

Engineering Report:

Lassen National Forest

Eagle Lake Ranger District

Analysis of

National Forest System Road (NFSR)

32N09

#32N09A

for Motorized Mixed Use Designation

Forest: Lassen

District: Eagle Lake

Road Number: 32N09/A Road Name: Bogard Buttes/Cone Lake

Introduction: The 32N09/A Road segments studied are located on the west side of Lassen National Forest (LNF) in the Bogard Buttes quadrangle.

NFSR 32N09 ML3 begins at the intersection with 32N10 in Section 14 of said quadrangle and trends west by north along the northern flanks of the four Bogard Buttes, meanders past Lost Spring and Pole Springs in the Prospect Peak quadrangle and within ¼ mile of the northern boundary of the Lassen Volcanic National Park, then intersects with a terminus at 32N21, the Butte Lake Campground Road. The approximate road length is approximately 6.0 miles.

Segment 1 (32N09) starts at approximate road mile 1.00 at the intersection with 32N10 and intersects with 32N09A and 32N09A1 for a distance of approximately 1.00 miles.

Segment 2 (32N09A) starts at the intersection with 32N09 and intersects with 32N09A1 for a distance of approximately 0.25 miles.

These roads are currently managed by LNF as open only to highway-legal vehicles. The road segments analyzed were 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 operating/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) on 32N09 / ML3. The LNF Travel Analysis (June 2008) identified this road section as a connector for recreational off-highway vehicle (OHV) loop opportunities on the adjacent maintenance level two road network, of which a portion is currently managed as open to non-highway-legal vehicle use.

Study Segment road data from the forest transportation atlas:

Segment 1: Beginning Mile Post: 1.00 Ending Mile Post: 2.00

32N10 to 32N09A

Traffic Service Level: ☐ A ☐ B ☒ C ☐ D

Objective Maintenance Level: ☐ 1 ☐ 2 ☒ 3 ☐ 4 ☐ 5

Operational Maintenance Level: ☐ 1 ☐ 2 ☒ 3 ☐ 4 ☐ 5

Segment 2: Beginning Mile Post: 0.00 Ending Mile Post: 0.25

32N09 to 32N09A1

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:

No agreements are documented.

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

Description of State California Vehicle Code and Forest Service Directives:

According to California Vehicle Code section 38026, *Designating Highways: Combined Use*, off-highway operators on a Combined Use highway must be in possession of a valid driver's license.

Based on the Forest Service Directives and Travel Management purpose and need, to allow all motor vehicles on this segment with a designation of motorized mixed use for a segment or segments with a cumulative distance of 3 miles or less could be consistent with state and federal laws and directives with appropriate mitigation for safety concerns.

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

Road 32N09/A / ML3 currently encourages use as an objective ML3 and operational ML3 collector road and functions as a forest highway connecting the 32N10 road to the Hat Creek Ranger District, tree seed plantations, and defensible fuel profile zones.

These forest highways connects to all weather asphalt surfaced State Highway 44 via 32N21 the Butte Lake Campground road and provides ingress and egress to a myriad of defensible fuel profile zones – DFPZ's, forest plan units for timber harvesting, and wildlife management areas.

32N09 is utilized by forest personnel for ingress and egress to Defensible Fuel Profile Zones – DFPZ's and their associated vegetation management and fire suppression functions, for wildlife management, and for recreation access to a forest destination, Butte Lake Campground.

Most of the year it is currently managed as open only to highway legal traffic. The road is considered a highway by the forest service and is managed in

accordance with the Highway Safety Act.

The proposed use for this segment of 32N09/A / ML3 identified in this analysis is to authorize motorized mixed vehicle class use. The proposal is to utilize the ML3 road segment to connect adjacent ML2 roads into a loop for off highway motorized vehicle use.

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 mitigation measures, especially improved road / safety signing and comprehensive public education / outreach, will reduce crash probability.

Road mitigation should include implementing a comprehensive communication, management, and enforcement plan. Associated implementation costs will depend on the designated allowed use for the road.

NFSR road 32N09/A are an observed 1+ lane operational maintenance level 3 standard throughout its extent.

The road is maintained to a standard allowing efficient passenger car through traffic at speeds up to 40 mph for reasonable and prudent drivers on straightaways. Based on speeds and their associated risk for crash severity, designating the road segments as open only to highway-legal vehicles will provide the lowest crash probability and severity. Crash severity is determined by the dynamics of a vehicles speed or combined speeds, mass, and configurations.

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. The Lassen is not "typical" in its road system's adherence to maintenance levels. These roads are an objective ML3 and an operational ML3. It provides forest commodity haul and fire suppression access which necessitates a high level ingress/egress access road for the DOT Class 8 (26,001 – 33,000 GVWR) trucks that use it.
- The objective level of this road is classified as a 3, and the operational level is a ML3. This provides for all-weather (during fire season May to October) fire staffing access and fire vehicle emergency access. The objective of the road is to provide access for commodity haul, wildlife management, emergency fire detection and suppression response.
- Allowing non-highway-legal vehicles to use the road segment 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 a licensed parent, guardian, or authorized adult.
- The Lassen National Forest currently manages this road as a highway, in accordance with the Highway Safety Act. The road is subject to the provisions of the California Vehicle Code (CVC) for highways.
- The current use on NFSR 32N09/A appears to be consistent with state law and forest policy for operational maintenance level 3 roads.

2. Crash history:

There are no reported motor vehicle crashes on these roads.

3. 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)

2 civilian motor vehicles were observed along the 32N09 road during the field observation.

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

The speed greatly varies, depending on the roadway conditions. The 85th percentile would be estimated at: 40 mph.

5. Road surface type:

The road has a combination of native crushed rock aggregate and volcanic cinder surfacing. The majority of the traveled way is constructed upon a raised roadbed and the road has drainage ditches, singular culverts, and ditch-relief culverts. The road is approximately 16'-20' wide. The road traveled way is very dry and contains many fine aggregate components and produces prodigious quantities of dust when driven over. Road shoulders are soft and unconsolidated.

6. Intersections with other roads and trails:

Road segment 1 intersects with the following forest roads.

- 31N83
- 32N60
- 32N09L
- 32N09A
- 32N09A1

Road segment 2 intersects with the following forest roads.

- 32N09
- 32N09A1

The maintenance level 2 roads have historically provided forest management access, fire suppression access, commodity haul, forest grazing access, and hunting and firewood gathering access. The proposed MMU intersections of 32N09 /ML3 may result in higher traffic merging speeds.

7. Other roadway factors:

- Roadway alignment was adequate for the assigned maintenance level. Alignment provides for vehicle closing speeds of approximately 80 mph.
- The road was maintained with a traveled way width of 16'-20".
- Raised roadbed creates soft unconsolidated shoulders. Emergency vehicle run-out among numerous lava rocks, Juniper trees, mixed conifer trees, and brush may lead to loss of control for vehicle operators and/or collisions with immobile objects.
- The road provides administrative access for commodity haul, fire prevention patrol access, fire suppression access, wildlife management,

and recreation. Summer and fall seasons will experience peak use, winter and spring can bring snowy and icy conditions.

8. Roadside conditions:

- The segments run through high elevation, 5,000 ft., open conifer forest, open Juniper, brush, native grass and lava rock forest land.
- Cross slope is 0-2%.
- Grade is 0-2%.
- Pine and Juniper trees are $\leq 18''$ and numerous lava ejecta rocks.
- Emergency run-out is limited.

9. Risk without mitigation:

Crash probability: ☒ High ☐ Med ☐ Low

Crash severity: ☒ High ☐ Med ☐ Low

Crash probability was assessed based on:

- Traffic volume, dust, rates of speed, alignment, sight distance, traveled way surface and width.

Crash severity was assessed based on:

- Roadway geometry (including embankments), difference in vehicle sizes, difference in speeds of OHVs and full-size passenger vehicles.

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 and safety signing. Repair and replace devices as needed.
- Clear brush, especially along curves, to improve sight distance.
- 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". Manage the road in accordance with maintenance level 3 standards.

- Maintain all roadway signing to MUTCD standards.
- Consider designing new road-parallel 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 segments as “open to all motor vehicles”, including highway-legal and non-highway-legal vehicles.

- Recognize that this situation would involve different allowed uses and would complicate communication and enforcement.
- 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 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

Final Comments:

Signing on national forest system roads should 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:

Tim Dedrick

July 29, 2009

Prepared by Tim Dedrick
Lassen NF Civil Engineer

Date

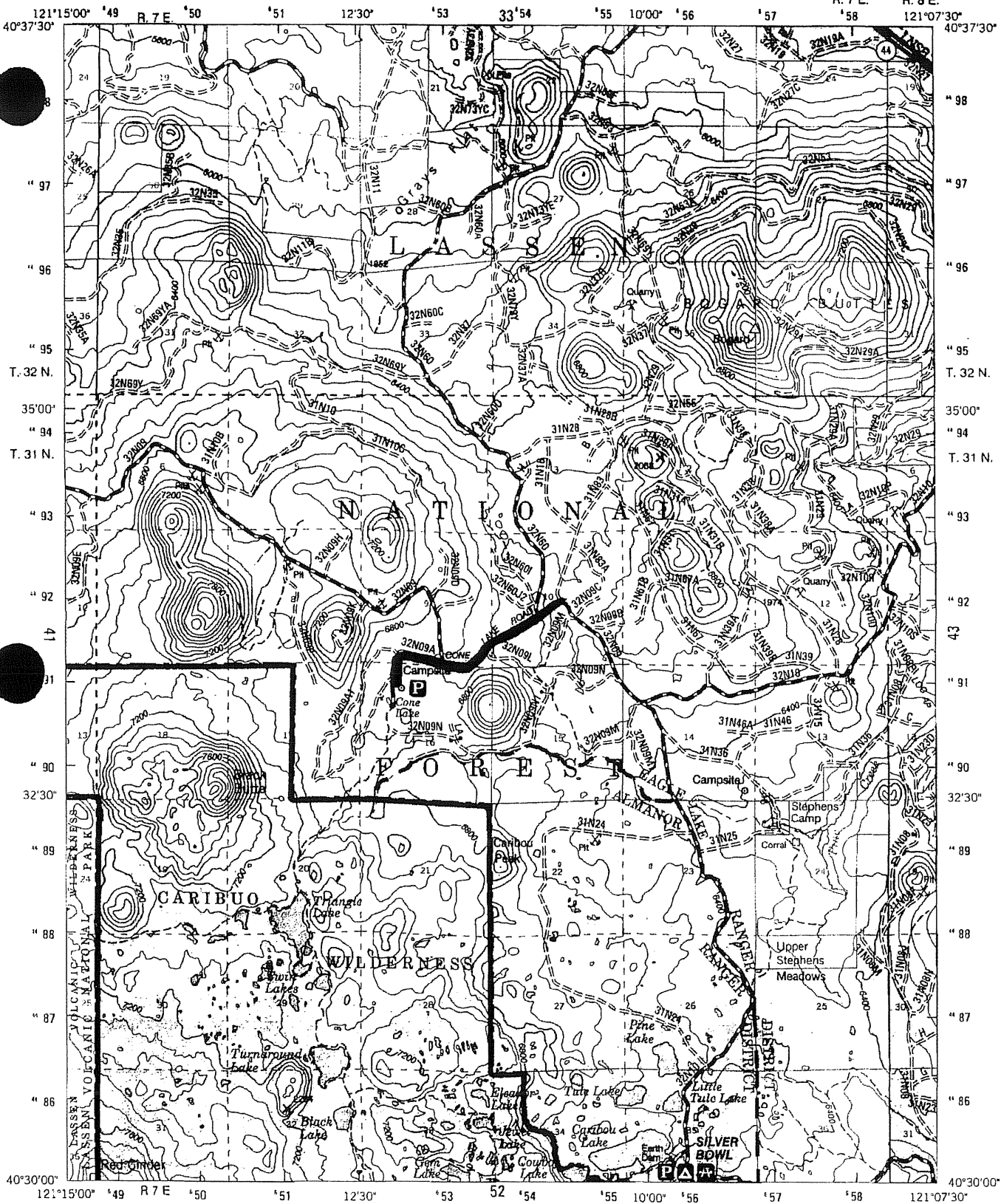
George Kulick
Region 5 Qualified Engineer

Date

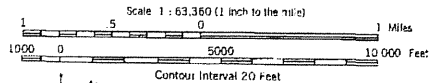
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

UNITED STATES
DEPARTMENT OF AGRICULTURE
FOREST SERVICE

BOGARD BUTTES, CA
43 40121-E2 1999



Produced by the U.S. Geological Survey
Revised by the U.S. Forest Service
This map is not a legal 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.



QUADRANGLE LOCATION

1	2	3
4	5	6
7	8	

ADJOINING 7.5' QUADRANGLES

HIGHWAYS AND ROADS

- 395 U.S. Primary Highway
- 139 State Secondary Highway
- 11 County Improved Road, Paved
- 30 National Forest Improved Road, Gravel
- OHV Composition Unspecified
- Wheel Drive Road Unimproved Road
- National Recreation Trail
- Trail

Engineering Report:

Lassen National Forest

Eagle Lake Ranger District

Analysis of

National Forest System Road (NFSR)

32N10

for Motorized Mixed Use Designation

Forest: Lassen

District: Eagle Lake

Road Number: 32N10

Road Name: Robbers Spring

Introduction: This report documents the engineering analysis for various segments of the “Robbers Spring Road”. NFSR 32N10 is located near Bogard Buttes, and connects California State Highway Route 44 with California State Highway Route 36. Lassen National Forest (LNF) currently manages this road as open only to highway-legal vehicles.

The study segments were 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, segments of NFSRs 32N08 (across SR-44) and 32N22 were also recommended for engineering analyses of motorized mixed use. The results can be found in a separate engineering report.

Study Segment road data from the forest transportation atlas:

Segments analyzed: SR-44 to NFSR 32N22, SR-44 to UNE392, NFSR 31N28 to NFSR 31N15, NFSR 31N24 to 31N25, NFSR 31N24 to NFSR 31N10A

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 first 500' (approximate) of the road is included in Caltrans (California Department of Transportation) agreements. This includes the SR-44 US Department of Transportation easement, and a FS issued Special Use Permit for Caltrans to manage a highway rest area west of, and connecting to, NFSR 32N10.

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 segments 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.

In addition, the proposed crossing of SR-44 would not currently allow OHVs to cross the roadway at an angle of approximately 90 degrees, and therefore would not comply with State law. The existing situation would require OHVs to operate within the Caltrans right-of-way for a longitudinal distance of 300' before exiting.

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

The road currently serves as an arterial road and provides a connection between California State Highway Route 44 and California State Highway Route 36.

The road was designed as a single-lane road but now is managed as a double-lane road, with a width of approximately 24'.

NFSR 32N10 has traditionally served administration of the LNF, including fuels and vegetation management, commodity extraction, fire suppression, and recreation. The road provides the primary access to the Caribou Wilderness area, and also provides the access to Silver Lake for traffic coming from the north and south.

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 is groomed for winter use—including skiers and snowmobiles.

The study segments are 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.

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 45 mph for reasonable and prudent drivers on straightaways.

Designating the road segments 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 4 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 32N10 appears to be consistent with State law and Forest Service policy for operational maintenance level 4 roads.
- The roadbed is raised and appears to provide for sufficient drainage and passenger car travel.
- A new year-round trailhead and parking area is being constructed immediately south of the Caltrans rest area. Although primarily built as a snowmobile and non-motorized facility, this may result in additional OHVs in the vicinity.
- Commercial, residential, and administrative traffic is expected along this segment.

2. Crash history:

At the time of this analysis, there is one record of a crash on this road. It took place on July 16, 2003, involving an ATV. No additional information is available at this time.

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 @ 1845-1915

2 passenger cars utilized the segment from SR-44 to the rest area.

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.

45 mph based on observation and engineering judgment.

5. Road surface type: coordinate

Aggregate, well maintained, smooth.

6. Intersections with other roads and trails:

The sight distances at the intersections are rated good. The intersection with NFSR 32N22 has a yield sign on NFSR 32N22 eastbound only. There are multiple unauthorized routes that access 32N10 in the study segment. South of the rest area there is an existing route accessing a corral.

The intersection with SR-44 does not have route identification for NFSR 32N10 in place. This intersection includes a transition, deceleration lane for east bound traffic entering the rest area and study segment. Through traffic speed limit is 65 mph in this section.

7. Other roadway factors:

- Evidence of recent vegetation treatments was observed at the NE corner of the intersection with NFSR 32N22.

8. Roadside conditions:

- The embankments were gentle.
- Double ditches were constructed throughout most of the study segment.
- Small trees (~12") were found encroaching along the shoulders.
- Larger trees (>24") are located along the segments outside of clearing limits.

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

Crash probability: ☐ High ☒ Med ☐ Low

Crash severity: ☒ High ☐ Med ☐ Low

Crash probability was assessed based on:

- Traffic volume, rates of speed, alignment, sight distance, traveled way surface and width.

Crash severity was assessed based on:

- Roadway geometry (embankments, slopes, horizontal and vertical alignments), 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 and trees, especially along curves and at intersections, 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 connecting to the 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 segments 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 on and along the highway to identify and communicate the potential hazards related to motorized mixed use.
- Coordinate with the State and revise existing agreements with Caltrans as applicable.
- Notify the Commissioner of the California Highway Patrol and review their opinion.
- Approximate Implementation Cost: \$ 2500

This does not account for the additional long-term annual maintenance cost increase 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 distinctive route status, and the change from the rest of the arterial route, this change would not be consistent with the road management objectives.
- Work with Caltrans to make necessary adjustments to existing agreements.
- Approximate Implementation Cost: ~\$75k 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 is relatively gentle and would provide for a parallel trail system. However, construction through Caltrans right-of-ways and within areas managed by Caltrans special use permits will require coordination and agreement modifications as appropriate.
- A large, year-round parking lot will be available near the beginning of the study segment.
- Approximate implementation cost: ~ \$8,000 per mile

This does not include the planning, agreements, 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.

Figure 1: Map of segment 1.



Figure 2: Looking across State Route 44 from NFSR 32N08, showing the potential motorized mixed use connection route crossing the State highway.

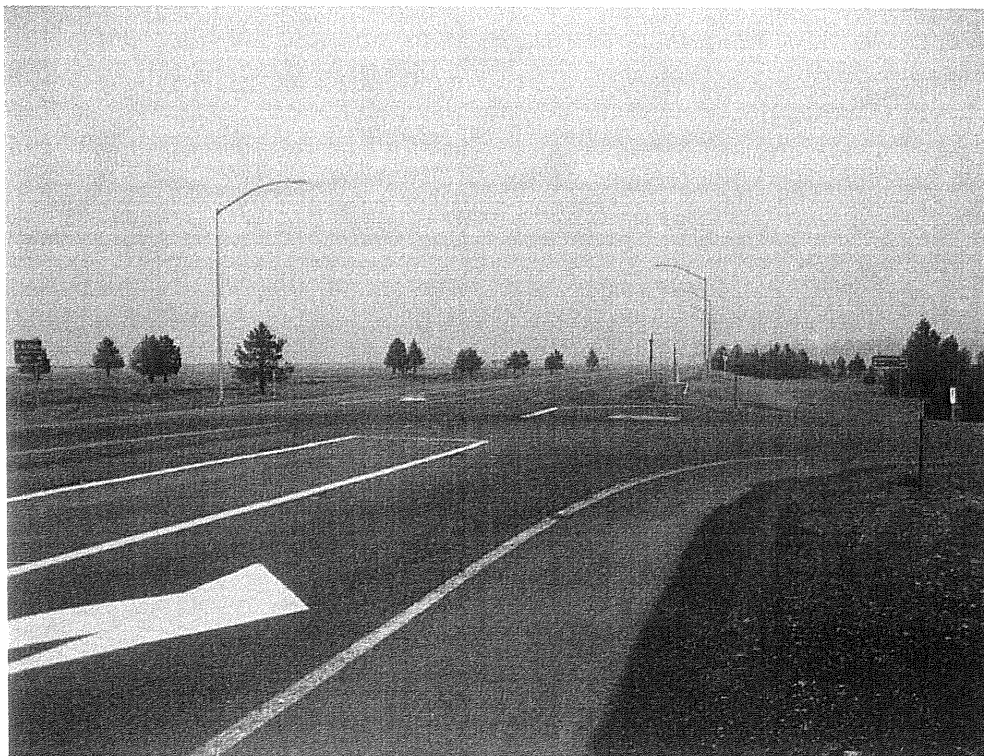


Figure 3: Looking east along SR-44, with the intersection of NFSR 32N10 on the right.



Figure 4: Looking down the study segment of NFSR 32N10, with the CA DOT rest area on the right.



Figure 5: Looking down the study segment, south of the rest area turnoff.



Figure 6: Typical roadway encountered between SR-44 and NFSR 32N22.



Figure 7: Looking towards the study segment, across the intersection with NFSR 32N22.



Figure 8: Looking from NFSR 32N22 west, towards the intersection with NFSR 32N10 (left & right). Note yield sign facing away.

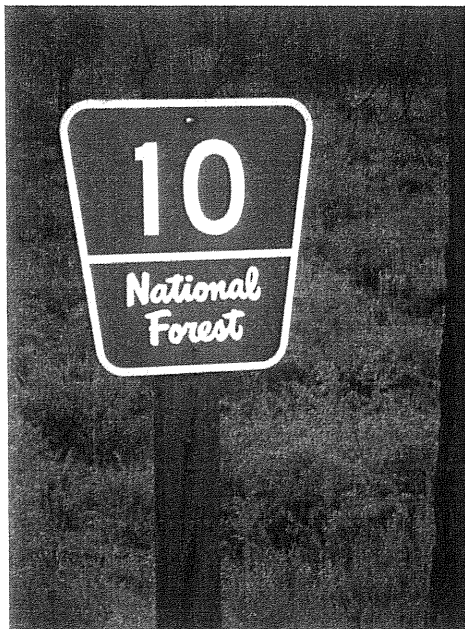


Figure 9: Distinctive Route 10 marker.

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