Grave Creek Watershed Project
Stream Culvert Replacements

EA # OR-118-02-013

May 2002

Proposed agency actions:	Replace undersized and damaged culverts within the Grave Creek Watershed
Type of statement:	Environmental Assessment
Lead agency:	U.S. Department of Interior Bureau of Land Management Medford District, Glendale Resource Area

Lynda L Boody
Field Manager
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Date

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Chapter 1 - Purpose and Need

1.0 Introduction

The Glendale Resource Area proposes to replace two existing culverts which are failing structurally, for public safety. Several additional culverts would be replaced to accommodate 100 year flood flow potential and to restore or improve passage for aquatic species.

1.1 Purpose and Need for the Proposal

There are approximately 800 miles of roads within the watershed with numerous stream crossings. The roads that would be affected by the proposal currently provide public access to private lands and recreation areas as well as BLM administered public forested lands. BLM staff have identified numerous stream crossings that currently impair or completely block passage of aquatic species including fish. The Glendale Resource Area is planning to replace undersized and damaged culverts within the Grave Creek watershed to help alleviate the problem. Rock weirs are planned immediately downstream of some culverts to submerge outlets and improve passage for small fish and other aquatic organisms.

1.2 Project Objectives

The project objectives are the following: (1) provide for public safety, (2) reduce the current and future risk of sedimentation, (3) maintain or improve fish passage, and (4) maintain road access to private, public and recreation areas.

1.3 Plan Conformance

This proposal is in conformance with the Medford District Record of Decision and Resource Management Plan (RMP) which notes a right-of-way objective to "Continue to make BLM-administered lands available for needed rights-of-way where consistent with local comprehensive plans, Oregon statewide planning goals and rules, and the exclusion and avoidance areas identified in this RMP" (pg 82), and "Develop and maintain a transportation system that serves the needs of users in an environmentally sound manner" (pg 84). RMP Aquatic Conservation Strategy objectives page 22, state that the objective is to maintain or restore aquatic and riparian characteristics.

1.4 Decisions to be Made

The Glendale Resource Area Field Manager will:

1) Select the Proposed Action or an alternative.
2) Determine whether the selected alternative would have significant effects and whether or not to prepare an environmental impact statement.
3) Determine whether the selected alternative is consistent with the Resource Management Plan.

Chapter 2 - Alternatives

2.0 Introduction

This chapter describes the alternatives under consideration. Descriptions focus on potential actions, outputs, and any related mitigation.

Table 2-1 Grave Creek: Proposed Construction for Each Alternative

Stream and Road Number * and location	Structure	Type of construction	Alternatives		
			1	2	3
5.** Slate Creek #34-5-10 rd. T33S R4W Sec29	culvert w/ temp bypass	replacement	X		
17. Clark Creek #1 #34-5-10 rd. T34S R5W Sec01	culvert w/ temp bypass	construct boulder weir at outlet	X		
6 . Clark Creek #2 #34-5-35 rd. T33S R5W Sec26	culvert	remove and replace with low water crossing	X		
8. Wolf Creek #1 #33-5-7 rd. (Board Tree Road). T33S R5W Sec07	culvert	replacement	X	X	
10. Big Boulder Creek #1 #34-5-10 rd. T33S R4W Sec15	culvert	replace or construct boulder weir at outlet	X		
31. Big Boulder Creek #2 #33-4-15.1 rd. T33S R4W Sec09	Culvert	replacement	X		
11. Eastman Gulch #34-5-2.1. T33S R5W Sec35	culvert	replacement	X		
21. Bummer Gulch #33-5-10.6 rd. T33S R5W Sec10	culvert	replacement	X		
23. Upper Grave Creek #1 #34-5-10 rd. (T33S R4W Sec11 NWSW)	culvert	construct boulder weir at outlet	X		
25. Upper Grave Creek #2 #34-5-10 rd. near road #33-4-3.3 T33S R5W Sec03	weir	construct boulder weir at outlet	X		
24. Panther Creek #34-5-10 near road #33-4-11.2 T33S R4W Sec11	culvert w/ temp bypass	replacement	X		
27. Coyote Creek #2 #33-5-21.1 rd. T33S R5W Sec27	culvert	replacement	X		

Stream and Road Number * and location	Structure	Type of construction	Alternatives		
			1	2	3
29. Baker Creek #2 #33-4-31 rd. T33S R4W Sec31	culvert	replacement	X		
30. Lick Creek #33-4-21.0 rd. (to Pleasant Creek Road) (T33S R4W Sec 22NW)	culvert	replacement	X		
33. Last Chance Creek #1 #34-5-10 rd. T33S R4W Sec10	culvert w/ temp bypass	replacement	X		
40. Last Chance Creek #2 #33-4-15	culvert	construct boulder weir at outlet	X		
Rock Creek T33S R7WSec32	culvert	replacement	X		

* BLM jurisdiction unless noted otherwise

** Project numbers are derived from master list of restoration projects for Grave Creek Watershed and are used for tracking purposes.

2.1 Alternative 1: Proposed Action

Stream structures would be replaced or improved to provide proper fish passage, access to private land, or road stabilization (Table 2-1). The time period for this activity is expected to encompass 5 to 7 years.

2.1.1 Project Design Features - Alternative 1

The in-stream work period would take place between June 15 and September 15 to conform with Oregon Department of Fish and Wildlife (ODFW) requirements. Waivers would be approved only on a site specific basis with involvement of ODFW and the resource area fish biologist and/or hydrologist. These dates apply to any intermittent or perennial stream showing scour, as defined by the Northwest Forest Plan.

At all stream crossings the approach would be as near a right angle to the stream as possible to minimize disturbance to streambanks and riparian habitat.

Bridges, bottomless culverts and pipe arches in descending order of preference would be used at road crossing in fish habitat to ensure uninterrupted upstream movement of fish and other aquatic species.

Bypasses would consist of small, one-lane road beds, adjacent to the project, with a small culvert to accommodate the smaller summer flows. They would be temporary and stream bottoms would be restored upon completion of the project.

A control weir or rock apron at a culvert outlet would be constructed to insure that water velocity through a new culvert would not cause "perching." A rock apron would consist of burying 1-3 foot diameter rock at the culvert outlet across the stream channel and downstream at a distance equal to 2-3 culvert diameters such that tops of boulders would be the same elevation as the bottom of the culvert.

Road crossings on all fish-bearing streams would be designed to maintain natural streambed substrate and site gradient, while minimizing long term maintenance needs.

Width of a crossing structure would be at least as wide as the mean bankfull width at the crossing site; to be measured by the resource area fish biologist or hydrologist.

The stream would be diverted around the work area in a manner (e.g. a pipe or lined ditch) that will minimize stream sedimentation. The diverted stream would not be returned to the channel until all in-stream work has been completed.

Straw bales, geotextile fabric or coconut fiber logs/bales would be placed immediately downstream of the work area in order to reduce movement of sediment downstream from the project site.

Waste stockpiles would be located at least one site potential tree length from a stream.

Wet or green (wet: fresh enough to flow; green: hardened but less than 21 days old) cement, would not be allowed to enter a stream. This includes water used to clean tools and wash out cement trucks after delivering material.

When designing a temporary stream crossing, the following materials may be used: (a) 1 to 3 inch diameter washed, uncrushed river rock as fill over the culvert (the gravel size will provide good spawning substrate for steelhead and salmon after the pipe is removed).

After a temporary culvert crossing is removed, leave river rock in the streambed and breech the fill rock with a blade to allow free movement of water.

To restore streambed habitat complexity inside new crossing structures, 1-3 foot diameter boulders would be placed in a staggered arrangement on the bottom of the culvert (or on the streambed in the case of a bottomless structure) at approximate 3 foot spacing across and for the length of the structure.

When removing a culvert and not replacing it, the slopes would be pulled back to at least 1.5:1 (more if necessary on highly erosive soils) to minimize sloughing, erosion and potential for the stream to undercut streambanks during periods of high streamflow. The entire bankfull width stream channel (as measured by a fish bio or hydrologist) would be opened to peak flows, not just the area previously occupied by the culvert, which may have been undersized. When culvert

fill depth exceeds capability of equipment to remove all of it, a rock blanket may be placed in the bottom of the draw to slow the erosion rate. Crossing structures less than bankfull width would constrict high streamflow and increase water velocity, resulting in scour at the outlet (perching), little to no deposition of streambed substrate in closed bottom structures and possible velocity barrier to fish.

Bare soil areas would be mulched with hydro-seeding, weed-free straw, or bark chips, etc and native grass seeded or other approved seed mix used, during the fall to discourage invasion of noxious plant species and to retard soil erosion.

Heavy equipment would be cleaned before moving onto the project site in order to remove oil and grease, noxious weeds and excessive soil.

Hydraulic fluid and fuel lines on heavy mechanized equipment would be in proper working condition in order to minimize leakage into streams.

Waste diesel, oil, hydraulic fluid and other hazardous materials and contaminated soil near the stream would be removed from the site and disposed of in accordance with Department of Environmental Quality regulations.

Equipment refueling would be conducted within a confined, secured area outside the stream channel such that there is minimal chance that toxic materials could enter a stream.

Equipment containing toxic fluids would not be stored in a stream channel anytime.

Some riparian vegetation may have to be cut to ensure equipment operator safety, to prepare the site for culvert replacement and possibly to clear a route for a temporary bypass road. The amount of vegetation that is cut would be the absolute minimum that is needed to accomplish the primary task. Any trees that are cut would be placed in the channel following construction to improve stream habitat. Cutting vegetation on road fill slopes would be minimized in order to maintain slope stability.

Affected landowners and the general public would be notified by letter or through the media prior to BLM temporarily closing any roads or if travel delays are expected.

Work would be temporarily suspended if rainstorms saturate soils to the extent that there is potential for runoff.

Work activities producing loud noises above ambient levels would not occur within 0.25 miles of any spotted owl nest site or activity center of known pairs and resident singles, between March 1 and June 30, or until 2 weeks after the fledging period.

Any proposed changes to this action during project construction would be fully analyzed, per

NEPA, by the interdisciplinary team and submitted to the Field Manager for a decision prior to such activity being approved.

2.2 Alternative 2 - Safety

The Wolf Creek #1 culvert (project 8) on Board Tree Road, Rd # 33-5-7 would be replaced to reduce potential threat to public safety. The other projects listed in Table 2-1 would be not be implemented at this time. The Project Design Features listed under Alternative 1 would be applied to minimize negative impacts on the human environment.

2.2.1 Project Design Features - Alternative 2

The Project Design Features listed under Alternative 1 would apply to Alternative 2.

2.3 Alternative 3 : No Action

No culvert replacement or sediment reduction projects would be implemented. Routine maintenance activities by the road crew would continue including grading and cleaning of ditchlines and existing culverts. The standards and guidelines identified in the RMP would continue to be applied.

Chapter 3 - AFFECTED ENVIRONMENT

3.0 Introduction

This section describes relevant resource components of the existing (baseline) environment.

3.1 Location

The location of the proposed action is:

Rogue River Basin
Analytical watersheds (fifth field): Grave Creek
Project area (sixth field watershed): Upper Grave Creek, Placer Creek, Upper Wolf, Lower Grave and Coyote Creek Subwatersheds.
County: Jackson and Josephine Counties

See Attachment #1 for a general location map.

The Grave Creek watershed is located about 15 miles north of Grants Pass, Oregon and is bisected by Interstate 5. The entire watershed has federal lands intermingled with non-federal lands in a checkerboard pattern characteristic of much of the Oregon and California (O&C) railroad lands of western Oregon. Most of the lands administered by BLM are situated in the higher elevations. The watershed has approximately 1100 miles of stream with anadromous and resident fish inhabiting about 120 miles of those streams. About 40 miles of stream have been designated as critical habitat for Southern Oregon/Northern California coho salmon, a listed Threatened species under the Endangered Species Act (ESA).

3.3 Fish Habitat, Riparian Zones

All fish habitat in the planning area has been identified as functioning at risk or not properly functioning (NMFS 1996) for various reasons, including culverts that are barriers or impediments to migration, high summer water temperature, inadequate large wood in the channel, excessive sedimentation and less than optimal riparian conditions. Approximately 81 miles of stream in the watershed have been listed as water quality limited for temperatures during the summer period by the Department of Environmental Quality. Of these, 27.5 miles occur on BLM administered lands. They include Slate Creek, Clark Creek, Wolf Creek, Big Boulder Creek, and Coyote Creek. No streams have been listed for any other water quality parameter. Recent stream surveys in the watershed indicate that the condition of riparian vegetation is on an upward trend, providing shade to affected streams . The Grave Creek Watershed Analysis (USDI, 1999) indicates 80% of the riparian acreage on BLM lands in the watershed is greater than 30 years of age, with 63% of the vegetation over 80 years of age. Over the past 10 years, destruction of vegetation along riparian zones has been very limited, which has further aided the improved condition. Most of the streams on BLM administered lands are 4th order or smaller, and are narrow, requiring less height of canopy to be effective for shading streams.

3.4 Threatened and Endangered Species

There are no known Northern Spotted Owl (NSO) sites within 0.25 miles of the project areas. Some projects would be located within NSO Critical Habitat Unit OR-32. The projects would be located outside critical habitat and survey areas A and B for the federally threatened marbled murrelet. Projects would not occur within late-successional reserves.

3.5 Survey and Manage Species

There are no natural meadows nearby which might be habitat for great gray owls. The habitat quality for survey and manage mollusks is poor. No mammalian tree nests were detected in the project area, nor any natural meadows nearby. No suitable habitat disturbance is expected for the only survey and manage mollusk (Oregon shoulderband) likely to occur in the watershed. No red tree vole nests are likely to occur within the disturbance areas as areas proposed for disturbance would be confined to road prisms and adjacent stream banks.

3.6 Noxious Weeds

Noxious weeds are prevalent along all roads within the watershed. Species such as Meadow Knapweed, Klamath weed and Scotch Broom are present and well as blackberry species that have crowded out native species particularly in disturbed areas.

3.7 Other Actions in the General Area (relative to cumulative effects)

The following actions have either occurred relatively recently or are anticipated within the foreseeable future. They provide a basis for analyzing cumulative effects of the proposed action and alternatives.

- Serpents Grave timber sale - sold not not awarded.
- Poor Angora timber sale - logged in 2001
- Improve drainage and reduce erosion on approximately 60 miles of road (1995-2001)
- Regeneration timber harvest and some road use on private lands
- Removal of Upper Last Chance Creek Culvert and decommissioning of Rd.
- Replacement of 2 Last Chance Creek culverts in 2000
- Renovation of Shanks Creek Road, armored waterdips and additional culverts with spot rocking in 2001
- Noxious weed eradication project, 2002 (primarily along roads)

Chapter 4 - Environmental Consequences

4.0 Introduction

This chapter forms the scientific and analytic basis for comparison of alternatives. Discussions include environmental impacts anticipated from implementation of the alternatives, both positive and negative. It also identifies and analyzes mitigation measures, if any, which may be taken to avoid or reduce projected impacts.

4.1 Effects Considered for Each Alternative

This chapter provides the scientific and analytic basis for the comparisons of the alternatives. This section also describes the probable consequences of each alternatives on selected environmental issues.

Direct effects are site-specific and result from the immediate action, such as the upgrade of the dam or the construction of a new restroom.
Indirect effects occur at a different place or time than the proposed action.
Cumulative effects result from an accumulation effects from past, current, and reasonably foreseeable actions, whose effects may not individually be significant.

Table 4.1 Critical Elements by Alternative The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order and must be considered in all EA's. (Y=yes N=no)

Resource or Issue Affected by Alternative	Alternative (Y or N)			Resource Affected by Alternative	Alternative (Y or N)		
	1	2	3		1	2	3
Air Quality	N	N	N	Threatened & Endangered Species	Y	Y	N
ACEC	N	N	N	Wastes, Hazardous/Solid	N	N	N
Cultural	N	N	N	Water Quality	Y	Y	Y
Farmlands, Prime/Unique	N	N	N	Riparian Zones	Y	Y	N
Floodplains	N	N	N	Wild & Scenic Rivers	N	N	N
Native American Religious Concerns	N	N	N	Wilderness	N	N	N
Invasive Species	N	N	N	Environmental Justice	N	N	N
Energy	N	N	N	*Public Safety	Y	Y	Y
*Survey and Manage	N	N	N				

*Non-Critical Element

4.2 Effects on Public Safety

4.2.1 Alternative 1 - Proposed Action

Direct Effects:

A safe crossing would be in place with the construction of a temporary stream crossing designed and constructed in compliance with Best Management Practices (BMP's) and Project Design Features (PDF's) referred to in this Environmental Analysis and the Medford District RMP. There would be no direct effects on public safety during construction. Once the culvert has been replaced and the temporary crossing area has been restored, overall safety of the road would improve.

Indirect Effects:

Replacing a culvert that is a hazard to public safety would reduce the potential for personal injury or physical damage to vehicles. Making improvements now, rather than after a failure, would also reduce the potential for loss of administrative and public access through project areas.

Cumulative Effects:

No cumulative effects on public safety would be anticipated from this replacement action.

4.2.2 Alternative 2 - Safety

Direct, Indirect, Cumulative Effects:

The impacts under this alternative would be the same as those under Alternative 1.

4.2.3 Alternative 3 - No Action

Direct Effects:

No direct effects from the No-Action alternative would be anticipated.

Indirect Effects:

The potential for an accident to occur resulting from a poor quality structure remaining in place at the Wolf Creek #1 culvert would remain high.

Cumulative Effects:

No cumulative effects on public safety would be anticipated under the No-Action Alternative.

4.3 Effects on Water Quality, Riparian Areas

4.3.1 Alternative 1 - Proposed Action

Direct Effects:

There would be a pulse of sediment at the time the water bypass was constructed and then again when the bypass is removed. Adverse impacts of the proposed action would be minor and transitory compared to the large quantity of sediment that would enter streams if the road prism failed due to undersized and deteriorating culverts. Soil would enter the stream if a ramp must be built to allow heavy mechanized equipment (e.g. excavator) to access the stream channel where it would prepare the streambed and channel for culvert installation. Some stream sedimentation would also occur during construction of any temporary by-pass road that may be needed to maintain traffic flow. Subsurface streamflow generally prevents a culvert worksite from being completely dewatered while construction is in progress. Some turbid water would affect aquatic life immediately downstream of the worksite. It is also likely that streamflow during the first major fall rainstorm would transport loose soil from around the completed culvert installation and deposit it downstream. The proposed PDFs would limit the amount of fine sediment entering streams. However, where there is sediment deposition and turbidity, it could impair respiration and feeding success of juvenile coho salmon, steelhead, cutthroat trout and other aquatic species for several days while culverts are being replaced. Turbid water and sedimentation would also adversely affect sediment-intolerant aquatic insects and primary production in a limited area immediately down stream of the construction site. More mobile species, like fish, may temporarily abandon the area affected by any sediment plume. These effects would be expected to be short term and diminish within a short distance (e.g.100 yards) downstream of each work site. Pre-disturbance conditions would be expected to return within a year of project completion.

The proposed actions would not increase water temperature in any stream since the affected area would be at the intersections of a road and culvert, and projects would not remove enough shading to affect water temperatures.

Indirect Effects:

Replacement, removal, or improvement of these culverts would be expected to reduce the amount of sediment that enters streams over the long term. Replacing culverts that are barriers or impediments to fish migration would also restore aquatic connectivity for all other aquatic species. Replacement of culverts would restore access for fish and other aquatic species upstream.

Any riparian vegetation that is cut at the construction site would be minimal and would not be enough to cause water temperature to increase downstream of the work area.

Cumulative Effects:

The project meets Standards and Guidelines of the Northwest Forest Plan, is consistent with the Aquatic Conservation Strategy and Watershed Analyses in the project area and implements reasonable and prudent measures of the March 18, 1997 National Marine Fisheries Service (NMFS) LRMP/RMP Biological Opinion for culvert replacement upgrades.

4.3.2 Alternative 2 - Safety

Direct, Indirect, and Cumulative Effects:

The effects of the replacement of a single culvert would be similar to those described for Alternative 1, but on a much smaller scale.

4.3.3 Alternative 3 - No Action

Direct Effects:

No direct effects would be anticipated.

Indirect Effects:

If no action is taken to improve the ability of water to flow through culverts and related structures, eventually destruction of the structure from age, high water velocity, or trapped debris would be anticipated. There would be an increased risk over time of reducing the water quality in the streams effected, and further increasing potential for negative effects on aquatic species. A large quantity of sediment would be expected to enter streams should the road prism fail as a result of undersized and deteriorating culverts. If a culvert failed, virtually all sediment from the road fill would move directly into the stream.

Cumulative Effects:

No cumulative effects were identified under this alternative.

4.4 Effects on Threatened or Endangered Species

4.4.1 Alternative 1 - Proposed Action

Direct, Indirect, and Cumulative Effects

Southern Oregon/Northern California coho salmon

The project as planned would be consistent with the NMFS July 12, 2001 Programmatic Biological and Conference Opinion for aquatic and riparian habitat projects and for road maintenance. There would be no significant effects from the proposed action.

Northern Spotted Owl

No impacts would be anticipated.

4.4.2 Alternative 2 - Safety

Direct, Indirect, and Cumulative Effects

Southern Oregon/Northern California coho salmon

The project as planned would be consistent with the NMFS July 12, 2001 Programmatic Biological and Conference Opinion for aquatic and riparian habitat projects and for road maintenance. There would be no significant effects from the implementation of Alternative 2.

Northern Spotted Owl

No impacts would be anticipated.

4.4.3 Alternative 3 - No Action

Direct Effects

No impacts would be anticipated.

Indirect Effects

Southern Oregon/Northern California coho salmon

No action may lead to continued or increased risk of deteriorated habitat as described under 4.3. Beneficial long term effects of restoring aquatic connectivity would not occur through no action. In addition, culverts would continue to block or restrict upstream movement of fish and other aquatic species. The net effect would cause an adverse effect on aquatic habitat and species dependent on it.

Northern Spotted Owl

No impacts would be anticipated.

Cumulative Effects:

No cumulative effects would be anticipated.

Chapter 5 - CONSULTATION

5.0 Persons and Agencies Consulted

The National Marines Fisheries Service (NMFS)was consulted with over similar activities under Section 7 of the Endangered Species Act and Magnuson-Stevens Act Essential Fish habitat. NMFS issued a biological and conference opinion (OSB2001-0070-PC) on July 12,2001which applies to the actions reviewed in this environmental assessment.

A legal notice will be placed in local newspapers to announce to the public that the Glendale Resource Area is requesting public comments on the proposed management action, In addition, notification of this proposal will be sent to the Oregon Department of Fish and Wildlife, the Oregon Dept. of Forestry, county commissioners for the affected county, several environmental groups, and representatives of the timber industry to request their comments. These announcements will be made following completion of this environmental assessment and before a decision is made. The Field Manager will consider all input before reaching a finding or making a decision concerning this proposal.

5.1 List of Preparers

Name	Title	Primary Responsibility
Randall Fiske	Engineer	Engineering
Bob Bessey	Fisheries Biologist	Fisheries/Riparian
Loren Wittenberg	Hydrologist	Soils/Air/Water
Marlin Pose	Wildlife Biologist	Wildlife
Sherwood Tubman	Ecosystem Planner	NEPA
Amy Sobiech	Archaeologist	Cultural Resources
Douglas Goldenberg	Botanist	Plants and Fungi
Vince Randall	Forester	Native American Concerns
Deston Russell	Engineer Tech	Hazmat
Sondra Nolan	ROW Specialist	Rights-of-way

The Proposed Action and Alternatives have been screened for compliance with the Endangered Species Act, The American Indian Religious Freedom Act, Historic Preservation Act, Bureau of Land Management policies related to the ecosystem objectives and concepts in the Medford District Resource Management Plan (RMP) and with the Aquatic Conservation Strategy of the Northwest Forest Plan. Furthermore, this action has been screened from a landscape perspective and there are no effects anticipated from this action that would foreclose future management options in relation to the watershed management objectives identified through the Ecosystem Analysis.

Ecosystem Planner — Date: 5/21/02

Reviewed for format and consistency

REFERENCES

National Marine Fisheries Service. 2001. Endangered Species Act - Section 7 Consultation and Magnuson-Stevens Act Essential Fish habitat Consultation. Programmatic Biological and Conference Opinion. Bureau of Land Management, Forest Service and BIA/Coquille Indian Tribe Programmatic Activities Affecting SONC Coho salmon, OC Coho salmon and OC Steelhead. July 12, 2001. OSB2001-0070-PC

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