

Environmental Assessment for Douglas Creek Road Stabilization

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Bureau of Land Management
Spokane District
Wenatchee Field Office

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1. Introduction

This Environmental Assessment (EA) analyzes a Bureau of Land Management (BLM) proposal to complete bank stabilization and stream restoration activities on Douglas Creek including road repairs along the Douglas Creek road.

1.1. Project Area Description

Douglas Creek is located in the southwest corner of Douglas County, south of the town of Waterville in central Washington (T.23N., R.23E., Appendix: Figure 1). The BLM manages approximately 29,000 acres in the Douglas Creek area. The main road through the area is the Douglas Creek County Road (unnumbered). The Nature Conservancy (TNC) owns a small portion of land crossed by the road in the southwest corner of T.23N., R.23E. The southern access point is near the town of Palisades, approximately 25 miles from Wenatchee, and the northern access point is approximately 12 miles from Waterville.

The following terms and definitions will be used throughout this EA:

- **Action Area:** the exact footprint of activities proposed under the action alternatives. Synonymous with “area of potential effect (APE)” for Cultural analyses.
- **Analysis Area:** the broad area surrounding the Action Area. Analysis Area in this EA shall refer to downstream reaches through the junction with McCartnency Creek for aquatic analyses, the full extent of sub-populations for flora described and all lands within 1.5 miles of the Action Area for wildlife analysis. Analysis Area includes the extent of noise effects above ambient conditions.
- **Environmental baseline:** current conditions integrating all historic, recent, and ongoing disturbance and succession processes.

1.2. Background

Most of the lands within Douglas Creek riparian and lower slope areas were under BLM management prior to establishing the Wenatchee Field Office in 1984. One of the first management actions taken by the BLM in Douglas Creek was to fence and exclude cattle from the stream corridor to protect the creek and riparian vegetation from grazing damage (USDI 1987). Active management of the riparian corridor has resulted in re-growth of vegetation and, subsequently, improved habitat along the creek.

Approximately 20 years ago, a large flood event damaged the county road in several places (Appendix: Figure 1). Subsequent flood events and minimal road maintenance have exacerbated the damage to the extent that public access has been impeded. The five primary areas of concern are as follows, in sequence from north to south (as shown the attached map).

On BLM managed lands in the Action Area:

1. The creek undercut bank below the road north of the first locust tree grove.

On Douglas Creek County Road in the Action Area:

2. Two graveled stream crossings that have been affected by high flows and beaver dams.
3. A damaged, non-functioning culvert northwest of McCue Springs.
4. The McCue Springs water crossing.
5. The steep bank/culvert at the last stream crossing before reaching the Palisades which has been destroyed in past flood events. Furthermore, the approach from the north is extremely rough and uneven. This area of concern is within the section of land owned by TNC.

Of the areas of concern, area #1 is the BLM's responsibility because it is located outside of the county road right-of-way. The remaining areas of concern, #2-5, are within the right-of-way and are, therefore, within Douglas County's jurisdiction. Because these areas of concern and the actions necessary to remedy the issues are co-located and interrelated, the BLM and Douglas County have developed this combined National Environmental Policy Act (NEPA)/Washington State Environmental Policy Act (SEPA) document, which will also form the basis for the submission of a Joint Aquatic Resource Permit Application (JARPA).

1.3. Purpose and Need

Visitors are drawn to the Douglas Creek canyon for a number of reasons, including hiking, camping, fishing, swimming, and hunting. The current condition of the county road provides for unreliable travel for visitors that are camping or traveling through the Douglas Creek canyon. Visitors also drive through a number of creek crossings, where the water flows across the road.

Past flood events and lack of repair have caused the stream bank to become unstable which could potentially reduce water quality and damage riparian resources. The flooding has also damaged the road which hinders public access and could be potentially unsafe for visitors. Without repair, it is possible that the existing Douglas Creek Roadway in the Action Area could further degrade. Eventually the road at Action 1 area could collapse enough to become a public hazard. Douglas Creek County Road would likely be physically impassible at that location due to the road failure.

The purpose of this action is to:

- Restore, protect, or enhance riparian resources and water quality.
- Maintain or restore public safety including safe ingress and egress to and from the area.

Decisions to be made:

The BLM will decide:

- Whether to stabilize the undercut bank?

The County will decide:

- Whether to perform some or all of the specified road repairs?

The BLM does not have jurisdiction to make decisions regarding road repairs within the boundaries of Douglas County's right-of-way for the county road. These decisions are the responsibility of the County.

1.4. LUP Conformance Review

BLM lands within the proposed project area are subject to the land use plan decisions in the 1987 Spokane District Resource Management Plan (RMP) Record of Decision (ROD) and 1992 Spokane District RMP Amendment ROD. The proposed action is in compliance with the RMP and Amendment RODs, and is specifically consistent with the following general management objective in the RMP ROD (page 12 of the ROD 1987):

“Manage public lands and keep access routes open for a variety of recreational opportunities/experiences, including both motorized and nonmotorized recreation activities.”

1.5. Applicable Laws, Regulations, and Policies

This Environmental Assessment is consistent with and considers the following laws and regulations:

- The National Environmental Policy Act (NEPA) of 1969 as amended (42 U.S. C 4321 et seq.)
- The Federal Land Policy and Management Act of 1976 (43 U.S.C. 1739)
- The Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.)
- BLM 6840 Manual on Special Status Species
- The Clean Water Act as amended (33 U.S.C. 1251 et seq.) and regulation supporting it
- Migratory Bird Treaty Act of 1918, 16 U.S.C. 703-712, 50 C.F.R. 1
- Bald and Golden Eagle Protection Act of 1972, 16 U.S.C. 668
- Washington State Environmental Policy Act, WAC 173-802, 197-11
- Joint Aquatic Resource Permits Application, WAC173-158
- Section 106 of the National Historic Preservation Act

1.6. Summary of Public Involvement and Scoping Activities

In April 2011, the BLM notified approximately 115 interested parties (individuals, agencies, or organizations) of the proposed project via U.S. Mail. Each party on the mailing list received a postcard notifying them of the proposed project and directing them to a scoping information package posted to the BLM Spokane District’s website. The scoping information package provided preliminary information on the Proposed Action, Purpose and Need for the action, as well as Issues identified to date. The public was given approximately 30 days to respond with comments. The BLM received scoping comments from two parties. Scoping comments are captured in Section 1.7 *Issues Identified* and 1.8 *Issues Considered but Not Analyzed in Detail*, and available upon request.

1.7. Issues Identified

The following issues were identified through public scoping, field review, consideration of published and collected information regarding the Action Area and its surrounding landscape, and by the project Interdisciplinary Team (ID Team), a team of resource specialists, for further analysis or consideration in the EA.

Aquatic Resources

- How would in-water work and habitat modification affect trout presence, abundance and habitat?
- How would stream bank stabilization, installation of in-water barbs, and bed materials affect Douglas Creek's channel morphology?
- How would stream bank stabilization, installation of in-water barbs, and bed materials affect Douglas Creek's sediment regime?
- How would stream bank stabilization, associated roadwork, and installation of riparian plantings change riparian vegetation and canopy cover along Douglas Creek in the Analysis Area?

Wildlife

- Would construction or associated noise disturbance affect habitat, abundance, or distribution of Federally Listed Threatened or Endangered Species?
- Would construction or associated noise disturbance affect bald eagle or golden eagle nesting?
- Would construction or associated noise disturbance affect migratory birds?
- Would construction or associated noise disturbance disrupt behavior, degrade habitat, or influence abundance or distribution of shrub-steppe associated species including the greater sage-grouse (*Centrocercus urophasianus*)?
- Would construction influence cliff habitat or disrupt behavior, degrade habitat, or influence abundance or distribution of cliff-associates and species with large home range sizes?
- Would in-water work and riparian modification disrupt behavior, degrade habitat, or influence abundance or distribution of riparian wildlife species (i.e. not fish)?
- Would construction activities and associated disturbances affect the distribution and availability of other species of interest for recreating and hunting publics?

Vegetation Resources

- How would construction activities impact individuals and populations of sensitive plant species?
- How would construction activities affect the distribution and abundance of noxious and invasive plants in the Analysis Area?

Cultural Resources

- Would construction activities including road stabilization, installation of riprap, and use of railroad ballast stockpiles for borrow material lead to loss of any traditional use plants in the Analysis Area?
- Would construction activities including road stabilization, installation of riprap, and use of railroad ballast stockpiles for borrow material affect NRHP-eligible cultural properties or paleontological sites?

Recreation

- How would the proposed project change patterns of use in the Douglas Creek area?
- How would improvements to road access in the Action Area impact recreational use pattern in the Douglas Creek area?

1.8. Issues Eliminated from Further Analysis

The following list of issues and concerns were identified through the same means as those described in Section 1.7, but have been eliminated from further consideration for reasons detailed below:

- Ecosystem sustainability and biodiversity. Ecosystem sustainability and biodiversity functions act at spatial scales much larger than the Action Area. No species would be eliminated from the Analysis Area by any alternative. Abiotic ecosystem functions, such as hydrological regime or soil productivity, would be similarly unchanged between alternatives. Other components are incorporated into the issues considered.
- Effects on westslope cutthroat trout (*Oncorhynchus clarkii lewisi*). The Analysis Area (Moses Coulee Subbasin) is not now and was not historically part of the range of the westslope cutthroat trout (May, 2009).
- Effects on salmonid species of concern. Douglas Creek has only intermittent hydrological connectivity to the Columbia River, and part of the flow is diverted for agriculture during several months of each year. Additionally, there are a number of large fish passage barriers below the Action Area. Federally listed threatened, endangered, or sensitive salmon are not present in the Analysis Area. No anadromous species are present in the Analysis Area.
- Issues associated with possible Douglas Creek County Road collapse in the Action Area. Although the Proposed Action has been developed to prevent road deterioration and potential eventual collapse, the probability, exact characteristics, and effects of road collapse cannot be accurately predicted or characterized. Consideration of the indirect effects of a potential future failure would be speculative.
- Increased traffic and utilization with road stabilization. Douglas Creek bank stabilization and stream restoration activities including road repairs along the Douglas Creek Road would not change Douglas Creek County Road's road designation. Douglas Creek Road would retain its designation as "primitive and closed" although the road is not physically gated or bermed. The road would still be rough, and would limit recreational users to high-clearance four wheel drive vehicles. For this reason, no increase in recreational traffic is anticipated as an indirect effect of the Proposed Action.
- Climate change. The Council on Environmental Quality (CEQ) has determined that discussion of climate change is within the scope of NEPA analysis when an analysis of the direct and indirect of GHG emissions from proposed actions "may provide meaningful information to

decision makers and the public”: CEQ bounds meaningful information as projected direct annual CO₂-equivalent GHG emissions from a proposed action of 25,000 metric tons (Sutley 2010). The Douglas Creek Stabilization Proposed Action would lead to very limited change in vegetation and productivity; construction emissions would be far less than 25,000 metric tons of carbon. Apart from GHG emission, CEQ Guidance also provides that, when appropriate, agencies should consider the potential effects of climate change on, or in combination with, a proposed action when the proposed action is designed for long-term utility and located in climate-change vulnerable areas. The Douglas Creek Stabilization Proposed Action is designed for long-term utility, but would be minimally affected by changes in climate. Engineering would ensure that even large changes in hydrology would not undermine construction. For these reasons, climate change is not further considered in this analysis.

2. Alternatives

2.1. The No Action Alternative

Under the No Action Alternative, neither BLM nor Douglas County would implement restoration or road repair work.

2.2. Proposed Action

The Proposed Action would entail five construction actions, including one BLM action (Action 1) and four County activities (Actions 2-5). Actions 1-5 are depicted in the Appendix: Figure 1.

Action 1 – Undercut Bank Restoration

The BLM would repair a section of undercut bank beneath the existing Douglas Creek Road in Township 23N, Range 23E, section 14, adjacent to and south of a locust grove and primitive campsite (Appendix: Figure 2, Example Construction Details). Action 1 would entail the following:

- Approximately 250 linear feet of large boulder riprap would be placed at the toe of the undercut bank slope under the road to reduce silt and sediment delivery into the stream. Riprap fill would be roughly 750 yd³, with approximately 600 yd³ of this material in the five year floodplain of Douglas Creek.
- A large boulder barb would be installed upstream of the undercut bank to direct high flows away from the undercut bank. This boulder barb would add an additional 55 yd³ of clean, large rock within the 2-year floodplain of Douglas Creek.
- A pad would be developed for approaching Douglas Creek at the northeastern end of the Action Area (Figure 2). This pad would be < 200 feet long, covering < 3,000 ft² (375 yrd³) in Douglas Creek’s 5 year floodplain, including some areas of jurisdictional wetlands (USACE 2008). Approximately 200 ft² of jurisdictional wetland area would be permanently removed by installation of the boulder barb and related pad area. The remainder of the pad area would be removed and replanted with native riparian shrub and grass species.

- The 200 ft.² of jurisdictional wetland impacted by barb installation would be mitigated at a 3:1 ratio on the south side of Douglas Creek through excavation and planting of an emergent riverine wetland mitigation site (approximately 600 ft.²) concurrent with channel relocation.
- During construction, Douglas Creek would be diverted around the construction site through a historic side channel. This side channel is currently partially armored with some cover by grasses. Approximately 3 yd³ of vegetated soil would be moved from the existing stream bank to re-direct Douglas Creek into this historic channel. Original channel topography at this location would be re-established, following construction.
- Equipment would operate within the Douglas Creek 5-year floodplain, including along the current Douglas Creek streambed, for less than seven days following the completion of site preparation work. Construction equipment will consist of one tracked excavator and one dump truck.
- Riparian vegetation would be planted within installed boulders, and native seed would be used to establish vegetative cover for erosion control (Design Features).
- A large railroad ballast stockpile in Douglas Creek canyon has been identified as the borrow site for Action 1 (47.470°N, 119.878°W, Figure 1). This site would also act as the source for material for Actions 2, 4, and 5.

Action 2 – Gravelling of Two Stream Crossings

Douglas County would install gravel on existing road surfaces at two existing, hardened, low-water crossings of Douglas Creek by Douglas Creek Road (47.487°N, 119.9 898°W, and 47.485°N, 119.898°W).

- Road crossings would be infilled with 4-6 inches of gravel and small cobble. Fill material would be clean 2 in. minus rock from a railroad ballast stockpile site (described above). Less than 2,500 ft² of total road surface would be treated at each site.

Action 3 – Culvert Near McCue Springs

Douglas County would alleviate a drainage issue associated with a culvert NW of McCue Springs along the Douglas Creek Road (47.4788 °N, 119.888 °W, Figure 1). This culvert was installed to drain a hillslope seep and roadside runoff, not McCue Springs. This small, non-functioning culvert would be removed and replaced with a waterbar, approximately 8 ft. x 6 in. in size, on the south side of the road to encourage proper drainage away from the road.

Action 4 – Gravelling of McCue Springs Crossing

Similarly to Action 2, Douglas County would install gravel on an existing low-water crossing of McCue Springs by Douglas Creek Road, immediately SE of Action 3. Design specifics would be the same as Action 2. Approximately 750 ft² of low water crossing road surface would be affected.

Action 5 – Repairs to Steep Bank / Southernmost Stream Crossing

Douglas County would repair a steep, downhill stream crossing of Douglas Creek by Douglas Creek Road (47.477 °N, 119.886 °W, Figure 1). Action 5 would entail the following:

- A compressed air jackhammer or tractor-mounted tool would be used to break off exposed, sharp points of rock or to remove rocks altogether, down to bedrock on the steep downhill stream crossing, within the existing road prism. Approximately 200 linear feet (3000 ft²) of the road prism would be treated.

- Spoils and other debris would be scattered outside of the immediate road corridor and above Douglas Creek's 2 year floodplain. Any accumulations of fine (< 1/2 in.) material over 0.5 yd³ in size would be stabilized prior to onset of winter precipitation using erosion control materials and or seeding.

Design Features of the Proposed Action

In-water work

- All work within the 2-year floodplain of identified waters of the state (USACE), including Douglas Creek, will be completed within a portion of the in-water work period approved by the Washington Department of Fish and Wildlife. The in-water work period for Douglas Creek is July 1-January 1, each year of construction. To minimize effects to neotropical migrant bird species, construction will be further limited to periods in-water work period but outside of neotropical bird breeding windows: September 1 to January 1, each year of construction.
- In-water work in flowing streams will be blocked off by nets in the work area prior to beginning any instream work. All fish in blocked areas will be removed by electro shocking and will be deposited downstream of nets prior to beginning work.
- Equipment used for instream or riparian work will be fueled and serviced in an established staging area outside of riparian zone. When not in use, vehicles will be stored in a staging area outside of the 100-year floodplain.
- The number and length of stream crossings and access routes through riparian areas will be minimized. Crossings and access routes will be at right angles whenever feasible to minimize disturbance.

Wildlife

- To minimize effects to neotropical migrant bird species, construction will be further limited to periods in the in-water work period but outside of neotropical bird breeding windows: September 1 to January 1, each year of construction.
- To prevent effects to riparian wildlife, all fauna would be removed from the diversion area before construction.

Borrow Materials

- Materials for construction will come only from areas within the constructed footprint or from a railroad ballast stockpile located at 47.470°N, 119.878°W.
- All materials placed in waters of the state, including Douglas Creek and McCue Springs, will be clean of fine sediment.

Equipment and staging

- Staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, hazardous material storage, etc.) will be established outside of the 100-year floodplain in a location and manner that will preclude erosion into or contamination of the stream or floodplain.

- Equipment access points will be kept to the minimum necessary to accomplish the work in a safe and efficient manner, and existing floodplains, riparian vegetation, and down wood will be protected to the extent practicable.
- Equipment access footprints will not create linear connections from road to stream. Equipment access will use water-bars and ripping of equipment footprint as necessary.
- All equipment used for instream work shall be cleaned and leaks repaired prior to entering the project area. Thereafter, any identified leaks will be addressed prior to entering streams or areas that drain directly to streams or wetlands.

Erosion control

- Sediment barriers will be installed prior to construction around sites where significant levels of erosion may enter the stream directly or through road ditches. Barriers will be maintained throughout construction and site restoration.
- All areas of ground disturbance within 75 feet of a stream channel will have short-term and permanent erosion control applied. Short-term stabilization measures may include the use of native seed, weed-free certified straw, jute matting, and other similar techniques. Stabilization measures will be instigated within three days of construction completion. Short-term stabilization measures will be maintained until permanent erosion control measures are effective.
- Seeding and mulching will be used as necessary prior to construction completion as necessary to stabilize soils.

Spill Prevention Control and Containment Plan (SPCCP)

- Contractor will be required to have a written Spill Prevention Control and Containment Plan (SPCCP) which describes measures to prevent or reduce impacts from potential spills (fuel, hydraulic fluid, etc.). The SPCCP shall contain a description of the hazardous materials that will be used, including inventory, storage, handling procedures; a description of quick response containment supplies that will be available on the site (*e.g.*, a silt fence, straw bales, and an oil-absorbing, floating boom whenever surface water is present).
- Included in the SPCC will be the requirement for an Oil Spill Kit to be onsite during operations. The contents and use of the Spill Kit, which should be suitable for 50 gallons of petroleum containment consistent with heavy equipment operations, are to be detailed in any contract provisions.

Site Restoration

- Upon project completion, project-related waste will be removed and properly disposed of.
- When necessary, compacted areas such as access roads, staging areas and stockpile areas will be loosened (ripped) using construction equipment.

Noxious and invasive plants

- To mitigate the introduction or spread of noxious and invasive plants all heavy equipment/machinery will be washed prior to entering BLM lands. Additionally, all heavy equipment/machinery will be washed prior to exiting the job site, to minimize introduction or spread of noxious and invasive plants from the job site.

Riparian planting

- Native grass seed will be used for erosion control, applied in areas with exposed dirt (Actions 1, 3, 5). Grass species would be appropriate for the setting.
- Native willow species, from cuttings adjacent to the construction area, will be planted within boulders. Plantings will be installed on 2 foot centers within 10 feet of the active channel margin. Approximately 1,000 cuttings will be installed.
- Planting will be completed no later than the spring planting season of the year following construction.
- Wetland plantings will be installed in an approximately 600 ft.2 constructed wetland area. Plantings will include appropriate sedges and rushes in lowest elevation areas, and willow cuttings at created wetland edges.

Other

- BLM-identified sensitive plants will be protected during construction, using enclosure materials and through onsite Contractor direction.
- The BLM will complete archaeological monitoring of ground disturbing activities associated with Action 1 to ensure that potential buried materials are not adversely affected by any of the Proposed Actions. If buried cultural materials are encountered during project implementation, all activities in the immediate vicinity of the find will cease. The Authorized Officer and Wenatchee Field Manager will be contacted. These officers will contact the Dept. of Archeology and Historic Preservation (DAHP) and Tribal Historic Preservation Officers and discuss potential mitigation options. Douglas County will be responsible for monitoring ground disturbing activities associated with Actions 2-5.

2.3. Alternatives Considered but not Analyzed in Detail

- Changing management status of Douglas Creek Road. Altering the management status of Douglas Creek Road could include road abandonment, permanent closure, or seasonal closure, and would be consistent with management of the Analysis Area as a reserve for shrub-steppe associated species. This Alternative would not meet Purpose and Need for the Action or direction for the Management Area (USDI 1985, as amended). This Alternative would fail to maintain public access and would not ameliorate local water quality or riparian conditions. Public safety would continue to be compromised. County and private partners have not made a determination regarding whether future closure of Douglas Creek Road would occur.
- Repairing a failed tunnel road crossing near Palisades. Douglas Creek County Road at the location of this tunnel, near the town of Palisades, WA, is not under BLM jurisdiction or administration. Consideration of this activity as part of the Proposed Action would not meet Purpose and Need for the Action. This Alternative would not ameliorate local water quality or riparian conditions. Repair of this tunnel would be an unrelated and separate Action, and will not be considered in this analysis.

2.4. Summary Comparison of Effects by Alternative

Table 1. Substantive changes in the environmental baseline under different Alternatives. Substantive changes were not identified associated with Wildlife (3.2), Recreation (3.4), or Cultural (3.5) Resources. Issues associated with all Resources are described in Chapters 3 and 4.

Resource	Change	Alternative		Notes
		No Action	Proposed Action	
Douglas Creek Road	Road condition (Action Area)	Chronic sediment delivery, instability, reduced public safety	Reduced sediment delivery, stable and safer road system	Road would remain “primitive and closed”
Aquatic resources (3.1)				
	Trout productivity (~3 reaches)	Chronic sediment delivery may depress productivity	Construction may temporarily depress productivity. Small long-term increase in production with barb and riparian planting and reduced sediment delivery	
	Channel morphology (Action 1 area)	Local failing, over-steepened bank with no riparian cover	Bank stabilization with barb, willow plantings-	Douglas Creek is PFC at reach-scale for both Alts
	Riparian vegetation (Action 1 area)	Dominated by exotic reed canary grass with few trees	No change in tree cover. Permanent removal of 200 ft ² of reed canary grass wetland; creation of 600 ft ² native wetland. Planting of willows.	Proposed Action should slightly increase shade production.
	Water quality (~3 reaches)	Not 303(d) listed	Temporary increase in sediment loads followed by long-term decreased sediment would improve water quality and would not lead to 303(d) listing	Action includes sediment detention, replanting
Vegetation Resources (3.3)				
	Longsepal globemallow (Action Area)	Several individual plants in Action Area	Construction would not eliminate individual plants	Direct impact to sensitive plants would be avoided during construction

3. Affected Environment and Environmental Effects

3.1. General Setting

Douglas Creek Riparian Context

Douglas Creek, part of the Lower Douglas Creek subwatershed (6th field Hydrological Unit Code HUC), is a fourth-order perennial stream. Douglas Creek reaches within the Analysis Area have been classified as having proper functioning condition, a state of resiliency allowing a riparian

system to maintain both physical and biological values during high flow (30 year) events (Prichard 1988).

Douglas Creek is a coldwater fish-bearing perennial stream in a desert shrub-steppe ecosystem. Originally, Douglas creek was populated by native redband trout; however, over the last 70 years, stocked hatchery rainbow trout have hybridized with and diluted the native redband trout population.

Biophysical Province Context

The Action Area is within the Channeled Scablands ecoregion within the Columbia Plateau (EPA 2012). Average rainfall is approximately 10 inches annually (NACSE 2012). Surface lithology outside of the Douglas Creek riparian area primarily includes coarse glacial outwash and glacial lake sediments. Ecological sites directly outside of riparian areas include primarily Stony and Dry-Stony (R008XY201WA, R008XY202WA (NRCS 2012)) shrub-steppe supporting Wyoming big sage (*Artemisia tridentata*) and bluebunch wheatgrass (*Pseudoroegneria spicata*) associations. Cover by Wyoming big sage is highly-variable. Invasive exotic species, including cheat grass (*Bromus tectorum*), and noxious weeds (described in Section 3.3) are present but are not abundant enough to have changed historic climax plant communities in any ecological sites (NRCS 2012). within the Analysis Area

3.2. Aquatic resources and Water Quality

3.2.1. Affected Environment

Trout presence, abundance, and habitat

Douglas Creek is a perennial stream tributary to the Columbia River supporting rainbow trout (*Oncorhynchus mykiss*). Douglas Creek historically supported Columbia River redband trout (*O. mykiss gairdnerii*), a subspecies found in Montana, Washington and Idaho. However, over the last 70 years, stocked hatchery rainbow trout have hybridized with and diluted the native redband trout population; recent surveys refer to salmonids in Middle Douglas Creek (part of the Lower Douglas Creek subwatershed) as rainbow trout (Vadas and Beecher 2011, R2 Resource Consultants 2004). Rainbow and redband trout find their ideal habitat in clean, cool, relatively small and low gradient streams, but are capable of enduring higher water temperatures (75–80° F; 24–27° C). As with other trout, they feed on insects, crustaceans, and forage fish depending on their size. Rainbow and redband trout spawn from late April through mid-June depending on water temperatures and levels. The fry (young fish) typically emerge from the gravel in which the eggs were laid in mid-July.

Surveys of Middle Douglas Creek (the Analysis Area) identified only American signal crayfish (*Pacifastacus lenisculus*) in addition to rainbow trout (Vadas and Beecher 2011). Pacific lamprey (*Lampetra tridentata*), several species of sculpin (*Cottus* spp.), speckled dace (*Rhinichthys osculus*) and three spine stickleback (*Gasterosteus aculeatus*) are noted in the mid-Columbia mainstem and some tributaries in the dry eastside counties of Douglas and Chelan (Mongillo and Hallock 1995), but were not observed in Douglas Creek by Vadas and Beecher (2011). Downstream passage barriers and lack of hydrological connectivity prevent anadromous salmonids and species associated with the Columbia River mainstem from entering the Analysis

Area. No salmonids other than rainbow trout and no sensitive aquatic species have been documented or observed during site visits to the Analysis Area.

Channel morphology

Stream morphology in and adjacent to the Action Area can be described as Rosgen types C3, C4 (in Area 1) and B4 in Area 2, with a sinuosity ratio of 1.4. Stream units are generally glides. In-water structures (logs, boulders) are limited. However, frequent undercut banks and beaver dams do provide a diversity of flow conditions. Banks are generally stable and bankside riparian vegetation is relatively well-developed, possibly as result of grazing exclusion in the Analysis Area over the last decade.

The Action Area associated with Action 1 supports limited braiding, including a side channel inundated at higher flows (2 year flood stage). This side channel is armored with cobble and has high canopy cover.

Water Quality and Sediment regime

Douglas Creek's recent water quality characteristics are described in (Behne 2005). Douglas Creek's hydrograph is driven by snowpack and spring input. Considering DOE surface water quality metrics (<http://www.ecy.wa.gov/programs/wq/links/standards.html>), Douglas Creek supports relatively high stream temperatures (14.7°C; 95% CI 9.8-19.6 °C) due to warm spring feeds. Sampled areas of Douglas Creek support acceptable dissolved oxygen (10.1 mg/l), low fecal coliform (12.7 colonies/ml), and relatively high nitrate loads (2.7 mg/l), possibly due to upstream agriculture.

Turbidity measured in Douglas Creek averaged 2.3 NTU, ranging from 0.0 NTU on several occasions to 118.0 NTU during one high flow event in 2003. Mean turbidity is far below DOI-described low NTU background conditions ([WA 2012](#)). Douglas Creek has not been listed under Washington's 303 (d) list for polluted waters, mandated under the Clean Water Act of 1972, for sediment, temperature, dissolved oxygen, nutrients, or other factors.

Riparian vegetation and canopy cover

Orographic and tree shading is relatively limited in the Action Area. Willow and other shrub cover is also limited in the Action Area. Reed canary grass (*Phalaris arundinacea*) dominates much of the bank vegetation, providing moderate bank stability but limited shading cover.

Due to hydrology and the influence of beaver dams, bank areas within the five year floodplain of Douglas Creek within the Action Area footprint support jurisdictional wetlands. Following USACE direction for delineation in this physiographic province (USACE 2008) and WA DOE direction for classification of wetlands (Hruby 2004), wetlands in the Action Area would be classified as Riverine Class III. Wetlands in this class provide modest hydrological function and have limited richness and diversity.

3.2.2. Direct and Indirect Effects from No Action Alternative

The No Action Alternative would have no direct effects on riparian resources. An indirect effect of the No Action Alternative (occurring later in time) would be further degradation of the

existing Douglas Creek Roadway in the Action Area. Full consideration of the indirect effects of this potential future failure would be speculative, and are not included in this analysis. Indirect effects of the No Action Alternative on aquatic resources are described below.

Trout presence, abundance, and habitat

Chronic, low volume sediment contributions and toxicant contributions (associated with low water crossings) would result in continued, extremely small adverse effects on the productivity of rainbow trout in the Action Area and downstream portions of Douglas Creek. Episodic water quality impacts to Douglas Creek are also possible. These point sources of sediment would have a small impact on fisheries resources in the immediate area and could lead to slight decreases in trout production in this reach of Douglas Creek: trout species would not be extirpated from the Action Area. Other aquatic species requiring water quality would be similarly affected (only American signal crayfish identified).

Channel morphology

No Action Alternative would maintain current channel morphology in Douglas Creek. Roadway collapse and its effects on local Douglas Creek channel morphology would be speculative, and are not included in this analysis.

Sediment regime

Short-term indirect effects of the No Action Alternative would include continued, chronic sediment delivery associated with the failing road. Long-term indirect effects could include larger failure of this road segment, resulting in up to 3,000 yd³ of material entering Douglas Creek's 5-year floodplain. Full consideration of the indirect effects of this potential future failure would be speculative, and are not included in this analysis.

Riparian vegetation and canopy cover

Short-term indirect effects of the No Action Alternative would include maintenance of herbaceous (grass) cover along the banks of Douglas Creek, including wetland conditions. Shrubs have not been successful in invading reed canary grass bank margins nor in colonizing cobble and boulder areas recently; it is possible that in the long-term such vegetation would establish. However, fluvial or other disturbance might be required to facilitate such establishment.

3.2.3. Direct and Indirect Effects from Proposed Action Alternative

Action 1. The results of road stabilization would include removal of a source of sediment to Douglas Creek, increased channel complexity, some floodplain impact, and increased shade. These habitat improvements would be predicted to result in a small net increase in trout production. These habitat quality improvements have the potential to increase local rainbow trout abundance.

Trout presence, abundance, and habitat

Direct effects on fish species due to short-term fish exclusion during construction; stream diversion into a high water side channel followed by road stabilization; barb installation; and riparian plantings (Appendix: Figure 2) would include temporary fish behavioral change and

avoidance of the Action 1 Action Area during project construction. Timing of construction (during WDFW in-water work window) would partially mitigate and minimize this effect. This behavioral change could lead to a temporary and extremely small, local decrease in trout population size or displacement of individual fish. This short-term effect on trout productivity would be less than chronic effects on productivity associated with the No Action.

Predicted indirect and long-term effects of Action 1 would include a small increase in trout populations within the Action Area and points downstream, attributable to: a) increased allocthanous input from riparian shrub increases; and b) increased complexity in stream morphology associated with barb installation. These habitat changes are described below. Habitat enhancements would be predicted to lead to a permanent, small (i.e. < 20 individuals) increase in rainbow trout carrying capacity in Douglas Creek.

Channel morphology

Action 1 would have direct effects on Douglas Creek stream morphology due to short-term stream diversion during construction, bank armoring and barb installation. Following completion of bank armoring and barb installation, the Douglas Creek channel will deepen at the “nose” and downstream of the installed barb. Eddies will be created downstream and near installed fill.

Installed bank stabilization would minimally impinge the Douglas Creek floodplain. The majority of the area to be hardened is over-steepened (> 30% slope) and does not act as floodplain. Less than 200 ft² of functioning floodplain would be impacted by riprap installation.

Sediment regime

Short-term indirect effects of Action 1 would include increased sediment delivery to Douglas Creek. Stream diversion prior to construction would only lead to a small increase in turbidity (estimated at < 5 NTU for < 24 hours), since this side channel is currently armored and gets occasional flows. Predicted indirect and long-term effects of Action 1 on sediment regime would include a reduction in chronic sediment delivery associated with the failing road segment in this area. Riparian plantings might further (marginally) increase sediment detention.

Riparian vegetation and canopy cover

Action 1 would have minimal direct negative effects on Douglas Creek riparian vegetation, since the failing bank area supports no vegetation. Existing trees and shrubs on the west side of Douglas Creek would be maintained. Planting native shrubs in installed bank stabilization areas would increase riparian vegetation in the Action Area, marginally increasing canopy cover on the east side of Douglas Creek in the Action Area.

Construction of an approach pad and installation of a rock barb would temporarily impact 2,420 ft.² (0.1 ac.) of jurisdictional wetlands, and permanently approximately 200 ft.² of jurisdictional wetlands. These wetlands are classified as Riverine Class III wetlands. They are dominated by reed canary grass and have modest function outside of sediment detention. The Proposed Action would include mitigation for this wetland impact at a ratio of 3:1 in an upland area west of the Douglas Creek stream bank. Mitigation would include excavation of roughly 600 ft.² in this area, to a depth comparable to the impacted wetland. Hydric soils scavenged from the wetland impact site would be placed in the created wetland mitigation site. The wetland mitigation site

would be planted with hydric plants including sedges and willow. Mitigation would result in the creation of a riverine shrub wetland area with sediment detention function, species richness, and utility for neotropical migrant bird species greater than the impacted wetland area.

Actions 2 and 4. Installation of 4-6 inches of gravel and small cobble on existing road surfaces at three crossings of Douglas Creek by Douglas Creek road would have no effect on riparian vegetation, minimal effects on channel morphology and sediment, and minimal effects on fish production.

Trout presence, abundance, and habitat

Direct effects on rainbow trout and other aquatic species due to short-term fish exclusion during construction would include behavioral change and avoidance of Action 2 through 4 Action Areas. Timing of construction (during WDFW in-water work window) would mitigate and minimize this effect. This behavioral change could lead to an extremely small, local decrease in rainbow trout population size or displacement of individual fish. Fish presence within these crossing areas is currently negligible due to the low quality habitat. Predicted indirect and long-term effects of Actions 2 and 4 would include no change in fish presence in the immediate Action Area and a small increase in fish populations downstream of Action Areas 2 and 4, attributable to decreased toxicant loads. Implementation of Actions 2 and 4 may slightly increase rainbow trout carrying capacity in Douglas Creek (i.e. < 5 individuals).

Channel morphology

Actions 2 and 4 would directly affect Douglas Creek channel morphology by installing gravel and cobble at 3 stream crossings. This installation would not cover existing gravel and cobble bed material resulting in no change in substrate, but would decrease stream depth in this Action Area (by < 6 inches).

Sediment regime

The direct effects of Actions 2 and 4 would include a very small increase in sediment delivery to Douglas Creek, associated with installation of gravel. Increase in turbidity would be estimated to be < 5 NTU for < 24 hours. Requirements for clean gravel/cobble would greatly mitigate this effect. Indirect and long-term effects of gravel/cobble installation would be a decrease in toxicant introduction and sediment to Douglas Creek, as vehicle undercarriages would be elevated above water elevations.

Action 3. Replacement of a small, non-functioning culvert with a waterbar to encourage proper drainage would have no effect on Douglas Creek riparian conditions or channel morphology.

Trout presence, abundance, and habitat

Reduction in sediment delivery to Douglas Creek would lead to a negligible increase in rainbow trout populations downstream in Douglas Creek, attributable to decreased sediment loads. Implementation of Action 3 may slightly increase fish carrying capacity in Douglas Creek (i.e. < 5 individuals).

Sediment regime

Action 3 would not directly affect sediment regime. Action 3 would be performed in dry conditions. The Action 3 Action Area is > 50 ft. from Douglas Creek. Sediment control would ensure no sediment entered Douglas Creek. Indirect and long-term effects of fixing this drainage issue would be a decrease in sediment delivery to Douglas Creek.

Action 5. Repair of a steep, downhill stream crossing of Douglas Creek by Douglas Creek road including removal of bedrock along 200 linear feet of the road prism would have no effect on riparian vegetation, minimal effects on channel morphology and sediment, and minimal effects on fish populations.

Trout presence, abundance, and habitat

Indirect effects of minor, temporary sediment delivery to Douglas Creek could include a negligible decrease in trout production downstream in Douglas Creek (< 5 individuals).

Sediment regime

The direct effects of Action 5 would include introduction of a small amount of dirt or rock to Douglas creek in the Action Area. Design Features including sediment detention would minimize sediment delivery. Increase in turbidity could be 10-20 NTU for < 24 hours.

3.2.4. Cumulative Effects

The cumulative effects of the Proposed Action on aquatic resources include consideration of the past, present and reasonably foreseeable future actions in the Analysis Area. Past actions are incorporated in the environmental baseline (described above), and present actions include only the Proposed Action. Future actions could be performed by land managers within the Analysis Area including the BLM, Washington Department of Natural Resources (DNR), The Nature Conservancy (TNC), and private owners. BLM-administered portions of the Douglas Creek Management Area would be managed as directed (USDI 1987b): Recreation and Wildlife values would be the priority. Cattle would continue to be excluded from Douglas Creek riparian areas (USDI 1987). Personal communication was made with TNC (Warner 2012), and DNR (Niessner 2012). No large planned changes in private landuse patterns are known: adjacent private landowners are assumed to continue grazing at moderate utilization (25-60% of current year's growth). No additional in-water activities are planned or known for the Douglas Creek Analysis Area by any land manager in the Analysis Area. Therefore, the cumulative effects of the Douglas Creek Stabilization Proposed Action would not lead to a decreasing population trend for any fish species at population or larger scales and would not lead to deterioration in water quality or riparian function at the reach scale or at larger hydrological scales.

3.3. Wildlife Resources

3.3.1. Affected Environment

The Analysis Area considered for wildlife species of concern was defined as all lands within 1.5 miles of each Action Area (Actions 1-5). This extent was chosen based on a one mile buffer around each Action Area that would be directly affected by noise disturbance, with an additional half mile of buffer for area indirectly affected by wildlife avoiding the area of direct disturbance. This area encompasses approximately 8,500 acres. Wildlife analysis considered sensitive species, defined as all federally- or state-identified species of concern (Appendix 1: Table 3); those with habitat or potential presence in the Analysis Area are discussed below.

Common species in the area include habitat generalists such as coyote (*Canis latrans*), common raven (*Corvus corax*) and mule deer (*Odocoileus hemeonus*). The area also supports habitat specialists such as sagebrush-obligate species, burrowing species and migratory birds. For the purposes of analysis, wildlife species utilizing the Analysis Area were analyzed as members of the following groups found within the Columbia Plateau Ecoregion: a) Federally listed Threatened and Endangered Species; b) bald and golden eagles; c) migratory birds; d) shrub-steppe associated species including the greater sage grouse; e) cliff-associates and species with large home range sizes; f) riparian wildlife species; and g) other species of (particularly hunting) interest.

Federally Listed Threatened and Endangered Species

All federally listed threatened and endangered species were considered in this analysis (Appendix 1: Table 3). The only listed species with suitable habitat and historic occurrences near the Analysis Area is the Columbia Basin pygmy rabbit. Currently, there are no wild pygmy rabbit populations known to occur in Washington's Columbia Basin. Historic populations of the species occurred within the Columbia Basin in deep soil shrub-steppe with sagebrush for cover and foraging. Currently pygmy rabbit populations are limited to an experimental population where captive-bred rabbits are held in fenced enclosures and tracked with radio chips, approximately eight miles from the Analysis Area (Becker et al 2011). There are no documented observations or historic occurrence of pygmy rabbits in the Analysis Area.

USFWS has placed greater sage-grouse (*Centrocercus urophasianus*) on the list of species that are candidates for Endangered Species Act Protection. This species is described below with other shrub-steppe associated species.

Bald and Golden Eagle

The Analysis Area is not regularly used by bald eagles (*Haliaeetus leucocephalus*) for foraging or nesting and the species has not been documented in the area. More suitable bald eagle habitat occurs along the Columbia River approximately fifteen miles to the southwest. Golden eagles (*Aquila chrysaetos*) nest on the cliff walls above Douglas Creek approximately one mile south of Action Area 5. The territory has been monitored since 1983 with active nesting documented from 1983-1990 and again from 2004-2009, when it was last monitored. Breeding and nesting activity occurs begins mid-February through mid-July and eagles are susceptible to disturbance during this time.

Migratory Birds

The Analysis Area is used by both neotropical migrant songbirds and migratory waterfowl. Neotropical migrant bird usage of the Douglas Creek Watershed has been monitored since 1989

as part of the Institute for Bird Population's Monitoring Avian Productivity and Survivorship (MAPS). No sensitive species have been documented during this monitoring, but this group as a whole is protected under the Migratory Bird Treaty Act of 1918. Neotropical migrant bird usage in the Analysis Area peaks in mid-June through early-August and includes breeding, nesting and foraging. Waterfowl, primarily ducks, use ponds on Douglas Creek during winter months, but the area is not considered a high use area for migratory waterfowl.

Shrub-steppe associated species

Greater sage-grouse (*Centrocercus urophasianus*) is associated with shrub-steppe supporting strong lateral cover for concealment, forb resources for brood rearing, sagebrush species for winter forage opportunities, as well as adjacent open areas for establishing leks). Leks for this species occur roughly two miles from the Action Area. Breeding generally begins in mid-February when grouse begin attending leks and continues through mid-May. Lek sites are generally flat, open areas that provide high visibility for displaying males and allow the sound made by their gular air-sac to travel and be heard by other grouse. Grouse are sensitive to noise disturbance during the breeding season because it interferes with audibility of gular air sac sounds. Nesting occurs in upland shrub-steppe habitat where sagebrush and perennial grass cover provide sufficient nest concealment. In Douglas County, the average distance from lek where captured to nest was 7.3 km (4.5 miles), and forty-six percent (46%) of Douglas County nests are greater than 5 km (3.1 miles) from the nearest lek (Stinson et al. 2004). Washington historically hosted a greater sage-grouse population in the thousands; the state's population has dwindled to two small, isolated populations, principally attributable to conversion of habitat to cropland (Stinson et al. 2004). The population closest to the Analysis Area occurs in Douglas and Grant counties, predominantly on private land.

Columbian sharp-tailed grouse (*Tympanuchus phasianellus*) has requirements similar to greater sage-grouse, but depends on deciduous tree species for winter forage and cover. The Analysis Area is within the Badger Mountain Recovery Unit identified by WDFW's Sharp-tailed Grouse Recovery Plan (Stinson and Schroeder 2010). This recovery unit is listed in the recovery plan as "Priority 4—Units that may provide habitat for populations to expand." The closest population of Columbian sharp-tailed grouse is approximately 30 miles north of the Action Area, and the species has not been documented within the Analysis Area.

Washington ground squirrel (*Uroditellus washingtoni*) burrows in upland shrub-steppe areas with deep soil and sufficient grass and forb components to provide for seed foraging. Washington ground squirrels emerge from burrows in late February/early March and are active above ground until early June. The remainder of the year is spent below ground in burrow systems estivating and hibernating (Sherman and Sherman 2009). Habitat within the Action Area is not suitable for Washington ground squirrel, but the species may occur in upland areas within the Analysis Area where suitable habitat exists, although it has not been documented.

Sensitive species associated with shrub components, rocky substrates, or open condition of shrub-steppe habitats include black-tailed jackrabbit (*Lepus californicus*), white-tailed jackrabbit (*L. townsendii*), Merriam's shrew (*Sorex merriami*), sagebrush lizard (*Sceloporus graciosus*), burrowing owl (*Athene cunicularia*) loggerhead shrike (*Lanius ludovicianus*), sage sparrow

(*Amphispiza belli*), and sage thrasher (*Oreoscoptes montanus*). White-tailed jackrabbit and loggerhead shrike have been documented within the Analysis Area. The Analysis Area provides suitable habitat for the remaining species, but none have been documented within the Analysis Area.

Cliff-associates and species with large home range sizes

Peregrine falcon (*Falco peregrinus*), prairie falcon (*Falco mexicanus*) and ferruginous hawk (*Buteo regalis*) hunt in open, often arid areas. Peregrine falcon and prairie falcon establish nests on cliffs while ferruginous hawk nests in open areas or in trees including cottonwoods and willows. Prairie falcon has been documented near the Analysis Area, while peregrine falcon and ferruginous hawk have not. Gray wolf is not federally listed within the Analysis Area (east of U.S. Highway 97), but is considered a BLM and State sensitive species. The gray wolf (*Canis lupus*) uses diverse habitat types in northern states where sufficient prey base is available. Breeding packs have been documented in the mountains of northeastern Washington and along the east slope of the Cascade Mountains. The nearest documented pack is the Teanaway pack near Cle Elum, over fifty miles west of the Analysis Area. The species has not been documented in or near the Analysis Area, and it is unlikely to occur within the Analysis Area during project implementation.

Riparian wildlife species

The Columbia spotted frog (*Rana luteiventris*) is associated with clear, open water habitats, including beaver dam ponds. Columbia spotted frog is most often found in association with wetland plant communities consisting primarily of non-woody plants, such as sedges, rushes, and grasses. This species has not been documented within the Analysis Area.

Two sensitive bat species have potential to occur in the Analysis Area. Townsend's big-eared bat (*Corynorhinus townsendii*) forages in riparian areas and nests in rocky areas including tunnels. Colonies of Townsend's big-eared bat are known from McCartney Creek over 7 miles away, but have not been observed in the Analysis Area. Pallid bat (*Antrozous pallidus*) uses habitats ranging from rocky outcroppings to sparsely vegetated grasslands, requiring that water be available nearby. Pallid bat has been documented within the Analysis Area.

Other species of interest

Although not sensitive, game species in the Analysis Area, including game birds such as chukar (*Alectoris chukar*), California quail (*Callipepla californica*) and ring-necked pheasant (*Phasianus colchichus*), as well as mule deer, are of interest for recreating publics.

3.3.2. Direct and Indirect Effects from No Action Alternative

Under the No Action Alternative, management of Douglas Creek Road and surrounding landscapes would remain the same: no ground-disturbing activities would occur, and disturbance of wildlife would be limited to current uses of the road prism and Analysis Area.

The Direct and Indirect effects of the No Action Alternative would include no usage of the Analysis Area by Federally-listed species, presence within approximately 2 miles by a Federal

candidate for listing (greater sage-grouse), possible presence by sensitive shrub-steppe associated species, extremely unlikely usage by sharp-tailed grouse and gray wolf, and usage by migratory birds and game species.

Current disturbance levels would be maintained by the No Action Alternative, including moderate road usage, and recreational usage including hunting (Recreation, Section 3.4). No Action noise disturbance levels would affect the behavior and distribution of riparian species, burrowing shrub-steppe species, shrub-steppe species associated with rocky substrates, and species associated with open, arid habitats, but the environmental baseline of disturbance is reflected in the current abundance and breeding success of neotropical migrant bird species in the Analysis Area. Neotropical migrant bird species and other sensitive species would be predicted to maintain the range in abundances observed in previous years under the No Action Alternative.

3.3.3. Direct and Indirect Effects from Proposed Action Alternative

The Proposed Action would have direct effects including activity disturbance and modification of habitat within the Action Area, and indirect effects including short-term noise disturbance and changes in wildlife behavior radiating out from Douglas Creek County Road within the Analysis Area. Potential effects to sensitive species are summarized in Appendix 1: Table 3 and are discussed below.

Federally Listed Threatened and Endangered Species

Pygmy rabbit would not be affected by the Proposed Action because the species is currently limited to an experimental population where the rabbits are held in a fenced enclosure and the species is highly unlikely to occur in the Analysis Area during project implementation.

Bald and Golden Eagle

Golden eagle nesting would not be affected by the Proposed Action because implementation would occur outside the nesting period.

Migratory Birds

Neotropical migrant bird species using the Douglas creek riparian zone would have completed breeding and begun fall seasonal migrations prior to commencement of construction of the Proposed Action. Thus, there would be no significant impacts to Neotropical migrant bird species under the Proposed Action.

Indirect noise disturbance associated with the Proposed Action would be as high as 100 dBA during construction periods, but would not include blasting. This noise would ameliorate to ambient levels (~25 dBA) at distances < 1 mi., and would not extend over ridges set closer to the Action Area. This would result in a total of approximately 4,500 acres affected by direct noise disturbance. An additional 4,000 acre buffer around this area would be indirectly affected by wildlife displaced into this area by noise and activity disturbance. Only a portion of this area, however, would be affected at any one time because implementation will not occur at all five

Action Areas simultaneously. Mitigation for this disturbance would include construction timing set in Fall, outside the breeding period for all species of concern as well as Neotropical migrant bird species using the Analysis Area. Noise disturbance during construction could thus impact individual species of concern for a short period, but would not represent a permanent degradation of shrub-steppe or adjacent habitats. Some species would avoid the area of disturbance for the duration of implementation, while other species would become de-sensitized and would continue to occupy portions of the Analysis Area near the Action Area during implementation.

Shrub-steppe associated species

The Action Area (direct footprint of construction) includes riparian habitat and disturbed roadway fill areas. Habitat for shrub-steppe associated species including the greater sage-grouse and sharp-tailed grouse does not occur in the Action Area, so no direct effects would occur to these species. Shrub-steppe habitat does occur in the Analysis Area, which would be influenced solely by noise disturbance during construction. Greater sage-grouse and sharp-tailed grouse breeding and early brood-rearing would not be disturbed by the Proposed Action; the timing of the Proposed Action would be outside breeding windows for these species. While dispersing individuals or groups of individuals of these species could be disturbed by the Proposed Action, the effect of this disturbance would be similar to the environmental baseline of disturbances that would be encountered in this area. Thus no change in greater sage-grouse or sharp-tailed grouse distribution or abundance is anticipated as a direct or indirect effect of the Proposed Action.

Washington ground squirrel would be underground during implementation of the Proposed Action and would not be affected. Other sensitive species would be affected in a similar manner, with some individuals or groups of individuals experiencing short-term disturbance and/or displacement. Affected wildlife would be expected to return the area following project completion. For shrub-steppe associated species using the Analysis Area, no permanent change in population sizes or use of the area would be predicted as a result of the Proposed Action.

Cliff-associates and species with large home range sizes

The Proposed Action would not measurably modify shrub-steppe, cliff, or cave habitat. The sensitive species associated with these habitat types would not lose habitat within the Analysis Area.

Riparian wildlife species

The Proposed Action would directly impact approximately 0.1 acres of riparian and instream habitat, in addition to impacts to the riprap bank functioning as low quality riparian corridor. If Columbia spotted frog is present in the Action Area, this species could be directly impacted by temporary channelization and riprap installation. This species has not been identified in the Analysis Area. Mitigative actions would include relocation of all fauna from diversion areas during temporary channel relocation, wetland mitigation at a ratio of 1.5:1 to replace loss of low quality riparian emergent wetland, and planting of riprap areas with willow stakes to improve streamside cover habitat. The Proposed Action would be predicted to lead to a change in behavior of few to no Columbia spotted frog individuals and would not influence abundance or distribution of this species in Action Area or at larger scales.

Other species of interest

Hunting for game birds such as chukar (*Alectoris chuckar*), California quail (*Callipepla californica*) and ring-necked pheasant (*Phasianus colchichus*), as well as mule deer, would be affected in the Action Area and portions of the Analysis Area immediately surrounding it. Disturbance to these species and limitations on hunting access would be short in duration and would not affect abundance and distribution of these game species or recreational opportunities available in the Douglas Creek area as a whole.

3.3.4. Cumulative Effects

The cumulative effects of the Proposed Action on wildlife resources include consideration of the past, present and reasonably foreseeable future actions in the Analysis Area. Past actions are incorporated in the environmental baseline (described above), and present actions include only the Proposed Action. Future actions could be performed by land managers within the Analysis Area including the BLM, Washington Department of Natural Resources (DNR), The Nature Conservancy (TNC), and private owners. Personal communication was made with TNC (Warner 2012), and DNR (Niessner 2012). No large planned changes in private landuse patterns are known: it is assumed that adjacent private landowners would continue grazing at moderate utilization.

The cumulative effects of the Proposed Action would have no effect on population trends for Federally-listed or candidate species under the ESA. Pygmy rabbit does not occur in the Analysis Area and the Proposed Action would not affect population trends for this species. Washington's population of greater sage-grouse became a federal Candidate species with a listing priority number of 9 on a scale of 1-12. The population is expected to be listed as Threatened under the Endangered Species Act at some point in the future, unless recovery efforts demonstrate significant positive results (Stinson et al. 2004). The Cumulative Effects of the Proposed Action would not influence key factors identified as affecting the continued existence of this species in Washington (Stinson et al. 2004) including: habitat fragmentation, livestock grazing levels, fire regime, or wide-spread occurrence of biological soil crusts.

The cumulative effects of the Proposed Action would include no change in the abundance of any other sensitive species (Appendix 1: Table 3) at the scale of the Analysis Area, would not affect population trends for any sensitive species, and would not contribute to a trend in Federal or State listing for any species. No affects to the Wildlife portion of the Human Environment are predicted as cumulative effects of this Action.

3.4. Vegetation Resources

3.4.1. Affected Environment

Sensitive Plant Species

Focused surveys were conducted throughout the flowering season of 2011 to identify sensitive plant species, defined as plant species: a) listed, proposed, or candidates for listing under the

Federal Endangered Species Act (ESA); b) BLM Sensitive or Strategic Species;); c) Washington Natural Heritage Program state listed rare plants (Appendix: Table 4). Botanical surveys were conducted in 2011 in the Action Area and surroundings. Surveys targeted historic records of sensitive species as well as WA State listed noxious weeds. The Action Area was 100% surveyed. Over 100 vascular plant species were identified during the survey in 2011: results are documented in the botanical survey report (Brooks 2011).

Historic records suggested the Action Area could potentially support two federally listed plants: Ute's lady's tresses (*Spiranthes diluvialis*) and Water howellia (*Howellia aquatica*). Neither of these species was observed in the Action Area or immediate surroundings. Habitat for Water howellia (ponds) is lacking in the Action Area. No other Federally Listed, Proposed, Candidate, or Federal Species of Concern was identified in the Action Area or immediate surroundings. Therefore, Federal Consultation was not initiated with USFWS for plants for this project. One sensitive species was identified: Longsepal globemallow (*Iliamna longisepala*). This species was identified in the Action Area for Action 1. Longsepal globemallow is a regional endemic species found in three Counties in north-central Washington (Chelan, Douglas, and Kittitas). It is found on the lower flanks of the east Cascades, and east to the western edge of the Columbia Basin Plateau. Longsepal globemallow is found in gravelly stream sides in open shrub steppe and open forests on the eastern flank of the Cascades; also on open hillsides in microsites not immediately adjacent to stream channels. The elevation of known sites ranges from 150–1500 feet (Camp and Gamon 2011). Distribution appears to be limited by fire disturbance and moisture provided by streams (Fuentes 2000). This species is not an ESA-listed species but is currently listed by the BLM as a Sensitive species (BLM 2008), and listed by the State of Washington as a Sensitive species (WA DNR 2011). Natureserve lists the conservation status of this species on a global scale and State scale as vulnerable (Natureserve 2011).

Presence and abundance of noxious and invasive plants

Noxious and invasive plants are common and widespread in the Analysis Area, particularly along the Douglas Creek riparian corridor. State- and County-identified noxious weeds observed in the Action Area and Analysis Area include (in order of prevalence): Russian knapweed (*Acroptilon repens*), Dalmatian toadflax (*Linaria dalmatica*), diffuse knapweed (*Centaurea diffusa*), and hairy whitetop (*Cardaria pubescens*). Additional noxious weeds are undoubtedly present in the Analysis Area. Reed canary grass (*Phalaris arundinacea*), a Class C noxious weed and facultative wetland indicator species, is present along much of Douglas Creek in the Analysis Area.

3.4.2. Direct and Indirect Effects from No Action Alternative

Sensitive Plant Species

Under the No Action, no construction would occur. Levels of human disturbance, fluvial disturbance, and noxious and invasive plant presence would remain similar to the environmental baseline. The No Action Alternative would not affect the abundance or distribution of sensitive plant species in the Analysis Area or outside it.

Presence and abundance of noxious and invasive plants

Under the No Action, the road stabilization project would not occur. If no action is done to improve the road and stream-bank, noxious and invasive plant populations should not change significantly from their current extent and quantity. The area is already highly infested with both noxious weeds and other non-native invasive species. Reed canary grass would continue to dominate much of the seasonally inundated terraces in Douglas Creek's riparian zone.

Current noxious and invasive populations are being inventoried and will be treated as part of the integrated weed management plan for the Spokane District BLM, following Weed Program priorities. Actions taken to reduce or control noxious weeds will be dependent upon budget and district priorities.

3.4.3. Direct and Indirect Effects from Proposed Action Alternative

Sensitive Plant Species

Longsepal globemallow is the only sensitive species occurring in the Analysis Area, and two individual plants occur in the Action Area. Above-ground portions of these individual plants would be protected to the extent possible during construction. Direct impacts to these 2 individual plants are unlikely during construction, and would be attributable to stem breakage and disturbance or compaction of the soil. Since this species is a fibrous rooted perennial, it is possible that even if the above ground parts of the plant are destroyed the plant may be able to recover in the following year. There is no information available regarding the impact of soil compaction on this species. Fire is known to stimulate seed germination for this species (Fuentes 2009, Harrod and Halpern 2005). It is possible that soil disturbance may mimic fire and could stimulate seed germination by scarifying the seed and opening up the seedbed to sunlight.

Diversion of water into an overflow channel associated with Action 1 could indirectly affect one or more of the longsepal globemallow plants. A single plant could be inundated during construction. This plant is already in Douglas Creek's 2 year floodplain, and is likely inundated most years by spring snowmelt runoff. A Fall temporary inundation may affect seeding by this individual, but would probably not lead to mortality.

Another indirect effect of construction could be the spread of noxious and invasive plant seeds adjacent to Longsepal globemallow individuals in the Action Area, diffuse and Russian knapweed in particular. An increase in noxious weeds could potentially lead to a decrease in the ability of the long-sepal globemallow plants to germinate and grow to maturity. Knapweeds are already well-distributed in the area. Seeding with native species following construction would limit noxious weed distribution in the Action Area and could remove some noxious weeds currently competing with longsepal globemallow in the Action Area.

Presence and abundance of noxious and invasive plants

Construction in Action Area 1 would create newly-disturbed bare areas, and could facilitate the establishment and expansion of noxious and invasive plants in the Action Area. This effect will be minimized through seeding of native grasses following construction (Design Features, Section

2.3). Noxious weeds including diffuse knapweed have been observed adjacent to fill removal areas. Installation of this borrow material during construction of Actions 1, 2 and 4 may introduce noxious and invasive plant seed to Douglas Creek, transporting noxious and invasive plants downstream.

There is potential for spread of noxious and invasive plants by equipment and vehicles used in implementation of the Proposed Alternative. Design criteria for the Proposed Action include requirements for equipment operators to thoroughly wash their equipment before entering or leaving the project area (Design Features, Section 2.3). This Design Feature should reduce the risk of spreading noxious and invasive plants outside of the Action Area.

The implementation of this project would slightly improve the quality of the Douglas Creek Road. However, Douglas Creek Road would retain its designation as primitive, and no increase in recreational traffic is anticipated as an indirect effect of the Proposed Action (Recreation, 3.4). Thus, increased spread of noxious and invasive plants due to recreational vehicles in and outside of the Analysis Area is not predicted to rise above the environmental baseline as an indirect effect of the Proposed Action.

Reed canary grass would likely invade any wet areas that are disturbed as part of this project. Active planting of native wetland shrub species (primarily willow (*Salix exigua*)) will limit the spread of reed canary grass and could actually decrease its dominance of the Action 1 Action Area.

3.4.4. Cumulative Effects

Sensitive Plant Species

Past actions relevant to vegetation resources are included in the described environmental baseline. There are no known planned future actions in the Analysis Area by BLM, DNR, TNC, or private land owners beyond the environmental baseline, which includes grazing at moderate utilization levels (DNR, private) passive management (TNC), and passive management with some recreation (BLM).

All known populations of longsepal globemallow are within 30 mi. of Wenatchee. Most of the populations lie east of the Columbia River. The most easterly populations of this species are the ones in the Moses Coulee HUC level 8 watershed. These three mapped populations are growing near streams in non-forested areas. The majority of populations located west of the Columbia River occur in dry forest or within forest gaps.

The Proposed Action could potentially impact at most two individual longsepal globemallow plants. It is very unlikely that the Proposed Action would eliminate this species from the Action Area, and weed control associated with the Proposed Action could improve habitat for this species. The Proposed Action including cumulative effects would not eliminate this species from the Analysis Area and would not affect other populations of this species across its range.

The Proposed Action including cumulative effects would not contribute to a trend towards federal listing of longsepal globemallow or any other sensitive plant species.

Presence and abundance of noxious and invasive plants

The Douglas Creek Analysis Area is currently infested with a variety of noxious and invasive plants and other invasive non-native plants. The cumulative effects of the Proposed Action would include disturbance of < 3 ac. within the Action Area. The Proposed Action would include revegetation of disturbed areas with native grass species and control of import and export of weed seed on construction vehicles. No other actions by federal, state, or private actors are reasonably foreseeable within the Analysis Area. Thus the cumulative effects of the Proposed Action would not increase the distribution or abundance of noxious and invasive plants at any spatial scale.

3.5. Recreation

3.5.1. Affected Environment

Visitor use in the Douglas Creek area consists of hiking, camping, fishing, bird watching, mountain biking, equestrian riding, swimming, and hunting for deer and upland birds. Visitors are mostly local, from the north central Washington area, though some visitors come from further across the state. Douglas Creek's nearby location to Wenatchee, WA (less than an hour away) makes it a quick location for a day trip. Nearby Waterville School has been visiting the area regularly for science field trips throughout the spring for the last 15 years. The perennial stream creates a desert oasis which makes the Douglas Creek area attractive for wildlife and wildflower viewing throughout the year. The area is highlighted on several area websites, including Audubon (as a neotropical migratory bird corridor) and Wenatchee outdoors (as a hiking and biking destination). BLM Recreation Management Information System (RMIS) data estimate that 8,500 visitors come to this area each year (BLM 2011 RMIS figures). These visitor use numbers are compiled through direct observation and estimates by BLM staff. Some visitor use occurs year-round, but visitation is highest from May–September. Most of the recreational use in the Analysis Area is concentrated at the southern end of Douglas Creek, at the pothole pools during the summer months. The rest of the visitor activity is along the creek corridor, mainly camping in the locust tree groves, fishing, and hunting. The majority of visitors come in relatively small groups for day use or short-term stays focused along the main access road near the creek. Visitors to the area arrive at the Douglas Creek area from either the north end or the south end. The condition of the Douglas Creek county road limits the type of vehicles that can access the canyon. Due to the water crossings and rough Douglas Creek road in the Action area, a high clearance vehicle is necessary to negotiate the middle section of Douglas Creek. As a result, not as many visitors drive all the way through the Douglas Creek canyon, preferring instead to visit either the north or the south end. North end visitors are usually fishing, camping or hiking the area. South end visitors are usually swimming in the natural swimming holes along

Douglas Creek or hiking. Dispersed camping is prominent in several locations within the canyon: both upstream and downstream of the Action Area. Current recreation facilities include a trailhead with parking area and sign board at the Slack Canyon trailhead that provides public information about BLM regulations and a non-motorized trail map of the railroad trail. Law enforcement patrols the area frequently and BLM staff maintains the entire area including removal of garbage on a seasonal (April-October) basis.

Few facilities exist and vandalism is therefore limited to signs, and natural resources. In addition to seasonal maintenance, BLM has also cooperated with local volunteer groups to do periodic cleanups of the area. Some unauthorized off-highway vehicle (OHV) use occurs in the Analysis Area. Visitors to the area would increase slightly, according to trends in Washington State and Douglas County population growth. According to the Washington Office of Financial Management Growth Management, Douglas County population has grown from 14,890 in 1960 to 39,222 in 2010. By 2030, population is projected to grow to 49,627. Between 2000 and 2007, the total number of people who participated in one or more outdoor activities grow by 4.4 percent. (Cordell 2008). Many of these activities were for nature-based recreation (such as photography, wildlife watching, hiking), and this trend would be expected to continue in the Analysis Area in the future as populations increase in adjacent areas including Wenatchee.

3.5.2. Direct and Indirect Effects from No Action Alternative

Under the No Action Alternative, recreation would continue as supported by the existing transportation facilities. Douglas Creek Road would continue to be passable solely by high clearance vehicles, and would continue to require stream crossings. Visitors would continue to access the north and south ends of the area for the recreation opportunities available there, but would not all drive the entire Douglas Creek canyon.

Further degradation of the existing Douglas Creek Roadway in the Action Area could also occur. Eventually the road at Action 1 area could collapse enough to become a public hazard. At this point Douglas Creek Road would be physically closed due to the road failure. Although the Proposed Action has been developed to prevent road deterioration and potential eventual collapse, the probability, exact characteristics, and effects of road collapse cannot be accurately predicted or characterized. Consideration of the indirect effects of a potential future failure would be speculative and its effects on Recreation are not here analyzed.

3.5.3. Direct and Indirect Effects from Proposed Action Alternative

As a consequence of stabilizing Douglas Creek County Road, the Proposed Action would make this road safer than it is currently. However, road stabilization (Action 1), grade raising (Action 2, 4), culvert removal (Action 3) and road bed leveling (Action 5) would not change the Douglas Creek County Road designation. Douglas Creek County Road would retain its designation as

primitive and closed. The tunnel collapse south of the Action Area would still prevent any but high clearance vehicles from passing through this area. Vehicle passage through certain sections of Douglas Creek canyon (the Action Area) would be safer and less rough due to the Proposed Action. However, the road would still be rough, and would limit recreational users to high-clearance four wheel drive vehicles. For this reason, no increase in recreational traffic is anticipated as an indirect effect of the Proposed Action. Since no increase or change in recreational use patterns is anticipated as an indirect effect of the Proposed Action, no additional indirect effect of increased recreational traffic on wildlife, riparian, or other resources is anticipated. The Proposed Action would not elevate recreation or recreation impacts above the environmental baseline.

3.5.4. Cumulative Effects

The cumulative effects of the Proposed Action on Recreation resources include consideration of the past, present and reasonably foreseeable future actions in the Analysis Area. Past actions are incorporated in the environmental baseline (described above), and present actions include only the Proposed Action. No actions are reasonably foreseeable by other Federal or State agencies in the Analysis Area, and no large planned changes in private land use patterns are known: adjacent private landowners are assumed to continue grazing at moderate utilization (Section 3.14).

Local citizen groups have demonstrated interest in making improvements to an existing non-motorized trail along the abandoned railroad grade that closely follows the creek channel at the north end of Douglas Creek Canyon in BLM-managed lands. The trail provides public access to the northern area of Douglas Creek. However, a formal proposal of future improvements to this trail has not been developed and consideration of its effects would be speculative. Existing recreation opportunities are discussed in the Affected Environment section. Future recreation developments highlighting camping, hiking and dispersed recreation in the area may be implemented, in accordance with Spokane District BLM's Resource Management Plan, which is currently being developed. However, no implementation-level plans detailing future recreation developments for the Douglas Creek area have been developed at this time. The nearest recreational facilities outside of the Analysis Area (Lincoln Rock State Park, and Orondo County Park are over 25 mi. from the Action Area. Thus the majority of the cumulative effects would be a result of direct and indirect effects of the Proposed Action.

3.6. Cultural Resources and Native American Values

3.6.1. Affected Environment

The Analysis Area is within the traditional lands of the Sinkayuse (Moses Columbia) tribe, recognized as a constituent tribe of, and today represented by the Colville Confederated Tribes

(CCT). The Douglas Creek area is also within the boundary of ceded lands of the Confederated Tribes and Bands of the Yakama Nation. Ray (1936; 1974) documented the existence of an historic village site known as *skiāmapást* (“cliff bottom”) which was situated approximately 4-5 miles southeast of the Action Area. Networks of trails across Badger Mountain and through Moses Coulee served to connect distant villages with one another and with the Columbia River corridor. Sinkayuse Chief Moses’ name appears in connection with several land marks in Moses Coulee and he is said to have sought spiritual powers along its rim (Ruby & Brown 1995:14). A literature and records search did not identify any specific traditional cultural properties within the Action Area; however, the greater Moses Coulee area retains important traditional cultural values for CCT members (Finley 2007).

Historically, Moses Coulee was important to native tribes’ subsistence; they fished for trout in Douglas Creek and collected seasonally available plant and root crops throughout the Coulee. Significant dietary plants included, but were not limited to, camas, bitterroot, serviceberries, wild onion (*Allium cernuum*), Indian carrots (wild caraway), “Indian potatoes” and “kouse” (*Lomatium* spp.). Plant materials from species such as cat tails, reed canary grass and willows were also used by some Plateau tribes to create fishing gear, baskets, mats, tools and weapons (Finley 2007; Turner et al. 1984). Tribal members continue to seasonally harvest culturally important dietary root and plant crops in the Moses Coulee area.

Traditional-use plants

It is likely that plant species historically used by native tribes do exist in the Action Area; however, botanical surveys indicate that culturally significant dietary species that are harvested by CCT members are not present in the Action Area (Brooks 2011). The available literature does not indicate whether the species of concern identified in the Action Area (longsepal globemallow) was historically used by Native peoples.

Cultural properties and paleontological sites

Cultural properties identified in the Analysis Area indicate that the area has been occupied and used by Native tribes since before contact with Euro-Americans (circa 1805). Pre-contact sites include lithic scatters and short-term resource procurement camps. Historic period sites are represented by the early 19th century Great Northern Railroad’s Mansfield-Alstow Spur (1910) and associated features such as sidings, trestles and ballast stockpiles (DAHP site #45DO908). These sites are present in the Analysis Area but are not directly adjacent to the roadway. After falling into disrepair the Mansfield spur was officially decommissioned in 1985: rails and ties were removed and over time the trestles fell into disrepair. Finally, the railroad spur’s tunnel entrances south of the Action Area were blocked to mitigate a potential public safety hazard.

In 2010, the BLM’s Wenatchee Field Office submitted a National Register of Historic Places (NRHP) nomination form for the Great Northern Mansfield spur to the Washington State Department of Archaeology and Historic Preservation (DAHP), citing that the rail line was eligible on the basis of Register Criteria A, B and D. While the DAHP agreed that the rail line was historically significant, very little of the railroad spur and its associated features are intact on BLM administered lands in Douglas Creek and it thus lacks sufficient physical integrity to be eligible for NRHP listing. The BLM nonetheless continues to manage the railroad’s remains for historical and recreational interpretive values.

Between 1979 and 2000, four Class III cultural resources inventories were completed within the Analysis Area. These surveys have identified five pre-contact sites, three historic period sites and one multi-component (pre-contact & historic) site. As noted above, the Great Northern's Mansfield rail spur lies within the Analysis Area and the railroad bed is also, intermittently, the Douglas Creek road itself. None of the cultural properties located within the Action Area are eligible for listing in the NRHP.

There are no known paleontological resources within the Action Area. Fossil bearing sedimentary rocks (sandstone/mudstone) are present near the waterfalls in Douglas Creek, south of the Action Area.

Consultations for this project were initiated on August 16, 2011 with the DAHP, the Colville Confederated Tribes and the Yakima Indian Nation.

3.6.2. Direct and Indirect Effects from No Action Alternative

Traditional use plants

Under the No Action alternative, the occurrence of reed canary grass may increase in the riparian corridor. However, there would be no effects upon culturally significant dietary plant species, as none have been identified within the Action Area.

Cultural properties and paleontological sites

Under the No Action Alternative, cultural and paleontological resources would be unaffected by BLM activities and archaeological monitoring of BLM activities would not be necessary.

One possible indirect effect of the No Action Alternative (occurring later in time) would be further degradation of the existing Douglas Creek Roadway in the Action Area, potentially including road collapse and closure. Road closure could lead to wildfire burn-over of cultural properties if the Douglas Creek Canyon became inaccessible to fire suppression vehicles. However, full consideration of the indirect effects of this potential future closure would be speculative, and is not included in this analysis.

3.6.3. Direct and Indirect Effects from Proposed Action Alternative

Traditional-use plants

The Proposed Action would mandate replanting of willows in disturbed areas in the riparian corridor, thus increasing the occurrence of this traditionally-used species. Culturally important dietary species are not found in the Action Area and the Proposed Action alternative would not have an effect upon traditional-use food crops.

Cultural properties and paleontological sites

The Proposed Action as described and analyzed would have no direct effect upon known cultural properties, because sites that are potentially eligible for listing in the NRHP lie outside the

Action Area. Identified cultural sites within the Action Area are ineligible for NRHP listing. Use of railroad surplus ballast materials for rip-rap bank armoring supporting Action1 would not affect listed cultural resources because this site is considered ineligible for NRHP listing. This rip-rap material source was selected to avoid impacting the integrity of the features associated with the railroad which the BLM manages for their interpretive values.

There are no known paleontological resources within the Action Area. Thus the Proposed Action would not impact paleontological resources.

As part of the Design Features for the Proposed Action (Section 2.3), The BLM would complete archaeological monitoring of all ground-disturbing activities to ensure that potential buried materials were not adversely affected by any of the Proposed Actions. If buried cultural materials were encountered during project implementation, all activities in the immediate vicinity of the find would cease until the DAHP and Tribal Historic Preservation Officers were contacted and potential mitigation options discussed.

3.6.4. Cumulative Effects

Since there would be no direct or indirect effects on cultural resources or Native American values from either alternative, there can be no cumulative effects.

4. Consultation and Coordination

- Consultations for this project were initiated on August 16, 2011 with the DAHP, the Colville Confederated Tribes (CCT) and the Yakima Indian Nation. Concurrence with the Action Area definition was received from the DAHP on August 22, 2011. The CCT responded on October 3, 2011, noting that the area lies within the traditional area of the Moses-Columbia tribe. Determinations of project effects upon cultural resources are pending archaeological monitoring of the project implementation.
- Determinations of “No effect” were made for Federally-listed anadromous fish species, as well as terrestrial and aquatic non-anadromous animal species. No Consultation was initiated with NOAA Fisheries or USFWS.
- A Joint Aquatic Resources Permit (JARPA) was submitted for the Proposed Action, to address in-water work and wetlands impacts and mitigation associated with the Action. This permit (January 2012) initiated coordination between the BLM and WADFW, USACE, and WADOE.

5. List of Preparers

Restoration Program Coordinator

Name	Title	NEPA Roles
Chris Sheridan	Restoration Program Coordinator	IDT Lead, Aquatic Resources
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Francoise Sweeney	Cultural Specialist	Cultural Resources and Native American Values
Diane Priebe	Recreation Planner	Recreation
Scott Pavey	Planning and Environmental Coordinator	Planning and NEPA compliance

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7. Appendices

7.1. Sensitive species tables

Table 2. Potential Sensitive Fish Species in Analysis Area: Douglas Creek Road Stabilization.

Scientific name	Common name	Fed Status	WNHP WDFW State Status	Affected Environment
<i>Cottus marginatus</i>	Margined sculpin	None	SS	Unlikely and not observed in Douglas Creek (Vardas 2012).
<i>Lampetra ayresii</i>	River lamprey	None	SC	No records of this species in Douglas Creek. Present in Columbia main stem.
<i>Oncorhynchus clarkii clarkii</i> (puget sound)	Coastal cutthroat trout	None	None	No records of this species in Douglas Creek. Coastal systems.
<i>Oncorhynchus mykiss</i> (lower columbia river)	Steelhead	FT	SC	No records of this species above Lower Columbia
<i>Oncorhynchus mykiss</i> (middle columbia river)	Steelhead	FT	SC	No records of this species in Douglas Creek. Present in Columbia main stem.
<i>Oncorhynchus mykiss</i> (snake river basin)	Steelhead	FT	SC	Species occurs in a different basin.
<i>Oncorhynchus mykiss</i> (upper columbia river)	Steelhead	FT	SC	No records of this species in Douglas Creek. Present in Columbia main stem.
<i>Oncorhynchus tshawytscha</i> (lower columbia river)	Chinook salmon	FT	SC	No records of this species above Lower Columbia
<i>Oncorhynchus tshawytscha</i> (snake river fall runs)	Chinook salmon	FT	SC	Species occurs in a different basin.
<i>Oncorhynchus tshawytscha</i> (snake river spring/summer runs)	Chinook salmon	FT	SC	Species occurs in a different basin.
<i>Oncorhynchus tshawytscha</i> (upper columbia river spring run)	Chinook salmon	FE	SC	No records of this species in Douglas Creek. Present in Columbia main stem.
<i>Prosopium coulterii</i>	Pygmy whitefish	None	SS	No records of this species in Douglas Creek.
<i>Rhinichthys umatilla</i>	Umatilla dace	None	SC	No records of this species in Douglas Creek.
<i>Salvelinus confluentus</i>	Bull trout	FT	SC	No records of this species in Douglas Creek. Associated with cool water systems.

Table 3. Potential Sensitive Wildlife Species in Analysis Area: Douglas Creek Road Stabilization

Scientific name	Common name	Fed Status	WNHP State Status	Potential for effect/Rationale
<i>Aechmophorus clarkii</i>	Clark's grebe	None	M	No suitable habitat in Analysis Area--Not Affected
<i>Alces americanus</i>	Moose	None	None	Outside of WDFW's priority management areas, dispersing individuals unlikely to be present in Analysis Area during implementation, disturbance would be similar to other disturbance encountered during dispersal--Not Affected.
<i>Amphispiza bilineata</i>	Black-throated sparrow	None	None	No documented occurrences in Analysis Area. Potential for noise/activity disturbance, loss/disturbance of ~0.1 acres of habitat
<i>Antrozous pallidus</i>	Pallid bat	None	M	Documented occurrences in Analysis Area. Potential for noise/activity disturbance, loss/disturbance of ~0.1 acres of habitat
<i>Athene cunicularia</i>	Burrowing owl	None	SC	No documented observations in Analysis Area, unlikely to be affected, small potential for noise/activity disturbance, no loss of habitat.
<i>Boloria bellona</i>	Meadow fritillary	None	M	No documented occurrence in Analysis Area, caterpillar host plant does not occur in Action Area--Not Affected.
<i>Brachylagus idahoensis</i> (columbia basin)	Pygmy rabbit	FE	SE	Outside current range of occurrence, no historic observations in Analysis Area--Not Affected.
<i>Buteo regalis</i>	Ferruginous hawk	None	ST	No documented observations in Analysis Area, potential for noise/activity disturbance to individuals.
<i>Callophrys gryneus barryi</i>	Barry's hairstreak	None	SC	Caterpillar host plant (Juniper) not present in Analysis Area, no suitable habitat--Not Affected.
<i>Canis lupus</i> (northern rocky mtn.)	Gray wolf	None	SE	No documented observations near Analysis Area, nearest breeding pack is >50 miles away, individuals unlikely to occur in Analysis Area during implementation, disturbance to dispersing individuals would be similar to other disturbances encountered during dispersal--Not Affected.
<i>Canis lupus</i> (outside northern rocky mtn.)	Gray wolf	FE	SE	Analysis Area is not within geographic area of ESA listed population--Not Affected.
<i>Centrocercus urophasianus</i> (columbia basin)	Greater sage-grouse	FC	ST	Documented occurrences in Analysis Area. Some potential for noise/activity disturbance outside of breeding season, no loss of habitat.
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None	SC	No documented occurrences in Analysis Area. Potential for noise/activity disturbance, loss/disturbance of ~0.1 acres of habitat
<i>Cupido comyntas</i>	Eastern tailed blue	None	None	No documented occurrences in Analysis Area. Potential for noise/activity disturbance, loss/disturbance of ~0.1 acres of habitat
<i>Dolichonyx oryzivorus</i>	Bobolink	None	M	No suitable habitat in Analysis Area--Not Affected
<i>Empidonax wrightii</i>	Gray flycatcher	None	M	No documented occurrences in Analysis Area. Potential for noise/activity disturbance, no habitat loss.
<i>Falco peregrinus anatum</i>	American peregrine falcon	None	SS	No documented observations in Analysis Area, unlikely to occur in Analysis Area during implementation, some potential for noise/activity disturbance to individuals.
<i>Falco rusticolus</i>	Gyr Falcon	None	M	No documented occurrences in Analysis Area, potential for noise/activity disturbance.
<i>Grus canadensis</i>	Sandhill crane	None	SE	No suitable habitat in Analysis Area--Not Affected
<i>Haliaeetus leucocephalus</i>	Bald eagle	None	SS	No documented observations in Analysis Area, not considered optimal habitat, unlikely to occur in Analysis Area during implementation--Not Affected.

Table 3 (Continued)

Scientific name	Common name	Fed Status	WNHP WDFW State Status	Potential for effect/Rationale
<i>Lepus californicus</i>	Black-tailed jackrabbit	None	SC	No documented occurrences in Analysis Area. Potential for noise/activity disturbance, no loss of habitat.
<i>Lepus townsendii</i>	White-tailed jackrabbit	None	SC	Documented occurrence just outside Analysis Area. Potential for noise/activity disturbance, no loss of habitat.
<i>Melanerpes lewis</i>	Lewis' woodpecker	None	SC	No documented occurrences in Analysis Area. Potential for noise/activity disturbance, loss/disturbance of ~0.1 acres of habitat
<i>Microtus pennsylvanicus kincaidi</i>	Kincaid meadow vole	None	M	No documented occurrences in Analysis Area. Potential for noise/activity disturbance, loss/disturbance of ~0.1 acres of habitat
<i>Myiarchus cinerascens</i>	Ash-throated flycatcher	None	M	No documented occurrences in Analysis Area. Potential for noise/activity disturbance, no habitat loss.
<i>Numenius americanus</i>	Long-billed curlew	None	M	No suitable habitat in Analysis Area--Not Affected
<i>Pelecanus erythrorhynchos</i>	American white pelican	None	SE	No suitable habitat in Analysis Area--Not Affected
<i>Picoides albolarvatus</i>	White-headed woodpecker	None	SC	Marginal to unsuitable habitat, unlikely to occur in Analysis Area--Not Affected
<i>Polites themistocles</i>	Tawny-edged skipper	None	M	Documented in Douglas County, potential for loss/disturbance of <0.1 acres of habitat
<i>Spermophilus washingtoni</i>	Washington ground squirrel	FC	SC	Low potential for noise/activity disturbance based on work occurring while squirrels are underground, no habitat loss/disturbance--species may occur in Analysis Area but Action Areas are not suitable habitat.
<i>Tympanuchus phasianellus</i>	Sharp-tailed grouse	None	ST	No documented observations in Analysis Area, nearest lek is >10 miles north, small potential for noise/activity disturbance to dispersing individuals.

Table 4. Potential Sensitive Plant Species in Analysis Area: Douglas Creek Rd Stabilization

Scientific Name	Common name	Federal Status	BLM-WA Status	WA State Status
<i>Allium constrictum</i>	Grand Coulee onion		Sensitive	Sensitive
<i>Astragalus misellus</i> var. <i>pauper</i>	Pauper milk-vetch		Sensitive	Sensitive
<i>Astragalus multiflorus</i>	Loose-flower milk-vetch		Strategic	Threatened
<i>Camissonia pygmaea</i>	Dwarf suncup, dwarf evening primrose		Sensitive	Sensitive
<i>Cryptantha gracilis</i>	Narrowstem cryptantha		Sensitive	Sensitive
<i>Cryptantha leucophaea</i>	Gray cryptantha	SC	Sensitive	Sensitive
<i>Delphinium viridescens</i>	Wenatchee larkspur	SC	Sensitive	Threatened
<i>Erigeron piperianus</i>	Piper's fleabane		Sensitive	Sensitive
<i>Hackelia cinerea</i>	Gray stickseed		Strategic	Sensitive
<i>Hackelia hispida</i> var. <i>disjuncta</i>	Rough stickseed, sagebrush stickseed		Sensitive	Sensitive
<i>Howellia aquatilis</i>	Water howellia	T		Threatened
<i>Iliamna longisepala</i>	Longsepal globemallow		Sensitive	Sensitive
<i>Juncus tiehmii</i>	Tiehm's dwarf rush		Sensitive	Threatened
<i>Juncus uncialis</i>	Inch-high rush		Sensitive	Sensitive
<i>Micromonolepis pusilla</i>	Red poverty weed		Sensitive	Threatened
<i>Mimulus suksdorfii</i>	Suksdorf's monkeyflower		Sensitive	Sensitive
<i>Nicotiana attenuata</i>	Coyote tobacco		Sensitive	Sensitive
<i>Ophioglossum pusillum</i>	Adder's-tongue		Sensitive	Threatened
<i>Pediocactus nigrispinus</i>	Snowball cactus		Strategic	Review
<i>Penstemon eriantherus</i> var. <i>whitedii</i>	Whited's penstemon		Sensitive	Sensitive
<i>Petrophyton cinerascens</i>	Chelan rockmat	SC	Sensitive	Endangered
<i>Phacelia lenta</i>	Sticky phacelia	SC	Sensitive	Threatened
<i>Phacelia tetramera</i>	Dwarf phacelia		Sensitive	Sensitive
<i>Polycytenium fremontii</i> var. <i>fremontii</i>	Fremont's combleaf		Sensitive	Threatened
<i>Sandbergia perplexa</i>	Puzzling rockcress		Strategic	Threatened
<i>Schizachyrium scoparium</i> var. <i>scoparium</i>	Little bluestem grass		Sensitive	Threatened
<i>Sisyrinchium montanum</i>	Strict blue eyed grass		Sensitive	Threatened
<i>Spiranthes diluvialis</i>	Ute ladies'-tresses	T		Endangered
<i>Thelypodium sagittatum</i> ssp. <i>sagittatum</i>	Arrow-leaved thelypody			Sensitive
<i>Trifolium thompsonii</i>	Thompson's clover	SC	Sensitive	Threatened

7.1. Figures: Douglas Creek Road Stabilization

Figure 1. Analysis Area: Douglas Creek Road Stabilization

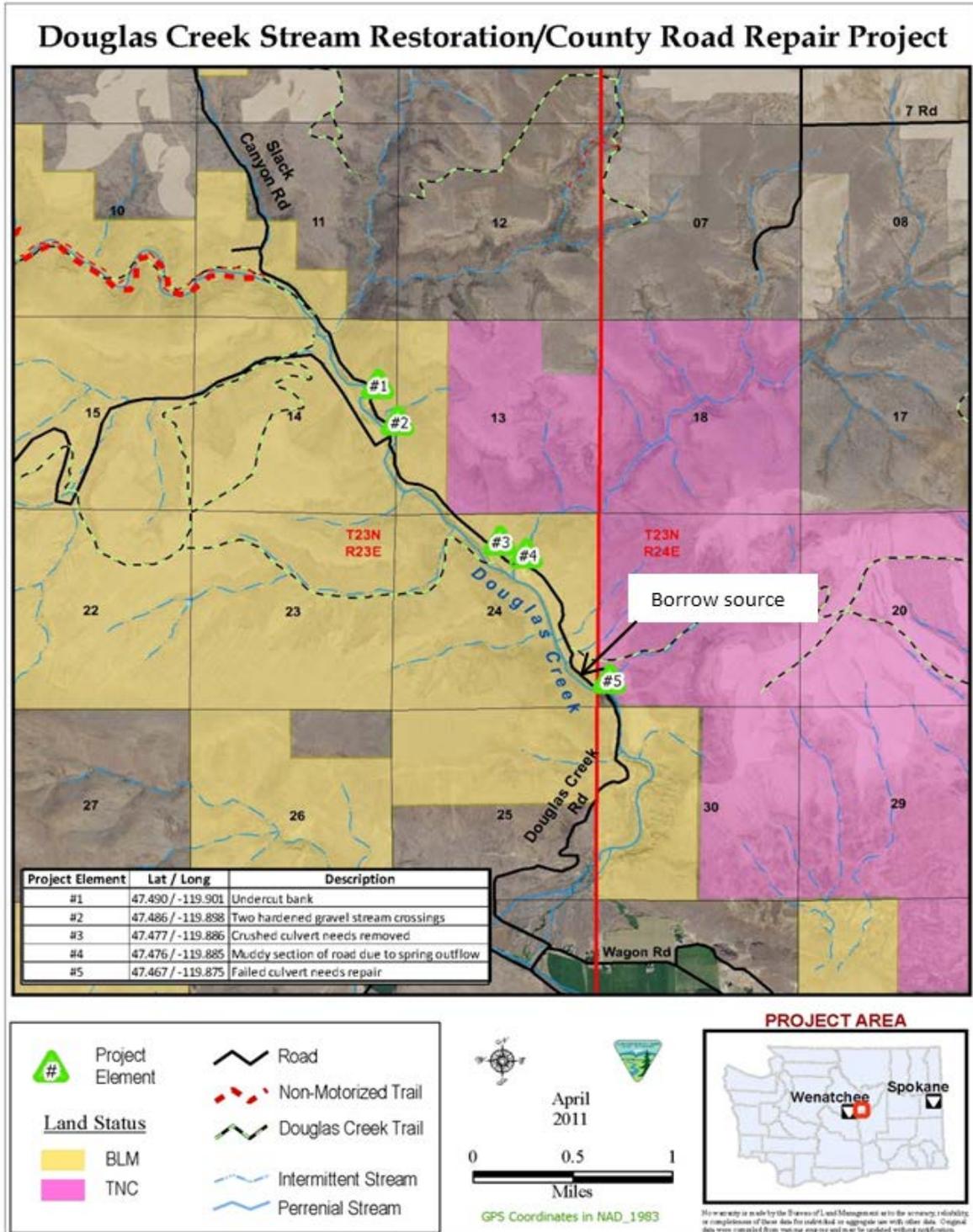


Figure 2. Construction schematics for Action 1: Douglas Creek Road Stabilization (Example Only). Note: Construction details are for illustration only.

