

Burned Area Emergency Response (BAER) OHV Recreation Report



Garden Ridge (Pre-Fire)

OHV Recreation Report

Bagley Fire

September 2012

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OHV Recreation Report

I. Potential Values at Risk (identified prior to the on-the-ground survey)

The values at risk identified for Off-Highway Vehicle (OHV) Recreation are located on Four Maintenance Level 2(ML2) Roads and three are also identified as Legacy Trails. These travel routes are historic Jeep, All-Terrain Vehicle (ATV) and Motorcycle (MCs) trails that are used for OHV Recreation, hunting, sightseeing and for fire suppression. The fire affected 35N07A, 35N46 (01W11), 36N40 (02W32) and 35N15Y (02W11). Due to high and moderate fire activities on these travel routes public safety, road and trail prisms are at risk.

The follow values are what were considered during the Burned-Area Emergency Response:

- Human life and safety on or in close proximity to burned NFS lands.
- Building, water systems, utility systems, road and trail prisms, dams, wells or other significant investments on or in close proximity to the burned NFS lands.

II. Resource Condition Assessment

A. Resource Setting

OHV Recreation

The Bagley Fire area is located in the area where the Forest Service has been working with a partner under a Challenge Cost Share agreement. Over the last year the Forest OHV Coordinator has been working with the Recreation Outdoors Coalition (ROC) on the Bagley OHV Demonstration Project. The project is a feasibility study that is intended to provide information and recommendations to the Forest for OHV Recreation opportunities. The Bagley Fire area encompassed the majority of the Bagley OHV Demonstration Project area.

ROC prepared a (Public Law 106-393, Secure Rural Schools and Community Self-determination Act of 2000) grant application through the Shasta County Resource Advisory Committee (RAC) to develop an OHV feasibility study for the Bagley Mountain area.

The Bagley OHV Demonstration Project application was approved for RAC funding on July 22, 2011. This project has five major tasks.

- Complete a field inventory of routes; validate easement and rights-of-way status.
- Identify natural and cultural resource constraints.
- Develop objectives and experience criteria for OHV activities with affected stakeholders.
- Assess the quality of riding opportunities with road and trail management and experience criteria.
- Complete the OHV feasibility study and provide maps.

Field Surveys (Pre-Fire)

36N40(02W32--Garden Ridge Legacy Trail) The road crosses squaw creek at a very deep and misleading spot. The North end of the creek crossing is very deep (3 ½ feet) in October. There is also a very large boulder (15ft by 7ft) in the path that vehicles try to cross. The boulder forms a deep eddy on the back side of the rock which causes ATVs and MCs to drown out their machines. If an individual can cross the creek (experts only) the road continues onto garden ridge. The ascent to the ridge top is roughly a mile hill climb. The road is 40% in spots. Not recommended for high –clearance vehicles. The private portions of garden ridge are not marked and riders continue on the trail. The trail narrows to single track in numerous spots and is very technical.

35N46(01W11--Bagley Mt. Legacy Trail) Half of the road is currently an open and well maintained ML2 Road. The other half of the road is narrow and two track in most spots. The road is in poor shape (potential to slide) near the junction of 35N46 and 37N43. From 37N95 to 37N48 the road is grown over and very difficult to navigate.

35N07A The road is very narrow and is impassible by most high clearance vehicles. The road is best for ATV, MCs and high clearance jeep or truck traffic.

37N15Y(02W11--Curl Ridge Legacy Trail) The road is drivable near North Fork Mt. for roughly a half mile. The road crosses private land in Section 29 and quickly turns into a single track/two track trail in Section28. The route continues North as it crosses 37N95 near Happy Hunting Ground. The road is drivable for about a mile, then turns into two track/single track for the majority of the route. The last mile of the road was almost completely brushed over.

B. Findings of the On-The-Ground Field Surveys (Post-Fire)

36N40 (02W32--Garden Ridge Legacy Trail) Crews installed a temporary crossing for passage through Squaw Creek. The road prism is now more open and drivable to ATVs and MCs. Some modified Jeeps will be able to travel the route. Suppression efforts included brushings and some Dozer work directly on the ridge. The brushing occurred in sections 27 and 22 near Wheeler Ranch. There are dozer lines in Sections 21 and 16. Road rehab is recommended. Section 4 received moderate burns with pockets of high burned areas. The potential for hazard trees and erosion problems are likely. Sections 33 and 32 received high fire activities. The potential for erosion, landslides and hazards trees risk the value of the Garden Ridge Legacy Trail. **The risk is High** (likely and moderate consequences).

35N46 (01W11--Bagley Mt Legacy Trail) The intersection from 37N48 & 35N46 down to 37N51Y (sections 6, 7 and 18) on the Bagley Mt Legacy Trail received some suppression repair. There are numerous trees down and will continue to fall. The majority of this section is moderately burned. The intersection of 37N51Y to 37N50 (sections 18 and 19) has numerous pockets of very low and unburned areas. The intersection of 37N50 & 35N46 to 37N95

(sections 19, 24, and 25) is mostly low and moderately burned with some trees starting to fall. The intersection of 37N95 & 35N46 (Private Section25) to 37N43 is mostly moderately burned with pockets of highly burned areas with erosion potentials and hazard trees risking the value of the trail. Sections 36, 1 and 12 on the Bagley Mt. Legacy trail received mostly moderately burned areas with pockets of high in section 1. Erosion is possible and hazard trees are likely to risk the trail. Section13 mostly received low to very low burned areas. **The risk is High** (likely and moderate consequences).

35N07A The road prism is significantly improved which now allows 4WD, Jeeps, ATVs and MCs to travel from wheeler ranch over to the Bagley Mt. Legacy Trail. Additional suppression repair work is needed to ensure sediment does not enter into East Fork of Squaw Creek. Due to the number of vehicles and dry conditions on the road, deep dust is currently present. **The risk is Intermediate** (possible and moderate consequences).

37N15Y (02W11--Curl Ridge Legacy Trail) The road is drivable near North Fork Mt. for roughly a half mile. The road crosses private land in Section 29 and quickly turns into a single track/two track trail in Section28. Sections 32, 29 and 28 all received high burned areas and pockets of moderate burns from the fire. The road continues onto section 21 for a short segment, where equipment work has been completed. The potential for erosion problems, rock fall and hazard trees are very likely in sections 32, 29 and 28. The route continues North as it crossed 37N95 near Happy Hunting Ground. The road is drivable for about a mile, then turns into two track/single track for the majority of the route. Sections 22, 15, 10, 11 and 2 received highly burned areas with pockets of moderate burned severity near Shoeinhorse and Little Shoeinhorse Mt. The potential for erosion problems, rock fall and hazard trees are very likely in sections 22, 15, 10, 11 and 2. **The risk is High** (very likely and moderate consequences).

Table 1: Qualitative terminology for use in assessing risk to property (modified by Koler from Fell et al., 2005)

<i>Qualitative measures of likelihood of occurrence</i>					
Level	Descriptor		Description		
A	Almost certain		The event is expected to occur		
B	Likely		The event will probably occur under adverse conditions		
C	Possible		The event could occur under adverse conditions		
D	Unlikely		The event could occur under very adverse circumstances		
E	Rare		The event is conceivable but only under exceptional circumstances		
F	Not credible		The event is inconceivable or fanciful		
<i>Qualitative measures of consequences to the resource and human life and safety</i>					
1	Catastrophic		Resource is completely destroyed or large scale damage occurs requiring major engineering works for stabilization		
2	Major		Extensive damage to most of the resource, or extending beyond site boundaries requiring significant stabilization		
3	Medium		Moderate damage to some of the resource, or significant part of the site requires large stabilization works		
4	Minor		Limited damage to part of the resource, or part of the site requires some reinstatement/stabilization works		
5	Insignificant		Little damage		
<i>Qualitative risk analysis matrix – classes of risk to resource</i>					
	Consequences to the resource				
Likelihood	Catastrophic	Major	Medium	Minor	Insignificant
Almost certain	VH	VH	H	H	H
Likely	VH	H	H	M	L-M
Possible	H	H	M	L-M	VL-L
Unlikely	M-H	M	L-M	VL-L	VL
Rare	M-L	L-M	VL-L	VL	VL
Not credible	VL	VL	VL	VL	VL

Legend – VH: very high risk; H: high risk; M: moderate risk; L: low risk; VL: very low risk

Field Data Log for Rolling dips/outsloping locations according to Slope and Grade

Road Assessment

While studying the road conditions I took photographs, helmet camera videos and numerous notes. The notes included current conditions, trail maintenance recommendations, slope and grade measurements with and inclinometer and signage inventory/recommendations.

Road Assessment Table

**note-- max grade for high clearance and four-wheel drive vehicles: 18% or as required by State safety regulations. (FSH 7709.56-Road Construction Handbook CH. 40-Design)

Road	Mileage	Slope	Grade	Recommendation
36N40(Garden Ridge)	7.02 Miles	Max 51% Eight Spots>35%	Max 27% Eight Spots > 18%	Convert to trail- Provides loop opportunities and is part of the Bagley Mt. OHV Study area. Sign as Black Diamond open to MCs and ATVs. Construct multiple rolling dips on locations that exceed 18% grade as identified. Clear Hazard trees to ensure safety of crews.
35N46(Bagley MT Legacy Trail)	9.5 Miles	Max 38% Six Spots > 35%	Max22% Six Spots >18%	Convert to trail Part of the Bagley Mt. OHV Study area. Sign as Blue Diamond open to Jeeps, MCs and ATVs accordingly. Construct multiple rolling dips on locations that exceed 18% grade as identified. Clear Hazard trees to ensure safety of crews.
37N15Y(Curl Ridge Legacy Trail)	9.35 Miles	Max 45% 5 Spots > 35%	Max 24% 5 Spots > 18%	Convert to trail: Part of the Bagley Mt. OHV Study area. Sign as Blue Diamond open to Jeeps, MCs and ATVs accordingly. Construct multiple rolling dips on locations that exceed 18% grade as identified. Clear Hazard trees to ensure safety of crews.

Risk Determination for Forest Service and Private Roads

Resources at Risk	Probability of Damage or loss	Magnitude of Consequences	Risk Rating
High and Moderate Burned Sections			
35N07A	Possible	Moderate	Intermediate
35N46 (4.58miles)	Likely	Moderate	High
36N40 (3.76miles)	Likely	Moderate	High
37N15Y (9.35miles)	Very Likely	Moderate	High

Risk Determination for Forest Service Roads

Resources at Risk High and Moderate Burned Sections	Probability of Damage or loss	Magnitude of Consequences	Risk Rating
35N07A	Possible	Moderate	Intermediate
35N46 (4.57miles)	Likely	Moderate	High
36N40 (2.52miles)	Likely	Moderate	High
37N15Y (6.45miles)	Very Likely	Moderate	High

II. Emergency Determination

The emergency to values at risk include high potential for geologic hazards (ie., landslides, debris flows, rockfalls and flooding), hazard trees (ie., standing snags, down trees, widow makers) and the loss of Forest Service signs caused by the fire will have adverse effects to human life and safety on or in close proximity to burned NFS lands on road & trail prisms. Of particular concern is the likely risk for injury or illness to humans and moderate property damage in the high burned areas with standing snags and rock slides. The moderate burned areas also have a likely potential to cause injury or illness to humans and cause moderate property damage.

III. Treatments to Mitigate the Emergency

A. Treatment Types

- **Trail Stabilization/Rolling Dips and Outsloping**—Rolling dip cross drains are designed to pass slow traffic, while also dispersing water. Rolling dips cost less, require less maintenance and are less likely to fail compared to inboard ditches and culvert pipes. Outsloping will be designed where the road allows such construction. These treatment types fit into the Road and Trail Treatments—Trail Stabilization Category, Rolling Dips Category and Outsloping Roads Category.
- **Hazard Tree/Rock Removal**—Treatment of hazard trees and unstable rock is prescribed to protect life along roads. Large boulders destabilized by wildfire and severely burned trees pose a preventable risk to public safety. This treatment type fits into the Protection and Safety Treatments—Hazard Trees and Unstable Rocks Category.
- **Warning Signs and Sign Installation**—The warning signs will be used to alert drivers and recreational users of existing or potentially hazardous conditions created by the wildfire. The road/trail signs must be replaced as they are a critical value for safety and road/trail prisms. This treatment type fits into the Protection and Safety Treatments—Warning Signs.
- **Monitoring**—Monitoring will be used to evaluate the effectiveness of the treatments. Photo monitoring and the Soil Conservation Plan will be tools to capture data and progress. The Soil Conservation Plan is attached in Appendix I.

B. Treatment Objectives

- Assess effects of the fire and untreated suppression actions to Off-Highway Vehicle (OHV) recreation opportunities within the Shasta Lake and McCloud Ranger Districts. On-going monitoring will help determine the effects of the fire using the Soil

Conservation Plan attached in Appendix I.

- Mitigate potential threats to public users because of the effects of the fire and related suppression activities.
- Implement the treatments to reduce significant safety threats to users and perform trail work to control erosion issues of the area.

C. Treatment Descriptions

- Several bulldozed fire suppression and control lines intersect and follow the existing forest service system roads. Public use of these lines is unsafe and can accelerate erosion leading to impacts to trails, roads and watersheds. Rolling dips and outsloping will be implemented to such areas.
- Certain routes have been exposed by the fire. The portions of roads that have been brushed in are now open to larger vehicles, which may see increased use patterns. Rolling dips, hazard tree removal, and installation of signs will be implemented to ensure public safety.
- An unknown number of trees along the existing approved road network are dead or dying due to the effects of the fire. These standing trees pose a threat to users of the routes. Hazard tree removal will mitigate this problem.
- The majority of the existing road signs have been burned due to the High and Moderate burn areas on 35N46, 36N40 and 37N15Y.

D. Treatment Costs

Supply Cost

ITEM	Cost Per Unit	Number of Items	Total
Carsonites(fiberglass marker)	\$XXX	35	\$ XXX
Stickers (numbers/symbols for carsonites)	XXX	1	\$ XXX
Tools/Post Pounder	\$ XXX	1	XXX

*prices based on averages from numerous trail system suppliers

TOTAL \$ XXX

Forest Service Employees Time

Employee	Cost Per Day	Days For Project Implementation	Total
OHV Coordinator	\$ XXX	30	\$ XXX
GS 5 Rec Tech/SCA Intern	\$ XXX	30	\$ XXX

*time utilized for COR, Monitoring and Sign Installation

TOTAL \$ XXX

Contractor Treatment Cost for Forest Service and SPI Road Treatments

Resources at Risk: Legacy Trails located in High to Moderate Burn Areas	Miles	Trail Stabilization: \$ XXX /Mile	Hazard Tree and Rock Removal: \$ XXX /Mile	Total/Trail
35N07A Intermediate Risk	0	\$ XXX	\$ XXX	\$ XXX
35N46 High Risk	4.59 Miles	\$ XXX	\$ XXX	\$ XXX
36N40 High Risk	3.76 Miles	\$ XXX	\$ XXX	\$ XXX
37N15Y High Risk	9.36 Miles	\$ XXX	\$ XXX	\$ XXX

*Cost based from BAER Treatments Catalog and private trail contractors **TOTAL \$ XXX**

Contractor Treatment Cost for Forest Service Road Treatments

Resources at Risk: Legacy Trails located in High to Moderate Burn Areas	Miles	Trail Stabilization: \$ XXX /Mile	Hazard Tree and Rock Removal: \$ XXX /Mile	Total/Trail
35N07A Intermediate Risk	0	\$ XXX	\$ XXX	\$ XXX
35N46 (01W11) High Risk	4.57Miles	\$ XXX	\$ XXX	\$ XXX
36N40 (02W32) High Risk	2.52 Miles	\$ XXX	\$ XXX	\$ XXX
37N15Y (02W11)High Risk	6.45 Miles	\$ XXX	\$ XXX	\$ XXX

*Cost based from BAER Treatments Catalog and private trail contractors **TOTAL \$ XXX**

TOTAL PROJECT COST FOR FOREST SERVICE TREATMENTS

Resources at Risk: Legacy Trails located in High to Moderate Burn Areas	Contracts	Time	Supplies	Total
35N07A	\$ XXX	\$ XXX	\$ XXX	\$ XXX
35N46 (01W11)	\$ XXX	\$ XXX	\$ XXX	\$ XXX
36N40 (02W32)	\$ XXX	\$ XXX	\$ XXX	\$ XXX
37N15Y (02W11)	\$ XXX	\$ XXX	\$ XXX	\$ XXX

TOTAL \$ XXX

IV. Discussion/Summary/Recommendations

Implement all aspects of the project as describe in the BAER Report. The treatment recommendations will ensure that the values at risk will be mitigated before the winter storms.

These treatment options will also provide quality OHV recreation opportunities for the public to enjoy.

V. References

Burned Area Emergency Response Treatments Catalog. Carolyn Napper, Soil Scientist. USDA Forest Service. December 2006.

Low Volume Roads Engineering, Best Management Practices Field Guide. Gordon Keller & James Sherar.

VI. Appendices

Shasta-Trinity National Forest 2012 Soil Conservation Plan

Introduction

This Soil Conservation Plan (SCP) has been prepared to meet California State Parks - Off-Highway Motor Vehicle Recreation Divisions, Grant and Cooperative Agreement requirements for Soil Conservation for specific projects where ground disturbing activities are proposed and for which funding is requested. This SCP was developed for the Shasta-Trinity National Forest, to demonstrate how the Soil Conservation Standard is being met or will be met in the Ground Operations for Burned Area Emergency Response treatments for the Bagley Fire.

Protocol for assessment, maintenance and monitoring are identified below.

Implementation of projects include use of Best Management Practices (BMPs) identified in the Trail Management Handbook, The Standard Specifications for Maintenance and Construction of Trails, and the Trail Construction Notebook. Reporting includes documentation of the requirements specified in this SCP for the purposes of determining future needs, effective implementation, and fiscal accountability.

Protocol for Assessment:

- A. Water and mechanical erosion protocols will be followed as outlined in the U.S. Forest Service Revised OHV Trail Monitoring Form (GYR Form) and Training Guide, July 30, 2004. The GYR form will be used to meet assessment protocols.
- B. Water and sediment control measures would be assessed using the GYR Form.
- C. Tread condition will be assessed using the GYR Form.
- D. Off-site impacts due to water and wind carried sediments will be assessed by visual inspections of boundaries, estimates of quantities will be performed if any are observed to determine if significant impacts are occurring.
- E. Watercourse crossings will be assessed using the GYR Form.

Protocol for Maintenance:

- A. In consideration of A through E above: Maintenance work will be done in accordance with the BMPs described in the Trail Management Handbook FSH 2309.18, Standard Specifications for Trail Maintenance and Construction EM 7720-104, and the Trail Construction and Maintenance Notebook 0723-2806-MTDC.
- B. Maintenance schedules will be established utilizing monitoring reports developed as a result of the GYR form, FSM 2300 Policy Direction, guidance in the Trail Management Handbook FSH 2309.18, and TRACS.

Protocol for Monitoring:

- A. The objectives for monitoring are:
 - a. To determine if erosion is occurring and the extent.
 - b. To determine where erosion is occurring.
 - c. To determine what conditions or combination of conditions are causing accelerated erosion.
- B. Monitoring parameters include:
 - a. Informal monitoring of conditions by staff, volunteers, and visitors.
 - b. Formal monitoring by trained staff during inspections at established photo-points or transverse profile plots and trail logs.
 - c. Formal monitoring of open water crossings after rain events.
- C. Monitoring site selection will be determined by:
 - a. Past monitoring results, TRACS, and available budgets. Erosion hazard assessment using past maintenance records and institutional knowledge of past practices and occurrences.
 - b. Erosion hazard assessment using evaluations for terrain, soil type, weather patterns, and use patterns.
- D. Monitoring schedules will be determined by:
 - a. Known historic weather patterns.
 - b. Visitor use patterns.
 - c. Availability of trained staff.
- E. Data collection will be performed by staff that has been trained by the Shasta-Trinity National Forest trail coordinator to ensure quality assurance/quality control and compliance with USFS standards.
- F. Data management will be performed by the Shasta-Trinity National Forest Trail Coordinator.
- G. The monitoring methods will consist of:
 - a. Establishing photo points or
 - b. Transverse profile plots and longitudinal logs of trail and road segments.

Design and Construction Elements

- A. Appropriate level survey and environmental review will be completed prior to construction.
- B. Work will be done in accordance with the BMPs described in the Trail Management Handbook FSH 2309.18, Standard Specifications for Trail Maintenance and Construction EM 7720-104, and the Trail Construction and Maintenance Notebook 0723-2806-MTDC.

Monitoring and Soil Conservation Standard Report

The monitoring report will be submitted at the end of the project performance period along with the final payment request. The following will be included:

- A. Historical Conditions:
 - a. Previous GYR Forms and any additional photo documentation or written condition assessments. **Attachment A.**
 - b. All maintenance activities for the past 5 years for cost projections and maintenance scheduling. **Attachment B.**
 - c. Any other monitoring documentation.
- B. Change Analysis
 - a. Documentation of any changes to water crossings on the affected trail system and pre and post monitoring results.
 - b. Documentation of any changes to drainage structures (drainage dips, water bars, reverse grades, etc) on the affected trail system and pre and post monitoring results.
 - c. When annual maintenance was last performed and justification if it was missed.
- C. Findings:
 - a. Document resource benefits found from pre and post project monitoring.
 - b. Document activities and how maintenance is affected.
 - c. Document activities that result in changes to costs.
- D. Conclusions:
 - a. State any additional needs for completed work
 - b. State successful elements including future cost savings and ecologic protection.
 - c. State goals for next year.

Compliance Action Plan:

Ground disturbing activities will be conducted while ground moisture is adequate. In some cases only early and late season or just after storm cycles may be the only opportunity to conduct trail tread maintenance, reconstruction or construction. Details of future restoration or maintenance plans will be stated. Trail logs may be used to convey work plans.

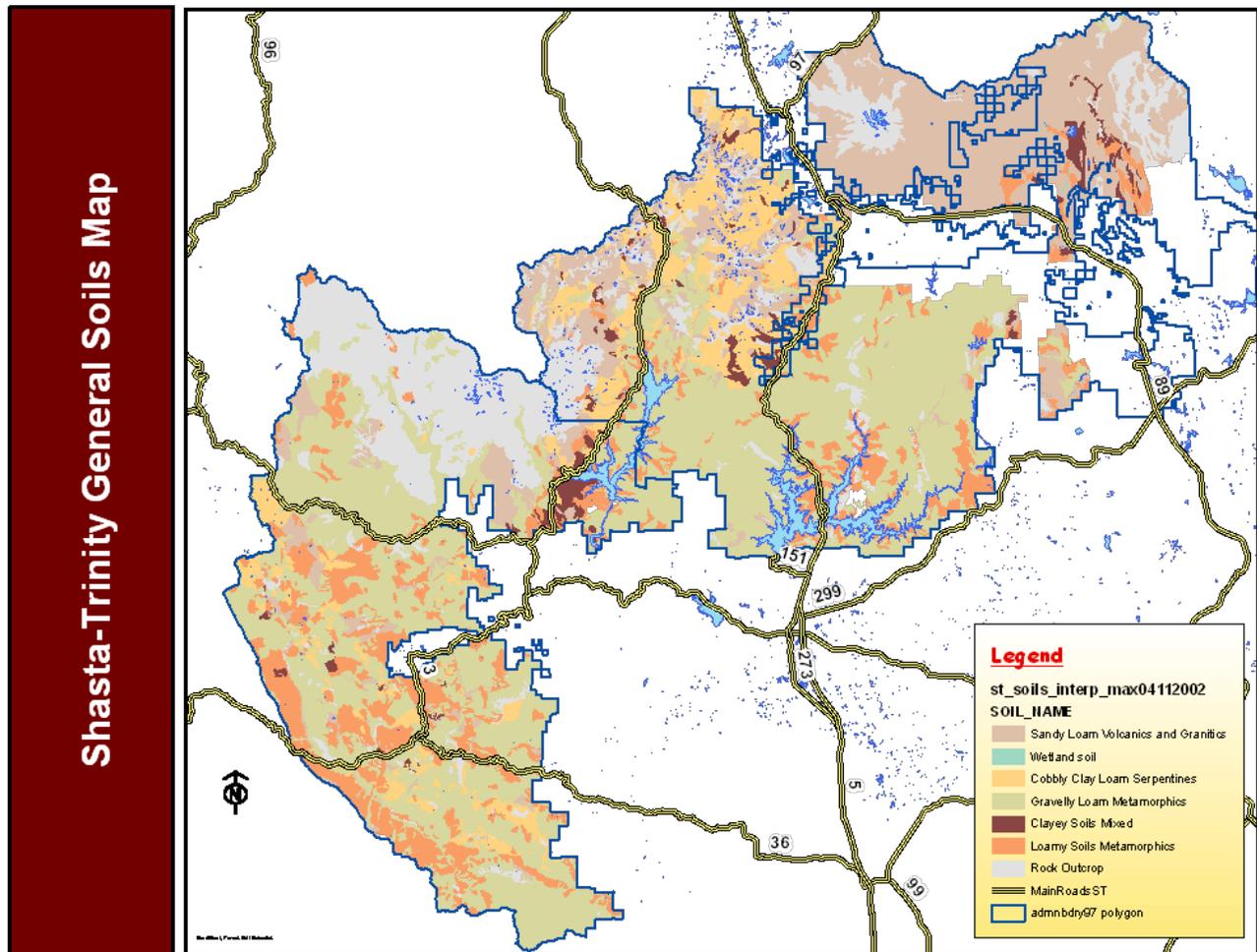
Soils Present:

Soils within the STNF are typically gravelly loams, loams, and sandy loams on volcanic, granitic, and metamorphic mountainous landscapes.

See Appendix A: Soil map for the STNF

See Appendix B: Soil Condition Table

Appendix A: Soil map for the STNF



Appendix B: Soil Condition Table

<i>General Soil Information for the Shasta-Trinity National Forest</i>				
Soil Type	Parent Material	Texture	Depth	Compactibility
Sandy	Volcanic & Granitic	Sandy Loams	Mod-Deep to Very Deep	Low
Wet	Mixed	Clayey	Very Deep	High
Cobbly Clay	Serpentine	Gravelly Clay Loams	Shallow to Mod. Deep	High
Gravelly Loam	Metamorphic	Gravelly Loams	Moderately Deep	Mod
Clayey	Mixed	Clay to Silty Clay	Very Deep	High
Loamy	Metamorphic	Loamy	Mod-Deep to Deep	Mod. High