Forest Aquatic Restoration Project
NEPA Compliance and Implementation Checklist
Project Name

Project Number: 01012019 **Date:** 10/01/2018 **Location:** Bridge Creek and Beech Creek
Category: 2 – Large wood, boulder and gravel placement
Project Description: This project will authorize large wood placement within Bridge and Beech creeks as part of ODOT hazard tree mitigation activities along Highways 26 and 395.

Heritage (to be completed by heritage specialist)

Y	N	Initial	
☒	☐	____	Specific PDC for heritage addressed (heritage surveys; avoidance areas).

Botany (to be completed by botany specialist) → Project EC

Y	N	Initial	
☑	☐	KLC	Specific PDC for botany addressed (sensitive plant surveys).
☑	☐	KLC	Specific PDC for noxious weeds addressed.

Land Management Consistency (is the proposed project within the management area? Check yes or no. If yes, comments should indicate whether proposed actions are consistent with the standards for the management area.)

Y	N	Initial		Y	N	Initial	
☐	☒	KLC	4A big game winter range	☐	☒	KLC	9 research natural areas
☐	☒	KLC	6A and 6B wilderness	☐	☒	KLC	10 semi-primitive non-motorized recreation areas
☐	☒	KLC	7 scenic area	☐	☒	KLC	22/22A wild and scenic river
☐	☒	KLC	8 special interest areas	☐	☒	KLC	inventoried roadless areas

Comments: This project falls under Management Areas 3B, "Anadromous Riparian Areas;" 14F, "Visual Corridors – Foreground," and within a category 1 Riparian Habitat Conservation Area.

I have reviewed this project and have determined it is compliant with the Malheur Forest Plan and Aquatic Restoration environmental assessment project design criteria identified for my resource.

Table 1. Projects design criteria and Malheur Forest Plan compliance checklist

Resource	Signature	Date	Comments (additional PDCs may be noted if necessary)
Heritage	[signature]	10/3/18	No Adverse effects if PDC's are followed
Botany	[signature]	10/3/18	No concerns
Invasive Plants	[signature]	10/3/18	No concerns
Wildlife	[signature]	10/3/18	NA
Fish*	[signature]	10/3/18	Variance approved/ overall beneficial effect to MCR steelhead
Hydrology*	[signature]	10/3/18	Project will help the condition of stream + water quality
Range	[signature]	10-3-18	
Soils	[signature]	10/3/18	Felling & no removal has no adv impacts.
Recreation/Visuals	[signature]	10/3/18	No concerns if PDCs are followed
Special Uses	[signature]	10/3/18	Re-coordinate w/ utility providers in areas where ROW [illegible]
Lands / Mining	N/A		No lands or mining
Engineering	N/A		Hazard tree mitigation falls under MOU between USFS and ODOT.
Fuels / Fire	[signature]	10/3/18	No Concerns
Silviculture	N/A		Hazard tree mitigation falls under MOU between USFS and ODOT.

* Ensure that an experienced fisheries biologist or hydrologist is involved in the design of all projects covered by Aquatic Restoration Biological Opinion II. The experience should be commensurate with technical requirements of a project.

District Environmental Coordinator: Katherine L. Cuero Date: 10/4/18

Line Officer Signature: Robert B. [illegible] Date: 10/4/18

Implementation Description

Bridge and Beech Creeks Large Wood Project

Table 1. Project information

Category 2: Large wood, Boulder, and Gravel placement	Lead Preparer: Dan Armichardy
Applicant: Blue Mountain Aquatics	NEPA Reference: DN For Aquatic Restoration EA website*
Location: Bridge Creek, along Highway 26, Beech Creek, along Highway 395 USGS Quad: Bates, Johnson Saddle	Lease/ /Case File/ Serial #: na (Reference #):na
Begin Date: 09/05/2018	Due Date: 10/05/2018

*Please see http://www.fs.usda.gov/detailfull/malheur/landmanagement/?cid=STELPRD3817723&width=full

Purpose and Need

Oregon Department of Transportation (ODOT) has requested to mitigate hazard trees to address public and highway safety concerns along U.S. Highways 26 and 395, including sections that parallel Bridge and Beech creeks, respectively. Bridge Creek and Beech Creek each contain threatened Mid-Columbia River Steelhead and their critical habitat. Both creeks are deficient in large woody debris and habitat complexity as outlined by Malheur Forest Plan standards and PACFISH riparian management objectives for fish habitat criteria. The Forest Service has requested that hazard tree mitigation activities include felling into the stream channel and floodplain as described below. The purpose and need for this action is to improve: (1) floodplain connectivity, (2) channel complexity, and (3) riparian and aquatic habitat, to support anadromous Mid-Columbia River steelhead, resident fish, and wildlife.

Bridge Creek is a primary stream within the Upper Middle Fork John Day Watershed, a U.S. Forest Service Region 6 priority watershed. Recent stream surveys indicate that wood standards were not met for Bridge Creek. The highest amount of large woody debris found during 2012 Bridge Creek stream surveys were approximately 6 pieces per mile for small wood and 1 piece per mile for large wood. Bankfull width for Bridge Creek is <10 feet for all reaches. Malheur Forest Plan standards for fish habitat criteria for lodgepole and mixed conifer (the dominant ecosystem along Bridge Creek) are:

> *Mixed Conifer ecosystem* – 80-120 pieces per mile ≥12 inch diameter and 20% >20 inches in diameter and ≥35 feet long or 1.5 times bankfull width.
>
> *Lodgepole Pine ecosystem* – 100-350 pieces per mile ≥6 inch diameter and 10% >12 inches in diameter and ≥18 feet long or 1.5 times bankfull width.

PACFISH riparian management objectives for large woody debris applicable to Oregon, east of the Cascade Crest are >20 pieces per mile >12 inch diameter, >35 foot length. Beech Creek is not meeting PACFISH large wood standards.

ODOT estimates less than 50 dead trees could potentially be felled in Bridge Creek and less than 20 dead trees could be felled in Beech Creek. These trees range in size from approximately 18 to 28 inches in diameter at breast height. Felling these trees within Bridge and Beech creeks will move the creeks toward

the desired conditions for large woody debris and habitat complexity as outlined by Forest Plan standards, as amended.

Land Use Plan Conformance

The project areas fall under several overlapping management areas within the Malheur National Forest Plan.

The project falls under Management Area (MA) 3B "Anadromous Riparian Areas" of the Malheur National Forest Land and Resource Management Plan (LRMP). The goal of MA3B is to "Manage riparian areas to protect and enhance their value for wildlife, anadromous fish habitat and water quality. Design and conduct management in all riparian areas to maintain or improve water quality and beneficial uses." Fish and Wildlife standards within MA14 state to "Provide the necessary habitat to maintain or increase populations of management indicator species with special emphasis on steelhead (USDA Forest Service, 1990).

The project falls under Management Area (MA) 14F "Visual Corridors – Foreground." The goal of MA14 is to "manage corridor viewsheds with primary consideration given to their scenic quality and the growth of large diameter trees. Visual quality objectives…will be applied while providing for other uses and resources." Fish and Wildlife standards within MA14 state to "Design and implement fish and wildlife improvement/maintenance projects to meet visual quality objectives" (USDA Forest Service, 1990).

Bridge Creek and Boulder Creek are each within a category 1 Riparian Habitat Conservation Area (fish-bearing stream) as designated by PACFISH/INFISH, and each contain critical habitat for Mid-Columbia River steelhead designated by the National Marine Fisheries Service (NMFS).

The project complies with Malheur National Forest Plan goals and standards by: (1) improving riparian and aquatic habitat for wildlife and fish, including critical habitat for Mid-Columbia River Steelhead; (2) improving corridor viewsheds by removing dead trees; (3) improving long-term corridor viewsheds by encouraging riparian hardwood species via a more connected floodplain and protection of existing hardwood species.

Proposed Action and Implementation Plan

Within ODOT hazard tree felling areas adjacent to Bridge Creek (along U.S. Highway 26) and Beech Creek (along U.S. Highway 395), trees will be hand-felled within the stream and floodplain to improve (1) floodplain connectivity, (2) channel complexity, and (3) riparian and aquatic habitat, including critical habitat for the threatened Mid-Columbia River Steelhead. In order to meet these desired conditions, tree-felling activities shall meet the following project design criteria (PDCs) as agreed to between USFS and ODOT on September 26, 2018.

PDCs for Highway 26 along Bridge Creek and Highway 395 Beech Creek:

- Within safety felling requirements, trees will be felled so the bole and limbs interact with the low flow channel and within the bankfull when feasible.
- Trees that are not tall enough to reach the stream channel will be felled across the floodplain and underlying limbs bucked to allow the bole to touch the ground, or when possible laid onto point bars (see figure 1).
- When feasible, hazard trees will be felled to interlock with existing shrubs (willow, dogwood, alder, or cottonwood) in order to hold the tree in place during high flows. Hazard trees will also be felled to protect the existing shrub community within Bridge Creek.

PDCs for Highway 395 tree felling along Beech Creek:

- All trees that can safely reach Beech Creek will be directionally felled at an angle where they will most interact with the stream channel.
- Trees will be limbed and bucked so the bole contacts the ground surface.
- When possible, tops of trees will be felled directly into riparian hardwood shrubs (willow, dogwood, alder, or cottonwood) in order to hold the tree in place during high flows. Hazard trees will also be felled to protect the existing shrub community within Beech Creek.

Highways 26 and 7 are managed for visual quality objectives as identified in the Malheur Forest Plan, Highway 7 Corridor Plan (1995), and Highway 26 Viewshed Corridor Plan (2000). Highway 395 is managed for visual quality objectives as identified in the Malheur Forest Plan. The desired condition is to maintain the existing scenic beauty and manage the area to appear only slightly altered to the average viewer. It is expected that large wood placement in Bridge Creek along Highway 26, and in Beech Creek along Highway 395, will provide long-term enhancement to the visual corridor by encouraging expansion of riparian hardwood species and protecting existing hardwood species.

To meet these objectives, the following conditions should be met:

- Low cut all stumps within 200 feet of the road.
- Slash should be removed within one year.
- Hand-piling within 500 feet of the road is preferred to crushing or machine piling.

Figures

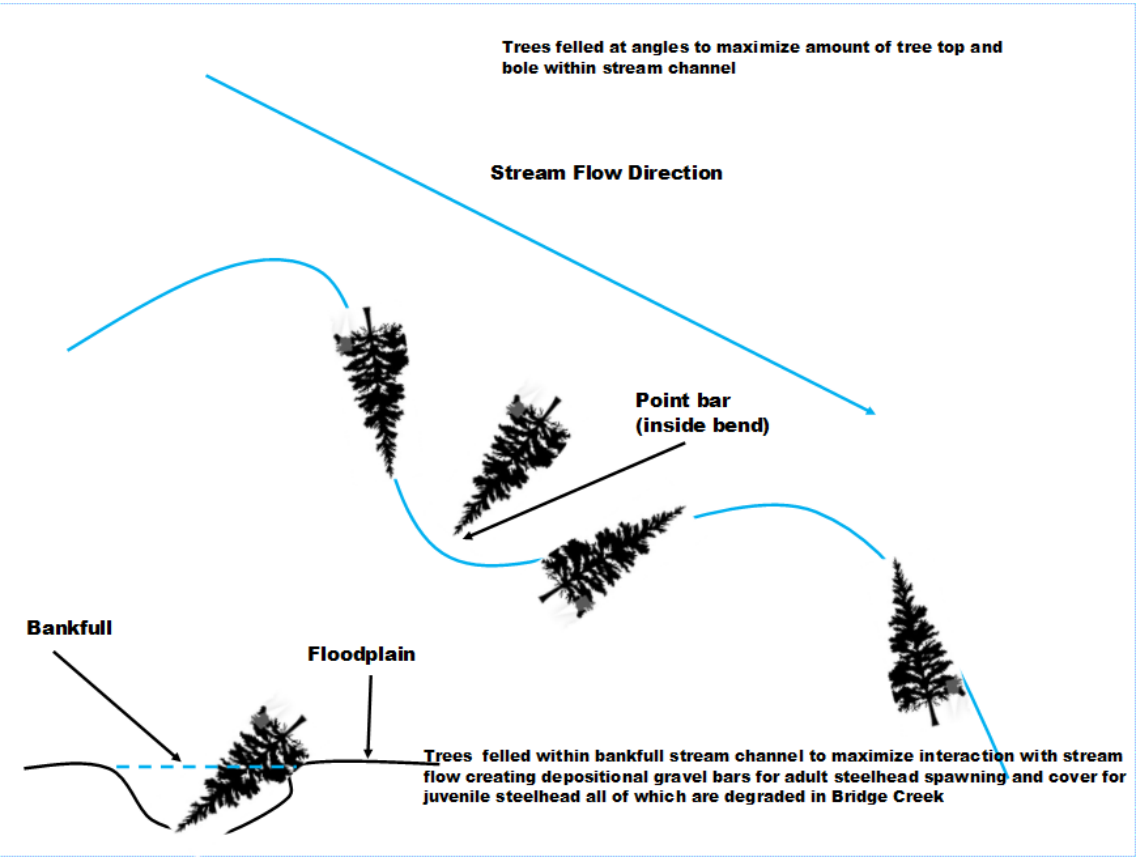

Figure 1. Directional tree felling onto point bars.

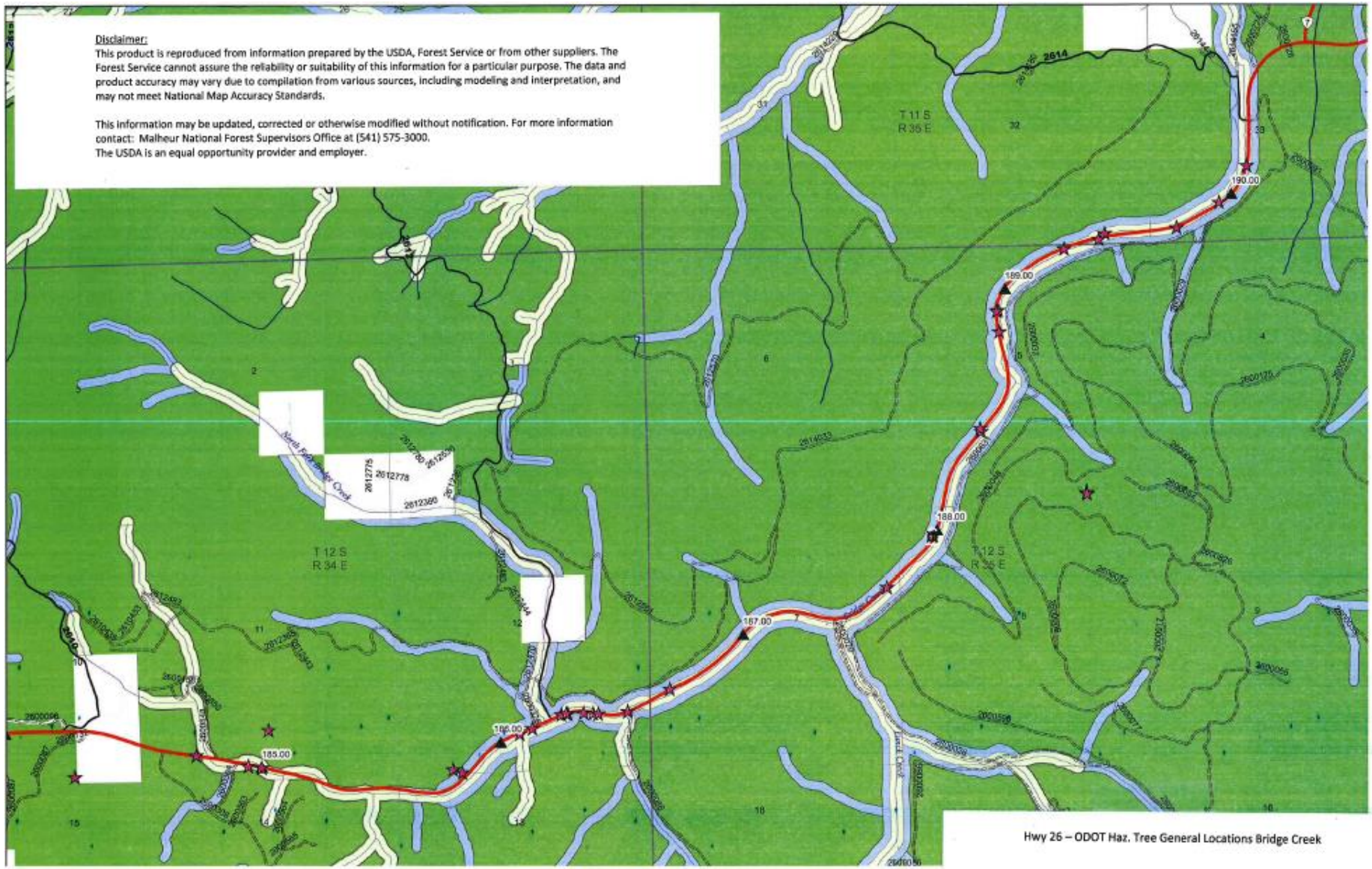

Figure 2. Location of proposed trees to be felled into Bridge Creek adjacent to U.S. Highway 26

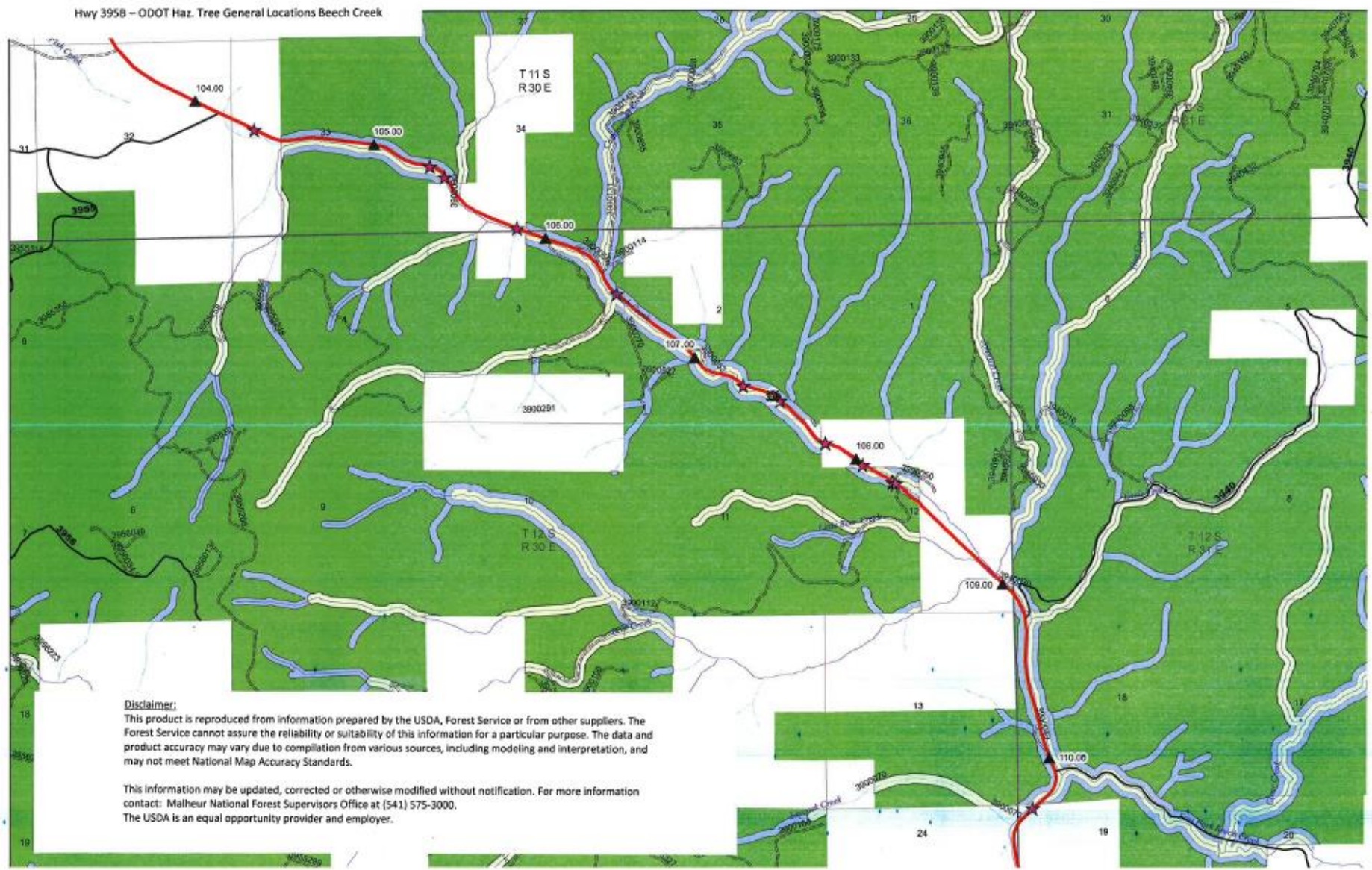

Figure 3. Location of proposed trees to be felled into Beech Creek adjacent to U.S. Highway 395.

Appendix to the Aquatic Restoration EA

Implementation Description

Project Title: Bridge and Beech Creeks Large Wood Project

Project Number: 01012019

Category 2 : Large wood, boulder, and gravel placement

The following information will guide actions for this project that is taking place within the bounds of the Decision Notice for the 2014 Malheur National Forest Aquatic Restoration Environmental Analysis to maintain that all conservation measures, guidelines, and project design criteria are met under this guiding document.

Much of the information below is reproduced from the Decision Notice for Aquatic Restoration Project Appendix A (pages 7 through 44), and may cite project design criteria (PDC) numbers, literature, or other documents not referenced further in this proposal document. Please refer to the Decision Notice for more information.

Program Administration

1. Integration of project design criteria and conservation measures and terms and conditions into project design and contract language
    a. This document is to outline the conservation measures and PDCs that will be used during project implementation to remain compliant with the aquatic restoration biological assessment as well as ARBO II.
2. Project notification: The following information will be provided to the National Marine Fisheries Service (NMFS) Level 1 aquatics members 30 days prior to implementation as a Project Notification Form 7.

    a. Action identifier –
    b. Project name – Bridge and Beech Creeks Large Wood Project
    c. Location – Bridge Creek along highway 26, Beech Creek along highway 395

Table 2. Project location information

Project location	[Project Name]
Stream name	Bridge Creek, Beech Creek
6th field HUC	Upper Beech Creek (170702010801) Bridge Creek (170702030105)
Latitude / Longitude (decimal degrees)	• 44.533N 118.578W – 44.572N 118.506W • 44.543N 119.054W – 44.570N 119.123W

    d. Agency contact – Dan Armichardy, 541-575-3391, darmichardy@fs.fed.us
    e. Timing – 10/8/2018 – 10/31/2018
    f. Activity category – Category 2: Large Wood, Boulder, and Gravel Placement
    g. Project description – Project description is available in the Proposed Action and Implementation Plan section above.
    h. Species affected –

i. Listed species: Mid-Columbia River Steelhead
ii. Critical Habitat: Mid-Columbia River Steelhead
iii. MIS Species: Redband trout

i. Date of submittal – Submitted to NMFS 10/2/18 and expedited due to variance -request approved 10/2/18
j. Site assessments – Assessment for contaminants is not required at these locations.
k. Review – NMFS fish passage review and Restoration Review Team review are not required.
l. Verification – _____
m. SOD project notification – _____

3. Minor Variance: Variance for the in-stream work period approved October 2, 2018 by NOAA Fisheries.
4. NMFS Fish Passage Review and Approval: This work does not require review by the NFMS level 1 team member.
5. Restoration Review Team: This work does not require review by the restoration review team.
6. Project Completion Report: To be completed after implementation
7. Annual Program Report: This project will be completed within 1 year, completion and annual reporting will occur in the winter of FY19 before February 15th.

General Aquatic Conservation Measures

8. **Technical skill and planning requirements:**
    a. An appropriately qualified fisheries biologist or hydrologist will be involved in the design of this project.
    b. The scope of this project is limited in both space and context. Field evaluations and site-specific surveys will require little work. Appropriate time will be allotted for these actions, prior to implementation. Planning and design will involve appropriate expertise.
    c. The assigned fisheries biologist or hydrologist will make sure that any applicable conservation measures and project design criteria are met through the contracting process.
9. **Climate change:** due to the small scale of this work, future climate changes impacts will not have dramatic effects on this work
10. **In-water work period:** In-stream activities will occur between July 15th and August 15th, unless a variance is approved. See Program Administration section.
11. **Fish passage:** Not applicable.
12. **Site assessment for contaminants:** In developed or previously developed sites, such as areas with past dredge mines, or sites with known or suspected contamination, a site assessment for contaminants will be conducted on projects that involve excavation of greater than 20 cubic yards of material. The action agencies will complete a site assessment to identify the type, quantity, and extent of any potential contamination. The level of detail and resources committed to such an assessment will be commensurate with the level and type of past or current development at the site. The assessment may include the following:
    a. Review of readily available records, such as former site use, building plans, records of any prior contamination events.
    b. Site visit to observe the areas used for various industrial processes and the condition of the property.
    c. Interviews with knowledgeable people, such as site owners, operators, occupants, neighbors, local government officials, etc.
    d. Report that includes an assessment of the likelihood that contaminants are present at site.

13. **Pollution and erosion control measures:** Implement the following pollution and erosion control measures:
    a. **Project contact:** Identify a project contact (name, phone number, an address) that will be responsible for implementing pollution and erosion control measures.
    b. List and describe any hazardous material that would be used at the project site, including procedures for inventory, storage, handling, and monitoring; notification procedures; specific clean-up and disposal instructions for different products available on the site; proposed methods for disposal of spilled material; and employee training for spill containment.
    c. Temporarily store any waste liquids generated at the staging areas under cover on an impervious surface, such as tarpaulins, until such time they can be properly transported to and treated at an approved facility for treatment of hazardous materials.
    d. Procedures based on best management practices to confine, remove, and dispose of construction waste, including every type of debris, discharge water, concrete, cement, grout, washout facility, welding slag, petroleum product, or other hazardous materials generated, used, or stored on-site.
    e. Procedures to contain and control a spill of any hazardous material generated, used or stored on-site, including notification of proper authorities. Ensure that materials for emergency erosion and hazardous materials control are onsite (for example, silt fence, straw bales, oil-absorbing floating boom whenever surface water is present).
    f. Best management practices to confine vegetation and soil disturbance to the minimum area, and minimum length of time, as necessary to complete the action, and otherwise prevent or minimize erosion associated with the action area.
    g. No uncured concrete or form materials will be allowed to enter the active stream channel.
    h. Steps to cease work under high flows, except for efforts to avoid or minimize resource damage.

14. **Site preparation:**
    a. **Flagging sensitive areas:** Prior to construction, clearly mark critical riparian vegetation areas, wetlands, and other sensitive sites to minimize ground disturbance.
    b. **Staging area:** Establish staging areas for storage of vehicles, equipment, and fuels to minimize erosion into or contamination of streams and floodplains.
        i. No topographical restrictions: Place staging area 150 feet or more from any natural water body or wetland in areas where topography does not restrict such a distance.
        ii. Topographical restrictions: Place staging area away from any natural water body or wetland to the greatest extent possible in areas with high topographical restriction, such as constricted valley types.
    c. **Temporary erosion controls:** Place sediment barriers prior to construction around sites where significant levels of erosion may enter the stream directly or through road ditches. Temporary erosion controls will be in place before any significant alteration of the action site and will be removed once the site has been stabilized following construction activities.
    d. **Stockpile materials:** Minimize clearing and grubbing activities when preparing staging, project, or stockpile areas. Any large wood, topsoil, and native channel material displaced by construction will be stockpiled for use during site restoration. Materials used for implementation of aquatic restoration categories (for example, large wood, boulders, and fencing material) may be staged within the 100-year floodplain.
    e. **Hazard trees:** Where appropriate, include hazard tree removal (amount and type) in project design. Fell hazard trees when they pose a safety risk. If possible, fell hazard trees within riparian areas towards a stream. Keep felled trees on site when needed to meet coarse large wood objectives.

15. **Monitoring:** Monitoring will be conducted by action agency staff, as appropriate for that project, during and after a project to track effects and compliance with this opinion.

    a. Implementation:
    i. Visually monitor during project implementation to ensure effects are not greater (amount, extent) than anticipated and to contact Level 1 representatives if problems arise.
    ii. Fix any problems that arise during project implementation.
    iii. Regular biologist/hydrologist coordination if biologist/hydrologist is not always on site to ensure contractor is following all stipulations.

    b. **401 Certification**: To minimize short-term degradation to water quality during project implementation, follow current 401 Certification provisions of the Federal Clean Water Act for maintenance or water quality standards described by the following: Oregon Department of Environmental Quality (Oregon BLM, Forest Service, and BIA); Washington Department of Ecology (Washington BLM); and the Memorandum of Understanding between the Washington Department of Fish and Wildlife (WDFW) and Forest Service regarding Hydraulic Projects Conducted by Forest Service, Pacific Northwest Region (WDFW and USDA-Forest Service 2012); California, Idaho, or Nevada 401 Certification protocols (BLM and Forest Service).

    c. **Post project:** A post-project review shall be conducted after winter and spring high flows.
    i. For each project, conduct a walk through/visual observation to determine if there are post-project affects that were not considered during consultation. For fish passage and revegetation projects, monitor in the following manner:
    ii. Fish Passage Projects: Note any problems with channel scour or bedload deposition, substrate, discontinuous flow, vegetation establishment, or invasive plant infestation.
    iii. Revegetation: For all plant treatment projects, including site restoration, monitor for and remove invasive plants until native plants become established.
    iv. In cases where remedial action is required, such actions are permitted without additional consultation if they use relevant PDC and aquatic conservation measures and the effects of the action categories are not exceeded.

Applicable Project Design Criteria

Project Design Criteria for Aquatic Restoration Activity Categories

2. Large Wood, Boulder, and Gravel Placement

Large wood, boulder, and gravel placement includes large wood and boulder placement, engineered log jams, porous boulder structures and vanes, gravel placement, and tree removal for large wood projects. Such activities will occur in areas where channel structure is lacking due to past stream cleaning (large wood removal), riparian timber harvest, and in areas where natural gravel supplies are low due to anthropogenic disruptions. These projects will occur in stream channels and adjacent floodplains to increase channel stability, rearing habitat, pool formation, spawning gravel deposition, channel complexity, hiding cover, low velocity areas, and floodplain function. Equipment such as helicopters, excavators, dump trucks, front-end loaders, full-suspension yarders, and similar equipment may be used to implement projects.

a. **Large wood and boulder projects:**

i. Place large wood and boulders in areas where they would naturally occur and in a manner that closely mimics natural accumulations for that particular stream type. For example, boulder placement may not be appropriate in low-gradient meadow streams.
ii. Structure types shall simulate disturbance events to the greatest degree possible and include, but are not limited to, log jams, debris flows, windthrow, and tree breakage.
iii. No limits are to be placed on the size or shape of structures as long as such structures are within the range of natural variability of a given location and do not block fish passage.
iv. Projects can include grade control and bank stabilization structures, while size and configuration of such structures will be commensurate with scale of project site and hydraulic forces.
v. The partial burial of large wood and boulders is permitted and may constitute the dominant means of placement. This applies to all stream systems but more so for larger stream systems where use of adjacent riparian trees or channel features is not feasible or does not provide the full stability desired.
vi. Large wood includes whole conifer and hardwood trees, logs, and rootwads. Large wood size (diameter and length) should account for bankfull width and stream discharge rates. When available, trees with rootwads should be a minimum of 1.5 times bankfull channel width, while logs without rootwads should be a minimum of 2.0 times bankfull width.
vii. Structures may partially or completely span stream channels or be positioned along stream banks.
viii. Stabilizing or key pieces of large wood must be intact, hard, with little decay, and if possible have root wads (untrimmed) to provide functional refugia habitat for fish. Consider orienting key pieces such that the hydraulic forces upon the large wood increases stability.
ix. Anchoring large wood – Anchoring alternatives may be used in preferential order:

1. Use of adequate sized wood sufficient for stability
2. Orient and place wood in such a way that movement is limited
3. Ballast (gravel or rock) to increase the mass of the structure to resist movement
4. Use of large boulders as anchor points for the large wood
5. Pin large wood with rebar to large rock to increase its weight. For streams that are entrenched (Rosgen F, G, A, and potentially B) or for other streams with very low width to depth ratios (less than 12) an additional 60 percent ballast weight may be necessary due to greater flow depths and higher velocities.

e. **Tree removal for large wood projects:**

i. Live conifers and other trees can be felled or pulled/pushed over in a Northwest Forest Plan (USDA and USDI 1994a) Riparian Reserve or PACFISH/INFISH (USDA-Forest Service 1995 ; USDA and USDI 1994b) riparian habitat conservation areas (RHCA), and upland areas (for example, late successional reserves or adaptive management areas for northern spotted owl and marbled murrelet critical habitat) for in-channel large wood placement only when conifers and trees are fully stocked. Tree felling shall not create excessive stream bank erosion or increase the likelihood of channel avulsion during high flows.
ii. Danger trees and trees killed through fire, insects, disease, blow-down and other means can be felled and used for in-channel placement regardless of live-tree stocking levels.
iii. Trees may be removed by cable, ground-based equipment, horses or helicopters.
iv. Trees may be felled or pushed/pulled directly into a stream or floodplain.
v. Trees may be stock piled for future instream restoration projects.
vi. The project manager for an aquatic restoration action will coordinate with an action-agency wildlife biologist in tree-removal planning efforts.

Project Design Criteria by Resource

Fisheries and Hydrology

Fisheries and hydrology resources will follow all mitigation measures and project design criteria for aquatic restoration activities as shown in the 'Aquatic Restoration Project Categories, Program Administration, General Aquatic Conservation Measures, and Project Design Criteria for Aquatic Restoration Activity Categories on the Malheur National Forest.'

Additional Aquatic project design criteria were developed for the following elements: tree tipping and felling, juniper treatments, tree hauling, and prescribed burning.

General For Inside Riparian Habitat Conservation Areas

All snags will be maintained within the RHCA unless deemed a hazard to the restoration activity.

Tree Tipping and Tree Felling for Large Wood Projects

Source trees being extracted (either by tipping or felling) as part of this project for instream restoration will not be harvested from within the primary shade zone.

Table 3. Primary shade zone width slope distance (feet), based on adjacent hillslope (percent)

Hillslope less than 30 percent	Hillslope 30 to 60 percent	Hillslope greater than 30 percent
50 feet	55 feet	60 feet

The Temperature Implementation Strategies allow the distances in the above table to be less (but not less than 25 feet.) if any of the following conditions applies:

- The trees are located on a south facing slope (175 to 185 degree azimuth) and therefore do not provide stream shade;
- An appropriate level of analysis is completed and documented, such as shade modeling, using site-specific characteristics to determine the primary shade tree width; and/or
- Field monitoring or measurements are completed to determine the width where optimum angular canopy density (65 percent or greater) is achieved (see TMDL Implementation Strategies).
- If trees are being felled for safety reasons they can be felled towards the stream.
- Source trees should come from but are not limited to: over or fully stocked upland and riparian stands, hazard trees, trees generated from administrative sites (maintenance, expansion, or new construction), and hardwood restoration.

There is no DBH (diameter at breast height) restriction for large wood, but consider the following before removing and placing trees:

Diameter:

- The key to establishing a logjam is utilizing larger diameter wood that resists decay. These pieces of wood are often called "key pieces," and serve as the anchors for the logjam structure. Wood can improve fish habitat only if the wood is large enough to stay, influence flow patterns, and sediment sorting. Larger diameter wood retains its size longer as abrasion and decay occurs over the years. Larger diameter wood is more effective in creating pools and complex channels that improve fish populations. The minimum diameter required for a key piece of wood depends on the bankfull width of the stream is found in the following table:

Table 4. Bankfull widths and minimum diameter of logs to be considered key pieces

Bankfull width* (in feet)	Minimum diameter* (inches)
0 to 10	10

Bankfull width* (in feet)	Minimum diameter* (inches)
10 to 20	16
20 to 30	18
Over 30	22

*This table was taken from '1995 A Guide to Placement of Large Wood in Streams.

Length:

- The length of the wood is also important to stability. To be considered a key piece a log with a rootwad still attached should be at least 1 1/2 times (1.5 times) the bankfull or a log without a rootwad should be twice (2 times) the length of the stream's bankfull width. As the best fish habitat is formed around jams composed of three to seven logs, at least two key pieces should be used at each structure.
- Mimic natural accumulations of large woody debris based on stream type, valley setting, and community type and ensure future large woody debris recruitment
- Tailholds as part of tree tipping operations are permitted across perennial, intermittent and ephemeral streams, but the use of protective straps will be required to prevent tree damage.

Prescribed Burning and Related Activities

- Mechanical piling and burning of large piles will be restricted to existing roads and landings.
- Include all relevant PDC in silviculture prescriptions and bum plan objectives for all fuel treatment activities within RHCAs.
- Use all available fuel treatments and preparation activities as necessary (for example, multiple entries, slash pull-back, modified ignition methods, locations, timing, and sequence, thinning of small green trees, pruning of green trees and snags, prescribed fire, fire suppression, jack pot burning, etc.) to achieve the specific PDC. Suppression should be used only as a last resort to achieve other PDC.

For Perennial and Fish-Bearing Stream Channels:

- Avoid removing trees along stream banks (for example, don't cause bank instability or increase erosion).
- Within primary shade zone retain 100 percent of the overstory canopy closure with the exception of hardwood treatment.
- For intermittent. non-fish-bearing stream channels:
  - ♦ Within 50 feet of the stream channel backing fire is preferred.
- For the maintenance and use of water sources and draft sites:
  - ♦ Minimize disturbance of existing riparian vegetation to the greatest extent practical; in particular, maintain shade, bank stability, and large woody material recruitment potential.
  - ♦ Use sediment control measures such as straw bales, filter cloth, or sediment fences when conditions warrant.
  - ♦ Maximize maintenance activities during late summer and early fall to best avoid wet conditions.
  - ♦ Do not pump from streams that do not have continuous surface flow. When pumping water in all situations from streams, ensure that at least one-half of the original streamflow remains below the pump site.
  - ♦ Refuel power equipment, or use absorbent pads for immobile equipment, and prepare concrete at least 150 feet (or as far as possible from the water body where local site conditions do not allow a 150 foot setback) from water bodies to prevent direct delivery of contaminants into associated water bodies.

- Fisheries, hydrology or other qualified personnel must work with engineering/fire personnel to review proposed activities to minimize potential effects to fish, stream channel conditions, and water quality.
- Use and develop off-channel ponds outside of stream channels were feasible and appropriate. Work with fire folks to prioritize and decommission unnecessary in-stream drafting sites.
- Water withdrawal equipment must have a fish screen installed, operated and maintained in accordance to NOAA Fisheries guidelines.

Wildlife

Threatened, Endangered or Sensitive Species

- If wolves become established (denning) while project implementation is occurring, measures will be taken to avoid activity in that vicinity
- If any evidence of wolverines is discovered during project implementation, measures will be taken to provide protection. If a den is found we would protect it from human disturbance.

Raptors

- No activities will occur within currently known goshawk or other raptor nest stands. To conserve nesting habitat and to minimize disturbance to nesting individuals, restrictions would be executed according to the requirements of the species involved.
- With all newly discovered raptor nests, a buffer zone would be established by the wildlife biologist to restrict activities near the nest area during occupancy.
- Where possible, retain trees with inactive nests that may be important to secondary nesters (for example, great gray owl).
- Any snags in riparian areas or uplands will be protected from disturbance, removal, or use in stream restoration activities unless deemed a safety hazard at a specific work site.

Botany

Note: Pre-implementation planning project design criteria are identified.

Rare and Sensitive Plants and Habitats

- ***Pre-Implementation:*** Proposed restoration projects shall be completely surveyed early in the implementation planning process by a qualified botanist or rare plant technician, to identify and assess any sensitive or rare plant populations or habitats.
- ***Pre-Implementation:*** Proposed restoration projects shall develop restoration plans for degraded sensitive species habitats and/or mitigation plans in areas where sensitive plant populations are documented. This shall be accomplished by a journey-level Forest Service botanist in collaboration with the interdisciplinary team and other stakeholders.
- Heavy equipment, vehicle operation, road construction, staging areas, stockpile areas, piling of slash, fence construction, recreation sites, prescribed fires, fire lines, and other operational activities shall not be allowed in any documented sensitive plant sites unless it is for the demonstrated benefit or protection of the site. All sensitive plant populations should be buffered 100 feet. from all operational activities where topography does not restrict such a distance. Sensitive plant sites and associated buffers shall be identified as areas to protect.

Sensitive and Unique Habitats

- The integrity of unique habitats shall be maintained. Unique habitats [may] include meadows, rimrock, talus slopes, cliffs, animal dens, wallows, bogs [fens], seeps and springs. This shall be accomplished by incorporating cover buffers approximately 100 feet in width.
- Heavy equipment, vehicle operation, road construction, staging areas, stockpile areas, piling of slash, fence construction, recreation sites, prescribed fires, fire lines, and other operational activities shall not occur within, or at the interface of lithosols (scablands).
- Cutting of old-growth juniper shall be prohibited. Old-growth characteristics include: sparse limbs, dead limbed or spiked-tops, deeply furrowed and fibrous bark, branches covered with bright-green arboreal lichens, noticeable decay of cambium layer at base of tree, and limited terminal leader growth in upper branches.

Groundwater-Dependent Ecosystems

- The integrity of groundwater-dependent ecosystems shall be maintained. Spring developments shall not dewater groundwater-dependent ecosystems. Spring developments shall not be allowed if the spring is occupied by rare or sensitive plant species, or in peatlands, fens, or where histic soils are present. These sites should be buffered 100 feet from all operational activities where topography does not restrict such a distance, and be identified as areas to protect.
- Heavy equipment, vehicle operation, road construction, staging areas, stockpile areas, piling of slash, fence construction, fire lines, and other operational activities shall not be allowed in springs, seeps, or any other groundwater dependent ecosystem, unless it is for the benefit or protection of the groundwater dependent ecosystems or development of the spring.
- Spring developments should not disturb the spring orifice (point where water emerges). Spring head boxes should be placed in a location that will cause the least amount of disturbance to the soils and vegetation of the groundwater dependent ecosystems. Preferable locations for spring head boxes should be in an established channel downstream from the orifice or a location where flowing water becomes subsurface.
- When necessary, construct fenced exclosures around spring developments to prevent damage from wild ungulates and livestock.
- Spring developments shall have a return flow system to minimize the diversion of surface and subsurface water from the catchment area. Consider using a float valve or similar device to reduce the amount of water withdrawn from the groundwater dependent ecosystems.
- When developing springs, place troughs far enough away from groundwater-dependent ecosystems, wetlands, and other sensitive or unique habitats to prevent erosion, compaction, or degradation to sensitive soils and vegetation due to livestock congregation.

Invasive Plant Species

- ***Pre-Implementation:*** Proposed restoration projects shall be surveyed for invasive plants early in the implementation planning process by a qualified invasive plant specialist /technician, to identify and assess any undocumented invasive plant infestation.
- ***Pre-Implementation****:* For project areas that overlap or are adjacent to invasive plant infestations, assure that there is sufficient time prior to develop a long-term site strategy for control, eradication, and revegetation of the site. This shall be accomplished by a qualified invasive plant specialist in collaboration with the interdisciplinary team and other stakeholders.
- All activities shall be conducted in a manner as to minimize or prevent the potential spread or establishment of invasive species.
- Actions conducted on National Forest System Lands that will operate outside the limits of the road prism, require the cleaning of all heavy equipment (bulldozers, skidders, graders, backhoes, dump

trucks, etc.) prior to entering the Malheur National Forest. Cleaning will be inspected and approved by the forest officer in charge of administering the project.

- Assure that all materials are weed-free. Use weed-free straw and mulch for all projects conducted or authorized by the Forest Service on National Forest System Lands. If State certified straw or mulch is not available, individual national forests should require sources certified to be weed-free using the North American Weed Free Forage Program standards or a similar certification process.
- Inspect active gravel, fill, sand stockpiles, quarry sites, and borrow material for invasive plants before use and transport. Treat or require treatment of infested sources before any use of pit material. Use only gravel, fill, sand, or rock that are judged to be weed free by District or Forest weed specialists.
- Prohibit heavy equipment operation, vehicle travel, staging areas, fire-control lines, and any other operational activities in invasive plant infestations, unless the activities are for the express purpose of eradicating the infestation or INV1 and INV2 have been completed.
- Conduct post-implementation monitoring for invasive plants. Continue monitoring, treating, and removing invasive plants until all infestations are eradicated and native plant species are well established.

Fire and Fuels

- Mechanical tools may be necessary to prepare fire control lines for these bums, but would be limited, and typically no heavy equipment would be used. Prescribed bums or wildfires could temporarily affect air quality.
- The project design criteria for both Juniper Removal and Riparian Vegetation Treatment (controlled burning) would be followed. National, state, and local policies regarding prescribed fire implementation will be met.
- Activities that are expected to create smoke emissions would follow the State of Oregon Smoke Management Plan. Prior to burning, approval will be obtained from the Oregon Department of Forestry, who determines compliance with the Clean Air Act. State smoke forecasts, which predict wind direction and smoke mixing height, will be obtained prior to all burning to ensure smoke intrusions will not occur in the local smoke sensitive receptor areas.
- Burning will follow the guidance provided by the Oregon Smoke Management Plan (Directive 1-4-1-601, Operational Guidance for the Oregon Smoke Management Program), which is an agreement between federal land management agencies in northeast Oregon and Oregon Department of Forestry limiting smoke emission amounts. Oregon Department of Forestry monitors activity, and if a limit is reached it will shut down prescribed fire activity.

Heritage Resources

- Compliance with section 106 of the National Historic Preservation Act for activities authorized under this analysis will be completed and concurred with by the Oregon State Historic Preservation Office before any ground disturbing action takes place. For each potential activity the district or zone archaeologist will determine which of the criteria in the 2004 Programmatic Agreement with the Oregon State Historic Preservation Office best fit the particular project. This will vary somewhat project to project based on the scale of the particular activity, the location on the landscape, and the nature of associated cultural resources, if any.
- The district or zone archaeologist will document their findings on a programmatic agreement form with a project description, rationale and location map which will be attached to the Forest Service Heritage Event database. The forest archaeologist will review and sign off on the programmatic review form if concurred with. For appendices A, B and C projects as defined in the 2004 Programmatic Agreement, the Forest will retain the documentation and provide the Oregon State

Historic Preservation Office with the annual summary of projects as described in the Preservation Act.

- For full inventories the district or zone archaeologist will complete an inventory report meeting current Oregon State Historic Preservation Office (SHPO) standards which will be reviewed by the forest archaeologist. The forest archaeologist will forward the completed inventory report to the Oregon State Historic Preservation Office for review and concurrence signature or further discussion as appropriate.
- Consultation with Native American tribes is conducted under the terms of the Memorandums of Understanding the Forest has with each individual tribe. The Forest regularly consults with the Burns Paiute Tribe, the Confederated Tribes of the Umatilla Indian Reservation and the Confederated Tribes of Warm Springs Reservation.
- For work requiring a full inventory under the terms of the 2004 Programmatic Agreement any identified cultural resources sites will generally be avoided. For cases where site avoidance is impractical mitigation procedures will be developed in consultation with the Oregon SHPO before project work begins.
- If any previously unidentified cultural resources are located during project implementation, ground disturbing work will be halted until the resources are evaluated by the district or zone archaeologist. If the cultural resources are determined to be potentially eligible for listing on the National Register of Historic Places work will either be permanently halted or a mitigation plan will be developed in consultation with the Oregon SHPO before work continues.
- All eligible and potentially eligible (unevaluated) historic properties will be avoided or protected during all ground disturbing activities, including the use of heavy equipment and mechanical impacts during hazard tree removal.

Grazing

Protection of Government and Permittee Investments

- All existing structural range improvements (fences, gates, spring developments, etc.) and permanent ecological plots would be contractually protected.
- Maintain structural integrity of range improvements.
- If structural improvements are damaged during project operations they would be repaired to Forest Service standards prior to livestock scheduled use by the party responsible for causing the damage. Repairs would be required of the purchaser if damage were done during thinning or fuel treatment contractors or by force account where appropriate.
- Three or more splices to a single wire within a distance of 20 feet will be replaced with a single splice.
- Fence right-of-ways (6 feet either side of fence), trails, other developments and access to them would be cleared of slash produced by project activities.

Notification

- During the planning stage of each individual project all potentially impacted grazing permittees will have notice of action and opportunity to provide input that may lessen impacts to their livestock operation well in advance of implementation.
- Prior to implementation all potentially impacted grazing permittees will be given notice of dates when work will start.

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From: Withee, Katee - FS
To: Cueno, Katherine - FS
Subject: RE: ODOT hazard tree CE update
Date: Saturday, September 29, 2018 11:26:11 AM
Attachments: image001.png
image002.png
image003.png
image004.png

Hi Kate!

Below are my PDCs for the two hazard tree removal projects.

- It is recommended that this project be approved, as there is no potential to cause effects on historic properties as defined in 36 CFR 800.3 a (1). If during project activities, cultural material is encountered, all activities will cease immediately and a Forest Heritage specialist will be contacted to evaluate the discovery.
- All eligible and potentially eligible (unevaluated) historic properties will be avoided or protected during all ground disturbing activities. Including the use of heavy equipment and mechanical impacts during hazard tree removal.
- Slash piles will not be constructed within eligible or potentially eligible (unevaluated) historic property boundaries.

Katee R. Withee
Archaeologist

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Caring for the land and serving people

From: Cueno, Katherine - FS
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Subject: ODOT hazard tree CE update