U.S. Department of Homeland Security
FEMA Region 10
130 228th Street, SW
Bothell, WA 98021-8627

FEMA

FINDING OF NO SIGNIFICANT IMPACT

Clearwater Complex Vegetation Management Project
Idaho County, Idaho
Hazard Mitigation Grant Program FM-5099-5R

Idaho County applied to the Federal Emergency Management Agency (FEMA) through the Idaho Office of Emergency Management (OEM) for a grant under FEMA's Hazard Mitigation Grant Program (HMGP) for a vegetation management project. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (Public Law 93-288, as amended, 42 U.S. Code § 5121-5207). Funds were made available through the HMGP following Fire Mitigation Assistance Grant (FMAG) declarations for fires that occurred during the 2015 wildfire season.

The purpose of the FMAG-triggered HMGP is provide funding assistance for activities that help reduce the risk of future damage, hardship, loss, or suffering in any area affected by a wildfire. The purpose of the proposed project is to reduce hazards associated with wildfire, erosion, surface runoff, and flooding due to vegetation loss from the Clearwater Complex Fire, as well as reduce invasive species growth that occurred after the fire and may contribute to future wildfire spread.

The Proposed Action would treat up to about 1785 acres scattered along county road rights-of-way (ROWs) and on State, Tribe, and privately-owned parcels affected by the Clearwater Complex Fire and within the Upper Clearwater Cooperative Weed Management Area (WMA). Work on parcels would be voluntary and coordinated by the County. Most of the treatment sites are within the Nez Perce Tribe Reservation. Treatment will be performed by the County or local contractor crews and includes control of invasive plants and riparian corridor restoration. The weed species targeted for invasive weed management protocols would include rush skeletonweed (Chondrilla juncea), common tansy (Tanacetum vulgare), yellow toadflax or butter and eggs (Linaria vulgaris), Scotch broom (Cytisus scoparius), and yellow star-thistle (Centaurea solsitialis).

Invasive plants would be controlled through release of U.S. Department of Agriculture (USDA)-approved biological controls and U.S. Environmental Protection Agency (EPA)-approved herbicide application followed by reseeding with native and desirable U.S. Natural Resource and Conservation Service (NRCS)-approved non-native grass-forb seed mixes. Riparian corridor restoration would be achieved through removal of blackberry thickets and planting of native trees and shrubs. Treatment would occur along the Clearwater River, Lolo Creek, Tom Taha Creek, Lawyer Creek, and Sevenmile Creek, County road ROWs, and on property affected by the wildfires.

The Proposed Action includes the following activities which would occur over a three-year period followed by monitoring for two years:

- An **Early Detection and Rapid Response** (EDRR) approach will be used to monitor and control invasive weeds in the Upper Clearwater Cooperative WMA. The County anticipates surveying up to 740 parcels for localized spot herbicide treatment. Herbicide applications would be conducted using backpack sprayers or all-terrain vehicles (ATV), consistent with product label application protocols and best management practices. County roads are vectors of invasive weed spread; therefore, county ROWs (within 15 feet of the road edge) would also be treated with herbicides. Sites treated under the EDRR protocol would be monitored three times per year with the goal of attaining 90 to 100 percent control within 5 years depending on the weed species. Adjuvants would be used to improve the efficacy of proposed herbicides. Release of biological control agents (insects) would be used to control the most widespread and difficult to eradicate weed species where populations of insects have been depleted due to the wildfires' intensity. Insects would either be collected from Idaho, Montana, and Washington or reared by the Nez Perce Tribal Biological Control Center and released across the project extents, focusing on areas containing the largest and densest populations of invasive species. Only insect species approved by the USDA's Animal and Plant Health Inspection Service-Plant Protection Quarantine would be used. Effectiveness monitoring would be conducted by the Nez Perce Biological Control Center, in coordination with Idaho County.

- **Riparian Restoration**, also in the Upper Clearwater Cooperative WMA, would include removing invasive blackberry thickets within 100-feet of the ordinary high-water mark (OHWM) of ephemeral, non-fish bearing streams and planting native trees and shrubs. Several of these treatment sites are located along small draws on the bluffs facing the Clearwater River, with the majority of the treatment area elevated above the Clearwater River floodplain. The County anticipates riparian restoration work to occur on up to 35 parcels. Blackberry thickets would be masticated using full-sized excavators equipped with a drum-type mulching attachment or by handheld brushing tools on poor access sites. Mulch created by mastication of blackberry thickets would be left in situ to prevent soil exposure, erosion, and increased sedimentation.

  In late fall in the riparian restoration areas, native seedlings and shrubs would be hand-planted using a hoedad. Planting sites would be monitored for blackberry regrowth and, as needed, would be spot treated with herbicides from an ATV or by ground crew with a backpack sprayer. Protective mesh guards would be installed around each seedling. Native seedling species proposed for planting would be in up to one-gallon pots and include cottonwood (Populus spp.), rocky mountain maple (Acer glabrum), alder (Alnus incana and A. viridus), service berry (Amelanchier alnifolia), ninebark (Physocarpus malvaceus), syringa (Philadelphus lewesii), elderberry (Sambucus nigra), and chokecherry (Prunus virginiana).

- **Reseeding** with a native grass-forb mix and a non-native NRCS-approved mix would revert large rangelands and grasslands that were converted to non-native grass and invasive weed communities after the Clearwater Complex Fire to more native, fire-resistant vegetation communities. The County anticipates reseeding to occur on up to 162 parcels. Site preparation would occur in spring prior to reseeding and would entail removal of invasive vegetation with an ATV, light pickup truck, or tractor with a disk or chain harrow attachment. In spring or fall, any germinating annual grasses would be treated with herbicide applications.

Native seed mix would either be scattered by hand or drilled approximately 2 inches or less into soil by rangeland or no-till drill. Degraded sites that need more resource input will have cover crops planted in the spring prior to being reseeded with the native seed mix. The cover crop would be composed of annual species that die out after a single winter season and could include forage peas (Pisum sativum), everleaf forage oats, canola (Brassica napus), triticale, radish (Raphanus rahpanistrum subsp. sativus), and turnip (Brassica rapa supsp. rapa). The permanent native seed mix would include mountain brome (Bromus marginatus), blue wildrye (Elymus glaucus), big bluegrass (Poa secunda 'Sherman'), Sandberg bluegrass (Poa secunda), bluebunch wheatgrass (Pseudoroegneria spicata), slender wheatgrass (Elymus trachycaulus), thickspike wheatgrass (Elymus lanceolatus), and Lewis' flax (Linum lewisii). Other seed mix species proposed include western wheatgrass (Pascopyrum smithii), basin wildrye (Leymus cinereus), sheep fescue (Festuca ovina), forage kochia (Kochia prostrata), small burnett (Sanguisorba minor), and common yarrow (Achillea millefolium). Below 1,800 feet in elevation, Secar Snake River wheatgrass (Elymus wawawaiensis) would be used in place of bluebunch wheatgrass.

FINDINGS

FEMA prepared an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321−4347 (2000), as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [C.F.R.] 30 §§ 1500−1508), and in accordance with FEMA Directive 108-1 and Instruction on Implementation 108-1-1 for Environmental Planning and Historic Preservation Responsibilities and Program Requirements and Department of Homeland Security (DHS) Instruction Manual 023-01-001-01, Implementation of the National Environmental Policy Act. The EA analyzed the potential individual and cumulative environmental impacts from implementation of the Proposed Action and a No Action Alternative.

The following will not be affected by the Proposed Action either because they do not exist in the project areas or the alternative will have no effect on them: wild and scenic rivers, land use and zoning, traffic, and public services and utilities. During implementation of the Proposed Action, negligible to minor short-term adverse impacts on soils, air quality, surface waters and water quality, wetlands, floodplains, vegetation, fish and wildlife, threatened and endangered species, cultural resources, hazardous materials, noise, minority and low income populations, and public health and safety are anticipated. With implementation of conditions to avoid, minimize, and mitigate impacts as listed in Attachment A, none of these potential impacts will be significant. In the long-term, the Proposed Action will have beneficial effects on several resources from the reduced risk of wildfire spread and damages, along with helping restore native vegetation cover.

FEMA consulted with the U.S. Fish and Wildlife Service, the National Marine Fisheries Service (NMFS), the Idaho State Historic Preservation Office, and Nez Perce Tribe to identify potentially affected resources and appropriate measures to avoid and minimize potential impacts. The draft EA was made available to the public and interested parties for review and comment from May 12 to June 14, 2022. Comments to the draft EA were received from one federal agency and the EA was updated to address substantive comments. The proposed action is the selected alternative because the no action

alternative would not address the purpose and need stated in the EA and no other practical alternatives were identified.

CONCLUSION

Based upon the information contained in the HMGP grant application, the EA, and conditions in Attachment A of this Finding of No Significant Impact (FONSI); and in accordance with FEMA's Directive and Instruction; Executive Orders (EOs) addressing floodplains (EO 11988), wetlands (EO 11990), and environmental justice (EO 12898); the DHS Instruction Manual; and CEQ regulations; FEMA has determined that the Proposed Action will not have significant impacts on the quality of the natural and human environment. As a result of this FONSI, an environmental impact statement will not be prepared and the project, as described in the grant application, the EA, and the conditions in Attachment A may proceed.

EHP APPROVAL

SCIENCE A KILNER

Digitally signed by SCIENCE A KILNER
Date: 2022.08.25 11:57:26 -07'00'

Science Kilner — Date
Regional Environmental Officer
FEMA Region 10

EHP ENDORSEMENT

JACKIE D PRITCHETT JR

Digitally signed by JACKIE D PRITCHETT JR
Date: 2022.08.25 12:10:48 -07'00'

Jackie Pritchett Jr. — Date
Hazard Mitigation Assistance Branch Chief
FEMA Region 10

Attachment A

PROJECT CONDITIONS

Idaho County shall implement the Proposed Action and comply with the following project conditions, best management practices, and mitigation measures. Many of these are incorporated into the Proposed Action's scope of work:

- In riparian restoration areas, masticated blackberry vines would be left in place to act as mulch to minimize erosion and sedimentation.
- Crews would keep ATV running times to a minimum and ensure that all engines are properly maintained.
- Backpack and handgun sprayers would be operated via pump or from battery powered pumps.
- ATVs would be parked away from waterbodies to prevent soil disturbance and fuel or lubricant leaks from reaching surface waters.
- Refueling and staging areas would be located away from waterbodies.
- A spill prevention plan will be prepared and will address any potential effects from spills during work.
- Biocontrol practitioners would adhere to the International Code of Best Practices for Biocontrol of Weeds to reduce the potential for adverse impacts from biological control agents.
- All in-water work will be avoided.
- Incidental take of aquatic ESA-listed species (salmon and steelhead) will be minimized from project activities by minimizing the potential for herbicide impacts to water quality.
- Ensure completion of a monitoring and reporting program to confirm that the terms and conditions in the NMFS Incidental Take Statement (2021) were effective in avoiding and minimizing incidental take from permitted activities and that the extent of take was not exceeded.
- Contractors will be trained to identify Spalding's catchfly and its suitable habitat, no herbicide applications will occur within one-quarter mile of identified suitable habitat.
- No entry and work buffers are required around some culturally sensitive areas within the project boundary. To maintain confidentiality, the locations will be provided to the County separate from this document.
- All work crews will follow an Inadvertent Discovery Plan (IDP) for cultural resources. The attached IDP must be distributed to work crews and signed prior to the start of fieldwork to

ensure the process is reviewed and understood by work crews. The IDP must be on-site for reference during activities related to riparian restoration and reseeding and followed in case any prehistoric or historic artifacts or features are encountered during work. Signed copies of the IDP must retained in the grant's administrative records and submitted as part of the grant's closeout.

- All machinery used will meet applicable local, state, and federal noise control regulations.
- Noise-producing equipment may be used during normal waking hours.
- The County will provide the Material Safety Data Sheet for any of the herbicides upon request.
- Treated areas would be signed and closed to the public access during herbicide application.
- The County would follow EPA requirements for each herbicide, as well as the Idaho Forest Practices Act (Idaho Administrative Code [IDAPA] 20.02.01).
- All herbicide applications would occur consistent with label recommendations and would be applied by trained applicators using equipment that is calibrated on an annual basis.
- If at any time the EPA product label requirements, or any State regulations, concerning project herbicides change, the County will be required to monitor for EPA bulletins and adhere to the updated label/regulatory requirements.
- Herbicide will be applied at the lowest effective label rates and adhering to the maximum application rate per acre and by product (EA Table 3-2).
- Milestone™ (aminopyralid) herbicide will not be used on moderately steep slopes, in accordance with the product guidelines.
- The County will adhere to all no herbicide application buffers by product and application method for ditches, streams and wetlands (EA Table 3-3).
- Under the Idaho Forest Practices Act, employ BMPs that include measures to prevent leaks and spills (IDAPA 20.02.01.060).
- Only the quantities of herbicide needed for work in a given day would be transported to the project site.
- The applicator would prepare and carry out an herbicide safety/spill response plan to reduce likelihood of spills or misapplications.
- Herbicides will be mixed more than 150 feet from any natural waterbody to minimize the risk of an accidental discharge.
- Impervious material will be placed beneath mixing areas in such a manner as to contain any spills associated with mixing/refilling.

- All hauling and application equipment shall be free from leaks and operating as intended.
- Herbicide drift and leaching will be minimized as follows:
    - Do not spray when wind speeds exceed 10 miles per hour to reduce the likelihood of spray/dust drift. Winds of two mph or less are indicative of air inversions. The applicator must confirm the absence of an inversion before proceeding with the application whenever the wind speed is two mph or less.
    - Do not apply when air temperatures exceed 80 degrees.
    - Be aware of wind directions and potential for herbicides to affect aquatic habitat area downwind.
    - No broadcast application from helicopters. Broadcast application will be from ATV only and will keep boom or spray as low as possible to reduce wind effects.
    - Avoid or minimize drift by utilizing appropriate equipment and settings (e.g., nozzle selection, adjusting pressure, drift reduction agents, etc.). Select proper application equipment (e.g., spray equipment that produces 200 to 800-micron diameter droplets [spray droplets of 100 microns or less are most prone to drift]).
    - Follow herbicide label directions for maximum daytime temperature permitted (some types of herbicides volatilize in hot temperatures).
    - Do not spray during periods of adverse weather conditions (snow or rain imminent, fog, etc.). Wind and other weather data will be monitored and reported for all pesticide applicator reports.
    - Herbicides shall not be applied when the soil is saturated or when a precipitation event likely to produce direct runoff to fish-bearing waters from a treated site is forecasted by National Oceanic and Atmospheric Administration (NOAA) National Weather Service or other similar forecasting service within 48 hours following application. Soil-activated herbicides can be applied as long as label is followed. Do not conduct any applications during periods of heavy rainfall.
- Spray tanks shall be washed further than 300 feet away from surface water.
- Equipment will be washed prior to initial entry into the Project area to reduce noxious weed spread.
- In addition to these protocols, the NMFS BiOp (2021) includes the following ‘Terms and Conditions’ (for ESA) and conservation recommendations (for Essential Fish Habitat [EFH]) which are non-discretionary:
    - The County shall ensure that the upland herbicides Indaziflam and Diuron are not applied within 100 feet of any floodplain (100-year floodplain) or 100 feet of any wetland, flowing or standing water when the floodplain is not clear (ESA/EFH).

- The County shall not use the adjuvants Entry II and R-11 (ESA/EFH).
- The County shall ensure that either its staff or its contractors equipment crosses streams only at the designated crossings and does not enter flowing or standing water (EFH).
- The County will monitor herbicide application to comply with product labels and the additional application restrictions as specified herein (ESA/EFH).
- In the event of a spill or chemicals or fuel, the County shall ensure activities cease immediately, and action is taken to contain and clean up the spill (ESA/EFH).
- The County shall use as little herbicide as is required for the desired effect (ESA).
- The County shall not treat more than 1785 acres of vegetation with herbicides, as proposed herein (ESA).
- The County shall submit a monitoring report (with information on herbicide use, application rates, timing, and location) by April 15 of the year following project completion to FEMA (fema-programmatic@fema.dhs.gov) and NMFS (Snake River Basin Office- nmfswcr.srbo@noaa.gov) (ESA/EFH).

On 10/19/2023 the scope of work change to include piled burning was approved by EHP with the following conditions:

- Any necessary local, state, or federal permits and notifications needed to conduct the proposed burning will be obtained before work.
- Ensure the Idaho Department of Environmental Quality as no burning restrictions prior to ignition.
- Piles will be burned at least 20 feet away from streams.
- Idaho County's pile burning best management practices, including safety precautions, will be followed.

Final Environmental Assessment

Clearwater Complex Vegetation Management Project

HMGP 5099-5-R

Idaho County, Idaho

May 2022

Federal Emergency Management Agency

Region X
Department of Homeland Security
130 – 228th Street SW
Bothell, WA 98021

This document was prepared by

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Acronyms and Abbreviations

APE	area of potential effect
ATV	all-terrain vehicle
BMP	best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DCH	Designated Critical Habitat
DEQ	Idaho Department of Environmental Quality
EA	environmental assessment
EDRR	Early Detection Rapid Response
EFH	Essential Fish Habitat
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FMAG	Fire Management Assistance Grant
FONSI	finding of no significant impact
FPPA	Farmland Protection Policy Act
GHG	greenhouse gas
HMGP	Hazard Mitigation Grant Program
HUC	Hydrologic Unit Code
IDFG	Idaho Fish and Game Department
IDP	Inadvertent Discovery Plan
IPaC	Information Planning and Conservation
IPC	Idaho Programmatic Consultation
MBTA	Migratory Bird Treaty Act
n.d.	no date

NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
OEM	Idaho Office of Emergency Management
OHWM	Ordinary High-Water Mark
ROW	Right-of-way
SHPO	State Historic Preservation Office
U.S.C.	United States Code
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

Glossary

Biological control agents: species of insects that feed on invasive weeds and that may be released into invasive weed populations that are too difficult to reach and treat by other means (all-terrain vehicle and herbicide application).

Invasive Plant: a non-native plant species that is able to grow and spread quickly to the point of adversely affecting native plant communities and ecosystems (U.S. Department of Agriculture [USDA] Natural Resources Conservation Service [NRCS] no date).

Native Plant: A plant that is part of the balance of nature in a particular region or ecosystem; this natural balance has likely developed over centuries or millennia (USDA NRCS no date).

Riparian Restoration: the act of restoring riparian areas (the interface between land and a river or stream) to their original, pre-wildfire conditions through methods such as removal of invasive species and planting and seeding.

Soil Stabilization: the act of altering physical, chemical, or biological properties of soils to improve qualities such as strength and provide erosion control.

Weed: A plant that is not valued in the location in which it is growing; weeds can be native or nonnative species (USDA no date).

Wildfire: any uncontrolled fire that spreads through vegetative fuels such as forests, shrubs, or grasslands, damaging and possibly consuming structures.

SECTION 1. Introduction

Idaho County, Idaho, proposes to implement vegetation management work on lands affected by the 2015 Clearwater Complex Fire in the north area of the county. Idaho County applied to the Federal Emergency Management Agency (FEMA) through the Idaho Office of Emergency Management (OEM) for a grant under FEMA's Hazard Mitigation Grant Program (HMGP). OEM is the direct recipient for the grant, and Idaho County is the subrecipient. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Under the HMGP, federal funds pay 75 percent of the project cost, and the remaining 25 percent comes from non-federal sources. The HMGP funds for this grant were made available after Fire Management Assistance Grant (FMAG) declarations made by FEMA in 2015, and these funds are intended for projects that reduce the risk for wildfire, flood, or erosion post event.

Idaho County, located in northern Idaho, is bordered by Oregon to the west, and Montana to the east. The project area for the Clearwater Complex Vegetation Management project encompasses about 1,785 acres within the burn area of the Clearwater Complex Fire (**Figure 1-1**). The project area includes work along perennial waterways such as the Clearwater River, Lolo Creek, Lawyer Creek, Sevenmile Creek, Tom Taha Creek, numerous ephemeral streams; County road rights-of-way (ROW), and on State, Tribe, and private property affected by the fire. Although the project areas are on county- and privately-owned property, the project areas are almost entirely within the Nez Perce Tribe Reservation.

Idaho County has an ongoing invasive plant management program that is based on strong partnerships with private, local, State, federal, and Tribal stakeholders within given Weed Management Areas (WMAs). Vegetation management activities for this project, consistent with the County's ongoing program, would include invasive weed management with U.S. Environmental Protection Agency (EPA) approved herbicide application and release of U.S. Department of Agriculture (USDA) approved biological control agents, monitoring, blackberry removal and planting trees and shrubs in riparian areas, reseeding with native and Natural Resource Conservation Service (NRCS) approved non-native seed mix, and long-term maintenance. Areas that would receive herbicide applications are shown in **Figures 1-2a&b** and **Figure 1-3**. Early Detection and Rapid Response (EDRR) areas are places where there is a high concern for the spread of invasive plants. These areas would be surveyed and if invasive species are detected, they would be controlled through the use of herbicides and monitored closely. Invasive plants along county road ROWs would also be controlled with herbicides. Blackberry thickets along riparian areas would be removed and replanted with native trees and shrubs, and areas that would be reseeded with native/desirable plants are shown in **Figure 1-3**. A complete project description is found in **Section 3.2**.

This draft environmental assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969; the President's Council on Environmental Quality (CEQ) regulations to implement NEPA (40 Code of Federal Regulations [CFR] Parts 1500 to 1508); Department of Homeland Security Instruction 023-01-001; and FEMA Instruction 108-01-1, NEPA implementing procedures. FEMA is required to consider potential environmental impacts before funding or approving actions and projects. The purpose of this EA is to analyze the potential environmental impacts of the proposed project. FEMA will use the findings in this

EA to determine whether to prepare an environmental impact statement or to issue a finding of no significant impact (FONSI). Changes to the CEQ regulations became effective on September 14, 2020, so the new regulations would apply to any NEPA process begun after that date. However, this EA substantively commenced prior to that date; therefore, this EA conforms to the CEQ regulations that were in place prior to the changes.

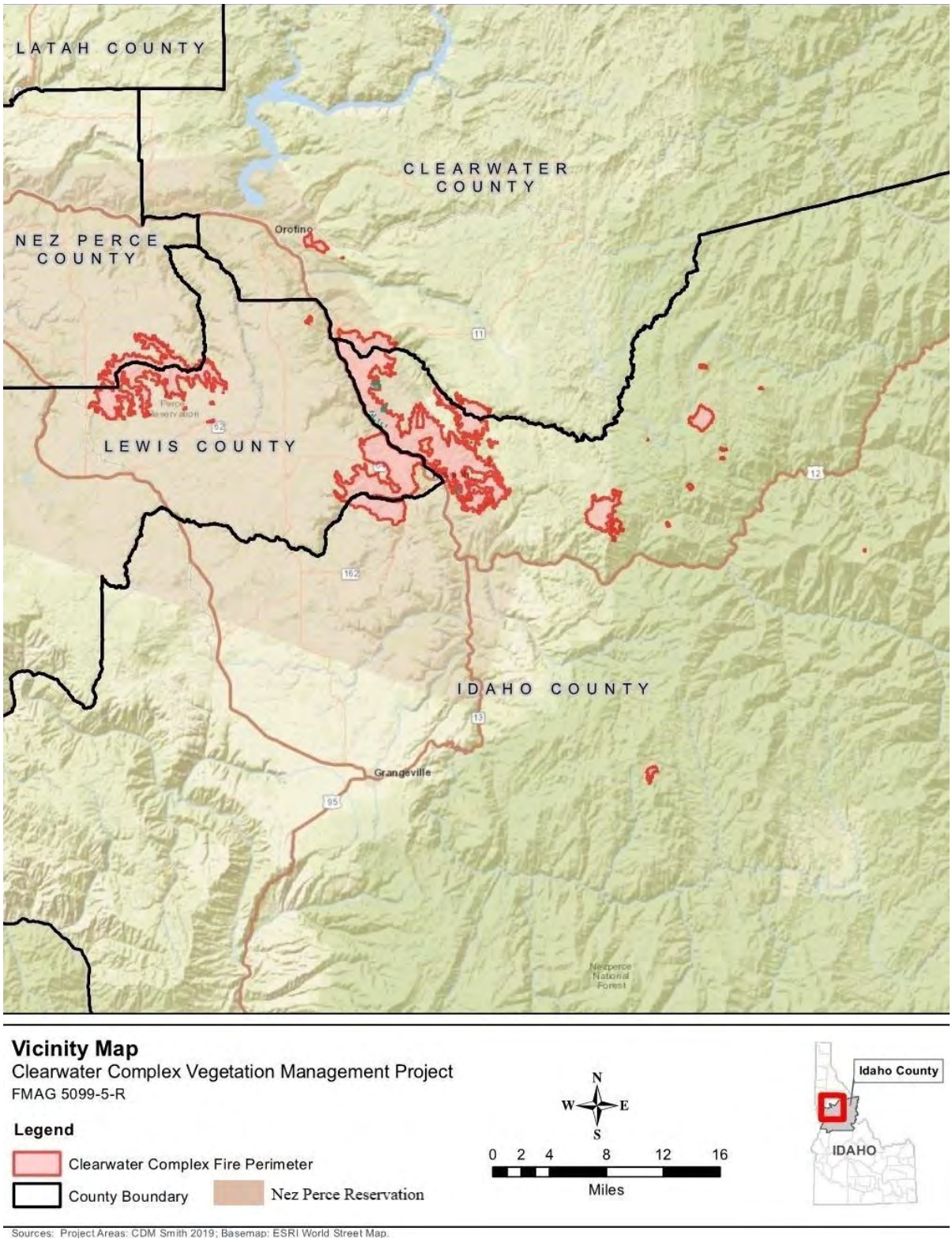

Figure 1-1: Project Vicinity (Project is the Idaho County portion of Clearwater Complex Fire)

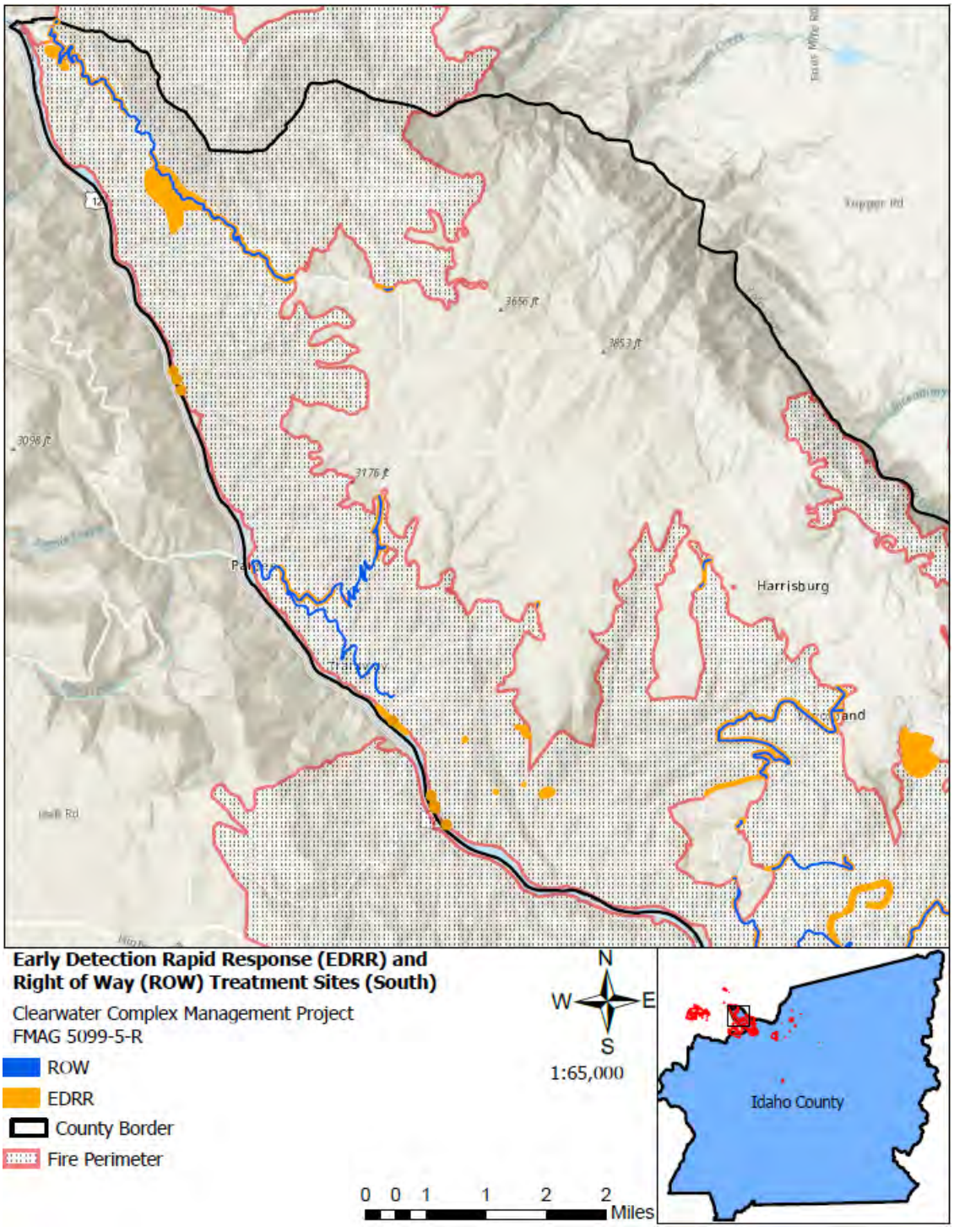

Figure 1-2a: EDRR and ROW Treatment Sites (North) within the Idaho County Portion of the Clearwater Complex Fire

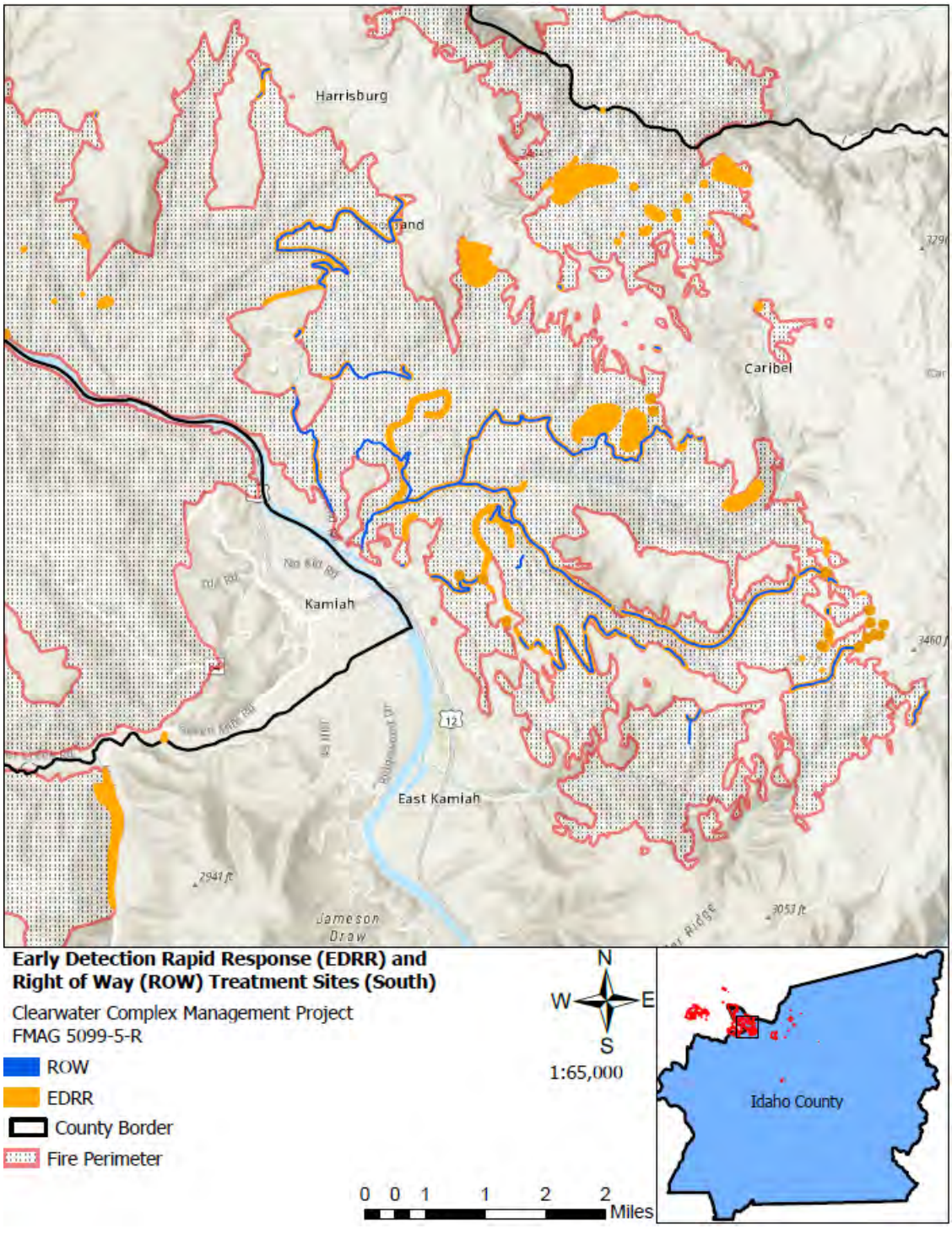

Figure 1-2b: EDRR and ROW Treatment Sites (South) within the Idaho County Portion of the Clearwater Complex Fire

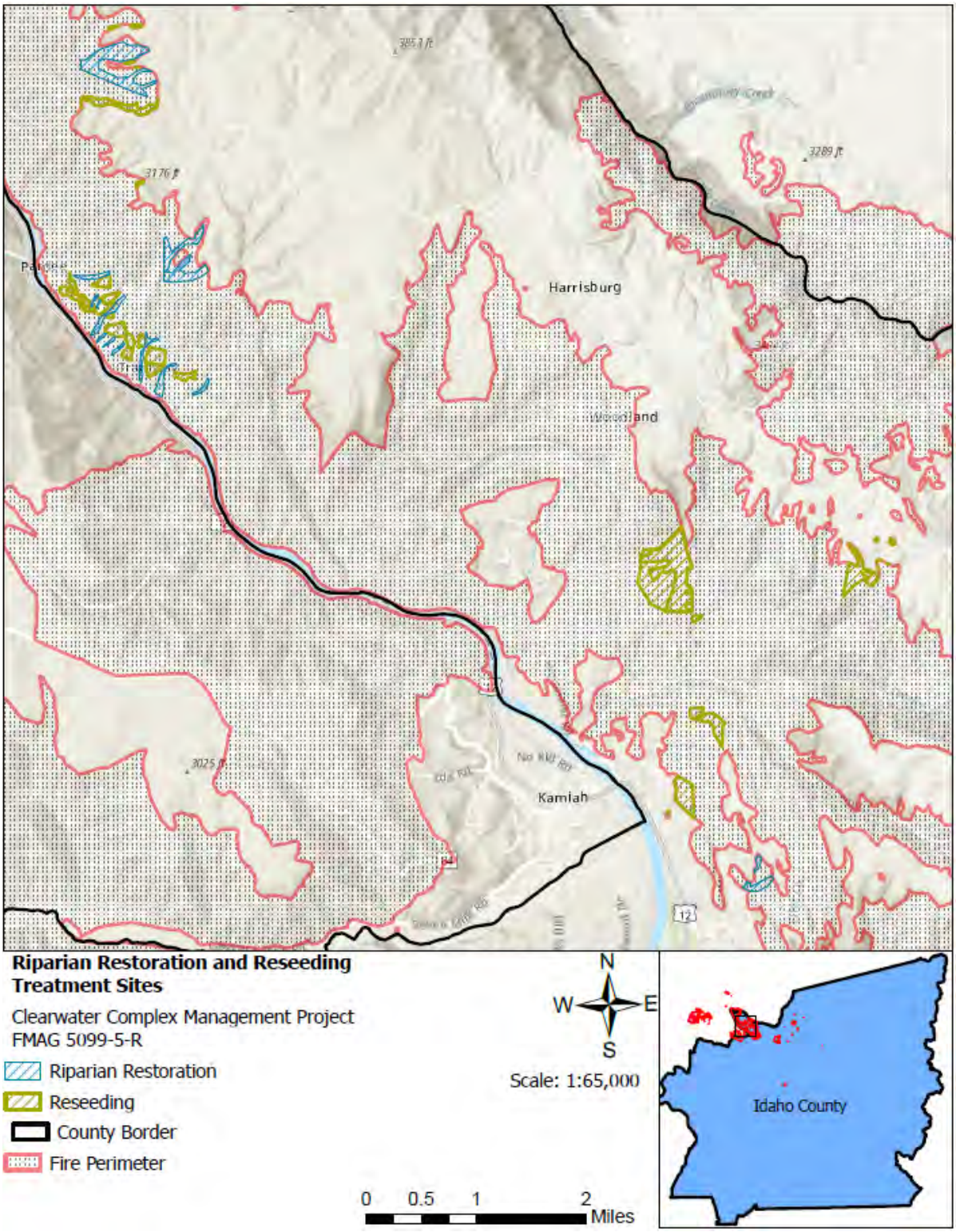

Figure 1-3: Riparian Restoration and Reseeding Treatment Sites within the Idaho County Portion of the Clearwater Complex Fire

SECTION 2. Purpose and Need

FEMA's HMGP provides funds to eligible state and local governments, federally recognized tribal governments, and nonprofit organizations to help implement long-term hazard mitigation measures after a presidential major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable risk mitigation measures to be implemented during the recovery from a declared disaster. Under the FMAG-triggered HMGP, FEMA provides funds to assist with activities that help reduce the risk of future damage, hardship, loss, or suffering in any area affected by a wildfire. The purpose of this project is to reduce hazards associated with wildfire, erosion, surface runoff, and potential flooding due to vegetation loss from the Clearwater Complex Fire. The purpose is also to reduce invasive species growth that occurred after the fire, and which may contribute to the spread of future wildfires.

In the summer of 2015, the Clearwater Complex Fire burned more than 68,000 acres of land across four counties in central Idaho (**Figure 1-1**). The fire destroyed 48 homes and 70 other structures and put communities, recreation sites, and communications facilities at risk (Idaho Fire Info 2015). Although summer wildfires are a natural element of the area's ecosystem (Newell 2014), the scale and intensity and thus adverse impacts from recent wildfires may be uncharacteristic. The 2015 fires resulted in widespread loss of native vegetation throughout the burn area, damage to timber resources, and created unstable conditions in some areas with moderate to extreme slopes. Steep slopes within the fire footprint were denuded of native vegetation during the fire and these areas were quickly replaced with invasive weed species and annual grasses. Shallow root systems on annual grasses and invasive species create conditions conducive to rapid soil loss. These types of replacement vegetation can also lead to erosion, contribute to slope instability, and increase the risk of landslides and debris flows. Native vegetation, which has deeper root systems, helps to stabilize sediment and debris and absorb water; therefore, the loss of native vegetation and an increase in invasive species after a fire increases the potential for erosion, surface runoff, and flooding adverse impacts (FEMA 2012, Geertsema and Highland 2015).

Invasive and exotic weed species have come to dominate the post-fire landscape. Significant wildfires can remove native plants that may otherwise prevent invasive species from becoming established. Newly cleared areas are recolonized by invasive species before native species can reestablish. Ground disturbing fire suppression activities during the fire, coupled with subsequent salvage logging, increased the susceptibility of the burned area to the spread of invasive weeds. Along riparian areas, the loss of tree canopy due to the fire reduced the natural shade that prevents some invasive species such as blackberry from spreading. Following a fire, these invasive species quickly take advantage of the opportunities created by the fire. Wildfires may also eliminate insect populations that naturally control invasive weed species. The loss of these biological controls also helps invasive species spread after a fire.

Invasive species inhibit the establishment of native tree and plant species that may be more fire resistant. The *Idaho County, Idaho Multi-Hazard Mitigation Plan* (2015) identifies the encroachment and establishment of invasive and exotic species as a factor in increasing wildfire risk. Invasive species are less fire-resistant and faster growing than native species, creating excess biomass that may increase wildfire frequency, spread, and severity.

Figure 2-1: Project Area Dominated by Invasive Species

SECTION 3. Alternatives

This section describes the no action alternative and the proposed action alternative.

3.1 No Action Alternative

The no action alternative describes potential future conditions if no action is taken to reduce the potential for adverse impacts associated with native vegetation loss from the Clearwater Complex Fire. Under this alternative, no FEMA funded weed management, riparian restoration, or reseeding work would occur in the proposed treatment areas. Without FEMA funding, the County would continue to treat County owned ROWs, plus some additional EDRR or biological control work as alternative funds are made available. No riparian restoration or reseeding would occur as part of the invasive plant management program.

The program generally includes treatment through mechanical, USDA-approved biological and EPA-approved herbicides application; with ground crews or using all-terrain vehicles (ATVs), tractors, or and other vehicles to access treatment sites. Existing trends in the burn scar would persist with vegetation continuing to convert to invasive species-dominated plant communities, which have shallow root systems and are particularly flammable. Erosion and flooding hazards resulting from the loss of native vegetation following the fire would continue to adversely impact watersheds, any downstream improvements, and its residents. In the longer term, the prevalence of flammable and invasive vegetation in the treatment areas could lead to a more intense and spreading wildfire if one were to ignite nearby, posing a further hazard to residents.

3.2 Alternative 2 – Proposed Action

The proposed action would reduce hazards associated with wildfire, erosion, surface runoff, and potential flooding due to vegetation loss from the Clearwater Complex Fire, as well as reduce invasive species growth that has occurred after the fire, and which may contribute to future wildfires. The proposed action would treat up to 1,785 acres scattered along county-road ROWs and on State, Tribe, and privately-owned parcels within areas affected by the Clearwater Complex Fire and within the Upper Clearwater Cooperative WMA (**Figures 1.1-1.3**). Work on parcels would be voluntary and coordinated by the County. Most of the treatment sites are within the Nez Perce Tribe Reservation. Treatment would include control of invasive plants and riparian corridor reforestation. Work would be performed by County or local contractor crews. The weed species targeted for invasive weed management protocols would include rush skeletonweed (*Chondrilla juncea*), common tansy (*Tanacetum vulgare*), yellow toadflax or butter and eggs (*Linaria vulgaris*), Scotch broom (*Cytisus scoparius*), and yellow star-thistle (*Centaurea solsitialis*).

Invasive plants would be controlled through release of USDA-approved biological controls and EPA-approved herbicide application followed by reseeding with native and desirable NRCS-approved non-native grass-forb seed mix. Riparian corridor restoration would be achieved through removal of blackberry thickets and planting of native trees and shrubs. Treatment would occur along the Clearwater River, Lolo Creek, Tom Taha Creek, Lawyer Creek, and Sevenmile Creek, County road ROWs, and on property affected by the fire. The analysis in this EA covers all potential project areas shown in **Figure 1-2** and **Figure 1-3**.

Long-term maintenance would not be funded by FEMA but would be a related activity necessary to ensure long-term effectiveness of the project. Each activity is described below.

An EDRR approach would be used to manage invasive weeds in the Upper Clearwater Cooperative WMA. Under EDRR, areas of highest concern for the spread of invasive weeds would be surveyed to identify recently established patches of invasive species and these areas would be treated with spot application of herbicides three times during the growing season. The County anticipates surveying up to 740 parcels for localized spot treatment. Herbicide applications would be conducted using backpack sprayers or ATVs. County roads are vectors of invasive weed spread; therefore, county ROWs (within 15 feet of the road edge) would also be treated with herbicides. Sites treated under the EDRR protocol would be monitored three times per year with the goal of attaining 90 to 100 percent control within 5 years depending on the weed species. Adjuvants would be used to improve the efficacy of proposed herbicides. Herbicides and adjuvants proposed for use are discussed in **Section 3.2.3** below, along with application rates and protocols.

Release of biological control agents (insects) would be used to control the most widespread and difficult to eradicate weed species where populations of insects have been depleted due to the fire's intensity. Insects would either be collected from Idaho, Montana, and Washington or reared by the Nez Perce Tribal Biological Control Center in Lapwai and released across the project extents, focusing in areas containing the largest and densest populations of invasive species. Only insect species approved by the USDA's Animal and Plant Health Inspection Service-Plant Protection Quarantine would be used (Winston et al 2016). Targeted invasive plants and associated plant-feeding biological control insects to be collected and released are:

- Yellowstar Thistle: 150-300 hairy weevil (*Eustenopus villosus* or *Larinus curtis*).
- Spotted Knapweed: 200-300 seed head weevils (*Larinus minutus* or *L. obtusus*) and 100 root feeding weevils (*Cyphocleonus achates*).
- Rush skeletonweed: 100 root moth (*Bradyrrhoa gilveolella*)
- Dalmatian and yellow toadflax: 150-200 weevils (*Mecinus janthiniformis* and *M. janthinus*)

The collection, distribution, and monitoring of biological agents and assessment of effectiveness would be conducted by the Nez Perce Biological Control Center, in coordination with Idaho County.

Riparian restoration, also in the Upper Clearwater Cooperative WMA, would include removing invasive blackberry thickets within 100-feet of the ordinary high-water mark (OHWM) of ephemeral, non-fish bearing streams and planting native trees and shrubs. Several of these treatment sites are located along small draws on the bluffs facing the Clearwater River, with the majority of the treatment area elevated above the Clearwater River floodplain. Only a small amount of riparian restoration will occur near the Clearwater River (the lowest portion of a few larger draws). The County anticipates riparian restoration work to occur on up to 35 parcels (**Figure 1-3)**. Blackberry thickets would be masticated using full-sized excavators equipped with a drum-type mulching attachment or by handheld brushing tools on poor access sites. Mulch created by mastication of blackberry thickets would be left in situ to prevent soil exposure, erosion, and increased sedimentation. The following season, any blackberry regrowth would be

treated with spot applications of EPA-approved aquatic herbicides and adjuvants (discussed below in **Section 3.2.3)** approved for use near waterbodies. Treatment of new blackberry shoots would occur as needed. Spot application would be from an ATV or by ground crew with a backpack sprayer.

In late fall in the riparian restoration areas, native seedlings and shrubs would be planted by hand with a hoedad. Planting sites would be monitored for blackberry regrowth and would be spot treated with herbicides as needed. Protective mesh guards would be installed around each seedling. Native seedling species proposed for planting would be in up to one-gallon pots and include cottonwood (*Populus spp.*), rocky mountain maple (*Acer glabrum*), alder (*Alnus incana* and *A. viridus*), service berry (*Amelanchier alnifolia*), ninebark (*Physocarpus malvaceus*), syringa (*Philadelphus lewesii*), elderberry (*Sambucus nigra*), and chokecherry (*Prunus virginiana*). The goal of this planting is to create dense shade as quickly as possible in order to outcompete potential blackberry regrowth.

Reseeding with a native grass-forb mix and a non-native NRCS-approved mix would revert large rangelands and grasslands that were converted to non-native grass and invasive weed communities after the Clearwater Complex Fire to more native, fire-resistant vegetation communities. The County anticipates reseeding to occur on up to 162 parcels. Site preparation would occur in spring prior to reseeding and would entail removal of invasive vegetation with an ATV, light pickup truck, or tractor with a disk or chain harrow attachment. In spring or fall, any germinating annual grasses would be treated with herbicide applications.

Native seed mix would either be scattered by hand or drilled approximately 2 inches or less into soil by rangeland or no-till drill. However, at certain degraded sites that need more resource input, cover crops would be planted in the spring prior to being reseeded with the native seed mix. The cover crop would be composed of annual species that die out after a single winter season and could include forage peas (*Pisum sativum*), everleaf forage oats, canola (*Brassica napus*), triticale, radish (*Raphanus rahpanistrum* subsp. *sativus*), and turnip (*Brassica rapa* supsp. *rapa*). The permanent native seed mix would include mountain brome (*Bromus marginatus*), blue wildrye (*Elymus glaucus*), big bluegrass (*Poa secunda* 'Sherman'), Sandberg bluegrass (*Poa secunda*), bluebunch wheatgrass (*Pseudoroegneria spicata*), slender wheatgrass (*Elymus trachycaulus*), thickspike wheatgrass (*Elymus lanceolatus*), and Lewis' flax (*Linum lewisii*). Other seed mix species proposed include western wheatgrass (*Pascopyrum smithii*), basin wildrye (*Leymus cinereus*), sheep fescue (*Festuca ovina*), forage kochia (*Kochia prostrata*), small burnett (*Sanguisorba minor*), and common yarrow (*Achillea millefolium*). Below 1,800 feet in elevation, Secar Snake River wheatgrass (*Elymus wawawaiensis*) would be used in place of bluebunch wheatgrass. Although native species would be preferred in the seed mix, non-native species could be used if necessary, with the assistance of local NRCS land manager experts.

3.2.1 Timing and Duration of Proposed Work

The project is composed of three categories of activities, each of which would occur concurrently and last approximately three (3) years following project commencement. Post-fire mitigation work would include EDRR, herbicide treatments, monitoring, and release of biological agents on newly identified infestations of non-native weeds. Riparian restoration

includes the mastication of blackberry thickets, herbicide applications on new blackberry shoots, and planting a mix of native trees and shrubs. Reseeding includes herbicide applications to remove invasive weeds from upland grassland areas and reseeding with a native/desirable grass and forb mix. An approximate timeline would be as follows:

- Years 1 to 3: Postfire invasive weed mitigation, including EDRR, treatments, monitoring, and release of biological control agents in hard-to-reach areas. Success of treatments would be monitored three times during each year of the project.

- Year 1 (spring): Mastication of blackberry thickets in riparian areas, preparation of reseeding areas with mowing of existing vegetation and herbicide treatments.

- Year 1 (early fall): Treatment of new blackberry growth and reseeding areas with herbicide applications. Blackberry regrowth would be spot treated with herbicides multiple times prior to planting of seedlings.

- Year 1 or 2 (late fall): Planting tree and shrub seedlings in riparian areas, depending on the success of blackberry regrowth treatments. Herbicide treatments of reseeding areas continues as needed.

- Year 2 (spring): Plant cover crop mix on degraded grassland areas.

- Year 2-3 (early fall): Seed grasslands with native grass mix.

- Year 1-5 Long Term Monitoring: Project monitoring using county post-treatment protocol (measuring percent control), via ocular estimate of the effectiveness of control efforts. The goal being 90 to 100 percent control on EDRR sites within 5 years.

3.2.2 Access and Equipment

The project area can be accessed via well-maintained, unpaved access roads. **Figure 3-1** and **Figure 3-2** show typical access roads in the project area. Herbicide applications would be conducted primarily by ground crews operating backpack sprayers and spot spraying of herbicides would be conducted using backpack sprayers or ATVs with handguns. In some reseeding areas, herbicides would be applied from ATVs or other light weight equipment such as a smaller tractor or pickup equipped with spray nozzles on a boom up to 10 to 15 feet long. There would be no aerial application of herbicides. Mastication of blackberry thickets would be completed with full-sized excavators equipped with a drum-type mulching attachment or by handheld brushing tools on sites with poor access. Planting of tree and shrub seedlings would be completed with ground crews using hand tools such as hoedads. Native seed mixes may be applied by ground crews scattering seed by hand or drilling into soil less than two inches deep with a rangeland or no-till drill. Existing roads would be used for all ingress/egress to work areas. No new roads would be required, and off-road areas would be accessed by ATV. Maintenance of existing roads would not occur.

Figure 3-1: Representative Access Road in Project Area

Figure 3-2: Representative Access Road in Project Area

3.2.3 Herbicide Application

This section describes the various requirements for herbicide and adjuvant use based on EPA-approved product labels, State code, and as a result of Endangered Species Act (ESA) consultations. Herbicides are regulated by the EPA under the authority of the 1996 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) [7 U.S.C. §136 et seq]; as amended by the 1996 Food Quality Protection Act and the 2003 Pesticide Registration Improvement Act. FIFRA states that "before EPA may register a pesticide under FIFRA, the applicant must show, among other things, that using the pesticide according to specifications 'will not generally cause unreasonable adverse effects on the environment'". EPA's herbicide product registration process includes an ecological risk assessment before they are released for sale and use. The assessment evaluates the potential for harm to humans, wildlife, fish, plants, endangered species, non-target species, and contamination to surface or groundwater. The results of this process include various product label use requirements to ensure safety and avoid and minimize harm to the environment and public health. Additionally, EPA reassesses and reregisters products periodically, reviewing updated scientific studies for human health and ecological effects, to ensure products' continued safe use. The outcome of process may result in updated use bulletins and product labeling (EPA

2022). EPA has been re-evaluating one of the herbicides proposed for use on this project, glyphosate, as part of this process and also in response to ongoing litigation. In January 2022, EPA issued a final interim decision for its continued use, finding no human health risks and ecological risks that are mitigated through adherence to product labeling with use restrictions (EPA 2022a).

Three ESA programmatic biological opinions were used to help inform protocols for herbicide application and complete an ESA-required Biological Assessment specifically for the proposed action, detailed in **Section 4.11**. These programmatic items include: FEMA's Endangered Species Programmatic (FESP) (WCR 2016-6048) (2018), issued by the National Marine Fisheries Service (NMFS) which addresses Stafford Act funded actions in Idaho, and Idaho Programmatic Consultations (IPC) for routine aquatic habitat restoration projects. The IPC documents are the NMFS Programmatic Biological Opinion for Habitat Restoration Projects in the Salmon River Basin, Clearwater River Basin, Hells Canyon Subbasin, and Lower Snake-Asotin Subbasin (NMFS 2015) and the U.S. Fish and Wildlife Service's (USFWS) Idaho Habitat Restoration Programmatic – Biological Opinion for the Salmon River Basin, Clearwater River Basin, Hells Canyon Subbasin, and the Lower-Snake-Asotin Subbasin (USFWS 2015b). ESA consultations were completed with NMFS and USFWS with the Biological Assessment addressing proposed action effects to ESA-listed species within their jurisdiction, with requirements detailed below. NMFS' Biological Opinion (NMFS BiOp 2021) and USFWS' concurrence letter (2020) are in Appendix A and B, respectively.

To achieve the project purpose, herbicide use, to be applied consistent with product label restrictions will need to occur in both upland and riparian zones within the project areas. There will be three different methods for applying herbicides as follows:

- Boom spraying applications in some of the reseeding areas will use a pressurized sprayer attached to an ATV at two to three feet above the ground. Booms will typically extend five to six feet on either side of the ATV but could extend up to 15 feet in total.
- Spot spraying will be completed with manual backpack or ATV-mounted tanks with hand-held sprayers, with application no more than four feet above the ground.
- Hand-selective applications include methods such as wick, stem-injection, and cut-stump applications.

Table 3-1 indicates the herbicide type and maximum application rate proposed for use in riparian areas, which will be defined as a minimum of 100 feet upland of the OHWM for narrow riparian corridors or when the riparian zone is not readily apparent. **Table 3-2** indicates the herbicide type and max application rate proposed by the Project for use in non-riparian areas. Both tables include the length of time (days) that the active ingredient stays persistent in soils and the mobility. Soil mobility is the potential for herbicide to persist and leach into groundwater and be transported through the soil. Herbicides that bind to soil, are less water soluble, and have higher stability to hydrolysis and photolysis are less mobile in soil. Proposed adjuvants include blue high light (e.g. Hi-Light Blue™), non-ionic surfactant (e.g. Insist 90™, Surface™), and/or adjuvant combo (e.g. Liberate™, Grounded™). Adjuvants enhance the effectiveness of the

herbicide. Herbicide applications are proposed in the vicinity of the Clearwater River, Lolo Creek, Tom Taha Creek, Lawyer Creek, and Sevenmile Creek, as well as several non-fish-bearing ephemeral tributaries. Only herbicides authorized for riparian use will be applied near riparian areas including no application buffers (**Table 3-3**), as directed by the NMFS BiOp (2021).

Table 3-1: Physical Properties and Application Rates for Aquatic Herbicides Proposed for Use in Riparian Areas/1

Active Ingredient	Persistence in Soil (days)	Mobile in Soil	Max Label Application Rate
Aquatic Glyphosate (Rodeo ™)	47	No	8 lb acid equivalent/acre (a.e./ac)
Aquatic Triclopyr	30	Yes	9.00 lb a.e./ac
Metsulfuron-methyl	30 (7-28)	No	0.378 lb a.e./ac

/1 – Includes within 100ft of flowing or standing water when the riparian zone is narrow or is not readily apparent.
Source: EPA 2019c

Table 3-2: Physical Properties and Application Rates for Herbicides Proposed for Use in Non-riparian Areas

Active Ingredient	Persistence in Soil (days)	Mobile in Soil	Max Label Application Rate
Aminopyralid	5-343	No	0.11 lb a.e./ac
Metsulfuron-methyl	30 (7-28)	No	0.19 lb a.e./ac
Dimethylamine	10	Yes, but degrades quickly	4.0 lb a.e./ac
Indaziflam/1	150-200	Yes	0.134 lb a.i./ac
Imazapic	7-150	No	0.19 lb a.e./ac
Rimsulfuron	6-25	Yes	2 oz a.i./ac
Metribuzin	14-60	Yes	1.24 lb a.i./c
Diuron/1	372-1,000	Yes	12lbs a.i./ac

/1- May not be applied within 100ft of any 100-yr floodplain extent, or within 100ft of Flowing or standing water when the floodplain is not easily defined.

Table 3-3: Aquatic Herbicide Buffer Distances by Formula, Stream Type, and Application Method

Herbicide	No Herbicide Application Buffer Width from Stream, Ditch, Wetland					
	Streams and Roadside Ditches with flowing or standing water present and Wetlands			Dry streams, Roadside Ditches, and Wetlands		
	ATV Boom Spraying	Spot Spraying	Hand Selective/2	ATV Boom Spraying	Spot Spraying	Hand Selective
Aquatic Glyphosate (Rodeo ™)	100 ft	OHWM	OHWM/1	50 ft	None	None

Herbicide	No Herbicide Application Buffer Width from Stream, Ditch, Wetland					
	Streams and Roadside Ditches with flowing or standing water present and Wetlands			Dry streams, Roadside Ditches, and Wetlands		
	ATV Boom Spraying	Spot Spraying	Hand Selective/2	ATV Boom Spraying	Spot Spraying	Hand Selective
Aquatic Triclopyr - TEA	**Not allowed**	15 ft	OHWM	**Not allowed**	None	None
Metsulfuron-methyl	100 ft	15 ft	Bankfull Elevation/2	50 ft	None	None

Source: USFWS 2015b, NMFS 2018
/1 - OHWM = Ordinary High-Water Mark
/2 - Bankful Elevation is the top of a stream channel or the point at which floodwaters begin to spread out into the floodplain. It may be a higher point on a streambank than the OHWM.

The County would follow EPA label requirements for each herbicide, as well as the Idaho Forest Practices Act (Idaho Administrative Code [IDAPA] 20.02.01) as follows:

- All herbicide applications will occur consistent with label recommendations and will be applied by trained applicators using equipment that is calibrated on an annual basis.
    - If at any time the EPA product label requirements, or any State regulations, concerning project herbicides change, the County will be required to monitor for EPA bulletins and adhere to the updated label/regulatory requirements.
    - The County will provide the Material Safety Data Sheet for any of the herbicides upon request
    - Herbicide will be applied at the lowest effective label rates.
    - Milestone™ (aminopyralid) herbicide will not be used on moderately steep slopes, in accordance with the product guidelines.
- Under the Idaho Forest Practices Act, employ Best Management Practices (BMP) that include measures to prevent leaks and spills (IDAPA 20.02.01.060).
    - The applicator will prepare and carry out an herbicide safety/spill response plan to reduce likelihood of spills or misapplications.
    - Only the quantities of herbicide needed for work in a given day will be transported to the Project site.
    - Herbicides will be mixed more than 150 feet from any natural waterbody to minimize the risk of an accidental discharge.

  - Impervious material will be placed beneath mixing areas in such a manner as to contain any spills associated with mixing/refilling.
  - All hauling and application equipment shall be free from leaks and operating as intended.

- Herbicide drift and leaching will be minimized as follows:
  - Do not spray when wind speeds exceed 10 miles per hour to reduce the likelihood of spray/dust drift. Winds of two mph or less are indicative of air inversions. The applicator must confirm the absence of an inversion before proceeding with the application whenever the wind speed is two mph or less.
  - Do not apply when air temperatures exceed 80 degrees.
  - Be aware of wind directions and potential for herbicides to affect aquatic habitat area downwind.
  - No broadcast application from helicopters. Broadcast application will be from ATV only and will keep boom or spray as low as possible to reduce wind effects.
  - Avoid or minimize drift by utilizing appropriate equipment and settings (*e.g.*, nozzle selection, adjusting pressure, drift reduction agents, *etc.*). Select proper application equipment (*e.g.*, spray equipment that produces 200 to 800-micron diameter droplets [spray droplets of 100 microns or less are most prone to drift]).
  - Follow herbicide label directions for maximum daytime temperature permitted (some types of herbicides volatilize in hot temperatures).
  - Do not spray during periods of adverse weather conditions (snow or rain imminent, fog, *etc.*). Wind and other weather data will be monitored and reported for all pesticide applicator reports.
  - Herbicides shall not be applied when the soil is saturated or when a precipitation event likely to produce direct runoff to fish-bearing waters from a treated site is forecasted by National Oceanic and Atmosphere Administration (NOAA) National Weather Service or other similar forecasting service within 48 hours following application. Soil-activated herbicides can be applied as long as label is followed. Do not conduct any applications during periods of heavy rainfall.
- Contractors will be trained by Idaho County staff to identify Spalding's catchfly and its suitable habitat. No herbicide applications will occur within one-quarter mile of a confirmed ESA-listed plant species or suitable habitat for such species.
- Spray tanks shall be washed further than 300 feet away from surface water.
- Equipment will be washed prior to initial entry into the Project area to reduce noxious weed spread.

In addition to these protocols, the NMFS BiOp (2021) includes the following 'Terms and Conditions' (for ESA) and conservation recommendations (for Essential Fish Habitat [EFH]), which are non-discretionary:

- The County shall ensure that the upland herbicides Indaziflam and Diuron are not applied within 100 feet of any floodplain (100-year floodplain) or 100 feet of any wetland, flowing, or standing water when the floodplain is not clear. (ESA/EFH).
- The County shall not use the adjuvants Entry II and R-11 (ESA/EFH).
- The County shall ensure that either its staff or its contractor's equipment crosses streams only at the designated crossings and does not enter flowing or standing water (EFH).
- The County will monitor herbicide application to comply with product labels and the additional application restrictions as specified here (ESA/EFH).
- In the event of a spill or chemicals or fuel, the County shall ensure activities cease immediately, and action is taken to contain and clean up the spill (ESA/EFH).
- The County shall use as little herbicide as is required for the desired effect (ESA).
- The County shall not treat more than 1,785 acres of vegetation with herbicides, as proposed herein (ESA).
- The County shall submit a monitoring report (with information on herbicide use, application rates, timing, and location) by April 15 of the year following project completion to FEMA and NMFS (Snake River Basin Office- nmfswcr.srbo@noaa.gov) (ESA/EFH).

3.3 Additional Action Alternatives Considered and Dismissed

No other reasonable or practicable alternatives were identified to the proposed action. The weed management program outlined in the proposed action is a comprehensive approach that includes identification surveys, treatments, monitoring, and reseeding of highly disturbed sites. However, without the additional funding of the HMGP grant, the effectiveness of weed management activities within the burn area would be impaired because fewer acres would be treated. Treating only a small area would not achieve the purpose of the project because it would be insufficient to reduce the risk of hazards caused by the spread of invasive species.

SECTION 4. Affected Environment, Potential Impacts, and Mitigation

This section describes the environment potentially affected by the alternatives, evaluates potential environmental impacts, and recommends measures to avoid or reduce adverse impacts. When possible, quantitative information is provided to establish potential impacts, and the potential impacts are evaluated qualitatively based on the criteria listed in **Table 4-1**. The "study area" generally includes the treatment areas and access and staging areas needed for the proposed action. If the study area for a particular resource category is different from the project area, the differences will be described in the appropriate subsection.

Table 4-1: Evaluation Criteria for Potential Impacts

Impact Scale	Criteria
None/Negligible	The resource area would not be affected, or changes or benefits would be either nondetectable or, if detected, would have effects that would be slight and local. Adverse impacts would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable although the changes would be small and localized. Adverse impacts or benefits would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource would be measurable and have either localized or regional scale adverse impacts/benefits. Adverse impacts would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary, and the measures would reduce any potential adverse effects.
Major	Changes would be readily measurable and would have substantial consequences on a local or regional level. Adverse impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce adverse impacts, but long-term changes to the resource would be expected.

4.1 Resources Not Affected and Not Considered Further

The following resources would not be affected by either the no action alternative or the proposed action because they do not exist in the project area, or the alternatives would have no effect on the resource. These resources have been removed from further consideration in this EA.

Table 4-2: Resources Eliminated from Further Consideration

Resource Topic	Reason for Elimination
Wild and Scenic Rivers	The Wild and Scenic designated portion of the Middle Fork Clearwater River is located approximately 5 miles upstream from the project area (National Wild and Scenic Rivers 2016). No impacts on wild and scenic rivers are anticipated due to the distance between the designated segments and the treatment areas.

Resource Topic	Reason for Elimination
Land Use and Zoning	The project aims to help restore vegetation communities in the project area to their pre-fire status. The proposed activities would not change existing land use and the alternatives would have no effect on land use. Idaho County has not established land use zones.
Traffic	The project area is served by mostly unpaved but well-maintained access roads. Under the proposed action, vehicle use would include work crews traveling to and from the project sites. Vehicles would consist of a very small number of ATVs, pickup trucks, tractors, and excavators. No additional roads would need to be built to accomplish the proposed project and no road maintenance would occur. Because roads within the project area are rural and lightly traveled and vehicle use related to project work would be temporary and negligible, no effects are expected on traffic conditions in the project area.
Public Services and Utilities	Most utilities and services in the area are privately owned. Most rural residences get water from on-site groundwater wells, and wastewater is treated by on-site septic systems. The project area includes remote parcels that may not receive public power and are located far away from other public services. Therefore, the alternatives are not expected to affect public services and utilities.

4.2 Geology, Soils, and Prime Farmland

The bedrock of northern Idaho County is characterized by accreted terranes, which are islands and microcontinents that became attached to the ancient North American west coast during the process of subduction. When two tectonic plates collide, one result is that the denser of the two plates subducts, or sinks, beneath the less dense plate and everything on top of the subducting plate gets accreted, or glued, onto the overriding plate. These accreted terranes were later covered by massive lava flows but are now visible in Hells Canyon in Idaho County (Schmidt and Link n.d.).

The accreted terranes are covered by Columbia River Flood Basalts deposited during the early to middle Miocene between 17.5 and 6 million years ago (Lewis et al. 2012). The first episode of these eruptions, called the Imnaha Basalts, occurred between 17.5 and 17 million years ago and buried what would become the Clearwater River canyon in approximately 3000 feet of lava (Straub and Link n.d.). During these eruptions, vast quantities of basaltic and andesitic magmas erupted over the landscape of Washington, Oregon, and western Idaho and cooled into formations of columnar basalts that are visible in the project area. The other group of volcanic rock includes plutonic rock, formed from magma composed of granodiorite, quartz diorite, and tonalite, and emplaced during the Cretaceous period between about 160 and 70 million years ago (Lewis et al. 2012).

The rivers and streams in the area have cut down through these volcanic formations, creating canyons with both steep and moderate slopes and large, relatively flat plateaus (**Figure 4-1** and **Figure 4-2**). The topography in the region is rugged, steep, with both narrow canyon floors and valley floors can be several miles wide. Wider valleys contain quality soils that support modern agriculture. Elevations near the project areas range from 1,240 feet in the town of Kamiah to about 3,000 feet above sea level on the large flat areas on either side of the Clearwater River. The proposed riparian restoration work would occur in steep, narrow draws that drain to the Clearwater River, while reseeding would occur mostly on the relatively large and flat areas that

are located at higher elevations. The geologic setting of a narrow river valley and side canyons, coupled with steep stream gradients, means that landslides are characteristic of this area with slope failures and creek blowouts occurring during spring flash flood events. Moreover, the consequences of a wildfire along these streams, denuding slopes, is thus another factor in the fluvial geomorphologic process (Newell 2014).

Soils in the study area are composed of loam, which contains silt, ash, gravel, sand-sized, and stony particles created by the physical and chemical weathering of underlying basaltic bedrock (USDA NRCS 2019). These soils are useful for agriculture and forestland (USDA NRCS 2019). Some post-fire evidence of soil erosion, such as barren soil, increased gravel, and landslides can be seen in the project area, particularly on steep slopes that have been denuded of native vegetation from fire.

Prime and unique farmlands are protected under the Farmland Protection Policy Act (FPPA) (Public Law 97-98, 7 United States Code [U.S.C.] 4201 et seq.). The FPPA applies to prime and unique farmlands and those that are of state and local importance and requires federal agencies to minimize the unnecessary conversion of farmland into nonagricultural uses. Areas identified as prime farmland occur along several of the ROWs being treated for invasive weeds. Treatment by application of herbicide would occur within 15 feet on either side of the road. These areas are not currently used for agricultural purposes because they are within the county ROW. According to the NRCS Web Soil Survey, the proposed treatment area contains approximately 3 percent prime farmland soils (USDA NRCS 2019).

No Action Alternative

Under the no action alternative, there could be some adverse impacts on geologic processes. In the absence of a major wildfire near the project area, the no action alternative would have negligible disturbances on soils from limited County invasive plant management program treatments using EPA-approved herbicides. These activities would not convert farmland soils to non-agricultural uses, nor would they prevent the future use of the soils for farming purposes. However, the hazards from soil erosion would continue which could adversely impact land uses.

Heat from wildfires can cause soils to form hydrophobic layers that repel water, resulting in decreased stormwater infiltration. Hydrophobicity occurs when plants burn in wildfires, releasing a gas into the soil that cools and solidifies into a waxy, water-repelling substance that coats soil particles. Large-pored soils, such as sandy or coarse-textured soils, such as those present in parts of the proposed treatment areas, are more vulnerable to becoming hydrophobic because they transmit heat more easily than heavily textured soils, such as clays (USFS 2005).

Under the no action alternative, a wildfire would be more likely to spread due to the prevalence of invasive plant species, and soils within the burned area could be further adversely affected. While a low-intensity wildfire may not affect soil properties, a major, or high-intensity wildfire could alter the cycling of nutrients; the physical and chemical properties of soils; and the temperature, moisture, and biotic characteristics of the existing soils (Debano 1990). In the event of a major wildfire, more bedrock could be exposed to direct rainfall, which would increase the rate of erosion of the bedrock formation and overlying soils. These primary adverse impacts from a severe wildfire can also result in decreased infiltration and increased runoff, which often cause increased erosion. There is evidence that the Clearwater Complex Fire has adversely

impacted soils this way, as landslides have occurred within the project area. The exposure of bedrock and changes to soil properties caused by a major wildfire could have moderate adverse impacts on soil production processes over a very long recovery time period. Thus, adverse impacts on geology and soils would range from minor to moderate depending on the scale and intensity of a wildfire, exacerbating conditions that make the area already prone to landslides.

Figure 4-1. Steep Canyon Slopes in Project Area

Figure 4-2. Broad Gentle Slope in Project Area

Proposed Action

The proposed action would not result in measurable adverse impacts on geology or geologic processes. The proposed activities could result in minor and temporary adverse soil impacts from EPA-approved herbicide use and sediment transport from the site by stormwater runoff or from ATV and heavy equipment use. In riparian restoration areas, masticated blackberry vines would be left in place to act as mulch and minimize erosion and sedimentation.

Herbicide application may affect soils adversely. Some study results indicate that the adverse impacts of herbicide application on soil function are often minor and temporary, but there are some that suggest effects that could substantially alter soil function. Rose et al (2016) suggests disruption to earthworm activity in soils (interrelationship with mycorrhizal fungi and surface plants) where glyphosate and atrazine are used, and that soil nitrogen cycling can be disrupted by herbicides (sulfonylurea herbicide class posing the greatest risk). Diuron can disrupt soil microorganisms (algae and fungi), inhibiting microbial activity at low concentrations (NCAP 2003).

These adverse impacts can happen both at the time of application, and for some herbicides, over a lengthy period of time (herbicide persistence or fate). As listed in Tables 3-1 and 3-2, depending on the herbicide used, it could persist in soils from 5 up to 1,000 days. Diuron in particular has regularly been detected in the soil the following year after application, with the potential to be present up to 3 years (persistence occurs longer in dry soils). Certain soil factors affect herbicide persistence, such as soil composition, soil chemistry (pH, water), microbial activity, and climatic factors (Curran 2001). Soil composition (including organic matter) affects soil binding, leaching and volatilization. The pH levels of the soil affect the chemical and microbial breakdowns of herbicides. Fungi, bacteria, protozoan levels are a major factor in herbicide breakdowns. The climatic factors that assist in this process are moisture, soil temperature, and sunlight. Ultimately, as described in **Section 3.2.3**, EPA's completion of ecological risk assessments for proposed products followed by their registration for use means it has determined there aren't unreasonable adverse effect to soil function.

Native plant seeding will not result in overall soil disturbance beyond topical disturbance during dispersal, which would involve being scattered by hand or drilled into soil approximately 2 inches or less by rangeland or no-till drill. Proposed ATV use could result in negligible and temporary erosion of soils. Re-establishment of native vegetation would mitigate erosion and capture surface runoff before it travels down steep slopes and contributes to slope instability. Reseeding with native and other desirable species would result in the stabilization of surface soils on rolling hills, resulting in minor, beneficial effects related to soil erosion.

Tree and shrub planting in riparian restoration areas would be conducted with hoedads to push dirt forward, place seedlings, remove hoedad, and tap dirt around seedling causing the least amount of soil disturbance as possible. Thus, tree and shrub planting would result in only temporary and negligible disturbance of soils. Planted trees and shrubs would eventually bind soil particles, reduce stormwater runoff, and increase infiltration, which would result in stabilization of soils and protection of steep slopes.

Since the proposed action does not involve any conversion in land-use, no impacts related to protected prime and unique farmlands are expected. However, there would likely be minor long-

term indirect beneficial effects on area farmland soils by reducing the risk of soil damage from large spreading wildfires. Overall, the proposed action would help with reestablishment of native grassland and tree communities, facilitating long-term soil stability and function; and minor localized and temporary adverse effects on soil function would occur from targeted spot treatments.

4.3 Air Quality

The Clean Air Act, as amended, requires EPA to set National Ambient Air Quality Standards for six pollutants harmful to human and environmental health, including ozone, particulate matter, nitrogen dioxide, carbon monoxide, sulfur dioxide, and lead. The EPA Green Book indicates that Idaho County is in attainment for all six criteria pollutants (EPA 2021. The nearest air quality monitoring station is located in Kamiah, Idaho. The project area has a low population and air quality is generally considered to be good in the area.

Air quality is negatively affected by everyday activities such as vehicle use and major events such as wildfires. Wildfire smoke is composed of carbon dioxide, water vapor, particulate matter, carbon monoxide, nitrogen oxides, organic chemicals such as hydrocarbons, and trace minerals, which affect air quality (EPA et al. 2016). Air quality can also be affected by fugitive dust, which is considered a component of particulate matter. Fugitive dust is released into the air by wind or human activities and can have adverse human and environmental health impacts (California EPA Air Resource Board 2007).

No Action Alternative

In the absence of a major wildfire in the area, there would be no adverse impact on air quality under the no action alternative because current air quality conditions would not change. However, a wildfire would be more likely to spread under the no action alternative as invasive, flammable plants would have limited treatment through the County's invasive plant management program. A major wildfire could cause substantial pollutant emissions and affect air quality over large areas. Wildfire smoke can deteriorate air quality and expose vulnerable populations, such as youth and the elderly, to harmful pollutants. Particulate matter, specifically, can have many harmful effects, including eye and respiratory tract irritation, reduced lung function, asthma, and heart failure (EPA et al. 2016). The limited treatment from the County's ongoing invasive plant management program would have negligible effects on air quality as EPA-approved herbicide application would likely adhere to product label application protocols in terms of weather conditions, equipment used, and spray heights, which would avoid and minimize the potential for herbicide drift. Thus, the no action alternative could have a minor to moderate adverse impact on air quality depending on the scale and intensity of a wildfire.

Proposed Action

Under the proposed action, the use of equipment, such as excavators, tractors, or ATVs to spray herbicides and haul materials could result in low levels of particulate matter (fugitive dust) and vehicle exhaust emissions, such as hydrocarbons. Emissions would be temporary, localized, and negligible. To reduce emissions, crews would keep ATV running times to a minimum and ensure that all engines are properly maintained. Backpack and handgun sprayers would be operated via pump or battery and would have no fuel emissions. Adherence to the EPA-approved herbicide application protocols, detailed in **Section 3.2.3**, in terms of weather conditions, equipment, and

spray heights, would avoid and minimize the potential for drift and thus effects on local air quality. Consequently, the proposed action would have negligible, short-term adverse air quality impacts from vehicle and equipment use, activities contributing to the release of fugitive dust, and herbicide application. By reducing the risk of wildfire spread, the proposed action would have minor, long-term, beneficial effects on sustaining good air quality.

4.4 Climate Change

"Climate change" refers to changes in the Earth's climate caused by a general warming of the atmosphere. Its primary cause is emissions of greenhouse gases (GHGs), including carbon dioxide and methane. Climate change is capable of affecting species distribution, temperature fluctuations, and weather patterns. The CEQ's *Final NEPA Guidance on Consideration of Greenhouse Gas Emissions and the Effects on Climate Change* (CEQ 2016) suggested that quantitative analysis should be done if an action would release more than 25,000 metric tons of GHGs per year.

Annual precipitation within the project area is approximately 42 inches per year and ranges from about 5.7 total inches in December to 1.2 total inches in August. The climate is relatively extreme, with winter mean minimum temperatures of about 19 degrees Fahrenheit and summer mean maximum temperatures of about 82 degrees Fahrenheit (NOAA 2019).

Global and regional climate change is expected to accelerate in the coming decades. Temperatures in Idaho have increased by 1 to 2 degrees Fahrenheit on average over the past century (EPA 2016). Increasing temperatures have reduced the amount of snowpack in most locations and caused snowpack to melt earlier in the year; both trends make water less available in the summer. The frequency and severity of wildfires is expected to increase as the climate warms, summers become drier, and vegetation shifts to allow longer fire seasons with hotter and faster-burning fires. By the end of the 21st Century, climate change is expected to more than double the area burned by wildfires in the northwestern U.S. during an average year (EPA 2016).

No Action Alternative

In the absence of a major wildfire, the no action alternative would have negligible equipment GHG-related effects on climate change as there would be limited treatment through the County's invasive plant management program. Climate change is resulting in periods of extended drought and increasing the risk of wildfires in the area. The no action alternative would provide limited wildfire risk reduction through invasive species removal. Therefore, a wildfire would be more likely to spread through and from the area, and large quantities of GHGs could be released, depending on the scale and intensity of the fire, that would have moderate contributions to regional climate change.

Proposed Action

Implementation of the proposed action would have a negligible effect on climate change because potential GHG emissions from ATV, tractor, excavator, and other vehicle use would be short-term and minimal. Backpack and handgun sprayers are operated via pump or battery and would result in no emissions of GHGs. Reducing the risk or severity of wildfires would have a positive effect on climate change by reducing the volume of GHGs released during a wildfire. In addition, the planting of seedlings would further help reduce GHGs as growing trees consume

carbon dioxide during growing seasons. Over the long term, there would be a minor beneficial effect on regional climate change from the proposed action.

4.5 Visual Quality and Aesthetics

Because vegetation management projects have the potential to alter vegetative cover, they have the potential to affect visual quality. The analysis of visual quality is a qualitative analysis that considers the visual context of the treatment area, the potential for changes in character and contrast, whether the project area includes any places or features that have been designated for protection, the number of viewers, their activities, and the extent to which those activities are related to the aesthetic qualities of the area.

The project area is primarily located in forested and meadow mountain landscapes. Surrounding land uses are rural residential and ranching. The project area contains some access roads and steep slopes that may be visible from multiple viewpoints; however, the number of viewers is very low in this remote rural area.

No Action Alternative

Under the no action alternative, there would be little change in the existing appearance and visual quality of the treatment area from any limited treatment through the County's invasive plant management program. Areas affected by the Clearwater Complex fire in 2015 would continue to slowly revegetate primarily with invasive species. Trees and forest cover would likely expand into burned areas over a period of decades. However, in areas where soils are destabilized or where invasive plants dominate, recovery may not occur or may be further delayed. Therefore, the burned landscape and vistas dominated by invasive species would persist. Under the no action alternative, the noticeable presence of invasive vegetation species could have a moderately negative adverse impact on visual quality for those who can see the area.

Proposed Action

Systematic invasive species management, riparian restoration, and reseeding activities would likely affect the visual quality and aesthetics of the treated areas. The proposed action aims to return the project area to a condition similar to its pre-fire vegetation. Burned areas that undergo riparian restoration, including the removal of blackberry thickets and replanting of native trees and shrubs, would likely experience the greatest amount of contrast with existing conditions. Nearby residents and visitors may find a return to pre-fire visual character a positive attribute. The control of invasive weeds and grasses and reseeding with native and more desirable grass-forb species is unlikely to result in much visual contrast with existing conditions; however, ranchers and local landowners who can tell the difference between different plant species may find the contrast more striking. The change in grassland areas would occur more quickly than in riparian forested areas, with native or desirable nonnative grassland species becoming established in 1 or 2 years. Therefore, the proposed action would have negligible, short- and long-term, beneficial effects on visual quality and aesthetics in the project area.

4.6 Surface Waters and Water Quality

Section 303(d) of the Clean Water Act of 1977, as amended (33 U.S.C. § 1313(d)(2)), establishes requirements for states and tribes to identify and prioritize waterbodies that do not meet water

quality standards. The Idaho Department of Environmental Quality (DEQ) Integrated Water Quality Assessment (IWQA) was used to determine whether any streams in the project area are considered impaired or waters of concern (DEQ 2018; 2020).

The proposed project activities would primarily occur in the Sevenmile Creek – Clearwater River subwatershed (HUC 12 170603060106) and the Tom Taha Creek – Clearwater River subwatershed (HUC 12 170603060501). Perennial streams that occur within the vicinity of the project area include the Clearwater River, Lolo Creek, Lawyer Creek, Sevenmile Creek and Tom Taha Creek. Streams that are nearby but not adjacent to the project area are Fivemile Creek and Sixmile Creek (**Figure 4-3a&b**). As noted in **Section 4.2**, some of the ephemeral streams in the upland parts of project area are characterized by steep gradients in narrow valleys and canyons, and prone to stream blowouts during spring flash flood events. Landslide and blowout events are part of the fluvial geomorphologic process. According to the current DEQ IWQA, tributaries to Lawyer Creek are considered Section 303(d) impaired for reasons including, but not limited to, ammonia, oil and grease, sedimentation and siltation, and high temperatures. Sevenmile Creek was listed as impaired because of sedimentation and siltation (DEQ 2020).

No Action Alternative

The Clearwater Complex Fire resulted in a loss of vegetation and changed much of the vegetation to annual winter grasses and forbs with shallow root systems. This has increased erosion from the burn areas and resulted in increased sedimentation in the creeks and river, and even landslides. The loss of vegetation may also result in decreased infiltration, increased stream flow, and increased scour downstream (USFS 2005). Under the no action alternative, which would have limited treatments through the County's invasive plant management program, these hazards would continue into the future, resulting in short-term continued degradation of water quality and changes in the flood flows in the basin until the watershed stabilizes.

In addition, under the no action alternative, a wildfire would be more likely to spread due to the prevalence of invasive plant species, and soils within the burned area could be adversely affected again, leading to further erosion and water quality degradation. Under the no action alternative, there would be minor, long-term adverse impacts on water quality, depending on the scale and intensity of a wildfire. Any herbicide applied through the County's ongoing program would have to abide by product label restrictions as they pertain to streams, thus adverse surface water impacts from this should be minimal.

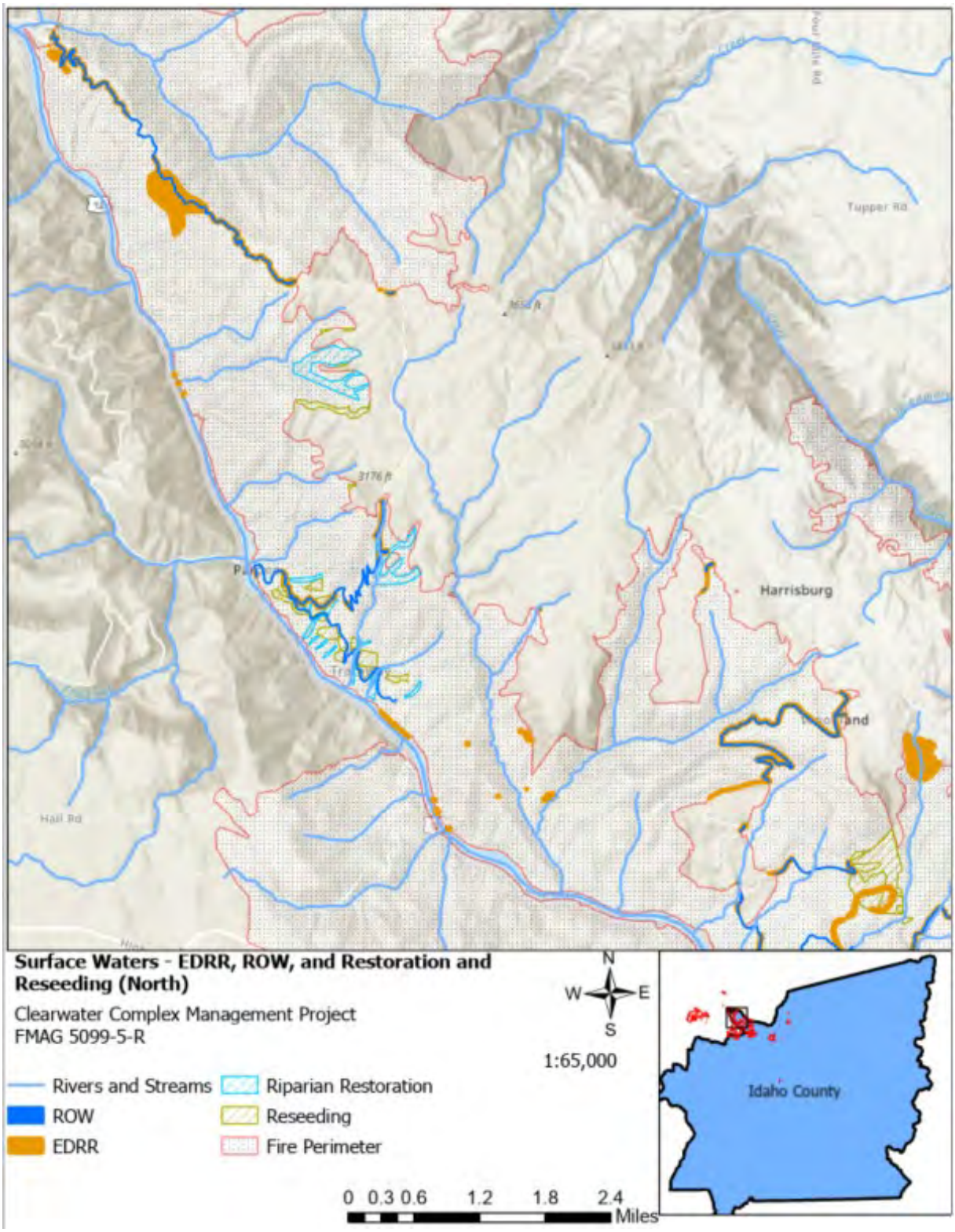

Figure 4-3a: Project Area Surface Waters (North)

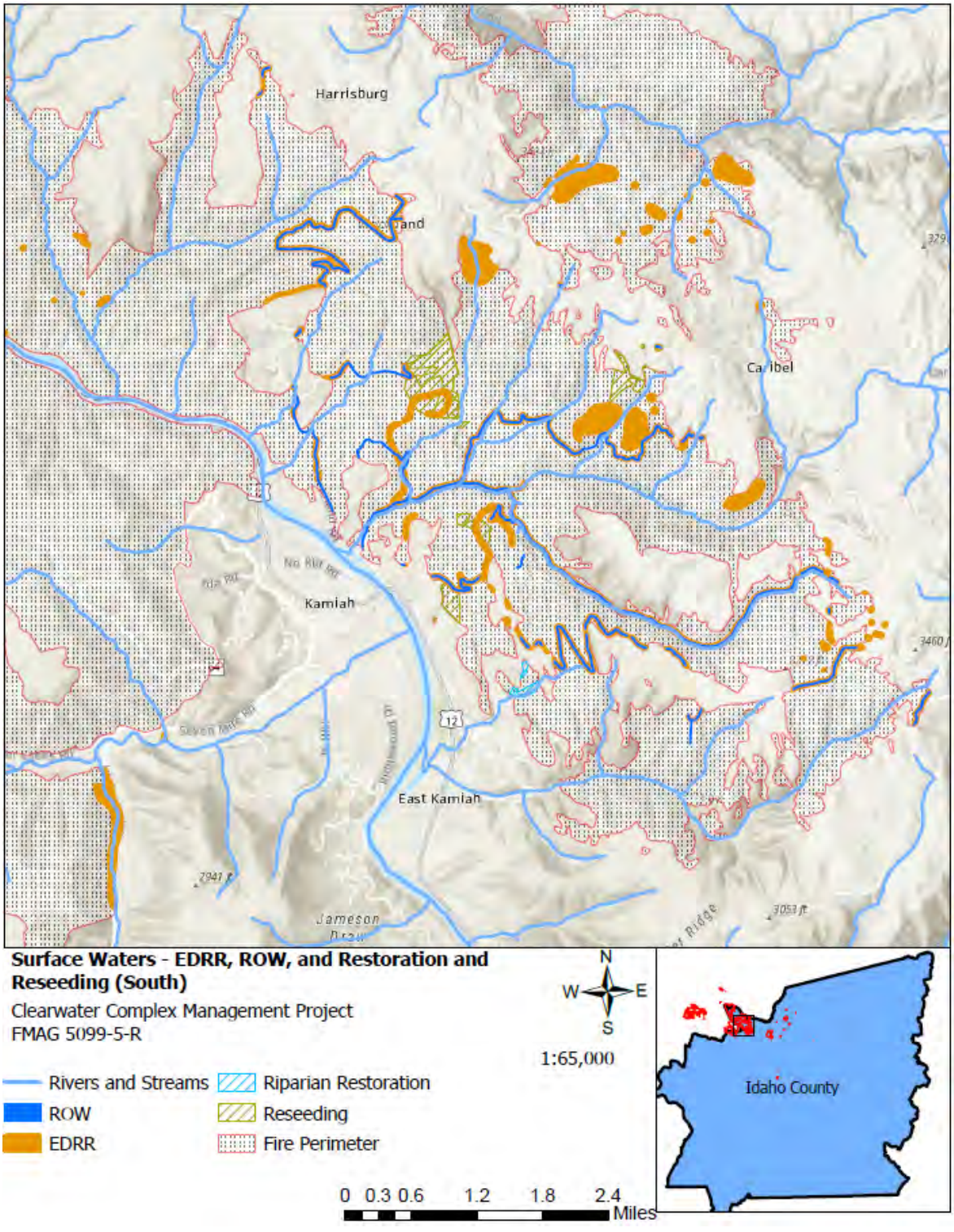

Figure 4-3b: Project Area Surface Waters (South)

Proposed Action

Under the proposed action, large areas would be seeded with native and desirable non-native rangeland grasses and forbs, and riparian areas would be planted with native trees and shrubs. Re-establishment of native and desirable nonnative vegetation would provide long-term soil stability and increased interception and infiltration of precipitation. The proposed action would reduce soil erosion and associated water quality degradation.

Vegetation management would involve boom and spot spraying of EPA-approved herbicides in areas where invasive weeds are outcompeting native vegetation. No herbicides would be sprayed into surface waters. **Table 3-3** in **Section 3.2.3**, presents herbicide products that may be used near perennial and intermittent streams along with the allowable method of application and no spray buffers relative to the OHWM. With implementation of these measures, the potential for water quality degradation from the use of herbicides is minimal. Also, as described in **Section 3.2.3**, EPA's completion of ecological risk assessments for proposed products followed by their registration for use means it has determined there aren't unreasonable adverse effect on water quality.

The use of ATVs and heavy equipment could result in some localized, short-term, negligible soil disturbance. To prevent potential adverse impacts from fuel or lubricant leaks, ATVs and heavy equipment would not be parked, fueled, or staged near waterbodies. Additionally, in riparian restoration areas, masticated blackberry thickets would be left in place to act as mulch, which would minimize erosion and sedimentation into surface waters. Therefore, there would be minor impacts on surface waters or water quality from the use of ATVs and equipment.

Overall, the proposed action would result in short-term, minor adverse impacts on surface waters and water quality from herbicide and equipment use. The planting of native trees, shrubs, and desirable grasses and forbs would provide shade and moderate surface water temperatures. Thus, the proposed action would result in long-term, moderate beneficial effects on surface waters.

4.7 Wetlands

Executive Order (EO) 11990, Protection of Wetlands, requires that federal agencies take action to minimize the loss of wetlands. Activities that fill jurisdictional wetlands require a permit from the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act of 1977 (33 U.S.C. 1344). FEMA regulation 44 CFR Part 9, Floodplain Management and Protection of Wetlands, sets forth the policy, procedures, and responsibilities to implement and enforce EO 11990 and prohibits FEMA from funding construction in a wetland unless no practicable alternatives are available. To comply with EO 11990, FEMA uses the eight-step decision-making process in 44 CFR 9.6 to evaluate proposed actions that have potential to affect wetlands.

Based on information from the U.S. Fish and Wildlife (USFWS) National Wetlands Inventory maps (2019a) for the proposed project area, there are potential freshwater emergent and freshwater forested/shrub wetlands within or are intersected by some reseeding and riparian treatment sites and work sites, most of which are perennial or intermittent streams. Because the project area has a semi-arid climate, as described in **Section 4.4,** there are not likely to be many wetlands present beyond the streams. Figures identifying potential wetlands in or near the proposed action area can be found in Appendix C.

No Action Alternative

The no action alternative, which would have limited treatments through the County's invasive plant management program, would not substantially reduce the risk of post fire hazards, including erosion, surface runoff, flooding, or the risk of future wildfire spread fueled by invasive vegetation. Such a wildfire could destroy or damage vegetation in wetlands within and outside of the treatment parcels. In addition, destruction of vegetation in wetlands would damage habitat for wildlife and lessen the effectiveness of wetlands to filter pollutants and maintain water quality. Any herbicide applied through the County's ongoing program would have to abide by product label restrictions as they pertain to wetlands. Therefore, the no action alternative could have long-term, minor adverse impacts on wetlands.

Proposed Action

Because wetlands could occur within a few of the treatment sites, minor, short-term adverse impacts on wetlands are possible. However, any potential wetlands areas would be avoided while work is being completed. Since the wetlands are mostly associated with perennial and intermittent streams, all herbicide treatments would be applied to EPA-approved product labels and abide by the no-spray buffer distances, as shown in **Table 3-3** in **Section 3.2.3**. Because of the small area potentially affected and with implementation of no-spray buffers and other herbicide use protocols, there would be a negligible, short-term adverse impact on wetlands from the proposed action. The proposed action would reduce the risk of erosion, surface runoff, flooding, and wildfire spread that could adversely affect wetlands. Therefore, there could be minor, long-term, beneficial effects on wetlands from the proposed action.

4.8 Floodplains

EO 11988, Floodplain Management, requires federal agencies to avoid, to the extent possible, short- and long-term, adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Floodplains are environmentally sensitive, ecologically diverse, and hydrologically important areas within a watershed. Naturally functioning floodplains help moderate flood events through storage and infiltration of runoff, as well as filtering some of potential nutrients and pollutants therein before reaching surface waters. Similarly, floodplains also help reduce sedimentation of surface waters. Based on FEMA Flood Insurance Rate Map (FIRM) panels 1602130225B, 1602130405B, 1602130410B, and 1602130415B, effective September 27, 1991, some programmatic treatment and riparian restoration sites are located within or near mapped 100-year floodplains.. The treatment areas also include unnamed tributaries to the Clearwater River; Lolo Creek, and Tom Taha Creek; that have floodplains but are not mapped through FEMA FIRMs.

No Action Alternative

In the absence of a wildfire, the no action alternative, which would have limited treatments through the County's invasive plant management program, would not substantially reduce post-fire hazards, including increased erosion, surface runoff, and flooding. Invasive vegetation would continue to spread including within floodplains. If a wildfire were to occur and spread, floodplains in the burned area could be adversely impacted by more vegetation loss and changes to soil conditions, as described in **Section 4.2**, which would adversely affect natural floodplain

functions. The no action alternative would have a minor, long-term, adverse impact on floodplains.

Proposed Action

Most treatment sites are located outside of the mapped 100-year floodplain. Some proposed action work, including EDRR and ROW treatments, as well as riparian restoration work would occur within the mapped 100-year floodplain of the Clearwater River and major tributaries, such as Lolo Creek, Sevenmile Creek, and Tom Taha Creek. This work would also occur in the unmapped floodplain of the numerous unnamed tributaries within the project area. The proposed action would not cause an increase in base flood elevations or modify the existing floodplain. Herbicides would be applied according to EPA-approved product label instructions and adhere to stream buffer distances and application methods outlined in **Table 3-3** and discussed in **Section 3.2.3**. There would be negligible effects on floodplains with the implementation of these protocols and the small area of floodplain affected by the treatment activities further limits the potential for adverse impacts. The proposed action would help reduce the risk of erosion, surface runoff, flooding, and wildfire spread that could adversely affect floodplains. Therefore, there would be minor, long-term, beneficial effects on floodplains in and around the project area.

4.9 Vegetation

The project is located in the Idaho Batholith ecoregion. Common tree species include grand fir (*Abies grandis*), Douglas fir (*Pseudotsuga menziesii*), and western larch (*Larix occidentalis*), as well as subalpine fir (*Abies lasiocarpa*) and Engelmann spruce (*Picea engelmannii*) in higher elevation areas, and ponderosa pine (*Pinus ponderosa*), grasses and shrubs in canyons (McGrath et al. 2002).

Much of the native vegetation of the project area was destroyed by the Clearwater Complex Fire in 2015 and post-fire vegetation is dominated by invasive species, such as Himalayan blackberry (*Rubus armeniacus*), rush skeletonweed (*Chondrilla juncea*), yellow star-thistle (*Centaurea solstitialis*) and Italian plumeless thistle (*Carduus pycnocephalus*) (**Figure 4-4**). The post-fire vegetation community has transitioned to winter annual grasses and forbs with shallow root systems and flashy fuel loads that contribute to increased risk of wildfire spread. EO 13112, Invasive Species, requires federal agencies to prevent the introduction of invasive species and provide for their control to minimize the adverse economic, ecological, and human health impacts that invasive species may cause. Moreover, as noted in **Section 1**, Idaho County has an active invasive plant management program to treat invasive species.

Figure 4-3: Representative Vegetation in Project Area

No Action Alternative

Under the no action alternative, limited vegetation treatments through the County's invasive plant management program would occur. Native vegetation would not be reestablished, and invasive plant species would continue to dominate the project area. Invasive species are often annual species, which have shallow root systems and produce large amounts of dry biomass. Invasive, dry biomass accumulates and contributes to a fire risk that is greater than in areas dominated by perennial, native grasses, trees, and shrubs. Under the no action alternative, the risk of wildfire spread would remain high. Annual invasive grasses do not provide the same degree of soil stabilization, erosion protection, and stormwater runoff moderation as native forest cover and native perennial grasses can; therefore, erosion and flooding would be more likely to occur under the no action alternative. Invasive plants outcompete seedlings of native grasses, forbs, shrubs, and trees effectively lengthening or completely preventing the post-fire recovery process for all ecosystems (forests, rangeland, etc.). Thus, the no action alternative would have moderate, adverse impacts related on vegetation.

Proposed Action

Planting in riparian restoration areas would help stabilize slopes close to streams by reintroducing a mix of native trees and shrub seedlings. Protective mesh or plastic guards would

be installed around each plant to improve survival. The species mix would include the following native species: cottonwood (*Populus spp.*), rocky mountain maple (*Acer glabrum*), alder (*Alnus incana and A.viridus*), service berry (*Amelanchier alnifolia*), ninebark (*Physocarpus malvaceus*), syringa (*Philadelphus lewesii*), elderberry (*Sambucus nigra*), and chokecherry (Prunus virginiana). These plantings would eventually create dense shade to outcompete infestations of blackberry thickets.

The proposed action would also include the reseeding of grassland and rangeland sites within the watersheds of the Clearwater River, Sevenmile Creek, Lolo Creek, Lawyer Creek and Tom Taha Creek that were converted to annual weedy grass cover after the fire. If necessary, annual cover crops, such as forage peas and triticale, would be planted in the spring to act as ground cover, add organic material to the soil, and hold moisture close to the soil prior to reseeding with perennial native grasses or other desirable grass-forb species. Seed mixes would be designed with the assistance of local NRCS land management experts, and although preferred, would not be limited to native species. Seed mixes would be designed to outcompete weeds, germinate quickly, and increase perennial vegetative cover, thereby reducing the risk of erosion and flooding.

The use of EPA-approved herbicides under the proposed action would affect vegetation, particularly invasive species found within the treatment areas. Because of the limited and focused herbicide application protocols described in **Section 3.2.3**, loss of native vegetation next to treatment sites is expected to be incidental and negligible. Control of invasive species with herbicides would allow seeded species and native tree and shrub seedlings a first chance at the nutrients and water necessary to become established. These desirable plant species generally have lower risk of fire starts than invasive species and grow more slowly, reducing the amount of dry, flammable biomass produced. A landscape dominated by native species of grasses and trees would reduce the risk of wildfire ignition and rates of spread compared to current, invasive-dominated conditions.

In addition to herbicides, USDA-approved biological control agents (plant-eating insects) would be released in areas where eradication is not feasible to achieve long-term control of widespread weed infestations. The collection, distribution, and monitoring of biological agents and assessment of effectiveness would be conducted by the Nez Perce Tribe Biological Control Center. The insect agents proposed for this project, including weevils, have all been approved for redistribution and release in the United States through the USDA's Animal and Plant Health Inspection Service-Plant Protection Quarantine. Insect agents would target invasive plant species and allow for regrowth of native plant species. Plant species targeted for biocontrol and their associated insect agents are (see **Section 3-4**):

- Yellowstar Thistle: 150-300 hairy weevil (*Eustenopus villosus* or *Larinus curtis*).
- Spotted Knapweed: 200-300 seed head weevils (*Larinus minutus* or *L. obtusus*) and 100 root feeding weevils (*Cyphocleonus achates*).
- Rush skeletonweed: 100 root moth (*Bradyrrhoa gilveolella*)
- Dalmatian and yellow toadflax: 150-200 weevils (*Mecinus janthiniformis* and *M. janthinus*)

Biocontrol practitioners would adhere to the International Code of Best Practices for Biocontrol of Weeds to reduce the potential for adverse impacts from biological control (Winston et al 2016). These best practices include such measures as ensuring only the intended agent is released, stopping the release of ineffective agents, and monitoring adverse impacts on potential nontarget species (Washington State University 2008). Biological releases and monitoring would occur over a three-year period. Released biological agents would spread if there was sufficient food source (targeted weed species) in surrounding areas. Standardized Impact Monitoring Protocols (SIMP) have been conducted by BLM, the Idaho Dept. of Agriculture, and the Nez Perce Tribe Biocontrol Center on previous biological control efforts in this area and with the targeted approach to releases, loss of native vegetation in the treatment areas is expected to be incidental and negligible.

The proposed action would have short-term, minor adverse impacts on invasive and native vegetation in the project area and long-term, moderate benefits on native vegetation communities.

4.10 Fish and Wildlife

Idaho County provides habitat for many native wildlife species, such as Rocky Mountain elk (*Cervus canadensis*), coyote (*Canis latrans*), American beaver (*Castor candensis*), showshoe hare (*Lepus americanus*), river otter (*Lontra canadensis*), red winged blackbird (*Agelaius phoeniceus*), common garter snake (*Thamnophis sirtalis*), and western tiger salamander (*Ambystoma mavortium*) (Idaho Department of Fish and Game [IDFG] 2019a). ESA-listed wildlife species are discussed in **Section 4.11**. The habitat within the proposed project area is highly degraded from the Clearwater Complex Fire and the spread of invasive plant species; therefore, species diversity in the project area likely has been reduced.

The Migratory Bird Treaty Act (MBTA), as amended (16 U.S.C. §§ 703–711), provides protection for migratory birds and their nests, eggs, and body parts from harm, sale, or other injurious actions. All native birds, including common species, are protected by the MBTA, and the project area would support a wide variety of native bird species even in the existing degraded condition. According to the USFWS Information for Planning and Consultation (IPaC) online database, some of the migratory bird species that could occur in the project area include Cassin's finch (*Carpodacus cassinii*), green-tailed towhee (*Pipilo Chlorurus*), Lewis's woodpecker (*Melanerpes lewis*), olive-sided flycatcher (*Contopus cooperi*), rufous hummingbird (*selasphorus rufus*), white-headed woodpecker (*Picoides albolarvatus*), and Williamson's sapsucker (*Sphyrapicus thyroideus*). The nesting season for migratory birds is generally March through August, depending on the species and location.

The Bald and Golden Eagle Protection Act of 1940 prohibits the take, possession, sale, or other harmful action, of any golden or bald eagle, alive or dead, including any part, nest, or egg (16 U.S.C §§ 668(a)). According to USFWS (2015), bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) could be present in the project areas. Bald eagles prefer habitat near rivers, lakes, and marshes with adequate food supply, and winter in tall trees. Golden eagles prefer open areas for hunting and cliffs, rock outcrops, and trees for nesting (USFWS 2015).

There are several fish-bearing perennial streams located in or near the project area: Clearwater River, Lolo Creek, Sevenmile Creek, and Lawyer Creek. These streams support native fish species, such as cutthroat trout (*Oncorhynchus clarkii*) and rainbow trout (*Oncorhynchus mykiss*). Although Tom Taha Creek is a perennial stream and appears to be suitable for fish based on gradient and size, the creek is not listed as fish-bearing on any databases. The project area also includes non-fish bearing ephemeral streams. ESA-listed fish species are discussed in **Section 4.11**.

No Action Alternative

Under the no action alternative, only limited vegetation treatments through the County's invasive plant management program would occur. Habitats that support fish and wildlife would continue to degrade because of the spread of invasive plants. Native wildlife species rely on native plants for sources of food and/or habitat, and the spread of invasive plants would continue to limit species diversity. Because invasive species often outcompete native species, the habitat would remain degraded for the long term. Additionally, the increased risk of erosion, sedimentation, stormwater runoff, and flooding under the no action alternative would further degrade fish and wildlife habitats by affecting water quality and the functions of floodplain and wetland habitats. The no action alternative would have a moderate adverse impact on fish and wildlife and their habitats in the long term.

Proposed Action

Noise and activity related to ATV and heavy equipment use during blackberry removal, EPA-approved herbicide application, and reseeding could disturb wildlife and cause individuals to move from their preferred areas or temporarily change their behavior. Blackberry thickets and other treatment areas with heavy foliage should be evaluated for actively nesting birds prior to conducting treatments, or delay work until after the nesting season. The rugged terrain of the project area provides many topographic changes where wildlife could move out of sight and hearing of restoration activities within a relatively short distance. In addition, the adverse impacts would be localized and of a short duration. Additionally, few wildlife species are expected in the project area because the habitat has been degraded from the Clearwater Complex Fire and the subsequent spread of invasive species. Thus, potential adverse impacts on local populations of wildlife from equipment use would be temporary and minor.

No project work, including programmatic work, riparian restoration, or reseeding, would be conducted along fish-bearing, perennial streams (**Figure 4.1**). Riparian restoration work would only occur along non-fish bearing ephemeral streams. Thus, potential project-related adverse impacts on fish would be negligible and discountable.

Since there is the potential that herbicide applications could directly or indirectly affect non-targeted wildlife species within a treatment area, as noted in **Section 3.2.3**, the EPA conducts an ecological risk assessment on all pesticides before they are registered and released for sale. The ecological risk assessment evaluates the likelihood that a proposed pesticide may have on non-targeted species and imposes limits (caps on application methods or rates, special license, not to apply within a floodplain) on the application directions when significant hazards to certain species may exist (EPA 2021). Any effects on small mammals, birds, or insects would be minimized by adhering to the application quantities and concentrations stipulated by the label directions. Protocols for herbicide use are outlined in **Section 3.2.3**. Any potential effects would

be expected to be minor and temporary because toxicity effects would dissipate over a short period. Adverse impacts to aquatic habitats would be avoided, using aquatic EPA-approved herbicides (Rodeo^{TM}) and adhering to the buffers in **Table 3-3**. With the implementation of these protocols, the potential for adverse effects on larger terrestrial species or aquatic species would be negligible.

The proposed action would have a minor, long-term benefit on wildlife species by promoting the growth of native plant species that provide habitat and food for native wildlife species. Biological control activities could increase the food supply for migratory birds. Additionally, invasive species removal would reduce the risk of wildfire spread, erosion, surface runoff, and flooding in and near the project area. This would benefit both terrestrial and aquatic species.

4.11 Threatened and Endangered Species and Critical Habitat

The ESA of 1973 gives USFWS and NMFS authority for the protection of threatened and endangered species. This protection includes a prohibition of direct take (e.g. killing, harassing) and indirect take (e.g. destruction of critical habitat).

As noted in **Section 3.2**, the action area for potential effects on ESA-listed species is defined as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action" (50 CFR § 402.02). The action area encompasses an area within 0.86 miles of proposed project activities based on the potential for noise to disturb terrestrial wildlife. Effects on plants and aquatic species would be limited to areas within 100 feet of project activities based on the estimated maximum extent of potential herbicide drift at maximum wind speed of 10 miles per hour. Streams within 100 feet of potential herbicide applications are included in the action area. Streams that are likely fish-bearing within the action area include the Clearwater River, Sevenmile Creek, Lawyer Creek, and Lolo Creek.

The USFWS IPaC online database was used to identify threatened, and endangered species in the action area under the jurisdiction of USFWS. The NMFS West Coast Region endangered species list and the NMFS EFH Mapper were consulted to identify the federally listed species potentially present in the action area under their jurisdiction. The Idaho Fish and Wildlife Information System was also consulted to identify known locations of listed species in the vicinity of the action area. All federally listed species that may be in the vicinity of the action area are listed in **Table 4-3**. As noted in **Section 3.2.3**, a Biological Assessment (2020) was completed to evaluate effects of the proposed action on ESA-listed species that may be present, and consultation completed with USFWS (informal, 2020) and NMFS (formal, 2021). The Biological Assessment provides additional detail regarding species and effects (available upon request).

Table 4-3: Potential Federally Listed Species in the Action Area

Common Name	Scientific Name	Status
Fish		
Snake River steelhead	*Oncorhynchus mykiss*	Threatened
Snake River fall-run Chinook salmon	*Oncorhynchus tshawytscha*	Threatened
Bull trout	*Salvelinus confluentus*	Threatened
Plants		

Common Name	Scientific Name	Status
Spalding's catchfly	*Silene spaldingii*	Threatened

Habitat conditions for the threatened and endangered species that could occur in the project area are listed below. Since steelhead, Chinook salmon, and bull trout share similar habitats and will respond similarly to the potential adverse impacts of the proposed project actions, they will be analyzed together as ESA listed salmonids.

ESA Listed Salmonids: Snake River Basin steelhead are documented in the Clearwater River, Lolo Creek, Lawyer Creek, and Sevenmile Creek (IDFG 2019b, StreamNet 2019). Steelhead are also likely to use Lolo Creek but are unlikely to use other perennial streams in the project area. Snake River Basin steelhead has DCH in the Clearwater River, Lolo Creek, Tom Taha Creek, Lawyer Creek, and Sevenmile Creek (Federal Register 2005).

Snake River fall-run Chinook salmon have been documented in the Clearwater River, Lolo Creek, and Lawyer Creek (IDFG 2019b). Critical habitat is designated in the Clearwater River up to the confluence with Lolo Creek (Federal Register 2005).

Bull trout require cold water (less than 59 to 64 degrees Fahrenheit), unblocked migratory corridors, clean gravel for spawning and rearing, and stable stream flows. Bull trout are documented in the mainstem Clearwater River and bull trout critical habitat is designated in the Clearwater River. Lolo Creek has documented juvenile bull trout above a juvenile barrier (small falls), indicating a potential local population in the upper Lolo Creek drainage (USFWS 2002). . Given the life history of bull trout and the presence of suitable habitat in the action area, bull trout could be present year-round in the action area where it intersects with the Clearwater River.

Spalding's catchfly: Spalding's catchfly is a leafy perennial plant found in open, moist grasslands and occasionally sage-brush steppe communities. The species is generally found in swales or on north- or east- facing slopes where soil moisture is relatively higher (USFWS 2007). Occupied habitats include the Salmon River Basin in Idaho County. Spalding's catchfly is not documented within the action area; the closest documented presence is approximately twelve miles west of the action area. Herbicide applications would occur in targeted areas dominated by aggressive invasive species, which are a primary reason for the decline of Spalding's catchfly (USFWS 2007). If any unknown populations are present within the action area, they would most likely occur in undisturbed, native canyon grasslands or sparse Ponderosa pine forests that would not be treated with herbicide. The species is not likely to occur adjacent to roadsides and within disturbed, invasive species-dominated areas where herbicides would be applied.

Essential Fish Habitat: The Magnuson-Stevens Fisheries Conservation and Management Act (16 U.S.C. 1801 et seq.) designates EFH for certain commercially managed marine and anadromous fish species and is intended to protect the habitat of commercially managed fish species, including anadromous fish species, from being lost because of disturbance and degradation. Also, discussed in the Biological Assessment (FEMA 2020), EFH is present in the project area and includes all fish-bearing streams used by or historically accessible to Chinook and coho salmon. Snake River fall-run Chinook salmon are documented in the Clearwater River, Lolo Creek, and Lawyer Creek (IDFG 2019b). While Chinook may not use or be documented in

some of the smaller fish-bearing streams, such as Tom Taha Creek and Sevenmile Creek, those streams are accessible to salmon and are therefore considered EFH.

No Action Alternative

Under the no action alternative, only limited vegetation treatments through the County's invasive plant management program would occur. The habitats that support threatened and endangered species would continue to degrade from the spread of invasive plants. Riparian areas along perennial and intermittent tributaries would continue to be dominated by blackberry, slowing or preventing the establishment of a forested canopy. The lack of shade would adversely affect stream temperatures. Invasive species are more flammable and contribute to fuel loading that leads to increased risk of wildfire spread. Additionally, the increased risk of erosion, sedimentation, stormwater runoff, and flooding under the no action alternative would further degrade habitat for listed species. The no action alternative would have a moderate adverse impact on threatened and endangered species and their habitats both within and outside of the project area.

Proposed Action

An overview of the proposed action's potential effects on ESA-listed species along with conservation measures to avoid or minimize effects is provided below and additional detail is included in the Biological Assessment (FEMA 2020) and NMFS BiOp (2021) (Appendix A).

ESA Listed Salmonids: The proposed action does not include any in-water work, the project would not directly remove or alter any physical elements of ESA listed salmonid habitat. However, there is the potential that some EPA-approved herbicide could enter the water column through spray drift, spill, or surface runoff after an unanticipated rainstorm. The effects of herbicides on fish, when used in recommended concentrations and application rates, are not generally lethal (Solomon et al. 2013; Stehr et al. 2009; EPA 1979). But herbicides do have the potential to cause sub-lethal effects to fish through drift or runoff, which may include reproductive effects, stress, and olfaction and behavior modification. There is also the potential for adverse impacts to insect species on which ESA listed salmonids forage upon.

Because of these potential effects, the proposed action's herbicide application protocols include various conservation measure and BMPs that minimize the potential adverse impacts. These measures will follow product label restrictions and ESA consultation terms and conditions detailed in **Section 3.2.3.**, such as establishing no herbicide application buffers in riparian areas **(Table 3-3)**.

Even with the implementation of the herbicide application buffers and other protocols outlined in **Section 3.2.3**, the proposed action was determined as Likely to Adversely Affect (LAA) Snake River steelhead and Snake River fall Chinook Salmon and their DCH. The proposed action was determined as Not Likely to Adversely Affect (NLAA) bull trout and their DCH. Formal consultation with NMFS was initiated on February 4, 2020, and the BiOp was issued February 19, 2021, which concurs with those determinations and found that the proposed action would not likely jeopardize Snake River steelhead or Snake River fall Chinook Salmon. Informal consultation with USFWS was initiated on February 4, 20202 and the letter of concurrence was issued on June 5, 2020.

In the long-term, the proposed vegetation management would help to reduce erosion and stabilize soils, which would reduce sedimentation and improve instream substrate conditions in the project area streams.

Spalding's catchfly: It is unlikely that Spalding's catchfly is present adjacent to the roadsides and within the areas that could be affected by herbicide drift. However, as a precaution, contractors will be trained by Idaho County to identify Spalding's catchfly and its suitable habitat. No herbicide applications will occur within one-quarter mile of identified suitable habitat and no aerial herbicide applications would occur. The biological control agents are selected based on species-specific targets and are not anticipated to affect non-target species, including Spalding's catchfly. As a result, potential direct effects are considered discountable. Competition from non-native species is a primary factor in the decline of Spalding's catchfly. Successful re-establishment of native grass species would improve habitat conditions for the species. With the implementation of the herbicide application buffers and other measures outlined in **Section 3.2.3**, the proposed action would be not likely to adversely affect Spalding's catchfly.

4.12 Cultural Resources

This section provides an overview of potential effects on cultural resources, including historic properties and archaeological resources. Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. § 470f), requires that activities using federal funds undergo a review process to consider potential effects on historic properties that are listed in or may be eligible for listing in the National Register of Historic Places (NRHP). Cultural resources include prehistoric or historic archeology sites; historic structures; historic districts; objects; artifacts; cultural properties of historic or traditional significance, referred to as Traditional Cultural Properties that may have religious or cultural significance to federally recognized Indian Tribes; or other physical evidence of human activity considered to be important to culture, subculture, or community for scientific, traditional, religious, or other reasons.

Pursuant to 36 CFR 800.4(a)(1), an Area of Potential Effects (APE) was defined to include the areas within which the undertaking may directly or indirectly affect cultural resources. Within the APE, impacts on cultural resources were evaluated for both historic structures (aboveground cultural resources) and archaeology (belowground cultural resources).

The project area lies in the heart of the traditional homeland of the Sahaptin speaking Nez Perce (Marshall 1977; Walker 1998:420). Villages were located primarily near fishing places in the deep canyons of the area and their people were sustained by harvesting and storing salmon using a variety of methods (Landeen and Pinkham 1999:93-106). Major villages were located along the Clearwater River, particularly at Lewiston and Kamiah, Idaho. The Nez Perce Tribe has occupied their homeland since time immemorial, and archaeological evidence confirms that ancestors of the Nez Perce have lived in the region for at least 16,000 years (Ames et al. 1981; Davis and Schweger 2004). The traditional economy in the mountains and valleys of the Nez Perce homeland was based on a seasonal cycle of fishing (primarily salmon), gathering plants (roots, berries, medicines, and other flora), and hunting (primarily deer and elk as well as small game and birds) (Walker 1998: 420-421).

In 1805, members of Lewis and Clark's Corps of Discovery entered Clearwater County and traveled up the Clearwater River on their return trip in 1806. American fur trappers moved

through the area during the early 1800s. In the1830s, Christian missionaries established a series of missions in Washington Territory, which were the first sustained settlements in the region (Johansen 1967; Sappington 1996). Gold was discovered on the north fork of the Clearwater River in 1861, inspiring a regional gold rush and significant encroachment on the Nez Perce Reservation.

Under the Land Act of 1820, the Homestead Act of 1864, and through Indian Fee Patents, European American homesteaders and Native peoples filed land claims in the Clearwater Valley. Properties that included the current project areas were formally issued between the turn of the twentieth century and the 1920s (Bureau of Land Management [BLM] 2019). Approximately 3,000 non-Indian men and women claimed over half a million of acres of Nez Perce land.

In 1909, the Camas Northern Railroad line, jointly owned and operated by the Northern Pacific and Union Pacific Railroads, was built through the Clearwater Canyon (U.S. Geological Survey 1924). By the 1960s, developments within the APE consisted of a series of informal roads and jeep trails. Little development has occurred in the project vicinity during the historic period. The project area vicinity has remained sparsely populated and the local economy is largely supported by the timber industry.

A review of the Idaho State Historic Preservation Office (SHPO) available records indicated that numerous previous cultural resource studies were conducted, and archaeological sites identified, within one mile of the APE. Some archaeological sites within one mile of the project area include ethnographic village and camp sites, lithic scatters, historic mining sites, a townsite, historic railroad segments, a Nez Perce trail, and Lewis and Clark trail segments. The majority of identified sites are clustered in or near Kamiah and East Kamiah and tend to be found within the Clearwater River corridor or near drainages that empty into the Clearwater River. Only one of the 46 previous studies were conducted within the APE, and it did not identify any cultural resources within the APE. Only two previously recorded archaeological sites are within the APE: site 10-IH-2810 (Lewis and Clark Trail segment) and site 10-IH-3177 (Camus Prairie Railroad segment). Site 10-IH-845 (a Nez Perce Tribe camp) is located immediately outside of the APE.

Approximately 640 acres were surveyed for cultural resources for this project and a total of four new archaeological sites and four archaeological isolates were identified. Of these resources, two archaeological sites were unevaluated (temporary #s: 18-8MN-1 and 18-8MN-2, each historic debris scatters), and one recommended as eligible for inclusion in the NRHP (18-8MN-3, which may be site 10-IH-845). The remaining resources, including all four archeological isolates (each consisting of historic refuse, vehicle parts or equipment) and one archeological site (18-8MN-4, a defunct mining adit), are recommended as not eligible under the NRHP. One of the previously recorded archaeological resources within the APE (site 10-IH-2810) was not relocated; the other previously recorded resource (site 10-IH-3177) was visually relocated but exists outside of the APE.

EDRR and ROW treatment areas were not included in the survey because the proposed activities (survey for invasive plant species, herbicide application, release of biological controls, and monitoring) would not result in ground disturbance or affect potential historic resources.

On September 5, 2019, consultation was initiated with the Nez Perce Tribal Historic Preservation Officer (THPO) for the proposed action to solicit any additional information about cultural

resources in the APE that could be affected by the project (Appendix B). No comments were received.

No Action Alternative

The no action alternative's vegetation treatments through the County's invasive plant management program could affect cultural resources, if present, through ground disturbance, depending on treatment method. However, because there would be limited work occurring and most treatment methods have minimal ground disturbance, the potential for adverse impacts would likely be negligible.

Proposed Action

Based on the results of the cultural resource assessment, proposed action ground disturbing activities could affect some identified cultural resources, however implementation of avoidance and minimization measures during work would reduce the potential for effects. Sites 18-8MN-1, 18-8MN-2, and 18-8MN-3 (possibly 10IH845) would be avoided entirely by establishing a 30 meter no work buffer around the sites. Additionally, a cultural resources Inadvertent Discovery Plan (IDP) will be developed for crews to adhere to during site work. The cultural resources assessment was provided to the Nez Perce THPO for review, who concurred on April 21, 2022 with FEMA's No Adverse Effects to Historic Properties determination (Appendix B).

Activities proposed in the EDRR and ROW treatment areas would not result in ground disturbance and would not result in adverse impacts on known or unknown cultural resources.

4.13 Environmental Justice

Environmental justice is defined by EO 12898, Environmental Justice, (59 *Federal Register* 7629) and CEQ guidance (1997). Under EO 12898, demographic information is used to determine whether minority or low-income populations are present in the areas potentially affected by the range of project alternatives. If so, a determination must be made whether implementation of alternatives may cause disproportionately high and adverse human health or environmental impacts on those populations.

This environmental justice analysis is focused at the local (i.e. census tract) level. The local area included in this analysis is where project-related effects would occur, potentially causing an adverse and disproportionately high effect on neighboring minority and low-income populations.

Minority or low-income census tracts are defined as meeting either or both of the following criteria:

- The census tract contains 50 percent or more minority persons or 25 percent or more low-income persons.
- The percentage of minority or low-income persons in any census tract is more than 10 percent greater than the average of the surrounding county.

The project area, most of which is within the Nez Perce Tribe Reservation, is encompassed by census tract 9400, block groups 1 and 2, and census tract 9601, block group 1 (EPA 2019a).

Table 4-4 provides demographic and economic characteristics for these census tracts and block groups. Information for Idaho County is presented for comparison.

Table 4-4: Environmental Justice Demographics

Project Area	Percent Minority Population	Percentage of Population Below Poverty Level
Idaho County	10.3%	13.1%
Census Tract 9400 Block Group 1	22.0%	20.3%
Census Tract 9400 Block Group 2	22.1%	23.6%
Census Tract 9601 Block Group 1	7.9%	17.2%

Source: EPA 2019a; USCB 2019a

Minority Populations

CEQ (1997) defines the term "minority" as persons from any of the following groups: Black, Asian or Pacific Islander, American Indian or Alaskan Native, and Hispanic. This analysis is based on the best available U.S. Census Bureau (USCB) data from the American Community Survey 2013-2017. As shown in **Table 4-4**, census tract 9400 block groups 1 and 2 have a total minority population of 22.0 percent and 22.1 percent respectively (predominantly Nez Perce people), which is more than 10 percent greater than the County average of 10.3 percent (USCB 2019a). Therefore, based on the criteria outlined above, the project area could be considered to contain an environmental justice minority population.

Low-Income Populations

Residents of areas with a high percentage of people living below the poverty level may be considered low-income populations. The USCB poverty threshold for a family of four (two adults and two children under the age of 18) in 2018 was $25,465 and $13,064 for an individual under the age of 65 (USCB 2019b). The low-income population of Idaho County as a whole is approximately 13.1 percent. As shown in **Table 4-4,** low-income populations range between 17.2 percent and 23.6 percent in the census tracts containing the project areas (USCB 2019a). These areas are part of the Nez Perce Reservation. The low-income population in census tract 9400, block group 2 is more than 10 percent greater than the County. Therefore, the project area could be considered to contain an environmental justice low-income population.

No Action Alternative

Under the no action alternative, with the County's limited invasive plant management program, all persons within and surrounding the project areas, regardless of race or income, would continue to be at risk of wildfire spread, air quality degradation, and post-fire erosion and flooding risks. Because of their low income, this population could be disproportionately and adversely affected by a wildfire because of their limited resources to recover from losses. Therefore, minor to moderate adverse impacts may occur on minority and low-income populations, within the Nez Perce Reservation in particular, and in the project area vicinity depending on the scale and intensity of a wildfire.

Proposed Action

Under the proposed action, since the EPA-approved herbicide applications and biological controls are focused along road ROWs and scattered localized spot treatments, with restrictive application protocols, there would not be a disproportionately high or adverse effect on minority or low-income populations. Similarly, revegetation activities also would not result in disproportionate harm since they are limited to seeding and plantings.

In the long term, the proposed action would have a minor beneficial effect on all people living and working in the vicinity of the project areas, including low income and minority populations as it would reduce the risk of harm to individuals and personal property from post-fire erosion, flooding or wildfire spread.

4.14 Hazardous Materials

The Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act, and the Toxic Substances Control Act define hazardous materials. The Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, which was further amended by the Hazardous and Solid Waste Amendments, defines hazardous wastes. In general, both hazardous materials and waste include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, may present substantial danger to public health or to the environment when released or otherwise improperly managed.

Hazardous materials may be encountered in the course of a project, or they may be generated by project activities. To determine whether any hazardous waste facilities exist in the vicinity or upgradient of the proposed treatment areas or whether there is a known and documented environmental issue or concern that could affect the proposed treatment parcels, a search for Superfund sites, toxic release inventory sites, industrial water dischargers, hazardous facilities or sites, and multiactivity sites was conducted using the EPA NEPAssist database. According to the NEPAssist database, no Superfund, hazardous waste, air pollution, Brownfields, or multiactivity sites exist within the proposed treatment areas or vicinity. However, there are two industrial waste dischargers and one toxic release within one mile of one of the reseeding areas (**Table 4-5**). These hazardous materials sites are located outside the project area.

Table 4-5: Regulated Sites in the Project Vicinity

Site Name	Location	Regulation	Distance from Project Area
Empire Lumber Kamiah Mills	100 Railroad Street Kamiah, ID 83536	Toxic Release and Industrial Water Discharger	Located approximately 0.25 miles outside one of the proposed reseeding sites
Kamiah Water Treatment Plant	1755 S Laguna Drive Kamiah, ID 83536	Industrial Water Discharger	Located approximately 0.45 miles outside one of the proposed reseeding sites

Source: EPA 2019b

No Action Alternative

No active hazardous materials or waste sites were identified within the project area that would potentially affect the existing environment. Under the no action alternative, limited vegetation

treatments through the County's invasive plant management program would continue with no change to existing conditions with respect to hazardous materials. There would be some potential for small accidental release of hazardous materials from equipment or vehicles use, however adverse impacts would be negligible. There would also be potential for small inadvertent herbicide releases if products aren't handled and applied per product labels.

Proposed Action

Under the proposed action, no adverse impacts from waste storage and disposal sites would occur because the hazardous facilities are located outside the proposed treatment sites where reseeding would occur, and they are at a lower elevation. If site contamination or evidence of contamination is discovered during implementation of the proposed action, the county would manage the contamination in accordance with the requirements of the governing local, state, and federal regulations and guidelines.

The proposed action would involve the use of mechanical equipment such as ATVs, tractors, excavators, and vehicles. There is always a negligible threat of leaks of oils, fuels, and lubricants from the use of such equipment. The short-term duration of equipment use at any individual treatment area and the use of equipment in good condition would reduce any potential effect to a negligible level.

EPA-approved herbicides would be handled and applied per the protocols listed in **Section 3.2.3** and applicable federal, state, and local regulations. With adherence to these protocols, the potential for inadvertent herbicide release during handling and application would be negligible along with environmental effects described in **Sections 4.5 through 4.11 and 4.16**.

4.15 Noise

Sounds that disrupt normal activities or otherwise diminish the quality of the environment are considered noise. Noise events that occur during the night (10 p.m. to 7 a.m.) are more bothersome than those that occur during normal waking hours (7 a.m. to 10 p.m.). The project area is considered rural. Typical noise events in the project area are presently associated with climatic conditions such as wind and rain, light traffic, and from residential uses (lawnmowers etc.).

Assessment of noise impacts includes the proximity of the proposed action to sensitive receptors. A sensitive receptor is defined as an area of frequent human use that would benefit from a lowered noise level. Typical sensitive receptors include residences, schools, churches, hospitals, libraries, and parks. Sensitive receptors near the project area consist of scattered rural residences.

No Action Alternative

Under the no action alternative, with limited vegetation treatments through the County's invasive plant management program, there would be no change in existing noise levels that could affect sensitive receptors in the project area.

Proposed Action

Under the proposed action, noise would be generated by operation of equipment, such as vehicles, ATVs, mulching equipment, and excavators, which would increase noise levels within

the immediate vicinity of the work. Few receptors (residences) would be within hearing distance of the proposed work. Increases in noise levels would be temporary and would occur during normal waking hours. In addition, the noises generated by the proposed action would be typical of normal forestry or rangeland management activities. All equipment and machinery used would meet all applicable local, state, and federal noise control regulations. Therefore, adverse impacts from noise on receptors near the project areas would be negligible and short-term.

4.16 Public Health and Safety

Police services in and near the project area are provided by Idaho County. The Sheriff's office is located in Grangeville, Idaho; there is a single service area that covers Kooskia and surrounding areas, which include the project area (Idaho County 2019). BPC Volunteer Rural Fire Department, Kooskia Volunteer Fire Department, and Ridge Runner Fire Department provide fire services in the vicinity of the project area (FireDepartment.net 2018). Additionally, the Idaho County Office of Fire Mitigation implements community fire protection measures and hazardous fuels treatments through the county fire and fuel management program (Idaho County 2019). Emergency services and mitigation programs are important for safeguarding the health and safety of residents of Idaho County, as the county has a history of disasters such as wildfires and landslides. The Idaho County Weed Management office is tasked with controlling invasive weeds across the county. These invasive weeds increase fire risk (flashy fuels), interfere with farming and disrupt normal ecological functions. The Weed Management office controls the spread of invasive weeds through a combination of education and networking, mechanical means, biologic controls, and application of EPA-approved herbicides.

No Action Alternative

Under the no action alternative, there would be limited vegetation treatments through the County's invasive plant management program. There would be no substantive reduction in the risks associated with erosion, surface runoff, and flooding. Heavy rain following wildfires can contribute to surface erosion and surface runoff, which could potentially lead to landslides, leading to sediment and debris transport in nearby waterways (Geertsema and Highland 2011). This influx in debris can affect downstream water quality and damage structures, roads, and utilities critical to the safety and well-being of citizens in and downgradient of the affected area.

In addition, the spread of invasive species may promote the spread of a future wildfire, which can result in the loss of life and property. If a wildfire occurs, people and structures in and near the fire would be at risk. Wildfires can generate substantial amounts of particulate matter, which can affect the health of people breathing smoke-laden air. Therefore, the health of people downwind of a wildfire, especially young children, the elderly, and people with lung disease or asthma, could be adversely affected. Wildfires can also generate substantial amounts of carbon monoxide, which can pose a health concern for frontline firefighters. During a major wildfire, emergency personnel would not be available to respond to other emergencies in their service area, potentially resulting in indirect adverse impacts on human health and property. Under the no action alternative there would be minor to moderate adverse impacts on public health and safety, depending on the scale and intensity of a wildfire.

Proposed Action

EPA-approved herbicide use could affect public health if not applied properly, consistent with using the product label instructions. As described in **Section 3.2.3**, EPA completes human health effects analysis as part of its FIFRA product registration process including periodic reassessments with updated scientific studies. The products proposed for use for the proposed action have an active FIFRA registration. Barring EPA product use update bulletins or a cancellation of the registration, the products have been determined safe for use.

As detailed in **Section 3.2.3**; adherence to the various herbicide protocols including work being done by trained professionals, application methods and rates, weather conditions, and posting warning signage would limit the potential public exposure risks associated with herbicide use. Recreational access, including trails and hunting access, would be closed during application of herbicides to avoid public exposure. Therefore, potential adverse impacts related to herbicide application would be negligible, short-term, localized to the application area, and unlikely to affect public health and safety.

The primary objective of the proposed action is to replace invasive species with native and desirable non-native species to reduce the potential for erosion, surface runoff, flooding, and wildfire hazards associated with the increase in invasive species after the Clearwater Complex Fire. If wildfires are smaller or more easily controlled, there would be a minor benefit on public health and safety. The proposed action would help create a safer environment for residents and visitors in the project area and would have a minor, long-term, beneficial effect on public health and safety.

4.17 Summary of Mitigation

This summary provides required agency coordination efforts or permits and conditions and BMPs the County will be required to implement during work to reduce potential adverse effects of the proposed action. These are in addition to the proposed action implementation details outlined in **Section 3.2**.

- **Geology and soils**:
  - In riparian restoration areas, masticated blackberry vines would be left in place to act as mulch to minimize erosion and sedimentation.

- **Air Quality:**
  - Crews would keep ATV running times to a minimum and ensure that all engines are properly maintained.
  - Backpack and handgun sprayers would be operated via handpump or from battery powered pump.

- **Floodplains, Surface Waters, Wetlands, and Water Quality:**

  - ATVs would be parked away from waterbodies to prevent soil disturbance and fuel or lubricant leaks from reaching surface waters.
  - Refueling and staging areas would be located away from waterbodies.

- **Vegetation:**
  - Biocontrol practitioners would adhere to the International Code of Best Practices for Biocontrol of Weeds to reduce the potential for adverse impacts from biological agents.

- **Fish and Wildlife, and Threatened and Endangered Species:**
  - All in-water work would be avoided.
  - Incidental take of aquatic ESA-listed species (salmon and steelhead) will be minimized from project activities by minimizing the potential for herbicide impacts to water quality.
  - Ensure completion of a monitoring and reporting program to confirm that the terms and conditions in the Incidental Take Statement were effective in avoiding and minimizing incidental take from permitted activities and that the extent of take was not exceeded.
  - Contractors will be trained to identify Spalding's catchfly and its suitable habitat, no herbicide applications will occur within one-quarter mile of identified suitable habitat.

- **Cultural Resources:**
  - A 30 meter no work buffer will be established around sites 18-8MN-1, 18-8MN-2, and 18-8MN-3 (possibly 10IH845).
  - All crews will follow an IDP for cultural resources.

- **Noise:**
  - All machinery used would meet applicable local, state, and federal noise control regulations.
  - Noise-producing equipment would be used during normal waking hours.

- **Public Health and Safety:**

  - EPA herbicide use bulletins will be monitored for changes to project-proposed product application protocols and label changes. The County will be required to adhere to the updated requirements.
  - The County will provide the Material Safety Data Sheet for any of the herbicides upon request.
  - Treated areas would be signed and closed to public access during herbicide application.
  - The County would follow EPA requirements for each herbicide, as well as the Idaho Forest Practices Act (Idaho Administrative Code [IDAPA] 20.02.01)
  - All herbicide applications would occur consistent with label recommendations and would be applied by trained applicators using equipment that is calibrated on an annual basis.

- If at any time the EPA product label requirements, or any State regulations, concerning project herbicides change, the County will be required to monitor for EPA bulletins and adhere to the updated label/regulatory requirements.
- Herbicide will be applied at the lowest effective label rates and adhering to the maximum application rate per acre and by product (EA Table 3-2).
- Milestone™ (aminopyralid) herbicide will not be used on moderately steep slopes, in accordance with the product guidelines.
- The County will adhere to all no herbicide application buffers by product and application method for ditches, streams and wetlands (EA Table 3-3).
- Under the Idaho Forest Practices Act, employ BMPs that include measures to prevent leaks and spills (IDAPA 20.02.01.060).
- Only the quantities of herbicide needed for work in a given day would be transported to the project site.
- The applicator would prepare and carry out an herbicide safety/spill response plan to reduce likelihood of spills or misapplications.
- Herbicides will be mixed more than 150 feet from any natural waterbody to minimize the risk of an accidental discharge.
- Impervious material will be placed beneath mixing areas in such a manner as to contain any spills associated with mixing/refilling.
- All hauling and application equipment shall be free from leaks and operating as intended.
- Herbicide drift and leaching will be minimized as follows:
  - Do not spray when wind speeds exceed 10 miles per hour to reduce the likelihood of spray/dust drift. Winds of two mph or less are indicative of air inversions. The applicator must confirm the absence of an inversion before proceeding with the application whenever the wind speed is two mph or less.
  - Do not apply when air temperatures exceed 80 degrees.
  - Be aware of wind directions and potential for herbicides to affect aquatic habitat area downwind.
  - No broadcast application from helicopters. Broadcast application will be from ATV only and will keep boom or spray as low as possible to reduce wind effects.
  - Avoid or minimize drift by utilizing appropriate equipment and settings (e.g., nozzle selection, adjusting pressure, drift reduction agents, etc.). Select proper application equipment (e.g., spray equipment that produces 200 to 800-micron diameter droplets [spray droplets of 100 microns or less are most prone to drift]).
  - Follow herbicide label directions for maximum daytime temperature permitted (some types of herbicides volatilize in hot temperatures).
  - Do not spray during periods of adverse weather conditions (snow or rain imminent, fog, etc.). Wind and other weather data will be monitored and reported for all pesticide applicator reports.
  - Herbicides shall not be applied when the soil is saturated or when a precipitation event likely to produce direct runoff to fish-bearing waters from a treated site is forecasted by National Oceanic and Atmospheric Administration (NOAA) National Weather Service or other similar forecasting service within 48

hours following application. Soil-activated herbicides can be applied as long as label is followed. Do not conduct any applications during periods of heavy rainfall.

- Spray tanks shall be washed further than 300 feet away from surface water.
- Equipment will be washed prior to initial entry into the Project area to reduce noxious weed spread.
- In addition to these protocols, the NMFS BiOp (2021) includes the following 'Terms and Conditions' (for ESA) and conservation recommendations (for Essential Fish Habitat [EFH]) which are non-discretionary:
- • The County shall ensure that the upland herbicides Indaziflam and Diuron are not applied within 100 feet of any floodplain (100-year floodplain) or 100 feet of any wetland, flowing or standing water when the floodplain is not clear (ESA/EFH).
- • The County shall not use the adjuvants Entry II and R-11 (ESA/EFH).
- • The County shall ensure that either its staff or its contractors equipment crosses streams only at the designated crossings and does not enter flowing or standing water (EFH).
- • The County will monitor herbicide application to comply with product labels and the additional application restrictions as specified herein (ESA/EFH).
- • In the event of a spill or chemicals or fuel, the County shall ensure activities cease immediately, and action is taken to contain and clean up the spill (ESA/EFH).
- • The County shall use as little herbicide as is required for the desired effect (ESA).
- • The County shall not treat more than 641 acres of vegetation with herbicides, as proposed herein (ESA).
- • The County shall submit a monitoring report (with information on herbicide use, application rates, timing, and location) by April 15 of the year following project completion to FEMA and NMFS (Snake River Basin Office-nmfswcr.srbo@noaa.gov) (ESA/EFH).

SECTION 5. Cumulative Impacts

This section addresses the potential cumulative impacts associated with the implementation of the proposed action. Cumulative impacts under NEPA are defined as the impacts of a proposed action when combined with impacts of past, present, or reasonably foreseeable future actions undertaken by any agency or person. CEQ's regulations for implementing NEPA require an assessment of cumulative effects during the decision-making process for federal projects. Cumulative impacts can result from individually minor but collectively significant actions.

The project area consists of State, Tribe, private and County-owned land, mostly within the Nez Perce Reservation. The land surrounding the project area is primarily owned by BLM, and to a smaller extent, USFS and the National Park Service. The proposed treatment parcels are adjacent to land owned by federal, tribal and local governments and private landowners.

The proposed action would only have short-term, negligible or minor, adverse effects on soils, air quality, climate change, visual quality and aesthetics, surface waters and water quality, wetlands, floodplains, vegetation, fish and wildlife, threatened and endangered species, hazardous materials, noise, and public health and safety. Long-term effects on vegetation, fish and wildlife, and public safety from a reduction in invasive weed spread would be beneficial.

Idaho County's invasive plant management program focuses work within WM A. The County has formed numerous partnerships to adminster the program; partnerships include, but are not limited to, private landowners, neighborhing counties, groups such as Back Country Horseman, the Nez Perce Biological Control Center, and government agencies, including the Idaho State Department of Agriculture, Idaho Department of Lands, Idaho Department of Fish and Game, BLM, and the USFS Clearwater and Payette National Forests. Weed management efforts in surrounding areas may be implemented before, during, and after the proposed project and would have similar short-term adverse impacts and long-term benefits as those described for the proposed action. As detailed in **Section 3.2.3**, as part of its FIFRA for herbicide registration process, EPA completes a human health and ecological risk assessments which takes into account cummulative effects. Adverse cumulative impacts would be unlikely because the adverse effects are short-term and there would be likely be temporal and spatial separation between the varaious weed abatement activities.

Weed management activities conducted by others and by Idaho County under other funding sources would collectively result in long-term, net beneficial effects and would complement the proposed action by reducing invasive species spread, erosion risks, habitat degredation, and the spread of wildfires in the area. Therefore, there would be a long-term, cumulative beneficial effect that could be minor to moderate in its effect on the project and surrounding areas.

SECTION 6. Agency Coordination, Public Involvement, and Permits

6.1 Agency Coordination

During preparation of this EA, the Nez Perce Tribe was consulted for comment related to cultural resources. Consultation letters and responses are provided in Appendix B**.** As described in **Section 4.11**, FEMA consulted with NMFS and USFWS on potential effects on threatened and endangered species with a Biological Assessment (available upon request). The USFWS concurrence letter is in Appendix B. The NMFS BiOp (2021) is in Appendix A.

6.2 Public Participation

In accordance with NEPA, FEMA released the Draft EA to the public and resource agencies for a 30-day public review and comment period. Comments received on the Draft EA are discussed in Section 6.2.1 below and have been addressed in this Final EA as appropriate. This EA reflects the evaluation and assessment of the federal government, the decisionmaker for the federal action, i.e. award of grant funding to OEM. FEMA took into consideration substantive comments received during the public review period to inform its decision regarding grant approval and project implementation.

The public review process for the proposed project included a public notice in the *Clearwater Progress* (Kamiah, ID), a general circulation paper that covers the project area. The notice was sent to the following federal and state agencies for comment: U.S. Forest Service, U.S. BLM, U.S. Department of Interior Region 9, National Interagency Fire Center, Federal Highway Administration-Idaho, National Marine Fisheries Service, National Park Service, US Army Corps of Engineers-Northwest Division & Walla Walla District, Natural Resource Conservation Service-Idaho, US EPA Region 10, US Fish & Wildlife Service-Pacific Region, US Geological Service, Idaho State Department of Agriculture, Idaho Department of Water Resources, Idaho Department of Environmental Quality, Idaho Department of Lands, Idaho Department of Fish and Game, Idaho Department of Parks and Recreation, Idaho State Historical Society, Idaho Soil & Water Conservation Commission, and the Idaho Geological Survey. The notice was also sent to the Nez Perce Tribe, Friends of the Clearwater, and area residents. The notice invited the public and agencies to submit their comments about the proposed action, potential adverse impacts, and proposed mitigation measures so that they could be considered and evaluated. The 30-day comment period was from May 12, 2022 through June 17, 2022.

Idaho County made the Draft EA available on its website https://idahocounty.org/ under Public Notices or the Noxious Weed Management Department. It was also posted on FEMA's website: https://www.fema.gov/emergency-managers/practitioners/environmental-historic/nepa-respository.

Hardcopies of the Draft EA were available at the Kamiah City Hall at 507 Main Street, Kamiah, ID 83536 and at the Kooskia City Hall at 026 S Main Street, Kooskia, ID 83539.

Comments could be submitted to fema-r10-ehp-comments@fema.dhs.gov or submitted via mail to :

FEMA Region 10
Attention: Regional Environmental Officer
130-228th Street SW
Bothell, WA 98021

6.2.1 Public Comments

Public comments on the Draft EA were received from 1 respondent, the Environmental Protection Agency Region 10. The comments were in support of the proposed action: "EPA supports Idaho County's efforts to limit the volume of flammable and invasive vegetation in the treatment areas, to minimize the potential of another wildfire, thus diminishing the potential of future climate threats and associated hazards to its residents." EPA also provided enclosed comments on the NEPA analysis which were considered as part of this Final EA.

6.3 Permits

Idaho County will obtain any necessary local, state, or federal permits needed to conduct the proposed work. At this time, no local, state, or federal permits appear to be necessary to implement the proposed Clearwater Complex Vegetation Management Project.

SECTION 7. List of Preparers

The following is a list of preparers who contributed to the development of the Clearwater Complex Vegetation Management Project EA for FEMA. The individuals listed below had principal roles in the preparation of this document. Many others had significant roles and contributions, and their efforts were no less important to the development of this EA. These others include senior managers, administrative support personnel, and technical staff.

Preparers	Experience and Expertise	Role in Preparation
Argiroff, Emma[1]	Environmental Planner	NEPA Documentation
Ellis, Dave[2]	Senior Archaeologist	Cultural Resources
Kahlo, Ryan[3]	Biologist	Threatened and Endangered Species
Regel, Megan[1]	Environmental Planner	NEPA Documentation
Solimano, Paul[2]	Archaeologist	Cultural Resources
Stenberg, Kate Ph.D.[1]	Senior Biologist, Senior Planner	Project Manager, Technical Review

[1] *CDM Smith*
[2] *Willamette Cultural Resource Associates*
[3] *Watershed Company*

Federal Emergency Management Agency

Reviewers	Expertise	Role in Preparation
Coskey, Owen	Environmental Specialist	Technical Review
Kilner, Science	Regional Environmental Officer	Technical Review, Editing, and Approval
Parr, Jeffrey	Environmental Specialist – Biological Resources	Technical Review

Idaho County

Reviewers	Expertise	Role in Preparation
Joe Slichter	Idaho County Weed Control	NEPA documentation review
Connie Jensen Blyth	Consultant to Idaho County Weed Control	NEPA documentation review

SECTION 8. References

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Appendices

Appendix A Biological Opinion

Appendix B Agency and Tribal Correspondence

Appendix C Wetland Analysis Figures

Appendix A Biological Opinion

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1201 NE Lloyd Boulevard, Suite 1100
PORTLAND, OREGON 97232

Refer to NMFS No: WCRO-2020-00523

https://doi.org/10.25923/cmvq-bp09

March 29, 2021

Mark G. Eberlein
Regional Environmental Officer
U.S. Department of Homeland Security
Federal Emergency Management Agency, Region 10
130 228th Street SW
Bothell, Washington 98021-8627

Re: Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the FEMA Clearwater Complex Post-Fire Mitigation Project, Idaho County, ID, HUC 17060306.

Dear Mr. Eberlein:

Thank you for your letter of February 4, 2020, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 et seq.) for the Clearwater Complex Post-Fire Mitigation Project. This consultation was conducted in accordance with the 2019 revised regulations that implement section 7 of the ESA (50 CFR 402, 84 FR 45016).

In the enclosed biological opinion (opinion), NMFS concludes that the action, as proposed, is not likely to jeopardize the continued existence of Snake River Basin steelhead. NMFS also determined the action will not destroy or adversely modify designated critical habitat for this ESA listed species. Rationale for our conclusion is provided in the attached opinion. In the enclosed document, NMFS also concurs with the Federal Emergency Management Agency's (FEMA's) determinations of not likely to adversely affect for Snake River fall Chinook salmon and their designated critical habitat.

As required by section 7 of the ESA, NMFS provides an incidental take statement (ITS) with the opinion. The ITS describes reasonable and prudent measures (RPMs) NMFS considers necessary or appropriate to minimize the impact of incidental take associated with this action. The take statement sets forth nondiscretionary terms and conditions, including reporting requirements that FEMA and any permittee who performs any portion of the action must comply with to carry out

the RPM. Incidental take from actions that meet these terms and conditions will be exempt from the ESA take prohibition.

This document also includes the results of our analysis of the action's effects on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson–Stevens Fishery Conservation and Management Act (MSA), and includes six Conservation Recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. These Conservation Recommendations are identical to the ESA Terms and Conditions. Section 305(b)(4)(B) of the MSA requires Federal agencies provide a detailed written response to NMFS within 30 days after receiving these recommendations.

If the response is inconsistent with the EFH Conservation Recommendations, FEMA must explain why the recommendations will not be followed, including the justification for any disagreements over the effects of the action and the recommendations. In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many Conservation Recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, in your statutory reply to the EFH portion of this consultation, NMFS asks that you clearly identify the number of Conservation Recommendations accepted.

If you have questions regarding this consultation, please contact Jennifer Gatzke, Northern Snake Branch Office, at (208) 883-8240, or Jennifer.gatzke@noaa.gov.

Sincerely,

Michael P. Tehan
Assistant Regional Administrator
Interior Columbia Basin Office

Enclosure

cc: Jeffrey Parr – FEMA
Mike Lopez – NPT
Christina Hacker – USFWS

Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response

Clearwater Complex Post-Fire Mitigation Project

NMFS Consultation Number: WCRO-2020-00523

Action Agency: Federal Emergency Management Agency (FEMA)

Affected Species and NMFS' Determinations:

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species?	Is Action Likely To Jeopardize the Species?	Is Action Likely to Adversely Affect Critical Habitat?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Snake River steelhead (*Oncorhynchus mykiss*)	Threatened	Yes	No	Yes	No
Snake River fall Chinook salmon (*O. tshawytscha*)	Threatened	No	NA	No	NA

Fishery Management Plan That Identifies EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	Yes

Consultation Conducted By: National Marine Fisheries Service, West Coast Region

Issued By: Michael P. Tehan
Assistant Regional Administrator

Date: March 29, 2021

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ACRONYMS

ACRONYM	DEFINITION
a.e./ac	acid equivalent per acre
BA	Biological Assessment
BPA	Bonneville Power Administration
opinion	Biological Opinion
BMP	Best Management Practice
BLM	Bureau of Land Management
CWA	Clean Water Act
CRTIFC	Columbia River Tribal Inter Fish Commission
DPS	Distinct Population Segment
DQA	Data Quality Act
EEC	Expected Environmental Concentration
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FEMA	Federal Emergency Management Agency
FESP	FEMA Endangered Species Programmatic
GEEC (or EEC); also GENEEC	Generic Estimated Environmental Concentration
GIS	Geographic Information System
GSI	Genetic Stock Identification
HAPC	Habitat of Particular Concern
HUC	Hydrologic Unit Code
ICTRT	Interior Columbia Technical Recovery Team
IDFG	Idaho Department of Fish and Game
IHRP	Idaho Habitat Restoration Programmatic
IPC	Idaho Programmatic Consultation
ITD	Idaho Transportation Department
ITIP	Idaho Transportation Improvement Program
ITS	Incidental Take Statement
ISAB	Independent Scientific Advisory Board
ICTRT	Interior Columbia Technical Recovery Team
JCRMS	Joint Columbia River Management Staff
MaSA	Major Spawning Area
MPG	Major Population Group
NLAA	Not Likely to Adversely Affect
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observed Effect Concentration
NWFSC	Northwest Fisheries Science Center
NOEC	No Observed Effect Concentration
ODFW	Oregon Department of Fish and Wildlife
OHWM	Ordinary High Water Mark
PBF	Physical or Biological Feature

PCE	Primary Constituent Element
PDC	Project Design Criteria
PFMC	Pacific Fishery Management Council
project	FEMA's Clearwater Complex Post-fire Mitigation Project
RPA	Reasonable and Prudent Alternative
RPM	Reasonable and Prudent Measure
RQ	Risk Quotient
SLOPES	Standard Local Operating Procedures for Endangered Species
Tribe	Nez Perce Tribe
VSP	Viable Salmonid Population
WDFW	Washington Department of Fish and Wildlife

1. INTRODUCTION

This Introduction section provides information relevant to the other sections of this document and is incorporated by reference into Sections 2 and 3, below.

1.1. Background

The National Marine Fisheries Service (NMFS) prepared the biological opinion (opinion) and incidental take statement (ITS) portions of this document in accordance with section 7(b) of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.), and implementing regulations at 50 CFR 402, as amended.

We also completed an essential fish habitat (EFH) consultation on the proposed action, in accordance with section 305(b)(2) of the Magnuson–Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1801 et seq.) and implementing regulations at 50 CFR 600.

We completed pre-dissemination review of this document using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (DQA) (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within 2 weeks at the NOAA Library Institutional Repository (https://repository.library.noaa.gov/welcome). A complete record of this consultation is on file at the Snake Basin office.

1.2. Consultation History

On February 20, 2020, NMFS received a request for formal consultation under Section 7 of the ESA from the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) for a vegetation management project proposed by Idaho County, Idaho. NMFS had reviewed the draft Biological Assessment (BA) in January 2020 for FEMA's Clearwater Complex Post-fire Mitigation Project (project). Through communications with FEMA during January through early March 2020, NMFS received clarifications and analyses regarding several of the proposed herbicides. Changes to the proposed action included the removal of one herbicide from consideration due to insufficient available information to conduct an analysis of toxicity (Propoxycarbazone), and the restriction of another herbicide to use outside of the floodplain (Indaziflam). On March 13, NMFS issued a letter to FEMA, initiating formal consultation. Grant funding for Idaho County's proposed project comes from FEMA's Hazard Mitigation Grant Program, which is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. In August, 2020, NMFS requested the first of two mutually agreed upon consultation extensions due to interruptions from the COVID-19 pandemic, and the due date was extended to December 2020. On December 29, in response to NMFS' request for clarifications, NMFS received revised determinations from FEMA "not likely to adversely affect" (NLAA) for Snake River fall Chinook salmon, and their designated critical habitats. This species and their critical habitat are addressed in Section 2.12, below.

1.3. Proposed Federal Action

"Action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies (50 CFR 402.02). For EFH, Federal action means any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by a Federal agency (50 CFR 600.910).

The 2015 Clearwater Complex Fire burned 68,000 acres in four counties of central Idaho. This project proposes to treat up to 1,786 of these acres in northern Idaho County, Idaho (Figure 1). Invasive weed species and annual grasses quickly replaced widespread loss of native vegetation on steep slopes. The shallow root systems of annual grasses and invasive species create conditions conducive to rapid soil loss, erosion, surface runoff, and flooding. Invasive vegetation can lead to erosion, contribute to slope instability, and increase the risk of landslides and debris flows. This project is intended to reduce these risks, as well as future wildfire hazards.

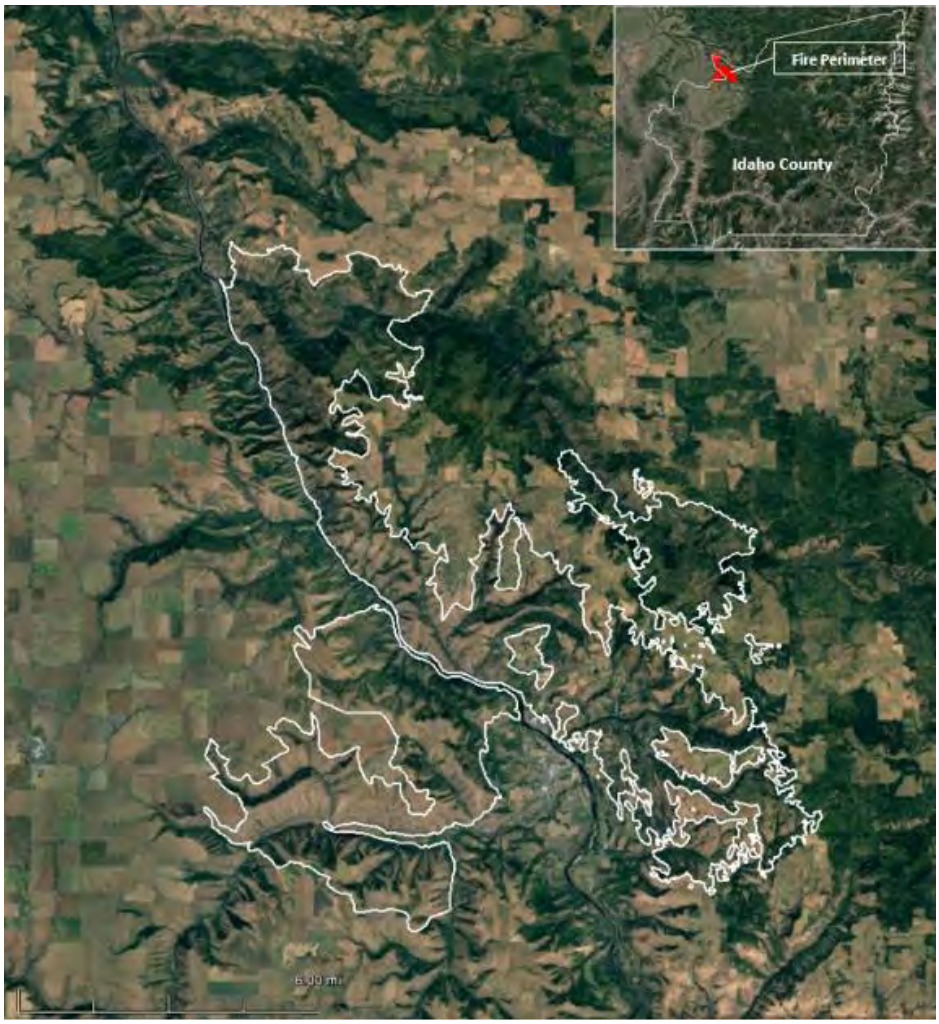

Figure 1. Clearwater Complex wildfire perimeter in northwest Idaho County, Idaho; the southern portion flanks Kamiah, Idaho, and the northern perimeter extends about 10 miles northwest of Kamiah toward the Lolo Creek Confluence.

Within the Idaho County fire perimeter, up to 1,786 non-contiguous acres will be treated by three methods. The three primary methods of vegetation control and restoration proposed include: (1) invasive weed management (herbicide treatment and use of biological insect controls); (2) riparian restoration [physical removal of Himalayan blackberry within 100 ft of either side of the stream ordinary high water mark (OHWM)]; and (3) native grass reseeding (following herbicide treatment of invasive species) (Table 1). Figure 2 identifies areas within which, smaller patches of invasive plants will be treated, with patches ranging in size from several plants to 15 acres. No in-water work is proposed. There will be no wetted crossing of streams by equipment; any crossing will be done via established roads. Idaho County anticipates that project activities, including follow-up treatments, will continue for up to 5 years following commencement of activities (spring following final authorization; 3 years of treatment plus 2 years of adaptive management and possible further treatment).

Table 1. Three methods of proposed vegetation treatments and restoration.

Vegetation Treatment Method	Description of Treatment Action
Invasive weed management	Treatment with both herbicides and biological controls (insects) within the riparian area and upland habitats
Riparian restoration	Physical removal and chipping of Himalayan blackberry, replanting with native riparian (within 100 ft of the OHWM) shrubs and trees
Native grass reseeding	Removal of litter layer and reseeding with native grasses, largely in upland areas; treated patches will be between 5–15 acres in size

The proposed action does not fall within the description of activities contained within FEMA's Endangered Species Programmatic (FESP) biological opinion with NMFS (WCR 2016-6048), referred to hereafter as the Standard Local Operating Procedures for Endangered Species (SLOPES), to fund actions under the Stafford Act Authorized or Carried Out by the Federal Emergency Management Agency in Oregon, Washington, and Idaho (NMFS 2018).

FEMA proposes best management practices (BMPs) to minimize the impacts of project activities on listed fish and their habitat (Table 2). These incorporate the proposed design criteria (PDC) for invasive and nonnative plant control as outlined in SLOPES (NMFS 2018) and the Idaho Habitat Restoration Programmatic Consultation (IHRP) for aquatic habitat restoration projects in Idaho (NMFS 2019a). The County will also follow U.S. Environmental Protection Agency (EPA) requirements for each herbicide and surfactant/adjuvant, as well as the Idaho Forest Practices Act [Idaho Administrative Code (IDAPA) 20]. The activities for FEMA's proposed funding of Idaho County are described in the February 20, 2020 BA.

Herbicide applications are proposed in the vicinity of the Clearwater River, Lolo Creek, Tom Taha Creek, Lawyer Creek, and Sevenmile Creek, as well as several non-fish-bearing ephemeral tributaries (Figure 2). Only herbicides authorized for riparian use will be applied near riparian areas and the County will implement all the Project Design Criteria (PDCs), including no application buffers, as described in SLOPES (NMFS 2018) and IHRP (NMFS 2019a; USFWS 2015) opinions. Figure 2 shows the drainages within the project boundaries. Within the identified

polygons, patches of invasive plants (approximately 1,786 acres in total) would receive the proposed vegetation treatments.

Figure 2 shows the action areas and critical habitat for Snake River Basin steelhead (purple), showing Kamiah, Idaho, in the southern portion. The Clearwater River flows southeast to northwest. Larger Creeks entering the Clearwater River from the south: on the west side of the Clearwater River are Lawyer Creek (including Sevenmile Creek Tributary), Sixmile Creek, and Fivemile Creek; on the east side of the Clearwater River are Tom Taha Creek (beside Kamiah), and Lolo Creek entering in the northwest. Maggie Creek, tributary to the Clearwater River east of Kooskia, is seen in the far southeast corner of the map.

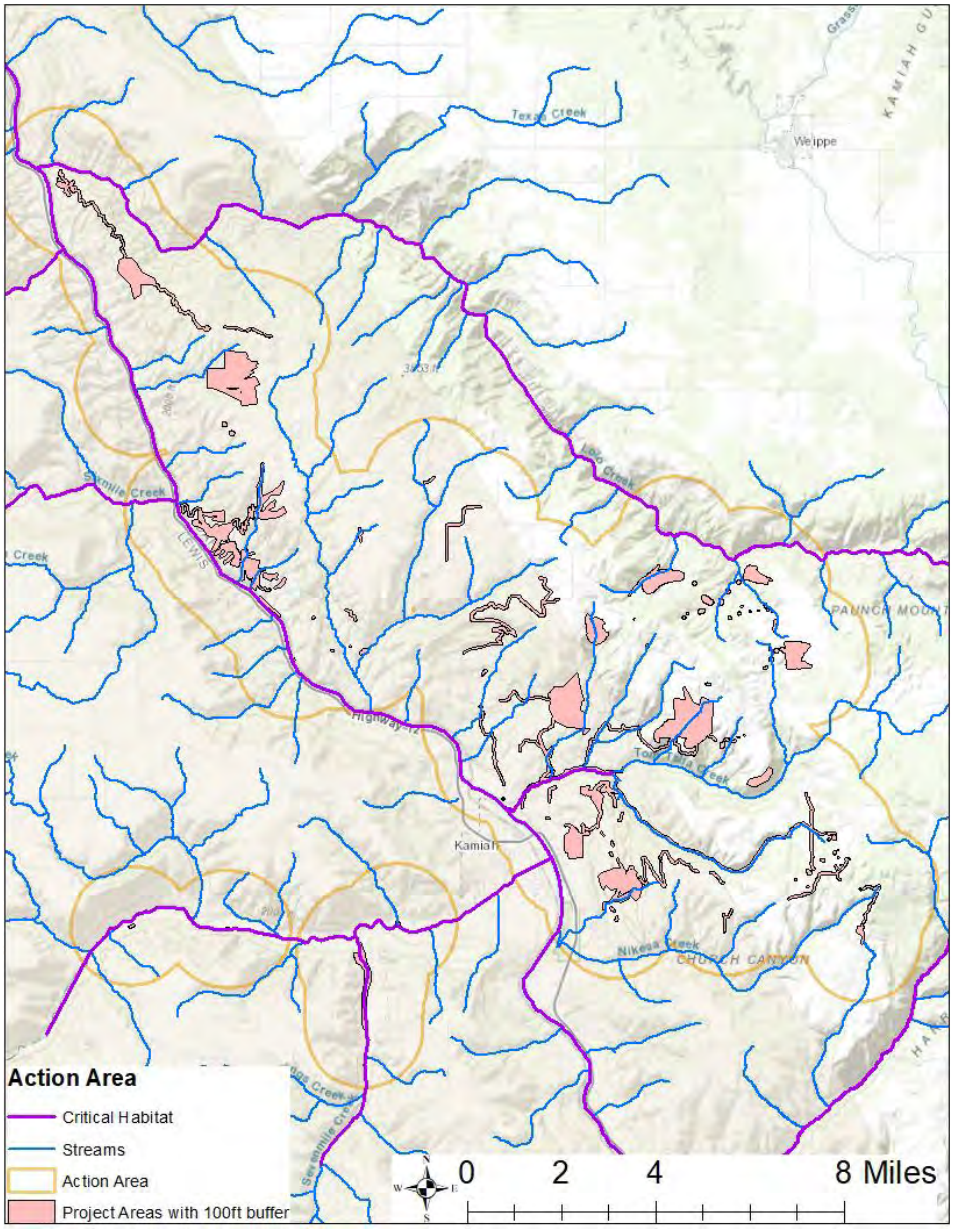

Figure 2. Clearwater River basin action areas and critical habitat for Snake River Basin steelhead (purple), showing Kamiah, Idaho, in the southern position.

Table 2. Project actions, timing, and conservation measures.

Method	Action and Timing	Best Management Practices (BMPs)

Invasive weed management	**herbicide treatment**
	Three annual herbicide treatments from spring through early fall
	
	Upland and riparian zones
	Three methods of application:
	
	- *Boom spraying applications* (ATV boom sprayer applying 2–3 ft above ground & 5–6 ft on either side of ATV, except within 100 ft of streams)
	
	- *Spot spraying* (backpack or ATV-mounted handheld sprayers no more than 4 ft above ground)
	
	- *Hand-selected applications* (wick, stem-injection, cut-stump) up to the OHWM of streams
		• Only three aquatic approved herbicides used in riparian zone (within 100 ft of the OHWM), and eight non-riparian approved herbicides.
		• Spot spray application from ATV sprayer no more than 4 ft above ground to reduce drift, and no ATV boom applications within 100 ft of streams.
		• All herbicide applications will follow label recommendations and be applied by trained applicators using equipment that is calibrated on an annual basis.
		• Herbicide will be applied at the lowest effective label rates.
		• Milestone™ (Aminopyralid) herbicide will not be used on moderate to steep slopes, in accordance with the product guidelines.
		  • County will follow U.S. Environmental Protection Agency requirements for each herbicide, as well as the Idaho Forest Practices Act [Idaho Administrative Code (IDAPA) 20.02.01].
		• Under the Idaho Forest Practices Act, employ BMPs that include measures to prevent leaks and spills (IDAPA 20.02.01.060).
		  o The applicator will prepare and carry out an herbicide safety/spill response plan to reduce likelihood of spills or misapplications.
		  o Only the quantities of herbicide needed for work in a given day will be transported to the project site. Herbicides will be mixed more than 150 ft from any natural waterbody to minimize the risk of an accidental discharge.
		  o Impervious material will be placed beneath mixing areas in such a manner as to contain any spills associated with mixing/refilling.
		  o All hauling and application equipment shall be free from leaks and operating as intended.
		• Herbicide drift and leaching will be minimized as follows:
		  o Do not spray when wind speeds over 10 miles per hour (mph).
		  o Winds of 2 mph or less are indicative of air inversions. The applicator must confirm the absence of an inversion before proceeding with the application whenever the wind speed is 2 mph or less.
		  o Do not apply when air temperatures over 80°F.
		  o Be aware of wind directions and potential for herbicides to affect aquatic habitat area downwind.
		  o Broadcast application will be from ATV only and will keep boom or spray as low as possible to reduce wind effects.
		  o Use appropriate equipment and settings (e.g., nozzle selection, adjusting pressure, drift reduction agents, etc.)
		  o Follow herbicide label directions for maximum daytime temperature permitted (some types of herbicides volatilize in hot temperatures).

Method	Action and Timing	Best Management Practices (BMPs)
		o Do not spray during periods of adverse weather conditions (snow or rain imminent, fog, etc.) Wind and other weather data will be monitored and reported for all pesticide applicator reports. o Herbicides shall not be applied when the soil is saturated or when a precipitation event likely to produce direct runoff to fish-bearing waters from a treated site (as forecasted by NOAA National Weather Service or other similar forecasting service within 48 hours following application). Soil-activated herbicides can be applied as long as label is followed. Do not conduct any applications during periods of heavy rainfall. • Spray tanks shall be washed further than 300 ft away from surface water. • Equipment will be washed prior to initial entry into project area to reduce noxious weed spread. • Herbicides proposed for use in riparian areas are consistent with those assessed and recommended in the FEMA Endangered Species Programmatic (NMFS 2018) and Idaho Habitat Restoration Programmatic (NMFS 2019a; USFWS 2015) documents. • ATV boom spray herbicide applications will not occur within 100 ft of any wetted streams or 50 ft of any dry streambeds. • Adjuvants include non-ionic surfactants, which have no ionic charge, are hydrophilic, and are generally biodegradable. • Blue Hi-light will be used with herbicides to make it easier to see where herbicide has been applied, and where or whether it has dripped, spilled, or leaked. This also helps applicators avoid spraying an area twice. • No herbicide applications will be allowed within one-quarter mile of known listed plant locations.
	Biological control agents (insects) *Nez Perce Tribe (Tribe) coordinates site- & agent-specific insect release (timing not yet known)*	• To achieve long-term weed control for the most widespread weed infestation where eradication is not feasible, Tribe collects native insects from Washington, Idaho and Montana to restore biological control plant-feeding insects (beetles, flies, & moths) lost to fire (See Table 3 for species details). • Use of host-specific biological control agents that will target specified invasive species but will have little to no effect on other plant species. • Agents proposed in this project have all been approved for redistribution and release in the United States through the U.S. Department of Agriculture's Animal and Plant Health Inspection Service-Plant Protection Quarantine.
Riparian Restoration	**Himalayan blackberry mastication** *Several years of subsequent herbicide treatments late fall year 1–2* Physical removal and chipping of blackberry thickets, with subsequent herbicide treatments	• Project activities will be limited to the identified project areas. • No in-water work is proposed. • Mastication will not include root removal or mechanical ground disturbance. • Riparian plantings will be installed to stabilize slopes, including a mix of native trees and shrubs. • Replanting, mechanical and/or hand removal of invasive species.

Method	Action and Timing	Best Management Practices (BMPs)
	Spring: chipper or handheld brushing tools w/limited herbicide application *Early fall*: (excluding drought conditions) new canes will be treated with a hand-selective or herbicide spot treatment	
	Restore native vegetation *Follow-up treatments occurring as needed after plant installation.*	• Planting of trees and shrubs in riparian areas. Blackberry will be repeatedly treated before plantings are installed.
Reseeding 5–15 acres per site	**Reseeding and vegetation management activities** *Germinating annual grasses treated with herbicide in spring and following fall. Grass seed will be applied in the fall* Convert non-native, invasive grass sites back to a more desirable vegetation cover near homes and structures *Spring*: each site prepared by creating conditions that promote seed-to-soil contact (removing litter using a disk or chain harrow implement behind ATV or tractor) *Late fall of year 1 or 2*: depending upon treatment success, riparian plantings installed to stabilize slopes, including a mix of native trees and shrubs	• Plantings will be native seedlings installed with hoedads causing negligible soil disturbance. The species mix will include the following native species: cottonwood (*Populus* spp.), rocky mountain maple (*Acer glabrum*), alder (*Alnus incana & A.viridus*), serviceberry (*Amelanchier alnifolia*), ninebark (*Physocarpus malvaceus*), mock orange (*Philadelphus lewesii*), elderberry (*Sambucus nigra*) and chokecherry (*Prunus virginiana*). • Seed mix and rates will be designed with the assistance of local Natural Resources Conservation Service land management experts. • Protective mesh or plastic guards will be installed for each plant. • At certain degraded sites that need more resource input add organic matter, add nitrogen or nitrogen fixing plants, and/or break up heavy soils. • Existing roads will be used for all ingress/egress to work areas. No new roads will be required. • Hoedads will be used to open small holes for planting seedlings. This will minimize ground disturbance significantly. • Idaho County has selected native grass seed mixes that are native and appropriate for the ecoregion to be used for most stabilization and revegetation activities. Not all species included in the Economy Mix are native species, but the Native Mix will be the preferred option.
	Long term monitoring management *5 years of three times annual inventory w/follow up treatment*	• Monitoring of treatment methods, using county post-treatment protocol (measuring percent control), will be conducted three times per year. Measurements will be via ocular estimate of the level of invasive plant control from the previous herbicide applications given in a percentage, with a goal of 90 to 100 percent control within 5 years. Long term management will include spot spraying or wick applications of herbicides in areas where non-native vegetation is outcompeting the seedlings.

FEMA and Idaho County propose to use three herbicides within riparian areas and eight herbicides in non-riparian areas to control invasive and nonnative plants (Table 3). FEMA defines riparian areas as from the OHWM outward to 100 ft.

Table 3. Physical properties and application rates for herbicides to be used in riparian areas, and in non-riparian areas.

Active Ingredient	**Persistence in Soil (days)**	**Mobile in Soil**	**Max Label Application Rate** (acid equivalent/acre = a.e./ac)
Herbicides to be used in Riparian Areas (from the OHWM to 100 ft)			
Aquatic Glyphosate	47	No	8.000 lb.
Aquatic Triclopyr	30	Yes	9.000 lb.
Metsulfuron-methyl	30 (7–28)	Yes	0.378 lb.
Herbicides to be used in Non-riparian Areas			
Aminopyralid	5–343	No	0.110 lb.
Metsulfuron-methyl	30 (7–28)	No	0.190 lb.
Dimethylamine	10	Yes, but degrades quickly	4.000 lb.
Indaziflam	150–200	Yes	0.134 lb.
Imazapic	7–150	No	0.190 lb.
Rimsulfuron	6–25	Yes	0.125 lb.
Metribuzin	14–60	Yes	1.240 lb.
Diuron	372–1,000	Yes	12.000 lb.

A conservative calculation of total stream length within the treatment area is 38,274 ft, including fish and non-fish bearing streams. Within 100 ft on each side of these streams (riparian), we calculate 7,654,800 sq. ft. (176 acres) of riparian area within the treatment area. With 1,786 acres of total treatment area, approximately 176 acres are riparian and 1,610 acres are non-riparian. Therefore, approximately 176 acres of the action area may be within 100 ft of the OHWM and thus may be treated with triclopyr, glyphosate or metsulfuron-methyl. FEMA further restricts the type of application methods and buffers that must be used within the riparian area (Table 4).

Table 4. Herbicide application buffers by stream type.

Herbicide	**No Application Buffer Width (feet)**					
	Streams and Roadside Ditches with flowing or standing water present and Wetlands			Dry Streams, Roadside Ditches, and Wetlands		
	Broadcast Spraying	Spot Spraying	Hand Selective	Broadcast Spraying	Spot Spraying	Hand Selective
Aquatic Glyphosate	100	OHWM[1]	OHWM[1]	50	None	None
Aquatic Triclopyr-TEA	**Not Allowed**	15	OHWM[1]	**Not Allowed**	None	None
Metsulfuron-methyl	100	15	Bankfull Elevation[2]	50	None	None

Source: USFWS 2015; NMFS 2018

1- Ordinary High Water Mark

2- The river elevation at a given location indicating the point beyond which the river banks would overflow and/or cause significant flood damage.

Restoring biological control agents, or insects lost to fire, works towards long-term weed control for the most widespread weed infestation where eradication is not feasible. "Agents" are defined as plant-feeding insects, primarily beetles, flies, and moths. FEMA proposes to use biological control agents specific to targeted weed species (Table 5). Insect agents will be collected and released in high priority areas. High priority areas will be determined using data collected through transects located at predetermined sites using Geographic Information System (GIS) analysis of suitable habitat and past release data. This analysis, collection, distribution, and monitoring of the agents and vegetation impacts will be conducted by the Nez Perce Tribe Biological Control Center, Lapwai, Idaho (under contract). Collections will occur in the northwest, including Idaho, Montana, and Washington.

Table 5. Biological control agents by target species.

Target Species	Control Agent	Release Quantity (number of insects per infestation)
Yellow star-thistle *(Centaurea solstitialis)*	*Eustenopus villosus OR Larinus curtis*	150–300
Spotted knapweed *(Centaurea stoebe)*	*Larinus minutus OR Larinus obtusus*	200–300
	Cyphocleonus achates	100
Rush skeletonweed *(Chondrilla juncea)*	*Bradyrrhoa gilveolella*	100
Dalmatian toadflax *(Linaria dalmatica ssp. dalmatica)*	*Mecinus janthiniformis*	150–200
	Mecinus janthinus	150–200
Yellow toadflax *(Linaria vulgaris)*	*Mecinus janthinus*	150–200
	Mecinus janthinus	150–200

We considered whether or not the proposed action would cause any other activities and determined that it would not.

2. Endangered Species Act: Biological Opinion And Incidental Take Statement

The ESA establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat upon which, they depend. As required by section 7(a)(2) of the ESA, each federal agency must ensure that its actions are not likely to jeopardize the continued existence of endangered or threatened species, or adversely modify or destroy their designated critical habitat. Per the requirements of the ESA, federal action agencies consult with NMFS and section 7(b)(3) requires that, at the conclusion of consultation, NMFS provide an opinion stating how the agency's actions would affect listed species and their critical habitats. If incidental take is reasonably certain to occur, section 7(b)(4) requires NMFS to provide an ITS that specifies the impact of any incidental taking and includes non-discretionary reasonable and prudent measures (RPMs) and terms and conditions to minimize such impacts.

FEMA determined the proposed action is not likely to adversely affect Snake River fall Chinook salmon, or their critical habitat. Our concurrence is documented in the "Not Likely to Adversely Affect" Determinations section (Section 2.12).

2.1. Analytical Approach

This opinion includes both a jeopardy analysis and an adverse modification analysis. The jeopardy analysis relies upon the regulatory definition of "jeopardize the continued existence of" a listed species, which is "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR402.02). Therefore, the jeopardy analysis considers both survival and recovery of the species.

This opinion relies on the regulatory definition of "destruction or adverse modification," which "means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species" (50 CFR 402.02).

The designation(s) of critical habitat for (species) use(s) the term primary constituent element (PCE) or essential features. The 2016 critical habitat regulations (50 CFR 424.12) replaced this term with physical or biological features (PBFs). The shift in terminology does not change the approach used in conducting a "destruction or adverse modification" analysis, which is the same regardless of whether the original designation identified PCEs, PBFs, or essential features. In this opinion, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

The 2019 regulations define effects of the action using the term "consequences" (50 CFR 402.02). As explained in the preamble to the regulations (84 FR 44977), that definition does not change the scope of our analysis and in this opinion we use the terms "effects" and "consequences" interchangeably.

We use the following approach to determine whether a proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat:

- Evaluate the rangewide status of the species and critical habitat expected to be adversely affected by the proposed action.
- Evaluate the environmental baseline of the species and critical habitat.
- Evaluate the effects of the proposed action on species and their habitat using an exposure-response approach.
- Evaluate cumulative effects.
- In the integration and synthesis, add the effects of the action and cumulative effects to the environmental baseline, and, in light of the status of the species and critical habitat, analyze whether the proposed action is likely to: (1) directly or indirectly reduce

appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species; or (2) directly or indirectly result in an alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

- If necessary, suggest a Reasonable and Prudent Alternative (RPA) to the proposed action.

2.2. Rangewide Status of the Species and Critical Habitat

This opinion examines the status of each species adversely affected by the proposed action. The status is determined by the level of extinction risk that the listed species face, based on parameters considered in documents such as recovery plans, status reviews, and listing decisions. This informs the description of the species' likelihood of both survival and recovery. The condition of critical habitat throughout the designated area is determined by the current function of the essential physical and biological features (PBFs) that help to form that conservation value.

2.2.1. Status of the Species and Critical Habitat

The status of the species and their critical habitat is summarized below (Table 6). The PBFs are essential to the conservation of the ESA-listed species because they support one or more of the species' life stages (e.g., sites with conditions that support spawning, rearing, migration and foraging) (Table 7). More information can be found in recovery plans and status reviews for these species. These documents are available on the NMFS WCR website (https://www.westcoast.fisheries.noaa.gov/).

Table 6. Listing classification and date, recovery plan reference, most recent status review, status summary, limiting factors, and critical habitat summary for species considered in this opinion.

Snake River basin steelhead	
Listing Classification: Threatened *Listing Status*: 1/5/06 71 FR 834 *Recovery Plan Reference*: NMFS 2017b *Most Recent Status Review*: NMFS 2016	*Species Status Summary* This DPS comprises 24 populations. Two populations are at high risk, 15 populations are rated as maintained, three populations are rated between high risk and maintained, two populations are at moderate risk, One population is viable, and one population is highly viable. Four out of the five Major Population Groups are not meeting the specific objectives in the draft recovery plan based on the updated status information available for this review, and the status of many individual populations remains uncertain (NMFS 2016). A great deal of uncertainty still remains regarding the relative proportion of hatchery fish in natural spawning areas near major hatchery release sites within individual populations. *Limiting factors* • Adverse effects related to the mainstem Columbia River hydropower system • Impaired tributary fish passage • Degraded freshwater habitat • Increased water temperature

Snake River basin steelhead	
	• Harvest-related effects, particularly for B-run steelhead • Predation • Genetic diversity effects from out of population hatchery releases
Designation Date: 9/02/05 *Federal Register Citation*: 70 FR 52630	*Critical Habitat Status Summary* Critical habitat encompasses 25 subbasins in Oregon, Washington, and Idaho. Habitat quality in tributary streams varies from excellent in wilderness and roadless areas, to poor in areas subject to heavy agricultural and urban development (Wissmar et al. 1994). Reduced summer stream flows, impaired water quality, and reduced habitat complexity are common problems. Migratory habitat quality in this area has been greatly affected by the development and operation of the dams and reservoirs of the Federal Columbia River Power System. A total of 12 dams have blocked and inundated habitat, impaired fish passage, altered flow and thermal regimes, and disrupted geomorphological processes in the mainstem Snake River. These impacts have affected juvenile and adult steelhead through loss of historical habitat, altered migration timing, elevated dissolved gas levels, caused juvenile fish stranding and entrapment, and increased susceptibility to predation. In addition, land use activities have affected tributary habitats, affecting water quality and diminishing habitat quality. The most widespread ecological concerns pertain to a lack of habitat quality/diversity, degraded riparian conditions, low summer flows, and poor water quality (i.e., increased water temperatures in late summer/fall) (NMFS 2016).

Table 7. Types of sites, essential physical and biological features, and the species life stage each Physical and Biological Feature (PBF) supports.

Site	Essential Physical and Biological Features	Species Life Stage
Snake River Basin Steelhead[a]		
Freshwater spawning	Water quality, water quantity, and substrate	Spawning, incubation, and larval development
Freshwater rearing	Water quality and forage[b]	Juvenile development
	Natural cover[c]	Juvenile mobility and survival
Freshwater migration	Free of artificial obstructions, water quality and quantity, and natural cover[c]	Juvenile and adult mobility and survival

[a] Additional PBFs pertaining to estuarine, nearshore, and offshore marine areas have also been described for Snake River steelhead. These PBFs will not be affected by the proposed action and have therefore not been described in this opinion.
[b] Forage includes aquatic invertebrate and fish species that support growth and maturation.
[c] Natural cover includes shade, large wood, log jams, beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

Status Information since the Last Status Review in 2016

The best scientific and commercial data available with respect to the adult abundance of Snake River Basin steelhead indicates a substantial downward trend in the abundance of natural-origin spawners at the Distinct Population Segment (DPS) level from 2014 to 2019 (NMFS 2020a). The number of natural-origin spawners in the Upper Grande Ronde Mainstem population appears to

have been at or above the minimum abundance threshold established by the Interior Columbia Technical Recovery Team (ICTRT), while the Tucannon River and Asotin Creek populations have remained below their respective thresholds. The 2019 abundance level for the Tucannon River population was lower than the most recent 5-year geomean (NMFS 2020a).

The Upper Grande Ronde, Tucannon and Asotin Major Population Groups (MPGs) are surveyed by monitoring at weirs, conducting mark-recapture studies, PIT-tag detections, or redd counts. For many other Snake River Basin steelhead populations, spawning ground surveys are not feasible due to high spring flows that would wash out weirs and low visibility that precludes redd counts. The Idaho Department of Fish and Game (IDFG), Columbia River Inter-Tribal Fish Commission (CRITFC), and the Northwest Fisheries Science Center (NWFSC) therefore collect tissue samples from adult steelhead trapped at Lower Granite Dam and assign these fish to genetic stocks by comparing them to samples taken inside the boundary of each spawning population. The genetic stock identification (GSI) groups are broader than spawning populations, but fit within the MPGs. The most recent 5-year geometric means indicate large decreases in natural origin abundance for most of the genetic stocks/MPGs, with a smaller decrease for the Upper Clearwater genetic stock group. Numbers for 2019 were much lower than the 2014 to 2018 geomean (NMFS 2020a).

Data show that Snake River Basin steelhead MPGs generally increased in abundance after the 1990s, but experienced reductions during the more recent period when hydrosystem operations, the overall availability and quality of tributary and estuary habitat, and hatchery practices were relatively constant or improving, but ocean conditions were poor (NMFS 2020a). Although these conditions (e.g., temperature and salinity, coastal food webs) appear to have been more favorable to juvenile steelhead survival in 2018, juveniles were still affected by recent warming trends. Increased numbers of sea lions in the lower Columbia River in the last 10 years could also be a contributing factor to the recent reductions.

2.2.2. Climate Change Implications for ESA-listed Species and their Critical Habitat

Several studies have revealed that climate change has the potential to affect ecosystems in nearly all tributaries throughout the Snake River (Battin et al. 2007; ISAB 2007). Likely changes in temperature, precipitation, wind patterns, and sea-level height have implications for survival of Snake River salmonids in their freshwater and marine habitats. In the Pacific Northwest, most models project warmer air temperatures, increases in winter precipitation, and decreases in summer precipitation. Warmer air temperatures will lead to more precipitation falling as rain rather than snow. As the snow pack diminishes, seasonal hydrology will shift to more frequent and severe early large storms, changing streamflow timing, which may limit salmon survival (Mantua et al. 2009). In general, these changes in air temperatures, river temperatures, and river flows are expected to cause changes in salmon and steelhead distribution, behavior, growth, and survival, although the magnitude of these changes remains unclear. One of the largest drivers of climate-induced decline in salmon populations is projected to be the impact of increased winter peak flows, which scour the streambed and destroy salmon eggs (Battin et al. 2007), is climate change alters the structure and distribution of rainfall, snowpack, and glaciations, each factor will in turn alter riverine hydrographs. Climate and hydrology models project significant reductions in both total snow pack and low-elevation snow pack in the Pacific Northwest over the next 50

years (Mote and Salathé 2009), changes that will shrink the extent of the snowmelt-dominated habitat available to salmon. Such changes may restrict our ability to conserve diverse salmon life histories.

Higher water temperatures and lower spawning flows, together with increased magnitude of winter peak flows are all likely to increase mortality of salmon and steelhead. The Independent Scientific Advisory Board (ISAB) (2007) found that higher ambient air temperatures will likely cause water temperatures to rise. Salmon and steelhead require cold water for spawning and incubation. As climate change progresses and stream temperatures warm, thermal refugia will be essential to persistence of many salmonid populations. Thermal refugia are important for providing salmon and steelhead with patches of suitable habitat while allowing them to undertake migrations through or to make foraging forays into areas with greater than optimal temperatures. To avoid waters above summer maximum temperatures, juvenile rearing may be increasingly found only in the confluence of colder tributaries or other areas of cold-water refugia (Mantua et al. 2009).

Climate change is expected to make recovery targets for salmon and steelhead populations more difficult to achieve because of changes to critical habitat (generally increasing temperature and peak flows, and decreasing base flows). Although changes will not be spatially homogenous, effects of climate change are expected to decrease the capacity of critical habitat to support successful spawning, rearing, and migration. Habitat action can address the adverse impacts of climate change on salmon. Examples include protecting and restoring riparian vegetation to ameliorate stream temperature increases (Battin et al. 2007; ISAB 2007).

The effects of the proposed action will occur over approximately 5 to 8 years. Climate change over the course of approximately 10 years will not likely cause any measurable change in stream conditions for salmon and steelhead. The beneficial effects of the project will be long term and concurrent with the time period when appreciable climate change effects (e.g., on streamflow and water temperature) are expected to occur. The proposed action, by increasing native vegetation (to secure soils), and adding riparian plantings of native species (to enhance stream shading and wood recruitment), will likely decrease wildfire risk and improve riparian habitat in some reaches and may incrementally improve the resilience of some stream reaches to the effects of climate change.

2.3. Action Area

"Action area" means all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area includes 1,786 of treated acres within a larger wildfire burn zone, surrounding Kamiah, Idaho, and running north alongside and upslope from the Clearwater River and tributaries (Figure 2). The action area includes the places within those drainages where the treatments will occur as well as the sections of those streams downstream to their mouths that may experience changes in water quality from the action.

Herbicide treatment is proposed for the action area along the Clearwater River and tributaries. On the Clearwater River, rapid dilution of project-associated inputs of chemicals is expected, and

effects are expected to occur, at most, 100 ft below the downstream-most treatment site (see Figure 2, above). The action area is used by all freshwater life history stages of Snake River Basin steelhead.

2.4. Environmental Baseline

The "environmental baseline" refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed federal projects in the action area that have already undergone formal or early section 7 consultations, and the impact of State or private actions, which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

The treatment area is located in the Lower Clearwater Canyons of Idaho in the Northern Rockies Ecoregion (McGrath, et al 2002). Project area elevations range from approximately 1,200 to 3,200 ft. The climate is characterized by hot and dry summers, with precipitation primarily occurring during winter months. Average annual precipitation is approximately 24 inches.[1] Land uses within the action area include rural residential, and light to moderate grazing.

Understory vegetation within the action area is heavily composed of non-native, invasive species such as Himalayan blackberry (*Rubus armeniacus*) (often along the riparian corridors), meadow knapweed (*Centaurea jacea*), rush skeletonweed (*Chondrilla juncea*), common tansy (*Tanacetum vulgare*), yellow toadflax/butter and eggs (*Linaria vulgaris*), Scotch broom (*Cytisus scoparius*) and yellow star-thistle (*Centaurea solstitialis*). When invasive weeds replace native vegetation, they can increase rates of soil erosion and water yield, and reduce slope stability. These effects occur through reductions in ground cover, which can occur through increased frequency of wildfires (Brooks et al. 2004; Fusco et al. 2009), and reductions in root strength when perennial grasses are replaced with annual species such as spotted knapweed (Lacey et al. 1989) or cheat grass. Native riparian understory vegetation includes blue elderberry (*Sambucus nigra*), mock orange (*Philadelphus lewesii*), serviceberry (*Amelanchier alnifolia*), cottonwood (*Populus* spp.), rocky mountain maple (*Acer glabrum*), alder (*Alnus incana* and *A.viridus*), ninebark (*Physocarpus malvaceus*), and chokecherry (*Prunus virginiana*). These native species will be replanted during this proposed action.

Within the Clearwater River subbasin, the action area includes portions of the Clearwater River, a tributary of the Snake River and a large system averaging 1,800 cubic ft per second downstream of the action area (USGS 2019). Most of the riparian vegetation restoration sites are located along ephemeral stream channels, but there are treatment areas within 100 ft of the Clearwater River, Lolo Creek, Lawyer Creek, Sevenmile Creek, Sixmile Creek, and Tom Taha Creek. All of these streams have documented Snake River Basin steelhead, and both the Clearwater River and Lolo Creek have documented Chinook salmon (IDFG 2019a; StreamNet

[1] https://www.usclimatedata.com/climate/kamiah/idaho/united-states/usid0424, accessed 3/16/2021

2019; regarding Chinook salmon species, refer to the NLAA and EFH portions of this document, Sections 2.12 and 3, below). None of the smaller, ephemeral tributaries in the action area are of sufficient size and gradient to provide suitable fish habitat and are not documented as fish-bearing streams (IDFG 2019b).

Critical habitat for Snake River Basin steelhead is designated for segments of the Clearwater River, Lolo Creek, Tom Taha Creek, Lawyer Creek, Fivemile Creek, Sixmile Creek, and Sevenmile Creek (50 CFR 226). Figure 2 shows Snake River steelhead distribution and critical habitat in the action area. These fish belong to the Clearwater River MPG, which includes five extant populations; Lolo Creek, South Fork Clearwater, lower Clearwater mainstem, Lochsa River, and the Selway River (Figure 3). All of these populations migrate through the action area. Lolo Creek and lower Clearwater mainstem populations spawn, incubate, and rear in the action area.

We note that FEMA recently consulted with NMFS on distinctly funded, but very similar project to the proposed action, the Idaho County Tepee Springs Vegetation Project (WCRO-2020-00522, issued 2/19/2021). The Tepee Springs project action, however, is in the Salmon River drainage and is entirely outside of the action area for the proposed project. The effects of these two FEMA projects therefore will not be additive within the action area of this proposed action (Clearwater Complex).

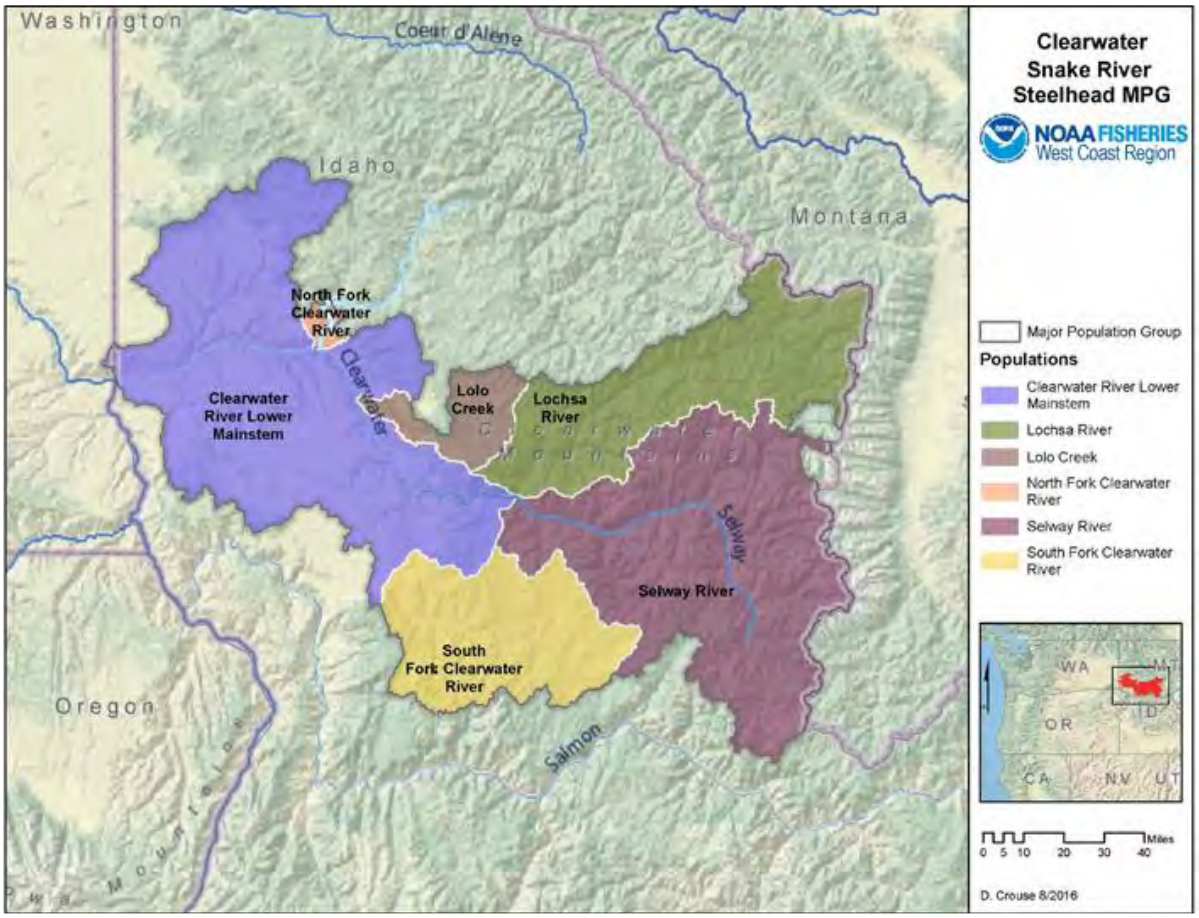

Figure 3. Clearwater River Snake River Basin steelhead Major Population Group.

In the Clearwater River MPG, data on natural-origin spawner abundance indicated in the most recent 2016 status review that the Lower Clearwater, Lochsa River, and Selway River populations had likely improved in overall abundance relative to prior reviews, but they were still considered maintained (NMFS 2016). The South Fork Clearwater and Lolo Creek populations were considered high risk, but with uncertainty noted for those two assessments. The uncertainties for the assessment of "high risk" with those two populations were due to limited data and associated uncertainties in the estimates of productivity and hatchery spawner composition (NWFSC 2015). Since 2015, DPS and population-specific data affirm that the South Fork Clearwater and Lolo Creek populations should be considered high risk (NMFS 2020a).

Data show that Snake River Basin steelhead MPGs generally increased in abundance after the 1990s, but then experienced reductions during the most recent period when hydrosystem operations, the overall availability and quality of tributary and estuary habitat, and hatchery practices were relatively constant or improving, but ocean conditions were poor (NMFS 2020a). Although these conditions (e.g., temperature and salinity, coastal food webs) appear to have been more favorable to juvenile steelhead survival in 2018, juveniles were still affected by recent warming trends. Increased numbers of sea lions in the Lower Columbia River in the last 10 years could also be a contributing factor to the recent reductions.

Limiting factors for the Clearwater MPG include tributary and estuarine habitat degradation, hydropower impacts, harvest pressure, impacts from hatchery production, and predation (Table 6). Federal hydropower projects in the lower Snake and Columbia River mainstem affect juvenile and adult Snake River Basin steelhead, which must pass up to eight mainstem dams. The fish are also affected by the management of water released from the Hells Canyon Complex on the middle Snake River, Dworshak Dam on the North Fork Clearwater River, and other projects, including upper basin storage reservoirs in the United States and Canada. Limiting factors include those related to dam passage mortality, loss of habitat due to conversion of riverine habitat to slower moving reservoirs with modified shorelines, and changes in temperature regimes due to flow modifications in all mainstem reaches. Additional limiting factors include exposure to toxic contaminants, and the effects of climate change and ocean cycles.

The ICTRT developed different viability curves corresponding to a range of extinction risks over a 100-year period: less than 1 percent (very low) risk, 1–5 percent (low) risk, 6–25 percent (moderate) risk, and greater than 25 percent (high) risk. A population with less than 5 percent risk of extinction in 100 years is considered to be viable, and a population with a less than 1 percent risk of extinction during the period to be highly viable. A viable salmonid population (VSP), is an independent population that has a negligible risk of extinction due to threats from demographic variation (random or directional), local environmental variation, and genetic diversity change (random or directional) over a 100-year time frame (NMFS 2017b). The recovery plan aims to achieve at least viable status (low risk) for the Lower Mainstem Clearwater, Selway, and Lochsa Rivers populations (targeting one population for high viability/very low risk), and maintained status (moderate risk) for South Fork Clearwater River and Lolo Creek populations (Table 8). Maintained status indicates a population status in which, the population does not meet the criteria for a viable population but does support ecological functions and preserve options for Evolutionarily Significant Units (ESU) recovery. All of the extant Clearwater MPG populations remain at maintained/moderate or high-risk status for extinction.

Table 8. Population status as of the most recent status review (NWFSC 2015; NMFS 2016) and recovery plan target status for Science Review Board steelhead populations (NMFS 2017b). The "high risk?" rating involves substantial uncertainties in those estimates.

Clearwater Major Population Group			
Population	Population Status (as of 2016 status review)	Recovery Plan Proposed Target Status	Interior Columbia Technical Recovery Team (ICTRT) Viability Criteria Recommendations Regarding Target Status
Lower Main Clearwater River	maintained	viable or highly viable	The basic ICTRT criteria would require at least three populations to be viable and one of these highly viable; the rest should meet criteria for maintained. The Lower Mainstem Clearwater population, as the only extant large or very large population, should be viable or highly viable. At
South Fork Clearwater River	high risk?	viable or maintained	

Clearwater Major Population Group			
Population	Population Status (as of 2016 status review)	Recovery Plan Proposed Target Status	Interior Columbia Technical Recovery Team (ICTRT) Viability Criteria Recommendations Regarding Target Status
North Fork Clearwater River	extirpated	not part of recovery scenario	least two of the three intermediate-sized populations should be viable or highly viable. At least one A-Index and one B-Index population should be viable.
Lolo Creek	high risk?	viable or highly viable	
Selway River	maintained	viable or maintained	
Lochsa River	maintained	viable or highly viable	

NMFS 2020a

2.5. Effects of the Action

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see 50 CFR 402.17). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b).

While the proposed action will gain longer-term habitat improvements by replacing non-native vegetation with native vegetation, the activities may have some minor, short-term effects such as increased stream turbidity, riparian disturbance, and small amounts of herbicide in stream. NMFS worked closely with FEMA to incorporate minimization measures into the proposed action to reduce these short-term effects. However, some short-term adverse effects are reasonably certain to occur, and are associated with the chemical effects of the proposed vegetation treatments.

2.5.1. Effects to Species

2.5.1.1. Species Exposure

The proposed action would take place from early spring through fall each year, up to 5 years. Spawning adults, incubating eggs, and juvenile life stages will be present in the action area during all or part of the project work period. Snake River Basin steelhead spawn in tributaries from March to May. Snake River Basin steelhead fry emerge in early June, and since juveniles spend at least 1 year rearing in freshwater, they are likely to be present during project activities. All populations of the steelhead Clearwater River MPG will potentially be exposed to project effects during migration, spawning, incubation, emergence and rearing (Table 9).

Table 9. Species and life stage potentially at risk during treatment phases.

Species	Life stage	Presence/Timing
Snake River Basin steelhead (Clearwater Major Population Group)	adult migration and overwintering	September–February[1] (overwinter in pools)
	Spawning	March–May (in tributaries)
	fry emergence, rearing	Early June to July, rearing year-round 1–3years
	Juveniles emigrate	March–mid-June

[1] Joint Columbia River Management Staff (JCRMS). 2021.

2.5.1.2. Potential Pathways for Project Effects

The effects of the proposed action on salmon and steelhead are expected to occur from effects of the vegetation treatments (herbicide application, mechanical treatment and reseeding/replanting) on fish habitat and fish through alterations of: (1) shade and water temperature; (2) sediment delivery and associated water quality and stream substrate effects; (3) large wood recruitment; (4) water quality/toxicity; and (5) prey base/forage for the salmon and steelhead.

Shade and Water Temperature

Through the proposed mechanical and chemical treatments, the action will remove non-native shrub and herbaceous plant species and thereby temporarily reduce riparian cover and stream shade. The existing non-native shrubs and plants in some locations do provide streamside shade and cover for fish. However, significant shade loss is likely to be rare, occurring primarily from treating and removing streamside knotweed and blackberry monocultures. Most invasive plants are understory species that do not provide the majority of streamside shade and furthermore will be replaced by planted native vegetation. The loss of shade would persist until native vegetation reaches and surpasses the height of the invasive plants that were removed. Shade recovery may take one to several years, depending on the success of invasive plant treatment, stream size and location, topography, growing conditions for replacement plants, and the density and height of the invasive plants that were removed. The short-term shade reduction that is likely to occur due to removal of riparian weeds could slightly affect stream temperatures or dissolved oxygen levels, which could cause short-term stress to fish adults, juveniles and eggs.

Sediment Delivery

During the spring, each site will be prepared by creating conditions that promote seed-to-soil contact. Proposed ground disturbing activities include mechanical preparation through (1) masticating (grinding/chipping) Himalayan blackberry thickets without root removal and leaving material as ground cover, (2) using disk or chain harrows behind an ATV/tractor to remove the litter layer, and (3) employing ATVs to apply herbicides. Ground disturbance near streams may result in small amounts of sediment delivery, especially during rainstorms, before native plants become established to help hold soils. Stream crossings by equipment will occur at

established roads—there will be no 'wetted' stream crossings. Project BMPs include equipment using existing culvert crossings and bridges (not fording the streams) and soil stabilization/sediment interception materials and techniques to minimize sediment delivery to streams.

In addition to mechanized ground disturbance, hand pulling of emergent vegetation along stream edges is likely to result in localized turbidity and mobilization of fine sediments. Treatment of knotweed and other streamside invasive species is likely to result in short-term increases in fine sediment deposition or turbidity when treatment of locally extensive streamside monocultures occurs.

The project is expected to increase sediment delivery to streams and cause turbidity in those ways mentioned above; however, the turbidity and sediment deposition effects in stream are expected to be small, temporary, and scattered within stream reaches. The short-term sediment increase from soil disturbance is unlikely to be large enough to appreciably change the stream substrate characteristics. For instance, soil disturbance by disking and harrowing will occur in patches, whereby surrounding vegetation left intact will act as a filter. New vegetative cover is expected to establish by the end of the first growing season. After the first few growing seasons, sediment delivery from hillslopes is likely to be reduced from present conditions, as a result of the proposed plantings as well as natural recolonizing of native perennial grasses and other native vegetation. Salmon and steelhead may be displaced by the turbidity and vegetation removal activities and may experience small changes in stream substrates in areas they occupy; however, the fish are unlikely to be harmed by these small changes in their habitat and will likely compensate by moving to adjacent stream reaches.

Large Wood Recruitment

The project includes planting native trees in riparian areas that are presently dominated by non-native shrubs including Himalayan blackberry and Japanese knotweed. Over a period of about 30 to 70 years, the native trees will mature and some of these trees will die and be recruited to the stream. In that way the project may provide some long-term beneficial effects at the scale of the sites/stream reaches where the native trees are planted. The increase in large wood on these riparian slopes and instream can provide soil holding, instream structure, pool formation, and substrate gravel retention. These features would increase the complexity of habitat for juvenile steelhead, and, at the site scale, help improve their growth and survival.

Water Quality/Toxicity

FEMA proposes to treat invasive plants adjacent to streams and rivers to improve the ecological function of habitat where ESA-listed species live. The effects of managing vegetation using physical controls (manual and mechanical removal) are subject to special conservation measures that limit the amount and extent of disturbance, and minimize the disturbance to fish and water quality (see *Sediment Delivery* above).

The effect of herbicide use on fish and habitat depends on the fate and transport of that herbicide and the toxicity of the herbicide. Stream margins often provide shallow, low flow-velocity

conditions, have a slow mixing rate with mainstem waters, and are the site at which runoff and subsurface flows are introduced. Juvenile salmon and steelhead, particularly recently emerged fry, often use low-velocity areas along stream margins. For example, wild Chinook salmon rear near stream margins until they reach about 60 millimeters in length. As juveniles grow, they migrate away from stream margins and occupy habitats with progressively higher flow velocities. Nonetheless, stream margins continue to be used by larger salmon and steelhead for a variety of reasons, including nocturnal resting, summer and winter thermal refuge, predator avoidance, and flow refuge. NMFS identified three scenarios for the analysis of herbicide application effects: (1) runoff from riparian application; (2) accidental application within perennial stream channels (e.g., via drift); and (3) runoff from intermittent channels and ditches. Each of these could occur via surface water or groundwater.

Spray and vapor drift are important pathways for herbicide entry into aquatic habitats. Several factors influence herbicide drift, including spray droplet size, wind and air stability, humidity and temperature, physical properties of herbicides and their formulations, and method of application. For example, the amount of herbicide lost from the target area and the distance the herbicide moves both increase as wind velocity increases. Under inversion conditions, when cool air is near the surface under a layer of warm air, little vertical mixing of air occurs. Spray drift is most severe under these conditions, since small spray droplets will fall slowly and move to adjoining areas, even with very little wind. Low relative humidity and high temperatures cause more rapid evaporation of spray droplets between sprayer and target. This reduces droplet size, resulting in increased potential for spray drift. Vapor drift can occur when herbicide volatilizes. The formulation and volatility of the compound will determine its vapor drift potential. The potential for vapor drift is greatest under high air temperatures and low humidity and with ester formulations. For example, ester formulations of triclopyr are very susceptible to vapor drift, particularly at temperatures above 80°F (DiTomaso et al. 2006). Triclopyr TEA, as well as other herbicides and pesticides, are detected frequently in freshwater habitats within the action area (NMFS 2011a).

Several conservation measures reduce the risk of herbicide drift. Ground equipment reduces the risk of drift, and hand equipment nearly eliminates it. Relatively calm conditions, preferably when humidity is high and temperatures are relatively low, and low sprayer nozzle height will reduce the distance that herbicide droplets will fall before reaching weeds or soil. Less distance means less travel time and less drift. Wind velocity is often greater as height above ground increases, so droplets from nozzles close to the ground would be exposed to lower wind speeds. The higher that an application is made above the ground, the more likely it is to be carried by faster wind speeds, resulting in long distance drift. Finally, the greater the distance the application is from the stream, the less likely it is for drift to reach the channel. FEMA proposed action requires the use of conservation measures that will reduce the likelihood of drift as a pathway for herbicides to reach stream channels.

Surface water contamination with herbicides can occur when herbicides are applied intentionally or accidentally into ditches, irrigation channels or other bodies of water, or when soil-applied herbicides are carried away in runoff to surface waters. Direct application into water sources is generally used for control of aquatic species, and is not a component of the proposed action. Accidental contamination of surface waters can occur when irrigation ditches are sprayed with

herbicides or when no-application buffer zones around water sources are not wide enough. In these situations, use of hand application methods will greatly reduce the risk of surface water contamination. The minimum buffer BPA has proposed for boom application methods is 100 ft, and only hand application is allowed within 100 ft of a stream channel. These restrictions limit the opportunity for surface water contamination.

The contribution from runoff will vary depending on site and application variables, although the highest pollutant concentrations generally occur early in the storm runoff period when the greatest amount of herbicide is available for dissolution (Stenstrom and Kayhanian 2005; Wood 2001). Lower exposures are likely when herbicide is applied to smaller areas, when intermittent stream channels or ditches are not completely treated, or when rainfall occurs more than 24 hours after application. Under the proposed action, some formulas of herbicide can be applied up to the water's edge (with hand application techniques). Any juvenile fish in the margins of those streams are more likely to be exposed to herbicides as a result of overspray (highly unlikely to occur with hand application only within the riparian zone), inundation of treatment sites, percolation, surface runoff, or a combination of these factors. Overspray and inundation will be minimized through the use of restrictions on application method.

Groundwater contamination is another important pathway. Most herbicide groundwater contamination is caused by "point sources," such as spills or leaks at storage and handling facilities, improperly discarded containers, and rinses of equipment in loading and handling areas, often into adjacent drainage ditches (DiTomaso 1997). Point sources are discrete, identifiable locations that discharge relatively high local concentrations. In soil and water, herbicides persist or are decomposed by sunlight, microorganisms, hydrolysis, and other factors. Proposed conservation measures minimize these concerns by ensuing proper calibration, mixing, and cleaning of equipment. Non-point source groundwater contamination of herbicides can occur when a mobile herbicide is applied in areas with a shallow water table. Proposed conservation measures minimize this danger by restricting the formulas used and staging areas, and the time, place and manner of their application to minimize offsite movement.

Herbicide toxicity. Herbicides included in this proposed action were selected due to their low to moderate aquatic toxicity to listed salmonids compared to those with higher risk. The risk of adverse effects from the toxicity of herbicides and other compounds present in formulations to listed aquatic species is mitigated by reducing stream delivery potential to waterbodies by restricting application methods. Near wetted stream channels, FEMA proposes to allow three aquatic labeled herbicides applied using only hand application methods (wicking/wiping/ injection). FEMA will allow other herbicide formulations and other application methods (boom sprayer) when used at least 100 ft from a stream channel. The associated application methods were selected for their low risk of contaminating soils and subsequently introducing herbicides to streams. However, direct and indirect exposure and toxicity risks are inherent in some application scenarios.

Generally, herbicide active ingredients have been tested on only a limited number of species and mostly under laboratory conditions. While laboratory experiments can be used to determine acute toxicity and effects to reproduction, cancer rates, birth defect rates, and other effects to fish and wildlife, laboratory experiments do not typically account for species in their natural

environments. This leads to uncertainty in risk assessment analyses. Environmental stressors (e.g., high temperatures) and other chemicals that co-occur with the applied herbicide (known as environmental mixtures) can increase the adverse effects of contaminants, but the degree, to which these effects are likely to occur for various herbicides is largely unknown.

The effects of the herbicide applications to various representative groups of species have been evaluated for each proposed herbicide. Rainbow trout are the resident form and same taxa as steelhead, and are frequently used in standard toxicity tests and serve as a good surrogate for other ESA-listed salmonids. The effects of herbicide applications using spot spray, hand/select, and broadcast (boom) spray methods were evaluated under several exposure scenarios: (1) runoff from riparian (above the OHWM) application along streams, lakes and ponds; (2) runoff from treated ditches and dry intermittent streams; and (3) application within perennial streams (dry areas within channel and emergent plants). The potential for herbicide movement from broadcast drift was also evaluated.

Although the conservation measures will minimize the risk of drift and contamination of surface and groundwater, any herbicides reaching surface waters will likely result in mortality to fish during incubation, or lead to altered development of embryos. Stehr et al. (2009) found that the low levels of herbicide delivered to surface waters are unlikely to be toxic to the embryos of ESA-listed salmon, steelhead and trout. However, mortality or sub-lethal effects such as reduced growth and development, decreased predator avoidance, or modified behavior may occur. Herbicides are likely to also adversely affect the food base for listed salmonids and other fish; forage species include terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.

NMFS reviewed the aquatic toxicity of all herbicides proposed for use in the proposed action using analyses from the biological opinion NMFS prepared for Bonneville Power Administration's Habitat Improvement Program (NMFS 2020b, refer to WCRO-2020-00102) and other sources. Adverse effect threshold values for each species group were defined (where information was available) as either 1/20th of the LC50 value for listed salmonids, or the lowest acute or chronic "no observable effect concentration," whichever was lower. A risk quotient (RQ) was calculated from a no adverse effect level divided by an Expected Environmental Concentration (EEC) (Table 10). The EEC is derived from a direct application of the active ingredient to a 1-acre pond that is 1 foot deep, using the maximum application rate proposed for use. BPA also developed generic estimated environmental concentrations (GEEC) for all herbicides using the EPA's GENEEC (GENeric Estimated Environmental Concentration) modeling software; GENEEC simulates an application of herbicide near a water body. The GEEC (or EEC) is an extreme level that is unlikely to occur during implementation (because of conservation measures) and should be viewed as a worst-case situation. If a RQ is greater than 10, then the risk to an individual fish is low. If the RQ is less than one, then the risk to an individual fish is high.

Table 10. A summary of the risk quotient and level of concern calculated for the herbicides proposed for this action. These data are from NMFS 2020b or EPA 2001. Level of Concern was derived based on the Risk Quotient (when available) or the narrative assessment below.

Active Ingredient	Risk Quotient	Level of Concern
Aquatic Glyphosate	214	Low
Aquatic Triclopyr	75.5	Low
Metsulfuron-methyl	163	Low
Aminopyralid	417	Low
Metsulfuron-methyl	163	Low
Dimethylamine	34.6	Low
Indaziflam	no data	High
Imazapic	714	Low
Rimsulfuron	no data	Low
Metribuzin	no data	Moderate
Diuron	1.3–9 (EPA 2001)	Moderate

Most toxicity experiments only evaluate mortality to the tested population, whereas NMFS is interested in whether an individual ESA-listed fish's fitness is compromised. As well, data on toxicity to wild fish under natural conditions are limited and most studies are conducted on lab specimens. Adverse effects could be observed in stressed populations of fish, and it is less likely that effects will be noted in otherwise healthy populations of fish. Studies of chronic exposure and/or long-term evaluation of the fish (including egg-and-fry stages) are sometimes conducted. Risk characterizations for both terrestrial and aquatic species are limited by the relatively few animal and plant species on which data are available, compared to the large number of species that could potentially be exposed. This limitation and consequent uncertainty is common to most if not all ecological risk assessments. Additionally, in laboratory studies, test animals are exposed to only a single chemical. In the environment, humans and wildlife may be exposed to multiple toxicants simultaneously, which can lead to additive or synergistic effects. These factors contribute to uncertainty in our understanding of the effects of herbicide use on ESA-listed fish. Below is a description of the known toxicity of herbicides proposed for use.

Glyphosate. Glyphosate is a nonselective herbicide used to control grasses and herbaceous plants; it is the most commonly used herbicide in the world. It is moderately persistent in soil, with an estimated average half-life of 47 days (range 1–174 days). Glyphosate is relatively non-toxic for fish; however, sub-lethal adverse effects to fish from glyphosate can occur (NMFS 2019b). There is a low potential for the compound to build up in the tissues of aquatic invertebrates. In resident freshwater fish, toxicity appears to increase with increasing temperature and pH. The U.S. Forest Service and Bureau of Land Management (BLM) looked at the exposure of ESA-listed fish from the treatment of emergent knotweed with glyphosate. They looked at three pathways: overspray, foliar wash-off, and leakage from stem injections. They found that potential for exposure varied with application rates, and that there was a potential for adverse effects at the higher application rate with all three application methods. They concluded, however, that adverse effects were not likely to occur with the stem injection methods because only a few milliliters of glyphosate would be injected per stem, and it is unlikely that enough

stems would be broken to result in instream concentrations exceeding the salmonid effects threshold.

Triclopyr. The environmental fate of triclopyr has been studied extensively. FEMA proposes to use the aquatic or TEA formulation of triclopyr; this formulation of triclopyr is not highly mobile, although soil adsorption decreases with decreasing organic matter and increasing pH (Pusino et al. 1994). Similarly, the toxicity of triclopyr to fish and their prey is relatively well characterized. BPA calculated at RQ of 75.5, indicating a low level of concern. Wan et al. (1987) present 96-hour LC 50 values for Garlon 3A (triclopyr TEA) for Chinook salmon, coho salmon, chum salmon, sockeye salmon and rainbow trout based on bioassays. These data showed relatively low toxicity for all species compared to different formulations. With the exception of aquatic plants, substantial risks to non-target species (including humans) associated with the contamination of surface water are low, relative to risks associated with contaminated vegetation. Stehr et al. (2009) observed no developmental effects at nominal concentrations of 10 mg/L or less for purified triclopyr alone or for the TEA formulations Garlon 3A and Renovate. NMFS's (2011a) no-jeopardy consultation on the EPA's registration of triclopyr only considered the BEE formulation, not the TEA formulation proposed for use by FEMA.

Metsulfuron-methyl. Metsulfuron methyl is used to control brush and certain woody plants, broadleaf weeds and annual grasses. It is active in soil and is absorbed from the soil by plants. Metsulfuron dissolves easily in water, and has the potential to contaminate groundwater at very low concentrations. It has a half-life in water, when exposed to sunlight, of 1 to 8 days. Metsulfuron does not bio-accumulate in fish, and the EPA considers it to be practically nontoxic to fish. Metsulfuron can cause sub-lethal effects to early life stages of rainbow trout. Aquatic invertebrates do not appear to be sensitive to this herbicide. BPA calculated the RQ to be 163 (low level of concern) (NMFS 2020b). At proposed application rates and conservation measures, it is unlikely to cause sub-lethal effects in any exposed salmonids.

Aminopyralid. This is a relatively new selective herbicide first registered for use in 2005. It is used to control broadleaf weeds, and is from the same family of herbicides as clopyralid, picloram and triclopyr. Aminopyralid shows moderate mobility through the soil, but it does not bio-concentrate in the food web. The primary means of exposure for fish and aquatic invertebrates is through direct contact with contaminated surface waters. Acute toxicity tests show aminopyralid to be practically non-toxic to fish, with aquatic invertebrates showing more sensitivity. Thus, if aminopyralid does end up in surface waters, the most likely pathway of effect for steelhead is through loss of prey.

Dimethylamine. This herbicide is also known as 2,4-D amine; 2,4-D amine acts as a growth-regulating hormone on broad-leaf plants, being absorbed by leaves, stems and roots, and accumulating in a plant's growing tips. The EPA analyzed the risk of 2,4-D to ESA-listed fish species in the Pacific Northwest (Borges et al. 2004). They concluded that the use of this herbicide (when used according to its label, in the amine form) posed no direct risk to listed salmon and steelhead. They found, however, there could be an indirect risk when used for aquatic weed control (not a use approved by FEMA) because of a loss of cover in rearing habitat. Various lab studies looked at the response of various life stages of fish, including Chinook salmon. While these studies noted various LC50 concentrations, they noted that most of the

potential sub-lethal effects from exposure to 2,4-D amine have not been investigated with respect to endpoints that are considered important to the overall fish of salmonids. Exposure to 2,4-D has been reported to cause changes in schooling behavior, red blood cells, reduced growth, impaired ability to capture prey, and physiological stress (Gomez 1998; Cox 1999). Sub-lethal effects include a reduction in the ability of rainbow trout to capture food (Cox 1999); 2,4-D can combine with other pesticides and have a synergistic effect, resulting in increased toxicity. NMFS (2011b) consulted with the EPA on the effects of 2,4-D on listed Pacific salmonids. NMFS concluded that ESP's registration of 2,4-D will jeopardize all species considered in the consultation, and will adversely modify critical habitat for salmon and steelhead. As an RPA, NMFS (2011a) restricted the use of 2,4-D during windy conditions (to minimize drift) and did not allow the use of the ester form when applied to water with listed salmonids. The use of the ester formulation is not part of FEMA's proposed action, and FEMA has imposed restrictions during windy conditions consistent with the RPA. If an applicant uses 2,4-D amine, FEMA requires a 100-ft buffer for application. These buffers are designed to prevent 2,4-D amine from reaching a waterbody. The risk of exposure to ESA-listed steelhead is very low.

Indaziflam. This pesticide has a number of trade names, depending on the formulation. It is used to control invasive winter annual grasses (Sebastian 2017), and is considered as a potential alternative to glyphosate. The reregistration (EPA 2016) has a groundwater advisory stating that the chemical may leach into groundwater if used in areas where soils are permeable, particularly where the water table is shallow. Further, it is listed as having a high potential for reaching surface water via runoff for several months or more after application. It is listed as highly toxic to fish, aquatic invertebrates and plants (PMRA 2011; EPA 2001). Studies show the metabolites of degraded Indaziflam are more mobile in soils and toxicologically significant to non-target aquatic macrophytes. It is unlikely to bio-accumulate in aquatic organisms, but early life stage exposure of fish was found to cause a reduction in fry survival. Studies to date have been conducted using fathead minnows; no studies have been reported using salmonid species. This project proposes to use indaziflam in upland areas only for the treatment of difficult to eradicate invasive winter annual grasses, preparing soil for reseeding efforts with native species. Due to NMFS' concern over indaziflam persistence/mobility in soil and potential to enter groundwater, FEMA and Idaho County agreed to restrict the use of this herbicide to use outside of the riparian areas.

Imazapic. Imazapic is used to control grasses, broadleaves, vines, and for turf height suppression in non-cropland areas. FEMA proposes to allow its use outside of a 100-foot buffer for boom application. Imazapic has an average half-life of 120 days in soil, is rapidly degraded by sunlight in aqueous solutions, but is not registered for use in aquatic systems. Even though BPA calculated a hazard quotient of 714 (low level of concern) in their analysis, Tu et al. (2001) reports that it is moderately toxic to fish. They do say that its rapid degradation in water renders it relatively safe to aquatic animals, and they also note that there is no potential for the herbicide to move from soils with surface water. Thus, the likelihood of imazapic exposure to ESA-listed steelhead is very low.

Rimsulfuron. This herbicide is used to control annual grasses and broadleaf weeds. The BLM conducted an ecological risk assessment for this herbicide in 2014 (BLM 2014). They found off-site drift up to 25 ft using low boom application up to 100 ft using maximum application rates.

The study there was no risk to fish and aquatic invertebrates from surface runoff at typical application rates; however, they did not provide the data or information on target species to validate this finding. They also found no direct risk to salmonids based on modeling and stated that salmonids are not likely to be indirectly impacted by a reduction in food supply. Based on FEMA's proposed restriction on the application of this herbicide and the limited information available, it is likely that rimsulfuron is a low risk to steelhead in the action area.

Metribuzin. This herbicide is used to selectively control certain broadleaf weeds and grassy species. It was first registered as a pesticide in 1973, with 86 products now registered that include metribuzin. The primary routes of degradation are microbial metabolism and photolytic degradation on soil. Thus, these compounds are available to leach to groundwater and runoff to surface water because they are not volatile. It is persistent in groundwater, but not in well-mixed shallow surface water with good light penetration. The EPA (1998) considers it practically non-toxic to fish on an acute basis, and moderately to slightly toxic to aquatic invertebrates on an acute basis. EXTOXNET, however, states that metribuzin is slightly toxic to fish. The EPA (1998) considers metribuzin to be very mobile and highly persistent with a high potential to contaminate groundwater and surface water. Based on limited information, we conclude that this herbicide poses a moderate risk to steelhead because of its persistence in groundwater and surface runoff and its ability to concentrate thereby.

Diuron. Diuron is persistent, mobile, and has been found in both surface and groundwater. In the 1990s, there were reported incidents on non-direct lethal exposure to fish. The EPA also reports that it is moderately toxic to rainbow trout, but highly toxic to cutthroat trout and fathead minnow. Cox (2003) reports that low concentrations of diuron affect fish by causing behavior changes (increased vulnerability to predation), and reduction in food sources. Higher concentrations reduced the survival of juvenile fish and caused an inhibition of the nervous system and anemia. FEMA is allowing the use of diuron to treat invasive plants that are greater than 100 ft from the stream, and is imposing other restrictions to limit the movement of diuron into the water. When fully applied, these BMPs likely result in a moderate risk to salmon and steelhead from diuron application. Due to NMFS' concern over diuron persistence/mobility in soil and potential to enter groundwater, FEMA and Idaho County agreed to restrict the use of this herbicide to use outside of the riparian areas.

Adjuvants. FEMA did not specify which adjuvants will be used with herbicides, but did note that they would be limited to water soluble types, and that EPA label requirements for the adjuvants will be adhered to. There are three categories of adjuvants: colorants, surfactants and drift retardants. Because we have no information about the adjuvants FEMA is proposing to allow, we cannot assess the risk of salmon and steelhead except in a general way. Some surfactants can cause injury or death (R-11 and Entry II), some have a low level of concern, and we lack data on others. The likely pathway for adjuvants to enter streams will be through leaching/groundwater or aerial drift.

For the most part, the discussion above looked at acute and chronic response to exposure to a single chemical. The complexity of the real world, including exposure to multiple stressors (including other chemicals or high temperatures) and sub-lethal responses, will increase the

likelihood of adverse reactions, resulting in reduced survival over the long term. Sub-lethal effects can occur at levels substantially lower than lethal effects.

Stehr et al. (2009) studied developmental toxicity in zebrafish (*Danio rerio*), which involved conducting rapid and sensitive phenotypic screens for potential developmental defects resulting from exposure to six herbicides (picloram, clopyralid, imazapic, glyphosate, imazapyr, and triclopyr) and several technical formulations. Available evidence indicates that zebrafish embryos are reasonable and appropriate surrogates for embryos of other fish, including salmonids. The absence of detectable toxicity in zebrafish screens is unlikely to represent a false negative in terms of toxicity to early developmental stages of threatened or endangered salmonids. Their results indicate that low levels of noxious weed control herbicides are unlikely to be toxic to the embryos of ESA-listed salmon, steelhead, and trout. Those findings do not necessarily extend to other life stages or other physiological processes (e.g., smoltification, disease susceptibility, behavior).

The proposed project design criteria (including all conservation measures) include limitations on the herbicides, handling procedures, application methods, drift minimization measures, and riparian buffers. These are limiting thresholds that, together with the other limitations, will greatly reduce the likelihood that significant amounts of herbicide will be transported to aquatic habitats, although some herbicides are still likely to enter streams through leaching through soils and transport in groundwater, aerial drift, in association with eroded sediment in runoff, and dissolved in runoff, including runoff from intermittent streams and ditches. Even when used according to the EPA label and the proposed conservation measures, herbicides are reasonably likely to reach streams with listed fish. This is because of the uncertainty associated with the effectiveness of the conservation measures. There may be some sub-lethal effects to listed fish as a result of herbicide and adjuvant exposure. It is reasonable to expect that effects will include direct and indirect mortality, and increase or decrease in growth, changes in reproductive behavior, and a reduction in number of eggs produced, developmental abnormalities, reduction in ability to osmoregulate or adapt to salinity gradients, reduced ability to respond to stressors, etc. Stream margins, adjacent to areas treated with herbicides, have the greatest potential for exposure to herbicides.

Lower exposures are likely when the treatment area is small, further from the stream, when intermittent channels or ditches are not completely treated, or when rainfall occurs more than 24 hours after application. FEMA is not proposing to use any herbicide within the wetted channel, but is allowing the use of three herbicides within 100 ft of a channel. Any juvenile fish in the margins of those streams may be exposed to herbicides as a result of inundation of treatment sites, percolation, surface runoff, or a combination of these factors.

The risk to steelhead is mitigated by reducing the stream delivery potential, and using low toxicity herbicides within 100 ft of the channel. Other restrictions apply, and the associated application methods were selected for their low risk of introducing herbicides to streams. Based on previous analyses (e.g., NMFS 2012) and information presented in the biological assessment and from other biological opinions completed by NMFS (e.g., NMFS 2020b), adverse effects may occur in stressed populations of fish as a result of the application of herbicides, but it is less likely that effect would be observed in healthy populations. Generally, herbicide active

ingredients have only been tested on a limited number of species and mostly under laboratory conditions. Inferring risk to species from laboratory studies to how a species responds in a complex world is more uncertain. The risk analysis presented above describes how safety factors were included in the risk calculations. However, inferring actual risk based on laboratory analyses leads to uncertainty in the risk assessment analyses. Environmental stressors increase the adverse effects of contaminants, but the degree to which, these effects are likely to occur for various herbicides is largely unknown. Given their longer residency in freshwater, juveniles have a greater likelihood of exposure.

Pesticide monitoring in Clearwater River tributaries by Campbell (2004, 2007, 2012) detected twelve herbicides in water. Results of those studies serve in general terms as useful surrogates to characterize herbicide/adjuvant concentrations likely to occur with the proposed action. In those studies, maximum concentrations of the twelve herbicides were all less than 1/1000th of the lowest no observed effect concentration (NOEC) recognized by the EPA (EPA 2020). Similar monitoring data are not available for adjuvants that might be used in the proposed action, but relative dilution of adjuvants would likely be proportional to what was observed with the herbicides. Subtle behavioral effects that can influence fish survival may not be detected in routine assays that are used to derive the NOEC values. As such, sub-lethal effects such as impaired olfaction or maladaptive behaviors cannot be discounted, and may still occur under the proposed action.

Biological effects on fish from the proposed chemical applications are likely to include physiological developmental effects for developing eggs, alevins, and newly emerged fry. The likelihood of physiological or developmental effects is low generally, but there may be isolated areas where redds or fry occupy an area where herbicide-affected groundwater would also tend to seep back into the stream. These can be the places where steelhead in particular tend to spawn, eggs incubate, and early rearing occurs. Once fish are strong enough to swim, they will usually disperse out from these natal sites. Effects of the herbicide chemicals on the juvenile fish may include behavioral changes and possibly olfactory impairment (as discussed above). These effects in turn are expected to reduce feeding, growth, and avoidance of predators for a subset of the small number of juvenile salmon and steelhead that would be exposed to an appreciable concentration of the herbicide and adjuvant chemicals.

The design of FEMA's vegetation management program, including herbicide treatment, is intended to improve habitat for ESA-listed salmon and steelhead by improving habitat quality at the reach scale by replacing invasive plants with native plants that improve the function of the riparian ecosystem. The short-term effect of herbicide application is an increased potential for herbicide (and adjuvant) exposure. The conservation measures are designed to limit the potential for exposure. If the conservation measures work as intended, no fish should be exposed to any herbicide or adjuvant. Realistically, the conservation measures may not be enough to prevent movement of herbicides (via drift, surface water and groundwater) in all cases. Exposure is most problematic for chemicals that leach more readily, and ones that have an increased likelihood of lethal or sub-lethal response in juveniles or adults exposed. These include herbicides such as indaziflam, Metribuzin, and diuron, and adjuvants such as R-11. For these chemicals, it is likely that individual juvenile and adult salmon steelhead may respond with adverse effects.

The proposed action does not discuss whether mixtures of herbicides can be allowed, but there is nothing in the proposed action that prohibits it throughout the action area. This creates the possibility of interactions when these herbicides mix. If mixing does occur, Choudhury et al. (2000) found that adverse effects are most likely to be additive, not synergistic, because mixtures with components that affect the same endpoint by the same mode of action, and behave similarly with respect to uptake, metabolism, distribution and elimination tend to follow a dose addition formula. NMFS believes that even with an additive model, the risk to species is low because of the types of herbicides allowed and the conservation measures controlling their use.

Spills of herbicide chemicals and petroleum products from project machinery are unlikely because of product handling and fueling/chemical transfer restrictions that will keep these away from streams. There is a small possibility a substantial spill would occur on the ground beyond 100 ft from streams; however, even in such an instance, application of the required containment and soil cleanup would likely be effective in preventing effects in streams. For this action, the likelihood of streams and fish ultimately being affected by chemical spills is small. If a spill occurs, it is likely to be very small, and it is unlikely that any of the spilled toxicants will reach the stream because of the multiple BMPs that are in place.

In summary, the proposed conservation measures, including limitations on the herbicides, handling procedures, application methods, drift minimization measures, the use of dyes to indicate where herbicides have been applied will reduce potential for over treatment, and riparian buffers for some chemicals, will greatly reduce the likelihood that significant amounts of herbicide will be transported to aquatic habitats; although, some herbicides are still likely to enter streams through aerial drift, in association with eroded sediment in runoff, and dissolved in runoff. Some individual fish are likely to be negatively impacted (sub-lethal effects-feeding, growth, response to predators) as a consequence of that exposure. The long-term consequences of invasive, non-native plant control will depend on the success of follow-up management actions to exclude undesirable species from the action area, and establish a secure native plant community that supports habitat for steelhead.

Prey Base/Forage

Juvenile steelhead eat various species of aquatic and terrestrial invertebrates, and within the action area rely on a diet of invertebrates for early growth and survival. Herbicides can have toxic effects on invertebrates at concentrations an order of magnitude lower than for effects on fish (see toxicity analysis above). For the reasons noted in the preceding section, leaching of project herbicides into streams is likely to occur, delivering low concentrations of herbicide within stream reaches adjacent to treatment areas. Because invertebrates can be killed at very low concentrations of herbicides and adjuvants, NMFS expects the action will reduce the invertebrate prey base in some reaches adjacent to treatment areas. These effects may occur during the 5 years of project implementation, and for up to 3 more years in the case of diuron, which can persist for up to 1000 days in soil. Other herbicides proposed for use can persist in soils from 5 to 343 days, thus we expect effects to prey for these herbicides to last up to 1 year following application.

As with our assessment of project-associated chemical toxicity effects on fish, we cannot quantify the effect on prey species, and therefore cannot quantify the consequence of loss of prey on the fish. The effects will be small because of the previously noted restrictions on chemical application location and techniques, and relatively low toxicity to invertebrates of the resulting instream chemical concentrations. Prey reductions in short reaches adjacent to treatment areas are not expected to affect growth and survival of individual juvenile steelhead. Juvenile fish move around within stream reaches to forage and grow before beginning their downstream migrations, and the fish affected by a loss of prey in one reach can easily move to an adjacent reach with more abundant prey.

FEMA proposes to allow the use of biological controls—applications of insect species that target the non-native plants. The insect species that may be used include various species of beetles (plant host-specific weevils) and one species of moth (Table 5). None of the proposed biological control species includes an aquatic life stage; therefore, they would not compete with the aquatic invertebrates, which form the majority of the diet of juvenile salmon and steelhead. The weevils and moths may compete somewhat with terrestrial invertebrates adjacent to streams with salmon and steelhead (thus potentially part of the prey base), until the time when those specific non-native host plants are replaced by the native plant species. These particular U.S. Department of Agriculture (USDA)-approved plant control insect species tend not to eat the native plants and will not outcompete the native terrestrial insect species once the native vegetation is restored. With such small, short-term effects to terrestrial insects in treatment reaches, the prey base for steelhead likely will not be appreciably affected, and the growth and survival of the fish will not be reduced by this aspect of the proposed action.

2.5.1.3. Summary of Effect to Species

Snake River Basin steelhead of all life stages are likely to be exposed to effects from herbicides entering streams and loss of cover at the reach scale. The lower Clearwater and Lolo Creek populations within the Clearwater River MPG will be exposed, and eggs and juveniles will experience a loss in fitness through reduced growth and altered response to predators. These effects are likely to occur at a reach scale within the action area.

2.5.2. Effects to Critical Habitat

Designated critical habitat for Snake River Basin steelhead occurs in the streams where the treatments are proposed. The treatment areas are either adjacent to or upstream from critical habitat. The proposed action affects critical habitat through vegetation management activities that include disking or harrowing soils, planting native grasses and woody vegetation, removing blackberry thickets, and weed control efforts that include herbicide use. With the exception of herbicide use, these vegetation management activities are unlikely to cause meaningful changes in critical habitat. The proposed action will affect the following PBFs of critical habitat for the species: water quality (including shade/temperature), substrate, and cover/shelter, and forage/food. The effects of the action on these PBFs are discussed below.

Water Quality PBF

As discussed above in the Effects to Species section, Shade and Water Temperature subsection (Section 2.5.1), the proposed action has the potential to temporarily affect water temperature through removal of non-native vegetation that in some instances is shading the streams. Through the proposed mechanical and chemical treatments, the action will remove non-native shrub and herbaceous plant species and thereby temporarily reduce riparian cover and stream shade. Through seeding and planting post treatment, the non-native species will be replaced by native species. In streamside areas dominated by monocultures of blackberry or knotweed (a maximum of 176 acres in total), the removal of these species will also reduce the suppression of and help foster growth of some trees that provide more shade to the streams in the long term. The interim loss of shade along streams, until the native vegetation grows in, is likely to be small and temporary, lasting approximately 1 to 5 years. These small, short-term effects at the site scale are unlikely to cause appreciable change to the water temperature aspect of the water quality PBF within the action area stream reaches.

As discussed above in the Effects to Species section, Sediment Delivery subsection (Section 2.5.1), the proposed action may also cause small, short-term effects on the suspended sediment aspect of water quality. The proposed ground disturbing activities include using disk or chain harrows, machinery for grinding up/chipping the removed shrubs (described as "mastication" of the invasive shrubs), and ATVs for applying herbicides. Ground disturbance near streams may result in small amounts of sediment delivery, especially during rainstorms, before native plants become established to help hold soils. Project BMPs include equipment using existing culvert crossings and bridges (not fording the streams) and soil stabilization/sediment interception materials and techniques to minimize sediment delivery to streams. In addition to ground disturbance, hand pulling of emergent vegetation along stream edges is likely to result in localized turbidity and mobilization of fine sediments. Treatment of knotweed and other streamside invasive species is likely to result in short-term increases in turbidity when treatment of locally extensive streamside monocultures occurs (a maximum of 176 non-contiguous acres). These effects may cause small, brief changes in the water quality PBF at the reach scale where sediments may enter the water, but will not appreciably affect PBF function within the action area.

As discussed above in the Effects to Species section, Water Quality/Toxicity subsection (Section 2.5.1), the proposed action's potentially most substantive effect on water quality will be from herbicide and adjuvant chemicals leaching into streams. This effect will likely be short-term and in low concentration; however, reach-scale chemical effects may temporarily reduce the function of the water quality PBF within portions of the action area streams. The action includes use of three herbicides within 100 ft of streams, and eight herbicides in areas beyond 100 ft of streams. These herbicides and their application rates and basic persistence and mobility properties are listed in the Proposed Action section, Table 3, above. The herbicides will not be applied directly to wetted areas or to plants that are rooted in flowing water; however, applications of the three herbicides and accompanying adjuvants in areas immediately along streams is likely to result in small concentrations of these chemicals leaching into action area streams. It is also possible that small amounts of the herbicides and adjuvants that were applied beyond 100 ft of the streams will make their way into streams through leaching/groundwater.

There is substantial uncertainty about concentrations of the herbicides that will occur in stream; however, NMFS anticipates the effects will be at small scales and/or involve low concentrations and effects within the action area for one or more of the following reasons for each chemical: moderate to low toxicity; moderate to low potential to move in soils; relatively low concentrations due to prohibition of boom spraying near streams; and a 100-ft riparian buffer will be implemented for herbicides that have greater toxicity. As discussed in Section 2.5.1 above, monitoring data from areas where herbicides are applied more routinely, and likely without the added restrictions (beyond EPA label restrictions) that FEMA/Idaho County propose in this case, indicate that only very low concentrations of the chemicals are found (Campbell 2004, 2007, 2012). Similar monitoring data are not available for adjuvants that might be used in the proposed action, but adjuvant concentrations are likely to be proportional to the herbicide concentrations.

Leaching of the herbicides and adjuvants into streams will likely occur, and the effect is possible for up to 8 years (up to 5 years of project implementation and up to 3 years of herbicide input following treatment) from the start of the project. These herbicide inputs are likely to be episodic (associated with freshets) and will occur at the reach scale. These changes in the water quality PBF will be spatially patchy and at a small scale when compared to the entire action area.

It is very unlikely that spills of herbicide chemicals and petroleum products would occur and reach streams. Product handling and fueling/chemical transfer restriction BMPs will keep the tanks and storage of fuels and herbicides away from streams. There is a small possibility a spill would occur on the ground beyond 100 ft from streams; however, this likely would be effectively cleaned up and contained. NMFS does not expect the water quality PBF to be affected by any project-related chemical spill.

Substrate PBF

As discussed above in the Effects to Species section, Sediment Delivery subsection (Section 2.5.1), the project is expected to increase sediment delivery temporarily because of vegetation removal in near stream areas; however, the sediment deposition effects in stream are expected to be small, temporary, and scattered within stream reaches due to the patchy nature of riparian treatment within the action area. Re-planting and natural processes of revegetation that will occur within 1 to 5 years; the project will likely increase soil stability and somewhat reduce baseline levels of sediment delivery in these creeks (Brooks et al 2004; Fusco et al 2009; Lacey et al 1989). Those longer-term beneficial effects will likely also be small and difficult to detect. Project associated changes to the substrate PBF will be very small and will not affect its function.

Cover/Shelter PBF

As discussed above in the Effects to Species section, Shade and Water Temperature and Large Wood Recruitment subsections (Section 2.5.1), the project will temporarily reduce stream edge cover through riparian vegetation removal, and will likely result in a long-term increase in riparian trees and eventual large wood/structure in streams at a reach scale over 30–70 years.

Both of these effects will change the cover/shelter PBF in reaches of streams with riparian treatment within the action area. These effects will likely not appreciably reduce or increase the function of the cover/shelter PBF at the scale of the action area.

Forage/Food PBF

As discussed above in the Effects to Species section, Prey Base/Forage subsection (Section 2.5.1), herbicides tend to have toxicity effects on invertebrates at concentrations an order of magnitude lower than for effects on fish. Leaching of project herbicides and adjuvants into streams is likely to occur, but the effects are likely to be small—delivering low concentrations in reaches adjacent to treatment. Because invertebrates can be killed at lower concentrations of the herbicides, concentrations that may occur in certain settings of chemical application and shallow groundwater with this project, NMFS expects the action will reduce the invertebrate prey base for steelhead in short reaches adjacent to application areas. These effects may occur during the 1 to 5 years of project implementation and for up to 3 more years because of the persistence of the herbicide diuron in soil. The effects will be small because of the previously noted restrictions on chemical application location and techniques. The project effects on invertebrates will likely be limited to reaches adjacent to treatment areas within the action area, and will not appreciably reduce the function of the food/forage PBF at the scale of the action area.

The project's application of non-native plant targeting insect species as biological controls may have temporary and small effects on native terrestrial-riparian insect species that juvenile steelhead eat. However, the aquatic invertebrates that form the bulk of the prey base would not be affected. Also, the native terrestrial insects will ultimately outcompete the introduced insects, which are host specific to the non-native plants. The biological control aspect of the proposed action, therefore, will not appreciably reduce the function of the forage/food PBF at the scale of the action area.

2.6. Cumulative Effects

"Cumulative effects" are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02 and 402.17(a)). Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Some continuing non-Federal activities, such as grazing and road use, are reasonably certain to contribute to effects within the action area. It is difficult if not impossible to distinguish between the action area's future environmental conditions caused by global climate change that are properly part of the environmental baseline *vs.* cumulative effects. Therefore, all relevant future climate-related environmental conditions in the action area are described in the environmental baseline (Section 2.4).

In the Clearwater River drainage, Idaho County lists active mining claims above tributaries to the Middle Fork Clearwater River, and in the headwaters of Lolo Creek.[2] (Figure 4). Many of these claims were filed between 2010 and 2020. Mines are primarily placer mines, with several lode claims. Placer mining of alluvial substrate directly impacts the stream channel habitat, so sediment disruption and habitat modification are to be expected as these mines are worked in the future.

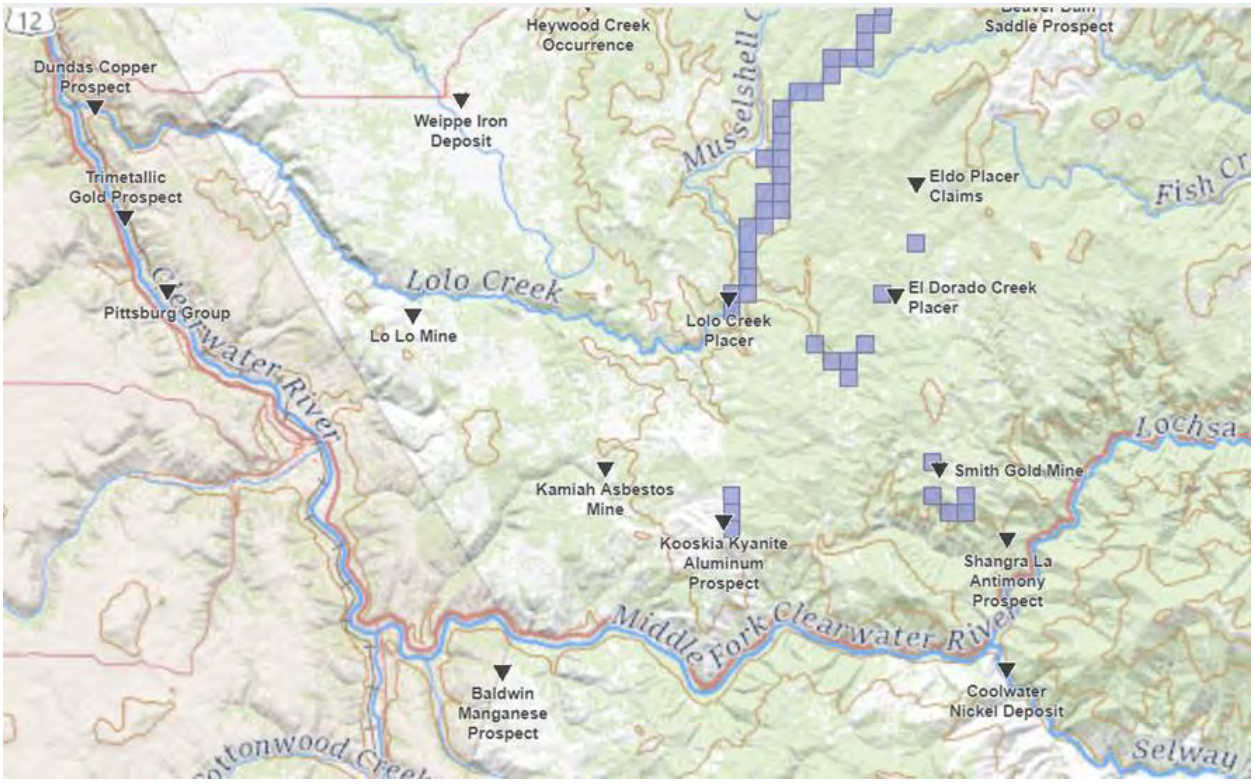

Figure 4. Active mining claims in and upstream from the action area. Placer mining claims upstream and north of the Middle Fork Clearwater River, and in the headwaters of Lolo Creek.

Idaho County plans to spend $70 million on transportation infrastructure projects in the near future, with projects identified in Idaho Transportation Improvement Program's (ITIP's) 2021–2027 draft plan. Several ITIP proposed projects are for culvert replacement, highway overlays and rehabilitations, bridge maintenance and repair, and road design improvements. Several ITIP proposed projects in Idaho County are for culvert replacement, highway overlays and rehabilitations, bridge maintenance and repair, and road design improvements. A $1.2 million project for 2022 would construct a curve improvement on SH13 just south of Kooskia at milepost 23.5. According to the Idaho Transportation Department, one of the major projects proposed for North Central Idaho is replacement of the East Kooskia Bridge on State Highway 13 in 2027. The 481-ft-long, steel-truss bridge on State Highway 13 Business Loop, off U.S. Highway 12, crosses the Middle Fork Clearwater River and was built in 1935. In 2016, ITD

[2] https://thediggings.com/usa/idaho/idaho-id049/map?bounds=46.33069122894694_-115.80874444538495_46.302829273239304_-115.69888116413497&disposition=a&type=384201. Accessed 2/4/2021

proposed reducing weight loads on the bridge due to structural deficiencies. As proposed in the ITIP plan, the bridge will be replaced with a new structure at a total cost of $7.5 million. These major projects are upstream from the action area. While not certain, it is expected that these near future projects will involve a federal nexus and require ESA section 7 consultation, and thus are not cumulative effects.

2.7. Integration and Synthesis

The Integration and Synthesis section is the final step in our assessment of the risk posed to species and critical habitat as a result of implementing the proposed action. In this section, we add the effects of the action (Section 2.5) to the environmental baseline (Section 2.4) and the cumulative effects (Section 2.6), taking into account the status of the species and critical habitat (Section 2.2), to formulate the agency's opinion as to whether the proposed action is likely to: (1) reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing its numbers, reproduction, or distribution; or (2) appreciably diminish the value of designated or proposed critical habitat as a whole for the conservation of the species.

Species

In 2015, the Clearwater Complex Fire burned 68,000 acres, some being within the southern portion of Idaho County, Idaho. Invasive weed species and annual grasses quickly replace native vegetation on steep slopes, increasing soil erosion and water yield. The proposed action is designed to reduce these negative impacts in the action area by replacing nonnative plant species with native species. FEMA is funding the project, and it will be implemented by Idaho County. The proposed action will likely provide benefits to fish habitat over the long term by supporting complex habitat features (large wood) and reduced sediment in the substrate including in spawning areas.

However, the proposed action is likely to have short-term negative impacts during the 5 years of project implementation and potentially another 3 years of herbicide movement to streams in the action area. There will likely be a short-term reduction in stream cover at a reach scale where the invasive plants are removed, with a possible consequence of increased water temperatures and decreased dissolved oxygen. As well, there may be some movement of herbicides into the streams, particularly when the application is adjacent to streams. However, FEMA and Idaho County have committed to implementing conservation measures, which will reduce the likelihood of herbicides reaching the stream via drift, surface runoff or groundwater. We expect Snake River Basin steelhead (juveniles and adults) will experience reduced water quality, and we expect juveniles may experience reduced feeding, growth, olfactory impairment and behavioral changes that reduce their fitness at the reach scale (sub-lethal effects).

It is unlikely that the project will exacerbate the effects of climate change on fish and their habitat because of the short-term nature of the proposed action.

Snake River Basin steelhead are listed as threatened and use the action area for migration, spawning, incubation, rearing and overwintering. The populations residing in the action area (Lower Mainstem and Lolo Creek) are at moderate to high risk of extinction, respectively. For recovery, the Lower Mainstem population must improve to at least viable/low risk status and the

Lolo Creek population must improve to maintained/moderate risk status (Table 8). The recovery plans note needed improvements in sediment delivery and improvements to riparian areas. The proposed action aims to improve both attributes over the long term, although there may be some localized negative impacts in the short term (3–8 years).

The proposed action will not appreciably increase the probability of extinction or slow recovery of the affected populations of Snake River Basin steelhead because: (1) the affected populations are not expected to go extinct within the next 3 to 5 years; (2) the effect on the productivity of the proposed populations may be positive after 5 years (when long-term benefits begin to show); (3) the effect on productivity and survival for the affected populations are expected to be minor and short-term; and (4) we do not expect that implementation of the proposed action will change the viability status or recovery potential of the affected populations.

Because the viability of the affected populations is not likely to change, we do not expect that the proposed action will change the risk of extinction for the Salmon River Basin steelhead ESU. Thus implementation of the proposed action will not increase the probability of extinction for Snake River Basin steelhead. We considered both the survival and recovery of the affected species.

Critical Habitat

For reasons described above, the proposed action may reduce the function of the substrate, cover/shelter, forage, water quality PBFs at the reach scale within the action area. However, the proposed action is not likely to appreciably diminish the conservation value of critical habitat for Snake River Basin steelhead at the designation scale because: (1) the proposed action is expected to result in improvements in the conservation value of these PBFs at the reach scale in the future; and (2) the short-term effects will be localized, and adequate nearby habitat is available for achieving these life functions within the action area.

2.8. Conclusion

After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of ESA listed Snake River Basin steelhead, and is not likely to destroy or adversely modify its designated critical habitat.

2.9. Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined by regulation to include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). "Incidental take" is defined by regulation as takings

that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). Section 7(b)(4) and section 7(o)(2) provide that taking that is incidental to an otherwise lawful agency action is not considered to be prohibited taking under the ESA if that action is performed in compliance with the terms and conditions of this Incidental Take Statement (ITS).

2.9.1. Amount or Extent of Take

In the opinion, NMFS determined that incidental take is reasonably certain to occur as follows:

The proposed action will result in a loss of stream cover in some reaches within the action area for the few years before the native vegetation becomes established. This change in stream cover will likely result in increased water temperatures and decreased dissolved oxygen in a subset of those reaches. This change in water quality will be experienced by a few individual Snake River Basin steelhead (Clearwater River MPG populations). The exposure will reduce the fitness of these juveniles. It is not possible to quantify the harm to these few individuals. When take cannot be adequately quantified, NMFS describes the extent of take through the use of surrogate measures of take that would define the limits anticipated in this opinion. Extent of riparian acres disturbed by vegetation removal is relatively easy to ascertain and, as a quantifiable habitat indicator, can be accurately measured. In this case, the extent of take for this pathway of effect will be described as the amount of riparian habitat disturbed. The extent of take exempted by this ITS would be exceeded if more than 1,786 acres of riparian habitat is disturbed. Because it is not practical to measure the localized changes in temperature and dissolved oxygen caused by the proposed action, NMFS will use the extent of treatment area (1,786 acres) as a surrogate for take. NMFS will consider the extent of take exceeded if treatment area of the project exceeds 1,786 acres.

A second pathway of effects that is likely to harm individual Snake River Basin steelhead (Clearwater River populations) is exposure to herbicides as described in the effects section. Leaching of herbicides and adjuvants into streams is likely to occur within a subset of the action area. The concentrations of chemicals entering the stream in that manner can be sufficient to have sub-lethal effects on the eggs and juvenile steelhead that will cause reduced feeding, growth and predator avoidance. The specific stream locations that will experience herbicide concentrations sufficient to cause sub-lethal effects on eggs and juvenile fish cannot be determined, and therefore the number of fish exposed and affected cannot be quantified. The number of acres proposed for treatment (1,786 acres) is causally linked to the amount of herbicide that reaches a stream with ESA-listed fish. NMFS will use the extent of treatment area (1,786 acres) as a surrogate for take. NMFS will consider the extent of take exceeded if the area treated with herbicide exceeds 1,786 acres.

2.9.2. Effect of the Take

In the biological opinion, NMFS determined that the extent of anticipated take, coupled with other effects of the proposed action, is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

2.9.3. Reasonable and Prudent Measures

"Reasonable and prudent measures" are nondiscretionary measures that are necessary or appropriate to minimize the impact of the amount or extent of incidental take (50 CFR 402.02).

FEMA shall:

1. Minimize incidental take from project activities by minimizing the amount of herbicide and change in water quality with ESA-listed steelhead.

2. Ensure completion of a monitoring and reporting program to confirm that the terms and conditions in this ITS were effective in avoiding and minimizing incidental take from permitted activities and that the extent of take was not exceeded.

2.9.4. Terms and Conditions

The terms and conditions described below are non-discretionary, and FEMA or any applicant must comply with them in order to implement the RPMs (50 CFR 402.14). FEMA or any applicant has a continuing duty to monitor the impacts of incidental take and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. To implement RPM 1 (minimize take from project activities), FEMA and Idaho County shall require the following as conditions of funding and/or permitting:
    a. Ensure that Indaziflam and Diuron are not applied within 100 ft of any floodplain (100-year floodplain).
    b. Ensure that the adjuvants Entry II and R-11 are not used for this proposed action.
    c. For FEMA, ensure that requirements for the funding are consistent with the project description, conservation measures, and terms and conditions in the BA and this opinion.

2. To implement RPM 2 (monitoring and reporting), FEMA shall:
    a. Ensure that Idaho County monitors herbicide application to comply with product labels and the additional application restrictions FEMA specified in the proposed action.
    b. Require that if there is a spill of chemicals or fuel, activities will be ceased immediately and actions will be taken to contain and clean up the spill.
    c. Contact NMFS if more than 1,786 acres of vegetation are to be treated with herbicides.
    d. Submit a monitoring report (with information on herbicide application rates and areas) by April 15 of the year following project completion to: Snake River Basin Office, email: nmfswcro@noaa.gov.

2.10. Conservation Recommendations

Conservation recommendations are defined at 50 CFR 402.02, and, for this consultation, are as follows:

1. Use as little herbicide as is required for the desired effect.

2.11. Reinitiation of Consultation

This concludes formal consultation for the Clearwater Complex post-fire mitigation project.

As 50 CFR 402.16 states, reinitiation of consultation is required and shall be requested by the federal agency or by NMFS where discretionary federal agency involvement or control over the action has been retained or is authorized by law and if: (1) the amount or extent of incidental taking specified in the ITS is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

2.12. "Not Likely to Adversely Affect" Determinations

Snake River fall Chinook salmon, listed as threatened in 1992 with critical habitat designated in 1993, are documented in the Clearwater River (IDFG 2019a). Critical habitat for Snake River fall Chinook salmon on the Clearwater River extends upstream to the confluence with Lolo Creek (50 CFR § 226.205). While fall Chinook salmon are distributed above the Lolo Creek confluence, upstream Clearwater River was not designated critical habitat. The Snake River fall Chinook salmon ESU is composed of a single demographically independent population. This Lower Snake River population consists of five major spawning areas (MaSAs). Fall Chinook in the Clearwater River subbasin are part of the Clearwater River MaSA. FEMA determined that the action as proposed may affect, but is not likely to adversely affect Snake River fall Chinook salmon and their designated critical habitat. Within the action area, fall Chinook salmon and/or their critical habitat are in the mainstem Clearwater River, where the fish spawn, incubate, rear, and migrate.

The herbicide treatments will occur during the spring through early fall. FEMA and Idaho County have proposed BMPs (Table 2) that will be effective at minimizing the movement of the herbicide into the Clearwater River. For example, they are only allowing the use of three less toxic herbicides within 100 ft of active streams (Table 3). Further, these herbicides must be hand applied, under certain weather conditions that limit drift, surface runoff and groundwater runoff (Table 4). The herbicide applications will target cheat grass that typically occurs along floodplain benches. The method of application in these areas is by hand spraying alone, which generally reduces the amount of herbicide that is needed to be effective.

All life stages of Snake River fall Chinook salmon use the mainstem Clearwater River. Adult fall Chinook enter the Snake River between early September and mid-October, and spawn through

early December (NMFS 2017a). Adults in the Clearwater River MaSA spawn about a week or 2 earlier than do adults in the other four major spawning areas (Connor et al. 2001), spawning late September through November using gravel and cobble bars. These gravel and cobble bars tend to be in deeper water, rather than along the margins of the river.

Adults do not feed in the mainstem Clearwater River. They may be exposed to low concentrations of herbicide, but these exposures will be transitory during their rapid migration, and at very low concentrations. Due to project BMPs (Table 2), the likelihood of herbicides reaching the mainstem Clearwater River at harmful concentrations is unlikely, as noted above (see *Water Quality/Toxicity in* 2.5.1.2). Further, adult fall Chinook tend to migrate in deeper water, away from the stream margins where potential herbicide concentrations would be greater. We do not expect that the project effects will reduce the survival of adult fall Chinook salmon. Thus, we expect the effects of this action to be insignificant for adult Snake River fall Chinook salmon.

Fall Chinook redds and eggs will be present in fall through early spring, which generally does not coincide with the timing of herbicide applications. Also, redds are located in deeper sections of the river channel rather that along the channel margins where it is more likely that herbicides would leach into the river. Thus, it is not likely that redds and eggs will be exposed to project effects and thus project effects to these life stages are discountable.

Snake River fall Chinook salmon fry typically emerge from redds in March and move from deeper water to the river's edge to avoid predators. Juveniles briefly rear in their natal streams before starting late spring migration. Juvenile fish immediately begin their slow downstream migration as sub-yearlings, feeding as they head to the ocean or overwintering habitat in the lower Snake and Columbia River reservoirs. Juvenile fall Chinook salmon in the lower Clearwater River grow more slowly and generally linger in the lower mainstem riverine habitat longer than they do in the lower Snake River (Connor et al. 2005). Juveniles that begin downstream dispersal in June likely move downstream rapidly until they reach the lower 6 kilometers of the Clearwater River, where the river transitions into slack water as it joins Lower Granite Reservoir (Tiffan et al. 2009).

It is possible that juveniles will be exposed to low concentrations of herbicide along the rivers shoreline during their downstream migration. Groundwater pathways may bring low concentrations of the herbicides to the Clearwater River, but most of the herbicides will be taken up by plants or soils before reaching the river. We do not expect juvenile fish to be exposed to enough herbicide to reduce their ability to feed, grow and migrate. Thus, the effects of the proposed action’s use of herbicides on juvenile fall Chinook salmon is insignificant.

The proposed action may cause a short-term reduction in cover and prey in treated tributary reaches of the action area. Juvenile migration is not limited by temperature or prey availability, and a reach-scale, short-term change in either temperature or prey availability in tributary streams is not likely to affect a fish’s ability to grow and survive. Therefore these effects are insignificant.

The effects of this action on Snake River fall Chinook salmon and their critical habitat are all insignificant (for adults and juveniles) or discountable (for redds and eggs). NMFS concurs with FEMA that the proposed action is not likely to adversely affect (NLAA) Snake River fall Chinook salmon and their designated critical habitat.

3. MAGNUSON–STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT RESPONSE

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. The MSA (Section 3) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result from actions occurring within EFH or outside of it and may include site-specific or EFH-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). Section 305(b) also requires NMFS to recommend measures that can be taken by the action agency to conserve EFH.

This analysis is based, in part, on the EFH assessment provided by FEMA and descriptions of EFH for Pacific Coast salmon (PFMC 2014), and highly migratory species (PFMC 2007), contained in the fishery management plans developed by the Pacific Fishery Management Council (PFMC) and approved by the Secretary of Commerce.

3.1. Essential Fish Habitat Affected by the Project

The proposed action and action area for this consultation are described in the Introduction (Section 1.0) to this document. The action area is within the Clearwater Basin EFH for Chinook salmon (*Oncorhynchus tshawytscha*) and coho salmon (*Oncorhynchus kisutch*) (PFMC 2014).

The Clearwater River runs through the west side of action area, while Lolo Creek runs through the north and east portions of the action area. Both waterways contain designated EFH for various life-history stages of Chinook and coho salmon. The following habitat areas of particular concern (HAPCs) are present in the action area: complex channel and floodplain habitat, spawning habitat, thermal refugia, and submerged aquatic vegetation areas.

As noted above, the Clearwater River has ESA-listed fall Chinook salmon and their designated critical habitat. The Snake River spring/summer Chinook salmon ESU, however, does not include the Clearwater River, and instead consists of the Salmon River drainage and other Snake River tributaries downstream and upstream of the Clearwater River, and the Snake River mainstem upstream to Hells Canyon Dam. The historic population of Snake River spring/summer Chinook salmon in the Clearwater River drainage was eliminated or severely depressed by the Lewiston dam in the early through mid-1900s, and is considered an extirpated population for the purposes of the ESA. Because of this, the Clearwater drainage was not

included in the listed ESU. However, reestablished Clearwater River populations are utilizing the historical range and interact with other populations.

The Clearwater River and tributaries support various life-history stages of Chinook and coho salmon use this EFH. In addition, the following habitat areas of particular concern (HAPCs) are present in the action area: complex channel and floodplain habitat, spawning habitat, thermal refugia, and submerged aquatic vegetation areas.

3.2. Adverse Effects on Essential Fish Habitat

As analyzed in the ESA sections of the document (above) for steelhead and fall Chinook salmon, the proposed action will affect aspects of salmon habitat including shade/temperature, forage/prey base, substrate, water quality/toxicity, and cover/shelter; however, these effects will be small and unlikely to change those habitat functions over the long term. Adverse effects on water quality are anticipated in the locations where herbicides leach into the streams. These conditions are anticipated to occur within a subset of the action area, and anticipated to cause short term adverse effects on the salmon EFH.

Project actions will be implemented using various BMPs and mitigation measures (project BA, and summarized in Section 1.3 above). Habitat modification through vegetation removal will be a minor short-term impact, with the reduction of the targeted invasive non-native plant species to make room for native seeding and plant installation.

3.3. Essential Fish Habitat Conservation Recommendations

Fully implementing these EFH conservation recommendations would protect, by avoiding or minimizing the adverse effects described in Section 3.2, above, designated EFH for Pacific Coast salmon:

1. Ensure that Indaziflam and Diuron are not used within 100 ft of any 100-year floodplain.
2. Ensure that the adjuvants Entry II and R-11 are not used as surfactants for any herbicide application covered by this consultation.
3. Ensure that contractor's equipment crosses streams only at the designated crossings and does not enter live water.
4. For FEMA, ensure that requirements for the funding are consistent with the project description, conservation measures, and terms and conditions in the BA and this opinion.
5. Ensure that Idaho County monitors herbicide application to comply with product labels and the additional application restrictions FEMA specified in the proposed action.
6. Require that if there is a spill of chemicals or fuel, activities will be ceased immediately and actions will be taken to contain and clean up the spill.

3.4. Statutory Response Requirement

As required by section 305(b)(4)(B) of the MSA, FEMA must provide a detailed response in writing to NMFS within 30 days after receiving an EFH Conservation Recommendation. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of NMFS' EFH Conservation Recommendations unless NMFS and the Federal agency have agreed to use alternative timeframes for the Federal agency response. The response must include a description of measures proposed by the agency for avoiding, minimizing, mitigating, or otherwise offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations, the Federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects [50 CFR 600.920(k)(1)].

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

3.5. Supplemental Consultation

FEMA must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations [50 CFR 600.920(l)].

4. DATA QUALITY ACT DOCUMENTATION AND PRE-DISSEMINATION REVIEW

The DQA specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the opinion addresses these DQA components, documents compliance with the DQA, and certifies that this opinion has undergone pre-dissemination review.

4.1. Utility

Utility principally refers to ensuring that the information contained in this consultation is helpful, serviceable, and beneficial to the intended users. The intended user of this opinion is FEMA and Idaho County. Individual copies of this opinion were provided to FEMA. The document will be available within 2 weeks at the NOAA Library Institutional Repository (https://repository.library.noaa.gov/welcome). The format and naming adheres to conventional standards for style.

4.2. Integrity

This consultation was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, 'Security of Automated Information Resources,' Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

4.3. Objectivity

Information Product Category: Natural Resource Plan.

Standards: This consultation and supporting documents are clear, concise, complete, and unbiased; and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA regulations, 50 CFR 402.01 et seq., and the MSA implementing regulations regarding EFH, 50 CFR 600.

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the References section. The analyses in this opinion and EFH consultation contain more background on information sources and quality.

Referencing: All supporting materials, information, data and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with West Coast Region ESA quality control and assurance processes.

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United States Department of the Interior
U.S. Fish and Wildlife Service
Idaho Fish and Wildlife Office - Spokane
11103 East Montgomery Drive
Spokane Valley, Washington 99206
Telephone (509) 891-6839
www.fws.gov/idaho

In Reply Refer To:
FWS/IR09/ES/IFWO/2020-I-0711

June 5, 2020

Jeffrey Parr, Environmental Specialist
Federal Emergency Management Agency, Region 10
130 228th Street SW
Bothell, Washington 98021

Subject: Clearwater Complex Vegetation Management Project, Idaho County, Idaho - Concurrence

Dear Mr. Parr:

This letter responds to the Federal Emergency Management Agency's (FEMA) request for the U.S. Fish and Wildlife Service's (Service) concurrence on effects of the subject action to species and habitats listed under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.; [Act]). FEMA's request dated March 19, 2020 and received by the Service on April 13, 2020, included a biological assessment entitled *Clearwater Complex Vegetation Management Project* (Assessment) dated March 2020. Information contained in the Assessment is incorporated here by reference.

Through the Assessment, FEMA determined that the project may affect, but is not likely to adversely affect bull trout (*Salvelinus confluentus*) and its designated critical habitat, and Spalding's catchfly (*Silene spaldingii*). The Service concurs with FEMA's determination for bull trout and its designated critical habitat, and Spalding's catchfly and presents our rationale below. FEMA also determined, through the Assessment, that the project would have no effect to North American wolverine (*Gulo gulo luscus*). The regulations implementing section 7 of the Act do not require the Service to review or concur with no effect determinations.

Proposed Action

The Project area is located in Idaho County and is comprised of numerous discrete areas totaling 1,786 acres surrounding the town of Kamiah, Idaho. The primary purpose of the Project is to stabilize erosion and landslide hazard areas that resulted from vegetation loss and incursion of invasive plant species due to the Clearwater Complex Fire (Fire) and to help prevent future wildfires on private and County-owned lands within the vicinity of the Fire. Invasive plant

populations near and within moderate- to high-severity burned areas will be treated with herbicides up to three times in the first growing season, then once per year up to three years. Biological control agents (plant-feeding insects) will also be deployed in areas where weed eradication is not feasible. Riparian areas will be restored by eradicating invasive Himalayan blackberry through mastication and selective herbicide treatments and planting native shrubs and trees. Finally, occurrences of invasive annual grasses (i.e., cheatgrass) near homes and structures will be converted to native vegetation cover by tilling the soil, treating germinating cheatgrass with herbicides, and replanting the sites with desired native plant species. Highly degraded sites may utilize annual cover crops (e.g., canola, forage peas, etc.) during the first growing season to improve site productivity. The Project is anticipated to begin in spring 2020, and may continue for up to three years depending on the efficacy of the proposed treatments. The proposed action is fully described in the Assessment (pp. 7-16).

Species and Habitat Presence in the Action Area

Bull trout
Bull trout are known to be present year-round in the Clearwater River, although there are no local populations of bull trout in action area tributaries. Bull trout abundance in the action area is unknown but suspected to be low, particularly during the summer months when adults begin migrating upstream to spawning habitats.

Bull trout critical habitat
The Clearwater River provides feeding, migrating, and overwintering designated critical habitat within the action area and provides connectivity between core areas. Most of the proposed treatment areas are located along ephemeral non-fish bearing tributaries to the Clearwater River, however a limited number of treatment areas are located within 100 feet of the river.

Spalding's catchfly
Spalding's catchfly is not documented within the action area; the nearest known occurrence is approximately 12 miles west of the action area. However, surveys for Spalding's catchfly have not been conducted within the action area, which contains approximately 406 acres of potential suitable habitat. Spalding's catchfly may exhibit prolonged dormancy up to three years, so repeated surveys are required to determine if suitable habitat is occupied. Given the lack of surveys in the action area, presence of potential suitable habitat and nearby known occurrences, Spalding's catchfly may be present in the action area.

Potential Impacts and Effects from the Proposed Action

Bull trout
The proposed action will include application of herbicides and soil disturbance, which may result in effects to bull trout. Herbicides will be applied at the lowest effective label rates by certified applicators either by ATV-mounted booms (broadcast), spot spraying, or hand-selective methods (e.g., wicks, direct application). Herbicide applications will not occur when wind speeds exceed 10 miles per hour, air temperatures exceed 80 degrees Fahrenheit, during adverse weather conditions, within 48 hours of a predicted rain event, or when soils are saturated. Broadcast applications will not occur within 100 feet of the ordinary high water mark (OHWM) of any

wetted stream channel, or within 50 feet of dry channels. The lowest boom height possible and a minimum droplet size of 240 microns will be utilized to effectively preclude herbicide drift into stream channels. Within riparian buffers, only those herbicides approved for use in these areas will be used and will be applied by spot spraying or directly by hand. Soils in the project area are characterized by high infiltration rates, which reduce the likelihood of herbicide transport across the soil surface or through the soil profile. Low annual precipitation rates in the area also reduce the potential for surface transport. Additional best management practices (BMPs) and minimization measures are described in the Assessment (pp. 14-16). With the use of riparian buffers, appropriate application methods and timing, low risk of surface runoff and sub-surface transport, and adherence to BMPs and minimization measures, the effects of herbicide applications to bull trout are expected to be insignificant.

No roadwork is proposed for this Project. Machinery used to masticate blackberry vines causes very little ground disturbance (Assessment p. 35), and masticated vines will be left in place to prevent erosion or sedimentation. Tilled soils for annual grass control are located a minimum of 500 feet from any stream channel, will be performed in the spring or summer, and will be planted with native vegetation or cover crops as soon as possible after tilling. As a result, effects to bull trout from potential sedimentation are expected to be discountable.

Bull trout critical habitat
Herbicide use and soil disturbance may affect an abundant food base in designated bull trout critical habitat by reducing the abundance of invertebrate prey. As previously described, potential introduction of herbicides or sediment into the river will be minimized by Project design features and BMPs, and in the unlikely event that small amounts of herbicide or sediment reach the Clearwater River, they would be rapidly diluted and dispersed within the large volume of the river. As a result, effects to bull trout critical habitat are expected to be insignificant (herbicides) and discountable (sediment).

Spalding's catchfly
Spalding's catchfly may be affected by proposed use of herbicides and biological control agents. Spalding's catchfly is not known to occur in the action area, nor is it expected to occur in proposed treatment areas due to the effects of the Fire and subsequent establishment of invasive plants in burned areas. However, given the presence of potential suitable habitat in the action area, known occurrences nearby, and the significant survey effort required to determine whether Spalding's catchfly is present, it is assumed that Spalding's catchfly may be present in the action area. Potential suitable habitat in the action area will be surveyed and field-verified by trained contractors prior to Project implementation. Herbicides will not be applied within 0.25 mile from any documented occurrence of Spalding's catchfly or verified suitable habitat. As a result, effects to Spalding's catchfly from the use of herbicides are expected to be discountable.

Biological control agents will be collected from the wild in Idaho and in neighboring states. These agents are species-specific, and are not known to affect non-target species, including Spalding's catchfly. Most or all of these agents were likely present in the action area prior to the Fire. As a result, effects to Spalding's catchfly from releasing biological control agents are expected to be discountable.

Concurrence

Based on the Service's review of the Assessment, we concur with FEMA's determination that the action outlined in the Assessment and this letter, may affect, but is not likely to adversely affect bull trout and its designated critical habitat, or Spalding's catchfly. This concurrence is based on the use of riparian and Spalding's catchfly habitat buffers, minimal soil disturbance near streams, and use of BMPs and minimization measures that reduce impacts of the proposed action to bull trout and its designated critical habitat, and Spalding's catchfly to insignificant and discountable levels.

This concludes informal consultation. Further consultation pursuant to section 7(a)(2) of the Act is not required. Reinitiation of consultation on this action may be necessary if: (1) new information reveals effects of the action that may affect listed species or designated critical habitat in a manner or to an extent not considered in the assessment; (2) the action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the analysis; or (3) a new species is listed or critical habitat designated that may be affected by the proposed action.

Thank you for your continued interest in the conservation of threatened and endangered species. If you have any questions regarding this consultation, please contact Sean Sweeney of this office at (509) 893-8009 or sean_sweeney@fws.gov.

Sincerely,

Patricia C. Johnson-Hughes

for Christopher Swanson
Acting State Supervisor

cc: IDFG, Clearwater (Horsmon)
NMFS (Gatzke)
NPT (Armstrong)

Appendix B Agency and Tribal Correspondence

Nez Perce Tribe

CULTURAL RESOURCE PROGRAM © 1966

April 21, 2022

Philip Fisher, Archaeologist
FEMA Region X
130 228th Street SW
Bothell, Washington 98021

RE: THPO 2022-48, FEMA Idaho County Clearwater Complex Hazardous Fuels Mitigation Project, FMAG-HMGP 5099-5-R, and 5110-5-R

Dear Kevin,

Thank you for your supplementary cultural resource report dated April 13, 2022, for the above project. It addresses all the questions that I asked about the original report you submitted for review in December 2021.

I concur with FEMA's determination that the project will have no adverse effect to historic properties, made on December 10, 2021.

I also concur with FEMA's determination of eligibility for the recorded archaeological resources, and avoidance measures.

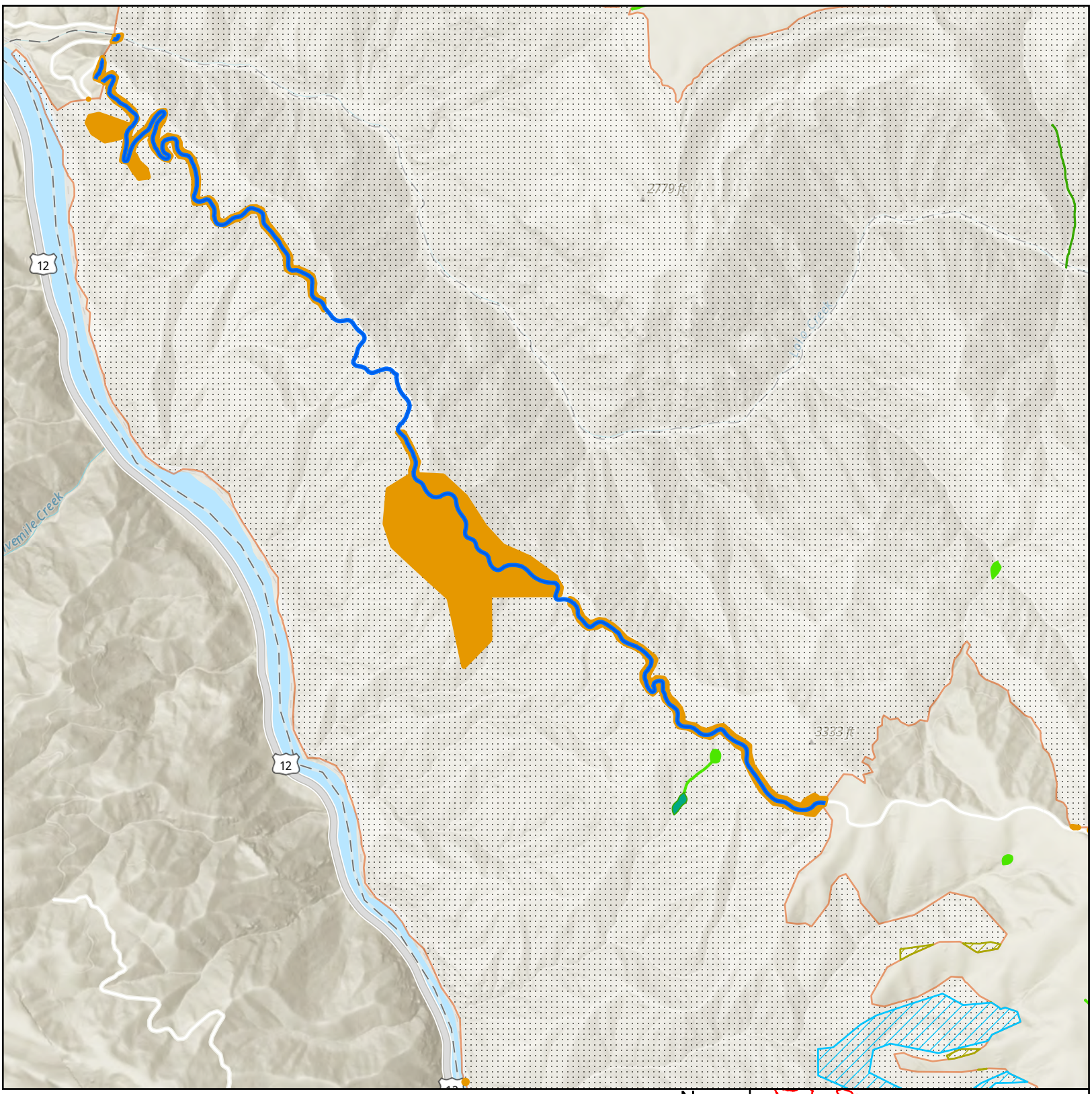
Resource	Type	General Age	NRHP Eligibility Recommendation	Management Recommendation
[redacted]	Site	Historic	***Not Eligible***	Proceed as planned
	Site	Historic	***Potentially Eligible***	Avoid site completely, 30 m buffer
	Site	Historic	Not Eligible	Proceed as planned
	Site	Precontact	Eligible	Avoid site completely, 30 m buffer
	Site	Historic	Not Eligible	Proceed as planned
	Isolate	Historic	Not Eligible	Proceed as planned
	Site	Historic	Not Eligible	Proceed as planned
	Isolate	Historic	Not Eligible	Proceed as planned

Let me know if you have any questions or concerns.

Sincerely,

Patrick Baird
Tribal Historic Preservation Office

Appendix C Wetland Analysis Figures



Forested/Shrub and Emergent Wetlands:

Clearwater Complex Management Project
FMAG 5099-5-R

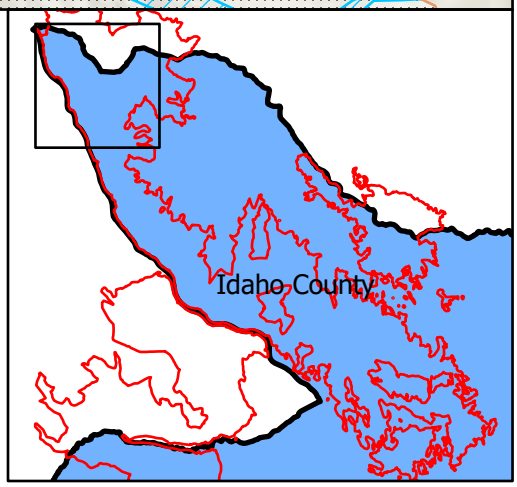
ROW
EDRR
Riparian Restoration
Reseeding

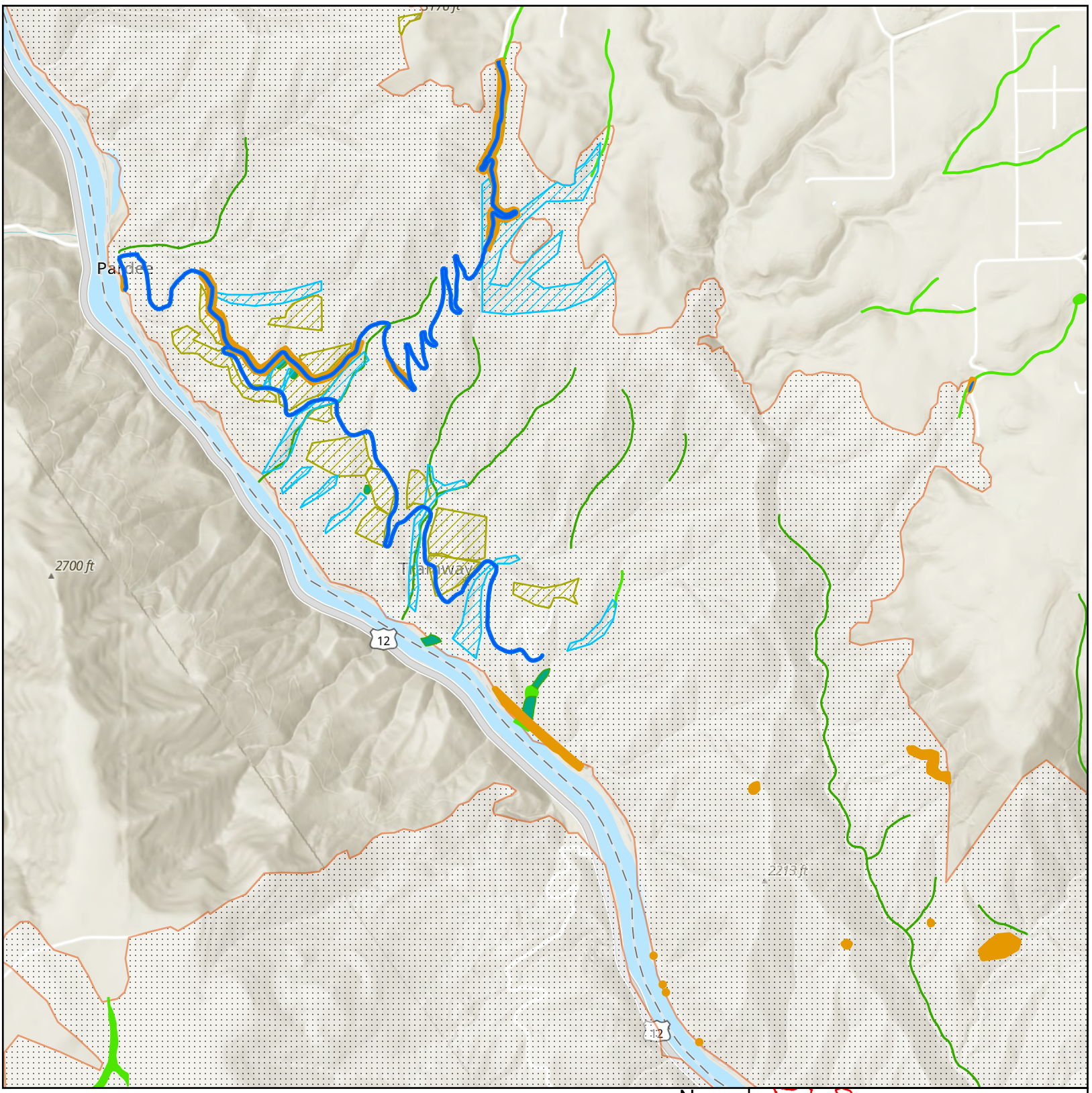
WETLAND TYPE
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Fire Perimeter

N
W E
S

1:25,000

0 0.5 0.9 Miles





Forested/Shrub and Emergent Wetlands:

Clearwater Complex Management Project
FMAG 5099-5-R

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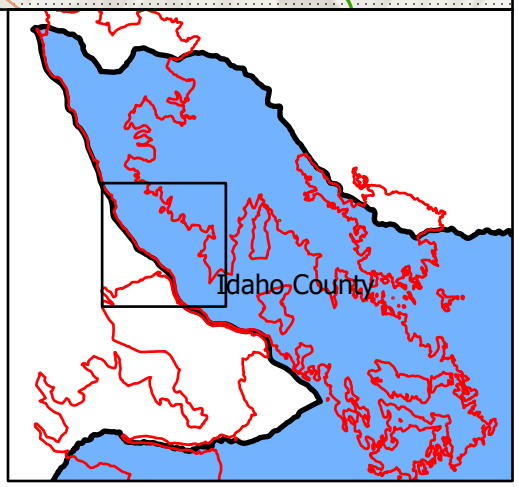
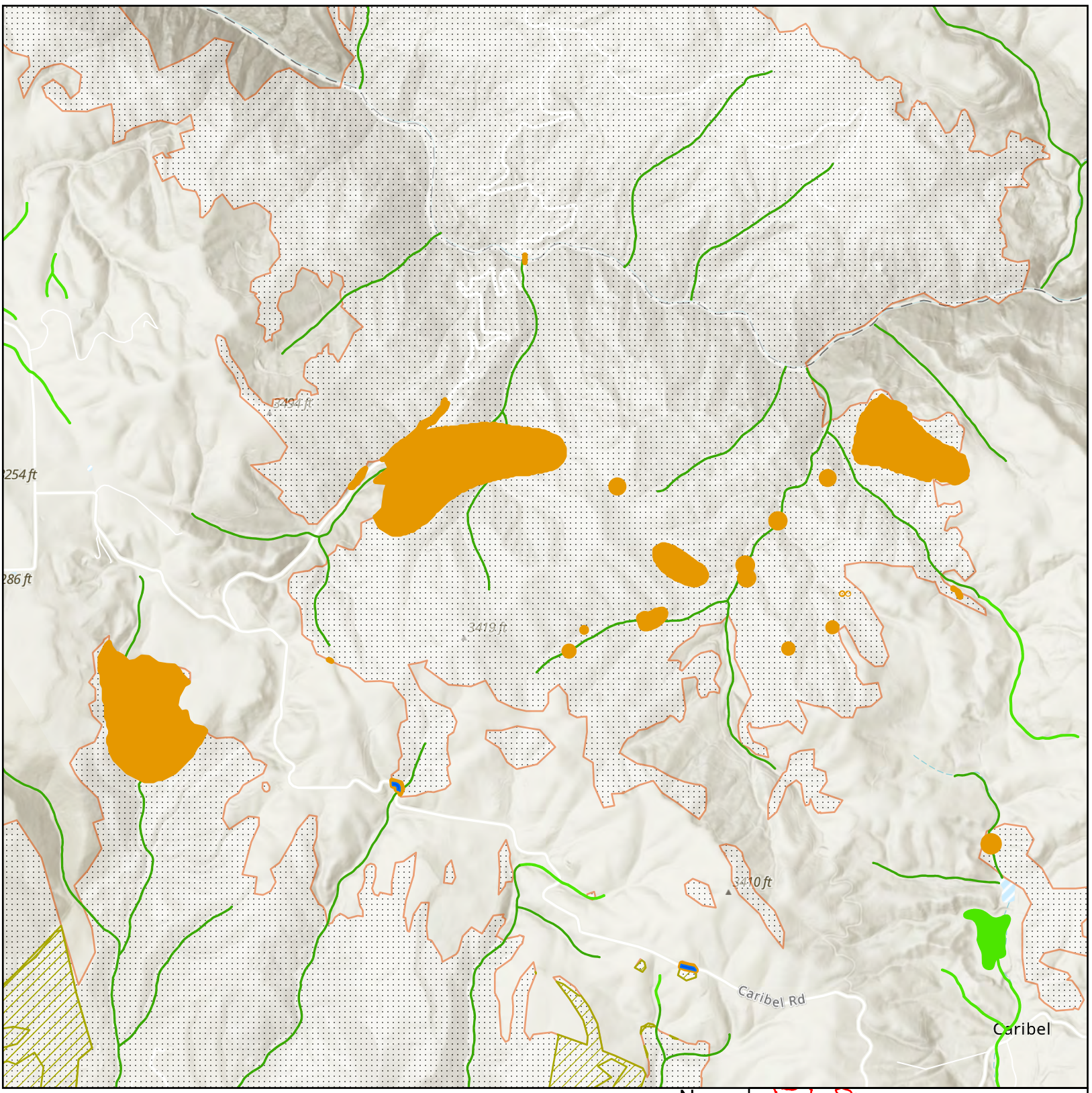
1:25,000

ROW
EDRR
Riparian Restoration
Reseeding

WETLAND TYPE
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Fire Perimeter

0 0.5 0.9 Miles





Forested/Shrub and Emergent Wetlands:

Clearwater Complex Management Project
FMAG 5099-5-R

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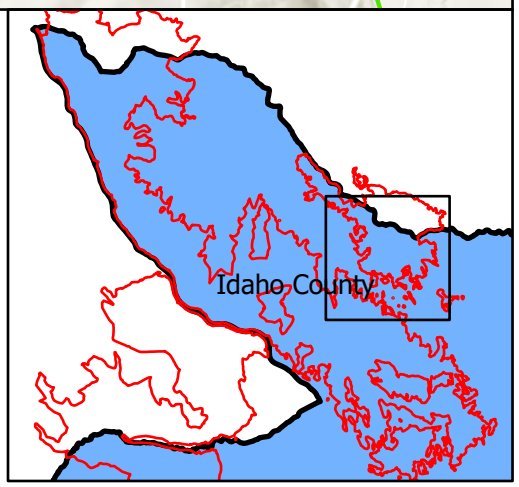
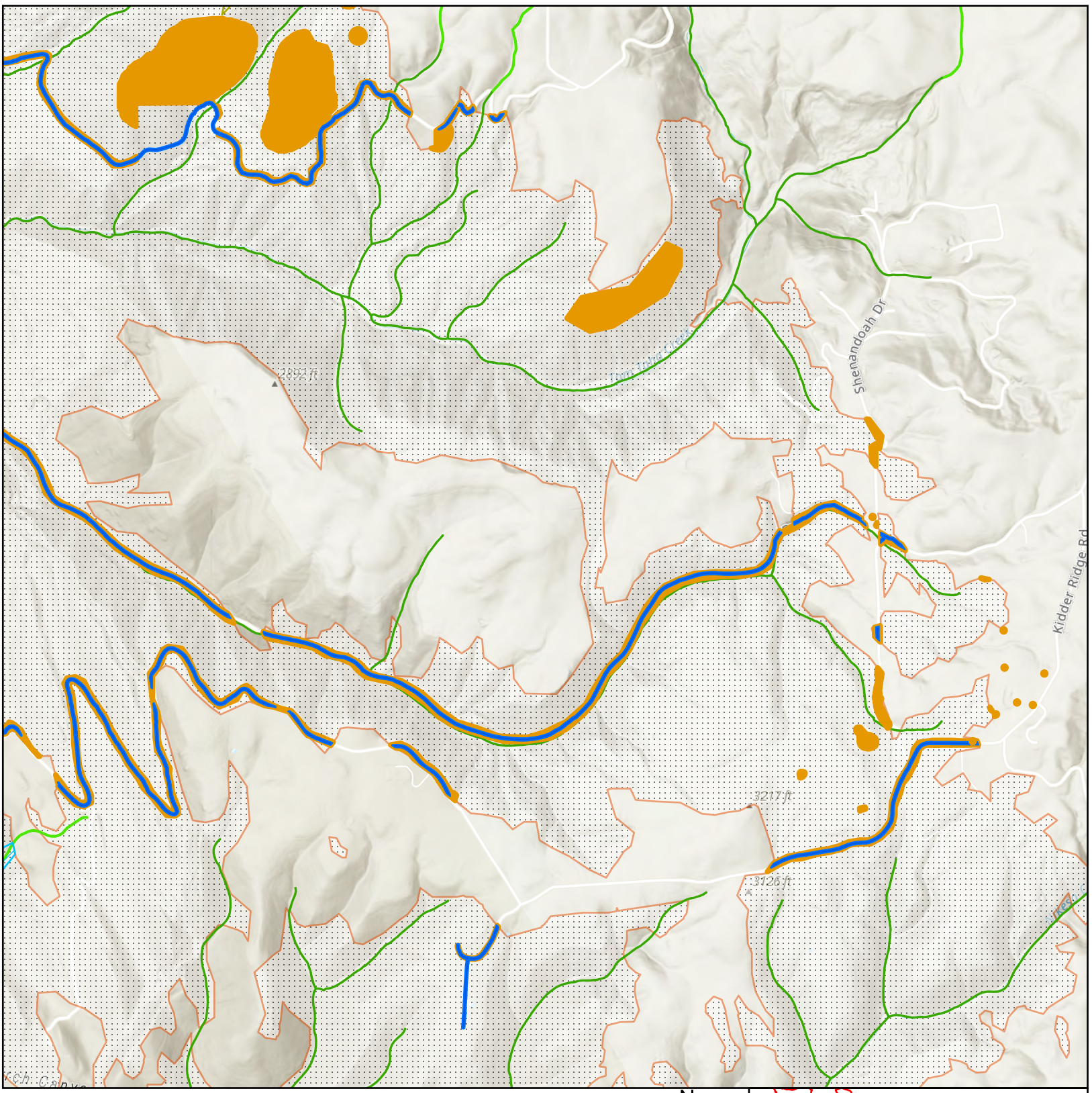
1:25,000

ROW
EDRR
Riparian Restoration
Reseeding

WETLAND TYPE
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Fire Perimeter

0 0.5 0.9 Miles





Forested/Shrub and Emergent Wetlands:

Clearwater Complex Management Project
FMAG 5099-5-R

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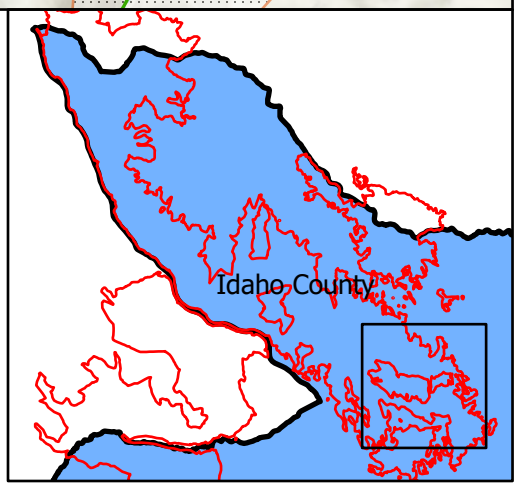
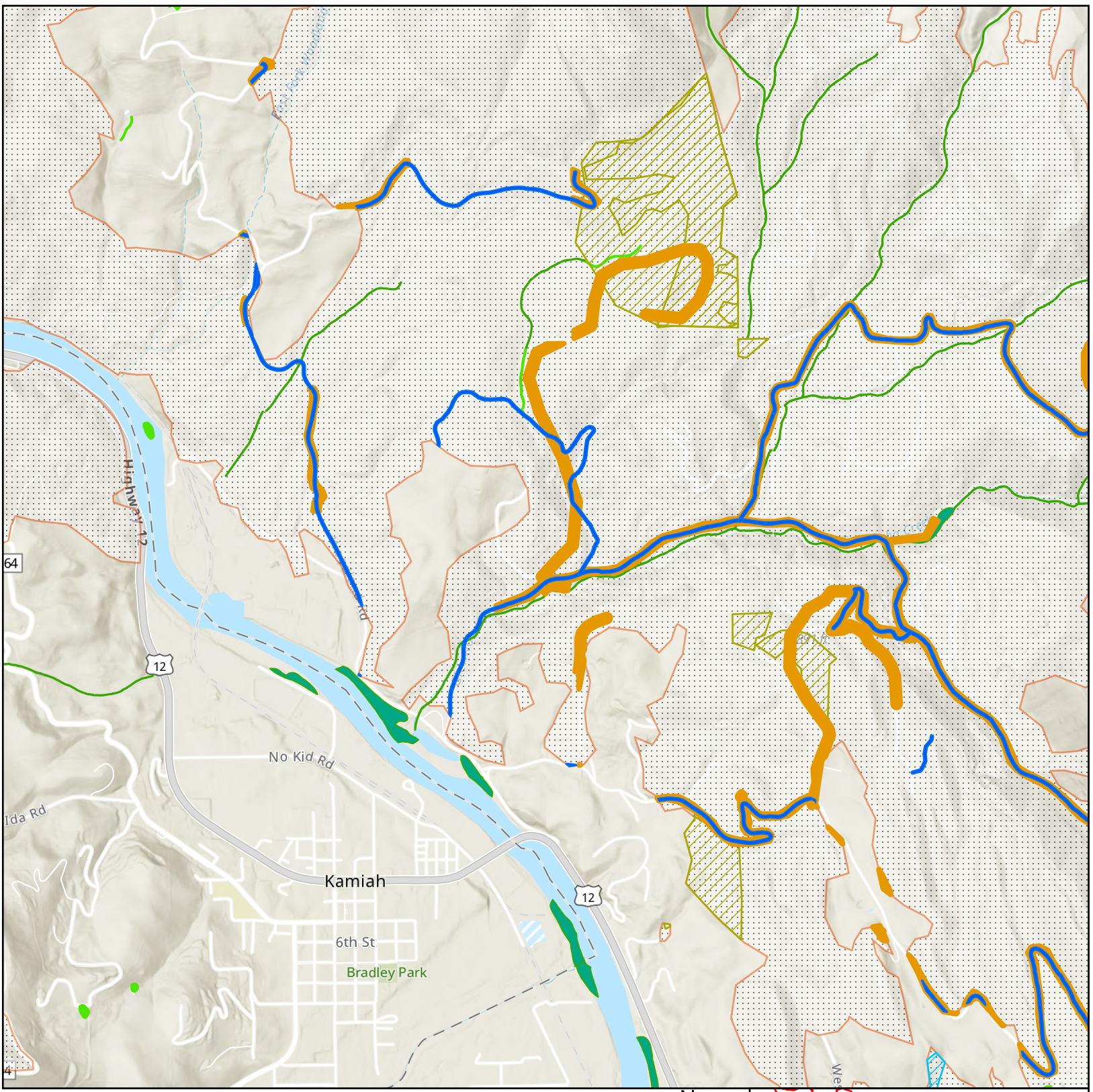
ROW
EDRR
Riparian Restoration
Reseeding

WETLAND TYPE
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Fire Perimeter

0 0.5 0.9 Miles





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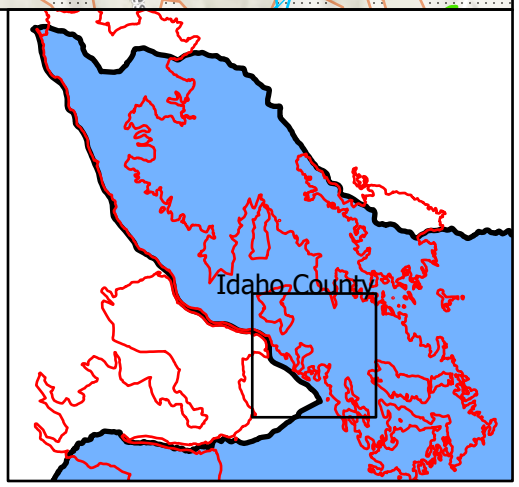

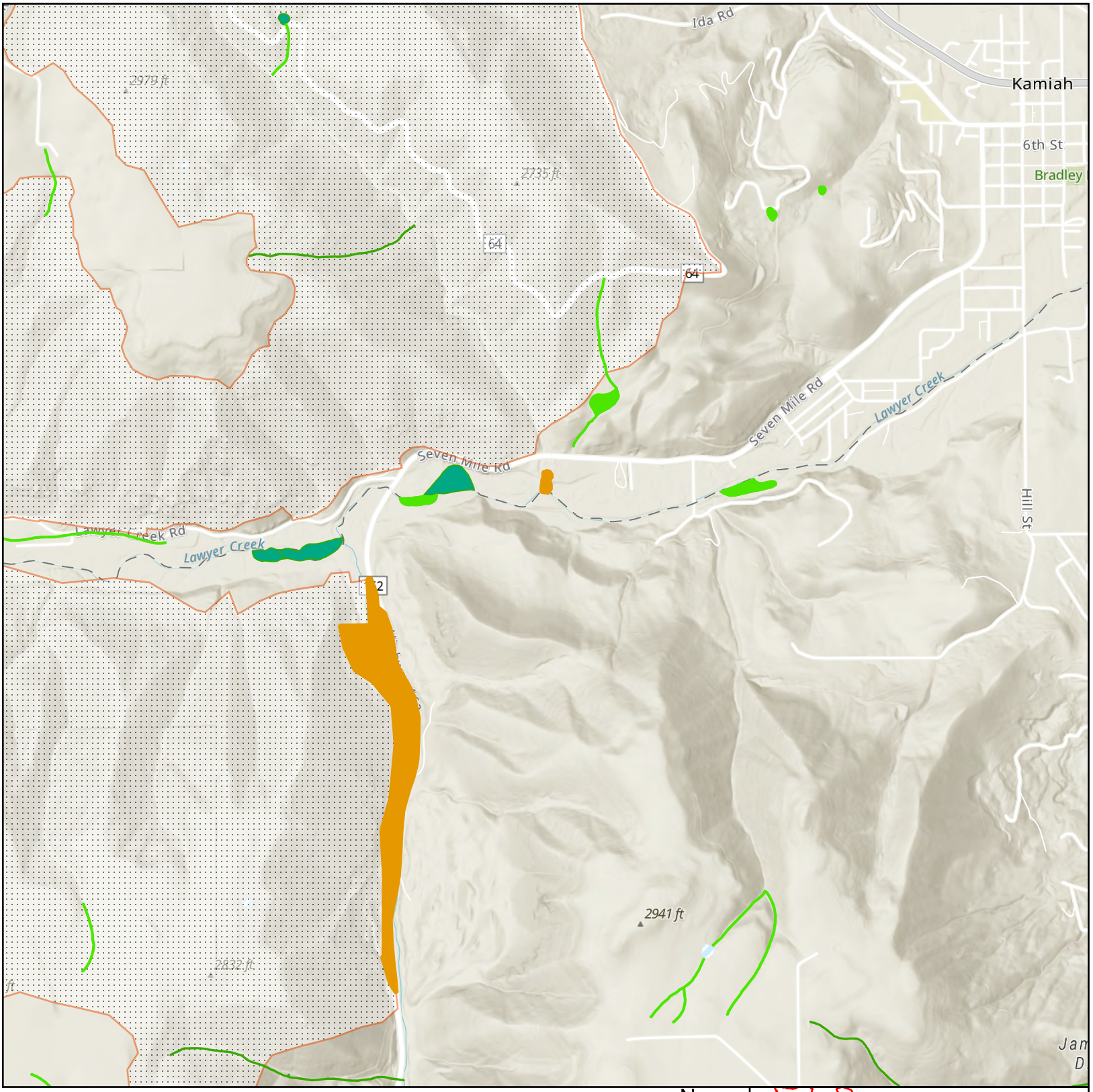

Forested/Shrub and Emergent Wetlands:

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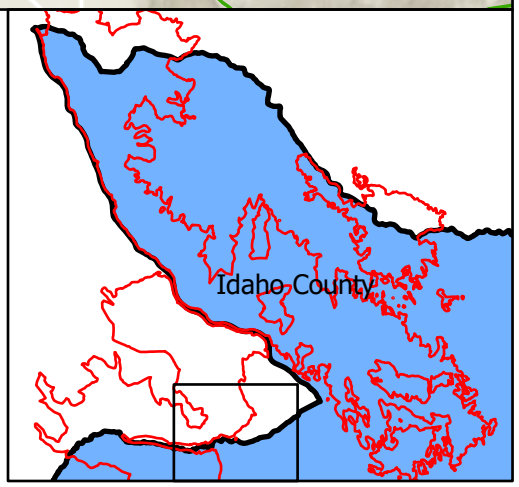

Appendix D Public Notice

PUBLIC NOTICE

Federal Emergency Management Agency
Draft Environmental Assessment
Clearwater Complex Vegetation Management Project

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) is proposing to fund Idaho County for the Clearwater Complex Vegetation Management Project (Project). Funding would be provided by the Hazard Mitigation Grant Program (HMGP) as authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. FEMA has prepared a Draft Environmental Assessment (EA) for the proposed project pursuant to the National Environmental Policy Act of 1969 and FEMA's implementing Instruction. The Draft EA evaluates alternatives for compliance with applicable environmental laws, including Executive Orders 11990 (Protection of Wetlands), 11988 (Floodplain Management), and 12898 (Environmental Justice). The alternatives that are evaluated in the Draft EA are (1) no action and (2) treat up to 1,785 acres scattered along county-road ROWs and on State, Tribe, and privately-owned parcels to control invasive plants and riparian corridor restoration.

The Draft EA is available to the public for review either on FEMA's website https://www.fema.gov/emergency-managers/practitioners/environmental-historic/nepa-repository or Idaho County's website https://www.idahocounty.org/ under Public Notices or the Noxious Weed Management Department.

A hard copy of this EA is available for review at the Kamiah City Hall at 507 Main Street, Kamiah, Idaho 83536 and at Kooskia City Hall at 026 S. Main Street, Kooskia, Idaho 83539. If no significant issues are identified during the comment period on the Draft EA, FEMA will finalize the Draft EA, issue a Finding of No Significant Impact (FONSI), and fund the project. The FONSI will be posted to FEMA's website. Unless substantive comments on the Draft EA are received, FEMA will not publish another public notice for this project. The deadline for submitting written comments on the Draft EA is June 17th, 2022. Comments should be either mailed to: Science Kilner, Regional Environmental Officer, FEMA Region X, 130 228th Street SW, Bothell, WA 98021 or submitted via e-mail to FEMA-R10-EHP-Comments@fema.dhs.gov. Please include "Clearwater" in the submittal subject line.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 155
Seattle, WA 98101-3188

REGIONAL
ADMINISTRATOR'S
DIVISION

June 16, 2022

Science Kilner, Regional Environmental Officer
FEMA Region X
130 228th Street SW
Bothell, WA 98021

Dear Science Kilner:

The U.S. Environmental Protection Agency has reviewed the Federal Emergency Management Agency's May 2022 Draft Environmental Assessment for the Clearwater Complex Vegetation Management Project in Idaho County, Idaho (EPA Project Number 22-0033-FEMA) pursuant to Section 309 of the Clean Air Act and the National Environmental Policy Act. EPA has conducted its review pursuant to the National Environmental Policy Act and our review authority under Section 309 of the Clean Air Act. The CAA Section 309 role is unique to EPA. It requires EPA to review and comment publicly on any proposed federal action subject to NEPA's environmental impact statement requirement.

The Draft EA evaluates the potential environmental impacts associated with the implementation of vegetation management work on lands affected by the 2015 Clearwater Complex Fire in the north area of Idaho County. The Proposed Action describes vegetation management activities including invasive weed management with herbicide application, release of U.S. Department of Agriculture approved biological control agents, monitoring, blackberry removal and planting trees and shrubs in riparian areas, reseeding with native and Natural Resource Conservation Service approved non-native seed mix, and long-term maintenance.

EPA supports Idaho County's efforts to limit the volume of flammable and invasive vegetation in the treatment areas, to minimize the potential of another wildfire, thus diminishing the potential of future climate threats and associated hazards to its residents.

Please see our enclosed comments for a description of our recommendations for completing the NEPA analysis. If you have questions about this review, please contact Lauren Boldrick of my staff at (907) 271-5097 and boldrick.lauren@epa.gov, or me, at (206) 553-1774 or at chu.rebecca@epa.gov.

Sincerely,

Rebecca Chu, Chief
Policy and Environmental Review Branch

Enclosure

U.S. EPA Detailed Comments on the
Clearwater Complex Vegetation Management Project
Idaho County, Idaho
June 2022

Federal Insecticide, Fungicide, and Rodenticide Act

EPA recommends revising the reference to the Federal Insecticide, Fungicide, and Rodenticide Act as "…(FIFRA), as amended." FIFRA has been amended several times since 1996 by a handful of different acts, and this proposed edit will support the public's understanding of the reference.

Glyphosate

We recommend FEMA revise the following text:

> In January 2022, EPA issued an ~~final~~ interim decision for glyphosate that determined there are no human health risks of concern. In response to a legal challenge to the interim decision, EPA has requested a remand of the ecological portion of the decision, thus additional re-evaluation is underway ~~for its continued use, finding no human health risks and ecological risks that are mitigated through adherence to product labeling with use restrictions~~.

EPA recommends that FEMA incorporate information on our November 2021 final biological evaluation for glyphosate that triggered consultation with the US Fish and Wildlife Service and National Marine Fisheries Service on effects to listed species[1]. The results of that consultation may involve additional mitigation to protect listed species and critical habitat.

On page 24, EPA recommends the first bullet refer to label requirements rather than recommendations to ensure that the document is consistent with FIFRA requirements.

On page 25, EPA advises that the bullet about minimizing drift indicate that if the labeling requires even more restriction, that would be followed instead. The same caveat should apply to any place where use directions are suggested. A possible revision would be "to the extent the herbicide product does not provide more restrictive directions…"

On page 32, EPA notes that there are descriptions of effects of some of the pesticides citing to sources that may not have been reviewed by the Office of Chemical Safety and Pollution Prevention. EPA recommends making this description clear for each pesticide described in this analysis. EPA recommend deleting the sentence saying "Ultimately, ….EPA's completion…" as the evaluation of ecological effects for gylphosate is still underway.

EPA notes this sentence refers back to a section 3.2.3 on page 3-6 of the DEA, and there is no heading indicating the section. References to 3.2.3 are found throughout the document and may require editing.

Monitoring

EPA recommends that the EA consider how the geochemistry of the project area soils may be affected as a result of the wildfire. Section 4.2 notes that post-fire evidence of soil erosion, has occurred in the project area, but does not discuss impacts to the soil geochemistry.

[1] https://www.epa.gov/endangered-species/final-national-level-listed-species-biological-evaluation-glyphosate.

EPA recommends that potential indirect effects of the wildfire related to vegetation recovery, surface waters and water quality, by way of geochemistry be considered. Since ashes can be hydrophobic, water permeability in this soils layer decreases; also, the element availability increases due to organic matter destruction. The increased availability of nutrients and metals can lead to a loss of nutrients by erosion and leaching processes and to a remobilization of potential toxic metals. [2] This change is geochemistry may impact the cumulative water quality, when considering the impacts of the pesticides.

Cultural Resources

In Section 4.12, (p.50) several Tribal archaeological resources are listed in vague detail. EPA recommends consulting with the Tribe regarding this description, as well as the Tribal Historic Preservation Officer. The EA is not clear in the level of reciprocal engagement on this topic with the Tribe.

EPA recommends consulting with the Tribe and the THPO when developing and describing consultation processes to improve the public's understanding of what has occurred. The EA should be clear on the topics that were consulted on, and how those issues were resolved.

Environmental Justice

Regarding Section 4.13, as a best practice, EPA recommends substituting the use of the label "environmental justice low-income population" with "community with environmental justice concerns" in cases where FEMA has discretion.

Tribal Consultation

EPA encourages the FERC to continue consulting with the Tribes and incorporate feedback from the Tribes when making decisions regarding the project. EPA recommends the NEPA analysis describe the issues raised during the consultations and how those issues were addressed.

[2] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7432673/#:~:text=The%20main%20direct%20effect%20of,of%20alkaline%20elements%20%5B6%5D.