U.S. Department of the Interior
Bureau of Land Management

BLM
Vale District Office

Little Whitehorse Creek Crossing Road Repair

Environmental Assessment
DOI-BLM-OR-V060-2015-037-EA

Vale District BLM
100 Oregon Street
Vale, OR 97918

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1.0 Introduction

The Oregon Canyon Mountains provide extensive opportunities for solitude and primitive recreation. The mountains are accessed through two main routes: the Disaster Peak Road to the Fifteenmile Road from the south and Whitehorse Ranch Lane to the Whitehorse-Fifteenmile Road from the north. The Whitehorse-Fifteenmile road crosses Little Whitehorse Creek through a meadow in Township 39 South, Range 39 East, Section 6, N½NW¼ (Figure 1). This is a main access route in the Oregon Canyon Mountains for public land users including recreationists, grazing permittees, and Bureau of Land Management (BLM) personnel. Since much of the area is designated as Wilderness Study Area and motorized travel is limited to designated roads, the Whitehorse-Fifteenmile road is one of the few routes accessible to motorized users.

In 1991, exclosures were constructed along Little Whitehorse Creek to enhance vegetation growth and promote cooling of the water. Riparian monitoring and aerial photography indicated that riparian species were becoming established by 2003. After the 2012 Holloway Fire, beaver activity upstream from the Little Whitehorse Creek crossing dammed the creek, forcing water into the two-track road on the floodplain east of the creek. The crossing is the main northern access road to the area. Alternative routes add an additional 3-4 hours of travel time, thus people continue to use, or attempt to use, the creek crossing. Vehicles have repeatedly been stuck in the saturated soils surrounding the road as they try to get through the crossing, creating an expanding disturbed area.

The beaver dam has dispersed the stream flow onto the historic floodplain. The dispersed water flow has caused the area around the road crossing to transition from a dry floodplain, composed of upland plant species, into a wet floodplain with riparian species. The standing water expanded into the floodplain and riparian plant species began to grow in the now saturated areas. In addition, a side channel started that flows from one of the upstream dams and returns to the main channel downstream of the crossing (Figure 2). The beavers have recently built a dam downstream of the crossing, raising the water table to the point that the crossing is now completely impassable during most of the year.

Little Whitehorse Creek has a genetically pure population of Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) which is listed as Threatened under the Endangered Species Act. Trout prefer clear streams with little sediment. The current condition of the crossing is contributing to erosion and increased levels of sediment in Little Whitehorse Creek.

Figure 1: Vicinity Map Including Rock Sources

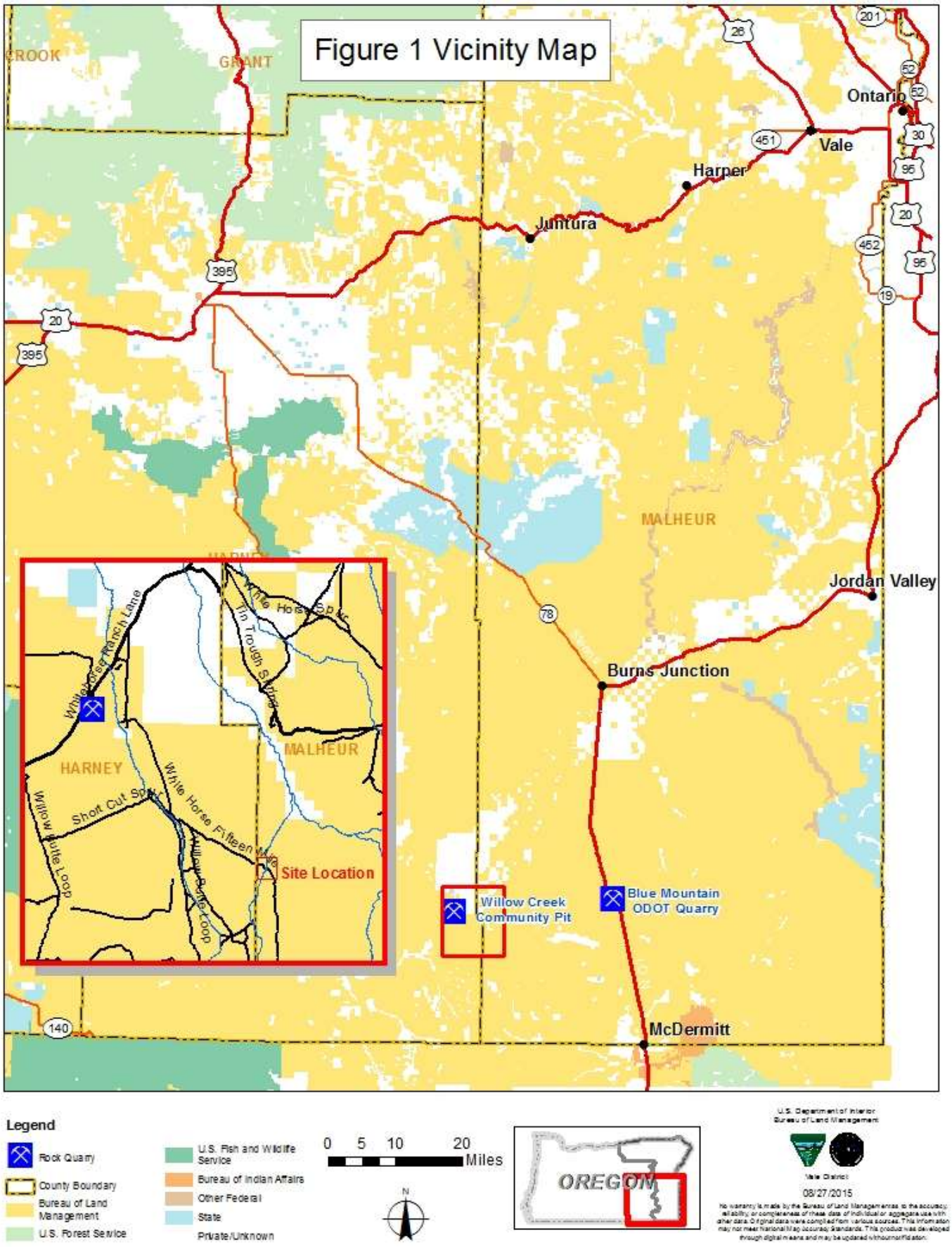
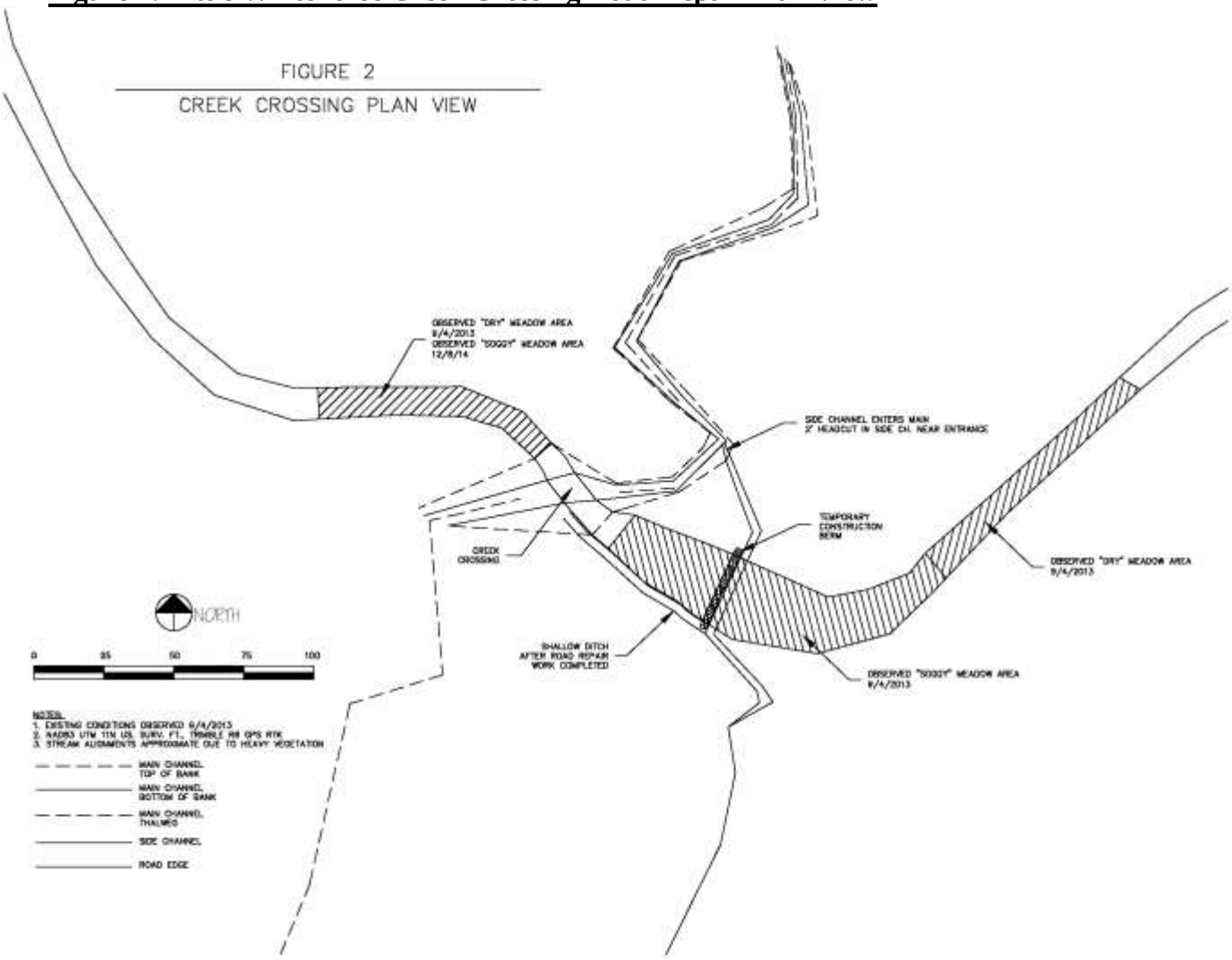


Figure 2: Little Whitehorse Creek Crossing Road Repair Plan View



1.1 Purpose and Need

The purpose of this project is to reestablish access across Little Whitehorse Creek on a stable road bed that will facilitate stream flow, fish passage, and expansion of the riparian area as the water table continues to rise.

The need to reestablish this access is not only to provide for recreational opportunity but for BLM administration of grazing permits, cultural resource protection, WSA monitoring, fish surveys, and possible fire suppression activities.

1.2 Conformance

The Proposed Action is in conformance with 2002 Southeastern Oregon Resource Management Plan and Record of Decision (SEORMP/ROD). Specifically, in *Fish and Aquatic Habitat*, on

p. 50, “management emphasis is on providing habitat for fish and other aquatic organisms to maintain the distribution of native species among subwatersheds”. Also, in *Special Status Animal Species*, p. 52, “management will emphasize achieving conditions that maintain enhance, or restore habitats and populations regardless of their economic status.” In *Water Resources and Riparian/Wetland Areas*, p. 48, this objective is stated: “Restore, maintain or improve riparian vegetation, habitat diversity, and associated watershed function to achieve healthy and productive riparian areas and wetlands.” Another objective for *Water Resources and Riparian/Wetland Areas*, on p. 44, is to “ensure that surface water and ground water influenced by BLM activities comply with or are making progress toward achieving State of Oregon water quality standards for beneficial uses as established per stream by the Oregon Department of Environmental Quality (ODEQ).”

The Proposed Action is also in conformance with the 1995 Lahontan Cutthroat Trout (LCT) Recovery Plan (LCT Plan). The objective of the plan is to delist LCT from the list of Threatened and Endangered Wildlife and Plants. Lahontan cutthroat trout will be considered for delisting when management has been instituted to maintain, enhance and protect populations and habitat required to sustain appropriate numbers of viable self-sustaining populations. This project will enhance habitat by preventing the sedimentation occurring from the current situation.

1.3 Scoping

Scoping has been completed within BLM and the United States Fish and Wildlife Service (USFWS). BLM personnel from the Vale District and the Oregon State Office have provided resource data, best management guidance, engineering design, and alternative analysis for this project. The USFWS met with the BLM at the site in September 2013 and have been consulted throughout the project design. Oregon Department of Fish and Wildlife personnel have provided input to the design as well.

1.4 Issues

The following concerns were brought forward during scoping.

1.4.1 Issues Considered in Detail

- Issue 1: How will the proposed action impact Lahontan cutthroat trout and their habitat quality?
- Issue 2: How will sediment released during and after road construction impact water quality?
- Issue 3: How will removal and fill of material for the road bed affect the hydrology of Little Whitehorse Creek and the riparian area?
- Issue 4: How will the proposed project impact travel and vehicular access?

1.4.2 1.4.2 Issues Considered but Not Analyzed in Detail

The following additional concerns were considered for analysis in this document. After initial analyses, the BLM determined that these concerns were not issues requiring detailed analysis because they are either not affected by the proposed action or their effects are avoided through design features of the proposed action. Therefore, these concerns were not analyzed in detail.

- **Issue: How will the repair of the road impact livestock grazing?**

This area is not allotted to any grazing permit. Therefore the construction itself will not cause impacts to active grazing. The current permittee of the surrounding allotment has access to the area through private property and therefore does not require repair of the road. Thus, the only impact this would have on grazing is allowing easier administration of the permit by BLM employees.

- **Issue: What effects will the proposed action have on the spread of noxious weeds?**

Degradation of the riparian area increases potential for weed spread and introduction. Repair of the crossing is expected to decrease the spread of weeds by keeping traffic to one main route and out of the riparian area. Using weed-free source material, as identified in the proposed action, eliminates any effects further.

- **Issue: Would the proposed action impair Wilderness Study Area (WSA) suitability and preserve wilderness character?**

The proposed action is bordered on the south by Willow Creek WSA (3-152) and on the north by Whitehorse Butte wilderness character inventory unit (OR-036-045). The WSA and wilderness character inventory unit boundaries form the edge of the road disturbance. The design of the proposed project is to keep disturbance within the current road disturbance. Repair of the crossing is expected to enhance WSA suitability and preserve wilderness character by providing a safe and reliable crossing at Little Whitehorse Creek and eliminating the need for recreational users to travel off of the road and into the WSA and wilderness character inventory unit.

- **Issue: Will the project comply with current Visual Resource Management Objectives?**

Visual resources in the Jordan Resource Area (JRA) have been classified according to BLM's Visual Resource Management (VRM) criteria (SEORMP/ROD 2002, Appendix J, page J-1). These criteria include scenic quality, visual sensitivity, and viewing distance and have resulted in four VRM classifications. Each VRM classification defines management objectives and the degree of visual change that will be acceptable within a landscape.

The project area includes classifications for VRM Class I, II, and III lands. The road crossing site is within VRM Class III. The proposed action is within the management class objectives since there is little to no visual contrast and therefore complies with the current management class.

- **Issue: Will the project affect cultural resources?**

This area was surveyed with a Level III Cultural Survey. The cultural resource report will be submitted to Oregon State Historic Preservation Office (SHPO), for Section 106 compliance. All

eligible and potentially eligible cultural resources will be protected and an archaeologist will be on site during excavation activities.

2.0 Alternatives

This section describes the alternatives analyzed in detail and considered through this project. Project design features associated to the action alternative are presented in Appendix A. General best management practices can be found in Appendix B. These features are in place to minimize impacts to water resources and fish habitat.

2.1 No Action Alternative

Under this alternative, no action would be taken by the BLM. The riparian exclosures would be maintained and beaver activity is expected to continue. The road crossing would continue to be impassable and travelers would continue to attempt alternative routes through or around the crossing. Vehicle disturbance would create additional ruts causing downstream sediment flow.

2.2 Proposed Action

The proposed action would establish a solid roadbed that would allow water to filter through the road. Construction would start from existing dry roadbed on the north of the stream. The existing roadbed would be excavated approximately 24 to 30 inches deep and 15 feet wide to the extent of a mechanical excavator's arm (Figure 3). This removed material will be transported to the Willow Creek Community Pit for disposal. An 18- to 20-inch layer of 3- to 6-inch foundation rock wrapped in a layer of geotextile fabric for stabilization would be placed in the excavated roadbed. An 8- to 10-inch layer of surface aggregate (1" minus material) would be placed on top of the fabric. This surface aggregate would be used to maintain maximum drainage while providing a hardened driving surface. Once this section is complete, the equipment would advance forward, using the newly created roadbed to work. The BLM estimates that the road repair would require 200 linear feet of rock and geotextile fabric. This equates to approximately 170 cubic yards of foundation rock, 100 cubic yards of surface aggregate and 1000 square yards of geotextile fabric. The final road would be approximately four inches above the surrounding ground surface.

Channel excavation would only occur if necessary to maintain a stable stream channel crossing. The creek channel excavation distance would not exceed 35 linear feet, 18 inches deep and 15 feet wide. Within the creek, cobble rock 6- to 12- inches in size would be used. This is approximately 30 cubic yards of large rock. The surface of the rock would align with the current streambed and the stream would flow over the road. After reaching the east side of the creek, a rock and soil berm would be constructed to prevent water from entering the road excavation. The section of road between the creek and the berm would then be repaired. After this section is complete, the berm across the road would be removed and a shallow ditch would be constructed along the upstream side of the road to divert the side channel back into the main stream channel. The rest of the road would then be repaired.

Figure 3: Cross-Section of Repaired Road

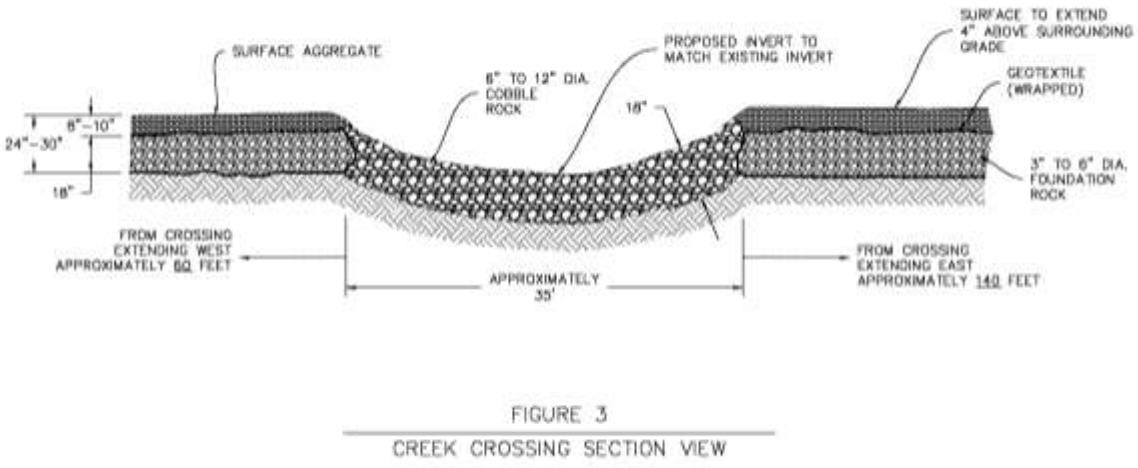


FIGURE 3
CREEK CROSSING SECTION VIEW

Construction would take approximately one to two weeks to complete and would be initiated in October. ODFW in-water work requirements restrict work in Lahontan cutthroat trout streams to between October 1 and March 31. This period is also when the creek has low water levels but the ground has not yet frozen. Labor would be completed by BLM employees using BLM-owned or leased equipment. Foundation rock would be taken from the Blue Mountain Oregon Department of Transportation (ODOT) pit. Round river rock for the stream crossing would come from the Jordon Valley area and the surface aggregate would be obtained at the Willow Creek Community Pit. This pit would also serve as the staging area for equipment and material. Both pits are noted on Figure 1. Following construction, the road would be marked with reflective posts on each side to ensure motorists stay on the hardened roadbed and all resource protection materials will be removed.

2.3 Alternatives Considered but Not Analyzed in Detail

2.3.1 Bridge Option

BLM engineers determined that building a bridge at 100-year flood plain water elevation over Little Whitehorse Creek would require an expensive, long-span bridge. Estimated costs for a bridge this size was over $500,000. The cost-to-benefit ratio does not justify this option and funds are not available.

2.3.2 Alternative Crossing Location

Moving the crossing to another location was considered. Upstream of the current crossing the canyon becomes much more incised with steep walls, making rerouting upstream impossible. Downstream there were a few possible options for crossing that weren't too far from the current road. However, all possibilities would require extensive new ground disturbance, possibly including rock outcrop removal. There was also no guarantee that these locations would not result in similar situations as the current crossing. Due to the level of disturbance, the cost of the work, and the uncertainty of longevity, this option was dismissed.

3.0 Affected Environment and Environmental Effects

This chapter describes the affected environment and environmental effects of the alternatives. This presents the existing condition and anticipated effects of the resources related to the issues identified to be analyzed in detail. Therefore, the presentation of this section is organized by issue.

3.1 Issue 1: How will the proposed action impact habitat quality for Lahontan cutthroat trout?

3.1.1 Affected Environment

The life history and habitat requirements of Lahontan cutthroat trout (LCT) are similar to other salmonids throughout the west. Optimal stream habitat is characterized by clear, cold water with silt-free substrate and a 1:1 pool-riffle ratio. Streams should have a variety of habitats including areas with slow deep water, abundant instream cover (i.e., large woody debris, boulders, undercut banks), and relatively stable streamflow and temperature regimes. Stream banks should be well vegetated to provide cover, shade, and bank stabilization. Spawning habitat must include clean, well oxygenated gravels with riffles, glides and small pools for fry habitat. This habitat is necessary for fry survival during the warmest part of the summer and the coolest part of the winter. If this habitat is not available, then hot water temperatures during the summer or winter freezing of shallow portions of the creek may occur, killing LCT fry. Spawning generally occurs from April through July, depending upon stream flow, elevation, and water temperature (McAfee 1966, Lea 1968, Moyle 2002, Rissler et al. 2006).

LCT are known to exist in Little Whitehorse Creek upstream and downstream of the road crossing (ODFW 2011). Current habitat in the vicinity of the proposed action consists of an understory dominated by sedge and rush species and an overstory comprised of alder and multiple willow species such as coyote, yellow, lemon, and whiplash. The well-vegetated stream banks provide bank stability and the willow canopy and overhanging banks provide shade and refuge. Multiple beaver dams have created pools in the area. In-stream habitat consists of a series of riffles and pools with clean gravels suitable for spawning.

3.1.2 Environmental Effects

3.1.2.1 No Action

Under the no action alternative, no short-term increase in sedimentation would result from construction. The current habitat conditions would continue to exist and LCT should continue to survive within Little Whitehorse Creek. However, with the existing high water table, the road would continue to be impassable most of the time.

Since access would be limited, people may try to find other ways to cross Little Whitehorse Creek or may still try to cross at the current location. These events would continue to add sediment to the creek which would degrade LCT habitat.

*3.1.2.2 **Proposed Action***

In-stream construction work would produce a temporary introduction of sediment in the stream. This temporary increase would last for the duration of construction (1-2 weeks). Project design elements would be implemented to reduce the impacts of sediment on the fish. First, fish would be isolated from the work area during construction. Also, a sediment trap will stop most of the sediment from flowing downstream to where the fish would be located. Sedimentation would be short-lived and would clear before the isolation is removed. Also, construction would occur in October, when temperatures should be moderate and fish would not be as stressed.

Vegetation would be altered within the existing road prism. Some willows would be trimmed or pushed back to facilitate operation of equipment and various species may need to be cut, removed or brushed back to facilitate placing isolation nets for the fish. These alterations would be minimized to the extent possible. Overall, this effect would be short-term and minor.

Vegetation would return quickly starting the next growing season. The amount of vegetation disturbed is negligible in the scope of the overall riparian vegetation present and would not impact overall fish habitat quality. Two beaver dams would be breached before and during the construction according to Project Design Elements (PDEs) in Appendix A. This is a short-term effect that again would have little impact on fish habitat quality in the long term. The BLM expects that the beavers would rebuild the dams shortly after construction is complete; the duration of this impact may be as little as the time of active construction.

After construction is complete and sediment has settled, this project would benefit LCT habitat. With a solid roadbed, people can drive across the creek without damaging the wetland or the banks and without contributing large amounts of sediment to the water.

3.2 Issue 2: How will sediment released during and after road construction impact water quality?

3.2.1 Affected Environment

Little Whitehorse Creek is within the Whitehorse Creek Watershed (Hydrologic Unit Code [HUC] No. 1712000904) and is a tributary to Whitehorse Creek. The road crossing occurs at River Mile 2.2 upstream of the Whitehorse confluence. Neither Little Whitehorse Creek nor Whitehorse Creek are on the current Section 303(d) list of the Clean Water Act. The 2012 Oregon Department of Environmental Quality (ODEQ) Water Quality Assessment Database lists the beneficial uses for Little Whitehorse Creek and Whitehorse Creek as: Salmonid fish rearing; Salmonid fish spawning; Resident fish; and aquatic life (ODEQ 2012). Sedimentation is considered a pollutant for these beneficial uses of surface water due to the formation of appreciable bottom or sludge deposits, or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life (ODEQ 2012). Due to the current disturbed condition of the road across the floodplain/riparian area there is an increased sediment load being contributed to Little Whitehorse Creek.

3.2.2 Environmental Effects

3.2.2.1 No Action

Under the no action alternative the roadway would remain disturbed and unstable, contributing to elevated levels of sediment input to Little Whitehorse and Whitehorse Creeks. This continued sediment input could potentially contribute to degradation of water quality and aquatic habitat.

3.2.2.2 Proposed Action

Under the proposed action there would be a temporary increase of sediment above current levels. This increase in direct sediment input would be limited to the duration of construction (1-2 weeks). Sediment generated from exposed soils would continue to decline until native vegetation reestablishes on any disturbed ground adjacent to the road bed. Project design elements outlined in Appendix A will minimize, to the extent possible, the direct input of sediment into the stream. Once construction is finished and a solid road bed is established, off-road travel through the riparian area, the source of disturbance and erosion, would cease. Ultimately, the construction of the hardened road crossing across Little Whitehorse Creek and the associated riparian area will reduce erosion and sediment input into the stream.

3.3 Issue 3: How will removal and fill of material for the road bed affect the hydrology of Little Whitehorse Creek and the associated riparian area?

3.3.1 Affected Environment

Little Whitehorse Creek is a perennial stream. The headwaters start at 7,100 feet in elevation characterized by scattered perennial springs emerging within large aspen groves. The creek flows approximately 16 miles to its confluence with Whitehorse Creek. There is no gauging station on Little Whitehorse Creek but a gauging station from the area just to the west on Trout Creek indicates that baseflow from August through February is quite low. Flows rise rapidly in the late winter and early spring with peak flow occurring from late March through May (USGS 1991).

Aerial photos (1961-present) and trend photos (1977-present) indicate the reach of Little Whitehorse Creek immediately upstream and downstream of the road crossing has historically meandered through the area constrained by topography and rim rock on both sides. The floodplain is typically only inundated by water during high flows over bankfull level. Recent beaver activity, beginning in 2013, above and more recently below the crossing has raised the water table, saturating the surrounding floodplain and road. The current disturbed road is pooling and diverting surface and ground water flowing through the meadow. The actual stream channel where the road currently crosses is stable.

3.3.2 Environmental Effects

3.3.2.1 No Action

Under the no action alternative the roadway would remain in its current condition. It would continue to pool and divert both surface and ground water that is flowing through the floodplain.

Leaving the road in its current condition would impede the natural laminar flow through the floodplain as vehicles continue to try to cross and perpetuate flow-altering disturbance.

*3.3.2.2 **Proposed Action***

Under the proposed action, there would be temporary alteration of flows across the floodplain. During construction of the new road bed, water on the upstream side of the road to the east of the creek would be diverted back to the main stream channel with a small ditch running parallel to the road. Upon completion of the road base, the aggregate will provide a solid foundation for the road bed while also allowing surface and subsurface water to move across the floodplain when water exceeds bank full levels. The approaches to the stream crossing and streambed surface at the crossing would be aligned with the current streambed to avoid compromising the flow or stability of the stream channel. Project design elements would provide for a stable hardened stream crossing and a firm roadbed across the floodplain while allowing natural movement of water through the system once construction is complete.

The short-term alteration of flows are acceptable because the benefits resulting from reestablishment of a stable and designated road crossing would minimize future disturbance and degradation to Little Whitehorse Creek and be long-term, greater than 10 years.

3.4 Issue 4: How will the proposed project impact travel and vehicular access?

3.4.1 Affected Environment

The Whitehorse-Fifteenmile Road is the primary access road to the Oregon Canyon and Trout Creek Mountains. This road is used by grazing permittees and recreationists to access the area, and for BLM administrative purposes including resource management and fire suppression.

This road provides access to the Whitehorse Butte Allotment and is a principle through-route to access the Zimmerman and McCormick Allotments. The permit holders have alternate access to the northern part of the Whitehorse Butte Allotment through private property. However, this is a big allotment (about 141,000 acres) and having access through the Whitehorse-Fifteenmile Road improves efficiency and grazing management.

The project is within the Trout Creek/Oregon Canyon Special Recreation Management Area (SRMA), and off-highway vehicle (OHV) use is classified as “Limited to Designated Routes.” The Whitehorse-Fifteenmile Road is a designated open route. It provides opportunities for people to travel and recreate in the area between the Whitehorse Road and the Fifteenmile Road. Many users approach this crossing from the south. If they cannot cross Little Whitehorse Creek, they have to turn around and return to the south, adding several hours to their original trip. This can be a safety issue if they are not adequately prepared for this delay.

BLM administrative access is restricted by the current condition of the road. It originally provided a through route to check several allotments without using extra time to backtrack. Due to the current condition of the crossing, BLM personnel would have to approach the Whitehorse Butte allotment from the south, and then return to the south, adding extra time and reducing the

area accomplished in a work day. Not having access across Little Whitehorse Creek hinders efficiency. It also causes safety concerns especially in relation to wildfire. This road is vital to quick response to fire starts and as an alternate escape route.

3.4.2 Environmental Effects

3.4.2.1 No Action

Under the no action alternative, the road would continue to be impassable to most vehicles. Access to the Oregon Canyon Mountains would be diverted to other less desirable routes which would add several hours to access and could result in safety issues due to the greater mileage. Users may still try to cross at the current location causing further degradation. The crossing would continue to be a safety concern to all users.

3.4.2.2 Proposed Action

During the construction phase, vehicular access would be completely restricted. This impact would be temporary (1-2 weeks) and a minor inconvenience to traverse a different route. However, the current condition of the crossing is already limiting access. Signs will be posted at appropriate locations during construction to inform recreational users the road is closed. After construction is complete, this project would benefit travel and access by providing a safe and reliable means to cross Little Whitehorse Creek and access the Oregon Canyon Mountains.

4.0 Cumulative Effects

The overall effects of the project would be to improve water quality and riparian habitat at the Little Whitehorse road crossing. Sediment load/turbidity of the creek would be decreased as compared to the existing situation of ruts and trenches created by vehicles. The improved water quality will be favorable as LCT habitat. Maintenance of this section of the road would allow normal vehicle passage and eliminate the need for alternate routes or damage to the existing crossing. The creek would primarily flow through the main channel, but the porous rock base would allow the water diverted by the beaver dams to continue to flow to the riparian zone. Beaver activity would not be inhibited by the road maintenance and beaver dam construction on the Little Whitehorse Creek would continue. As the beavers work downstream from the crossing area, their dams could help repair downstream down cuts and improve the overall health and function of the creek.

Traffic is not anticipated to be greater due to the maintenance of the crossing.

5.0 List of Interdisciplinary Reviewers

Monica Ketcham	Project Lead/Biologist
Todd Allai	Natural Resource Specialist (Hydrology/Riparian)
Dan Thomas	Outdoor Recreation Planner
Cheryl Bradford	Archaeologist
Lynne Silva	Weed Specialist
Susan Fritts	Botanist
Bryce Jones	Rangeland Management Specialist
Bill Reimers	Rangeland Management Specialist
Brent Grasty	Planning and Environmental Coordinator

6.0 Consultation

Consultation with the USFWS occurred through the process established under the Aquatic Restoration Biological Opinion II, dated July 1, 2013. Pre-project notification was completed on August 6, 2015. Coordination with USFWS would continue should the project move forward.

The Burns Paiute Tribe, the Fort McDermitt Paiute-Shoshone Tribes and any interested publics will be provided an opportunity to comment on this environmental assessment.

7.0 References

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Appendix A: Project Design Elements

Fisheries

- Fish will be isolated from the work area during construction. Nets will be placed upstream and downstream of the crossing and fish will be removed from the area between the nets by electrofishing.
- Before placing nets, the beaver dams downstream of the crossing will be breached. After water has drained to normal stream level, the beaver dam directly above the crossing will be breached. Water will be allowed to drain from this dam until water is stream level, flushing sediment that collected behind the downstream dam. The dam breaches will be maintained during construction. After this nets will be placed.
- Before electrofishing occurs, stream temperature will be taken. If the temperature exceeds 21°C shocking will not occur and the project will be delayed until stream temperatures are below 21°C.
- The temperature of the stream before and after shocking will be recorded and reported to the ODFW Malheur Watershed District fisheries biologist(s) as well as the number of fish captured and relocated.
- A silt curtain will be placed downstream of the work area to contain sediment from the construction. The silt curtain will be checked and cleaned of sediment daily at the beginning and end of the workday. The curtain will be checked periodically through the day to ensure it is not overloaded with sediment.
- The isolation nets will be checked daily at the beginning of the workday and debris will be removed as necessary to prevent failure of the net.

Road Construction and Maintenance

- During construction, signs will be posted at both ends of the Whitehorse-Fifteen Mile Road to inform land users the construction is occurring and the road is closed.
- After construction, carsonite posts with reflective decals will be placed on either side of the road to signify the location, should the water rise above the road surface.
- The road will be maintained when necessary to ensure the safe passage of vehicles on a hardened road surface. This will include surface grading and minor foundation repairs.

Weeds

- During surface-disturbing construction and maintenance activities, ensure that all construction equipment and vehicles are cleaned of all vegetation (stems, leaves, seeds and all other vegetative parts) prior to entering and prior to leaving public lands in order to minimize the transport and spread of noxious weeds.

Cultural

- The only potentially eligible cultural resource site will be flagged prior to construction to ensure vehicles and equipment do not enter the area.

Appendix B: Best Management Practices

Road Design and Maintenance

- Consider improving inadequately surfaced roads that are to be left open to public traffic during wet weather, with gravel or pavement to minimize sediment production and maximize safety.
- Minimize the number of unimproved stream crossings. When a culvert or bridge is not feasible, locate drive-through (low water crossings) on stable rock portions of the drainage channel. Harden crossings with the addition of rock and gravel if necessary. Use angular rock if available.
- Locate roads and limit activities of mechanized equipment within stream channels to minimize their influence on riparian areas. When stream crossing is necessary, design the approach and crossing perpendicular to the channel where practical. Locate the crossing where the channel is well-defined, unobstructed, and straight.
- Design and locate water crossing structures in natural drainage channels to accommodate adequate fish passage, provide for minimum impacts to water quality and RCA's, and capable of handling a 100-year event for runoff and floodwaters.
- Existing roads should be utilized whenever possible rather than constructing new road systems.

Noxious Weed Management

- All contractors and land-use operators moving surface-disturbing equipment in or out of weed infested areas should clean their equipment before and after use on public land.
- It is recommended that all vehicles, including off-road and all-terrain, traveling in or out of weed infested areas should clean their equipment before and after use on public land.
- Strictly limit off-highway vehicle (OHV) use to designated route across the meadow area and stream crossing associated with the Proposed Action, as designated by the Trout Creek/Oregon Canyon Special Recreation Management Area's (SMRA) classification as "Limited to Designated Routes.