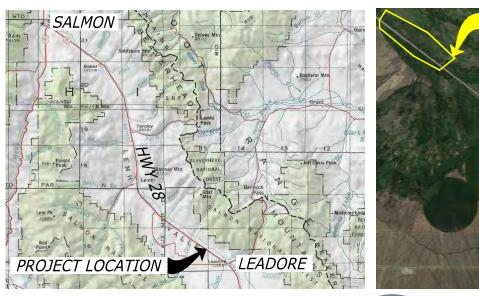
- Relocate stream segments to utilize existing mature riparian vegetation where feasible and appropriate to create immediate increases in shade conditions.
- Excavate pools and force tight constrictions to narrow and deepen the channel.
- Create constrictions and/or place structure allowing the channel to maintain excavated pools.

# **GENERAL NOTES:**

- Project coordinate system is NAD83 Idaho State Planes, Central Zone, US Foot (ID83-CF).
- Topographic mapping within stream banks of the project area is based on ground surveys performed by Rio ASE and IMA. Topographic information outside of the stream banks is based on 2010 LiDAR (Reclamation).
- Existing underground utility locations have not been completely identified and may not be shown on these plans. The contractor is responsible to locate utilities prior to construction and protect utilities during construction. The telephone number for the Idaho utilities underground location center is 800-342-1585.
- Access to the project site is from Highway 28, 2.5 miles northwest of Leadore, ID (Hwy 29 and Hwy 28 intersection), and from there as shown on the Drawings.
- Aerial photography 2010 LiDAR and BING, 2010.

# SITE SUMMARY:

T.17N, R.26E, SEC.19 LEMHI COUNTY, ID LAT/LONG - 44°42'12" N 113°23'50" W



Upper Salmon Basin

ERSHED PROGRAM



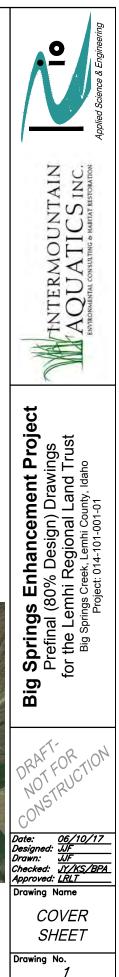


Regional









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# **GENERAL REQUIREMENTS**

#### DESCRIPTION OF WORK

- 1. This project will improve bank, channel and riparian conditions to address shade and habitat in areas where existing channel geometry and riparian vegetation is impaired. It will maximize short-term and long-term riparian and shade conditions to address established shade targets, reduce the channel width to a more appropriate geometry, and improve thermal refuge by increasing the frequency and magnitude of self-maintaining pools.
- 2. The work shall include, but not be limited to, the following activities as shown on the plans: preparation of construction access routes; installation and removal of temporary cofferdams and channel diversion structures; dewatering; creation of constrictions to allow the channel to scour pools and to narrow and deepen the channel; earthwork within the existing active channel zone to force flow against adjacent mature riparian vegetation; relocation of three stream segments to increase sinuosity; installation of multiple woody debris structures to prevent erosion; installation of a variety of edge treatments using FESL where the channel is narrowed; transplanting wetland sod; re-vegetation and seeding; reclaiming and restoring all construction access areas; fencing; irrigation. All work shall be completed in accordance with the contract provisions, the technical specifications, and Drawings.

#### **PROJECT ROLES**

- 1. The above work is to be performed for the Lemhi Regional Land Trust(LRLT), hereafter referred to as the "Sponsor". The Sponsor will appoint a project staff member, hereafter referred to as "Contracting Officer", who will have the responsibility to issue a contract to construct the above work and will administer the contract and funds for the project. Only the Sponsor may approve changes to the contract amount and the contract requirements.
- 2. Rio ASE, hereafter referred to as the "Engineer," is the Sponsor's representative who has designed the project. The Engineer provides clarification to the Contracting Officer regarding the intent of the Drawings and Specifications and whether all the proposed or completed work is in compliance with the construction specifications. The Engineer also reviews all proposed changes and makes recommendations to the Contracting Officer prior to the Contracting Officer's approval of the changes.
- 3. The owner of the property where construction will occur is the Leadore Land Partners Limited, managed by Karl Tyler herein referred to as the "Property Owner."
- 4. Construction observation will be provided by the Sponsor and the Engineer. Construction observers will not direct the Contractor in any way but will advise the Contracting Officer regarding the technical requirements of the Drawings and Specifications, and whether the ongoing work is in compliance or if there are discrepancies. The construction observers are not responsible for the construction means, methods, techniques, procedures and/or safety of the Contractor.

#### **GENERAL CONSTRUCTION SEQUENCE**

- 1. Construction staking
- 2. Site preparation, install erosion & sediment control measures
- 3. Construct downstream bypass channel
- 4. Dewater project area and divert flows through downstream bypass channel
- 5. Fish salvage (led by the Contracting Officer and completed by project partners).
- 6. Earthwork and floodplain excavation and grading including placement of fill and excavation of new channel meanders, transplant wetland sod and stabilize and plant floodplain features within downstream isolation area
- 7. Check grades, prewash channel, rewater channel, check flow patterns
- 8. If necessary, dewater channel, make adjustments, pre-wash channel and rewater channel

9. Reclaim bypass channel

- 10. Repeat Steps 3 through 9 for the upstream work areas and bypass channel
- 11. Construct work area 101.
- 12. Install wildlife exclusion fencing to protect riparian plantings and naturally regenerating areas
- 13. Reclaim construction access and staging areas to pre-existing conditions
- 14. Install/repair ranch fences
- 15. Dormant seed upland areas
- 16. Monitor, adaptive management and on-going weed control

#### WORK SCHEDULE

- 1. The approved work window for this project is September 1, 2017 to January 31, 2018; all work shall be completed during this period.
- 2. Work requiring equipment to operate partly, or wholly, below the ordinary high water line shall be completed during the modified in-water work window as determined by the Contracting Agency.
- 3. Completion of all work below the ordinary high water mark, including revegetation, shall be accomplished by the end of the allowable in-water work period; all other work including dormant seeding shall be accomplished by January 31, 2018.
- 4. The Contractor may not leave the work site or suspend activity for more than five (5) consecutive days after mobilizing to the site and prior to reaching substantial completion unless otherwise approved by the Contracting Officer.

#### LOCATION

- 1. All work is on Big Springs Creek, its floodplain, and the property belonging to the Property Owner: Section 19, Township 16 North, Range 26 East, Lemhi County, Idaho.
- 2. Access to the project site is from Leadore, ID travel northwest on Hwy 28 for 2.5 miles. At 2.5 miles, the dirt road on the north side of the highway is the start of the project. From this dirt road, the project continues 0.6 miles northwest along the north side of the highway. Site improvements may be required to create access points suitable for mobilization of construction equipment and delivery of project materials.

### **USE OF SITE**

#### **CONTRACTORS USE OF PREMISES**

- 1. Prior to performing work, the Contractor shall become thoroughly familiar with the Project Site, Project Site conditions, and all portions of the Work.
- 2. Contractor must coordinate all work and access to the site with the Contracting Officer. The Contracting Officer will be responsible for coordination with the Property Owner.
- 3. The Contractor is responsible for maintaining public safety in and around the Project Site, and will provide any safety precautions such as temporary fencing or other methods at the Contractor's discretion where deemed necessary. The Contractor shall be solely and completely responsible for compliance with all applicable OSHA and NRS Chapter 618 standards, in the construction practices for all employees directly engaged in the construction of this project.
- 4. The Contractor is responsible for the security of property at the Project Site and will provide reasonable protection to prevent damage or loss to equipment, materials, and supplies incorporated in the project and to the Property Owner.
- 5. The Contractor shall only access the Project Site as shown on the Drawings. Alternate gate access points shall not be used, unless authorized by the Contracting Officer.
- 6. Contractor shall only use designated access routes and stream crossing locations as indicated on the Drawings.
- 7. The Contractor shall cause notice to be given to the State of Idaho's Utilities Underground Location Center (DIGLINE) at 800-342-1585 and to any underground utility facilities who are not members of the registered protection service. The Contractor must take all reasonable measures to protect existing utilities and all notices shall be given at least 72 hours prior to the start of construction. All work performed adjacent to utilities shall be in accordance with procedures outlined by the utility company. The contractor shall immediately report any damage to utilities to the Sponsor and the utility company.
- 8. The Contractor shall be responsible for any damage incurred to any utility lines at no cost or obligation to the Sponsor or the Property Owner.
- 9. Movement of construction equipment over pipes, bridges, utilities or infrastructure during construction shall be at the Contractor's risk. The Contractor shall be responsible for any damage incurred to infrastructure at no cost or obligation to the Sponsor or the Property Owner.
- 10. Contractor is expected to keep a neat and tidy construction site, free of accumulated waste materials and trash. 11. Contractor shall take all measures necessary to minimize damage to existing vegetation during construction activities.
- 12. The Contractor shall only remove trees and shrubs that are absolutely necessary for the execution of the work and shall make all efforts to minimize tree and shrub removal. In the event that a tree or shrub outside the immediate work areas must be removed or damaged, the Contractor shall obtain prior approval from the Contracting Officer. Any tree or shrub unnecessarily removed from the work site shall be replaced by a new tree or shrub of equal or greater value at the sole expense of the Contractor as approved by the Contracting Officer.
- 13. The Contractor shall remove all temporary equipment and facilities upon completion of work under this contract. EOUIPMENT
- 1. Contractor is required to pressure wash and remove all dirt, grease, oil, fuel, vegetation and weed seeds before bringing equipment on site to limit introduction of noxious weeds, aquatic invasives and pollutants to the site.
- 2. Complete vehicle and equipment staging, cleaning, maintenance, refueling, and fuel storage in the designated construction staging and material storage area 150' away from any natural water body.
- 3. Inspect all vehicles and equipment operated within 150 feet of the Big Springs Creek daily for fluid leaks before leaving the construction staging and material storage area. Repair any leaks detected in the construction staging and material storage area before resuming operation. Document inspections in a record that is available for review on request by the Contracting Officer and regulatory agencies.
- 4. Use of equipment in flowing water is limited by applicable permits. Equipment must be thoroughly cleaned before entering the water. Contractor is responsible for compliance with applicable regulations for in-water equipment use.
- 5. Hydraulics Fluids All equipment that are doing work in active stream channels, or permanent water bodies during project construction must use hydraulic oil that meets or exceeds environmentally acceptable lubricants by the U.S. EPA (2011); e.g., mineral oil, polyglycol, vegetable oil, synthetic ester; Mobil® biodegradable hydraulic oils, Total® hydraulic fluid, Terresolve Technologies Ltd.® biobased biodegradable lubricants, Cougar Lubrication® 2XT Bio engine oil, Series 4300 Synthetic Bio-degradable Hydraulic Oil, 8060-2 Synthetic Bio-Degradable Grease No. 2, etc. or meet stringent acute aquatic toxicity (L-50), which is inherently biodegradable. This does not include trucks, dozers, front end loaders, etc., that are operated on the flood plain or involved in the construction of new channels prior to adding water flow or filling abandoned channels after de-watering. All products shall be API certified and the vendor shall furnish documentation of the certification upon request. Products must meet the performance and warranty requirements of the manufacturers listed in the specifications.
- 6. Absorbent pads to soak up leaks and a fuel spill response kit (including rag pads and booms) of appropriate size for the equipment used shall be on site at all times and readily available throughout the construction period.



### SPECIAL PROCEDURES

#### IN-STREAM WORK

- 1. In-stream work is allowed in Big Springs Creek for this project based on the in-water work modification dates obtained from the Contracting Agency as specified in the permit documents.
- 2. Idaho Department of Environmental Quality and HIP III turbidity criteria shall be strictly adhered to while completing all instream work. (See ection 3.2 Turbidity Monitoring)
- 3. Cofferdams, flow diversion structures and bypass channels shall be installed at all locations indicated on the Drawings or at locations shown on the approved "Cofferdam and Flow Diversion Plan." Some aspects of the project may not require the use of a cofferdam to complete the work.
- 4. Dewatering within cofferdams shall be performed to the extent necessary to construct the project as shown on these plans, as determined by the contractor. Dewatering shall be performed as necessary by the Contractor to maintain a work area at the location of large wood structure construction activities such that water is no deeper than the diameter of the log(s) on the lowest layer of the structure, and at the location of channel construction activities such that water is shallow enough to allow the Contracting Officer to easily inspect finished elevations of the work. Discharge from dewatering within specific work areas shall be routed to floodplain areas so as to allow the removal of fine sediments or other contaminants prior to reentering the river. All pumps used by the contractor for dewatering shall have screened intakes that meet Idaho Fish and Game specifications and National Marine Fisheries Service Anadromous Salmonid Passage Facility Design Criteria (NMFS, 2011).

#### TURBIDITY MONITORING

- 1. Turbidity monitoring is required as part of this project and shall be completed by the Contractor in accordance with Idaho DEQ and HIP III Conservation Measures. The Contractor shall comply with all requirements for turbidity as set forth in the permit documents and follow the protocols outlined below.
- a) Take a background turbidity sample using a recently-calibrated turbidimeter in accordance with manufacturer's instructions, or measure turbidity with a visual turbidity observation (Figure 1). Turbidity should be measured every 2 hours while in-water work is being implemented or more often if sediment disturbance varies greatly. Turbidity does not need to be monitored when working in the dewatered sections unless a visible plume is evident. The background samples should be taken at a relatively undisturbed location approximately 100 feet upstream from the project area. Record the observation, location (latitude/longitude), and time before monitoring at the downstream point, known as the measurement compliance point.
- b) Take a second sample, immediately after each upstream sample, at the measurement compliance point, approximately 100 feet downstream from the project area. Record the downstream observation, location, and time.
- Compare the upstream and downstream samples. If observed or measured turbidity downstream is more than upstream observation or c) measurement (> 10%), the activity must be modified to reduce turbidity. If visual estimates are used, an obvious difference between upstream and downstream observations shall bear the assumption of a (> 10%) difference. Mark "Yes" or "No" on your datasheet. Continue to monitor every 2 hours as long as instream activity continues.
- d) If exceedances occur for more than two consecutive monitoring intervals (after 4 hours), the activity must stop until the turbidity level returns to background, and the EC lead must be notified within 48 hours. The EC lead shall document the reasons for the exceedance and corrective measures taken then notify the local NMFS branch chief and/or USFWS field supervisor and seek recommendations.
- e) If at any time, monitoring, inspections, or observations show that the turbidity controls are ineffective, immediately mobilize work crews to repair, replace, or reinforce controls as necessary.
- Any exceedance of the turbidity standard must be reported to the Idaho Falls DEQ regional office within 24 hours. Copies of turbidity f) monitoring records or logs must be available to DEQ upon request. The log must include background measurements (in NTUs): down-current measurements, comparison of background and down-current monitoring as a numeric value (in NTUs), and latitude/longitude, time and date for each sampling event. Monitoring records or logs must describe all exceedances and subsequent actions taken to correct the violations, including monitoring and the effectiveness of the action(s) taken.

#### TEMPORARY UTILITIES

#### TEMPORARY ELECTRIC

- 1. Electric power is not available at the site.
- 2. If temporary power is necessary to operate pumps, Contractor shall provide all generators, and other electrical equipment and facilities for obtaining and distributing power on the site.
- 3. All generators shall be placed outside of the ordinary high water line with appropriate spill prevention and containment measures.

#### TEMPORARY WATER

- 1. Potable water is not available to the Contractor at the site. The Contractor shall be responsible for supplying potable water for all employees at the site.
- 2. The Contractor may use water from Big Springs for dust control, if a temporary water right has been obtained for dust abatement.

#### TEMPORARY SANITATION FACILITIES

1. Contractor shall provide and maintain temporary sanitation facilities (e.g., "port-a-potties") for use by the construction and observation crews for the duration of the construction and revegetation activities.

#### TEMPORARY FIRST AID FACILITIES

- 1. Contractor shall provide first aid equipment and supplies onsite for employees.
- 2. Contractor shall have an emergency action plan and instruct employees what to do in case of a workplace injury.
- 3. Contractor shall review the plan with each employee and have the plan available onsite at all times.

#### TEMPORARY FIRE PROTECTION

- 1. The Contractor shall conduct operations in a manner that is fire-safe for the work area and adjacent areas. Proper fire extinguishers shall be installed on all equipment and maintained by the Contractor. The premise shall be maintained clear of rubbish, debris, or other material constituting a potential fire hazard.
- 2. Where significant or continued noncompliance with fire safety is noted, the Contracting Officer reserves the right to stop the work at no extra cost due to extension of time pending remedial action. Furthermore, the Contractor shall be responsible for, and reimburse the Sponsor as appropriate, any fines or penalties levied by the Fire District.

#### TEMPORARY FUEL STORAGE

- 1. All stationary temporary fuel storage shall be located in the Construction Staging Area.
- 2. Fuel storage vessels shall be inspected prior to site delivery for leaks or damage. Leaky storage tanks will not be permitted on site.
- 3. Secondary containment will be required for all on site fuel storage vessels. Secondary containment structures will provide storage capacity in the amount of 110% of the volume of the largest primary container stored within.
- 4. At the conclusion of project construction, any leaked fuel or contaminated rainwater within the secondary containment structure will be properly collected and legally disposed of at an offsite location.

# ACCESS AND STAGING

#### **REGULATORY REQUIREMENTS**

- 1. The Contractor must comply with applicable local regulations for haul routes over public highways, roads, or bridges. The Contractor must investigate the condition of available public and private roads for clearances, restrictions, bridge-load limits, bond requirements, and other limitations that affect or may affect access and transportation operations to and from the site.
- 2. Contractor must meet jurisdictional conditions for use of existing roadways and haul routes; including seasonal or other limitations or restrictions, payment of excess size and weight fees, and posting of bonds conditioned upon repair of damage.

#### SITE CONDITIONS

- 1. Access to the site is limited and the Contractor shall only use equipment access, haul routes, parking and staging areas shown on the Drawings
- 2. There is an existing bridge crossing Big Springs Creek. The Contractor will be responsible for assessing the condition and load bearing capacity of the existing structure to determine if it is sufficient for site access. The Contractor is responsible for any structural damages and/or upgrades or modifications to the existing crossing to safely access the site.
- 3. Unavailability of transportation facilities or limitations thereon shall not become a basis for claims for damages or extension of time for completion of work.

#### TEMPORARY ACCESS AND DEWATERING ROADS

- 1. Access Roads:
- All temporary access roads are depicted in the Drawings. Contractor may not deviate from these locations without prior approval from a) the Contracting Officer.
- Establish access road for access from public roads to the work area, of a width and load-bearing capacity to provide unimpeded traffic b) for construction purposes.
- c) Wetlands shall be protected wherever access roads traverse wetland communities and shall be restored to their original grade and condition. Protect wetlands by stripping wetland sod and stock piling adjacent to the access road. If the Contractor determines that the access route will become too rutted out to restore original grades, lay down non-woven geo-textile road fabric and a minimum of 1' of wood chips (aka. Hog fuel). All materials used to protect wetlands shall be removed at project completion and wetland areas returned to pre-existing conditions. Wood chips may be distributed throughout upland disturbed areas and all fabric shall be disposed of by the Contractor
- Minimize soil disturbance along all access routes. d)
- 2. Maintain roadways, temporary staging, storage areas and temporary access roads in a sound, reasonably serviceable condition until completion and acceptance of all work under this contract.
- 3. All access routes shall be restored to their original condition.



### ACCESS AND STAGING CONTINUED ...

4. Temporary Bridge & Stream Crossing

- a) All work along Big Springs Creek shall be accessed via two temporary bridges crossing the excavated bypass channels.
- b) Contractor shall submit a temporary bridge plan detailing means and methods for placement of two temporary bridges at the locations identified on the Drawings. The plan shall detail construction materials used for temporary abutments (such as ecology blocks), no piers will be allowed. No crossings of the active channel shall be required for the installation and placement of the two proposed bridges.
- c) Contractor shall furnish a structurally sound bridge for the temporary crossing. The bridge shall have a minimum single span of 20 feet.
  - (1) The Contractor is solely responsible for supplying a structurally sound bridge including temporary abutments, structural support members, and bridge deck capable of supporting all equipment, machinery, and material deliveries that will cross the actively flowing river.
  - (2) The Contractor shall inspect and maintain the bridge and all associated components daily from the time of installation to the time of removal. The Contractor shall remove and replace any bridge components that become unfit or unsafe for use at no additional cost to the Contracting Agency.
- d) Bridge shall have a minimum clearance of 1 foot from the 1.25-year water surface elevation (the 1.25-year WSE at the specified locations are called out on the drawings) to the low chord.
- e) Temporary ramps shall be constructed as deemed necessary by the Contractor to safely access and utilize the bridge deck.
- f) The bridge shall be removed immediately following completion and final inspection.

#### FENCES & GATES

- 1. The Contractor is responsible for protecting existing fences and gates in the project area.
- 2. Property Owner require that gates remain closed and fence lines secure and operational throughout the construction period.
- 3. The Contractor may only remove sections of fencing or gates necessary for completion of the project and that are approved by the Contracting Officer. All sections removed shall be repaired or replaced with equal or better material in their original locations or in a location as directed by the Contracting Officer at no extra cost to the Sponsor.

#### CONSTRUCTION STAGING AREA

- 1. Contractor shall park all equipment, vehicles, materials, fuel, portable sanitation facilities, etc. on the sod in the construction staging area, do not strip.
- 2. All equipment and vehicles shall be stored in the staging area nightly.
- 3. To prep the staging area for seeding, Contractor shall disc the staging area to address compaction and prep the seed bed by removing all stones and dirt clods greater than 2".

#### **BORROW SOURCES**

1. Contractor shall strip the sod and topsoil layer (5"-10") within the borrow source areas and stock pile for reclamation. To reclaim, Contractor shall top dress the borrow areas with stockpiled topsoil and then sod. If deemed necessary, Contractor shall disc the Borrow Source to prep the seed bed and remove all stones and dirt clods greater than 2".

### TEMPORARY ENVIRONMENTAL CONTROLS

#### **REGULATORY REQUIREMENTS**

- 1. Contractor shall be responsible for compliance with all Federal, State, and local laws and regulations and shall be expected to maintain copies of all required permits on site for inspection and review.
- 2. Contractor shall conform to most stringent requirement in cases of conflict between specifications and regulatory requirements.
- 3. Contracting Officer may stop any construction activity in violation of Federal, State, or local laws and additional expenses resulting from work stoppage will be responsibility of Contractor.
- 4. Contractor will be responsible for producing implementing, adhering to, and maintaining a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the regulations and guidelines set forth and subject to approval by the State of Idaho.

#### DUST CONTROL

- 1. Contractor shall provide all labor, equipment, and materials to control dust on all access roads several times per day to prevent dust nuisance or damage to persons, property, or activities, including, but not limited to crops, orchards, cultivated fields, wildlife habitats, dwellings and residences, agricultural activities, recreational activities, traffic, and similar conditions.
- 2. Contractor shall be responsible for damages resulting from dust originating from Contractor operations.

#### AIR POLLUTION CONTROL

- 1. Utilize reasonably available methods and devices to prevent, control, and otherwise minimize atmospheric emissions or discharges of air contaminants.
- 2. Do not operate equipment and vehicles that show excessive exhaust gas emissions until corrective repairs or adjustments reduce such emissions to acceptable levels.

#### NOISE CONTROL

- 1. Do not exceed 80 decibels (daytime), as measured at noise-sensitive areas such as residences and schools during the hours of 7:00 a.m. to 7:00 p.m. Do not exceed noise levels of 65 decibels (nighttime) during the hours of 7:00 p.m. to 7:00 a.m.
- 2. Provide specialty mufflers for continuously running generators, pumps, and other stationary equipment to meet the decibel requirements above.
- 3. Compression brakes are not allowed.
- 4. Perform operations producing high-intensity impact noise only weekdays during the hours of 7:00 a.m. to 7:00 p.m.

#### WATER POLLUTION CONTROL

1. Perform construction activities by methods that will prevent entrance, or accidental spillage, of solid matter, contaminants, debris, or other pollutants or wastes into streams, flowing or dry watercourses, lakes, wetlands, reservoirs, or underground water sources. Such pollutants and wastes include, but are not restricted to refuse, garbage, cement, sanitary waste, industrial waste, hazardous materials, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.

#### SURVEYING

- 1. Initial construction staking will be provided by the Sponsor. The Contractor shall provide all additional surveying tasks necessary for construction. This includes, but is not limited to: locate survey control and reference points, establish horizontal and vertical control, place grading stakes, identify and stake the channel centerline, identify all major and minor work components, and periodically verify locations and elevations of all construction items. AutoCAD files for the design are available upon request.
- 2. Contractor shall be responsible for reporting any elevation or horizontal discrepancies to the Contracting Officer for clarification. Minor adjustments to suit field conditions are anticipated, and it shall be the responsibility of the Engineer to make decisions regarding these adjustments.
- 3. Topographic survey is provided by the Sponsor and shown on the Drawings. An electronic version of the topographic survey information, in AutoCAD format, is available to the Contractor upon request. The Drawings reflect LiDAR and survey data collected in October 2016 but do not include all utilities, surface features, structures, and other items that may be encountered at the Project Site. It is the Contractor's responsibility to check existing conditions prior to bidding or commencing work.
- 4. Control points identified on the Drawings shall be used for all ties to spatial and elevation data listed in the Drawings.
- 5. All dimensions on the drawings are in units of feet and decimals, unless otherwise specified.

### **RECORD DRAWINGS AND FINAL SITE REVIEW**

#### GENERAL

- 1. Throughout the progress of the Work, maintain an accurate record of changes in the Contract Documents.
- 2. Prior to commencing demobilization, the Contractor shall review all construction elements with the Contracting Officer, who will give approval or provide a written list of final items to be corrected.
- 3. Final site review approval is contingent on the successful completion of: construction of design elements, cleaning of the site, removal of all construction access roads, ruts and staging areas, restoration of areas disturbed by construction activities, and other tasks as outlined in these specifications and on the Drawings.

#### **RECORD DOCUMENTS**

- 1. Contractor's set: Secure from the Contracting Agency one complete set of Contract Documents for use as the Contractor's Set of Record Documents. Label immediately as "RECORD DOCUMENTS-CONTRACTOR'S SET." Use this set to record all changes in the Work as they occur on a daily basis.
- 2. Maintain the Contractor's set of Record Documents protected from deterioration and from loss and damage until completion of the Work. In the event of loss or damage use whatever means necessary to again secure and record the data.

3. At project completion verify the accuracy and completeness of the Contractor's set and submit Record Documents to the Contracting Officer.

#### FINAL CLEANUP

- 1. Complete the following cleanup tasks before requesting inspection for completion for the entire Project or a portion of the Project.
  - a) Clean the Project Site and grounds in areas disturbed by construction activities of rubbish, waste materials, litter, and foreign substances. Remove all waste from the property, do not burn, bury, or otherwise dispose of trash on the project site.
  - b) Remove construction equipment, tools, machinery, and surplus material from the site. Where extra materials of value remain after completion, coordinate with the Contracting Officer on where to leave them on the project site.
- c) Prepare all areas disturbed by construction activities that are above ordinary high water for seeding specifications outlined in this document
- d) Leftover woody material, wood and other native organics may be broken and broadcast over the restored area as approved by the Contracting Officer.
- e) Contracting Officer shall provide final approval of site cleanup prior to demobilization.



Applied Science & Engineering
THATERMOUNTAIN AQUATICS INC. ENVRONMENTAL CONSULTING & HARITAT RESTORATION
<b>Big Springs Enhancement Project</b> Prefinal (80% Design) Drawings for the Lemhi Regional Land Trust <sup>Big Springs Creek, Lemhi County, Idaho</sup> Project: 014-101-001-01
DRAFT-OR NOTFORTION CONSTRUCTION
Designed: <u>JJF</u> Drawn: <u>JJF</u> Checked: <u>JY/KS/BPA</u> Approved: <u>LRLT</u> Drawing Name GENERAL NOTES - 3
Drawing No. 4

# General Aquatic Conservation Measures Applicable to all Actions.

The activities covered under the HIP III are intended to protect and restore fish and wildlife habitat with long-term benefits to ESA-listed species; however, construction activities may have short-term adverse effects on ESA-listed species and associated critical habitat. To avoid and minimize these short-term adverse effects, BPA has developed the following general Conservation Measures in coordination with USFWS and NMFS. These measures will be implemented on all projects covered under the HIP III.

# Project Design and Site Preparation.

State and federal permits. All applicable regulatory permits and authorizations will be obtained prior to project implementation. These permits and authorizations include, but are not limited to, the National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), state and federal Section 404 of the Clean Water Act (CWA) permits, and Section 401 water quality certifications.

Timing of in-water work. Formal recommendations published by state agencies such as the Oregon Department of Fish and Wildlife (ODFW), Washington Department of Fish and Wildlife (WDFW), Idaho Department of Fish and Game (IDFG), and Montana Fish Wildlife and Parks (MFWP) or informal recommendations from the appropriate state Fishery Biologist in regard to the timing of in-water work will be followed.

- a. Bull trout Utilizing state-recommended in-water work windows will decrease potential effects to bull trout, but this alone may not be sufficient to protect local bull trout populations. This is especially true if work will occur in spawning and rearing areas because eggs, alevin, and fry are present nearly year round. Some project locations may not have designated in-water work windows for bull trout, or if they do, they may differ from the inwater work windows for salmon and steelhead. If this is the case, or if the proposed work is to occur within bull trout spawning and rearing habitats, the project sponsor will contact the appropriate USFWS field office to ensure that all reasonable implementation measures are considered and an appropriate in-water work window is being used to minimize project effects.
- b. Lamprey the project sponsor and/or their contractors will avoid working instream or river channels that contain Pacific lamprev from March 1 to July 1 in low- to mid-elevation reaches (5,000 feet), the project sponsor will avoid working instream or river channels from March 1 to August 1. If either timeframe is incompatible with other objectives, the area will be surveyed for nests and lamprey presence, and avoided if possible. If lampreys are known to exist, the project sponsor will utilize dewatering and salvage best management practices (BMPs) outlined in USFWS 20101 .
- c. Exceptions to ODFW, WDFW, MFWP, or IDFG in-water work windows will be requested through the Variance Process. Work area isolation and fish salvage activities are considered incidental to constructionrelated activities and shall occur during state-recommended in-water work windows.
- 3. Contaminants. The project sponsor will complete a site assessment with the following elements to identify the type, quantity, and extent of any potential contamination for any action that involves excavation of more than 20 cubic yards of material:
- a. A review of available records, such as former site use, building plans, and records of any prior contamination events;
- b. A site visit to inspect the areas used for various industrial processes and the condition of the property:
- c. Interviews with knowledgeable people, such as site owners, operators, and occupants, neighbors, or local government officials; and
- d. A summary, stored with the project file that includes an assessment of the likelihood that contaminants are present at the site, based on items 4(a) through 4(c).
- Site layout and flagging. Prior to construction, the project area will be clearly flagged to identify the following:
- a. Sensitive resource areas, such as areas below ordinary high water (OHW), spawning areas, springs, and wetlands;
- b. Equipment entry and exit points;
- c. Road and stream crossing alignments;
- d. Staging, storage, and stockpile areas; and
- e. No-herbicide-application areas and buffers.
- 5. Temporary access roads and paths.
- a. Existing access roads and paths will be preferentially used whenever possible, and the number and length of temporary access roads and paths through riparian areas and floodplains will be minimized to lessen soil disturbance, soil compaction, and impacts to vegetation.
- b. Temporary access roads and paths will not be built on slopes where grade, soil, or

other features suggest a likelihood of excessive erosion or failure. If slopes are steeper than 30%, the road will be designed by a civil engineer with experience in steep road desian

- c. The removal of riparian vegetation during construction of temporary access roads will be minimized. When temporary vegetation removal is required, vegetation will be cut at ground level (not grubbed).
- d. At project completion, all temporary access roads and paths will be obliterated, and the soil will be stabilized and revegetated. Road and path obliteration refers to the most comprehensive dearee of decommissioning and involves decompacting the road surface and associated ditches, pulling the fill material onto the running surface, and reshaping to match the original contour.
- e. Temporary roads and paths in wet areas or areas prone to flooding will be obliterated by the end of the in-water work window.
- 6. Temporary stream crossings.
- a. Existing stream crossings will be preferentially used whenever reasonable, and the number of temporary stream crossings will be minimized.
- b. Temporary bridges and culverts will be installed to allow for equipment and vehicle crossing over perennial streams during construction. Treated wood shall not be used on temporary bridge crossings or in locations in contact with or over water.
- c. Equipment and vehicles will cross streams in the wet only where:
- i. The streambed is bedrock; or
- ii. Mats or off-site logs are placed in the stream and used as a crossing.
- d. Vehicles and machinery will cross streams at right angles to the main channel wherever possible.
- e. The location of the temporary crossing will avoid areas that may increase the risk of channel re-routing or avulsion.
- f. Impacts to potential spawning habitat (i.e., pool tailouts) and pools will be avoided to the maximum extent possible.
- g. No stream crossings will occur at active spawning sites, when holding adult listed fish are present, or when eggs or alevins are in the gravel. The appropriate state fish and wildlife agency will be contacted for specific timing information.
- h. After project completion, temporary stream crossings will be obliterated, and the stream channel and banks restored.
- 7. Staging, storage, and stockpile areas.
- a. Staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, and hazardous material storage) will be 150 feet or more from any natural waterbody or wetland, or on an adjacent established road area in a location and manner that will preclude erosion into or contamination of the stream or floodplain.
- b. Natural materials used for implementation of aquatic restoration, such as large wood, gravel, and boulders, may be staged within the 100-year floodplain.
- c. Any large wood, topsoil, and native channel material displaced by construction will be stockpiled for use during site restoration at a specifically identified and flagged area.
- d. Any material not used in restoration, and not native to the floodplain, will be removed to a location outside of the 100-year floodplain for disposal.
- 8. Equipment. Mechanized equipment and vehicles will be selected, operated, and maintained in a manner that minimizes adverse effects on the environment (e.g., minimally-sized, low pressure tires; minimal hard-turn paths for tracked vehicles; temporary mats or plates within wet areas or on sensitive soils). All vehicles and other mechanized equipment will be:
- a. Stored, fueled, and maintained in a vehicle staging area located 150 feet or more from any natural water body or wetland or on an adjacent, established road area;
- b. Refueled in a vehicle staging area located 150 feet or more from a natural waterbody or wetland, or in an isolated hard zone, such as a paved parking lot or adjacent, established road (this measure applies only to gas-powered equipment with tanks larger than 5 gallons);
- c. Biodegradable lubricants and fluids shall be used on equipment operating in and adjacent to the stream channel and live water.
- d. Inspected daily for fluid leaks before leaving the vehicle staging area for operation within 150 feet of any natural water body or wetland; and
- e. Thoroughly cleaned before operation below ordinary high water (OHW), and as often as necessary during operation, to remain grease free.
- 9. Erosion control. Erosion control best management practices (BMPs) will be prepared and carried out, commensurate in scope with the action, that may include the following:
- a. Temporary erosion control BMPs.
- i. Temporary erosion control BMPs will be in place before any significant alteration of the action site and appropriately installed downslope of project activity within the riparian

buffer area until site rehabilitation is complete.

- ii. If there is a potential for eroded sediment to enter the stream, sediment barriers will be installed and maintained for the duration of project implementation.
- iii. Temporary erosion control measures may include fiber wattles, silt fences, jute matting, wood fiber mulch and soil binder, or geotextiles and geosynthetic fabric.
- iv. Soil stabilization utilizing wood fiber mulch and tackifier (hydro-applied) may be used to reduce erosion of bare soil if the materials are noxious weed-free and nontoxic to aquatic and terrestrial animals, soil microorganisms, and vegetation.
- exposed height of the BMP.
- be removed.
- b. Emergency erosion control BMPs. The following materials for emergency erosion control will be available at the work site:
- *i.* A supply of sediment control materials; and
- ii. An oil-absorbing floating boom whenever surface water is present.
- 10. Dust abatement. The project sponsor will determine the appropriate dust control measures by considering soil type, equipment usage, prevailing wind direction, and the effects caused by other erosion and sediment control measures. In addition, the following criteria will be followed:
- erosion.
- b. Dust-abatement additives and stabilization chemicals (typically magnesium chloride, calcium chloride salts, or ligninsulfonate) will not be applied within 25 feet of a natural waterbody or wetland and will be applied so as to minimize the likelihood that they will enter streams. Applications of liquinsulfonate will be limited to a maximum rate of 0.5 gallons per square yard of road surface, assuming a 50:50 (ligninsulfonate to water) solution.
- c. Application of dust abatement chemicals will be avoided during or just before wet weather and at stream crossings or other areas that could result in unfiltered delivery of the dust abatement chemicals to a waterbody (typically these would be areas within 25 feet of a natural waterbody or wetland; distances may be greater where vegetation is sparse or slopes are steep).
- d. Spill containment equipment will be available during application of dust abatement chemicals.
- e. Petroleum-based products will not be used for dust abatement.
- 11. Spill prevention, control, and counter measures. The use of mechanized machinery increases the risk for accidental spills of fuel, lubricants, hydraulic fluid, or other contaminants into the riparian zone or directly into the water. Additionally, uncured concrete and form materials adjacent to the active stream channel may result in accidental discharge into the water. These contaminants can degrade habitat and injure or kill benthic invertebrates and ESA-listed species. The project sponsor will adhere to the following measures:
- a. A description of hazardous materials that will be used, including inventory, storage, and handling procedures will be available on-site.
- b. Written procedures for notifying environmental response agencies will be posted at the work site.
- c. Spill containment kits (including instructions for cleanup and disposal) adequate for the types and quantity of hazardous materials used at the site will be available at the work site.
- location of spill containment kits.
- e. Any waste liquids generated at the staging areas will be temporarily stored under an impervious cover, such as a tarpaulin, until they can be properly transported to and disposed of at a facility that is approved for receipt of hazardous materials.
- 12. Invasive species control. The following measures will be followed to avoid introduction of invasive plants and noxious weeds into project areas:
- a. Prior to entering the site, all vehicles and equipment will be power-washed, allowed to fully dry, and inspected to make sure no plants, soil, or other organic material adheres to the surface.
- b. Watercraft, waders, boots, and any other gear to be used in or near water will be inspected for aquatic invasive species.
- the transfer of invasive species.

- v. Sediment will be removed from erosion control BMP once it has reached 1/3 of the
- vi. Once the site is stabilized following construction, temporary erosion control BMPs will

a. Work will be sequenced and scheduled to reduce exposed bare soil subject to wind

d. Workers will be trained in spill containment procedures and will be informed of the

c. Wading boots with felt soles are not to be used due to their propensity for aiding in



# Work Area Isolation & Fish Salvage

Any work area within the wetted channel will be isolated from the active stream whenever ESA listed fish are reasonably certain to be present, or if the work area is less than 300-feet upstream from known spawning habitats. Work area isolation & fish salvage activities are considered incidental to construction-related activities and shall occur during the state-recommended in-water work windows. When work area isolation is required, design plans will include all isolation elements, fish release areas, and, when a pump is used to dewater the isolation area and fish are present, a fish screen that meets NMFS's fish screen criteria (NMFS 2011, or most current). Work area isolation and fish capture activities will occur during periods of the coolest air and water temperatures possible, normally early in the morning versus late in the day, and during conditions appropriate to minimize stress and death of species present.

- National Marine Fisheries Service, 2011, Anadromous Slmonid Passage Facility Design, Northwest Region, Available online at:

http://www.nwr.noaa.gov/salmon-hydropower/ferc/upload/fish-passage-design.pdf

For salvage operations in known bull trout spawning and rearing habitat, electrofishing shall only occur from May 1 to July 31. No electrofishing will occur in any bull trout occupied habitat after August 15. Bull trout are very temperature sensitive and generally should not be electrofished or otherwise handled when temperatures exceed 15 degrees Celsius. Salvage activities should take place during periods of the coolest air and water temperatures possible, normally early in the morning versus late in the day, and during conditions appropriate to minimize stress to fish species present.

Salvage operations will follow the ordering, methodologies, and conservation measures specified below in Steps 1 through 6. Steps 1 and 2 will be implemented for all projects where work area isolation is necessary according to conditions above. Electrofishing (Step 3) can be implemented to ensure all fish have been removed following Steps 1 and 2, or when other means of fish capture may not be feasible or effective. Dewatering and rewatering (Steps 4 and 5) will be implemented unless wetted instream work is deemed to be minimally harmful to fish, and is beneficial to other aquatic species. Dewatering will not be conducted in areas known to be occupied by lamprey, unless lampreys are salvaged using guidance set forth in USFWS 2010

- U.S. Fish and Wildlife Service. 2010. Best Management Practices to Minimize Adverse Effects to Pacific Lamprey. Available online at: http://www.fws.gov/pacific/fisheries/sphabcon/lamprey/pdf/best%20management%20practices a. If conductivity is less than 100 MS, voltage ranges from 900 to 1100 will be used. %20for%20pacific%20lamprey%20april%202010%20version.pdf
- 1. Isolate.
- a. Block nets will be installed at upstream and downstream locations and maintained in a secured position to exclude fish from entering the project area.
- b. Block nets will be secured to the stream channel bed and banks until fish capture and transport activities are complete. Block nets may be left in place for the duration of the project to exclude fish.
- c. If block nets remain in place more than one day, the nets will be monitored at least daily to ensure they are secured to the banks and free of organic accumulation. If the project is within bull trout spawning and rearing habitat, the block nets must be checked every 4 hours for fish impingement on the net. Less frequent intervals must be approved through a variance request.
- d. Nets will be monitored hourly anytime there is instream disturbance.
- 2. Salvage. As described below, fish trapped within the isolated work area will be captured to minimize the risk of injury, then released at a safe site:
- a. Remove as many fish as possible prior to dewatering.
- b. During dewatering, any remaining fish will be collected by hand or dip nets.
- c. Seines with a mesh size to ensure capture of the residing ESA-listed fish will be used.
- d. Minnow traps will be left in place overnight and used in conjunction with seining.
- e. If buckets are used to transport fish:
- i. The time fish are in a transport bucket will be limited, and will be released as quickly as possible:
- *ii. The number of fish within a bucket will be limited based on size, and fish will be of* relatively comparable size to minimize predation;
- iii. Aerators for buckets will be used or the bucket water will be frequently changed with cold clear water at 15 minute or more frequent intervals.

- iv. Buckets will be kept in shaded areas or will be covered by a canopy in exposed areas
- v. Dead fish will not be stored in transport buckets but will be left on the streambank to avoid mortality counting errors.
- f. As rapidly as possible (especially for temperature-sensitive bull trout), fish will be released in an area that provides adequate cover and flow refuge. Upstream release is generally preferred, but fish released downstream will be sufficiently outside of the influence of construction.
- g. Salvage will be supervised by a qualified fisheries biologist experienced with work area isolation and competent to ensure the safe handling of all fish.
- 3. Electrofishing. Electrofishing will be used only after other salvage methods have been employed or when other means of fish capture are determined to not be feasible or effective. If electrofishing will be used to capture fish for salvage, the salvage operation will be led by an experienced fisheries biologist and the following guidelines will be followed: the NMFS's electrofishing guidelines (NMFS 2000).
- a. Initial Site Surveys and Equipment Settings
- *i.* In order to avoid contact with spawning adults or active redds, researchers must conduct a careful visual survey of the area to be sampled before beginning electrofishina.
- *ii. Prior to the start of sampling at a new location, water temperature and conductivity* measurements shall be taken to evaluate electrofisher settings and adjustments. No electrofishing should occur when water temperatures are above 18°C or are expected to rise above this temperature prior to concluding the electrofishing survey. In addition, studies by NMFS scientists indicate that no electrofishing should occur in California coastal basins when conductivity is above 350 µS/cm.
- *iii.* Whenever possible, a block net should be placed below the area being sampled to capture stunned fish that may drift downstream.
- iv. Equipment must be in good working condition and operators should go through the manufacturer's preseason checks, adhere to all provisions, and record major maintenance work in a logbook.
- v. Each electrofishing session must start with all settings (voltage, pulse width, and pulse rate) set to the minimums needed to capture fish. These settings should be gradually increased only to the point where fish are immobilized and captured, and generally not allowed to exceed conductivity-based maxima. Only direct current (DC) or pulsed direct current (PDC) should be used.
- b. For conductivity ranges between 100 to 300 MS, voltage ranges will be 500 to 800.
- c. For conductivity greater than 300 MS, voltage will be less than 400.
- b. Electrofishina Techniaue
- *i.* Sampling should begin using straight DC. The power needs to remain on until the fish is netted when using straight DC. If fish capture is unsuccessful with initial low voltage, gradually increase voltage settings with straight DC.
- *ii. If fish capture is not successful with the use of straight DC, then set the electrofisher* to lower voltages with PDC. If fish capture is unsuccessful with low voltages, increase pulse width, voltage, and pulse frequency (duration, amplitude, and frequency).
- iii. Electrofishing should be performed in a manner that minimizes harm to the fish. Stream segments should be sampled systematically, moving the anode continuously in a herringbone pattern (where feasible) through the water. Care should be taken when *fishing in areas with high fish concentrations, structure (e.g., wood, undercut banks)* and in shallow waters where most backpack electrofishing for juvenile salmonids occurs. Voltage gradients may be high when electrodes are in shallow water where boundary layers (water surface and substrate) tend to intensify the electrical field.
- iv. Do not electrofish in one location for an extended period (e.g., undercut banks) and regularly check block nets for immobilized fish.
- v. Fish should not make contact with the anode. The zone of potential injury for fish is 0.5 m from the anode.
- vi. Electrofishing crews should be generally observant of the condition of the fish and change or terminate sampling when experiencing problems with fish recovery time, banding, injury, mortality, or other indications of fish stress.
- vii. Netters should not allow the fish to remain in the electrical field any longer than necessary by removing stunned fish from the water immediately after netting.
- c. Sample Processing and Recordkeeping

- require a larger crew size.
- samples, fin clips, tagging).
- fish in buckets, etc.).
- sample work-up. vii.
- vii. The anode will not intentionally contact fish.
- stream bottom in one foot of water.
- mortality.
- shortest linear extent practicable.
- downstream reaches.
- NMFS Hydro fish passage review will be necessary.
- riparian vegetation and/or stream channel.
- habitat with cover, if the diversion allows for downstream fish passage.
- prior to reentering the stream channel.
- causes of any deaths.

i. Fish should be processed as soon as possible after capture to minimize stress. This may

*ii. All sampling procedures must have a protocol for protecting held fish. Samplers must* be aware of the conditions in the containers holding fish; air pumps, water transfers, etc., should be used as necessary to maintain safe conditions. Also, large fish should be kept separate from smaller prey-sized fish to avoid predation during containment.

iii. Use of an approved anesthetic can reduce fish stress and is recommended, particularly if additional handling of fish is required (e.g., length and weight measurements, scale

iv. Fish should be handled properly (e.g., wetting measuring boards, not overcrowding

v. Fish should be observed for general condition and injuries (e.g., increased recovery time, dark bands, visually observable spinal injuries). Each fish should be completely revived before releasing at the location of capture. A plan for achieving efficient return to appropriate habitat should be developed before each sampling session. Also, every attempt should be made to process and release ESA-listed specimens first.

vi. Pertinent water quality (e.g., conductivity and temperature) and sampling notes (e.g., shocker settings, fish condition/injuries/mortalities) should be recorded in a logbook to improve technique and help train new operators. It is important to note that records of injuries or mortalities pertain to the entire electrofishing survey, including the fish

viii. Electrofishing shall not be conducted when the water conditions are turbid and visibility is poor. This condition may be experienced when the sampler cannot see the

ix. If mortality or obvious injury (defined as dark bands on the body, spinal deformations, de-scaling of 25% or more of body, and torpidity or inability to maintain upright attitude after sufficient recovery time) occurs during electrofishing, operations will be immediately discontinued, machine settings, water temperature, and conductivity checked, and procedures adjusted or electrofishing postponed in order to reduce

4. Dewater. Dewatering, when necessary, will be conducted over a sufficient period of time to allow species to naturally migrate out of the work area and will be limited to the

a. Diversion around the construction site may be accomplished with a cofferdam and a by-pass culvert or pipe, or a lined, non-erodible diversion ditch. Where gravity feed is not possible, a pump may be used, but must be operated in such a way as to avoid repetitive dewatering and rewatering of the site. Impoundment behind the cofferdam must occur slowly through the transition, while constant flow is delivered to the

b. All pumps will have fish screens to avoid juvenile fish impingement or entrainment, and will be operated in accordance with NMFS's current fish screen criteria (NMFS 2011 , or most recent version). If the pumping rate exceeds 3 cubic feet per second (cfs), a

c. Dissipation of flow energy at the bypass outflow will be provided to prevent damage to

d. Safe re-entry of fish into the stream channel will be provided, preferably into pool

e. Seepage water will be pumped to a temporary storage and treatment site or into upland areas to allow water to percolate through soil or to filter through vegetation

5. Salvage Notice. Monitoring and recording of fish presence, handling, and mortality must occur for the duration of the isolation, salvage, electrofishing, dewatering, and rewatering operations. Once operations are completed, a salvage report will document procedures used, any fish injuries or deaths (including numbers of fish affected), and



# Construction and Post-Construction Conservation Measures.

- 1. Fish passage. Fish passage will be provided for any adult or juvenile fish likely to be present in the project area during construction, unless passage did not exist before construction, or the stream is naturally impassable at the time of construction. If the provision of temporary fish passage during construction will increase negative effects on ESA-listed species or their habitat, a variance can be requested from the NMFS Branch Chief and the USFWS Field Office Supervisor. Pertinent information, such as the species affected, length of stream reach affected, proposed time for the passage barrier, and alternatives considered will be included in the variance request.
- 2. Construction and discharge water. a) Surface water may be diverted to meet construction needs, but only if developed sources are unavailable or inadequate. b) Diversions will not exceed 10% of the available flow. c) All construction discharge water will be collected and treated using the best available technology suitable for site conditions. d) Treatments to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present will be provided.
- 3. Minimize time and extent of disturbance. Earthwork (including drilling, excavation, dredging, filling and compacting) in which mechanized equipment is utilized instream channels, riparian areas, and wetlands will be completed as quickly as possible. Mechanized equipment will be used instreams only when project specialists believe that such actions are the only reasonable alternative for implementation, or would result in less sediment in the stream channel or damage (short- or long-term) to the overall aquatic and riparian ecosystem relative to other alternatives. To the extent feasible, mechanized equipment will work from the top of the bank, unless work from another location would result in less habitat disturbance.
- 4. Cessation of work. Project operations will cease under the following conditions: a) High flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage; b) When allowable water quality impacts, as defined by the state CWA section 401 water quality certification or HIP III Turbidity Monitoring Protocol, have been exceeded; or c) When "incidental take" limitations have been reached or exceeded.
- 5. Site restoration. When construction is complete: a) All streambanks, soils, and vegetation will be cleaned up and restored as necessary using stockpiled large wood, topsoil, and native channel material. b) All project-related waste will be removed. c) All temporary access roads, crossings, and staging areas will be obliterated. When necessary for revegetation and infiltration of water, compacted areas of soil will be loosened. All disturbed areas will be rehabilitated in a manner that results in similar or improved conditions relative to pre-project conditions. This will be achieved through redistribution of stockpiled materials, seeding, and/or planting with local native seed mixes or plants.
- 6. Revegetation. Long-term soil stabilization of disturbed sites will be accomplished with reestablishment of native vegetation using the following criteria: a) Planting and seeding will occur prior to or at the beginning of the first growing season after construction. b) An appropriate mix of species that will achieve establishment, shade, and erosion control objectives, preferably forb, grass, shrub, or tree species native to the project area or region and appropriate to the site will be used. c) Vegetation, such as willow, sedge and rush mats, will be salvaged from disturbed or abandoned floodplains, stream channels, or wetlands. d) Invasive species will not be used. e) Short-term stabilization measures may include the use of non-native sterile seed mix (when native seeds are not available), weed-free certified straw, jute matting, and other similar techniques. f) Surface fertilizer will not be applied within 50 feet of any stream channel, waterbody, or wetland. g) Fencing will be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons. h) Re-establishment of vegetation in disturbed areas will achieve at least 70% of pre-project conditions within 3 years. i) Invasive plants will be removed or controlled until native plant species are well-established (typically 3 years post-construction).
- 7. Site access. The project sponsor will retain the right of reasonable access to the site in order to monitor the success of the project over its life.
- 8. Implementation monitoring. Project sponsor staff or their designated representative will provide implementation monitoring by filling out the Project Completion Form (PCF) to ensure compliance with the applicable BiOp, including: a) General conservation measures are adequately followed. b) Effects to listed species are not greater than predicted and incidental take limitations are not exceeded. c) Turbidity monitoring shall be conducted in accordance with the HIP III turbidity monitoring protocol and recorded in the PCF.
- *9. CWA section 401 water quality certification. The project sponsor or designated representative will complete and record water quality observations to ensure that in-water work is not degrading water quality. During construction, CWA section 401 water quality certification provisions provided by the Oregon Department of Environmental Quality, Washington Department of Ecology, or Idaho Department of Environmental Quality will be followed.*

# Staged Rewatering Plan.

When appropriate, the project sponsor shall implement a staged rewatering plan for projects that involve introducing streamflow into recently excavated channels under the 2a) Improve Secondary Channel and Wetland Habitat Activity category or 2f) Channel Reconstruction categories.

- a. Pre-wash the newly-excavated channel before rewatering. Turbid wash water will be detained and pumped to the floodplain, rather than discharging to fish-bearing waters.
- *b.* Prepare new channel for water by installing seine at upstream end to prevent fish from moving downstream into new channel until 2/3 of total streamflow is available in that channel. Starting in the early morning, introduce 1/3 of the flow into the new channel over a period of 1-2 hours.
- c. Perform monitoring according to HIP III Turbidity Monitoring Protocol.
- *i.* If turbidity exceeds 10% of background, modify the activity to reduce turbidity. In this case, this may mean decreasing the amount of flow entering the new channel and/or correcting any other issues causing turbidity (e.g., correct a bank that is sloughing, install or correct a BMP, etc.).
- ii. Monitor every 2 hours as long as the instream activity is occurring.
- *iii.* If exceedances occur for more than 2 monitoring intervals in a row (4 hours), then the activity must stop until turbidity reaches background levels. This means that the contractor may have to plug off water supply to the new meander until turbidity is within acceptable levels.
- *iv.* Once turbidity is within 10% of background levels, move on to the next re-watering stage.
- *d.* Prepare to introduce the second 1/3 of the flow (up to a total of 2/3) to the new channel by installing seine at upstream end of old channel in order to prevent fish from moving into a partially-dewatered channel. Introduce the second 1/3 of the flow over the next 1-2 hours. Salvage fish from the old channel at this time, so that the old channel is fish-free before dropping below 1/3 of the flow. Note: the fish will be temporarily blocked from moving downstream into either channel until 2/3 of the flow has been transitioned to the new channel. This blockage to downstream fish passage is expected to persist for roughly 12 to 14 hours, but fish will still be able to volitionally move out of the channel in the downstream direction. Perform monitoring as in #3 above.
- *e.* After the second 1/3 of flow is introduced over 2 hours, and turbidity is within 10% of the background level, remove seine nets from the new channel, and allow fish to move downstream back into the channel.
- f. Introduce the final 1/3 of flow. Once 100% of the flow is in the new channel, install plug to block flow into the old channel and remove seines from the old channel.

