



Draft Environmental Assessment

Gales Creek Trail Repair and Partial Relocation

OREGON DEPARTMENT OF FORESTRY

FEMA-1733-DR-OR

July 2009



FEMA

U.S. Department of Homeland Security

FEMA Region X

130 228th Street SW

Bothell, WA 98021-9796

1.0 INTRODUCTION

The Oregon Department of Forestry (ODF) has applied through the Oregon Department of Emergency Management (OEM) to the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) for funding to reconstruct and at times relocate 6 miles of a non-motorized recreation trail extending north from Gales Creek Campground in Washington County. The trail was badly damaged by severe storms, flooding, landslides, and mudslides that occurred from December 1, 2007, through December 17, 2007. The President declared the event a major disaster on December 8, 2007 under FEMA-1733-DR-OR. FEMA is proposing to fund 75 percent of the cost for this project through its Public Assistance Program.

Gales Creek Trail is part of the ODF recreation trail management program in the Tillamook Forest, located 32 miles west of Portland and one mile north of milepost 35 of Highway 6. It consists of 11.4 miles of trail for non-motorized traffic, including hikers, bicyclists and equestrians. The trail extends from Summit Trailhead to Reehers Camp Trailhead and winds through a forest with lush undergrowth. A total of 21 sites along a 6-mile stretch of the trail were damaged from the December storms. The damaged sites are located north of Gales Creek Campground, with the first damaged site occurring approximately two miles from the Gales Creek trailhead at the campground. There is an elevation gain of over 1,200 feet from the trailhead at Gales Creek Campground to the last damaged site to the north. In addition to repairing damaged sections of the trail, it is proposed that approximately 3 of the 6 trail miles be relocated upland away from Gales Creek to reduce the risk of repetitive damage from future storms. Figure 1 below provides a location map for the project. An aerial map of the damaged sites is included in Appendix A.

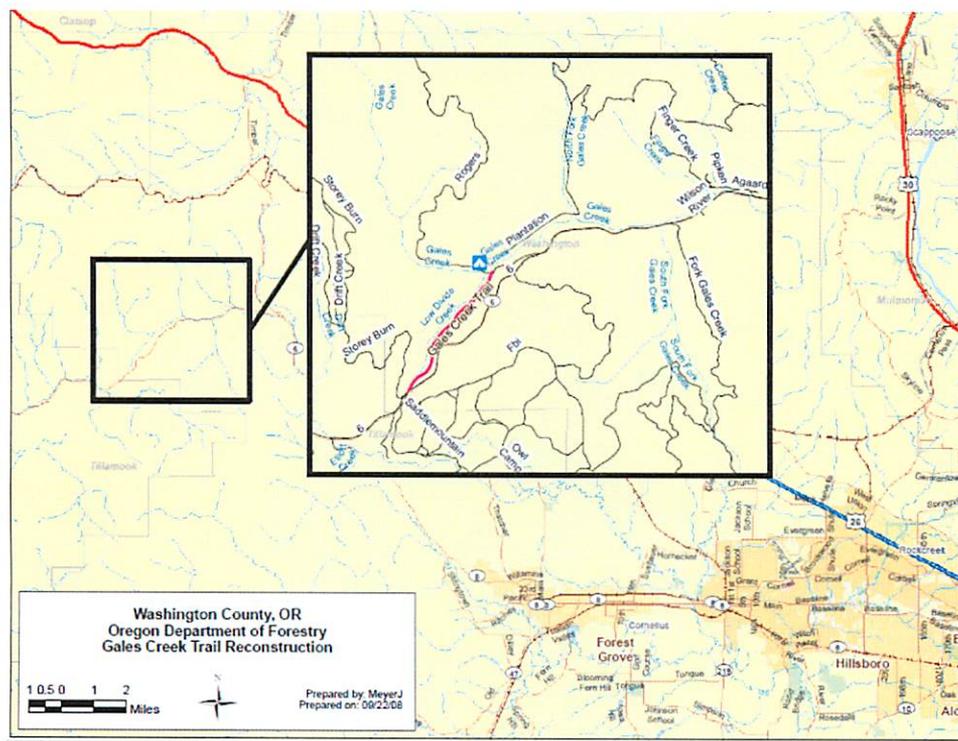


Figure 1. Gales Creek Trail Location Map

In accordance with the National Environmental Policy Act of 1969, the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500 through 1508), and FEMA regulations for NEPA compliance (44 CFR Part 10), FEMA must consider the environmental consequences of actions proposed for federal funding. The purpose of this Environmental Assessment (EA) is to meet FEMA's responsibilities under NEPA and to determine whether to prepare a Finding of No Significant Impact (FONSI) or a Notice of Intent to prepare an Environmental Impact Statement (EIS) for the proposed project.

2.0 PURPOSE AND NEED

The purpose of FEMA's Public Assistance (PA) Program is to reduce the impact of disasters on the built environment and to assist communities in recovering from disaster-related damage. Through this program, FEMA provides financial assistance to state, local and tribal governments, and U.S. territories, after the declaration of a major disaster. The purpose of this project is to provide funds to the ODF to reconstruct Gales Creek Trail where it was damaged during storms in December 2007. The ODF has determined there is a need for non-motorized trails in the Tillamook Forest for recreational users, including hikers, bicyclists and equestrians. The trails provide access to wilderness while protecting the forest environment. The trails must be safe, cost effective, and continuously usable.

3.0 ALTERNATIVE ANALYSIS

In accordance with federal laws and FEMA regulations, the EA process for a proposed federal action must include an evaluation of alternatives and a discussion of the potential environmental impacts. This EA includes two alternatives. Alternative 1 is the No Action Alternative, which leaves the damaged trail in its existing condition. Alternative 2 (the Proposed Action) is to repair the trail and relocate the portions that are vulnerable to damage from future storms due to their close proximity to Gales Creek. Repairing the trail entirely in its existing location was discarded as not feasible due to the high potential for repetitive damage.

Alternative 1 – No Action

Under the No Action Alternative, FEMA would not provide funding to repair the damaged trail. Existing conditions would continue and the trail would remain unusable in sections. Trail users would be unable to establish safe access to linking trails without undertaking substantial risks. The damaged trail would continue to deteriorate with larger sections deemed unusable from subsequent storms and floods. It is possible trail users would develop social paths that would be unsafe. This alternative would not meet ODF's recreation management goals, which are to establish safe and usable campgrounds and trails, and to control and manage identified uses in the Tillamook Forest.

Alternative 2 – Repair Gales Creek Trail and Relocate Vulnerable Portions (Proposed Action)

Six miles of trail would be repaired, including relocating approximately 3 miles of the trail upland away from Gales Creek along the route. Of the 21 sites damaged along the 6-mile section, it was determined that 55 percent of the damaged sections would be relocated due to steep terrain

and slope failures at the original damaged sites. Relocating these sections will avoid areas requiring extreme amounts of backfill and stabilization.

Trail repair and relocation sites will be marked by pin flags and wooden stakes and include 16,443 linear feet of 30-inch wide trail, 643 linear feet of 36-inch wide trail, 155 linear feet of 42-inch wide trail, and 345 linear feet of 54-inch wide raised trail bed. The construction log includes 17 rock stream crossings, 7 climbing turns, 2 log barriers, 1 switchback trail turn, 108 linear feet of log stream crossings, 7 linear feet of a trail lead off ditch, 223 linear feet of trail ditches, and 4 rolling dips in the trail.

All climbing turns and switchbacks shall be insloped or banked at a 5-8 percent grade. Trail sections built across hillsides shall be outsloped at a 5-8 percent grade, unless otherwise specified. Backslope clearance shall be 36 inches from the centerline of the trail at 30 inches high and above. Construction activity in live streams shall not be allowed from September 16 to June 30 unless otherwise approved by the Oregon Department of Fish and Wildlife (ODFW).

Clearing, grubbing, trimming, removing, and disposing of all debris, trees, logs, construction slash, brush, plants, and other protruding obstructions will be conducted within the clearing limits of the new trail. This work includes removing limbs and branches more than ½ inch in diameter that extend into the clearing limits, the treatment or removal of damaged trees to protect trail users from injury, and the removal and disposal of designated trees outside the clearing limits in order to meet backslope clearance requirements. The following will not be removed:

- Live, sound, and firmly rooted trees greater than 6 inches in diameter that are outside the trailway.
- Live brush and herbaceous plants between the trail and the clearing limits that are less than 12 inches in height and less than ½ inch in diameter at ground line.

At two sites with 65-70 percent side slopes, explosives may be required (when determined to be safely feasible) in order to make the grade requirements. Explosives may also be required at several other sites that have large rocks.

Debris from clearing and grubbing operations shall not be placed in streams, watercourses, snow ponds, meadows, or in any location that will impede flow through or from drainage facilities. All logs, limbs, lopped tops, brush, and grubbed stumps and roots shall be scattered on the downhill side of the trail and outside the clearing limits, with the following exceptions:

- Limbs, brush, and lopped tops from trees felled on the uphill side of the clearing limits shall be scattered below the trail, except where the side slope above the trail is less than 10% grade. In this case, such material may be scattered above the trail.
- Logs may be left on the uphill side of the trail if they are placed so that they will not move into the clearing limits.

To enhance the character of the trail and to help tell the story of the Tillamook Burn, special care shall be taken to preserve large nurse logs and large burn-scarred stumps. Where appropriate, old logs and stumps shall be left in place or cut only to provide a 3-foot-wide opening.

Excavation and grading shall not be done when weather and/or ground conditions are such that it would cause damage to the existing subgrade or excessive erosion. All suitable excavated material shall be conserved and used, where necessary and feasible, in the construction of trail embankments, trailbeds and for backfill. Excess and unsuitable material will be placed beyond the downslope edge of trailbeds and uniformly spread to a depth not exceeding 4 inches in depth. It will be placed so as not to create berms or obstruct drainage. Finished slopes shall be left in a uniform and roughened condition to facilitate vegetative growth. All loose rock within or above the backslopes shall be removed and embankment materials shall be free of woody debris, brush, muck, sod, frozen material, and other deleterious materials.

Drainage shall consist of rolling dips, ditches, ditchouts, catch basins, grade undulation, and installing culverts in the trailbed at locations specified in the construction log. Work shall include excavation, backfilling, grading, and ditch and catch basin construction. The depth, width and length of the rolling dips will depend on the location. Ditchouts for the rolling dips and trailway ditches will not exceed 12 inches wide and 12 inches deep. Ditchouts shall be constructed free of loose rocks, roots, sticks and other obstructions and will be of sufficient length to drain water away from the trailway. Log debris shall be placed over the ditches to block trail users from access into and across the ditches.

Three culverts shall be placed as close to the natural stream channel as feasible to provide unobstructed inlet and outlet flow of the designated streams and to capture seasonal water flow from existing streams. Logs, debris, soil, rocks, and other obstructions that would impede the flow into a culvert or away from the trailway will be removed above and below the culvert. The outlet end of any culvert which would allow water to erode embankment soil shall be provided with a downspout or other approved slope protection device.

Log barriers shall be used as determined necessary by the construction design. This work includes excavation, notching, pre-drilling, pinning, borrow, backfilling, and trailbed and slope finishing. All timber structures shall be constructed using Douglas fir logs and shall be peeled prior to use. Logs shall be selected from designated sites by ODF and shall be straight, sound, free of defects and not less than 12 inches in diameter measured at the small end of the log (inside bark). The tops, limbs, and other debris from the felled trees will be scattered away from the trail project location.

Raised trailbeds shall be constructed through drainage areas and work includes excavation, placing geotextile fabric, placing retaining logs, backfilling, trailbed and slope finishing, and culvert installation. Excavation shall provide a full bench foundation of stable soil or compacted suitable material and widened as necessary to facilitate installation of retaining logs. "V" ditches will be constructed 12 inches wide by 6 inches deep for the full length of the specified section and shaped or sloped to facilitate drainage into specified culverts. Retaining logs will be secured with ¾ inch rebar driven through pre-drilled holes, in intervals not to exceed 3 feet. The rebar will be driven into the trail foundation a minimum of 18 inches and will be recessed 1 inch from the top of the log. Backfill material may be utilized from adjacent excavations and compaction of the backfill will not exceed 1 foot in depth. The trail surface will be crowned 1 inch higher than the top of the logs.

Construction specifications and detailed drawings of plans for clearing limits, excavation and embankments, drainage details, switchbacks, insloped climbing turns, log barriers, log as well as

rock structures for shallow stream ford or gully crossings, and raised trailbed sections are included in Appendix A of this document.

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section of the Draft EA briefly describes the environment and existing conditions in the project area and identifies the potential effects of the two alternatives considered.

The project site is located in a designated recreational area of the Tillamook Forest in the Gales Creek basin. The terrain adjacent to both sides of Gales Creek consists of relatively steep, forested uplands with several unnamed tributary creeks flowing into Gales Creek from steep, rocky drainages. Most of the existing trail and all of the proposed relocated trail borders Gales Creek to the west. The surrounding forest land beyond the recreational boundary is managed by the ODF and private landholders for timber production.

The NEPA compliance process requires federal agencies to consider direct and indirect impacts to the environment. Table 1 describes the environment and existing conditions in the project area and identifies the potential effects of the two alternatives considered, including the impact intensity. Effects are categorized as follows:

- **None/Negligible:** The effects of the alternative on environmental resources would either be undetectable or, if detected, would have effects that would be slight and localized. Impacts would be well below regulatory standards, if applicable.
- **Minor:** The effects of the alternative on environmental resources would be measurable, although the changes would be small and affect only the immediate vicinity where the action would take place. Impacts would be well within regulatory standards. Mitigation measures would reduce potential environmental effects and environmental impacts would be negligible.
- **Moderate:** The alternative would have both localized and regional scale impacts. Mitigation measures would be necessary and the measures would reduce potential adverse effects.
- **Major:** The alternative would have substantial consequences on a local and regional level. Impacts would exceed regulatory standards. Mitigation measures to offset adverse impacts would reduce potential adverse effect, but long-term changes to the resource would be expected.

Table 1. Summary of Effects and Impact Intensity

Resource	Alternative 1 – No Action	Alternative 2 – Proposed Action
Air Quality	<i>None/Negligible.</i> There would be no effect to air quality, as no action would be taken.	<i>None/Negligible.</i> Negligible impact would be anticipated from increased dust during construction. Federal and state air quality attainment levels would not be exceeded.

Resource	Alternative 1 – No Action	Alternative 2 – Proposed Action
Coastal Zone Management	<i>None/Negligible.</i> The trail is located in upland areas of the Tillamook Forest. No impacts to the Oregon coastal zone are anticipated from no action.	<i>None/Negligible.</i> The project site is located in upland areas of the Tillamook Forest. No impacts to the Oregon coastal zone are anticipated.
Cultural Resources (National Historic Preservation Act, Section 106)	<i>None/Negligible.</i> FEMA would not fund the project and there would be no ground disturbance or clearing related to construction. No Action would have no significant effect on cultural resources.	<i>None/Negligible.</i> There have not been previous cultural resource surveys and there are no known historic or archaeological sites in the general project area, per Dennis Griffin, State Archaeologist, Oregon State Historic Preservation Office (SHPO; Case No. 08-1637). The steep slopes in the area where the trail relocations are proposed in Alternative 2 suggest a relatively low likelihood of the existence of any undiscovered archaeological resources in the immediate vicinity. However, the SHPO has stated the project area lies within an area generally perceived to have a high probability for possessing archaeological sites and/or buried human remains and extreme caution is recommended during ground disturbing activities. The SHPO concurrence letter was received 7/21/08. (See condition No. 4 in Section 8.0 of this document.)
Hazardous Materials and Toxic Wastes	<i>Minor to Moderate.</i> The hazardous trees identified in the area combined with hazardous trail conditions from the storm damage poses a public health threat to unauthorized trail users.	<i>None/Negligible.</i> Hazardous trees and trail conditions were noted during site visits conducted on 5/22/08 and 8/14/08. Hazardous trees would be cut to the ground or cut back to the extent the hazard is eliminated. All tree limbs and debris would be disposed of according to the construction plans and the clearing limits would be free of debris when the project is completed. Current trail hazards from the storm damage would be eliminated by the reconstruction proposed.
Hydrology and Floodplains (Executive Order 11988)	<i>None/Negligible.</i> The project area is not located in a floodplain.	<i>None/Negligible.</i> The project area is located outside the 100-year floodplain in Zone X, per the FEMA Flood Insurance Rate Map, Community Panel No. 41023801258. No impacts are anticipated. The public notice for the disaster and completion of this draft EA is consistent with FEMA's 8 Step planning process for Executive Order 11988 for floodplains.

Resource	Alternative 1 – No Action	Alternative 2 – Proposed Action
Magnuson-Stevens Fishery and Conservation Management Act (Essential Fish Habitat)	<i>None/Negligible.</i> No ground would be disturbed and therefore there would be no adverse affect to Essential Fish Habitat. Unauthorized trail users of the existing damaged trail are expected to work around the water at washed out areas.	<i>None/Negligible.</i> No adverse affect. (See threatened and endangered species impacts and required mitigation.)
Noise	<i>None/Negligible.</i> There would be no action and therefore no noise.	<i>Minor.</i> During the construction period campground residents and recreational users adjacent to the project site should not experience an increase in noise levels, other than noise from increased vehicle traffic to carry construction equipment and supplies to the trailhead and occasional sounds such as chainsaws in the distance.
Safety and Security	<i>Minor to Moderate.</i> The trail in its current damaged state is unusable in sections and poses a safety risk to unauthorized trail users due to hazardous trees and unstable (and at times impassable) trail conditions that would need to be navigated.	<i>Minor.</i> ODF has posted the project area as closed and no trespassing is permitted. This will continue until the repairs and relocations are completed and the trail is safe to use again. Trail users who trespass put themselves at risk from trail hazards. ODF is responsible for posting appropriate signage and barriers to alert potential trail users about the trail closure and project activities, to minimize public safety risks.
Socioeconomics and Environmental Justice (Executive Order 12898)	<i>None/Negligible.</i> No significant adverse effects.	<i>None/Negligible.</i> ODF manages the site as a trail for non-motorized recreationalists. Access to and use of the trail is open to the public without regard to socioeconomic status. There are no permanent residents. The proposed action is not expected to pose disproportionately high or adverse public health or environmental effects on minority and low-income populations and would not cause adverse economic impacts.

Resource	Alternative 1 – No Action	Alternative 2 – Proposed Action
<p>Threatened and Endangered Species (Endangered Species Act, Section 7)</p>	<p><i>None/Negligible.</i> No effect. While listed species occur in Gales Creek (coho salmon and steelhead; see comments under Alternative 2), there would not be any action taken with the potential to affect them.</p>	<p><i>Minor.</i> No effect to fish species. Coho salmon (<i>Oncorhynchus kisutch</i>; spawning and rearing) and steelhead (<i>Oncorhynchus mykiss</i>; spawning and rearing) occur in Gales Creek, a tributary to the Tualatin River. Both are federally listed as threatened. Dave Plawman, Oregon Department of Fish and Wildlife (ODFW) Fish Habitat Biologist, determined from a site visit on 8/14/08 that the proposed repairs and relocation sites would not have an affect on fish species, provided ODF complies with ODFW work windows, permit conditions and BMPs. Downstream effects were considered, as the drainages where the repairs are proposed do not have listed fish. Tom Murtough, ODFW Fish Habitat Biologist for Washington County, concurred with this determination on 9/17/08. No impacts to fish from the proposed project are anticipated.</p> <p>Per a phone conversation with Clint Wilson, Area Wildlife Biologist for the ODF Northwest Oregon Area Office, Forest Grove (B.Gimlin, 9/18/08), ODF did have a spotted owl activity center (<i>Strix occidentalis caurina</i>; federally listed as threatened). It was located approximately 1-1/2 miles from the Gales Creek Campground and was for a single owl. He anticipated the site will be declared historic this year based on four years of surveys with no conclusive responses. The site was held on an additional year due to an unknown response, which data in 2008 indicated was a barred owl.</p> <p>There are no known sites in the Forest Grove District for marbled murrelets (<i>Brachyramphus marmoratus</i>; federally listed as threatened). Smith said there needs to be forest habitat defined as 5 trees with suitable platforms in a 100 meter radius (200 meter diameter) for marbled murrelets to occur. They don't build a nest but hollow out a depression in moss on limbs that are 5" in diameter or greater. In general, nests occur in residual Douglas fir trees.</p> <p>From the conversation with Smith it was concluded there would be <i>no effect</i> to spotted owls or marbled murrelets from the proposed project.</p>

Resource	Alternative 1 – No Action	Alternative 2 – Proposed Action
Vegetation and Wildlife	<p><i>None/Negligible to Minor.</i> There would be no ground disturbance from construction and no vegetation or wildlife would be impacted if no action is taken, other than from the impact of unauthorized trail users. Unauthorized use, particularly if it starts to re-establish trails in the general area to navigate around the damaged areas, could cause encroachment on native habitat and increase erosion and sediment impacts.</p>	<p><i>Minor.</i> The project site is located in a relatively steep, rugged and remote forest in the Gales Creek basin. Unnamed upland tributaries flow into Gales Creek from steep, rocky drainages. Clearing for the trail will only affect a negligible percentage of the surrounding environment. Informal consultation with ODFW and ODF regarding recommended BMPs and mitigation measures for construction ensures that the project does not adversely impact regional species diversity. Impacts to natural resources are expected to be negligible.</p>
Water Quality	<p><i>None/Negligible.</i> There would not be any disturbance of the earth surface that would have the potential to impact water quality. Water quality and hydrology in the area would remain unaltered, unless impacted by soil disturbance and sediment release caused by unauthorized trail users.</p>	<p><i>Minor.</i> There is the potential for localized increase in sedimentation during construction. Coordinating and complying with ODFW and ODF requirements and recommendations, including BMPs, will significantly reduce potential sedimentation and impacts to water quality. Implementation of the project design would prevent surface and stormwater runoff and would not result in the discharge of pollutants into waters of the United States.</p> <p>The repairs and proposed relocation of the Gales Creek Trail does not require any coordination and/or permitting with the U.S. Army Corps of Engineers (USACE), per James McMillan, Senior Regulatory Project Manager of the USACE Portland District office (telephone conversation 9/17/08).</p>
Wetlands (Executive Order 11990)	<p><i>None/Negligible.</i> There would not be any disturbance of the earth surface, nor the need for staging areas that could potentially affect wetlands.</p>	<p><i>None/Negligible.</i> No wetlands were shown on FEMA’s environmental assessment (ENVAS) database, which includes U.S. Fish and Wildlife Service National Wetlands Inventory mapping. No wetlands were observed at the trail repair sites or where the upland trail relocation is proposed during site visits conducted on 5/22/08 and 8/14/08 by Barbara Gimlin, FEMA Environmental Specialist. No impacts to wetlands are anticipated.</p>

5.0 TRIBAL COORDINATION

Preliminary informal project notification was conducted by telephone to both the Confederated Tribes of the Grand Ronde Community of Oregon and the Confederated Tribes of Siletz Indians in June 2008. It was agreed at that time to provide a copy of the Draft EA to each. FEMA has determined, in consultation with the State Historic Preservation Office, that there have not been previous cultural resource surveys and there are no known historic or archaeological sites in the general project area. The steep slopes in the area where the trail relocations are proposed in Alternative 2 suggest a relatively low likelihood of the existence of any undiscovered archaeological resources in the immediate vicinity. Even so, an unexpected discovery clause is included as a condition of FEMA funding, in the event that any archaeological materials or items of cultural importance to the Tribes are identified during project implementation.

6.0 CUMULATIVE EFFECTS

Cumulative effects are those that result from the incremental effect of a proposed action when added to past, present and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other action. Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time.

Gales Creek Trail recreation area has no permanent residents. ODF classifies the areas of use as recreational and performs routine maintenance on the trail. For No Action (Alternative 1), even though the trail is technically closed at the current time, the possibility remains that unauthorized trail users would try to establish their own trails to navigate through the area and connect to other existing trails. This would lead to encroachment on native habitat and vegetation and a potential increase in erosion and sediment release, in addition to public safety concerns. Relocating the trail upland for the Proposed Action (Alternative 2) would reduce, if not eliminate, cumulative and repetitive adverse impacts to recreational trail use from storm-related events. The proposed construction design incorporates the use of sediment and erosion control measures to reduce surface runoff in Gales Creek. The return of trail users to the area would result in non-motorized traffic in the area once again, which has the potential to lead to user-related pollution if trail users are negligent in cleaning up after themselves.

7.0 PUBLIC INVOLVEMENT

FEMA's Draft EA will be released for public review. A period of 30 days after the publication of the public notice will be provided as an opportunity for comments to be received on the Draft EA. The notice identifies the action, location of the proposed action, participants, location of the Draft EA, and who to contact to contribute comments. Copies of the public notice will be posted at Gales Creek Campground, the Forest Grove Library, the Forest Grove Post Office, on the Forest Grove District website and on the ODF state website. The public notice and a copy of the Draft EA will be available for viewing at the ODF district offices in Forest Grove and Tillamook and on the FEMA website.

8.0 MITIGATION MEASURES REQUIRED

The following mitigation measures are required as a condition of FEMA funding:

1. The applicant is responsible for selecting, implementing, monitoring and maintaining Best Management Practices (BMPs) as required under the Oregon Department of Forestry Forest Practices Rules and Forest Practices Act, along with BMPs recommended by ODFW, to control erosion and sediment, reduce spills and pollution, and provide habitat protection. Erosion controls must be in place before any significant alteration of the area takes place. If fill is stored on site, the contractor would be required to cover it appropriately.
2. In-water work will be completed using ODFW in-water work windows when listed fish are least likely to be present downstream, as appropriate for the project area, unless otherwise approved in writing by ODFW. Coordination with ODFW is required regarding work windows, blasting (if required) and, where and when necessary, to divert or otherwise segregate resource waters from construction areas.
3. No construction material or debris shall be staged or disposed of in a wetland, even temporarily. Excess and unsuitable excavated material shall not be sidecast into or placed upslope of wetlands environments.
4. Should any cultural material (e.g., prehistoric stone tools or flaking, human remains, historic material caches) be encountered during construction, the applicant must ensure that work is immediately stopped and the State and FEMA are contacted. Under Oregon state law (ORS 358.905-995) it is a class B misdemeanor to impact an archeological site on public or private land, and under state law (ORS 97.740-760) impacts to Native American graves and cultural items are a Class C felony.
5. If the "Project Limits" (including clearing, excavation, temporary staging, construction, and access areas) extend into an area not previously identified for environmental, historic, cultural, or archaeological consideration, work in these areas shall cease until such time as the project is re-submitted through the State to FEMA for re-evaluation for compliance with national environmental policies.

9.0 REFERENCES

ENVAS mapping, FEMA Region X, Geographic Information System. September 2008 and March 2009.

Griffin, Dennis. State Archaeologist, Oregon State Historic Preservation Office, concurrence letter. July 21, 2008.

McMillan, James. Senior Regulatory Project Manager, U.S. Army Corps of Engineers, personal communication. September 17, 2008.

Murtagh, Tom. Fish Habitat Biologist, Oregon Department of Fish and Wildlife, Washington County, personal communication. September 17, 2008.

Oregon Department of Forestry (ODF), Forest Grove District. Gales Creek Trail Flood Damage Construction Log. 2008.

ODF Muddy Rub Pre-Sale Report, Commercial Forest Management Operation, Gales Creek Basin, prepared by Dan Lepschat. 2002.

Peterson, Randy. ODF Recreation Manager, Forest Grove District, personal communication. 2008-2009.

Plawman, Dave. Fish Habitat Biologist, North Coast Watershed, Oregon Department of Fish and Wildlife, Tillamook, personal communication. September 17, 2008.

Smith, Clint. Area Wildlife Biologist, ODF Northwest Oregon Area Office, personal communication. September 18, 2008.

Smith, Clint. Final Biological Assessment of the Proposed Rogers Break Timber Sale: Potential Impacts to the Gales Creek Northern Spotted Owl Site. May 7, 2007.

Smith, Clint. Preliminary Biological Assessment of the Rogers Break Timber Sale: Potential Impacts to the Gales Creek Northern Spotted Owl Site. February 3, 2006.

StreamNet. Fish distribution data query for Gales Creek, www.streamnet.org. September 2008.

10.0 LIST OF PREPARERS

- Barbara Gimlin, Environmental Specialist, FEMA Region X

APPENDIX A

AERIAL MAP OF DAMAGED SITES

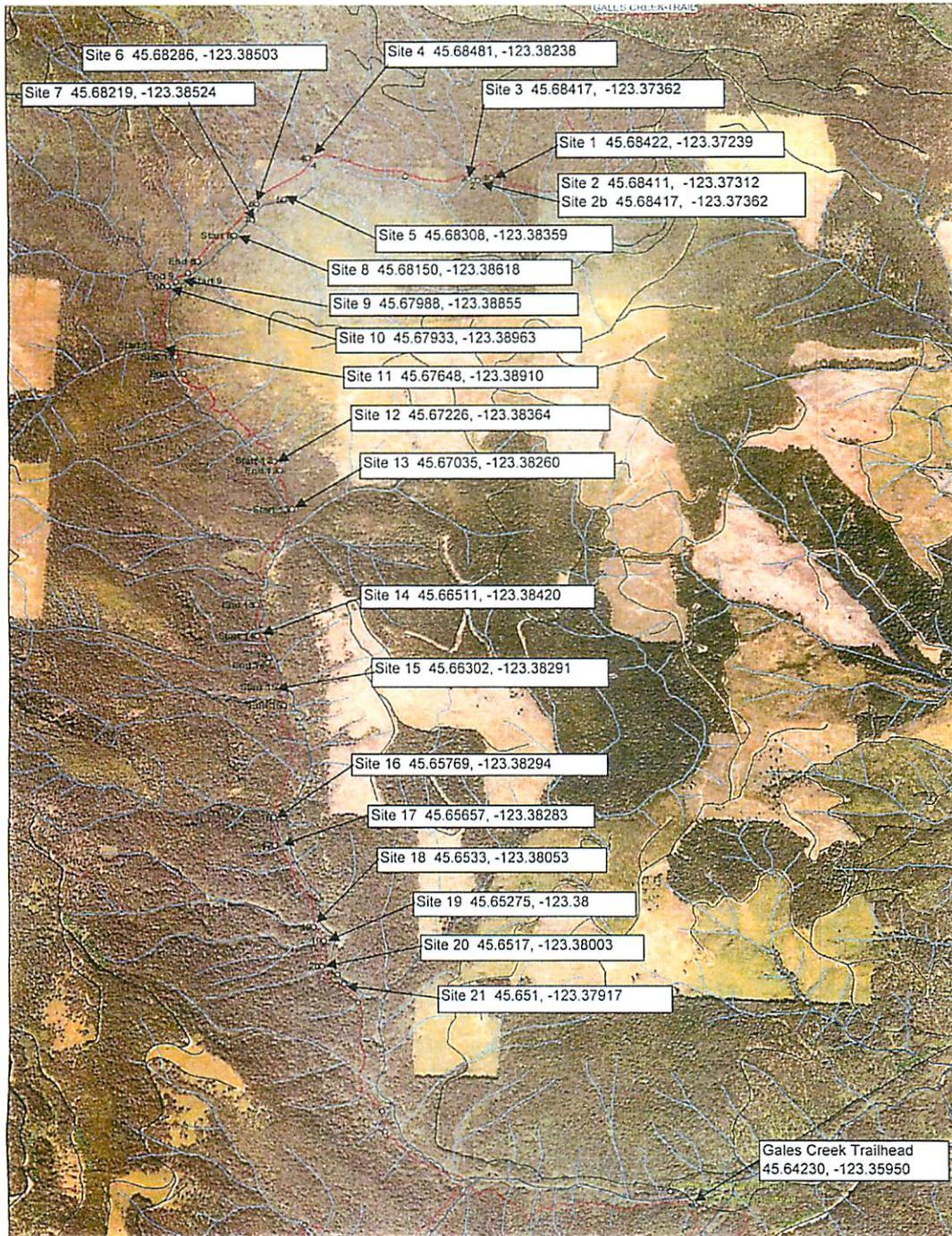
- Gales Creek Trail Damage Sites

CONSTRUCTION SPECIFICATIONS

- Exhibit C – Clearing Limits
- Exhibit D – Excavation and Embankment
- Exhibit E – Drainage Details
- Exhibit F – Switchback
- Exhibit G – Insloped Climbing Turn
- Exhibit H – Log Barrier
- Exhibit I – Shallow Stream Ford or Gully Crossing Log Structure
- Exhibit J – Shallow Stream Ford or Gully Crossing Rock Structure
- Exhibit K – Raised Trailbed Section

SHPO CONCURRENCE LETTER

Gales Creek Trail Damage Sites
DR 1733

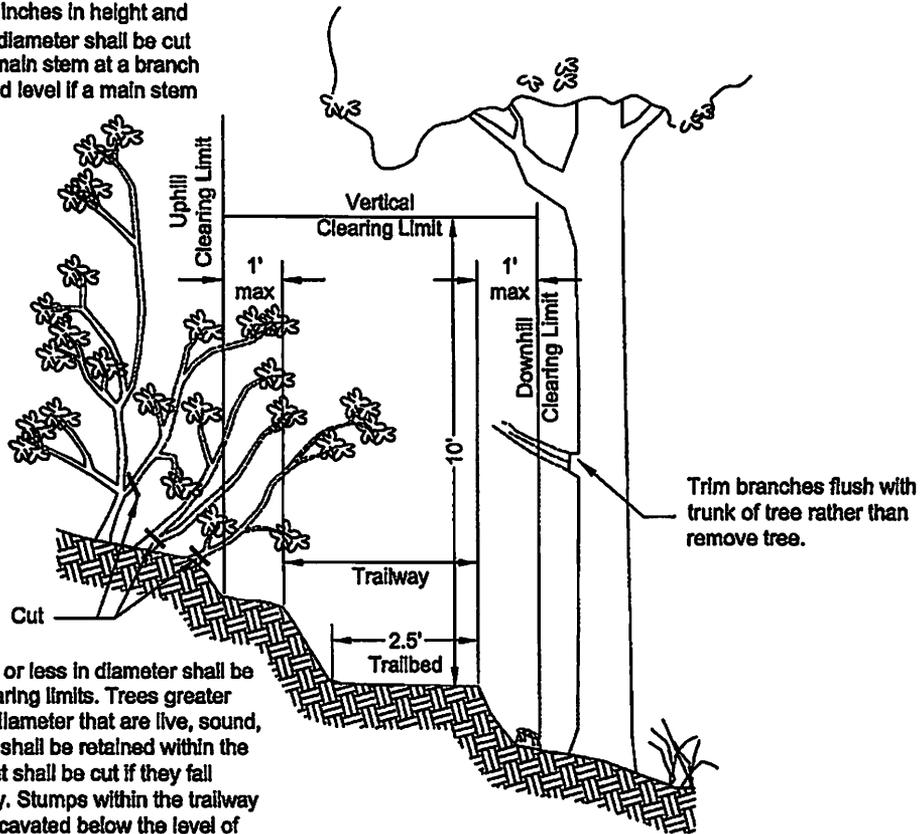


GALES CREEK TRAIL CONSTRUCTION CONTRACT

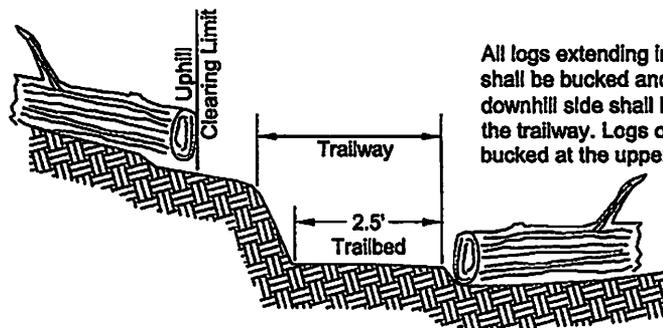
EXHIBIT C CLEARING LIMITS

NOT TO SCALE

Brush extending into the clearing limits that is over 12 inches in height and over ½ inch in diameter shall be cut flush with the main stem at a branch fork or a ground level if a main stem does not exist.



All trees 6 inches or less in diameter shall be cut within the clearing limits. Trees greater than 6 inches in diameter that are live, sound, and firmly rooted shall be retained within the clearing limits, but shall be cut if they fall within the trailway. Stumps within the trailway shall be cut or excavated below the level of the subgrade unless otherwise specified in Exhibit B.



All logs extending into or across the trailway shall be bucked and removed. Logs on the downhill side shall be bucked at the edge of the trailway. Logs on the uphill side shall be bucked at the upper clearing limit.

9/07

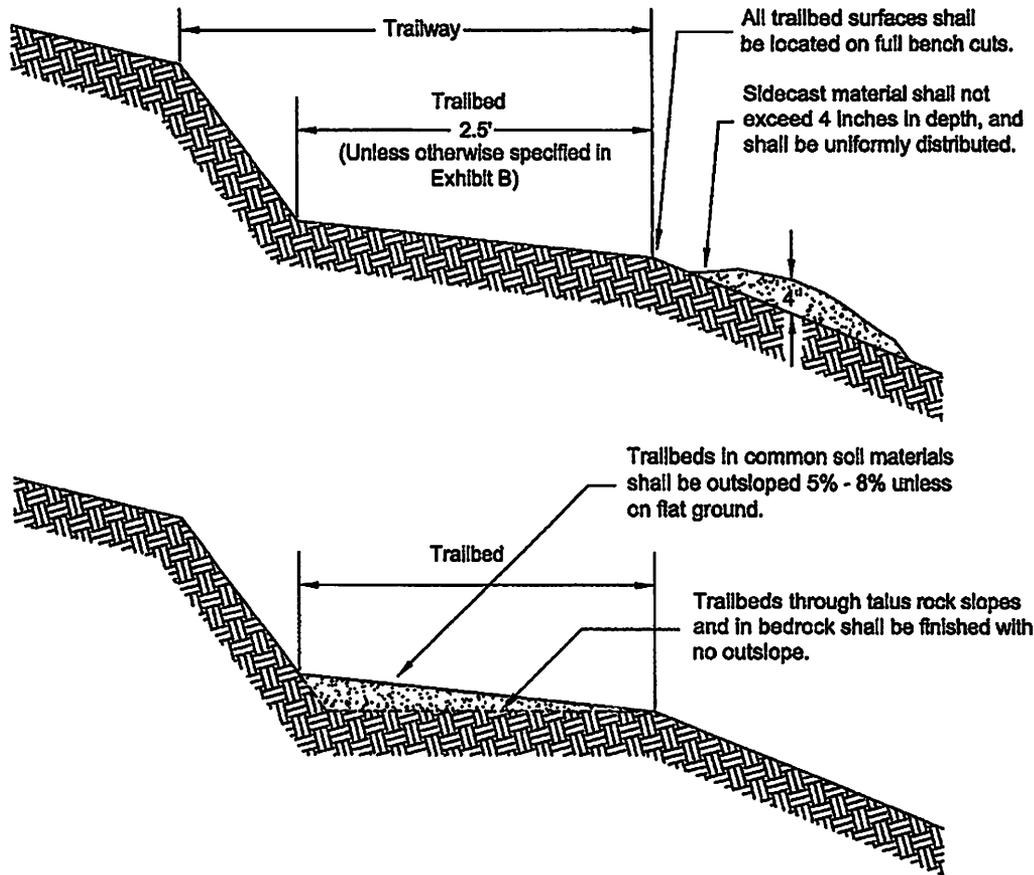
GALES CREEK TRAIL
CONSTRUCTION CONTRACT

EXHIBIT D
EXCAVATION AND EMBANKMENT

NOT TO SCALE

BACKSLOPE RATIO

Rock: 1/2:1
Common: 3/4:1



TRAILBED AND SLOPE FINISH

Remove roots over 1/2 inch in diameter that protrude from the backslope.

Remove roots over 1/2 inch in diameter whose ends protrude above the trail subgrade.

9/07

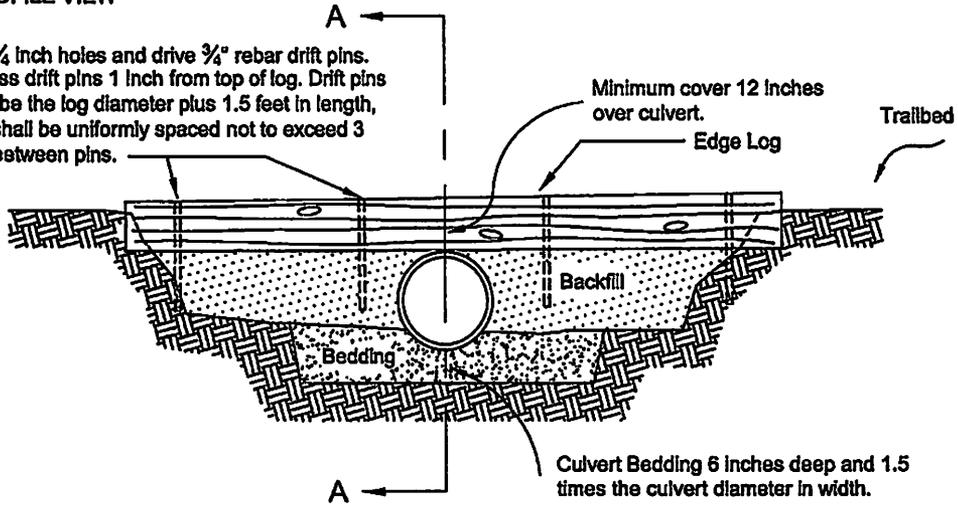
GALES CREEK TRAIL
CONSTRUCTION CONTRACT

EXHIBIT E
DRAINAGE DETAILS

NOT TO SCALE

CULVERT
PROFILE VIEW

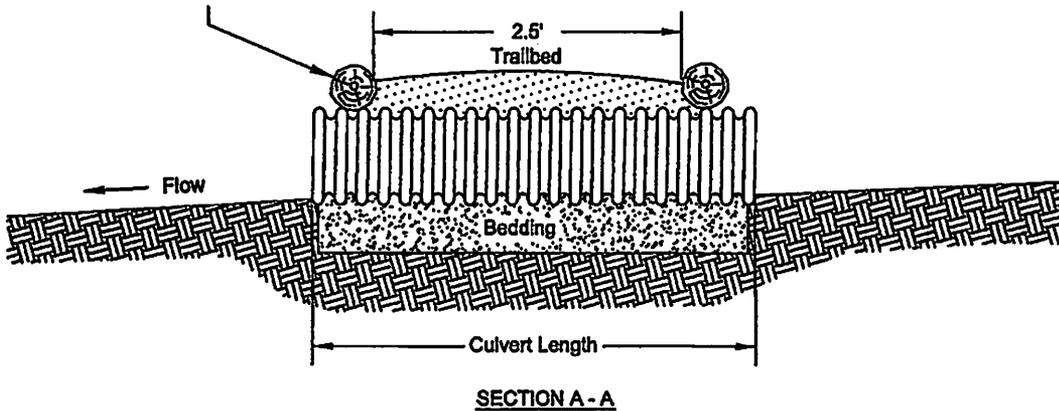
Drill $\frac{3}{4}$ inch holes and drive $\frac{3}{4}$ " rebar drift pins. Recess drift pins 1 inch from top of log. Drift pins shall be the log diameter plus 1.5 feet in length, and shall be uniformly spaced not to exceed 3 feet between pins.



SECTION VIEW

Logs shall be Douglas-fir and shall be not less than 12 inches in diameter measured at the small end of the log (inside bark). Logs shall not taper more than 1.5 inches per 10 feet of log length. All bark shall be removed from the logs before construction.

Straightness Requirement: the true center of each log shall deviate no more than three inches from a straight line between the centers of the ends of the log.

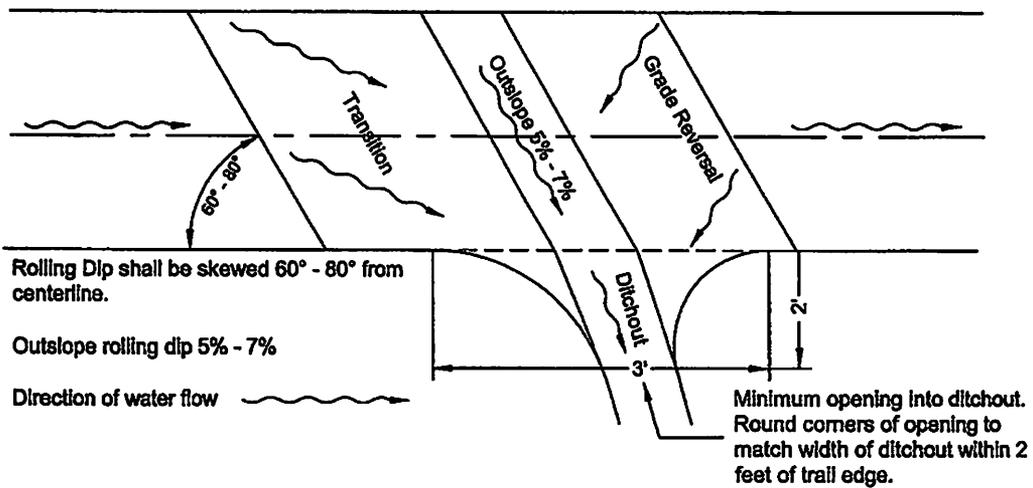


GALES CREEK TRAIL
CONSTRUCTION CONTRACT

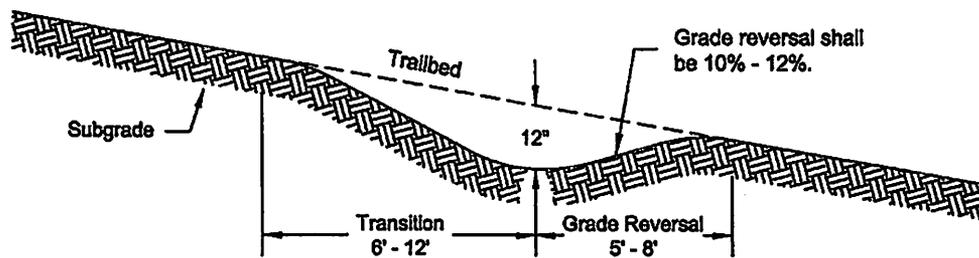
EXHIBIT E
DRAINAGE DETAILS

NOT TO SCALE

ROLLING DIP
PLAN VIEW



PROFILE VIEW



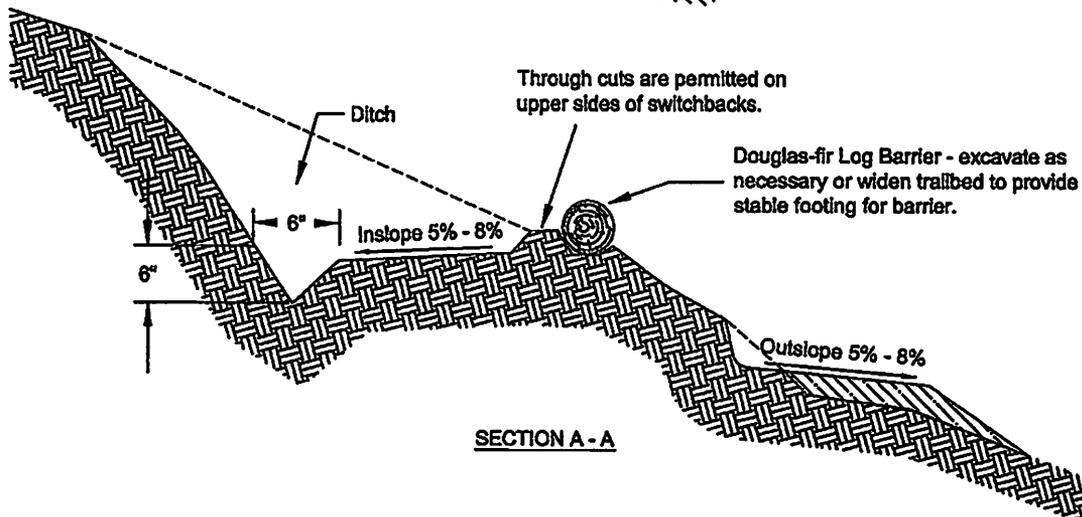
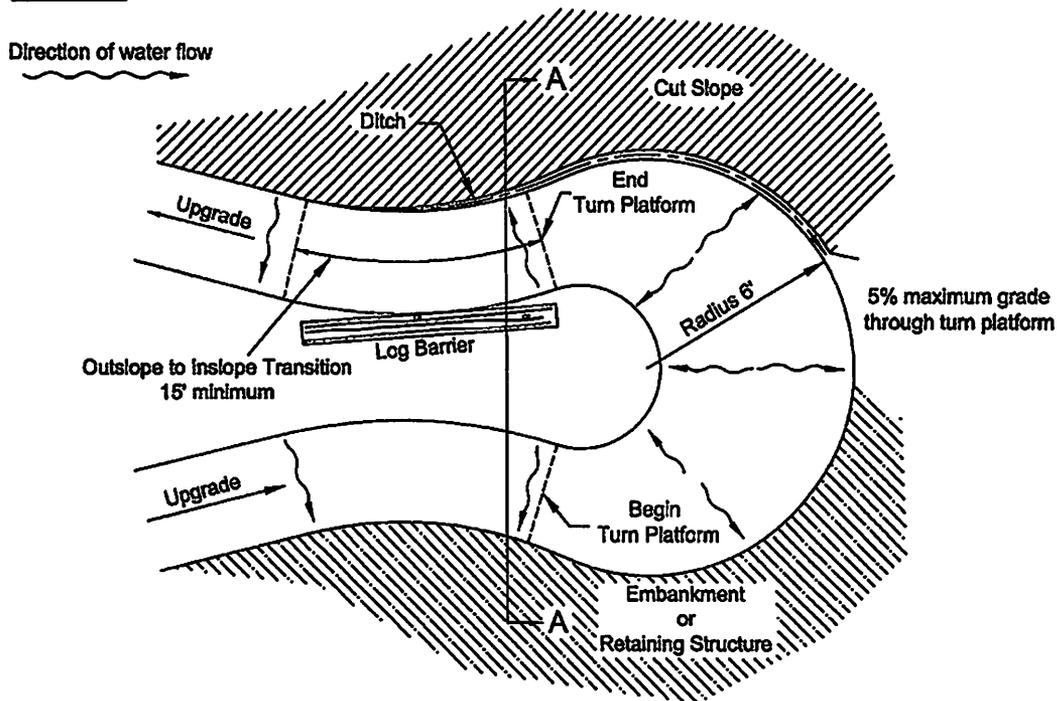
9/07

GALES CREEK TRAIL
CONSTRUCTION CONTRACT

EXHIBIT F
SWITCHBACK

NOT TO SCALE

PLAN VIEW



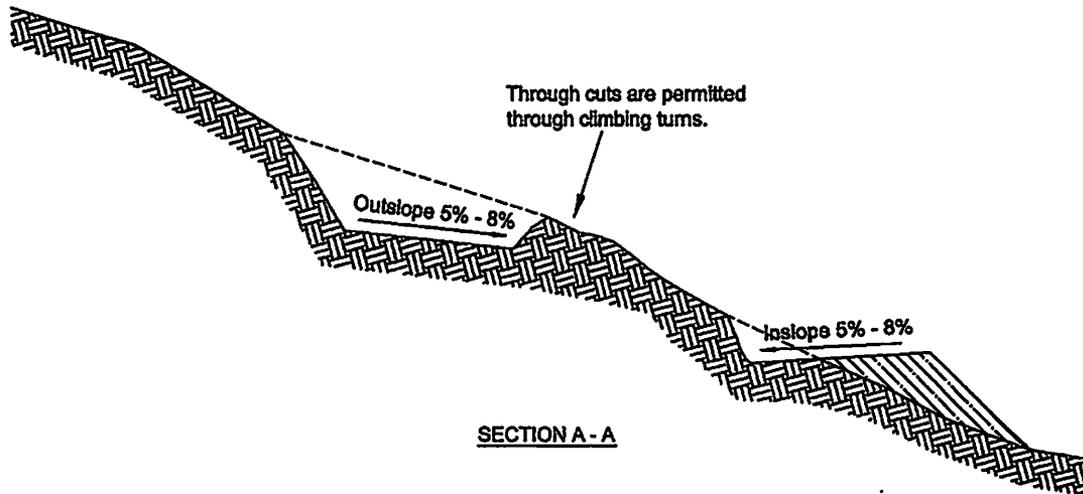
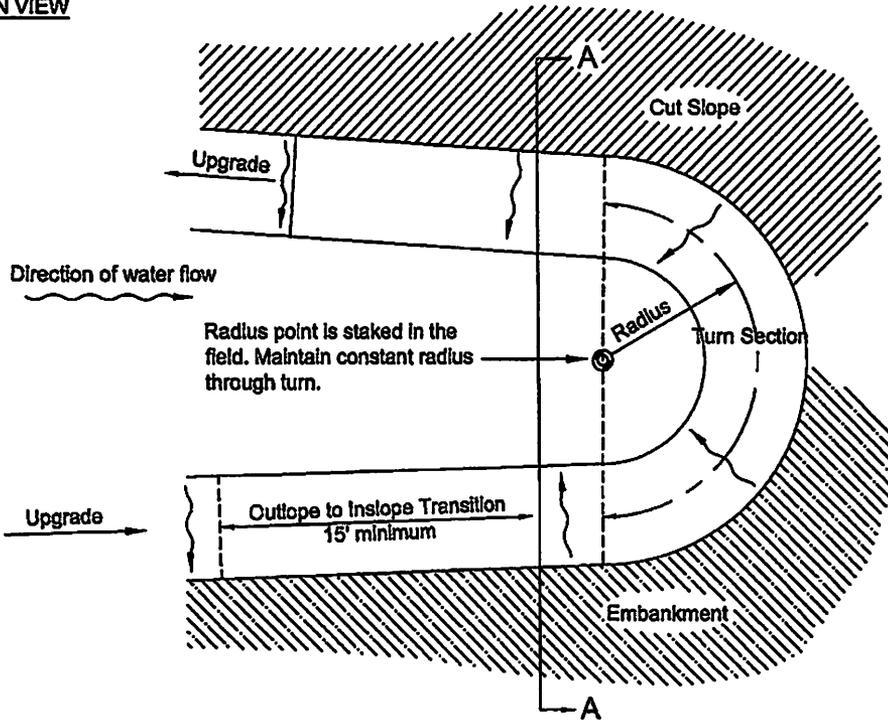
9/07

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CONSTRUCTION CONTRACT

EXHIBIT G
INSLOPED CLIMBING TURN

NOT TO SCALE

PLAN VIEW



9/07

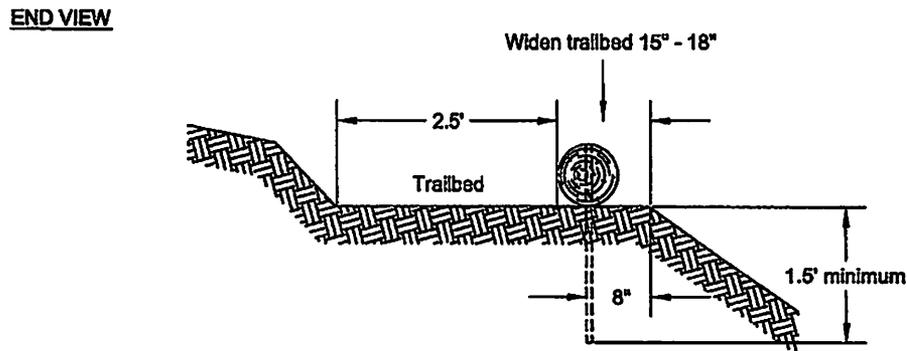
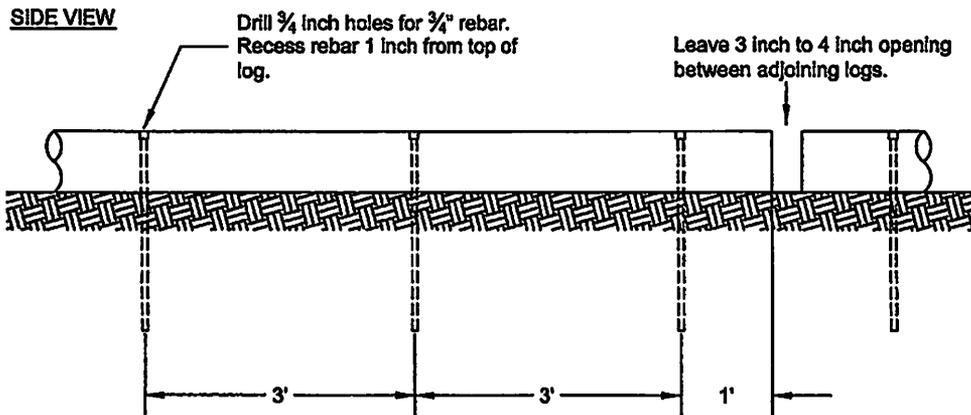
GALES CREEK TRAIL
CONSTRUCTION CONTRACT

EXHIBIT H
LOG BARRIER

NOT TO SCALE

Logs shall be Douglas-fir and shall be not less than 12 inches in diameter measured at the small end of the log (inside bark). Logs shall not taper more than 1.5 inches per 10 feet of log length. All bark shall be removed from the logs before construction.

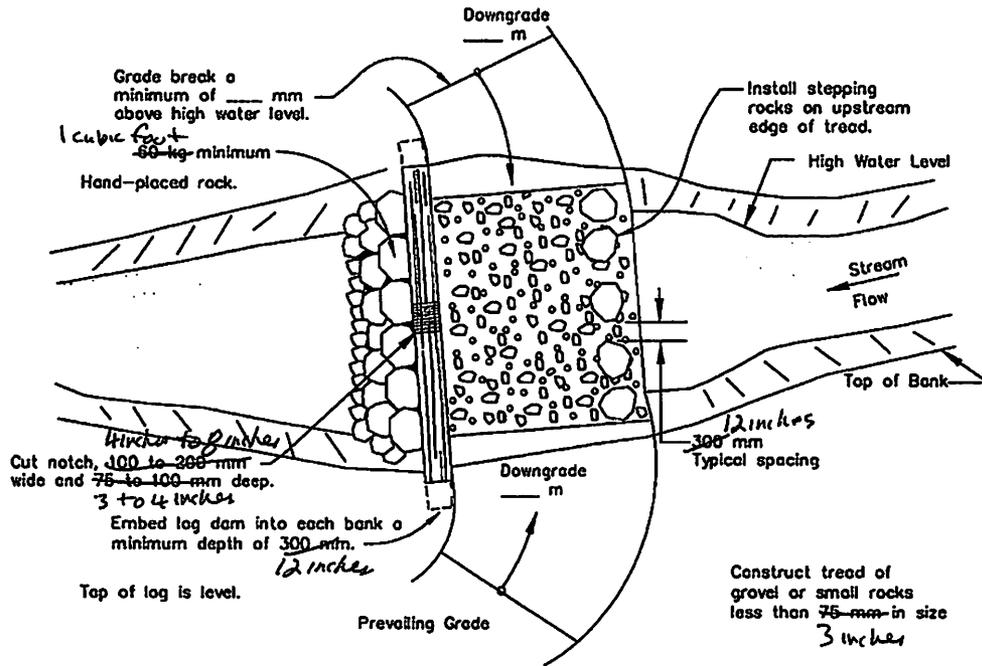
Straightness Requirement: the true center of each log shall deviate no more than three inches from a straight line between the centers of the ends of the log.



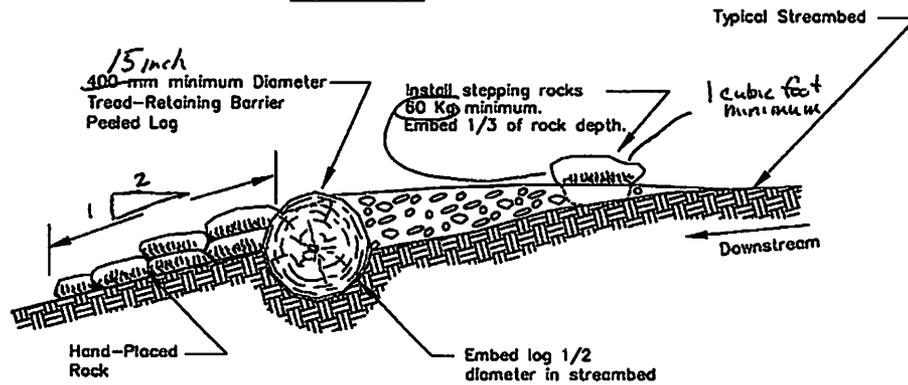
9/07

SHALLOW STREAM FORD OR GULLY CROSSING LOG STRUCTURE

NOT TO SCALE
Exhibit I



PLAN VIEW



CROSS SECTION

01/09

2/06

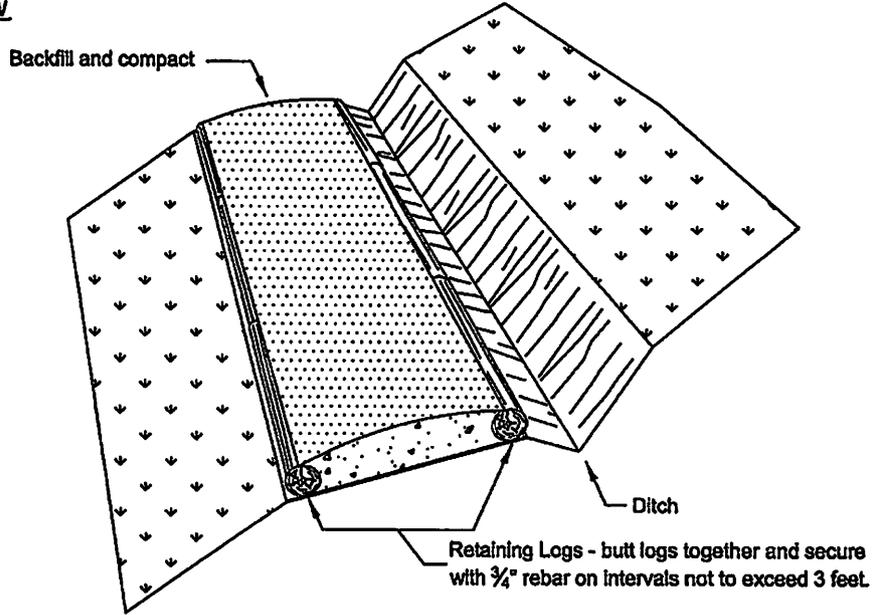
912-8

GALES CREEK TRAIL
CONSTRUCTION CONTRACT

EXHIBIT K
RAISED TRAILBED SECTION

NOT TO SCALE

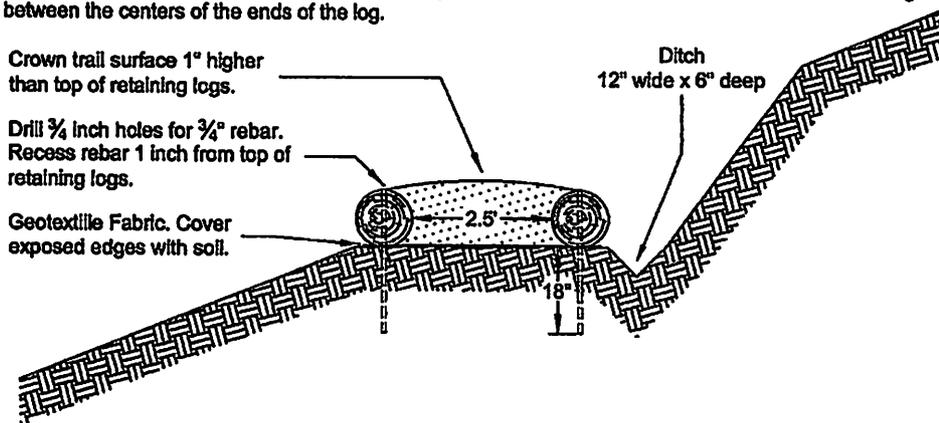
PLAN VIEW



SECTION VIEW

Retaining Logs shall be Douglas-fir and shall be not less than 12 inches in diameter measured at the small end of the log (inside bark). Logs shall not taper more than 1.5 inches per 10 feet of log length. All bark shall be removed from the logs before construction.

Straightness Requirement: the true center of each log shall deviate no more than three inches from a straight line between the centers of the ends of the log.



7/08



Oregon

Theodore R. Kulongoski, Governor

Parks and Recreation Department

State Historic Preservation Office

725 Summer St. NE, Suite C

Salem, OR 97301-1266

(503) 986-0707

FAX (503) 986-0793

www.hcd.state.or.us



July 21, 2008

Mr. Mark Eberlein
FEMA Region 10
130 228th St SW
Bothell, WA 98021

RE: SHPO Case No. 08-1637
Gates Creek Trail FEMA Proj
Re-route and reconstruct trails
FEMA/ODF
2N 6W 1, 11, 24, . Washington County

Dear Mr. Eberlein:

Our office recently received a request to review the proposal for the project referenced above. In checking our statewide cultural resource database, I find that there have been no previous cultural resource surveys completed near the proposed project area. However, the project area lies within an area generally perceived to have a high probability for possessing archaeological sites and/or buried human remains.

While not having sufficient knowledge to predict the likelihood of cultural resources being within your project area, extreme caution is recommended during future ground disturbing activities. ORS 358.905 and ORS 97.740 protect archaeological sites and objects and human remains on state public and private lands in Oregon. If any cultural material is discovered during construction activities, all work should cease immediately until a professional archaeologist can assess the discovery.

If you have any questions about my comments or would like additional information, please feel free to contact our office at your convenience. In order to help us track your project accurately, please be sure to reference the SHPO case number above in all correspondence.

Dennis Griffin, Ph.D., RPA
State Archaeologist
(503) 986-0674
dennis.griffin@state.or.us



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