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Travel Analysis Process

Willow-Parks Watershed Analysis Area

Shasta McCloud Management Unit
Shasta-Trinity National Forest
Siskiyou County, California

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Executive Summary

The Travel Analysis Process (TAP) is intended to identify opportunities for the forest transportation system to meet current or future management objectives, and to provide information that allows integration of ecological, social, and economic concerns into future decisions. The TAP is tailored to local situations, landscape conditions and issues as identified by an interdisciplinary team (IDT) of resource specialists.

The outcome of the TAP is a set of *recommendations*[1] for future management of the forest transportation system. Those recommendations contain an identification of the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands and an identification of roads on lands under Forest Service jurisdiction that are no longer needed to meet forest resource management objectives and that, therefore, should be decommissioned or considered for other uses, such as for trails.

Travel Analysis supports and informs subsequent National Environmental Policy Act (NEPA) processes, allowing individual projects to be more site-specific and focused, while still addressing cumulative impacts.

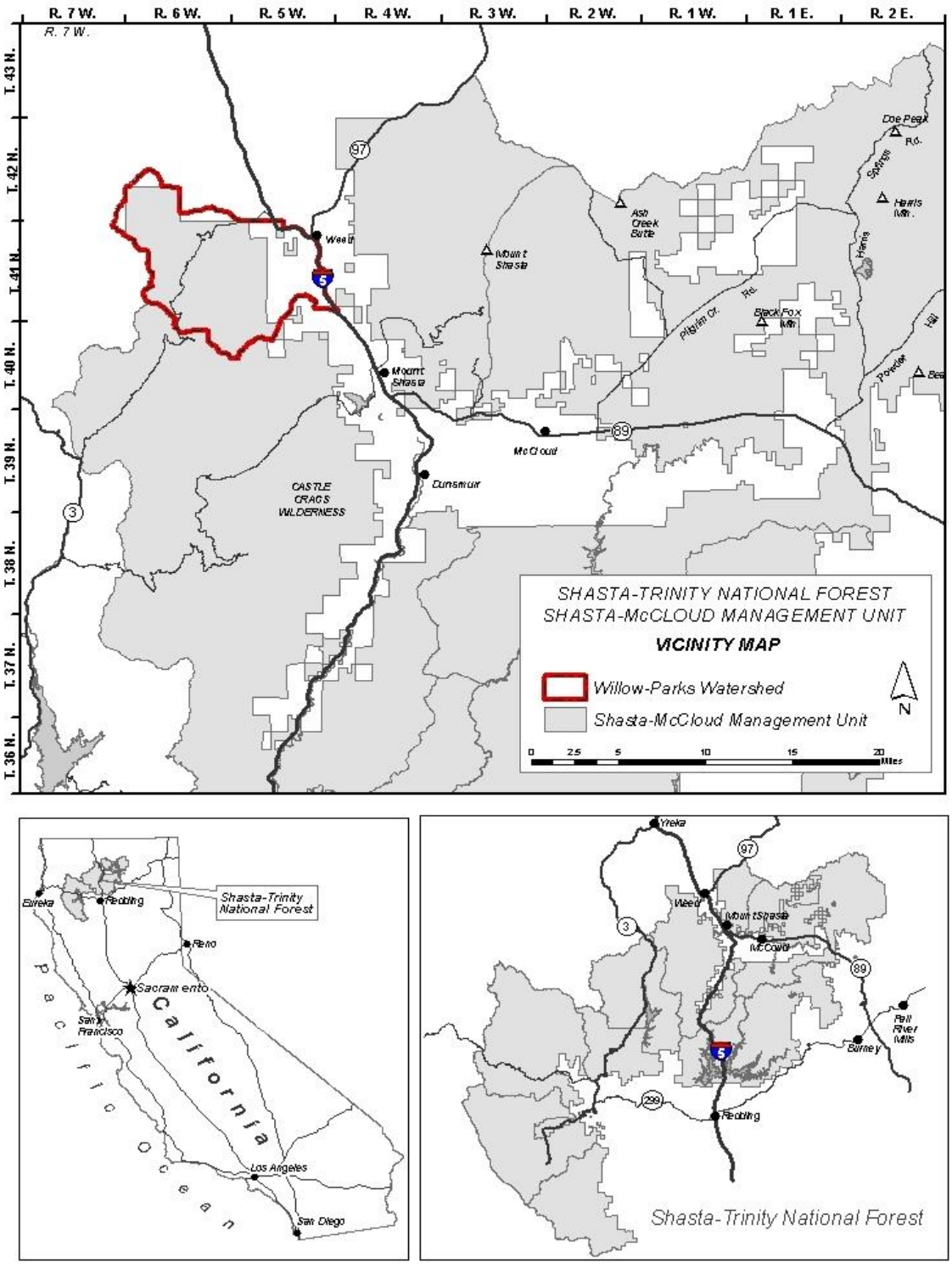
Introduction

The Willow-Parks Watershed Assessment (WA) identified resource damage, deteriorating road conditions and a need to make changes to National Forest System (NFS) roads and trails. A TAP was initiated to inform the decision making process. The District Ranger determined that all routes within the analysis boundary under forest service jurisdiction would be included in the TAP. The TAP analysis boundary is the same as the Willow Parks WA boundary.

The Willow-Parks Watershed is located in Siskiyou County, California, within the northwest corner of the Shasta McCloud Management Unit of the Shasta-Trinity National Forest. The analysis area is approximately 4 miles west of the town of Weed, California and 70 miles north of Redding, California.

[1] Recommendation does not indicate a decision by the responsible official or subsequent change on the ground. This is a suggestion as to what may be beneficial given the current circumstance.

Figure 1. Analysis Vicinity Map



Summary of Issues

The issues were identified using past projects, current issues effecting transportation management and IDT local knowledge and experience.

- Unauthorized Routes
- Road Maintenance Economics
- Right of Way and User Access
- User Safety
- Reconstruction and Improvements
- Road Density
- Material and Water Sources
- Scenery Corridors
- Long Term Plantation Management Access
- Recreation

Analysis Performed

A risk-benefit assessment was used to rank roads based on risks (wildlife disturbance, impacts on cultural resources, etc.) and benefits (access to facilities, recreational opportunities, etc.). The categories chosen to rank risks and benefits were based on issues identified and by criteria set by the members of the Interdisciplinary Team in Chapter 4.

Key Results and Findings

Through the TAP, the analysis team assessed routes based on resource risks and benefits.

- The majority of the Forest Transportation System (FTS) as it currently exists was identified as part of the minimum road system.
- 17.4 miles of the FTS were considered unneeded or impacting resources and are recommended for decommissioning
- There are 0.20 miles of unauthorized routes (currently not on the system) that have been assessed as being needed to meet administrative, resource access, recreation, or transportation needs.
- 6.9 miles of open roads are recommended to be closed until needed for future access.
- Trails systems are in disrepair. Reconstruction is needed and should include converting segments of NFS roads into part of the trail system.

How The Report will be used

Travel Analysis Process results will assist the Shasta-Trinity National Forest in addressing issues related to the FTS. It will be used to inform future analyses, decisions, and specific project actions within the Willow-Parks Watershed.

Chapter 1 – Step 1: Setting up the Analysis

Analysis Area and Objectives

The TAP was conducted for the Willow-Parks watershed. The objective of the analysis is to provide science-based information for managing roads that are safe and responsive to public needs and desires, conforms to the Shasta-Trinity National Forest Plan, is efficiently administered, has minimal negative ecological effects on the land, and is in balance with funding available for needed management actions.

The TAP is intended to be a broad scale comprehensive look at the transportation network within the Willow-Parks Watershed. The main objectives of the TAP are:

- Balance the need for access while minimizing risks by examining important ecological, social, and economic issues related to roads.
- Furnish maps, tables, and narratives that display transportation management opportunities and strategies that address future access needs, and environmental concerns.
- Identify the need for changes by comparing the current road system to the desired condition.
- Make recommendations to inform subsequent site-specific project proposals and future NEPA documents.

Roles of Specialists

The interdisciplinary team was assigned by the District Ranger. The team members and their primary interdisciplinary discipline(s) or function are listed below.

Table 1. Interdisciplinary Team

Name	Resource Area	Name	Resource Area
Steve Bachmann	Hydrology	Heather McRae	Fire Suppression/ Fuels
Dustin Bonivert	IDT Leader/Transportation	Marcus Nova	Recreation
Philip Brownsey	Invasive Plants/ Range	Rhonda Posey	Botany
Jonna Dushey	Soils/GIS	Jim Powell	Commodities
Deborah Flemming	Silviculture	Jennifer Redman	Special Uses
Juan delaFuente	Geology	Justin Mapula	Wildlife
Les Gross	Lands	Nisha van Hees	Silviculture/ Plantations
Leslie Johnson	Heritage/Cultural	Stephanie Joyce	Landscape Architecture

Process Plan

On August 23, 2012 the IDT assigned to the TAP met to discuss the TAP. The team reviewed the TAP policy and discussed the analysis area. The purpose of this session was to create a comprehensive list of known issues to consider through the process. These issues included those in which roads and trails were clearly a benefit or risk to resources and their use or protection. These issues were used to develop the evaluation criteria for use during the TAP.

Analysis Plan

The IDT followed these steps in order to carry out the analysis:

- Identify the existing road system to be studied.
- Identify criteria of each specialty area for ranking roads for risk and benefit.
- Rank the roads based on GIS analysis, specialist and local knowledge and experience.

- Review of the rankings by individual specialists and modify the rank based on knowledge of the specific field conditions and situation.
- Combine individual specialty rankings to assign risk and value rankings to each road.
- Generate management recommendations using risk and benefit rankings.
- Review the rankings, revise and incorporate into final IDT recommendations.

Information Needs

Information needs were identified and the IDT worked to consolidate as much information as available about the following:

- Accurate location and condition of all system roads and inventoried unauthorized routes within the analysis area.
- For each road the following information is needed:

    1. Any existing public, permittee, or agency use.
    2. Any right-of-way dedication to the FS.
    3. Any additional right-of-way required.
    4. Maintenance responsibility for the road (Forest Service, private, county, or state).

- Owner of the underlying land of each route.
- Assessment of opportunities, problems, and risks for all roads in the analysis area.
- Cultural resources.
- Soil, water resources, invasive species, environmental issues, and biological communities.
- Public access and recreational needs and desires in the area, including access for nearby landowners.
- Current observed road uses.
- Current road management objectives.
- Areas of special sensitivity, resource values, or both.
- Best Management Practices (BMP) for the area.
- Current Forest Plan and other management direction for the area.
- Agency objectives and priorities.
- Interrelationship with other governmental jurisdictions for roads.
- Applicable federal, state, and local laws, including laws that regulate motor vehicle use on and off public roads.
- Forest scale and any project level roads analysis process (RAP).

Chapter 2 – Step 2: Describing the Situation

Purpose

The purpose of this step is to:

- Describe the existing road and trail system within the analysis boundary.
- Describe existing management direction.

- Describe road maintenance levels.

Existing Road and Trail System

The Willow-Parks Watershed analysis area has approximately 105 miles of Forest Transportation System (FTS) roads. This includes 9 miles of paved arterial routes, 6 miles of collector routes and 90 miles of native surfaced local roads. There are also an undetermined amount of un-inventoried unauthorized routes in the area.

Access opportunities in the watershed for both public use and management purposes are dictated by the current condition of the transportation system. The transportation system was originally constructed to support mining operations and later timber harvest activities. As a result, the road density in the Eddy and Parks Creek Watersheds is relatively high, however many roads cannot be driven due to road washouts and lack of maintenance. Problems with roads include: undersized culverts, lack of adequate surface drainage resulting in rilling and erosion, and poorly located and designed roads. Many roads within the watershed are not passable for most 2-wheel drive vehicles and some pose a risk to water quality in the form of introduced sediment. Impacts from roads can also affect other resources including heritage, botanical special interest areas, and sensitive habitats such as wet meadows.

Road use sees peak traffic conditions during the summer and fall when commercial and recreational use is the highest, concentrated mostly on the Parks Creek road, 42N17. The Parks Creek Road provides access to a multitude of camping, hiking, swimming, fishing, hunting and other recreation opportunities. With the close proximity to the cities of Weed and Mount Shasta, traffic to the area can often be expected to make a same day return trip. Traffic during winter and spring is limited by road and snow conditions. The Parks Creek road is not maintained during the winter and on a typical year a snow drift near the top of Parks Creek road on the eastern face limits access west of the watershed until late June.

Figure 2. A ford water crossing (North State Resources 2010)

Right Of Way

Right of way and legal access is a significant access issue for the Willow Parks assessment area. The Willow Creek area is only accessible to the public from the south via 42N19 road from the Parks Creek road. There is no authorized access, public or administrative, to the Dale Creek drainage. Without access to the National Forest System lands within the Dale Creek Watershed, those parcels are currently unmonitored for any resource issues. Several other roads include segments that traverse private lands without a written record of legal access.

Cost Share roads are a moderate concern for actions involving the road system within the analysis area. While the lands are primarily National Forest, Cost Share and road use agreements from past land owners are still legally in effect even if a land exchange has taken place. This could prevent roads from being timely closed or decommissioned without the cooperation of the past owner to quitclaim the access rights.

Roads

42N17 Parks Creek Road

This is the main access route to the Parks Creek and Willow Creek watersheds. The Parks Creek road has a paved surface and is suitable for passenger cars. The road width varies and can be two lanes on some segments while narrowing to one lane in other areas. This road highlights some of the geomorphic challenges faced when building roads in the area with prominent slumping under the roadway. Cemented glacial outwash gravel under the road fill material and subsurface water flow combine to remove material from beneath the road to create a slump, or depression in the road surface. These slumps may be difficult to see on the roadway since they can occur without visually disturbing the surface pavement. Road user safety is a concern with the slumping roadway and the hazards they present. Road user sight-distance is also a safety concern on switch backs and curves since in many of these areas the road is only a single lane. Vehicle speed and type of vehicle using

the road is of additional concern. Vehicles pulling trailers are often surprised at the speed of other vehicles and with infrequent pullouts for passing, safety of all users is a concern.

Parks Creek Road System

Roads that connect to 42N17 see regular use and are in varying conditions. The steep terrain limits the amount of unauthorized off highway vehicle (OHV) use and concentrates traffic on the existing road system. Skid- trails from past logging activities are evident outside the roadway but are impassible to most four-wheel drive vehicles. Roads are mostly open and drivable, or have been naturally closed due to deferred maintenance and vegetation. Road maintenance has been limited and drainage facilities on local and collector roads are more likely to be impaired or under at-risk conditions.

41N26 Eddy Creek Road

This is the access route to the Eddy Creek drainage area. The road begins with a paved surface on private property and changes to a native surface road passible only by high clearance four-wheel drive vehicles. Drainage facilities on this road are poor and surface water is diverted by the road in several locations. Several segments of this road have inadequate drainage structures and as a result the fine materials in the roadway have been washed away and only the larger, rocky materials remain. This road ends near a meadow and connects to a non-motorized historic trail, although the meadow has evidence of unauthorized motorized use.

Eddy Creek Road System

Spur roads that connect to 41N26 Eddy Creek Road are in varying conditions. Typically the closer the road is to Eddy Creek the more susceptible a road is to carry surface run-off to the creek, resulting in hydrologic connectivity to the stream channel. As roads climb away from Eddy Creek they are generally in better condition. Roads that move south from 41N26 must use fords to cross Eddy Creek. Road use farther from the creek is less evident with road segments naturally closing from deferred maintenance and impassible vehicle conditions.

42N19 Dewey Mine Road system

The 42N19 Road is accessible via 42N17 (Parks Creek Road) and provides access to the Willow Creek drainage. The Dewey Mine is located in this vicinity primarily on private property with only private road access. Past efforts have been made to restrict road access to this area, but unauthorized use and vandalism have been a problem. The 42N19 road is only passible for high clearance four-wheel drive vehicles which limits management capabilities. A climbing segment of this road features steep switch backs that are subject to surface runoff and unstable road surface conditions combined with unsuitable geologic conditions.

Maintenance

Road maintenance for the FTS in the analysis area has been predominantly facilitated through vegetation management projects in the past. Current conditions are deteriorated from a lack of recent maintenance. A sediment source inventory completed in 2010 identified road segments and road drainage features that were not functioning properly. A road condition inventory in 2012 confirmed the overall condition of the FTS in the analysis area and the need for road maintenance.

The native surfaced roads, abundant surface water and the steep terrain of the area contribute to erosion and road maintenance problems throughout the area. Native surfaced roads without adequate, functioning drainage and runoff control lose their fine surface materials and the result is a rough and cobbled road surface. Roads lowest in the watershed, closest to the creeks and drainages see the most damage with concentrated runoff from higher elevations. Typically as roads climb out of the drainage they are in better condition as long as the road surface drains properly. Local roads and spurs in the watershed see less use, regulated by the condition of the road, individual vehicle capabilities and access restrictions.

Figure 3. A lack of maintenance and erosion control creates poor road conditions and safety concerns (North State Resources 2010)

Road Closures

The lack of funding for general road maintenance in the area includes the lack of maintenance of closure structures. Roads that were closed through past management activities have been reopened through vandalism. Roads that were not closed have been closed by natural events. Roads that were intended for seasonal closure have remained open year round. Typical closure methods include gates and earthen berms. Earthen berms appear to be more successful in closing roads as gates are more susceptible to vandalism. Road closures in the area are important to reduce road densities.

Figure 4. Slide material and vegetation have closed this road (North State Resources 2010)

Figure 5. A functioning road closure berm (North State Resources 2010)

Existing Direction for Roads, Trails, and Areas

Direction relevant to the analysis area as it affects transportation facilities includes:

Title 36, Code of Federal Regulations, Part 212 (36 CFR 212) is the implementing regulation for administration of the Forest Service transportation system. Part 212 provides criteria for road system management, maintenance and construction.

Forest Service Manual and Handbook Section 7700 contains agency policy for management of the Forest Transportation System. The policy requires the development of road management objectives (RMOs). The RMOs document the purpose of each road. The purpose for the road sets the parameters for maintenance standards needed to meet user needs, resource protection, resource management and public safety. Forest Service Handbook 7709.59 describes the maintenance management system the Forest Service uses and the maintenance standards needed to meet road management objectives (RMOs) for the road system.

The Shasta-Trinity National Forest Land and Resource Management Plan (LRMP or Forest Plan) (USDA Forest Service, 1995). The Forest Plan (p. chapter 4.B.8)states the forest-wide goals for facilities, including the FTS, as follows:

Goal 8: *Manage the Forests' transportation system to facilitate resource management activities, protect wildlife, meet water quality objectives, and provide recreational access* (page 4-4).

Goal 9: *Provide and maintain those administrative facilities that effectively and safely serve the public and Forest Service work force* (page 4-4).

Forest-wide goals are met by applying standards and guidelines for management of resources. The Standards and Guidelines for facilities (p. chapter 4.E.7) include the following, which are pertinent to travel management planning:

a. Perform road maintenance activities to meet a variety of management objectives. Not all roads will be maintained every year due to the maintenance level assigned by management, use, and other factors. Schedule road maintenance activities according to the following priorities: (1) to provide for user safety: (2) to meet contractual and legal obligations; (3) to protect natural resources; and (4) to provide an efficient transportation system.
b. Assign road maintenance levels to each system road or road segment based on traffic management and use objectives. Maintain all roads to at least Maintenance Level 1.
c. Closures of roads and/or selected areas, to assist in management of the Forests‟ resources, may be made by regulatory and/or physical devices on the road, for the following purposes: to protect the road surface during the wet season so that maintenance and erosion are reduced; to protect wildlife and/or help meet wildlife management objectives; for safety, fire, and general administrative purposes; and for special closures per Code of Federal Regulations (CFR).
d. A public information/education program will accompany any new road closure program. Closure areas will be signed for the seasons and periods of closure. The reason for closure, the regulations providing for closure, and the responsible agencies will also be indicated.

e. Retain roads on the Forest transportation system that will be needed for future activities (beyond one season) such as forest health, timber management, fire protection, recreation management, mining, wildlife, and range. Analyze non-inventoried roads to determine whether they should be added to the transportation system or obliterated as time and funding allow.

Forest Plan Management Area Direction

The analysis area is located in the Parks-Eddy Management Area (MA 5) which encompasses several management prescriptions under the Forest Plan:

a. **Prescription I Unroaded Non-Motorized Recreation**: Trail Construction and Reconstruction emphasized. No new road construction.
b. **Prescription III Roaded Recreation**: Road and Trail Construction and Reconstruction emphasized.
c. **Prescription VI Wildlife Habitat Management**: Road and Trail Construction and Reconstruction permitted, Roaded Natural Recreation permitted.
d. **Prescription VII Late-Successional Reserves and Threatened, Endangered and Selected Sensitive Species**: Protection and enhancement of Late-successional and old-growth forest ecosystems emphasized.
e. **Prescription VIII Commercial Wood Products Emphasis**: Road Construction and Reconstruction emphasized, Trail Construction and Reconstruction permitted, Roaded Natural Recreation permitted.
f. **Prescription X Special Area Management**: Semi-Primitive Non-Motorized Recreation permitted. Trail Construction and Reconstruction permitted.
g. **Supplemental Management Area Direction Specific to Transportation (MA 5):**
    a. Emphasize Alpine lakes fisheries management through increased trail access and habitat improvement projects.
    b. Maintain and improve access to dispersed recreation sites.

The Shasta-Trinity National Forest Motorized Travel Management. Prohibition of motorized travel on unauthorized routes and prohibition of cross-country travel has been established by Federal Regulation under the Forest's Motorized Travel Management (MTM) Record of Decision (ROD) (USDA Forest Service, 2010).

Water Quality Management for Forest System Lands in California, Best Management Practices (USDA Forest Service, 2000) this guidance documents the practice and procedures which are the structure of the water quality management program for the Pacific Southwest Region. It describes the Best Management Practices (BMP) used for water quality management on NFS lands and specific BMPs for transportation management.

Forest Wide Late Successional Reserve Assessment (LSRA) (LSRA, 1999)

The LSRA provides recommendations and guidance relative to the NFTS within the Shasta-Trinity National Forest. The following excerpts are pertinent to the proposed action:

Existing roads, within LSR/MLSAs are beneficial to providing access for control wildfire and to

function as fire lines in prescribe burns, to provide access for other habitat management actions such as thinning and pest control. (p. 39)

Willow-Parks Watershed Analysis (USDA Forest Service, 2014)
This analysis provides an understanding of the ecological processes and interactions occurring within the watershed area and how past and present activities and events interact with the physical, biological, and social environments. This analysis identified a need for additional travel analysis and changes to the transportation system.

Physical Environment

The analysis area is characterized by scenic mountains and ridges covered in ultramafic rock outcrops with a large and unique diversity of trees, shrubs and forbs. Alpine lakes are located throughout the analysis area with year round streams and many seasonal water sources. Soils are usually mixed ultramafic basil intrusive and granite mixes that have a high erodibility, naturally occurring asbestos (NOA), low to non-plantable site and high landslide potential. The topography is rugged with irregular drainage patterns; the ridge tops are often quite narrow and the canyons are deep and narrow in most places.

Road Maintenance Levels

There are five Maintenance Levels (ML) used by the Forest Service to determine the work needed to preserve the investment in the road. These MLs are described in FSH 7709.59 (Road System Operation and Maintenance Handbook) Chapter 60 and are briefly summarized as follows:

- ML 1: basic custodial care (closed to motor vehicle traffic). Roads are closed to traffic for protection of a resource, maintenance cost, or other reasons and vegetation may be growing on the roadway.
- ML 2: suitable for high clearance vehicles. Roads are primarily one lane, low traffic, low speed roads and can range from native surface to pavement depending on resource protection needs.
- ML 3: suitable for passenger cars. Roads support higher traffic volumes and are constructed with wider surfaces and longer sight distances for higher speed traffic.
- ML 4: suitable for passenger cars, moderate degree of user comfort. Roads support higher traffic volumes and are constructed with wider surfaces and longer sight distances for higher speed traffic.
- ML 5: suitable for passenger cars, high degree of user comfort. There are no ML 5 roads in the analysis area.

All levels of roads have drainage and erosion protection features that are maintained to protect water quality. Miles of road by operational maintenance level in the analysis area is provided in Table 2.

Table 2. Miles of FTS Road by Operational Maintenance Level in Analysis Area

Maintenance Level	Miles	Percent
1	3.2	3.06%
2	91.1	87.01%
3	1.3	1.24%
4	9.1	8.69%
Total	104.7	100%

Chapter 3 – Step 3: Identifying Issues

Purpose

The purpose of this step is to identify key issues affecting the transportation system and resource concerns related to travel management.

Resource Concerns

Wildlife

Transportation management recommendations should consider how roads and motorized vehicles can cause disturbance or displacement of wildlife, loss or depreciation of habitat and wildlife mortality. It is Forest Service policy to minimize damage to vegetation, avoid harassment to wildlife and avoid significant disruption to wildlife behaviour and adverse modifications of habitat while providing for motor vehicle use on NFS lands. (FSM 2353.03(2)).

Aquatic and Riparian Habitats/Species

Transportation facilities that interact with streams and riparian habitat should be given the appropriate consideration before a recommendation is made. Roads can impact aquatic species through stream channelization, increased erosion and sediment loading, changing watershed runoff characteristics, passage though inhibited cross drainage facilities.

Hydrology

Roads and trails have the potential to intercept runoff, change watershed runoff characteristics and increase erosion and sediment loading; all of which may have adverse effects on watershed functions. Travel analyses should consider direction relevant to transportation and best management practices when recommendations are made.

Land and Special Uses

Several special use sites exist within the analysis boundary. Access to these facilities is granted through a special use authorization. Road recommendations should consider existing special use access needs. Unauthorized roads within utility corridors may be part of a permitted access system but not part of the NFS.

Recreation

Almost any recreational activity on the Forest requires the FTS to some degree for access. The analysis area features many unmanaged dispersed camp sites and hunting, fishing and camping are historically popular uses in the analysis area. Vehicular access to a dispersed campsite may use unauthorized routes. Recommendations should consider the recreational benefits of currently unauthorized routes and the effects of road closures.

Fire Suppression

Vehicular access via the FTS is a critical component of fire suppression. The FTS enables a timely vehicular response when the terrain may prohibit other means of access. Open roads provide the best access, but may also increase the probability of a human started fire. Closed roads can be used for emergency access but may delay response time.

Vegetation and Fuels

Consideration should be given to plantation management access needs. Plantation treatments are infrequent, sometimes only taking place every 20+ years. Recommendations should balance the needs of the FTS and plantation units.

Heritage

Cultural sites on the National Forest are protected by the National Historic Preservation Act (NHPA). The Travel management Rule requires that the effects on cultural resources be considered with the objective of minimizing damage when designating roads trails and areas motor vehicle use on NFS lands (36 CFR 212.55(a), 212.55 (b)(1)). Unauthorized routes may have already diminished cultural properties.

Botany

Management decisions relate to motor vehicle travel and may affect plant, lichen and fungi species, their habitats and natural communities. It is Forest Service policy to minimize damage to vegetation, avoid harassment to wildlife and avoid significant disruption to wildlife behaviour and adverse modifications of habitat while providing for motor vehicle use on NFS lands (FSM 2353.03(2)). The IDT should consider known habitats and needs with all recommendations.

Invasive Plants

Vehicular travel contributes to the introduction and establishment of invasive plants. The location of roads and proximity to known invasive plant infestations can increase transportation and establishment of invasive species. Invasive plants can affect other resources; direction relevant to the management and prevention of invasive plants should be incorporated into the analysis.

Commodity Production and Extraction

The Forest Plan designates portions of the analysis area to Management Prescription VIII, commercial wood products emphasis. Road recommendations in this management prescription should consider other current and planned vegetation management activities.

Key Issues

The key issues related to the resource concerns were identified using past projects, current issues effecting transportation management and IDT local knowledge and experience.

Road Maintenance

Road maintenance budgets have declined over the past decade and the Forest's ability to maintain roads has been reduced with the loss of maintenance personnel and equipment. Careful planning is required to continue efforts of creating a more sustainable road system.

Right of Way and Access Needs

As the Forest continues to improve INFRA, more FTS roads are discovered that do not have a record of a formal access agreement. Historically there may have been a verbal agreement, but this is no longer compliant with Travel Management policy. Roads without a formal access agreement in place should be identified and evaluated in to determine access agreement needs. Quit claims should be executed where lands have transferred ownership and there is no remaining need for Cost Share use.

Reconstruction and Improvements

Important access routes that may require improvement and/or reconstruction should be identified and recommended in this process. User safety and resource protection should be a priority when recommending improvements. Roads that are not a priority for reconstruction should be considered for closure or decommissioning.

Road Density

Roads that provide unnecessary or redundant access may be recommended for closure or decommissioning in an effort to reduce overall and open road densities. Higher road densities may be required to navigate terrain features.

Scenery Corridors

Parks Creek road provides scenic opportunities to road users. Management considerations for scenic roads include safety improvements, managing pull-outs as viewing locations and vegetation removal to accommodate views.

Chapter 4 – Step 4: Assessing Risks, Benefits and Problems

Purpose

The purpose of this step is to describe the analysis process, the evaluation criteria and ranking.

The Analysis Process

The analysis began with the development of the TAP process plan by the IDT. The process plan established the resource risks and benefits for evaluation and evaluation criteria to be used to rank each road. Once ranked, a score was calculated and applied to a recommendation matrix. The recommendation matrix generated a proposed recommendation to be reviewed and possibly

adjusted by the IDT for a final recommendation.

Evaluation Criteria

The road and trail risk/benefit issues which were identified by the team were assigned to individual specialists based on the resource affected. Each specialist was tasked to produce a succinct statement describing the issue and the criteria by which they would rank the impact of each road or trail for that issue. The following tables detail the issue and ranking statements.

Table 3. Summary of risk and benefits

Risks	***Benefits***
Geologic Hazards	Fire Suppression
Naturally Occurring Asbestos	Commodity Production & Extraction
Wildlife	Silviculture / Fuels
Cultural Resources	Cultural Resources
Invasive Plants & Risk to Native Vegetation	Recreation Sites
Invasive Plants	Range
Botany – Sensitive Species	Road Use Agreements & Private Access
Botany – Unique Botanical Habitats	
Hydrology – Aquatic and Riparian Habitats/Species	
Hydrology – Hydrologic Connectivity	
Road User Safety	
Erosion & Sediment Delivery Potential	

Table 4. Individual Resource Evaluation Criteria

Fire Suppression	
Benefit	
Does the route provide ingress and egress for Fire suppression activities? **Units of Measure**: o Existing access along maintained route. **Data Source:** o Forest GIS transportation layer o District Fire Management Staff's professional experience and judgment	**HIGH** - The route provides critical access and the absence of this access is an unacceptable risk within the WUI.
	MEDIUM- The route provides critical access
	LOW - Area can be accessed by another system route that will be maintained.
Cultural Resources	
Benefit	
Does the route access a Native American Traditional Cultural Properties or Traditional Use Areas? **Units of Measure**: o Presence or absence of Native American Traditional Cultural Properties or Traditional Use Areas **Data Source:** o Information from Tribes o GIS data o Ethnographic mapping data o Tribal liaison's professional experience and knowledge	**HIGH** – The road does access a Native American Traditional Cultural Property or Traditional Use Area.
	MEDIUM – There are other better roads that can be used to access Native American Traditional Cultural Property or Traditional Use Area.
	LOW - The road does not access a known Native American Traditional Cultural Property or Traditional Use Area.

Commodities/Silviculture/Fuels	
Benefit	
Does the road provide access to stands needing silvicultural treatments? **Units of Measure**: o Stand age o Willow-Parks access/future foreseeable stand treatment o Road length (consider 1/10 mile distance) **Data Source:** o FACTS o GIS o Stand silvicultural prescriptions / stand cards o Professional knowledge	**HIGH** – Road provides primary access to a stand < 30 years old OR an Willow-Parks Project proposed stand
	MEDIUM - Road accesses a stand > 30 years old OR provides alternate access
	LOW – Road not required to support forest product removal or management.

Recreation Sites	
Benefit	
Does the road access a developed, dispersed, or other known recreation site? **Units of Measure**: o Proximity to recreation areas/purposes o Is the road a Scenic Byway? **Data Source:** o Forest GIS recreation data o Local public knowledge o Professional knowledge and experience o Recreational opportunity guide (ROG)	**HIGH** – Road accesses a historical/known recreation site.
	MEDIUM – Road provides access to a potential site.
	LOW – Road doesn't access a known or potential recreation site.

Range	
Benefit	
How does the road system affect access to and within range allotments? How does the road affect access to range structural improvements? **Units of Measure**: o Proximity to range allotments and improvements **Data Source:** o Forest GIS data o Professional knowledge o	**HIGH** – The road provides the sole or primary access to an improvement or allotment.
	MEDIUM – The road provides access but is not critical.
	LOW – The road does not access allotments or improvements or is not necessary.

Road Use Agreements & Private Land Access	
Benefit	
How does the road affect access to known rights-of-way and other road use agreements? Does the road access private land? **Data Source:** o Infra Route Authorizations Module Data	**HIGH** – The road is included in a known agreement, provides reasonable access to private land or authorized uses.
	MEDIUM -
	LOW - The road is not included in a known agreement or no longer provides access to private land.

Geologic Hazards	
Risk	
Does the route have a landslide on it? **Units of Measure**: o Landslide present **Data Source:** o Forest GIS o Field	**HIGH** - The route has a landslide present with a high potential for sedimentation or maintenance cost.
	MEDIUM – Moderate potential for landslides
	LOW – none present

Naturally Occurring Asbestos	
Risk	
Does the route have ultramafic rock presence? **Units of Measure**: o Ultramafic rock presence **Data Source:** o Forest GIS o Field	**HIGH** – Majority of road on ultramafic rock
	MEDIUM – Portions of road with ultramafic rock
	LOW – none present

Wildlife	
Risk	
Does the road affect NSO critical habitat, nesting habitat, or nest? **Units of Measure**: o Proximity to NSO habitat **Data Source:** o Forest wildlife GIS data	**HIGH** – within 0.25 miles of a nest, nesting/roosting habitat and/or critical habitat for the northern spotted owl.
	MEDIUM – between 0.25 miles and 1.3 miles from a nest, nesting/roosting habitat and/or critical habitat for the northern spotted owl.
	LOW – more than 1.3 miles from a nest, nesting/roosting and/or critical habitat for the northern spotted owl.

Cultural Resources	
Risk	
Does the route extend through or adjacent to an archaeological site? **Units of Measure**: o Proximity to archaeological sites **Data Source:** o GIS data o Site records and sketch maps o Professional knowledge and experience o	**HIGH** – The route extends through a site.
	MEDIUM - The route extends along the edge of a site.
	LOW - The route does not extend through or along a site.

Invasive Plants & Risk to Native Vegetation	
Risk	
How does the road affect introduction and establishment of invasive plants? **Units of Measure**: o HUC 8 Road density **Data Source:** o Forest GIS road layer	**HIGH** –More than 50% of the route in an 8th field watershed with more than 5 miles of roads per square mile.
	MEDIUM – More than 50% of the route in an 8th field watershed with between 2.5 and 5 miles of roads per square mile.
	LOW – More than 50% of the route in an 8th field watershed with less than 2.5 miles of roads per square mile.

Invasive Plants	
Risk	
How does the road affect spread of known invasive plants populations? **Units of Measure**: o Proximity to inventoried noxious weeds **Data Source:** o Forest GIS weeds layer	**HIGH** – More than 2 known invasive plant populations within 100' of road per mile.
	MEDIUM – One to two known invasive plant populations within 100' of road per mile.
	LOW – Less than 1 known invasive plant populations within 100' of road per mile.

Botany – Sensitive Species	
Risk	
How does the road affect known sensitive, survey and manage, and watch (NFMA listed) species? **Units of Measure**: o Road Proximity to plant populations **Data Source:** o Inventoried sensitive, survey and manage, and watch (NFMA listed) species	**HIGH** – Road enters known sensitive, survey and manage, and watch (NFMA listed) species population.
	MEDIUM - Road within ¼ mile of known sensitive, survey and manage, and watch (NFMA listed) species population.
	LOW - Road beyond ¼ mile of known sensitive, survey and manage, and watch (NFMA listed) species population.

Unique Botanical Habitats – (e.g. Fens, Wet Meadows, Springs)	
Risk	
Is the road/trail within a Unique Botanical Habitat? **Units of Measure**: o Road/trail proximity to Unique Botanical Habitats **Data Source:** o NHD o Fen Mapping Inventory o Field o TESP, CNDDB, SRI	**HIGH** – Road enters or terminates at unique botanical habitat
	MEDIUM - Road within ¼ mile of known unique botanical habitats
	LOW - Road has no potential of interacting with any unique botanical habitat

Hydrology – Aquatic and Riparian Habitats/Species	
Risk	
Is the road within a fish bearing or non-fish bearing perennial Riparian Reserve? **Units of Measure**: o Percent of road within fish-bearing and perennial non-fish bearing stream riparian reserves. **Data Source:** o Forest Riparian Reserve coverage.	**HIGH** – Greater than 50% of road within fish-bearing or non-fish bearing perennial stream Riparian Reserves.
	MEDIUM – Between 10-50% of road within fish-bearing or non-fish bearing perennial stream Riparian Reserves.
	LOW – Less than 10% of road within fish-bearing or non-fish bearing perennial stream Riparian Reserves.

Hydrology – Hydrologic Connectivity	
Risk	
What is the potential for interaction with aquatic and riparian habitats? **Units of Measure**: o Miles of hydrologically connected road **Data Source:** o SSI's o Netmap	**HIGH** – > 1 mile of hydrologically connected road
	MEDIUM – >0.1 and <1.0 mile of hydrologically connected road
	LOW – < 0.1 mile of hydrologically connected road

Erosion and Sediment Delivery Potential	
Risk	
What is the potential for sediment delivery to aquatic and riparian habitats? **Units of Measure**: o Miles **Data Source:** o SSI's o Netmap	**HIGH** – > 1 mile
	MEDIUM – >0.3 mile and <1 mile
	LOW – <0.3 mile

User Safety	
risk	
Does the road present hazardous conditions to road users? **Units of Measure**: o Hazards (washouts, landslides, etc.) in proximity of road o Road condition **Data Source:** o Road Inventory o GIS o SSI's	**HIGH** – hazards present an unacceptable risk or access issue for the public and management
	MEDIUM – hazards are present access is limited
	LOW – hazards may exist but have not been identified

Scoring and Rating

Each route is evaluated for the risk or benefit using the evaluation criteria.

- For any given route, there are 12 issues which were identified as risks, and 6 issues which were identified as benefits.
- The risk/benefit rankings of High, Medium, and Low will be converted into a numerical system – High = 3, Medium = 2, Low = 1.

- The total numerical risk and benefit score will be calculated for each route.
- The range of risk and benefits scores for all routes will be reviewed, and the route list divided up into three relatively equal (based on the miles of routes) groupings – Low, Medium, and High – for both risk and benefit. The following table shows an example of this ranking procedure.

Table 5. Risk / Benefit Ranking Procedure

Issue Category	Total Score Range*	Composite Ranking
Risk	12-20	Low
Risk	21-28	Medium
Risk	29-36	High
Benefit	6-9	Low
Benefit	10-13	Medium
Benefit	14-18	High

*based on final number of evaluation criteria

Statistical Distribution of Risk and Benefit Assessment

A recommendation matrix was used to automatically generate a preliminary recommendation for each route. The total score and composite ranking were incorporated into the matrix, as shown below:

Table 6. Risk / Benefit Recommendation Matrix

RECOMMENDATION MATRIX				
(RISKS)	(BENEFITS)			
	Scores	**Low 6-9**	**Medium 10-13**	**High 14-18**
	High 29-36	(HL) Decommission or Close	(HM) Mitigate or Restrict	(HH) Maintain- Highest Priority
	Medium 21-28	(ML) Restrict or Close	(MM) Mitigate-Maintain	(MH) Maintain-Second Priority
	Low 12-20	(LL) Mitigate-Close or Convert	(LM) Maintain-Low Priority	(LH) Maintain-Low Priority

Recommendations for Roads

Once the matrix had been applied and the results were compiled, the team reconvened and reviewed the results of the analysis. The routes in categories where there is a choice in the final recommendation for the route were reviewed first. These categories are highlighted in yellow in the matrix.

- The raw rankings by issues were used to determine the best recommendation for the routes in question. For instance, if a road has a high risk rating for sediment delivery potential and the route ranked out as 'HL', the appropriate recommendation may be to decommission the road to mitigate sediment delivery.

Once these routes were reviewed, the rankings for the remaining routes were sorted and filtered to identify routes with critical issues which were not dealt with in the first set.

These routes are in the category HH (highlighted in green).

- The raw rankings by issues were used to determine the best recommendation for the routes in question. For instance, if the issue is a route is needed for emergency access, but it is contributing sediment to a waterway, an appropriate recommendation would be upgrade the route maintenance objectives to reduce the sediment input.

Unauthorized routes with high benefits were considered for addition to the FTS. Higher risk, lower benefit unauthorized routes were considered for decommissioning. In addition, other findings, such as "dispersed campsite" or "legal access needed", were incorporated into the recommendation comments.

Guidelines for Risk Mitigation Recommendations

For roads that are identified as resource risks, a mitigation measure may need to be included in the recommendation. Evaluating roads with a numerical risk rating on a priority basis will determine effective mitigation measures such as:

- Closures
- Decommissions
- Reconstruction; emphasize Best Management Practices (BMPs)
- Relocation
- Other strategies specific to the resource to mitigate risk

Chapter 5 – Step 5: Describing Opportunities and the Minimum Road System

The purpose of this chapter is to identify the management opportunities and describe the changes recommended by the analysis. A comparison of the existing Forest Transportation System (FTS) with the desired conditions in the Forest Plan and regulations will explain the need for modifying the FTS.

The Minimum Road System

36 CFR 212.5 (b) (1) is a portion of the travel management regulations and it states:

- "…b) Road system--(1) Identification of road system. For each national forest, national grassland, experimental forest, and any other units of the National Forest System (§212.1), the responsible Official must identify the minimum road system (MRS) needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands. In determining the minimum road system, the responsible official must incorporate a science-based travel analysis at the appropriate scale and, to the degree practicable, involve a broad spectrum of interested and affected citizens, other state and federal agencies, and tribal governments. The minimum system is the road system determined to be needed to meet resource and other management objectives adopted in the relevant land and resource management plan (36 CFR part 219), to meet applicable statutory and regulatory requirements, to reflect long-term funding expectations, to ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance."

The IDT recommended the minimum road system (MRS) for the Shasta-Trinity National Forest using the direction in 36 CFR 212.5 (b). The recommended MRS includes 12.1 miles of trails, 75 miles of open roads and 4.9 miles of roads closed to vehicular travel. The recommended MRS includes adding approximately 3.2 miles of unauthorized routes for trails and dispersed campsite access. There are 19.2 miles of NFS roads that are recommended to be decommissioned. Refer to Appendix A for a complete list of road recommendations and Appendix B for maps of the location of the roads.

The MRS in this document is the IDT recommendation only intended to inform NEPA decisions. During subsequent NEPA processes actual road decisions may change in order for the Forest to achieve the MRS based on project level information and analysis.

A final consideration in developing the MRS is road maintenance. Creating a future road system to match the available or anticipated funds by simply closing or decommissioning roads may not result in a MRS needed for safe and efficient travel and for administration, utilization, and protection of NFS lands.

Opportunities that Respond to the Issues

The following section describes strategies that the Forest may choose to employ in projects and situations where the issues occur (see Chapter 3). The scale at which these actions may be implemented is dependent on the site and the compatibility of the action with the overall management focus of the surrounding area. Funding will be a factor in implementation scale. The list below is intended to provide options that project leaders and decision-makers may consider when implementing changes to the road system.

Issue 2: Road Maintenance

Opportunity: Reduce the number of road miles that need to be maintained or reduce the maintenance level to reduce the maintenance unit cost.

Opportunity: Leverage funds/efforts to increase maintenance capabilities. Continue to seek opportunities within the Forest, with other Forests, with counties and private entities to increase the amount of maintenance accomplished. For trails there are opportunities to work with volunteers to maintain the trails.

Issue 4: Right of Way and Access Needs

Opportunity: Emphasize right-of-way acquisition with out-year program planning and current year project planning. Adjust funding to areas directed at accomplishing right-of-way acquisition.

Opportunity: Negotiate with land owners to obtain formal right-of-way access to routes needed. Complete quit claim deeds as opportunities arise to update Cost Share documents to match land ownership.

Opportunity: Maximize cooperation from adjacent landowners by proposing to issue a reciprocal easement.

Issue 5: Reconstruction and Improvements

Opportunity: Reconstruct and improve facilities for efficiency and resource protection.

Issue 7: Road Density

Opportunity: Designate existing roads needed not needed for immediately foreseeable management activities as maintenance level 1 (closed). Road Management Objectives should be revised as needed to facilitate management.

Opportunity: Unauthorized roads within areas emphasizing vegetation management should be evaluated and added for future management or decommissioned to prevent use and reduce road density.

Issue 9: Scenery Corridors

Opportunity: Open views into the forest as well as distant views by thinning understory in overstocked stands along Road 42N17.

Opportunity: Remove trees that block views to the valley from Road 42N17 in specific locations.

Opportunity: Construct more traffic pull-outs on Road 42N17 not only to view scenery, but to increase safety for passing vehicles.

Opportunity: Acquire Sections 11, 33 and 3 along Road 42N17 alignment and Sections 7, 9 and 5 on Mt. Eddy to help protect scenery for future generations.

Chapter 6 – Step 6: Reporting

The purpose of this step is to report the key findings of the analysis.

Key Findings of the Analysis

42N17 Parks Creek Road

This road is an important arterial route. Reconstruction on this route is recommended to mitigate safety hazards and reinforce drainage features. Vehicle pull-outs should be constructed where passing width and sight-distances are inadequate. The road surface and subgrade should be repaired where slumping is prominent and may affect road user safety. Cut bank slides need to be removed and inside ditches need to be restored for the road drainage to function properly. Cross-drains culverts need to be cleaned and some inlets and outlets require additional armoring.

41N73 West Parks Lake Road

A climbing section of this road requires reconstruction. The end of this road is cut off where it washed out in a storm event. Beyond the washout a user maintained motorized trail system continues to West Parks Lake. The user maintained trail is a combination of the 41N73 road, the 41N73A road, the 06W23 trail, the 06W23A trail and user created ATV trails. The main route alignment should be brought to NFS standards and added to the NFS as a motorized trail. The trail should change to non-motorized use .28 mile before reaching the lower lake. The remaining road and trail system beyond the 41N73 washout should be decommissioned.

41N74 Caldwell Lakes Road

The road has inadequate drainage structures and accelerated erosion which makes it impassable without a high clearance vehicle. Currently the parking for the Caldwell Lakes Trail is immediately adjacent to the Parks Creek Road. The road portion beyond .2 miles should be decommissioned and the Caldwell Lakes Trail should be reconstructed along a better alignment to avoid meadow and riparian habitat. Construction of trail head facilities should also be considered.

41N26 Eddy Creek Road

The segments of this road that are prone to excessive runoff and drainage problems should be reconstructed while maintaining the current maintenance level intended for high clearance vehicles. Vehicular access should be physically prevented beyond the end of this road and non-motorized use should be encouraged on the 06W02 Eddy Creek Trail which should be relocated out of the meadow to its historic route.

Eddy Creek Road System

Spur roads tributary to the 41N26 Eddy Creek Road that are in poor and impassible condition were found to have low values to the Forest and should be decommissioned.

42N19 Dewey Mine Road system

The 42N19 Road is accessible via 42N17 and provides access the Willow creek drainage. Administrative access rights are needed to access the Willow Creek drainage from the Gazelle Callahan road from the north. Several other segments are missing records of legal access. The climbing segment of this road features steep switch backs through riparian features which should be

decommissioned and the segment relocated to the 42N19A road with connection back to the 42N19 road via an existing road on private lands. This will require cooperation with the private land owner.

Summary of Recommendations

Through the Travel Analysis Process the IDT identified several unauthorized routes that exist in the analysis area as trails and dispersed campsite spurs. These routes were recommended to be added to the FTS for management. Enhancements to existing trail systems, including converting existing roads into trails, were identified and recommended. The IDT identified resource concerns in wildlife and LSR management areas that were accounted for and incorporated into road recommendations. Appendix B contains maps that show the TAP recommendations. A complete list of individual road rankings can be found in Appendix A. Recommendations from Appendix A are summarized below.

Table 7. Summary of Recommendations

Recommendations	Miles*	Number of Roads or Trails
KEEP: Keep road in the NFS.	**75.6**	**42**
ADD: Add an unauthorized route to the NFS.	**0.2**	**3**
CLOSE: Keep road in the NFS and close.	**6.9**	**8**
RECONSTRUCT: NFS Road requires reconstruction.	**34.4**	**7**
DECOM: Decommission road; remove from NFS.	**17.4**	**30**
NOT NEEDED: Non-system roads not needed for the NFS.	**4.4**	**11**
CONVERT TO MOTORIZED TRAIL: Convert NFS road to Motorized Trail, no longer needed as a road.	**1.5**	**2**
CONVERT TO NON-MOTORIZED TRAIL: Convert NFS road to Non-Motorized Trail, no longer needed as a road.	**0.4**	**1**
ADD NON-MOTORIZED TRAIL: Add an unauthorized route to the NFS as a non-motorized trail.	**2.8**	**2**
ADD MOTORIZED TRAIL: Add an unauthorized route to the NFS as a motorized trail.	**0.1**	**1**
KEEP TRAIL: Keep trail in the NFS.	**7.8**	**7**
RECONSTRUCT TRAIL: Trail requires reconstruction.	**5.0**	**7**
DECOM TRAIL: Decommission trail; remove from NFS.	**0.6**	**2**
*all mileages are approximate		

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List of Appendices

Appendix A. Road Rankings and Recommendations

Road rankings are presented individually with the rating from each resource risk and benefit. Mileages, preliminary recommendations and IDT comments are included.

Appendix B. Travel Analysis Maps

Maps of the analysis area including final road recommendations.