

ENVIRONMENTAL ASSESSMENT

for the

Galice Access Road Slide Project

(EA# OR117-04-01)

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT
GRANTS PASS RESOURCE AREA

April 2004

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT

EA COVER SHEET

RESOURCE AREA: Grants Pass Resource Area

EA # OR-117-04-01

ACTION/TITLE: Galice Access Road Slide Removal Project

LOCATION: T. 34 S., R. 8 W., Sections 20, 21, 27-31, 34-36
T. 35 S., R. 8 W., Sections 2, 5, 6, and 7
T. 35 S., R. 9 W., Section 1, 2, 12, 13, 24

FOR FURTHER INFORMATION CONTACT: Abbie Jossie
Field Manager
Grants Pass Resource Area
Medford District BLM
3040 Biddle Rd., Medford, Oregon 97504
Phone (541) 618-2200

Interdisciplinary Preparers	Title	Resource Values Assigned	Initials and Date
Paul Podesta *	Engineer	Team Leader, EA Writer, Roads, Quarries, Road Agreements, Easements	
Jim Roper	Engineer	Engineering	
Stephanie Messerle *	Fisheries Biologist	Fisheries	
Dave Maurer *	Hydrologist	Floodplains, Wetlands, Soils and Water	
Armand Rebischke *	Botanist	Special Status Plants	
Robin Snider *	Wildlife Biologist	Wildlife and Grazing	
Tom Dierkes	Forester	Port-Orford Cedar	
Lisa Brennan	Cultural Resources	Cultural Resources	
Cori Cooper	Outdoor Recreation Planner	Rogue Wild and Scenic River	
Jeanne Klein	Outdoor Recreation Planner	Recreation, VRM	
Dave Taylor	Geologist	Geology, Mineral Resources	

* Core planning team member

TABLE OF CONTENTS

1.0 Purpose of and Need for Action	1
1.1 Introduction.....	1
1.2 Purpose of and Need for the Proposal	1
1.3 Project Location.....	2
1.4 Issues Relevant to the Project	2
1.5 Land Use Allocation Objectives	2
2.0 Proposed Action and Alternatives	3
2.1 Alternative 1: No Action	3
2.2 Alternative 2: Galice Access road Slide Removal and Road Reconstruction	3
2.3 Alternative 3: Peavine / Serpentine Springs Reconstruction	5
2.4 Alternative 4: Galice Access Road Slide Removal	6
2.5 Project Design Features	6
3.0 Environmental Consequences	9
3.1 Soils and Hydrology	9
3.2 Botany.....	12
3.3 Fisheries.....	14
3.4 Wildlife.....	16
3.5 Recreation and Visual Resource Management	18
3.6 Rogue Wild and Scenic River.....	20
3.7 Cultural Resources.....	20
3.8 Roads and Engineering	21
3.9 Mineral Resources	24
4.0 Agencies and Persons Consulted	25
4.1 Public Involvement.....	25
4.2 Availability of Document and Comment Procedures	25
4.3 Agency and Individual Consultation	25
Appendix A: Maps	26
Appendix B: Alternatives Considered but Eliminated from Further Analysis	30

1.0 Purpose of and Need for Action

1.1 Introduction

The purpose of this environmental assessment (EA) is to assist in the decision making process by assessing the environmental and human affects resulting from implementing the proposed project and/or alternatives. This EA will also assist in determining if an environmental impact statement (EIS) needs to be prepared or if a finding of no significant impacts (FONSI) is appropriate.

This EA tiers to the following documents:

- (1) *Final EIS and Record of Decision for the Medford District Resource Management Plan (RMP)* (June 1995)
- (2) *Final Supplemental EIS on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl* (February 1994)
- (3) *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* and its attachment A entitled *Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (April 1994) (also referred to as the Northwest Forest Plan (NFP));
- (4) *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (January 2001).

This document also references the US Fish and Wildlife Service's 2003 *Programmatic Biological Opinion: Fiscal Year 2004-2008 Activities that May Affect Listed Species in the Rogue River/ South Coast Province*. Log # 1-14-03-F-511.

1.2 Purpose of and Need for the Proposal

The Galice Access road is owned and maintained by the Bureau of Land Management (BLM). The road is an important forest transportation route providing access for management activities on BLM and Forest Service lands to the west. The Galice Access road is also the primary road used by shuttle vehicles and rafts floating the wild section of the Rogue River, a congressionally designated component of the National Wild and Scenic Rivers system. This road connects the towns of Galice and Agness and receives heavy seasonal use by rafts, outfitters, and other members of the public, especially during the Rogue River rafting season beginning on approximately May 1. The road is also part of the Galice-Hellgate National Back Country Byway and provides access to a diversity of Oregon's spectacular landscapes and attractions.

During the winter of 2002-2003, a series of rock fall events from the scarp filled in the road prism at milepost (MP) 4.6 road making the road impassable. The purpose of the project is to establish a route that can accommodate high levels of recreation and forest management traffic between Soldier Camp and Merlin-Galice road.

1.3 Project Location

The proposed project area is in the Rogue Recreation Section 5th field watershed, just west of the town of Galice, off the Merlin-Galice Road. More than 90% of the proposed project area is within the Galice Creek – Rogue Recreation Section 6th field watershed. Approximately one mile of the Peavine Road is in the Lower Rogue Recreation Section 6th field watershed. Project area maps are in Appendix A.

1.4 Issues Relevant to the Project

A variety of issues and concerns were raised by the interdisciplinary planning team, engineers, outside consultants, and others during initial project scoping. The most pertinent issues include:

- Impacts to commercial and non-commercial outfitters and rafters.
- The potential for loose soil and other material to fall or erode into North Fork Galice Creek.
- Port-Orford cedar (POC) is infected with (*Phytophthora lateralis*) in the North Fork Galice Creek portion of the project area.

1.5 Land Use Allocation Objectives

The slide site is located primarily within the riparian reserve land allocation. A small piece of matrix land is in the southwestern portion of the project area. The proposed waste deposition site is in the late-successional reserve (LSR) land allocation. The alternative routes considered are also in the LSR. Land use allocations are set by the NFP and RMP. The reader is referred to these documents for discussions of the management objectives and constraints for these allocations.

2.0 Proposed Action and Alternatives

2.1 Alternative 1: No Action

Under the no action alternative, the slide material will not be removed from the Galice Access road and the road will remain closed indefinitely. Vehicular traffic will utilize other road systems to bypass the slide.

2.2 Alternative 2: Galice Access road Slide Removal and Road Reconstruction

Alternative 2 will remove slide material and reconstruct the road to an 18'-20' lane width. Some slide material will be utilized in the project to elevate the road bed and the remaining amount will be placed at a designated disposal site (see Map 1). The proposal will also include upgrading the road for safety at seven other sites along the Galice Access road including ditch work, realignment, etc. It is anticipated that the project will begin by June 2004 and be completed in approximately three months. This alternative is described in greater detail below. The Galice Access road will be closed to all public traffic throughout the period required to clear the slide, reconstruct the road, and stabilize the site.

2.2.1 Slide Removal at Milepost (MP) 4.6

A temporary road (12' wide by 1,700' long) will be constructed to provide equipment access to the top of the slide. The first approximately 640' of the temporary road will be in the riparian reserve and will cross one intermittent draw. The length and location of the road are estimates because its exact location may change at the contractor's discretion. However, the road will not go outside areas surveyed for special status species nor will it exceed 640' in the riparian reserve. This temporary road will start at North Fork Galice Creek and proceed away from the creek, south of the existing road and out of the riparian reserve into the uplands. Trees cut for the road will be primarily Douglas-fir and cedars in a range of sizes up to approximately 36" DBH. Upon completion of the project, the access ramp will be obliterated and the slope recontoured and seeded using native species. Construction and obliteration will be completed in the dry season.

The temporary access road will be routed around the red tree vole nest.

During construction, the removal of trees ≥ 12 " DBH and large down wood will be minimized. The top of the road cut will be rounded where loose material is exposed. The temporary access road will be winterized if left over a winter and will include water barring, seeding, mulching and surfacing the road. Vegetation removed during construction will be used to help stabilize recontoured slopes.

To remove the slide material, drilling and blasting will begin at an elevation of 1,880' and proceed downhill to an elevation of 1,680' at 20' intervals. The area to be treated is approximately 78,500 ft² and 27,000 yd³ of material will be produced. This material plus the estimated 5,000 yd³ of material that have accumulated from past slide activity will be incorporated into the construction of an elevated road above the existing road prism. The road incline will begin approximately 2,500' on each side of the slide to a maximum elevation of 16' above the existing roadbed. Aggregate road base will be placed to a depth of 6" and surfaced with two layers of chip seal bituminous material to a finished width of approximately 20'. Through the slide area, retaining walls or a 5' deep rock fall

ditch will be placed along the sides of the road. Mechanically stabilized earth walls will consist of gabions and, on the cutbank side, low toxicity copper naphthenate treated posts to protect the gabions (wire baskets filled with 4-10" rock) from falling rock. The retaining walls will be approximately 300' long and 5-15' higher than the existing road (they will be flush with the new roadbed). The rock fall safety ditch or wall will be constructed to prevent rocks and slide ravel from reaching the road surface.

The estimated maximum disturbance area, blast and excavation volumes, and volume to be hauled from the site will be:

Existing failed volume of soil and rock:	10,000 yd ³ (Approx ½ to be removed)
Crown regrading released volume:	27,000 yd ³
Access ramp excavation:	7,100 yd ³
Total volume to be removed:	39,100 yd ³
Area of existing failure:	51,000 ft ²
Area of crown regrading:	50,000 ft ²
Area of access ramps:	41,000 ft ²

While efforts will be made to minimize fly rock from the blasting phase landing in North Fork Galice Creek, larger material (approximately ½ ft.³ and larger) that does reach the creek will be removed and placed in the road embankment. An in-water blasting permit will be obtained from the Oregon Department of Fish and Wildlife (ODFW) to allow removal of large boulders from the stream as needed.

Material resulting from project implementation that is not suitable for utilization in the road embankment will be placed at a designated disposal site approximately 2.7 miles up the Galice Access Road.

2.2.2 Additional Galice Access Road Reconstruction Sites

MP 4.5- Approximately 10-15 yd³ of loose blocks will be removed from the cutslope. The center line will be realigned to take advantage of the wide road template and build a rock catchment ditch with concrete Jersey barriers (2' wide and 3' tall for a distance of 50') along the shoulder. These barriers will look similar to what is seen along freeways.

MP 5.0- Loose debris will be removed from the cutslope and a rock catchment ditch with Jersey barriers will be installed.

MP 6.0- A 5' wide rock fall ditch will be installed to capture occasional rock fall and approximately 300' of gabions will be built 3' beyond the existing outside road shoulder. The gabion walls will be approximately 3' wide, 6' tall and 300' long.

MP 6.1- A 3' x 9' gabion wall will be installed on the outside edge of the road for approximately 180'.

MP 7.0- This culvert is adjacent to the Cedar Mountain Fault. It failed during the 1997 flood causing a fill failure. The culvert will be upgraded to meet 100 year flows and the road will be relocated approximately 25' up the draw.

MP 7.1- An 8-10' deep geotextile-wrapped subsurface underdrain will be installed for approximately 100' and will include an 8" outlet pipe. The subsurface drain will be constructed along the existing ditch line.

MP 7.5- the fillslope will be covered with a thin layer of excess rock from the Galice slide. The cutslopes will be hydromulched with a gypsum based solution.

Approximately 10 cross drain culverts from MP 5.0 to 7.0 will be replaced to correct poor skew and to meet minimum pipe grade standards.

2.2.3 Waste Disposal Site

An old log landing approximately 2.7 miles west of the slide will be used to locate excess slide material (Map 2). This site is approximately 1 acre in size and has an estimated capacity of 6,000 yd³. To prevent fill slope overload and minimize potential slope failure, material placed there will be limited to that which will fill the site and spur road from the top of the existing cut slope to the edge of the road or landing surface.

2.2.4 Alternative 2a-Additional Excavation Option

Additional excavation could be done to provide for greater stability. An additional 6,500 yd³ of material will be excavated above the slide (elevation 1940'). This will reduce the entire slope 40°. This option will increase total volume excavated from 39,100 to 45,600 yd³.

2.3 Alternative 3: Peavine / Serpentine Springs Reconstruction

This alternative will establish the Peavine/Serpentine Springs route as the primary route between Galice and Soldier Saddle. The slide on the Galice Access Road will not be repaired. The Peavine/Serpentine Springs route intersects Galice Access road at MP 0.7, climbs near Mt. Peavine, parallels the ridge line, and reintersects the Galice Access road at approximately MP 9.7. This route is currently being used as the primary detour to the coast (one way traffic only), with the Hansen Saddle/Taylor Creek route being used as the primary west to east route between Soldier Saddle and Galice.

Approximately 12.65 miles of Peavine/Serpentine Springs road will be reconstructed to a higher standard in order to accommodate increased traffic volume and mixed users (commercial and recreation). The proposed improvements are as follows:

Peavine Road: This road (6.43 miles) will be chip sealed and approximately 5 worn or undersized culverts will be replaced. In order to increase driver visibility and safety, hazard trees (dead or dying trees) and roadside vegetation would be thinned and pruned along the curves of the Peavine Road. Vegetation would be cut / severed, not be pulled. Cut vegetation would be lopped and scattered or, where slash concentrations are high, handpiled and burned. Hazard trees that lean

toward the road and which are sufficiently tall to reach the roadbed would be felled and left in place as woody debris. Trees that are growing on the running surface of the road (i.e., all or part of their boles are on the running surface) would be felled if needed for safe road use. These trees could be removed (NFP p. C-15) if coarse wood is sufficient in the adjacent stands. Any material (logs, limbs, slash) ending on the road surface would be moved from the surface and scattered adjacent to the road or handpiled and burned. Pruning vegetation for driver visibility would be favored over cutting. In order to re-establish site distance between turnouts, dense patches of conifers (0"-12" DBH) and hardwoods would be thinned. This thinning and pruning would be done in riparian reserves as needed to provide safe visibility. Riparian species such as willow, alder, Oregon ash, big leaf maple, vine maple, and dogwood would be retained unless they obstruct driver site distance. Low growing trees or shrubs that shade perennial streams would be retained as long as they do not obstruct driver site distance.

Serpentine Springs Road: The existing road (6.23 miles) will be widened to 18' (running surface) and will include a 1' wide ditch. This additional 4–6' of road width will be gained by excavating into the cutslope (outside the road prism) for 6.23 miles (approximately 4.5 acres or 48,000 yd³). Five culverts will be replaced and an additional 60 cross drain culverts will be installed. The road will be realigned from the junction of the 34-8-28 road to the ridge (1.7 miles). An aggregate base course 6" deep and double course chip seal will form the running surface.

Hansen Saddle/Chrome Ridge Roads: New cross drains, upgraded culverts and 8-10" of crushed aggregate will be added to the Hansen Saddle Road 35-9-1.4 (2.6 miles) and the BLM portion of the Chrome Ridge Road 35-9-12 (1.7 miles). The Chrome Ridge road will be widened 2-4' through excavating and filling as needed.

The Peavine and Hobson Horn rock quarries will provide material for crushed aggregate and chip seal rock (approximately 16,000 yd³ and 6,000 yd³ respectively). Blasting and rock crushing will occur. The quarries will be developed in accordance with their existing quarry development plans.

2.4 Alternative 4: Galice Access Road Slide Removal

Alternative 4 will remove the minimal amount (5,000-10,000 yd³) of slide debris necessary to open the Galice Access road. Slide stabilization and road reconstruction will not occur. Traffic warning signs and concrete Jersey barriers will be installed.

2.5 Project Design Features

Project design features (PDFs) are included in the proposed action to avoid potential adverse environmental impacts which might stem from the implementation of the proposal. The PDFs noted below will be part of all action alternatives unless otherwise noted.

2.5.1 Soil and Water

Fuel storage and fueling activity sites will be identified prior to the onset of work in order to minimize impacts that could occur from fuel spills.

Straw bales or geo-textile material will be placed in the ditch at the slide location to catch sediment.

A boulder wall (rock berm) will be installed to capture displaced material before it reaches the creek. Sediment influx to the stream will be minimized through measures such as sediment traps, filters or filter fabric.

Rocks and logs removed during project activities and that are not needed for the project will be stock piled at the disposal site.

2.5.2 Port-Orford Cedar

All heavy equipment will be washed at a designated site before entering and after leaving the slide area.

POC root wads and limbs will remain on site or be transferred to the waste disposal site. POC logs within the riparian area will remain on site. POC logs on the uplands will be left on site.

2.5.3 Botany and Weeds

Quarries or stockpiles with known populations of noxious weeds (e.g., Hobson Horn stockpile) will have the surface scalped before removal of rock to reduce the potential for spreading of noxious weeds.

Populations of the Bureau sensitive species *Sophora leachiana* along the Peavine road will be protected from disturbance during roadwork. Two turnouts (MPs 0.8 and 2.3) where the species occurs will be blocked with boulders.

No road maintenance (blading) will be done on the outside edges of the Peavine road and in turnouts from M.P. 0.7 to 2.5 to protect populations of *Sophora leachiana*.

2.5.4 Fisheries

Instream work will occur June 15 to September 15, unless a waiver is granted by ODFW due to dry conditions. When removing blasted slide material from the stream, instream equipment use will be minimized or avoided.

Riparian restoration will include planting native riparian species such as alders, willows, Douglas-fir and cedars other than POC. Native grasses may also be used to reduce erosion.

Prior to fall rains protective measures will be applied to erosion-prone disturbed ground. Certified weed free straw bails, waddles, or rock check dams will be placed in ditch lines to control erosion. Stockpiles will be covered with plastic and lined with silt fences to reduce runoff. Newly constructed fill slopes and cut slopes will be seeded with native grasses and hydromulched to reduce sedimentation.

During culvert replacement, the stream will be diverted around the work area in a manner that will minimize stream sedimentation (e.g., a pipe or lined ditch). The diverted stream will not be returned to the channel until all instream work has been completed. If it is impractical to dewater a stream channel due to factors such as deep channel incision or high gradient, the work will be

scheduled toward the end of the ODFW approved instream work period.

Reduce off-site sediment transport by locating straw bales, geotextile fabric or coconut fiber logs/bales adjacent to the work area to filter / trap sediment.

Fill material over a stream crossing structure will be stabilized as soon as possible after construction is completed, normally before October 15. If rain saturates soils to the extent that there is potential for environmental damage, including movement of sediment from the road to the stream, work will be suspended until soil conditions have dried.

2.5.5 Wildlife

No blasting will occur within one mile of known spotted owl nests during the critical spotted owl nesting period, March 1 to June 30. Biologists may waive this seasonal restriction if protocol surveys have determined that the activity center is not occupied, the owls are not nesting or the owls' nesting attempt has failed.

Large snags and remnant trees along the roadside or at the location of the temporary access road will be retained where feasible to reduce potential impacts to special status species dependent on these habitat features. Snags that need to be felled for safety reasons (or where work cannot be routed around the snags) will be left on site to provide additional coarse woody debris.

2.5.6 Recreation

Signs will be placed above and below the work area to warn the public of the roadwork being done, length of closure, and potential safety hazards. Barricades will be placed at both ends of the work area to prevent public access during project work.

After the road is reopened (Alternatives 2 and 4), warning signs will be installed above and below the slide site to warn motorists of hazardous conditions such as rock fall and narrowing roadway.

2.5.7 Cultural Resources

If any cultural sites are found during project implementation, activities around the site will halt until a BLM archeologist evaluates the site's significance.

3.0 Environmental Consequences

Only substantive site-specific environmental changes that will result from implementing the proposed action or alternatives are discussed in this chapter. If an ecological component is not discussed, it should be assumed that resource specialists have considered effects to that component and found the proposed action or alternatives will have minimal or no effects. Similarly, unless addressed specifically, the following were found to be unaffected by the proposed action or alternatives: air quality; areas of critical environmental concern (ACEC); cultural or historical resources; Native American religious sites; prime or unique farmlands; floodplains; endangered, threatened or sensitive plant, animal or fish species; water quality; wetlands/riparian zones; wild and scenic rivers; and wilderness areas. In addition, hazardous waste or materials are not directly involved in the proposed action or alternatives.

General or typical effects from projects similar in nature to the proposed action or alternatives are also described in the EISs and plans to which this EA is tiered.

3.1 Soils and Hydrology

3.1.1 Affected Environment

Typical landforms are extremely steep canyon slopes along the Galice Access road as well as complex hill and ridge slopes dissected by draws along the Peavine and Serpentine Springs roads. According to the 1983 Josephine County Soil Survey, soils in the project area consist of:

- 1) On canyon slopes adjacent to North Fork Galice Creek;
 - Vermisa – Beekman complex (80G, 81G, 82G)-- Extremely steep(60 to 100%), very gravelly and extremely gravelly loam, less than 20” to fractured bedrock.
- 2) On slopes along Peavine/Serpentine Springs Roads;
 - Pollard loam (61D)--Red, clayey subsoil, greater than 40” deep, well drained.
 - Speaker-Josephine gravelly loams (72F)-- Gravelly loam over gravelly clay loam subsoils, 20 to 40” and greater than inches deep respectively, well drained.
 - Vermisa – Beekman complex (80,81G)-- see above
 - Dubakella-Pearsoll complex (28,29F)-- Cobbly clay loam over very cobbly clay loam, 20 to 40” to serpentine bedrock (Dubakella) and extremely stony clay loam over extremely cobbly clay (Pearsoll), well drained with slow permeability, low calcium/high potassium serpentine minerals.

Annual precipitation ranges from 41” at the intersection of Peavine and Galice Access roads to 80” at the intersection of Serpentine Springs and Galice Access roads. Elevations range from 1,250 to 3,530’ respectively at the same two intersections.

Galice Creek, from the confluence of the two forks to the Rogue River, is not 303(d) listed for water quality limitations due to warm summer temperature.

The slide is a natural feature that would occur whether or not the Galice Access Road was located where it is. The road and road location are not the not causes of the slide (ref: phone conversation with Norman I. Norrish P.E., 3/18/04, Wyllie & Norrish Rock Engineers Inc. Redmond, WA)

3.1.2 Comparison of Effects

Alternative	Short Term	Long Term	Cumulative
Alt. 1 No Action	Continued rock fall at slide site	Some risk of stream obstruction at slide site	No change in stream flow regimes, no change in 303(d) listed qualities for Galice Creek
Alt. 2 Remove slide and fix road	Some addition of rock to stream, 640' of 10' wide opening (temporary road) in riparian reserve	640' of 10' wide opening (temporary road) in riparian reserve	
Alt. 3 Peavine/Serp. Springs route	Continued rock fall, very small increase of transient snow zone (TSZ) opening	Some risk of stream obstruction at slide site	
Alt. 4 Minimal slide removal	Moderate to high risk of slide reoccurring	High risk of slide reoccurring. Some risk of stream obstruction at the slide site.	

3.1.3 Alternative 1: No Action

Boulders and cobbles will likely continue to fall onto the mass already deposited on the road and some into North Fork Galice Creek at the slide location as well as other locations along the Galice Access road where steep cut banks and natural canyon walls weather and during the wet season. In the long term there is a possibility that slide material could block Galice Creek. This would most likely require a large storm such as a 50-year event. If this should happen, the predominately boulder size material that will reach the creek will leave large voids through which stream flow would most likely occur. However, it is possible that the North Fork Galice Creek could back up behind the block of boulders. As flow will naturally decrease in the spring and summer, the amount of stream water accumulation behind the boulders will diminish likely to very low amounts.

Along the Peavine/Serpentine Springs route, slight erosion and sediment delivery from the road surface and ditches will likely continue. Erosion and sedimentation will be most active during rain-on-snow events where inadequately drained roads result in concentrated overland flow. Impacted streams are mostly intermittent, with one perennial stream near the intersection of Peavine and Serpentine Springs roads.

3.1.4 Alternative 2: Galice Access road Slide Removal and Road Reconstruction

Some materials, mostly large rocks and boulders, will likely reach the creek as a result of blasting. However, PDFs would minimize these potential effects to stream habitat. Only very small amounts of fines are expected to reach the creek due to the very coarse composition of the slide material and the slide substrate. Existing fine sediment in North Fork Galice Creek is not a known water quality problem.

Because of its location adjacent to the creek, the existing Galice Access road compromises the very steep upland riparian reserve. The effects of building the temporary road would include further loss of vegetation. The already shallow soil would be effectively lost because it is predominately less

than 20" thick over hard fractured bedrock. New road cuts would be up to 17' high and the removed material would be approximately 80% rock and 20% soil. The soil in the replaced material would largely settle into voids, leaving few fines at the surface.

Short term effects (no long term effects are anticipated) of blasting in the slide area would include small amounts of rock fall that could be removed by equipment. Blasted material would be less likely to reach the stream than if blasting occurred all at once. A small amount of fines would likely be deposited in the stream.

Culvert replacement between mileposts 5.0 to 7.0 may result in localized short term additions of small immeasurable amounts of fine sediment to nearby streams.

In conclusion, any sediment delivery to streams associated with Alternative 2 would be highly localized, immeasurable, and of short duration. Erosion control and sediment trapping PDFs will minimize short term sediment impacts to water quality. There will be no discernible adverse impacts at the watershed level (5th field).

3.1.5 Alternative 3: Peavine/Serpentine Springs Reconstruction

The Serpentine Springs Road is located within the Transient Snow Zone (TSZ) elevation band where rain-on-snow events are most common. Given that approximately 40% of this road is in open areas unprotected by tree canopy, the total increase in open area created by widening the road will be less than half an acre (assuming an average increase in road width of 5'). This is an extremely small increase in TSZ openings. Therefore, added storm runoff and increased peak flows will be negligible. There are no anticipated cumulative effects with the exception of a minimal addition to TSZ openings.

The slide and other unstable areas along the Galice Access road will likely continue to release boulders and cobbles onto the mass deposited on the road and some into North Fork Galice Creek, especially during wet weather. There is a long term risk that additional slide material could block the creek. This would most likely require a large storm such as a 50-year event. If this should happen, the predominately boulder size material that would reach the creek will leave large voids through which stream flow will occur. It is possible that the North Fork Galice Creek could back up behind the block of boulders. As flow naturally decreases in the spring and summer, the amount of stream water accumulation behind the boulders would diminish likely to very low amounts.

Concerning necessary clearing of vegetation in order to maintain safe site distance on the Peavine Road, there will be little if any soil disturbance. The action will not result in erosion or sedimentation. There may be a short term affect of increased soil moisture at sites where trees are felled. However, neighboring root systems will fill in as roots of fallen trees decay. Therefore root strength will be maintained and slopes will remain stable. By this action there will be a small addition of CWD to forest stands.

3.1.6 Alternative 4: Galice Access Road Slide Removal

Rock fall will continue. The slide will naturally tend to stabilize as material moves downhill onto the road or into the creek. However, given that slide material will be removed from the road and

creek, the slide will likely continue to be active until bedrock that has enough structural strength to maintain its position on the steep slope is exposed. In the short term, the risk of additional sliding is moderate to high; in the long term, the risk is high. There is a long term risk that additional slide material could block the creek. This would most likely require a large storm such as a 50 year event. If this should happen, the predominately boulder size material that would reach the creek will leave large voids through which stream flow will occur. However, North Fork Galice Creek could back up behind the block of boulders. As flow would naturally decrease in the spring and summer, the amount of stream water accumulation behind the boulders would diminish, likely to very low amounts.

With no action on the Peavine/Serpentine Springs route, there would be continuing small amounts of erosion and sediment delivery from the road surface and ditches. Erosion and sedimentation would be most evident during large rain on snow events where existing road conditions allow concentrated runoff over bare mineral soil that result, contributing to sedimentation in streams.

Proposed Monitoring: For Alternatives 1, 3, and 4 there is a risk, albeit long term or low risk for each year, that a large mass of rock could break away at the main slide site and result in the blockage of the North Fork of Galice Creek. To provide a better idea of when this may happen and to reduce the risk of damage due to an ensuing washout, 3 to 5 survey prisms would be placed at key points on the slide mass. These points would be in line-of-sight from a stable survey instrument location. Periodic monitoring of the prism locations would occur. Additional checks for movement during and after storms that are roughly 10-year and greater events would also be made. If movement is detected and a massive slide appears to be imminent, the road would be closed until the conditions were re-assessed.

3.2 Botany

3.2.1 Affected Environment

Special Status Plants

This project is within the range of the federally listed endangered lily, *Fritillaria gentneri*. The species is known to occur on nearby federal lands in interface areas between oak woodlands and conifer forests. No suitable habitat exists within the project area because the slide and other work areas along Galice Access road occur in closed canopy Douglas-fir stands, and the Peavine/Serpentine Springs route passes through either a closed canopy Douglas-fir/Ponderosa pine stand or a heavily serpentine influenced ridge line area. Therefore, the project would have no effect on *Fritillaria gentneri* or its habitat.

The Bureau sensitive species *Sophora leachiana* occurs at two locations along the Peavine road (MPs 0.8 and mile 2.3).

The slide location was not surveyed for special status plants following the slide occurrence; however a vascular plant survey was conducted along the Galice Access road in 1995, prior to the slide. No special status plants were located in the area at that time. The Serpentine Springs road, however, does contain habitat for serpentine endemic species. The species listed in the following table are known to occur on serpentine soils in the general area of the Serpentine Springs road.

Table 2: Serpentine Endemic Species near the Project Area		
Species	Status	Life form
<i>Arabis macdonaldiana</i>	Federally endangered	Vascular
<i>Carex gigas</i>	Bureau Assessment	Vascular
<i>Fritillaria glauca</i>	Bureau Assessment	Vascular
<i>Pseudoleskiella serpentinensis</i>	Bureau Assessment	Moss

Vascular and non-vascular plant surveys will be completed by June 1, 2004. If any special status plant sites are located during these surveys, the species and appropriate mitigation measures would be implemented in accordance with the current management recommendations.

Noxious Weeds

Three noxious weed species, *Cirsium arvense* (Canada thistle), *Spartium junceum* (Spanish broom) and *Cytisus scoparius* (Scotch broom) are known to occur in the project area. One additional species, *Centaurea diffusa* (diffuse knapweed), occurs in and around the Hobson Horn gravel stockpile.

Port-Orford Cedar

POC is uninfected in sections 28, 29, 31 and 34. POC is infected along the North Fork Galice Creek. However, for all alternatives, the potential for POC disease spread outside of already infected areas is low, given that PDFs would ensure that infected material remain on site. .

3.2.2 Alternative 1

Sophora leachiana populations along Peavine road may be depressed or lost due to increased road use or maintenance as traffic is routed around the Galice Access road. The long term potential for noxious weed introduction and spread would also increase along the routes due to increased road use.

3.2.3 Alternatives 2 and 4

Sophora leachiana populations along the Peavine road would likely be adversely impacted in the short term due to increased traffic and road maintenance activities. However, PDFs to protect local populations of this species would likely reduce the potential impact and there would be no effect to the overall species abundance. No long term or cumulative impacts to *Sophora leachiana* are anticipated.

3.2.4 Alternative 3

Increased traffic and road maintenance activities could impact the two *Sophora leachiana* populations along Peavine road. However, PDFs would moderate this effect and the overall impact to the viability and abundance of the species would be inconsequential.

3.3 Fisheries

3.3.1 Affected Environment

North Fork Galice Creek supports summer and winter steelhead, and cutthroat trout in the lower 4.1 miles. Coho are present in the lower 0.9 miles and fall Chinook, in the lower 2.0 miles of Galice Creek. The unnamed tributary to North Fork Galice Creek at MP 6.1 contains cutthroat trout for 0.2 miles. (This information was obtained from ODFW surveys.)

ODFW conducted an Aquatic Inventory Survey on North Fork Galice Creek in 1999. In the lower reach of the survey, from the mouth of North Fork Galice Creek to Quartz Creek, the average gradient was 3.3% and rapids were the dominant habitat type. The dominant substrate was cobble, bedrock and gravel. From Quartz Creek to Mill Creek, the average gradient ranged from 4.9% to 6.3%. Rapids and cascades were the dominant habitat types. Cobble, boulder, and bedrock were the dominant substrates. The entire length of North Fork Galice Creek up to the slide is constrained by hill slopes in a steep V-shaped valley. Riparian vegetation consists primarily of deciduous trees, typically alders. Large instream down wood from the mouth of North Fork Galice Creek to the confluence with Mill Creek ranged from 1.7-9.1 m³/100m of stream channel. ODFW considers large woody debris volume less than 20 m³/100m to be undesirable.

The Serpentine Springs/Peavine route consists primarily of ridge top roads. The nearest fish to areas of road improvements are approximately 0.5-1.0 miles downstream.

3.3.2 Alternative 1: No Action

The slide may continue to release boulders into North Fork Galice Creek, potentially forming fish passage barriers. Appreciable deposition of fines would be unlikely.

Existing road conditions on the Peavine/Serpentine Springs route, which include segments of poor drainage and erosion, contributes to sedimentation in streams. However, these streams are located high in the watersheds. The sediment would not likely reach streams with fish presence or fish habitat.

3.3.3 Alternative 2: Galice Access road Slide Removal and Road Reconstruction

Materials that could reach the creek due to blasting will most likely consist of larger rocks and boulders. Minimal amounts of fines are expected to reach the creek due to the coarse composition of the slide material. Large boulders that could block fish passage will be removed by heavy equipment or blasting. Equipment will work from the stream bank to the greatest extent possible without entering the stream. Upon project completion, the stream through the project area will have similar substrate size and amounts as other stream reaches. Short term, highly localized effects may result from in-water blasting. However, those effects would be minimized by following ODFW in-water blasting requirements. Inconsequential, highly localized, short term effects may occur at the project level as a result of slide material reaching the stream but are not expected to impact salmonid production or survival. There would be no short term adverse impacts at the watershed level (5th field) resulting from in-water blasting or removal of the slide material.

It is unlikely that the loss of large and small vegetation due to construction of the temporary road would cause an increase in water temperature in North Fork Galice Creek. Due to shallow soils, only a small amount of fines is expected to reach the creek. The loss of vegetation and the addition of some fines would have inconsequential short and long term adverse effects to fish and fish habitat in North Fork Galice Creek.

All of the Galice Access road reconstruction sites, except for MP 6.0 and 6.1, are located upstream of fish presence or habitat. Any sediment delivery to streams due to culvert replacement would be highly localized, immeasurable, and of short duration. Implementation of the PDFs would minimize short term sediment impacts. This localized, short term sediment increase would not be expected to substantially affect salmonid survival or production. There would be no short term adverse impacts at the watershed level (5th field).

Upgrading culverts to meet 100 year flood criteria would reduce their chance of becoming plugged and the road washing out during a flood event. No long term or cumulative adverse effects (direct or indirect) are anticipated at either the project level (7th field scale) or the watershed level (5th field scale).

None of the proposed activities are anticipated to have any effect on the Fisheries Outstandingly Remarkable Value (ORV) in the Rogue River.

3.3.4 Alternative 3: Peavine/Serpentine Springs Road Reconstruction

The nearest fish presence or habitat to the proposed road improvement is approximately 0.5-1.0 miles. Localized, short term adverse effects may result from the proposed road reconstruction. However, it is highly unlikely sediment would be delivered to downstream fish habitat. There would be no adverse impacts at the watershed level (5th field). Furthermore measures to control erosion and sedimentation during road work will further reduce the possibility of sediment reaching fish habitat (see PDFs). This alternative is not expected to affect salmonid survival or production.

During road reconstruction, cross drain culverts would be replaced and sized according to 100-year flood criteria. Long term beneficial effects would include sediment reduction, reduced road-associated runoff and overall improved water drainage.

This alternative would not have a long term adverse impact on water quality (temperature, sediment), channel condition and dynamics (floodplain conductivity, stream bank condition), flow/hydrology (peak/base flows, drainage network increase), or watershed condition (road density and location, riparian reserve function). Therefore, no long term or cumulative adverse effects are anticipated at either the project level (7th field scale) or the watershed level (5th field scale).

This alternative is not anticipated to have any effect on the Fisheries ORV in the Rogue River.

3.3.5 Alternative 4: Galice Access Road Slide Removal

It is anticipated that additional rock fall will continue even after the slide is removed. Short and long term stream bank stability and riparian vegetation may be adversely impacted by use of

machinery to remove boulders from the creek. Additional rock fall will most likely consist of larger rocks and boulders, not fine material. Large boulders left in place may result in fish passage blocks.

Any sediment delivery to streams due to slide removal would be highly localized, immeasurable, and of short duration. There would be no adverse impacts at the watershed level (5th field). This alternative would not substantially affect salmonid survival or production. No long term or cumulative adverse effects are anticipated at either the project level (7th field scale) or the watershed level (5th field scale).

This alternative is not anticipated to have any effect on the Fisheries ORV in the Rogue River.

3.4 Wildlife

3.4.1 Affected Environment

The project area is located within the Fish Hook / Galice LSR and a designated spotted owl Critical Habitat Unit (CHU #65). One known northern spotted owl site (North Galice Creek) is within one mile of the slide. The Sourgrass spotted owl site is within one mile of the Hobson Horn rock quarry. There are no other threatened or endangered wildlife species in the project area.

Red tree voles (RTVs) are the only S&M species that may occur in the project area. RTV ground surveys were conducted along the proposed access road location. Approximately 30% of the road passes through forest stands that meet the RTV habitat requirements outlined in the October 2002 RTV protocol revision (Version 2.1). Two potential nests were found, but their activity status was undetermined.

The slide area provides potential habitat for special status species such the Del Norte salamander. Other work sites within the project area do not provide suitable habitat for T&E, S&M, or special status species because they are heavily disturbed sites as a result of past projects. The waste disposal site does not provide suitable habitat for T&E, S&M, or special status species.

3.4.2 Alternative 1: No Action

There are no anticipated effects to any wildlife species listed under the Endangered Species Act.

Because the Galice Access road would remain closed due to the slide, alternate routes including the Peavine Mountain road would be used. A portion of this system has been gated and closed in order to maintain Roosevelt elk populations (1982 Peavine Mountain Elk Habitat Management Plan (PMEHMP)). The road closures are designed to restrict vehicular access and limit year round roadside disturbance and poaching. Under the no action alternative, vehicular traffic would increase in the PMEHP area. This could lead to an increased probability of gate breaches within the road closure system, associated resource damage and poaching which would adversely affect local big game populations.

3.4.3 Alternative 2: Galice Access road Slide Removal and Road Reconstruction

Blasting will occur within one mile of the North Galice Creek spotted owl site. However, blasting will not occur during the critical nesting period (March 1 to June 30), so no effects from this activity are anticipated. Temporary road construction would remove approximately one acre of spotted owl dispersal habitat from the designated spotted owl Critical Habitat Unit (CHU # 65). The North Galice Creek spotted owl site is within ¼ mile of the proposed work at MP 6.1. However, noise is not expected to disturb owls at this site because the proposed activities would be more than 105' from the known spotted owl site (USFWS BO, 2003). There are no anticipated effects to other listed T&E species.

While the temporary access road would be routed around the two trees that have RTV nests (nest activity is unknown), approximately one acre of marginal RTV habitat would be removed. The impact of this on RTV habitat in the area is minimal as large blocks of suitable habitat are adjacent to the project area.

Talus habitat for the special status species Del Norte salamander occurs within the proposed temporary road location. Approximately ½ acre of talus would be affected by ground disturbance and canopy reduction. This represents only a small percentage of the talus present outside of the proposed access route and adjacent stands have enough talus to support viable populations, so the effects would be minimal. Direct effects to individuals would also be minimal because the project will occur during the dry season when salamanders are less active and are deeper below the surface. Compared to the other action alternatives, alternative 2 will have the greatest impact to known special status species and their habitats.

Compared to the other action alternatives, alternative 2 will also have the greatest impact to neotropical birds, including ground nesting birds, due to loss of cover and nesting habitat. However, the effects will be negligible because only a small percentage of habitat would be lost from the stand and proposed activities are expected to occur outside of the critical nesting period.

The designated waste disposal site for this alternative is currently not suitable habitat for T&E, S&M, or special status species so no effects are anticipated.

This alternative would have beneficial short and long term effects on big game populations in the Peavine Mountain area due to the reduction of vehicular traffic and the subsequent risk of poaching.

3.4.4 Alternative 3: Peavine/Serpentine Springs Reconstruction

Under Alternative 3, blasting is proposed for the Hobson Horn rock quarry. The Sourgrass spotted owl site would be within one mile of this activity. Seasonal blasting restrictions during the critical nesting period (March 1 to June 30), would help ensure there are no adverse effects from this activity. There are no anticipated effects to other listed T&E species.

Under this alternative, minimal effects to S&M and special status species are expected in areas where excavation would be used to widen the road. A small percentage of these areas provide only marginal habitat; the rest of the areas do not provide suitable habitat due to low canopy cover and prior disturbance. PDFs would further ameliorate the already minimal impacts anticipated.

Short term impacts to big game in the Peavine Mountain area would be expected in the form of displacement during project activities. Long term effects would be expected due to increased traffic through the PMEHMP area. There would be an increased probability of gate breaches where gates exist within the road closure system, associated resource damage, and poaching which could adversely affect local big game populations.

Proposed mitigation measure #1: Install the following gates to reduce restrict vehicular travel on roads tributary to the Serpentine Springs and Peavine roads thereby reducing big game disturbance:

- 34-8-28.1 at the junction with 34-9-1.2
- 34-8-36 at the junction with 34-9-1.2 (upper end of Galice Access Rd)
- 34-8-36 approx. 4.5 miles from the Merlin Galice County Rd (#2400)

3.4.5 Alternative 4: Galice Access road Slide Removal

This alternative would have no affect to T&E, S&M, and special status species because no habitat modifications would occur. Only short term noise disturbance would be expected to affect animals in the immediate vicinity. Under this alternative, the public would periodically need to bypass this segment of the Galice Access road when future slides occur. Use of alternate routes such as Peavine Mountain, which has closed areas, could lead to gate breaches, resource damage and poaching which would affect local big game populations.

3.4.6 Effects Common to All Alternatives

The proposed actions may disrupt some individuals of sensitive species and could cause habitat loss in some cases. However, none of the alternatives are expected to affect long term population viability of any species known to be in the area or lead to the need to list sensitive wildlife species.

3.5 Recreation and Visual Resource Management

3.5.1 Affected Environment

The Galice Access Road, a BLM designated Backcounty Byway, is heavily used by the public including those who raft the wild section of the Rogue River. Private and commercial shuttles transport river goers from Foster Bar over the mountain to Galice, Grave Creek, Almeda Bar, etc. Shuttle services typically use vans and boat trailers. There is one continuous paved alternate route, which is Highway 199 from Grants Pass to Brookings to Highway 101 north up the coast to Gold Beach and Foster Bar.

The slide occurred in a Visual Resource Management (VRM) Class IV area; moderate levels of change to the characteristic landscape are permissible. Management activities may dominate the view and be the major focus of viewer attention.

3.5.2 Alternative 1: No Action

Travel time and distance will increase and the economic impact will affect river users and shuttle services. The general public that used the road before the slide occurred will also be impacted due to increased travel time, distance and road conditions. Furthermore, vehicle damage could increase due to use of less improved roads and safety could be reduced. The Backcountry Byway will effectively be closed to recreationists and those traveling to the coast. VRM Class IV objectives will be met.

3.5.3 Alternative 2: Galice Access road Slide Removal and Road Reconstruction

Recreation: Short term effects for road users will be increased travel time, distance and degraded road conditions (narrow, aggregate surfaced roads) while the slide and other sites are being repaired. In the long term, access will be improved. This proposal will provide a long term fix of the slide area and there will be less potential for the road to close in the future due to sliding.

VRM: In the short term, there will be an increase in rough texture, strong vertical lines and browns/grays and bare soil as the slope is stabilized, the rock wall is built and the temporary ramp is built. Gabions installed at MP 6.0 and 6.1 may be visible and slightly increase the gray colors of the area. Hydromulching at MP 7.5 and plantings on the obliterated temporary access road at the slide will provide green over the browns of the slope. Over the long term, the colors will become more compatible with the surrounding area, form and line will be more conical and vertical as vegetation grows, and texture will become smoother and more consistent with the surrounding area. Visual resource management objectives (Class IV) will be met, as management activities may dominate the view and be the major focus of viewer attention.

3.5.4 Alternative 3: Peavine/Serpentine Springs Reconstruction

Recreation: In the short term, users will be delayed while this route is being improved. Long term effects for road users will be the increased travel time and distance. Portions of the new route will be surfaced with crushed aggregate (compared to the existing Galice Access Road which is chip sealed) which will contribute to wear and tear on vehicles as well as increase travel times. Even with signing, people may still attempt to travel up/down Galice Access Road and get stopped before/after the slide area, which will increase travel time due to back tracking.

VRM: While the road system is being reconstructed, there will be a short term increase in rough texture, horizontal lines and browns/grays and bare soil as the road is widened. Long term, chip sealing and laying aggregate base course will increase the grays/blacks. Over the long term, the colors will be more compatible with the surrounding area, form and line will be more conical and vertical as vegetation grows, and texture will become smoother and more consistent with the surrounding area. Visual resource management objectives (Class IV) will be met, as management activities may dominate the view and be the major focus of viewer attention.

3.5.5 Alternative 4: Galice Access road Slide Removal

Recreation: In this alternative, the area will open more quickly than with Alternative 2, providing access through the slide area for road users. However, the road surface will not be repaired and will

be rough and uneven, slowing travel time and contributing to vehicle wear and tear. In the long term, there will be higher potential for the road to close due to additional sliding as compared to Alternative 2. There are safety concerns with this alternative too. This road is used extensively by shuttle drivers and Backcountry Byway drivers, and there is increased risk of material sliding to the road before or as vehicles pass by, presenting a considerable safety hazard. Additional long term effects will be that if slide material closes the road again, the Peavine/Serpentine Springs reroute will have to be used without the benefit of road improvements or reconstruction. This will increase the travel time over that of Alternative 2 because the roads are have natural or aggregate surfaces and are muddy in the wet season.

VRM: There will be fewer browns and grays following removal of the slide material. Vertical lines would remain the same unless the slope fails again. If so, browns/grays, rough texture and vertical lines will increase. If the slope does not fail, greens may increase as the slide area revegetates. Visual resource management objectives (Class IV) will be met, as management activities may dominate the view and be the major focus of viewer attention.

3.6 Rogue Wild and Scenic River

3.6.1 Affected Environment

The outstandingly remarkable values for the Rogue River, as identified by Congress (HR 1917 September 24, 1968 and HR 1623 July 3, 1968); as described in the *Master Plan for the Rogue River Component of the National Wild and Scenic Rivers System* (USDI 1969); and as described in the 1972 Plan, the *Rogue National Wild and Scenic River, Oregon: Notice of Revised Development and Management Plan* (Federal Register Vol. 37, No. 131, 13408-13416) include natural scenic qualities along the river, fish, and recreation.

As discussed in the fisheries section above, there will be no effect to the fisheries ORV.

3.6.2 Effects Common to All Alternatives

Because the project is outside of the river corridor, there will be no direct or indirect effects on the river corridor's ORVs of natural scenic qualities and recreational opportunities. However, an indirect effect will be the longer shuttle time (for alternatives 2 and 4, this effect will not last beyond the project implementation season) for users of the wild and scenic portion of the Rogue River (see Recreation / VRM effects in the preceding section).

None of the proposed alternatives will be visible from the section of the Galice-Hellgate Backcountry Byway that is in the river corridor (the Merlin-Galice road) or from the river.

3.7 Cultural Resources

3.7.1 Affected Environment

A cultural resource survey was performed on October 28th and December 12th, 2003 by a BLM archaeologist. A possible adit (mine shaft entrance) had been reported on the east side of the slide by a BLM engineer. During the survey it was determined that the adit location had been covered by

slide material. Research of historic and contemporary documents revealed no additional information regarding past or present mining at that location. The nearest mine was located on the north side of the creek approximately ¼ mile east. No other historic or prehistoric cultural resources have been identified.

3.8 Roads and Engineering

3.8.1 Affected Environment

The Galice Access road is 18-20' wide with a bituminous surface treatment (multiple chip-seal). This road has historically been the main route between Galice and the coast. In 1992, summer traffic averaged 175 vehicles per day during the months of July and August. During the normal season of use, April 1 to November 31, traffic averaged 138 vehicles per day or 33,120 vehicles per season. Recreation traffic constitutes 93% of the use with the remaining traffic including business, local residents, timber haul, and mining. Outfitters and guides provide the major portion of recreational use. Traffic continues from December 1 to March 31 depending on snow conditions at higher elevations. This route was designed and is maintained for moderate volumes of mixed traffic and has a design speed of 35 miles per hour. The existing sight and stopping distance and driver comfort for this 9.7 mile segment is good.

In February 2002, a 10,000 cubic yard rock slide blocked the Galice Access road at MP 4.6. In June of 2002, slide removal work consisted of slope scaling, rock blasting and bench construction. Slide removal was completed and the road was reopened to traffic in July of 2002.

During the winter of 2002/2003, rock fall again blocked the road at MP 4.6 with approximately 10,000 cubic yards of material. A short segment of the outside shoulder was also damaged by the slide. Several massive boulders remain at the top of the slope.

The failure is approximately 450' long and 300' high with an estimated volume of displaced rock and soil of 10,000-15,000 cubic yards. Most, if not all, of the failure mass was caught on the road surface. Minor amounts of material may have deposited in North Fork Galice Creek. The majority of the slide material is rock, containing less than 5% soil or fine materials. The failure occurred on a steep, north slope composed of weathered and fractured metamorphic rock overlain by a thin layer of rocky soil. The bedrock dips 48-60° to the northeast. The mechanism of failure is thought to be a shallow translational slide along the contact between the weathered surface rock and the underlying competent bedrock.

Aerial photo review and field observations indicate evidence of at least three past failures of similar size within a ¼ mile of the current slide (Wyllie and Norrish 2004). Various other locations along the Galice Access road also show evidence of past and potential failure, cut slope ravel, road settling and culvert failure (MPs 4.5, 5.0, 6.0, 6.1, 7.0, 7.1, and 7.5).

The 12.65 mile Peavine/Serpentine Springs route was originally designed and constructed for logging activities. The Peavine Road is approximately 16' wide and 6.4 miles long and has a bituminous surface treatment. The Serpentine Springs Road is 14' wide, 6.2 miles long, has an aggregate and natural surface and is in steep, rocky terrain. These single lane roads (with turnouts) were designed for low traffic volumes and low speeds (25 miles per hour). Sight and stopping

distance and driver comfort are poor on the aggregate and natural surface segments and good on the chip sealed segment.

The Hansen Saddle/Chrome Ridge route was originally designed for logging. Total route length is 3.1 miles. This route consists of two road segments. The Hansen Saddle (35-9-1.4) road is 14-16' wide, 2.4 miles long and has a worn aggregate surface. The Chrome Ridge road (35-9-12) is located in steep terrain, is 12' wide, 1.7 miles long and has a rutted road surface varying from aggregate to natural roadbed. Wet areas and springs are in or adjacent to the road near MP 0.1 and 1.0 resulting in water flowing in the roadside ditch and saturating the road subgrade due to poor drainage.

These single lane roads have few turnouts and are designed for low traffic volumes and speeds (25 miles per hour). They were not designed for high volumes of mixed traffic (commercial and recreation). Overall sight and stopping distance as well as driver comfort is poor along Chrome Ridge road and poor to fair along the Hansen Saddle road.

During the summer of 2003, bypass routes suffered rutting and heavy wash boarding (even with additional maintenance such as dust abatement and grading) due to increased traffic volumes. Users reported vehicular damage due to the rough road surfaces.

3.8.2 Summary Comparison of Alternatives

Alternative	Acres Disturbed*	Excavated Volume (cubic yards)	Aggregate Volume (cubic yards)	Asphalt (tons)	Relative Construction Cost
Alt.1: No Action	1.17	0	0	0	Low
Alt. 2: Remove slide and fix road	3.92	39,100 (45,600 Alt. 2a)	1,500	35	High
Alt. 3: Peavine/Serp. Springs route	9.1	48,000	16,000	440	High
Alt. 4: Minimal slide removal	1.17	10,000	0	0	Moderate

* The existing disturbed slide area at M.P. 4.6 was included in the "Acres Disturbed" calculations.

The following table summarizes some impacts to road users. Estimates are based on a one way trip from Merlin-Galice road to the junction of where the Galice Access and Serpentine Springs roads reconnect above the slide. Commercial user fees are estimated and vary from year to year.

Alternative	Travel (miles)	Travel Time (minutes)	Commercial User Fees (\$/MBF)	Fuel Consumption
Alt.1 : No Action	13.4	31	12.40	High
Alt. 2 : Remove slide and fix road	9.7	17	5.82	Low
Alt. 3 Peavine/Serp. Springs route	13.4	23	8.04	Moderate
Alt. 4 Minimal slide removal	9.7	17	5.82	Low

3.8.3 Alternative 1: No Action

All traffic will utilize the alternate road systems to bypass the slide. These road systems were not designed for high volumes of mixed traffic (commercial and recreation), which, combined with rough terrain and road geometry, would result in an increased likelihood of “off the road” accidents. Consequences could be severe if, for example, a shuttle van carrying passengers were to collide with a log truck.

Increased driving time and distance could economically impact users. Commercial user fees for logging would increase \$6.60/MBF. See Table 4 above for more details.

Higher traffic volumes over the Peavine/Serpentine Springs route will require greater road maintenance along the natural and aggregate road segments. Based on 2003 maintenance records, Serpentine Springs Road blading will cost an estimated additional \$13,000/year and for dust abatement, \$18,000/year. Over ten years, this additional maintenance cost would be \$310,000 without considering inflation.

3.8.4 Alternative 2: Galice Access road Slide Removal and Road Reconstruction

There will be an estimated 12% chance of failure in the upper portion of the regraded slide area after the work is completed (Wyllie and Norrish 2004). There's a low probability that this material would slide all at once; more likely, it would consist of small rock fall or ravel events. Annual maintenance would be needed to keep rock fall ditches clear of this material.

For alternative 2a, chance of failure would be lower. The additional cost to remove this material is estimated at \$100,000 (an approximately 10% cost increase).

Most traffic will use the Galice Access road, which presents fewer safety hazards associated with falling rock and would be able to safely accommodate anticipated traffic volumes. Travel time and distance will be reduced, thus providing economic benefits to many users (Table 4).

Slide stabilization and road improvements will decrease needed annual maintenance on the Galice Access road. Furthermore, reduced traffic over the Serpentine Springs Road will decrease maintenance activities and costs discussed in Alternative 1.

3.8.5 Alternative 3: Peavine/Serpentine Springs Reconstruction

Most traffic will use the Peavine/Serpentine Springs route which will be able to safely accommodate anticipated traffic volumes. Travel time and commercial user fees will increase compared to Alternatives 2 or 4, but will represent a time and cost savings when compared to the no action alternative. Maintenance will be reduced compared to the no action alternative.

3.8.6 Alternative 4: Galice Access road Slide Removal

Given a severe storm event and prior wet conditions, there is a greater than 50% probability of annual sliding at the current slide location that could produce tens to hundreds of cubic yards of material that will reach the road (Wyllie and Norrish 2004).

Most traffic will use the Galice Access road. However, a tension crack upslope of the main slide area indicates the mass is in a weakened condition and that there is a potential for another failure. The timing of this event is unpredictable but could be associated with seismic activity or a large storm. Even with the installation of traffic warning signs and concrete barriers, user safety will continue to be a concern. It is likely that the road will be periodically closed due to smaller rock fall events. Road maintenance crews will need to routinely remove rock from the traveled way and traffic could be rerouted for varying lengths of time.

3.9 Mineral Resources

3.9.1 Affected Environment

A placer mining claim is at the site of the slide.

3.9.2 Alternatives 1 and 3

Neither of these alternatives would impact the placer mining claim. The claim would still be accessible by foot and vehicle. Driving time to claims above the slide will increase.

3.9.3 Alternative 2 and 4

The proposed slide removal activity will not impact the placer mining claim. No mining proposal has been received from the mining claimants; therefore, there would be no physical interference to any proposed mining activities.

4.0 Agencies and Persons Consulted

4.1 Public Involvement

Public scoping involved mailing 125 letters to area residents, landowners, county, state and federal officials and other interested parties. On-going discussions have also been held with other federal agencies as well as an engineering consultant. Scoping for the project was also conducted as part of the BLM's interdisciplinary planning process. Six scoping comments were received. Five commentors expressed a preference for Alternative 2. One preferred Alternative 4.

4.2 Availability of Document and Comment Procedures

Copies of the EA will be available for public review in the BLM Medford District Office and online at www.or.blm.gov/Medford/planning. A formal 21 day public comment period will be held following an announcement in the Grants Pass Daily Courier.

Written comments should be addressed to Abbie Jossie, Field Manager, Grants Pass Resource Area, at 3040 Biddle Road, Medford, OR 97504. E-mailed comments may be sent to or110mb@or.blm.gov.

4.3 Agency and Individual Consultation

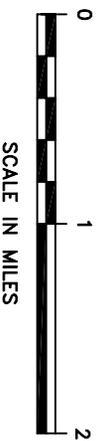
In evaluating the slide condition and potential solutions, the following were consulted:

- David Hilgedorf, Federal Highway Administration, ERFO Coordinator (site visit)
- Wylie & Norrish Rock Engineers Inc.
- Peter Jones, US Forest Service, Geotechnical Engineer
- Oregon Department of Transportation (site visit)
- Jerry Vogt, Oregon Department of Fish and Wildlife, Fish Biologist (site visit)
- Dominic Yballe, US Army Corps of Engineers, Regulatory Branch

Appendix A: Maps



Vicinity Map Gallice Access Road Alternatives



LEGEND

ROAD SURFACE TYPE

- ALTERNATIVE 2
- ALTERNATIVE 3

- 962 COUNTY ROAD

- FOREST SERVICE ROAD

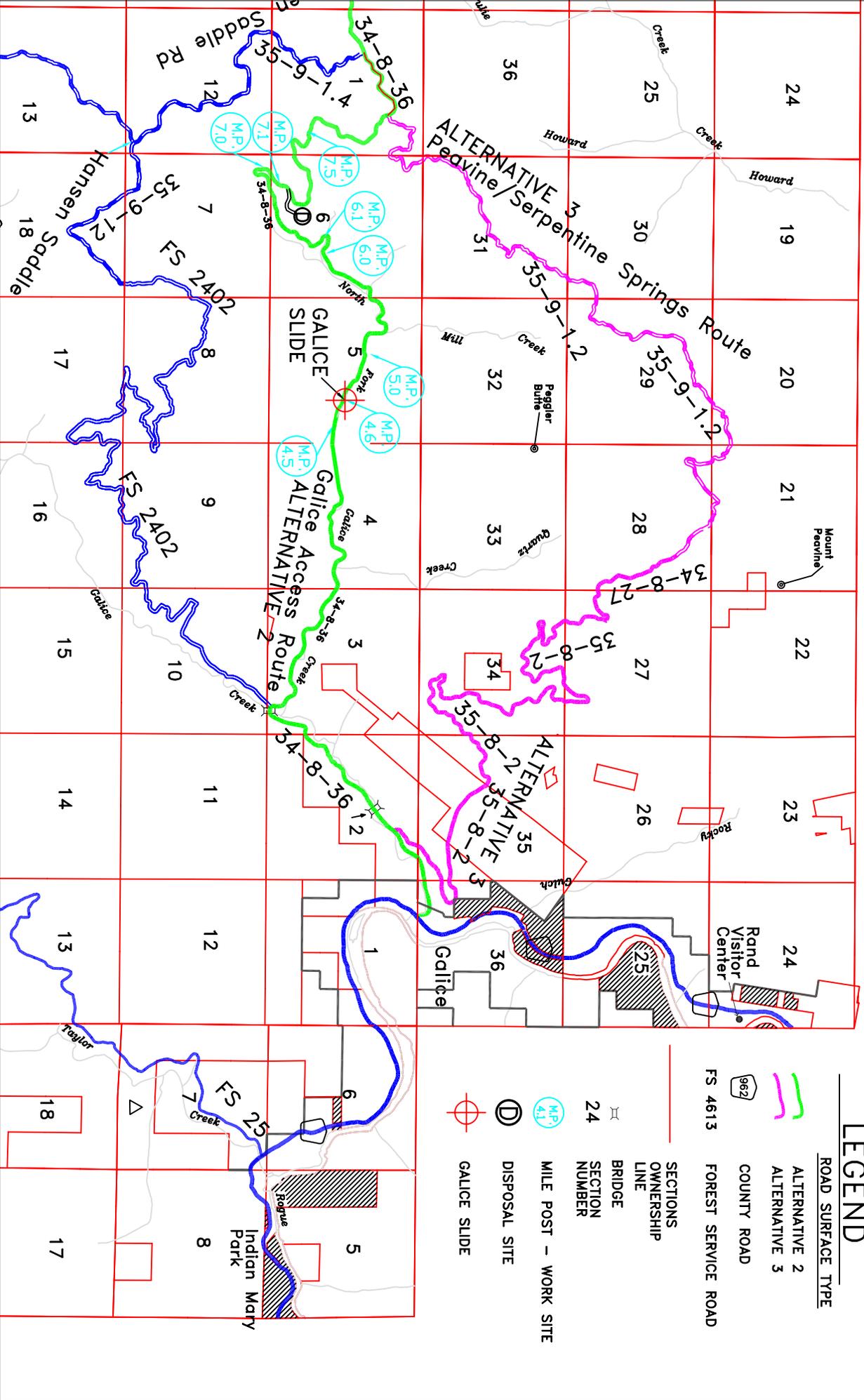
- SECTIONS OWNERSHIP LINE

- BRIDGE
- SECTION NUMBER

- MILE POST - WORK SITE

- D DISPOSAL SITE

- + GALICE SLIDE



PROJECT LOCATION MAP

GALICE ACCESS ROAD ALTERNATIVE 2

LEGEND

ROAD SURFACE TYPE

-  ALTERNATIVE 2
-  ALTERNATIVE 3

-  COUNTY ROAD

-  FS 4613 FOREST SERVICE ROAD

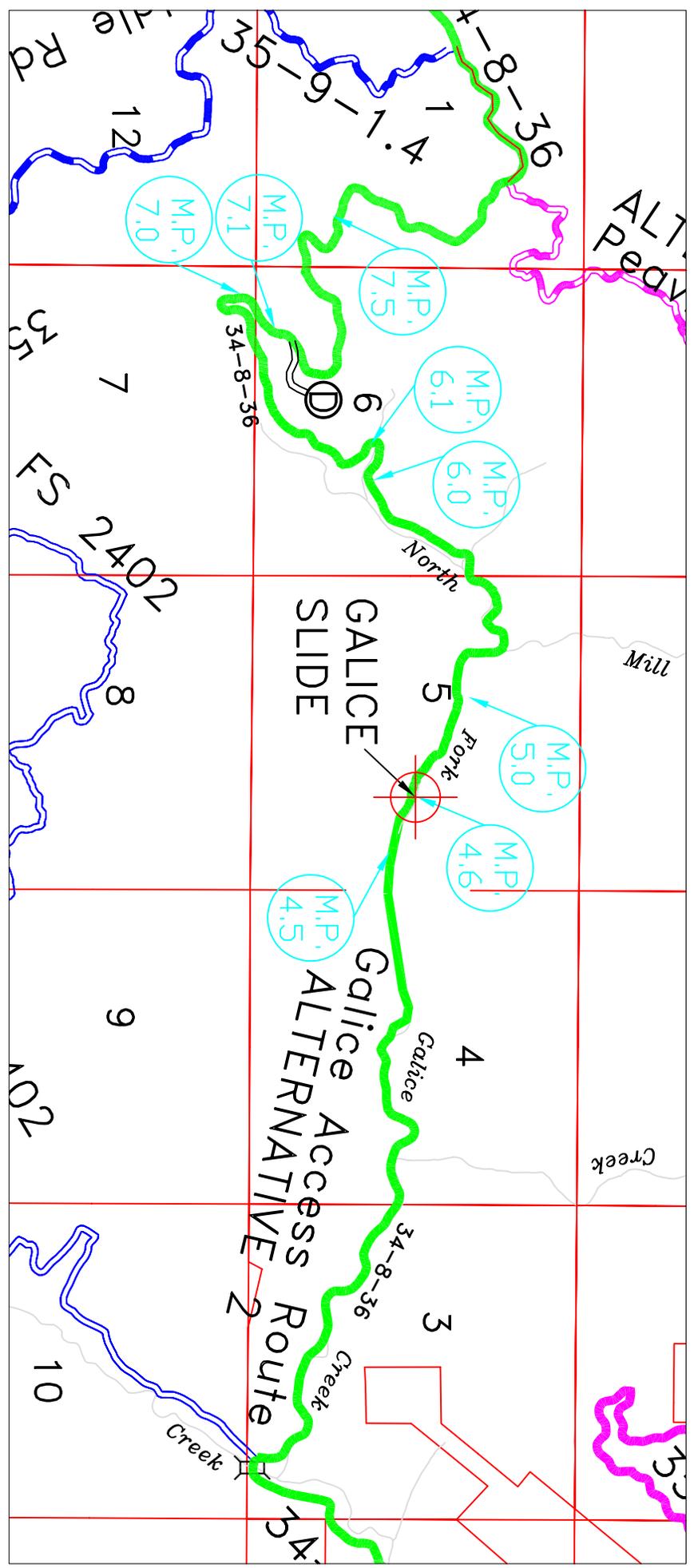
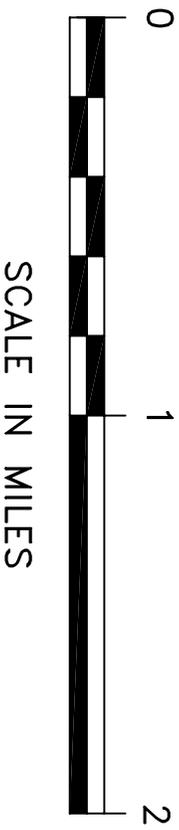
-  SECTIONS OWNERSHIP LINE

-  BRIDGE
-  SECTION NUMBER

-  MILE POST - WORK SITE

-  DISPOSAL SITE

-  GALICE SLIDE



PROJECT LOCATION MAP GALICE ACCESS ROAD ALTERNATIVE 3

LEGEND

ROAD SURFACE TYPE

ALTERNATIVE 2
ALTERNATIVE 3

962 COUNTY ROAD

FS 4613 FOREST SERVICE ROAD

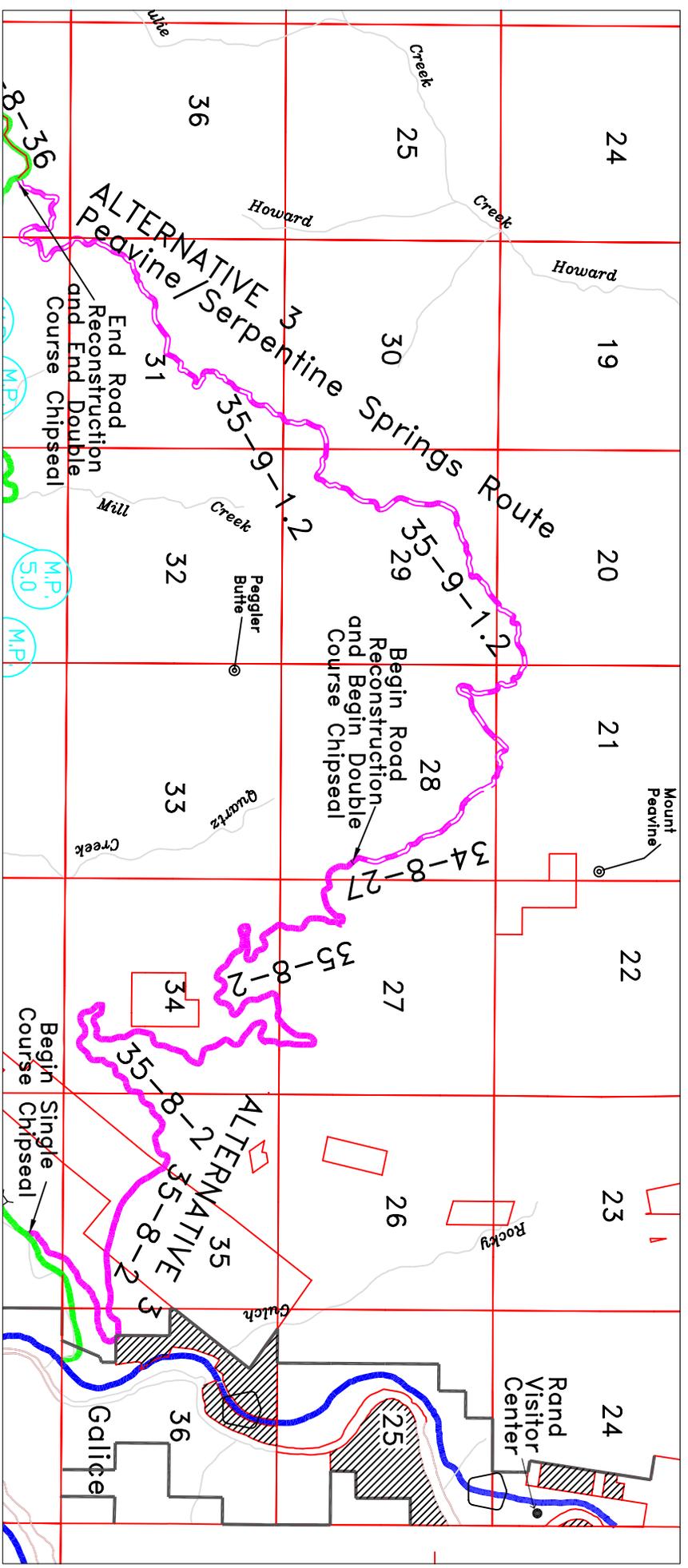
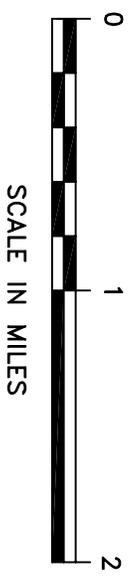
SECTIONS OWNERSHIP LINE

BRIDGE
SECTION NUMBER

MILE POST - WORK SITE

DISPOSAL SITE

GALICE SLIDE



Appendix B: Alternatives Considered but Eliminated from Further Analysis

Equipment Access Routes - The interdisciplinary team looked at potential routes for heavy equipment to access the top of the slide. One route started on BLM road 35-8-6.1. The last half of this road was impassable to vehicles due to road fill failures and would require heavy reconstruction. The route proceeded downhill at approximately a 12% grade for a length of 3,800' and ended above the existing slide. This route crossed the Hansen Saddle Fault where scarps and landslide activity were observed. Due to the apparently unstable ground, road reconstruction needs, and potential resource impacts due to the length of the route, this alternative was eliminated from further analysis.

Road Protection Culvert – An alternative of placing a single lane road through a large culvert structure and allowing the slide debris to pass over the road was considered. This would include 250' of road diversion and 250' of culvert for stream diversion. Due to single lane traffic safety issues, restrictive road width and height clearance issues (it would not accommodate commercial trucks), possible impacts of fish bearing streams, and high construction costs, this alternative was eliminated from further analysis.

Taylor Creek and Chrome Ridge Alternative Routes – The Taylor Creek route and the Chrome Ridge routes were considered as bypass routes. The majority of these routes are owned and managed by other agencies. Agencies were contacted and coordinated with, but due to funding issues this alternative was eliminated from further analysis.

Restoration of the Disposal Site - An alternative of implementing rehabilitation work at the waste disposal site after placement of the slide material was considered. This would have included removing and stockpiling the existing soil and then spreading it on the slide waste material after the site was full. It was concluded that largely due to the low percentage of fines in the slide material, any efforts to create a productive growing site on top of the wasted rock would be futile and that the soil would merely sift through the voids to the bottom of the rock pile or be washed off. Therefore, this alternative was eliminated from further analysis.