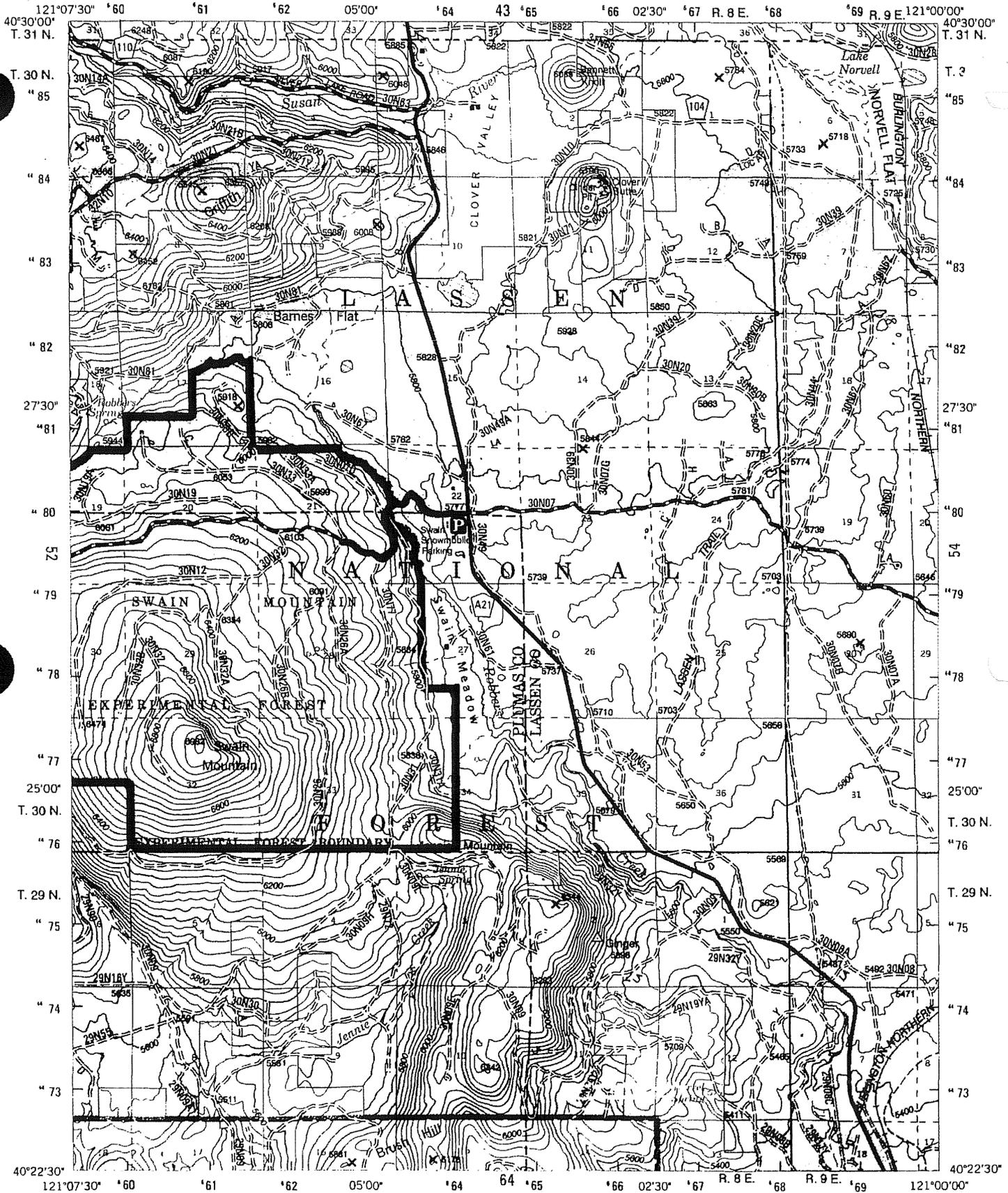
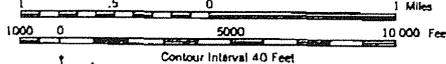


1. Unit Region 5	2. Sub-Unit Lassen 06	3. District, JCC Other, Eagle Lake 58	4. Case Number 7938239
5. Classification of Injured or Property Owner (Check One) <input checked="" type="checkbox"/> Visitor <input type="checkbox"/> Permittee/Personnel <input type="checkbox"/> Contractor/Personnel			
TIME & PLACE OF INCIDENT	6. Date (mm/dd/yyyy) 01/07/2006	7. Time 1240	9. Exact location where incident occurred (example: campground intersection route or trail) Approx. 2.88 East of County Road A21 on FS Road 30N07
	8. Day of Week (Day & Code) 7 Saturday		
PERSONAL INJURY DATA Fill out data for each person injured. (Omit if no injury involved)	10. Name of Injured (Last, First, MI) DeLos Santos, Lydea E		13. Permanent Address 7665 Kilarney Ln. #109 Citrus Heights, CA 95610
	11. Sex (Check one) <input type="checkbox"/> Male <input checked="" type="checkbox"/> Female	12. Age (to nearest birthday) 19	15. Hospital (name & location) Banner Lassen Medical Center Susanville, CA
	14. Extent of Injuries (check one) <input checked="" type="checkbox"/> Not requiring Hospitalization <input type="checkbox"/> Death <input type="checkbox"/> Severe (formal admission to hospital)		
	16. Description of Injury (describe exact nature of injury - compound fracture of upper left arm) Fractured Left Shoulder and bruises to her left hip and left calf.		
PROPERTY DAMAGE DATA \$350 (or more)	17. Owner (name and address) Claude Sherman. 8873 Water Song Roseville, CA 95747	18. Person Causing Damage (name and address) Lydea E. DeLosSantos(Injured)	
	19. Property Description and Extent of Damages 2004 Polaris Snowmobile	20. Estimated Damages (to nearest \$100) @\$ 6,000.00 (total loss)	
DESCRIPTION OF INCIDENT	21. Describe Fully (use reverse or additional sheet if necessary. Investigation report may be attached) See Attached CHP Report		
WITNESS	22. IMPORTANT: Secure the names and addresses of all witnesses, bystanders or persons in the immediate area who may have seen the incident or heard any statement made by the injured.		
	Name	Relationship	Address
INCIDENT CAUSE AND CONDITIONS (Click appropriate block block for each element)	23. Type of Incident	25. Agency of Acciden	26. Activity time of incident
	A. Accident <input checked="" type="checkbox"/>	A. Wild Animal/Reptile <input type="checkbox"/>	A. Camping <input type="checkbox"/>
	B. Assault <input type="checkbox"/>	B. Domesticated Animal <input type="checkbox"/>	B. Picnicking <input type="checkbox"/>
	C. Homicide <input type="checkbox"/>	C. Power Hand Tool <input type="checkbox"/>	C. Hiking <input type="checkbox"/>
	D. Malicious Act <input type="checkbox"/>	D. Manual Hand Tool <input type="checkbox"/>	D. Mountain Climbing <input type="checkbox"/>
	E. Natural Catastrophe <input type="checkbox"/>	E. Bicycle <input type="checkbox"/>	E. Other Forest Work <input type="checkbox"/>
	F. Exposure <input type="checkbox"/>	F. Falling Tree/Limb <input type="checkbox"/>	F. Travelling thru NF <input type="checkbox"/>
	G. Other (Specify) <input type="checkbox"/>	G. Fire Arms <input type="checkbox"/>	G. Sight-seeing in NF <input type="checkbox"/>
		H. Heavy Equipment <input type="checkbox"/>	H. Hunting, Fishing <input type="checkbox"/>
		I. Motor Vehicle, wheeled <input type="checkbox"/>	I. Boating, Canoeing Floating <input type="checkbox"/>
	J. Snowmobile <input checked="" type="checkbox"/>	J. Swimming <input type="checkbox"/>	
	K. Watercraft <input type="checkbox"/>	K. Other water Sport <input type="checkbox"/>	
24. Location	L. Ski Lift <input type="checkbox"/>	L. Snow Skiing <input type="checkbox"/>	
A. Developed Site <input type="checkbox"/>	M. Water <input type="checkbox"/>	M. Snow Mobiling <input checked="" type="checkbox"/>	
B. Undeveloped Site <input type="checkbox"/>	N. Rock <input type="checkbox"/>	N. Other Winter Sport <input type="checkbox"/>	
C. Administrative Site <input type="checkbox"/>	O. Snow <input type="checkbox"/>	O. Cycling <input type="checkbox"/>	
D. Special Use Area <input type="checkbox"/>	P. Work-Play Surface <input type="checkbox"/>	P. Logging <input type="checkbox"/>	
E. Contractor's Area <input type="checkbox"/>	Q. Lightening <input type="checkbox"/>	Q. Operating <input type="checkbox"/>	
F. FS Road System <input checked="" type="checkbox"/>	R. Other (Specify) <input type="checkbox"/>	R. Horseback Riding <input type="checkbox"/>	
G. FS Trail System <input type="checkbox"/>		S. Other (specify) <input type="checkbox"/>	
27. Prepared By (print or type): M. Welsh			
28. Signature	29. Title LEO	30. Date 01/19/2006	



Scale 1:63,360 (1 inch to the mile)



Contour Interval 40 Feet



1° 15' 22 MILLS
16° 289 MILLS

UTM GRID AND 1997 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

HIGHWAYS AND ROAD

- U.S. Primary Highway
- State Secondary Highway
- County Improved Road, Paved
- National Forest Improved Road, Gravel
- Gate Improved Road, Dirt
- Composition Unspecified
- Unimproved Road
- Wheel Drive Road
- National Recreation Trail
- Trail

QUADRANGLE LOCATION

1	2	3
4	5	
6	7	8

ADJOINING 7.5' QUADRANGLES

Produced by the U.S. Geological Survey
Revised by the U.S. Forest Service
Areas outside the National Forest System lands may not have been revised.
Control by USGS and NOS/NOAA
Compiled from aerial photographs taken 1973. Revised from aerial photographs taken 1991 and 1993. Partial field check by U.S. Forest Service 1995.
North American Datum of 1927 (NAD 27) Projection: California coordinate system, zone 1 (Lambert Conformal Conic).
 National Forest System lands. Revised 1997.
This map is not a legal land line or ownership document. Public lands are subject to change and leasing, and may have access restrictions; check with local offices. Obtain permission before entering private lands.

Tim Dedrick

Sept. 11, 2009

Prepared by Tim Dedrick
Lassen NF Civil Engineer

Date

George Kulick
Region 5 Qualified Engineer

Date

Engineering Report:

Lassen National Forest

Almanor Ranger District

Analysis of

National Forest System Road (NFSR)

30N16

for Motorized Mixed Use Designation

Forest: Lassen

District: Almanor

Road Number: 30N16

Road Name: Plantation Gulch

Introduction: This report documents the engineering analysis for a 0.5 mile segment of NFSR 30N16. The “Plantation Gulch” road (aka ‘McGowan Lake’ road) is located on the west slope of the Lassen National Forest (LNF) and connects California State Highway Route 89 with LNF Distinctive Route 17. The entire road is currently managed by LNF as open only to highway-legal vehicles. The study segment was recommended in the LNF Travel Analysis (2008) for an engineering analysis of motorized mixed use. The purpose of this engineering analysis is to investigate the potentials, and associated risks, for transporting both highway-legal vehicles (motor vehicles, including the operators, that are licensed or certified for general operation on public roads within the State) and non-highway-legal vehicles (motor vehicles, including the operators, that are not licensed or certified for general operation on public roads within the State) from the beginning termini to the end termini.

The LNF Travel Analysis identified this road section as a potential connection for recreational off-highway vehicle (OHV) loop opportunities on the adjacent road network, which is currently managed as open to non-highway-legal vehicle use. In the vicinity, a segment of Distinctive Route 17 (NFSR 31N17) was also recommended for an engineering analysis of motorized mixed use. The results can be found in a separate engineering report.

Study Segment road data from the forest transportation atlas:

Beginning Mile Post: 1.4 Ending Mile Post: 1.9

Traffic Service Level: A B C D

Objective Maintenance Level: 1 2 3 4 5

Operational Maintenance Level: 1 2 3 4 5

Maintenance by: **Forest Service (FS)**

Non-Forest Service ROW or jurisdiction? Yes No

Any road use agreements, maintenance agreements, or other encumbrances?

Yes No

Description of agreements or encumbrances:

N/A

Subject to Highway Safety Act? Yes No

Non-highway-legal vehicles currently permitted? Yes No

Would motorized mixed use be consistent with State and local laws?

Yes No

The proposed segment would be consistent with California Vehicle Code (CVC), Combined Use Highways Designation (CVC Division 16.5, Chapter 2, Article 1, Section 38026) if limited to less than 3 consecutive miles on maintenance level 3+ roadways. Based on the CVC and Forest Service Region 5 guidelines, the designation of motorized mixed use requires California Highway Patrol notification prior to designation. Based on the response from the CHP commissioner, the Forest may reconsider the decision to designate MMU and/or may adjust mitigation measures needed for implementation.

Description of road management objectives (RMOs), existing use, and proposed use:

The road currently serves as a collector road and provides a connection between Distinctive Route 17 and California State Highway Route 89.

The road is a single-lane road with turnouts. It provides access to McGowan Lake and the surrounding private land.

NFSR 30N16 has traditionally served administration of the LNF, including fuels and vegetation management, commodity extraction, fire suppression, and recreation.

The road will serve as a primary access route during implementation of the upcoming Gray's Peak project, which will involve vegetation treatments requiring haul vehicle traffic. To accommodate haul vehicles and provide watershed rehabilitation, additional surfacing and reconditioning is planned for the road.

The road is considered a highway by the forest service and is managed in accordance with the Highway Safety Act. The road is managed for passenger car vehicles and is appropriately posted with horizontal route identification markers. Most of the year it is currently managed as open only to highway-legal vehicles; however, when snow-covered the road serves as a cross-country ski trail.

The study segment is proposed for designation of motorized mixed use to allow both highway-legal and non-highway-legal vehicles to utilize the roadway. Operators of any motor vehicle would be required to be in possession of a valid state driver's license.

General Considerations:

All motor vehicle operators need to be cognizant of the applicable state laws, and how they pertain to each age group, vehicle type, and national forest system road classification (see next bullet).

Through authorities delegated by the Secretary, the Forest Service may restrict or control use to meet road management objectives (36 CFR 212.5). The LNF currently manages this road as a highway, in accordance with the Highway Safety Act. The road is therefore subject to the provisions of the California Vehicle Code (CVC) for highways.

State OHV Regulations: any motor vehicle must have a street-legal license plate to operate on highways. To operate on public lands, off of highways, motor vehicles must have either a street-legal license plate or a red sticker or a green sticker. For more information, see the CA State Parks Off-Highway Motor Vehicle Recreation site, available @ <http://ohv.parks.ca.gov/>

California has:

- requirements for ATV safety
- conditions for operating ATVs
- OHV equipment requirements
- OHV operation requirements

Summary of Findings:

Implementing the universal mitigation measures, especially improving sight distance by removing brush, maintaining proper signing, and providing better communication, will reduce crash probability.

Road hazard mitigation should be prioritized regardless of mixed use, along with implementing a comprehensive communication, management, and enforcement plan. Associated implementation costs will depend on the designated allowed

The road is maintained to a standard allowing efficient passenger car through traffic at speeds up to 30 mph for reasonable and prudent drivers on straightaways. Based on speeds and their associated risk for crash severity, designating the road as open only to highway-legal vehicles will provide the lowest crash probability and severity.

Designating the road segment for motorized mixed use, with mitigation, results in a risk assessment of moderate crash probability and high crash severity.

Factors Considered:

1. Operator considerations:

- The current use on NFSR 30N16 appears to be consistent with State law and Forest Service policy for operational maintenance level 3 roads.
- The roadbed is raised and appears to provide for sufficient drainage and passenger car travel.

2. Crash history:

At the time of this analysis, there is no record of a crash on this road.

3. Observed Traffic volume and type:

Non-highway-legal vehicles:

< 12 inch tread width < 50 inch tread width >50 inch tread width

Highway-legal vehicles:

< 12 inch tread width < 50 inch tread width >50 inch tread width

Passenger cars Commercial vehicles Recreation vehicles (RV's)

Vehicle distribution from an observation, 6/25/08 1300 – 1400.

None observed

4. Speed - Anticipated average speed (85th percentile):

The road segments were driven at various speeds to simulate conditions encountered by a reasonable and prudent driver in a passenger car.

30 mph based on observation and engineering judgment.

5. Road surface type:

Improved native aggregate

6. Intersections with other roads and trails:

The sight distances at the intersections are rated fair. The maintenance level 2 roads that enter NFSR 30N16 during the study segment allow for merging at moderate speeds. The intersection with NFSR 29N93 is angled and has reduced visibility for uphill traffic.

7. Other roadway factors:

- Roadway alignment was adequate for the assigned maintenance level. In general, the road was maintained with a traveled way width of one lane with periodic turnouts.
- The segment was mainly situated on a hill, climbing from west to east above Dry Lake.
- Drainage features include an inside ditch with frequent cross-drains. Rolling dips were gradual and required only minor speed reductions.
- Summer and fall seasons will experience peak use, winter and spring can bring snowy and icy conditions along with snowmobile traffic. The road has been used in the winter to bypass SR-89 and LVNP.

8. Roadside conditions:

- Route identification markers, regulatory signs, and warning signs generally meet the standards in MUTCD.
- The embankments were steep, with sections of 2:1 slopes on the fill and cut banks for lengths of up to 15'.
- An inside ditch was constructed throughout most of the study segment.
- Brush and debris encroachment was encountered along the traveled way and shoulders.

9. Risk without mitigation if designating the roadway "open to all motor vehicles":

Segment 1:

Crash probability: High Med Low

Crash severity: High Med Low

Crash probability was assessed based on factors including:

- Operator considerations, traffic volume, rates of speed, alignment, sight distance, traveled way surface and width, drainage, roadside conditions.

Crash severity was assessed based on factors including:

- Roadway geometry (embankments, slopes, horizontal and vertical alignments), speed, traffic types and difference in vehicle sizes, difference in speeds of OHVs and full-size passenger vehicles, potential path and objects encountered if a vehicle left the traveled way.

Alternatives and Mitigation Measures:

Alternatives and mitigation measures are presented to assist with safe road management. They are to be considered, should the agency have the appropriate time, workload, and funding based on competing priorities.

For all situations, the following mitigation measures apply:

- Clear communication and education to the visitors on allowed uses, safe motor vehicle use, and natural resources (informational signing and kiosks, maps, website, etc.).
- Improved route identification signing. Repair and replace devices as needed.
- Clear brush, especially along curves, to improve sight distance.
warning: improved sight distance may result in higher speeds
- Remove of roadside hazards such as boulders, trees, and debris.
- Combine the appropriate enforcement measures with the allowed uses for the road.
- Coordinate with other agencies to improve enforcement consistency.
- Utilize a monitoring program to better determine the appropriate management strategy for the types of use, new technologies, changes in visitor demands, and resource protection measures.

In addition, these mitigation measures would apply to the following alternatives. Although the following alternatives are not comprehensive for the situation, they represent the most likely and/or practical options based on engineering judgment.

Alternative 1: Designate the road segments as "open to highway-legal vehicles only". Continue to manage the road in accordance with maintenance level 4

standards.

- Maintain all roadway signing to MUTCD standards.
- Consider designing new trails, a new trailhead, and/or a new camping area to provide better opportunities for non-highway legal motor vehicle traffic to access the area and the adjacent maintenance level 2 roads.
- Approximate Implementation Cost: \$ 0
- Expected risk:

Crash probability: High Med Low

Crash severity: High Med Low

Alternative 2: Designate the road segment as “open to all motor vehicles”, including highway legal and non-highway-legal vehicles. Continue to maintain the road in accordance with maintenance level 4 standards.

- Improve education and enforcement communication to explain the complexities of various allowed uses on the road.
- Install appropriate signs of a type approved by the Department of Transportation (i.e., “Share the Road”) on and along the highway to identify and communicate the potential hazards related to motorized mixed use.
- Notify the Commissioner of the California Highway Patrol and review their opinion.
- Approximate Implementation Cost: \$ 3500
- Expected risk:

Crash probability: High Med Low

Crash severity: High Med Low

Alternative 3: Designate the road as “open to all motor vehicles”, including highway-legal and non-highway-legal vehicles. Downgrade the road segments in accordance with maintenance level 2 standards. This would require removing culverts and ditches, reconstructing the template and narrowing the roadway.

- Based on the quality of the road, the amount of thru traffic, the Forest Highway status, and the change from the rest of the arterial route, this change would not be consistent with the road management objectives.
- Approximate Implementation Cost: \$ 22,500 (~\$45k per mile)
- Expected risk

Crash probability: High Med Low

Crash severity: High Med Low

Alternative 4: Construct trail segments to allow non-highway-legal vehicles to bypass the road and access adjacent maintenance level 2 roads.

- The terrain in this area would provide for a parallel trail system; however, it would involve significant excavation.
- Construction of short connectors, utilizing the existing maintenance level 2 system would be more cost efficient and would not increase route density substantially. The south side of the road would be the best location to based on topography.
- Approximate implementation cost: \$6,500 (~ \$13000 per mile)

Crash probability: High Med Low

Crash severity: High Med Low

Final Comments:

Signing on national forest system roads will conform to the standards presented in the FS sign and poster guidelines (available @ http://fsweb.wo.fs.fed.us/eng/roads_trails/signs_05/index.htm).

In addition, roads managed under the Highway Safety Act, including the study segments here, must comply with the standards in the MUTCD (available @ <http://mutcd.fhwa.dot.gov/>).

According to the Sign and Poster Guidelines for the Forest Service (2005):

The following priorities are to be used to minimize the potential conflicts of mixed use:

- Provide separate facilities.
- Separate use periods. Roads may be designated for separate use periods such as season, weekday/weekend, or day/night. Notify the public of the locations, effective dates, times, and duration that the roads may or may not be used. Provide appropriate signs as shown in Chapter 3A.
- Manage concurrent use.

Upon designation and prior to allowing any mixed use, the Forest Supervisor is responsible for appropriately signing and mapping the route such that the dual traffic use is clear to all users.

Maps & Photos:

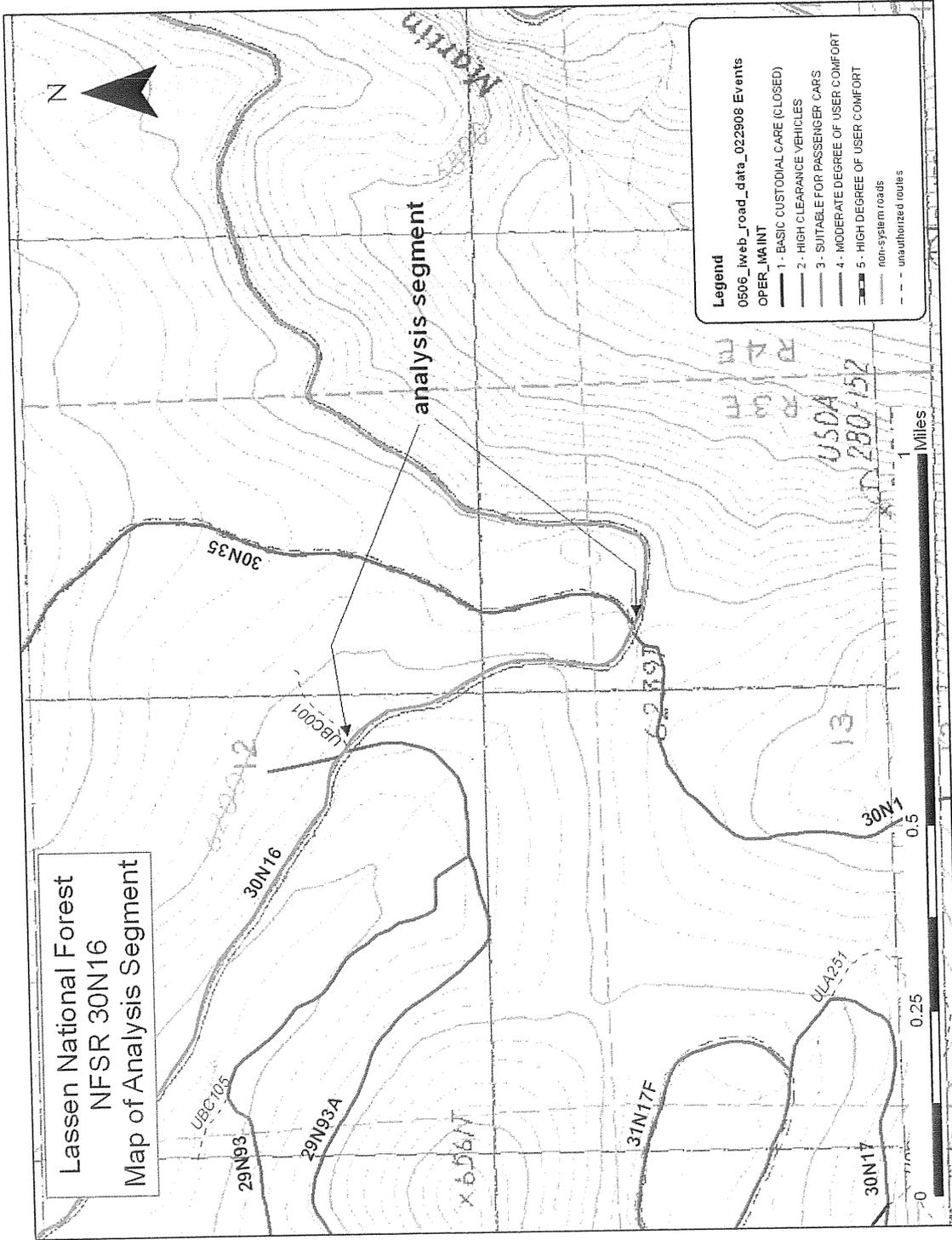


Figure 1: Map of road segment analyzed.



Figure 2: Forest road destination signing, directing through traffic along NFSR 30N16 to SR-89.



Figure 3: Looking towards the study segment, with the intersection of NFSR 29N93 on the right.



Figure 4: Looking down NFSR 29N93, from the intersection with NFSR 30N16.



Figure 5: Looking west along the study segment, NFSR 30N16.

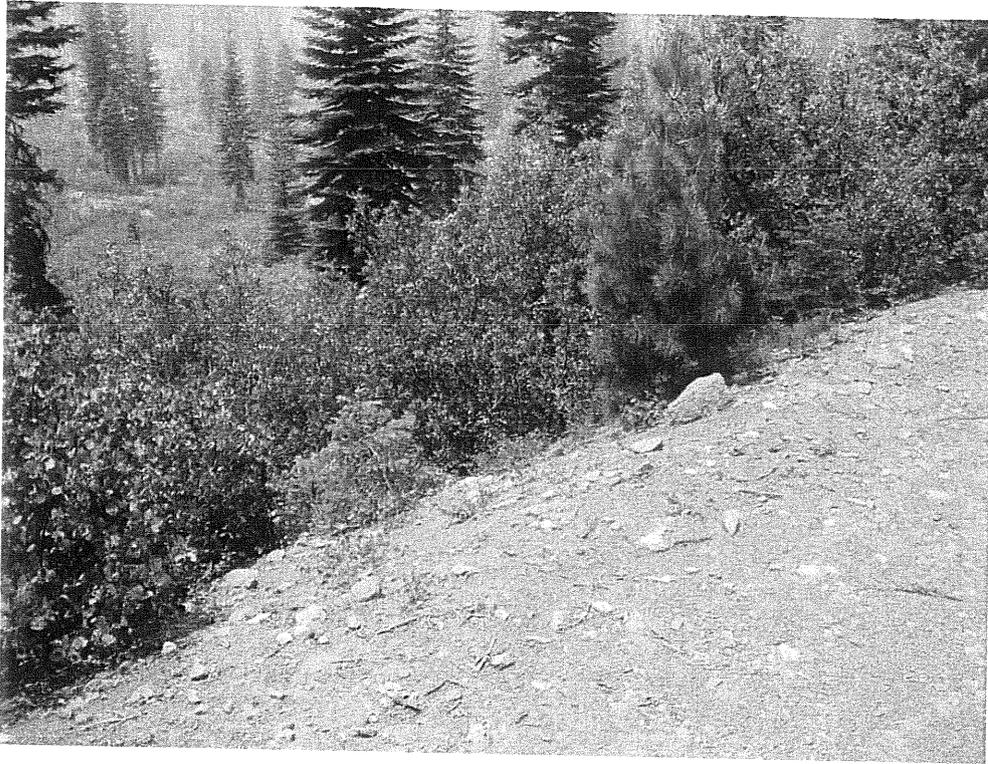


Figure 6: Looking down the fill embankment, NFSR 30N16.



Figure 7: Looking west from the end of the study segment, at the intersection with NFSR 30N35.



Figure 8: The 4-way intersection with NFSR 30N16C (left), NFSR 30N16 (straight), and NFSR 30N35 (right).



Figure 9: Signing on a tree along NFSR 30N16, identifying the winter recreation routing.

Chris Bielecki

Prepared by:
Chris Bielecki, Supervisory Civil Engineer

Engineering Report:

Lassen National Forest

Almanor Ranger District

Analysis of

National Forest System Road (NFSR)

31N17

for Motorized Mixed Use Designation

Forest: Lassen

District: Almanor

Road Number: 31N17

Road Name: Mineral - Viola Highway

Introduction: This report documents the engineering analysis for a 1.9 mile segment of NFSR 31N17. The “Mineral Viola Highway” is located on the west slope of the Lassen National Forest (LNF) and connects California State Highway Route 44 with California State Highway Route 36. The road, in its entirety, is also a forest distinctive route (DR 17) and is a designated Forest Highway, aka “Through Route” (FH 170). Shasta and Tehama counties consider this route an important inter-county connection. This arterial route is one of two routes that connect the eastern portions of these counties. In addition, this route is part of the Lassen Backcountry Byway. The entire road is currently managed by LNF as open only to highway-legal vehicles.

The study segment was recommended in the LNF Travel Analysis (2008) for an engineering analysis of motorized mixed use. The purpose of this engineering analysis is to investigate the potentials, and associated risks, for transporting both highway-legal vehicles (motor vehicles, including the operators, that are licensed or certified for general operation on public roads within the State) and non-highway-legal vehicles (motor vehicles, including the operators, that are not licensed or certified for general operation on public roads within the State) from the beginning termini to the end termini.

The LNF Travel Analysis identified this road section as a potential connection for recreational off-highway vehicle (OHV) loop opportunities on the adjacent road

network, which is currently managed as open to non-highway-legal vehicle use. In the vicinity, a segment of the "Plantation Gulch" road (NFSR 30N16) was also recommended for an engineering analysis of motorized mixed use. The results can be found in a separate engineering report.

Study Segment road data from the forest transportation atlas:

Beginning Mile Post: 15.4 Ending Mile Post: 17.3

Traffic Service Level: A B C D

Objective Maintenance Level: 1 2 3 4 5

Operational Maintenance Level: 1 2 3 4 5

Maintenance by: **Forest Service (FS)**

Non-Forest Service ROW or jurisdiction? Yes No

Any road use agreements, maintenance agreements, or other encumbrances?

Yes No

Description of agreements or encumbrances:

The road is typically used by Lassen Volcanic National Park personnel as a bypass to SR-89, especially during the off-season when access through the park is blocked by snow.

Subject to Highway Safety Act? Yes No

Non-highway-legal vehicles currently permitted? Yes No

Would motorized mixed use be consistent with State and local laws?

Yes No

The proposed segment would be consistent with California Vehicle Code (CVC), Combined Use Highways Designation (CVC Division 16.5, Chapter 2, Article 1, Section 38026) if limited to less than 3 consecutive miles on maintenance level 3+ roadways. Based on the CVC and Forest Service Region 5 guidelines, the designation of motorized mixed use requires California Highway Patrol notification prior to designation. Based on the response from the CHP commissioner, the Forest may reconsider the decision to designate MMU and/or may adjust mitigation measures needed for implementation.

Description of road management objectives (RMOs), existing use, and proposed use:

The road currently serves as an arterial road and provides the primary access to NFS lands between SR-36 and SR-44 and west of Lassen Volcanic National Park (LVNP). The road serves as the principal connection between the towns of Viola and Mineral, and as a lower-elevation alternate to SR-89. NFSR 31N17 provides access to a subdivision near Brokeoff Meadows. The road is a designated Forest Highway and is also included in California DOT strategic planning.

It has traditionally served administration of the LNF, including fuels and vegetation management, commodity extraction, fire suppression, and recreation. It also accommodates administrative traffic from LVNP.

The road provides the primary access to the upcoming Gray's Peak project area, which will involve vegetation treatments requiring haul vehicle traffic.

The road is considered a highway by the forest service and is managed in accordance with the Highway Safety Act. The road is managed for passenger car vehicles and is appropriately posted with horizontal route identification markers. Most of the year it is currently managed as open only to highway-legal vehicles; however, when snow-covered the road serves as an ungroomed trail for both skiers and snowmobiles.

The study segment is proposed for designation of motorized mixed use to allow both highway-legal and non-highway-legal vehicles to utilize the roadway. Operators of any motor vehicle would be required to be in possession of a valid state driver's license.

General Considerations:

All motor vehicle operators need to be cognizant of the applicable state laws, and how they pertain to each age group, vehicle type, and national forest system road classification (see next bullet).

Through authorities delegated by the Secretary, the Forest Service may restrict or control use to meet road management objectives (36 CFR 212.5). The LNF currently manages this road as a highway, in accordance with the Highway Safety Act. The road is therefore subject to the provisions of the California Vehicle Code (CVC) for highways.

State OHV Regulations: any motor vehicle must have a street-legal license plate to operate on highways. To operate on public lands, off of highways, motor vehicles must have either a street-legal license plate or a red sticker or a green sticker. For more information, see the CA State Parks Off-Highway Motor Vehicle Recreation site, available @ <http://ohv.parks.ca.gov/>

California has:

- requirements for ATV safety
- conditions for operating ATVs
- OHV equipment requirements
- OHV operation requirements

Summary of Findings:

Implementing the universal mitigation measures, especially improving sight distance by removing brush, maintaining proper signing, and providing better communication, will reduce crash probability.

Road hazard mitigation should be prioritized regardless of mixed use, along with implementing a comprehensive communication, management, and enforcement plan. Associated implementation costs will depend on the designated allowed use for the road.

The road is managed and identified as a forest distinctive route, a category used for significant, highly traveled routes through the Forest. Distinctive routes are passable by passenger cars during the normal season of use, and the appropriate travel management strategy is to encourage passenger car travel.

The road is maintained to a standard allowing efficient passenger car through traffic at speeds up to 35 mph for reasonable and prudent drivers on straightaways.

Designating the road segment for motorized mixed use, with mitigation, results in a risk assessment of moderate crash probability and high crash severity.

Factors Considered:

1. Operator considerations:

- Based on engineering judgment and experience/observation on other national forest management units, the LNF has an above average standard of road. Culverts are common drainage features on maintenance level 2 roads and standard on maintenance level 3 roads. Often roads on this national forest could be classified one maintenance level higher.
- Allowing non-highway-legal vehicles to use the road segments can involve both non-highway-legal equipment and non-licensed operators, including children.
- In California, children under the age of 18 must take a prescribed safety course, be under direct supervision of an adult possessing appropriate safety certificate, or possess the appropriate safety certificate in order to operate an ATV. In addition, children under the age of 14 cannot operate an ATV without direct supervision by parent, guardian, or authorized adult.
- The current use on NFSR 31N17 appears to be consistent with State law and Forest Service policy for operational maintenance level 4 roads.
- Non-motorized traffic was observed on the road (mountain bikes).
- The roadbed is raised and appears to provide for sufficient drainage and user comfort.

2. Crash history:

At the time of this analysis, there is no record of a crash on this road.

3. Observed Traffic volume and type:

Non-highway-legal vehicles:

< 12 inch tread width < 50 inch tread width >50 inch tread width

Highway-legal vehicles:

< 12 inch tread width < 50 inch tread width >50 inch tread width

Passenger cars Commercial vehicles Recreation vehicles (RV's)

Vehicle distribution from an observation, 6/25/08 1130 – 1300.

Passenger cars: 2 (1 administrative)

Fire Engines: 2

Mountain Bikers: 2

4. Speed - Anticipated average speed (85th percentile):

The road segments were driven at various speeds to simulate conditions encountered by a reasonable and prudent driver in a passenger car.

35 mph based on observation and engineering judgment.

5. Road surface type:

crushed rock aggregate

traveled way width varies from 15' to 20'

6. Intersections with other roads and trails:

The study segment connects a variety of NFS roads to state highways. The sight distances at these intersections are rated fair. NFSR 31N45 is also signed with private timber company identification("F line")

7. Other roadway factors:

- Roadway alignment was adequate for the assigned maintenance level. In general, the road was maintained with a traveled way width of 15' – 20'.
- Drainage features include an inside ditch with frequent cross-drains. Rolling dips were gradual and required only minor speed reductions.
- The embankments were gradual, with short sections of 2:1 slopes on the

- Summer and fall seasons will experience peak use, winter and spring can bring snowy and icy conditions along with snowmobile traffic. The road has been used in the winter to bypass SR-89 and LVNP.

8. Roadside conditions:

- Route identification markers, regulatory signs, and warning signs generally meet the standards in MUTCD.
- An inside ditch was constructed throughout most of the study segment. This was built with a depth up to 2 feet.
- Minor logs and debris encroachment was encountered along the traveled way and shoulders.
- Brush (alder) greatly limited visibility in one curve location (see photo).
- Trees < 40" lined the shoulders in sections.
- A dispersed campsite is located along the study segment near Dry Lake.

9. Risk without mitigation if designating the roadway "open to all motor vehicles":

Segment 1:

Crash probability: High Med Low

Crash severity: High Med Low

- Crash probability was assessed based on factors including:
- Operator considerations, traffic volume, rates of speed, alignment, sight distance, traveled way surface and width, drainage, roadside conditions.
- Crash severity was assessed based on factors including:
- Roadway geometry (embankments, slopes, horizontal and vertical alignments), speed, traffic types and difference in vehicle sizes, difference in speeds of OHVs and full-size passenger vehicles, potential path and objects encountered if a vehicle left the traveled way.

Alternatives and Mitigation Measures:

Alternatives and mitigation measures are presented to assist with safe road management. They are to be considered, should the agency have the appropriate time, workload, and funding based on competing priorities.

For all situations, the following mitigation measures apply:

- Clear communication and education to the visitors on allowed uses, safe motor vehicle use, and natural resources (informational signing and kiosks, maps, website, etc.).
- Improved route identification signing. Repair and replace devices as needed.
- Re-establish, define, and maintain a consistent traveled way width, utilize existing wider portions as turnouts.
- Clear brush, especially along curves, to improve sight distance. On certain curves, the cut slope can also be excavated and laid back.
warning: improved sight distance may result in higher speeds
- Remove of roadside hazards such as boulders, trees, and debris.
- Combine the appropriate enforcement measures with the allowed uses for the road.
- Coordinate with other agencies to improve enforcement consistency.
- Utilize a monitoring program to better determine the appropriate management strategy for the types of use, new technologies, changes in visitor demands, and resource protection measures.

In addition, these mitigation measures would apply to the following alternatives. Although the following alternatives are not comprehensive for the situation, they represent the most likely and/or practical options based on engineering judgment.

Alternative 1: Designate the road segments as “open to highway-legal vehicles only”. Continue to manage the road in accordance with maintenance level 4 standards.

- Maintain all roadway signing to MUTCD standards.
- Consider designing new trails, a new trailhead, and/or a new camping area to provide better opportunities for non-highway legal motor vehicle traffic to access the area and the adjacent maintenance level 2 roads.
- Approximate Implementation Cost: \$ 0
- Expected risk:

Crash probability: High Med Low

Crash severity: High Med Low

Alternative 2: Designate the road segment as “open to all motor vehicles”, including highway legal and non-highway-legal vehicles. Continue to maintain the road in accordance with maintenance level 4 standards.

- Improve education and enforcement communication to explain the complexities of various allowed uses on the road.
- Install appropriate signs of a type approved by the Department of Transportation (i.e., “Share the Road”) on and along the highway to identify and communicate the potential hazards related to motorized mixed use.
- Notify the Commissioner of the California Highway Patrol and review their opinion.
- Approximate Implementation Cost: \$ 4000

This does not account for the additional increase in long-term annual maintenance costs associated with maintaining these critical safety corridors.

- Expected risk:

Crash probability: High Med Low

Crash severity: High Med Low

Alternative 3: Designate the road as “open to all motor vehicles”, including highway-legal and non-highway-legal vehicles. Downgrade the road segments in accordance with maintenance level 2 standards. This would require removing culverts and ditches, reconstructing the template and narrowing the roadway.

- Based on the quality of the road, the amount of thru traffic, the Forest Highway status, and the change from the rest of the arterial route, this change would not be consistent with the road management objectives.
- Approximate Implementation Cost: \$ 89,000 (~\$45k per mile)
- Expected risk

Crash probability: High Med Low

Crash severity: High Med Low

Alternative 4: Construct trail segments to allow non-highway-legal vehicles to bypass the road and access adjacent maintenance level 2 roads.

- The terrain in this area would provide for a feasible parallel trail system. The west side of the road would be the best location to avoid wet areas associated with the Dry Lake area.
- Approximate implementation cost: \$11,000 (~ \$5500 per mile)

This does not include the planning, agreements with private landowners, and long term maintenance costs associated with a new NFS trail.

Crash probability: High Med Low

Crash severity: High Med Low

Final Comments:

Signing on national forest system roads will conform to the standards presented in the FS sign and poster guidelines (available @ http://fsweb.wo.fs.fed.us/eng/roads_trails/signs_05/index.htm).

In addition, roads managed under the Highway Safety Act, including the study segments here, must comply with the standards in the MUTCD (available @ <http://mutcd.fhwa.dot.gov/>).

According to the Sign and Poster Guidelines for the Forest Service (2005):

The following priorities are to be used to minimize the potential conflicts of mixed use:

- Provide separate facilities.
- Separate use periods. Roads may be designated for separate use periods such as season, weekday/weekend, or day/night. Notify the public of the locations, effective dates, times, and duration that the

roads may or may not be used. Provide appropriate signs as shown in Chapter 3A.

- Manage concurrent use.

Upon designation and prior to allowing any mixed use, the Forest Supervisor is responsible for appropriately signing and mapping the route such that the dual traffic use is clear to all users.

Maps & Photos:

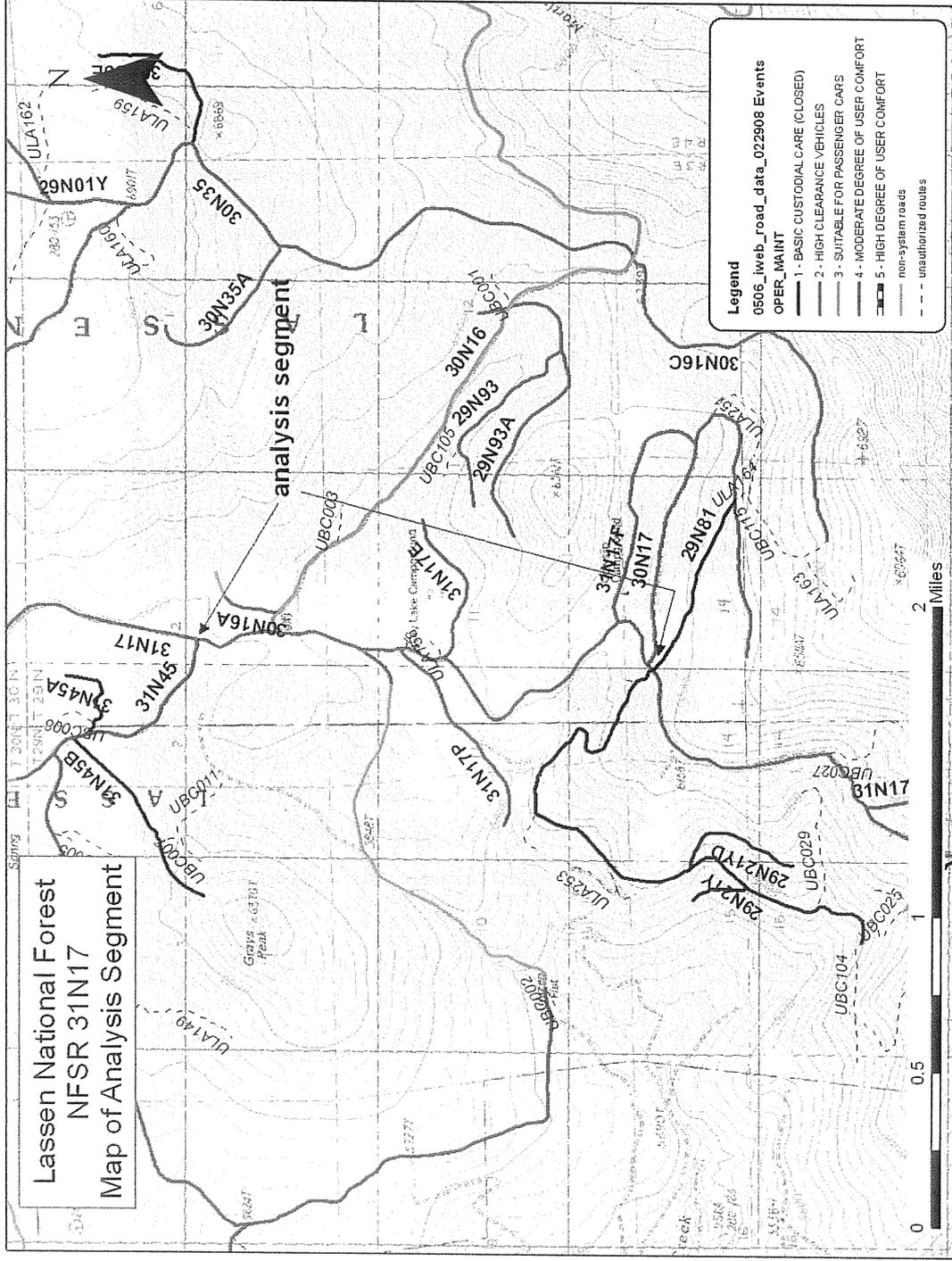


Figure 1: Map of road segments analyzed.



Figure 2: Signing at the south termini of NFSR 31N17.



Figure 3: Looking north at NFSR 31N17, with the intersection of 29N21Y on the left--marking the beginning of the analysis segment.



Figure 4: Curve in the analysis segment, NFSR 31N17.



Figure 5: Curve with low visibility, NFSR 31N17.



Figure 6: End of straightaway, NFSR 31N17.



Figure 7: S-curve and intersection with unauthorized route that accesses dispersed campsite on Dry Lake.



Figure 8: Destination signing, showing connectivity with State highways.



Figure 9: Typical section, NFSR 31N17.

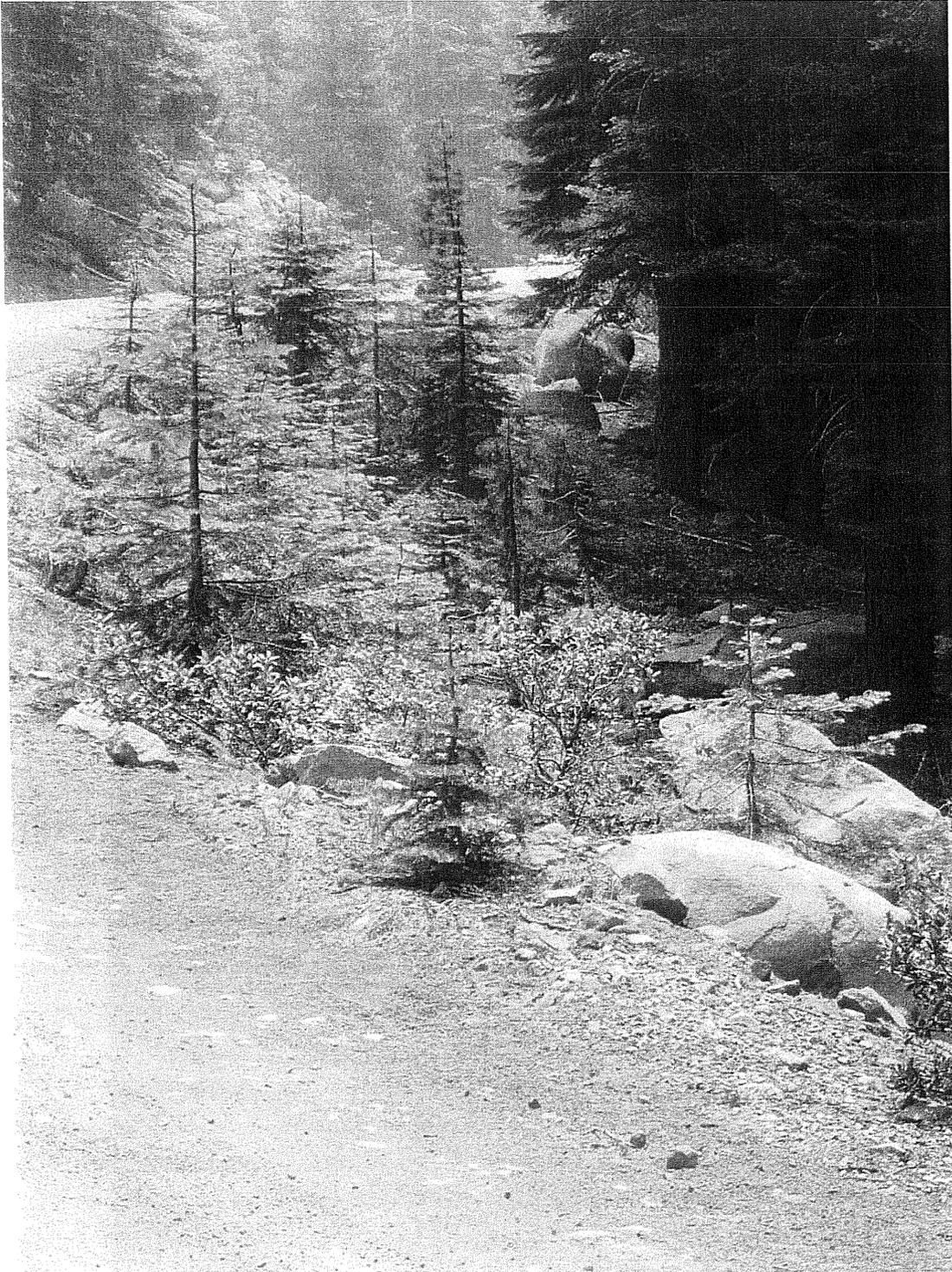


Figure 10: Inside curve showing fill slope and boulders.



Figure 11: Looking back at the analysis segment from the north end, with NFSR 31N45 on the right.

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