

CHAPTER 3 - ENVIRONMENTAL CONSEQUENCES

This section summarizes the physical, biological, social, and economic environments and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives presented in the chart above.

Most of the data used in the following analysis are from the Humboldt-Toiyabe National Forest corporate GIS layers. There is a certain amount of error in the location and alignments included in this GIS data. For example, the road layer overlying the stream layer may show more stream crossings than actually exist on the ground because of the different sources from which the different layers were obtained. Some perennial streams may show up on the map as being intermittent. This may also create some inaccuracies as to the exact location and extent of riparian zones. The Forest is constantly working to improve map accuracies and the corporate GIS layers.

For the purposes of this analysis the best data that is available was used. The data in the tables below and in the project record depicts with a reasonable amount of accuracy what would be occurring on the ground for each alternative, within the limitations described above. The changes between alternatives remain relative to each other.

Recreation

Affected Environment

There are many diverse recreation activities occurring on the Ely Ranger District, both motorized and non-motorized. The summer season begins in early May and is busy with camping in both developed campgrounds and dispersed areas. Hikers, mountain bikers, equestrians, fishing enthusiasts, motorcyclists, off-highway vehicle (OHV) riders, and recreational drivers utilize roads and trails on the District. In the fall, many hunters set-up camps and utilize motorized and non-motorized means from their base camp to access hunting areas. Sometimes they travel off-route to pursue or retrieve game. The fall also brings an influx of sightseeing recreationists, mostly driving full-sized vehicles, to view the colors of the changing aspen.

The winter season attracts a few backcountry skiers, cross-country skiers and snowmobilers. Most winter recreationists are from the local communities. Cross-country skiers utilize trails in the Ward Mountain area, where there have been some conflicts with snowmobiles. Backcountry skiers generally utilize the High Schells Wilderness Area, where there have been some snowmobile incursions. Snowmobile riders utilize the roads adjacent to this Wilderness and the Cave Mountain area south of the Wilderness. In the spring, horn hunters visit the area in search for elk antlers.

The Ely Ranger District contains approximately 192.3 miles of system trail, about 160 miles of that is located in Wilderness, with 25 more being managed as non-motorized,

though there are no legal restrictions to keep motor vehicles off these trails outside of designated Wilderness areas. The Ward Mountain and Ice Plant trail systems in the Murry Watershed and the Cave Lake trails adjacent to Cave Lake state park are two examples of trails that are used by both motor vehicles users and non-motorized recreationists. The portion of the Ice Plant trail that is within the watershed provides an excellent mountain bike opportunity. The portion outside of the watershed (E1489) is used by ATVs and connects to road (59442) providing a motorized loop opportunity and a way to keep motorized traffic out of the watershed but still providing a quality loop opportunity.

OHV riders utilize many of the existing routes on the District for recreation and transportation. User-created routes encompass 1,588 miles of road and motorized trail on the District. However, only 610 miles of those routes are identified as National Forest System roads. The remaining 978 miles are generally user-created routes, used by OHVs, full-size vehicles, all-terrain vehicles (ATV) and motorcycles as a motorized trail experience. From observation, most appear to be used by hunters to access isolated areas at the ends of canyons. For the most part, these routes do not provide good opportunities for motorized recreation because they lead to dead ends.

The 40-mile long Ranger Trail(19069), the Fawn Trail(19123), and many routes in the Ward Mountain area, including E1489, E9762, 59442 in the Ice Plant area; E1189, E1497, E1537 that connect to Lowery, and further south to other motorized routes, provide varying driver challenges and some loop opportunities. Fifteen miles of the Ranger Trail in the Duck Creek area is currently the only designated OHV trail on the District. Outside of hunting season, most recreational OHV use is concentrated in these two areas, which are near Ely and are easily accessible. There a very few motorized single-track recreation opportunities on the District.

All of the District's NFS trails, with the exception the Ranger Trail and a portion of the Ice Plant trail, are located in Wilderness areas and the Murry Watershed or are managed as non-motorized. Some sections of the Ranger Trail (outside of Duck Creek) are managed and proposed as motorized single track. The rest of the trail could be rehabilitated to single track. Most of the Ranger Trail in the Duck Creek Basin is designated as open to motorized vehicles less than 54 inches in width.

There are many opportunities for primitive recreation on the District in the nine Wilderness Areas encompassing 456,000 acres. Semi-primitive non-motorized trail experiences are less common on the District with two trail systems. Ward Mountain has the Ice Plant, and the Schells Cave Lake Trails. Both are managed as non-motorized.

Generally, there are few current conflicts between user groups. Mountain bike users have expressed concern (though not officially during scoping) that there is a limited amount of single track outside of wilderness and this would be turned into ATV trails. The Cave Lake area trails are protected by the state park (motorized users cannot access the trails through the park) so these are accessible to mountain bike users. The Ward

and Iceplant trails in the Murry Watershed can be used by mountain bikers but not motorcycle because of the restriction of motor vehicle use in the municipal watershed.

Cross-country skiers also use the Ward Trails in the winter and have reported some conflict with snowmobile users.

Environmental Consequences

The quality of the non-motorized recreation experience is diminished with the increase of motorized off-road travel and higher road densities. Gucinski et al. (2001) observed that the presence of roads can have conflicting effects on recreation. While roads can provide staging access to remote areas and wilderness, they can also diminish opportunities for solitude and perceptions of wilderness. The key issue is change in recreation opportunity. The environmental effects to non-motorized recreation experiences are measured by:

- The relative difference between the amount of Semi-Primitive Motorized (SPM) acres and Semi-Primitive Non-Motorized (SPNM) acres available for recreation opportunities on the different units.

The Humboldt National Forest Land and Resource Management Plan (Forest Plan 1986) directs managers to maintain the present amount of Recreation Opportunity Spectrum (ROS) Primitive and Semi-Primitive Non-Motorized area (page IV-18). Specific management direction in the Forest Plan that either directly or indirectly applies to Primitive and Semi-Primitive Non-Motorized ROS management includes:

- Allow no new permanent roads except for mineral production (USFS 1986, p. IV-18).

SPNM ROS corresponds to areas where there are no existing motorized routes and non-motorized recreation is predominant. These areas provide visitors with a high probability of getting away from the sights and sounds of other people, to be independent, to enjoy nature and to practice outdoor skills and are typically one half to three miles away from motorized routes. The amount of SPNM ROS is used to measure impacts to non-motorized recreation rather than primitive ROS because by definition primitive is an area with very little recreation and visitor use. In addition, primitive ROS on the district is completely within Wilderness or Inventoried Roadless Areas.

SPM ROS corresponds to areas where there are existing motorized routes and recreation dependent on motorized use occurs with some regularity. This ROS setting still provides some opportunities for solitude and but a user is more likely to encounter the sights and sounds of other users. Gucinski et al. (2001) noted that almost all recreation use in national forests depends to some degree on motorized access. Sightseeing, driving outdoors for pleasure, and developed camping are examples of activities that directly use roads as a part of the recreation experience. The key issue to

motorized recreationists is sustainable routes, with diversity in trail difficulty, and loop opportunities.

On National Forest Service land, there is a need and expectation that recreation opportunities for individuals, seeking either the SPNM or SPM setting is available. The Ely Ranger District has many areas where recreationists can enjoy near pristine, uninterrupted solitude while sitting only a few meters from a route within the available 295,118 SPM acres. The District also has approximately 482,400 acres of SPNM acres where recreationists wanting to get further away from development can go (Table 7). These opportunities are in conjunction with the 456,000 acres of Wilderness on the Ely Ranger District.

Table 7: Distribution of Acres of Semi-Primitive Motorized ROS and Semi-Primitive Non-Motorized ROS Class across the Different Mountain Ranges of the Ely Ranger District

ROS Class	Grant-Quinn	Moriah	Schell	Ward	White Pine
SPM	54,286	23,702	80,630	21,871	135,959
SPNM	113,893	57,494	140,873	14,811	155,330

Alternative 1 - No Action Alternative

Under this alternative, there is no restriction on motor vehicle use on the District outside of designated Wilderness Areas.

Non-Motorized Recreation

The No Action Alternative, as it allows many redundant routes to remain open and more route proliferation into primitive and semi-primitive areas, impacts non-motorized recreation opportunities. In essence, the entire 777,518 acres of SPM and SPNM is open for motor vehicle use. While terrain would prevent access into some areas, the density of user-created routes could increase as more routes are created across previously unroaded areas. This alternative has the greatest impact on non-motorized recreation experiences because, if left unchecked, the proliferation of routes could eventually allow motorized access to all unroaded areas on the District.

For example, hunters whose methods of accessing, scouting, stalking, and retrieving game by foot or horse are potentially affected by other hunters using motorized vehicles to travel cross-country to scout for game, access favorite hunting areas, drive or chase game for a better shot, and retrieve game. Contributing to this is the noise created by motorized vehicles that increases stress on and displaces game animals from the immediate area.

Motorized Recreation

Under the No Action Alternative, there is little impact on the availability of motorized recreation. All of the existing routes remain available for use. Motorized recreationists are able to travel off road and visit other areas. In the short term, motorized exploration of more remote areas may offer a satisfying experience. However, over time the quality of this motorized experience is diminished as the impact of dispersed motorized activity begins to degrade the scenery and natural appearance of the landscape. Potential impacts include route proliferation, physical damage that is visible to recreationists such as erosive routes and hill climbs, and the associated sights, sounds and impacts to other resources that may degrade the experience of exploring National Forest System lands.

Grant-Quinn

Unrestricted cross-country travel adversely affects much of the Grant-Quinn Range by allowing motorized route proliferation beyond the existing 212 miles of route that would remain open for use under the No Action Alternative. This alternative leaves 113,893 of 219,857 total acres as SPNM, compared to 130,718 in the Proposed Action. Continued use of these routes adversely affects the non-motorized recreation experience in the localized areas near the routes. This alternative would also have an adverse impact on recreationists in the SPM areas in the Grant-Quinn. The proliferation of routes that dead-end or bisect areas with numerous short routes that branch off of main routes and travel ways do not provide the type of motorized recreation experiences sought by many riders. Over time, degradation to scenery and the natural appearance of the landscape also occur with route proliferation, reducing the quality of the motorized experience.

Mount Moriah

The Moriah Range has approximately 81,200 acres of SPM and SPNM ROS that is accessible from 121 miles of existing routes open to motor vehicles. Continued use of all of the existing routes and unrestricted cross-country travel and the resulting route proliferation would slowly reduce the SPNM and increase SPM areas adversely affecting non-motorized recreation in the Moriah Range. Route proliferation would convert SPNM acres to SPM acres or to Roded Natural (RN) acres. Route proliferation in SPM would result in more RN acres. Roded Natural provides very little opportunities for primitive or semi-primitive recreation opportunities. These routes would provide more mileage to motorized recreationists, but would lack the variety and loop opportunities that are important to quality motorized recreational experiences.

Schells

The Duck Creek Transportation Plan (2005) designated 103 miles of roads and 20 miles of motorized trails in the Schells. There is an additional 390 miles of existing routes in the Schells available to motorized use. These routes provide access to 80,630 acres of SPM and 140,873 acres of SPNM. The associated sights, sounds, and physical impacts

of motorized use in the SPM areas reduce the quality of the non-motorized recreation experience. In addition, these routes are more likely to contribute to route proliferation, as most are user-created routes that dead end and some motorized recreationists may be tempted to continue beyond the end of the routes into primitive and SPNM areas.

Because of this alternative, there are many loop opportunities by combining the Ranger Trail (19069) and Fawn Trail (19123) in the North Schells. There are varying degrees of challenge and some single-track motorized opportunities on the Ranger Trail. In the South Schells, there are many motorized trails open to full-sized vehicles, with some loop opportunities and many spurs that access ridges. All of these routes provide extensive motorized recreation opportunities in the Schell Range. There is no impact to motorized recreation. However, 227 of the 390 miles available in the Schells are redundant spurs that provide little in the way of quality-motorized recreation and do not contribute to loop opportunities. Many of these user-created routes are dead ends. Motorized recreationists may be encouraged to continue beyond the end of the routes, which contributes to more route proliferation.

Ward Mountain

This alternative leaves 150 miles of existing route open to motorized use on Ward Mountain. Most of these routes access the 21,871 acres of SPM and the edges of the 14,811 acres of SPNM. Ward Mountain is very close to Ely and receives heavy OHV use, which is reflected in the distribution of SPM and SPNM. These factors give this area a higher likelihood of increased route proliferation in the watershed and semi-primitive and primitive areas. By not restricting motorized use to designated routes this alternative does not provide a separation between motorized and non-motorized recreation. This can lead to conflicts and adverse impacts to non-motorized recreation. There are two non-motorized trail systems located in the Murry Watershed. Under this alternative, these trails are threatened with route proliferation and motorized travel.

Motorized recreationists can continue to enjoy 149 miles of route open to motor vehicle use. A number of these routes are suitable as motorized trails, particularly on the east side of the range. Some of these routes offer interesting and challenging loop opportunities. However, the current number of redundant routes creates a spider web of confusing routes, which affects the motorized recreation experience. This alternative takes no steps to separate motorized and non-motorized recreation, which leads to conflicts and adverse impacts to motorized recreation.

White Pine

This alternative leaves 617 miles of existing route open to motor vehicle use on the White Pine unit, which accesses the 135,959 acres of SPM acres. There is also 155,330 acres of SPNM on the White Pine Range. The designated Wilderness Areas (Bald Mountain, Shellback, Currant Mountain, White Pine Range, and Red Mountain) in the White Pine Range provide many primitive recreation opportunities. Given the abundant Wilderness opportunities, non-motorized recreation is minimally impacted, providing that motor vehicle users remain on existing routes. However, under this alternative there is no prohibition against vehicles traveling off designated routes.

Without this prohibition, there are increased opportunities for route proliferation that would adversely affect non-motorized recreation in areas not designated as Wilderness but classified as SPNM. The sights, sounds, and physical impacts of motorized vehicles detract from the non-motorized recreation experience. There is also no restriction on cross-country travel, which leads to more route proliferation and can affect non-motorized recreation in both the SPM and SPNM areas.

This alternative provides 617 miles of roads and trails for motorized recreation with loop opportunities and varied experiences, including access to the historic White Pine Mining District. Unfortunately, 273 miles of these routes cross private land, mining claims, and potentially hazardous mining areas. This alternative does not negatively affect motorized use.

Alternative 2 - Proposed Action Alternative

This alternative adds a number of motorized routes, both trails and roads, to the forest transportation system to provide varied motorized recreation opportunities while protecting non-motorized opportunities. This alternative also designates motorized use on a part of the Ranger Trail to motorcycles in the north part of the Schell Creek Range, and closes the Murry Watershed in the Ward Mountain area to over-snow use.

Non-Motorized Recreation

The District is measuring the impact on non-motorized recreation by looking at the number of acres that would be classified as either Semi-Primitive Non-Motorized (SPNM) or Semi-Primitive Motorized (SPM). Table 8 displays acreage of SPNM and SPM by Mountain Range that would be available under the Proposed Action Alternative.

Motorized Recreation

Under the Proposed Action Alternative, the District would close 731 miles of existing user-created and system routes to motor vehicles, and prohibit cross-country travel. However, motor vehicles can use over 876 miles of forest transportation system routes.

Table 8: Distribution of Acres of Semi-Primitive Motorized ROS and Semi-Primitive Non-Motorized ROS Classes Across the Different Mountain Ranges of the Ely Ranger District Under the Proposed Action Alternative					
ROS Class	Grant-Quinn	Moriah	Schell	Ward	White Pine
SPM	32,576	17,501	46,080	20,057	96,300
SPNM	130,718	62,209	171,304	17,794	191,543

Grant-Quinn

This alternative adds 10 miles of road and 17 miles of motorized trail (open to all vehicles) to the forest transportation system. These routes provide access to dispersed recreation, remote canyons, hunting opportunities, and loop opportunities for OHVs and recreational driving. Motorized opportunities are limited to designated routes, but provide sustainable and reasonable opportunities. The closed routes are mostly redundant and do not provide loop opportunities or needed access.

There is no adverse impact to non-motorized recreation in the Grant-Quinn Ranges because the amount of SPNM acres would be increased from 113,893 acres in the No Action Alternative to 130,718 acres. This is the result of not designating 116 miles of routes not needed for recreation or resource management on the Grant-Quinn. This alternative also includes the prohibition restricting motor vehicle use to the designated routes. This prohibition puts an end to route proliferation in both the SPM and SPNM areas. The non-motorized recreation experience in these areas would be preserved because of this restriction.

For motorized recreation the remaining 93 miles of route is adequate to access the entire area outside the Grant Range Wilderness and the Quinn Canyon Wilderness. There is also a number of dispersed recreation spurs provided which retains the SPM experience.

Motorized recreationists who ride cross-country and on user-created routes in IRA would be affected in the short term by having their riding opportunities reduced. In the long term, however, the quality of this experience is preserved as scenic and natural resource qualities are not degraded by route proliferation.

Mount Moriah

Under the Proposed Action Alternative, the District would reduce routes open to motor vehicle use from 121 to 76 miles. The most utilized routes for motorized recreation, dispersed recreation, and hunting camps remain open under this alternative. The District would add many challenging and scenic routes and loop opportunities to the system in the Dog Springs/Four Mile area. Traditional motorized access remains intact.

There is no adverse impact to non-motorized and primitive recreation from the Proposed Action Alternative. Opportunities to gain access to primitive experiences actually improve by keeping the Silver Creek Spring route (E2039) and the South Fork Hendry's Creek route (U59162) open. These routes provide access to dispersed campsites and access for hunters. Under this alternative, the amount of SPNM acres would be increased by approximately 4,715 acres.

Schells

Under the Proposed Action Alternative, the amount of SPNM would be increased from 140,873 acres to 171,304 acres. This increase is the result of decreasing the number of available miles of user-created routes from 390 to 163. In the North Schells, this

alternative provides many varied motorized recreation opportunities. Much of the Ranger Trail becomes a single-track trail, providing an opportunity that is in short supply on the District. The Fawn Trail (19123) becomes a motorized trail open to all vehicles and provides a long and challenging loop opportunity that can be combined with other routes, including the Ranger Trail. Many routes in the North Schells access scenic vistas and provide excellent hunting access. The District would add many dispersed recreation spurs to the system in the Big Indian Creek drainage. There is very little adverse impact to motorized recreation in the North Schells.

The primary recreation uses in this area include dispersed recreation, hunting, and recreational driving. Most traditional motorized routes are currently part of the forest transportation system and provide some spurs for dispersed recreation. Hunters and recreational drivers accustomed to motorized access to every ridge top would no longer be able to access some areas. This alternative provides adequate access to the portions of the Schells that is not designated Wilderness. It is anticipated that hunting in the unit would be improved by eliminating some motorized pressures.

The Ranger Trail (19069) is 40 miles in length and currently receives motorized traffic. The portion in the Duck Creek Basin is designated as an NFS trail open to motor vehicles less than 50" wide. There is one small section in North Creek designated non-motorized. The remaining sections to the North are currently used by motorcycles and are the only quality motorized single-track opportunity on the District. This north-south trail stays high on the ridge in the North Schells. This alternative designates much of this trail as a single-track motorcycle route. This designation has adverse impacts to hunting and primitive recreation in the immediate vicinity of the trail. There are an additional two routes (U59488B -South Fork Mattier Creek and U59075 – South of McCurdy Creek) in the North Schells that would be added to the system as motorized trails. These routes provide loop opportunities and important access for both SPM and SPNM recreation opportunities and hunting.

Because of this alternative, there may be small-localized adverse impacts to primitive recreation along route corridors, but motorized vehicles are currently using the routes and the District expects no meaningful change by adding them to the system. In the southern part of the Range, an important loop opportunity would be designated along U59391 – Crethers Spring. This route has been used historically by automobiles and is shown on USGS maps. U59369 – North of Connors Summit provides additional access to a ridge top and provides access to an important viewpoint for hunters and recreational drivers. There is seldom any primitive or non-motorized recreation in these areas, so there is no impact to this form of recreation. The High Schells Wilderness and a non-motorized trail system adjacent to Cave Lake State Park continue to provide excellent primitive and non-motorized recreation opportunities.

This alternative closes several routes that are important for motorized recreation and access on the Westside of the Schell Range near Ely, Nevada. The fence line road on the west side of the area (U59371, U59384, and E7275) provides important north-south access along the foothills. This same route is also important to pronghorn antelope

hunters on adjacent BLM land. Motorized recreationists can still access this area of the range but must travel back to the highway and follow other routes into the area.

Ward Mountain

Under this alternative, the amount of SPNM is increased 2,983 acres from the 14,811 acres available in the No Action Alternative. The amount of SPM decreases by 1,814 acres. This change in recreation opportunities is important because some of these routes are important to non-motorized recreation and the absence of primitive (PR) ROS in the Ward Range. The Ice Plant motorized trail provides a popular loop opportunity near Ely, Nevada. This alternative retains non-motorized recreation opportunities by protecting two extensive non-motorized trail systems and directing motorized use away from the Murry Watershed. Two other routes E1389 and E6027 in the Gallaghers Canyon area provide access to dispersed recreation and hunting.

In the Ward Mountain area, the Proposed Action Alternative reduces the miles of route from 150 to 82. These 82 miles of route nearly doubles that available under the Current System Alternative.

The motorized routes added to the system connect with system routes and adjacent BLM routes and provide many loop opportunities for all types of OHVs. One comment during scoping requested route (E1489) be completely non-motorized. This route is proposed as a NFS trail open to motor vehicles less than 50” because it provides a motorized loop opportunity outside of the Murry Watershed. The NFS trail will also provide a quality opportunity for motorcycles and ATVs while protecting the non-motorized portion within the watershed and near the private land.

On the terraces on the west side of Ward Mountain, there are many loop opportunities, and some dispersed recreation spurs. Motorized recreationists have access to scenic areas along many roads and trails. For the most part, motorized recreation is not adversely impacted and there is potential for a higher quality experience. However, motorcycles lose some single-track trail in and adjacent to the Murry Watershed. Following Forest Plan direction, this alternative closes the section of the trail in the Murry Municipal Watershed to motorized vehicles to reduce erosion and protect the water source for the community of Ely. To manage this closure, the District closes adjacent segments of the Ice Plant Trail that access the Watershed. This removes one of the few motorized routes designated solely for single-track use. While motorcycles can utilize the many OHV trails, many motorcycle riders enjoy the challenge and experience of single-track trails.

White Pine

Under this alternative 191,543 acres of SPNM would be available for non-motorized recreation activities. This is an increase from the 155,330 acres available under the No Action Alternative and is a result of designating 110 miles of the available 382 miles of user-created routes. The prohibition restricting motorized recreation to designated routes and the increase in the SPNM area is a positive effect to non-motorized recreation in the White Pine Range under the Proposed Action Alternative.

Despite the sizable reduction to the SPM acres, (from 135,959 to 96,300) motorized recreationists still have considerable access to the entire area. The many cherry stems provide access for hunters and recreationists in many areas across the range. Most of the routes remain open to full-sized vehicles and provide a good transportation system. The District would also add a few, but not all, of the old mining roads in the White Pine Mining District to the forest transportation system as OHV trails. The District would also add many dispersed recreation spurs along the White River and Ellison Creek and Current Creek roads. These system roads are heavily used in the summer and hunting seasons and the associated dispersed recreation sites provide many recreation opportunities. This alternative reduces the miles of motorized routes; the quality of the motorized experience is improved with fewer redundant and unsustainable routes.

Table 9 shows the reduction in miles of motorized route that occurs under the three alternatives.

Table 9: Miles of Route Reduced from Existing Motorized Routes						
	Grant/Quinn	Moriah	Schell	Ward	White Pine	Total miles reduced from system
Alternative 1: No Action	0	0	0	0	0	0
Alternative 2: Proposed Action	119	45	208	68	272	712
Alternative 3: Current System	138	69	276	109	382	974

Alternative 3 - Current System Alternative

Non-Motorized Recreation

The Current System Alternative provides 610 miles of roads and trails open to all vehicles. It also prohibits motor vehicle use off designated routes. Table 10 shows the amount of SPM and SPNM acres available on each of the mountain ranges making up the Ely Ranger District. There are few miles of route designated open to OHVs and motorcycles in the Duck Creek Transportation Plan. More primitive recreation opportunities are available under this alternative than under other alternatives. Access to these areas is more difficult, which improves the primitive experience for some recreationists. It may also make some of these areas inaccessible to many other recreationists.

Motorized Recreation

Motorized recreation will be reduced by this alternative. The District reduces miles of available routes from 1,588 in the No Action Alternative to 610. More important than the mileage, the District eliminates the existing quality loop opportunities for OHVs and motorcycles on Ward Mountain, and reduces them in the Schells, Mount Moriah, and the White Pine Ranges. Dispersed recreation opportunities are also nearly eliminated given that the access to many of these dispersed recreation sites is not identified as system routes. As a result, campers must utilize developed sites or camp on BLM-administered lands. These limitations have a drastic impact to recreation and public access across the district. The basic transportation system is intact for full-sized vehicles with some challenging opportunities, but OHVs and motorcycles have only the current system routes to utilize, with very few trail opportunities. The ability of hunters to search for game is diminished as many of those routes are no longer open to motor vehicle use.

Table 10: Distribution of Acres of Semi-Primitive Motorized ROS and Semi-Primitive Non-Motorized ROS Classes Across the Different Mountain Ranges of the Ely Ranger District Under the Current System Alternative					
ROS Class	Grant-Quinn	Moriah	Schell	Ward	White Pine
SPM	28,250	13,773	29,388	12,965	65,680
SPNM	135,528	61,071	172,507	24,886	224,895

Cumulative Effects

There are a number of past, present, and reasonably foreseeable projects that, when implemented, may have impacts on recreation that, when combined with this action, may result in a reduction of either the non-motorized or motorized recreation opportunities across the Ely Ranger District. These projects include:

Ranger Rescission Project:

The Ely Ranger District has nearly completed an analysis of the livestock grazing allotments on the west side of the Ranger District (White Pine Range, Grant, and Quinn Ranges) for permit renewal, and then will start an analysis of the rest of the District. This project does not designate, or close, any routes on the District.

Coal Fired Electrical Plants:

There is a proposal to construct two coal fired electrical power generation plants in White Pine County west of the Schell Creek Range. This project does not occur on National Forest System land and does not add or subtract routes from the forest transportation system. The power plants may have many impacts on recreation, but not cumulatively with route designation.

White Pine County Land, Recreation, and Development Act:

The passage of the White Pine County Land, Recreation, and Development Act of 2006 (WPCRDA) created 456,000 acres of new Wilderness on National Forest System Lands, and 295,600 acres on the public lands managed by the BLM in White Pine County. This act added to the Mount Moriah Wilderness. In this area, any effects to non-motorized recreation would be beneficial, such as providing additional areas capable of providing primitive experience. WPCRDA also designated the 121,497-acre High Schells Wilderness, which eliminated motorized access in much of the Central Schell Creek Range. On the White Pine Range four new Wilderness Areas were designated under the WPCRDA, which when combined with route designation, should result in adequate protection of non-motorized recreation in this area.

The designation of these wilderness areas may have closed motorized routes that entered into these areas reducing motorized recreation opportunities across the district. The areas designated as wilderness would have been predominately made up of areas that met either the description of Primitive or SPNM. If this assertion is indeed the case there was very little SPM designated under WPCRDA. This action (Ely Travel Management) does reduce the amount of route open for motor vehicle use however; most of these routes were short spurs, redundant with system or user-created routes that are being designated. This project also designates many motorized trails for the exclusive use of ATVs and motorcycles as well as 148 miles of motor vehicle trails open to all vehicles.

Duck Creek Transportation Plan:

The Duck Creek Transportation Plan designated motorized routes in the Duck Creek Basin. The impacts of that project to recreation are similar to this district wide route designation process. Motorized users are required to stay on designated routes, with cross-country travel closed, but there are many quality routes left open with adequate loop opportunities including the Ranger Trail. The Ranger Trail in Duck Creek Basin was a popular route for equestrians. This route is now open to motorized travel (motorcycles and OHVs). This reduced the non-motorized recreation experience on that trail, but did not change amount of SPNM available.

Taylor Mine and Mill Development:

The District has received a plan of operation to mine and mill in the Taylor area of the South Schell Creek Range. This plan includes approximately 717 acres within the project area boundaries. This area would be closed for an indefinite period to both

motorized and non-motorized recreation activity. Given the entire Schell Creek Range totals approximately 286,000 acres the impact to recreation activities because of this mining proposal would be minimal (less than 0.01% of the total available area) in that the vast majority of the district would remain open and accessible for both non-motorized and motorized recreation opportunities.

Ward Mountain Projects:

Small ongoing trail, fuels, and wildlife projects in the Ward Mountain area are being proposed. The only potential recreation impact from these projects is if fuels treatments thin vegetation too much, route proliferation may increase as motor vehicles can more easily go off route. However, with the prohibition on motorized vehicle use off designated routes this activity would be addressed through the enforcement of the prohibition.

Landscape-scale Vegetation Projects:

The BLM and the Forest Service are planning landscape-scale vegetation projects on the lands on and near Ward Mountain, and the Forest Service is developing a landscape-scale vegetation project on the North Schells. These projects do not open or close any routes, but may allow increased route proliferation if vegetation is thinned next to designated routes, allowing vehicles to travel off-road. However, with the prohibition on motorized vehicle use off designated routes this activity would be addressed through the enforcement of the prohibition.

White Pine/Grant Quinn Oil and Gas:

Completion of the White Pine Grant Quinn Oil and Gas EIS and Record of Decision make approximately 255,000 acres of the White Pine and Grant-Quinn Ranges available for lease. The lease action does not approve any on the ground action to be taken by future leaseholders. Once a lease is granted the holder would be required to submit a plan of operations in order to occupy the lease block and explore for or develop the block. The Forest Service is then required to conduct the appropriate level of NEPA analysis to determine what effects the proposed operation would have on biological, physical or cultural resources in the project area. The decision would reiterate any stipulations required under the White Pine Grant/Quinn Oil and Gas ROD and any other measures required under the site-specific NEPA document.

Troy Canyon Mineral Exploration:

The mineral exploration in Troy Canyon and potential future development may have individual impacts to the non-motorized recreation experience, but combined with this project should not result in a decrease in motorized or non-motorized recreation opportunities.

Ely BLM Resource Management Plan (RMP):

The Ely BLM RMP is expected to close BLM-administered lands to cross-country travel. Combined with the District's route designation the District is greatly reducing the area available to motorized recreation. However, no quality loop opportunities or needed routes are being closed by either agency.

Roadless

Affected Environment

Since 1970, the Forest Service has inventoried and studied roadless areas greater than 5,000 acres and roadless lands, regardless of size, adjacent to existing wilderness. The District refers to these areas today as Inventoried Roadless Areas (IRAs). In 2001, the President signed the Roadless Area Conservation Rule. The White Pine County Conservation, Recreation, and Development Act of 2006 designated much of the Inventoried Roadless on the District as Wilderness. There are now 51 IRAs totaling 327,557 acres on the District outside of Wilderness. For comparison, the Ely Ranger District is about 1 million acres and contains 456,500 acres of designated Wilderness. The miles of route in IRAs are shown on tables 11, 12, and 13 below.

Currently, motorized use is allowed within the boundaries of IRAs on both National Forest System (NFS) roads and NFS trails, and on user-created routes. On the maps provided by the forest for the 2001 Roadless Area Conservation Rule 13.6 miles of NFS roads are located within the boundaries of Inventoried Roadless Areas (Table 13). The current Forest Plan allows this use (USFS 1986 IV-3), as does the Roadless Rule.

Environmental Consequences

Inventoried Roadless Areas have a variety of characteristics, including soil, water and air quality, diversity of plant and animal communities, public drinking water, habitat for sensitive species, primitive recreation, reference landscapes, distinctive landscape character and integrity, and locally unique features. IRAs also have wilderness attributes, including, natural integrity, apparent naturalness, and remoteness/solitude, opportunities for primitive recreation, special features, and manageability as a potential wilderness area.

Roads are often incompatible with these characteristics. Gucinski (et al. 2001) identified several effects of forest roads that conflict with roadless characteristics and wilderness attributes. Roads can result in the removal or displacement of topsoil and alter soil properties and productivity. Roads can alter hydrologic processes by intercepting rainfall, concentrating flow, and diverting or rerouting water from its natural path. Roads can lead to increases of fine sediment into streams. Animal populations can be affected by habitat fragmentation. Roads can also affect natural habitats by providing a pathway for non-native species to enter and spread into those habitats. Roads create very noticeable linear features on the landscape, and because of little rainfall throughout Nevada, these linear features remain for many decades because screening vegetation is little or non-existent from the continual impact from OHV's.

The quality of roadless characteristics and wilderness attributes is diminished with the increase of motorized travel within IRAs. The environmental effects to roadless characteristics and wilderness attributes are measured by:

- Miles of motorized routes within IRAs.

Alternative 1 - No Action Alternative

Under the No Action Alternative, there is no change to the forest transportation system and no restriction on motor vehicles. Table 11, shows the miles of roads in each mountain range and the amount of roads in that range that are located in inventoried roadless areas under the No Action Alternative. Under this alternative, all of these roads would remain open for motor vehicle use. In addition, under this alternative, the recreation users of motor vehicles are permitted to travel on and off routes in pursuit of their recreation activity.

This may result in widespread adverse impacts to roadless characteristics and wilderness attributes. It is likely that more user-created routes would be pioneered, degrading roadless characteristics. In addition, many miles of existing routes would remain open to motor vehicle use. Gucinski (et al. 2001) point out that as the number of routes in a roadless area increases the quality of the roadless characteristics and wilderness attribute decline. This decline can lead to adverse effects to wildlife habitat through fragmentation, impacts to soil air and water, and the reduction of scenic and sustainable landscape character. Increased roads in roadless areas can also decrease wilderness attributes associated with the roadless areas.

All routes reduce the size of the roadless areas decreasing the opportunity for solitude and primitive character. Many of these routes are poorly located and would be difficult to maintain or repair if the need arose. For example, a road that is too steep or is located where water cannot run off it is not sustainable over time. They may remain passable for years, but would leave a large scar on the landscape degrading landscape character and apparent naturalness. Leaving these routes open continues to degrade the quality of roadless areas.

Table 11: Miles of Motorized Route in IRAs under No Action Alternative		
Mountain Range	Total Miles	Miles in IRA
Grant-Quinn	211.5	40.5
Moriah	121	12.4
Schells	489.5	53.5
Ward	149.5	12.1
White Pine	616.5	36.9
Total	1,588	155.4

Grant-Quinn

This division contains roughly 129,000 acres of IRA, most of which is contiguous with either the Grant Range Wilderness Area or the Quinn Canyon Wilderness Area (Map Grant/Quinn 1-4). The No Action Alternative leaves 40.5 miles of user-created route within the IRAs open to motor vehicle use. Motorized cross-county travel could also continue resulting in the expansion of the number of routes and the impact routes have on roadless character and wilderness attributes. Allowing these routes to remain open reduces the number of actual roadless acreage by a small percentage but degrades the qualities of the remaining roadless areas where the routes are located. This reduces the apparent naturalness of the immediate area near these routes. There is a visual scar upon the land as well as associated sights and sounds of motorized travel.

Mount Moriah

Most of this area is within an IRA or the Mount Moriah Wilderness Area (Map Moriah 1-3). Many roads provide access to Wilderness trailheads. The IRAs are mostly contiguous with the Wilderness area. This alternative leaves 12.4 miles of motorized route within the IRAs. Most of these routes are redundant with routes already designated as National Forest System Roads and impact roadless characteristics and wilderness attributes within the IRAs, as well as within the contiguous Mount Moriah Wilderness by allowing motorized access to these areas. The presence of the routes on the landscape impairs the apparent naturalness and may reduce the natural integrity and reduce the areas ability to function as a reference landscape. These routes dead-end

within the IRAs. This creates the potential for route proliferation and extending these routes deeper into IRAs. Motorized recreationists may push routes further into IRA or Wilderness. Few of these routes provide quality dispersed recreation opportunities.

Schells

This area contains the High Schells Wilderness and some very high quality roadless areas with unique and outstanding qualities such as the dramatic limestone cliffs of Muncy Creek and many large aspen stands. The No Action Alternative allows 53.5 miles of motorized route to remain in the IRAs and allows overland travel. The IRAs in the north Schell Range are high elevation, open country and susceptible to route proliferation caused by cross-country travel (Map Schell 1-5). The Schell Range is also near Ely and heavily visited by recreationists. The No Action Alternative would likely lead to degradation of the North Schell and West Schell IRAs. Route proliferation would degrade the apparent naturalness by leaving more visual scars on the landscape. Natural integrity and other roadless characteristics may also be impacted, as would the wilderness attributes in these IRAs.

Ward Mountain

This area is very close to Ely and is heavily visited by residents and tourists. Currently, there are many system and user-created routes (Map Ward). The core of this area is the 15,927-acre Ward Mountain IRA. In the No Action Alternative, 12.1 miles of existing route in IRAs remain open to motorized use. These routes extend farther each year. This alternative leads to degradation of this small but exceptional IRA by allowing this route proliferation to continue. Apparent naturalness is diminished as routes are pushed deeper into the IRA.

White Pine

This Range contains a number of well-maintained system roads and many routes created by mining and ranching practices (Map White Pine 1-6). There are also a growing number of user-created routes recently pioneered by OHVs pushing farther into IRAs particularly in the Cottonwood and Indian Creek IRAs in the White River and Ellison areas. The area also contains five Wilderness Areas. Most of the IRAs are adjacent to these Wilderness Areas. There are 36.9 miles of these routes in IRA that remain open. Leaving these routes, open to motor vehicle use degrades the roadless characteristics and wilderness attributes. The visual impact of many routes impeding into IRA degrades the apparent naturalness. The presence of these routes may allow for more proliferation further degrading apparent naturalness and other roadless characteristics. Unrestricted cross-country travel allows more pioneered routes, reducing the size of the IRAs and threatening adjacent Wilderness Areas.

Alternative 2 - Proposed Action Alternative

This alternative addresses the recreation access issue by adding several user-created routes that are popular with recreation drivers to the forest transportation system. It also adds routes into popular hunting areas, and dispersed campsites. This alternative

balances the need for recreation access with protecting IRAs. The miles of motorized routes in IRAs are reduced from 157 to 33.6 miles. There is only a negligible reduction in size of the IRAs and very little adverse impact to roadless characteristics and wilderness attributes because there are very few miles of motorized route in IRAs and the routes are dispersed across the District (Tables 12 and 13).

Table 12: Miles of Proposed Motorized Route in IRAs under Proposed Action Alternative		
Mountain Range	Total Miles	Miles in IRA
Grant-Quinn	92.5	4.7
Moriah	76	2.5
Schell	281.5	20.1
Ward	81.5	3.0
White Pine	334.5	2.3
Total	866	32.6

Grant-Quinn

There are currently 2 miles of National Forest System Road located in or adjacent to Inventoried Roadless Areas. The Proposed Action Alternative proposes to designate 2.7 miles of motorized trail in Inventoried Roadless Areas located in the Grant-Quinn Division. One route, U59105, is located in the Wiregrass Spring IRA. This route is a motorized trail and provides access to one of the few portals to the Grant Range Wilderness. The route is 2.4 miles in length. Because of these routes, location and setting there is minimal impacts to the apparent naturalness of the Wiregrass Spring IRA and it would retain the visual presence of the route. This visual effect is limited to areas directly adjacent to the route however. At the end of the route, wilderness manageability would be preserved using natural topographic features, barriers and Wilderness signing. The Wiregrass IRA has a high level of natural integrity, remoteness, solitude and opportunities for primitive recreation. Given the location, rugged nature, and limited use of this route it would not detract from these wilderness attributes or the roadless characteristics of the Wiregrass Spring IRA.

A second route, E1778, is located in the Black Spring IRA. This motorized trail is 0.3 miles in length and accesses a dispersed campsite. This route has little effect on the

roadless characteristics or wilderness attributes of the Black Spring IRA. According to the *Assessment of Wilderness Potential prepared for the Forest Plan Revision (2006)* this roadless area lacks outstanding wilderness characteristics and is not contiguous to an existing Wilderness or Study Area.

Mount Moriah

In the Mount Moriah unit, the proposed action includes 2.5 miles of route in IRA, which includes 0.6 miles of current National Forest System Road. The remaining 1.9 miles is split between six small spur routes that provide access to dispersed recreation sites. E6197 (0.19 miles), E6193 (0.11 miles), U59148A (0.25 miles), E2039 (0.96 miles), U59481A (0.3 miles) and E13315 (0.06 miles) are the camping spurs. The routes are located along the Four Mile road and in the Dog Springs area. They lead to traditional dispersed recreation sites that have been in use for many years. These recreation sites allow people to enjoy the wilderness attributes and roadless qualities while still using motor vehicles. These routes are all located along the edge of an IRA in the Northwest portion of the Moriah unit. This IRA is approximately 3,800 acres in size and shares a boundary with the Mount Moriah Wilderness. Designation of these routes would not affect roadless characteristics in this area or wilderness attributes because of their short length and their isolated distribution in the landscape.

Schells

There are 20.1 miles of motorized routes in IRA in the Schell Creek Range. In the current system, there is 3.7 miles of National Forest System Road that borders the inventoried roadless areas, and because of mapping errors appear to be within the boundaries. There is also 2.4 miles of National Forest System Trail open for use by all vehicles types. There are 3.28 miles of NFS road located in Duck Creek Basin and was addressed in that analysis. This proposed action does not make a change regarding these routes. The Proposed Action would add seven routes totaling 3.58 miles as motorized trail into inventoried roadless areas as well as restricting use by vehicle type on the Ranger Trail (19069) which crosses IRA for 7.7 miles.

The District would designate 1.9 miles of user-created routes as a motorized trail in the south fork of Mattier Creek (U59488B) in the North Schells. This trail provides access for hunters and range permittees and provides a loop opportunity with the main fork of Mattier Creek. The District would also add short spur routes U59369 (0.9), U59661 (0.02), U59697A (0.06), U59436B (0.1), U59428C (0.2), and E12514 (0.4) that provide access to traditional dispersed recreation sites in the Indian Creek, and Cave Lake areas. These recreation sites are often in aspen stands. These aspen stands are an important component to the apparent naturalness of the North Schell and West Schell IRAs. Camping may have an impact on the apparent naturalness, but this impact is localized and not visible at any distance from the dispersed campsites. The District does not expect camping to increase, but dispersed camping activities and the associated impacts would continue. The Ranger Trail (19069) is already a system trail and currently receives motorcycle traffic and some ATV traffic. The Proposed Action would restrict much of the trail in IRA to motorcycle only limiting potential for route proliferation and reducing impacts to IRA compared to existing conditions.

Ward Mountain

Under the Proposed Action Alternative, two routes totaling 2.9 miles of motorized trail are located inside the IRA. Both routes are in the Lowry area E1389, 1.7 miles and E6027, 1.2 miles. These routes provide access to dispersed recreation, hunting, and traditional wood cutting areas. In addition, this area, though an IRA, is in the wildland urban interface near Ely. These routes would provide access for future fuels reduction and vegetation treatment projects. Adding these routes to the forest transportation system does not diminish the overall qualities of the Ward Mountain IRA. The Ward Mountain area is in Ely's backyard and many motorized and non-motorized visitors recreate in the area. By adding these two routes in the IRA, as well as adjacent routes, outside of IRA, that provide access and loop opportunities, resource management and recreation access is maintained and the roadless characteristics and wilderness attributes are preserved. This provides desired access to the public and reduces the urge to pioneer new routes that may impair apparent naturalness and other roadless characteristics.

White Pine

The White Pine Range contains 66,848 acres of IRA and five Wilderness Areas. This alternative adds 3.3 miles of motorized route in IRAs. This is a relatively short distance of routes considering the total acreage. One mile is NFS road that borders the inventoried roadless areas, and because of mapping errors appear to be within the boundaries. One mile of motorized trail is the South Six Mile Wash spur (E3303) that leads to a wildlife guzzler. The remaining 1.3 miles consist of short spurs to dispersed recreation sites. U59016 on the west slope of the Currant Mountain Wilderness, provides dispersed recreation, wilderness access, hunting access, and is a needed route for the range permittee. E3646 is on the south end of Red Mountain and provides camping opportunities and access to a range development. U59726, southeast of Red Mountain connects to an open route on BLM. E4203 is cherry stemmed into the Shellback Wilderness. U59405E is off the White River-Ellison road that provides access to dispersed recreation and access for hunters. Due to the large areas of IRAs and Wilderness, these small spurs have no adverse impact to the roadless characteristics or wilderness attributes of IRAs in the White Pine Range.

Alternative 3 - Current System Alternative

This alternative allows motorized use only on current forest transportation system routes. There is less than one mile of system route in IRAs in each of the Mount Moriah, Ward Mountain, and White Pine areas. There are two miles of NFS roads in the Grant-Quinn area. There are 12 miles of system route in IRAs in the Schells from the Duck Creek Travel Plan signed in 2005. This alternative provides the least number and mileage of motorized route in IRAs. There are currently 600 miles of NFS roads on the District, which has an area of 1,024,410 acres. Limiting motorized use to this relatively small number of routes protects IRAs and Wilderness, but also provides limited and unsatisfying motorized recreational opportunities. This alternative would close many traditional areas used for dispersed recreation on every unit. These dispersed sites are valuable resources on this district. Hunters typically use the sites in

the fall and other people seeking semi-primitive motorized experiences. Closing these sites would result in a loss of this recreation opportunity.

Table 13: Miles of Motorized Route in IRAs under Current System Alternative		
Mountain Range	Total Miles	Miles in IRA
Grant-Quinn	69.5	2.0
Moriah	52.4	0.6
Schell	206.6	8.2
Ward	40.5	0.1
White Pine	231	0.1
Total	600	11.0

Cumulative Effects

Range analysis for the Ely Ranger District does not increase miles of motorized route in IRA, so there would be no cumulative impact to Roadless Characteristics or Wilderness attributes because of this analysis.

Construction of coal-fired plants in Steptoe Valley does not increase miles of motorized route in IRAs located on the Ely Ranger District. This Travel Management Project would not incrementally result in any cumulative impact to Roadless Characteristics or Wilderness attributes when combined with the proposal to construct coal-fired plants.

Passage of the White Pine County Land, Recreation, and Development Act of 2006 does not increase miles of motorized route in IRAs located on the Ely Ranger District. This Travel Management Project would not incrementally result in the degradation of Roadless Characteristics or Wilderness Attributes when combined with the actions related to the passage of the White Pine County Land, Recreation, and Development Act of 2006, this project along with the act would have positive impacts preserving Wilderness Attributes and Roadless Characteristics.

The Duck Creek Transportation Plan designated motorized routes in the Duck Creek Basin. The impacts of Duck Creek Transportation Plan to roadless characteristics are similar to this Travel Management Project’s district wide route designation process.

The Duck Creek Transportation Plan did not designate any routes in IRA, except for a small number that were cherry stemmed in the High Schells Wilderness area.

Re-development of the Taylor Mill and Mine would not add any miles of motorized route in IRA. There would be no incremental effects to Roadless Characteristics or Wilderness Attributes resulting from the selection of any of the alternatives.

Restoration (vegetation treatments) in Ward Mountain and North Schells does not increase miles of motorized route in IRA. The Travel Management Project when combined with the restoration treatment project would not result in a decrease in the roadless Characteristics or Wilderness Attributes associated with the Roadless Areas located on the Ward Mountain and North Schell Units.

Completion of the White Pine Grant-Quinn Oil and Gas EIS and Record of Decision make approximately 255,000 acres of the White Pine and Grant-Quinn Ranges available for lease. Some Inventoried Roadless Areas on the White Pine and on the Grant-Quinn units are available for lease with controlled surface use lease stipulations. This stipulation prohibits new temporary roads, permanent roads, road construction or reconstruction within the IRAs. The Travel Management Action Alternatives designate 7 miles of routes under the Proposed Action and 2 miles under the Current System Alternatives. These increases in the number of miles of motorized route in IRA do not have any cumulative impact to Roadless Characteristics or Wilderness Attributes when combined with the White Pine Grant-Quinn Oil and Gas decision. In the future, there may be potential impacts to Wilderness attributes and roadless characteristics from oil and gas exploration and development but there are currently no proposed projects and no leases have been issued.

Implementation of the Ely BLM RMP is expected to close public lands managed by the BLM to cross-country travel. Because of the closures IRAs situated adjacent to public lands managed by the BLM will be less susceptible to incursion. There are no negative cumulative effects.

Noxious Weeds

Affected Environment

Noxious weeds are highly invasive plants that generally possess poisonous, toxic, parasitic, invasive, and aggressive characteristics. The presence of noxious weeds signifies an area that is at risk in terms of ecological health and sustainability, whether the landscape is disturbed or pristine. The District has several known locations of noxious plant species on the Nevada State Noxious Weeds list in addition to invasive species such as cheatgrass.

By providing a conduit for their expansion, roads are a major contributing factor in the proliferation of invasive plants into natural areas in the arid and semi-arid landscapes of the American West, (Gelbard and Belnap 2003). Noxious weed seed is easily transported and dispersed by wind, livestock, wildlife, recreation, and off-road motor

vehicles. Once established, the plants spread quickly after major disturbances, such as fire. Noxious weeds produce seeds that can persist in the soil for several decades.

Duncan and Clark (2005) estimated the rate of spread for noxious weeds if left untreated. The rate of spread depends upon their reproduction mechanism or the amount of disturbance to a site. Table 14 lists the eleven different weed species known to occur on the Ely Ranger District and estimates of the potential rate of spread for each species or their estimated annual seed production per plant. The Humboldt-Toiyabe National Forest utilizes an Integrated Pest Management System program that includes inventory and mapping of weed locations. When weeds are found an attempt to treat them is made using mechanical, biological, and or herbicide applications; however, the majority of weed species are treated on the District with herbicides.

Table 14: Annual Rate of Spread or Annual Seed Production for Selected Noxious Weeds		
Common name/Nevada Noxious Weed Category	Scientific name	Max. annual rate of spread or seed production
Black henbane (C)	<i>Hyoscyamus niger</i>	10,000+ seeds/plant
Bull thistle (n/a)	<i>Cirsium vulgare</i>	5,000+ seeds/plant
Canada thistle (C)	<i>Cirsium arvense</i>	10–12%
Hoary crest/whitetop (C)	<i>Cardaria draba</i>	1200 to 4800/plant
Leafy spurge (A)	<i>Euphorbia esula</i>	12–16%
Musk thistle (B)	<i>Carduus nutans</i>	12–22%
Perennial pepperweed (C)	<i>Lepidium latifolium</i>	rhizomes/abundant seed/plant
Russian knapweed (B)	<i>Acroptilon repen</i>	8–14%
Salt cedar (tamarisk) (C)	<i>Tamarix spp</i>	adventitious roots /1000+seeds/plant
Scotch thistle (B)	<i>Onorpardum acanthium</i>	12–20%

Spotted knapweed (A)	<i>Centaurea maculosa</i>	140,000seeds/plant
----------------------	---------------------------	--------------------

Existing routes present a high risk for the spread of noxious and invasive weed species. Weeds are known to occur along 168 miles of these routes, which include 113 miles of NFS roads (Table 15). The District has mapped all of these occurrences and included them in the Forest Weed Plan for treatment. The weeds that occur on the District and the ranges on which they occur are listed in Table 15.

Table 15: Noxious and Invasive Weed Species on the Ely Ranger District	
Species	Location (management areas)
Black henbane (<i>Hyoscyamus niger</i>)	White Pine Range
Bull thistle (<i>Cirsium vulgare</i>)	Scattered throughout the District
Canada thistle (<i>Cirsium arvense</i>)	Scattered throughout the District
Hoary crest/whitetop (<i>Cardaria draba</i>)	White Pine Range
Leafy spurge (<i>Euphorbia esula</i>)	Scattered throughout the District
Musk thistle (<i>Carduus nutans</i>)	North Schell Range
Perennial pepperweed (<i>Lepidium latifolium</i>)	Scattered throughout the District
Russian knapweed (<i>Acroptilon repen</i>)	Southern White Pine Range
Salt cedar (<i>tamarisk</i>)	North Schell Range, Mount Moriah, Grant-Quinn Range
Scotch thistle (<i>Onoropordum acanthium</i>)	Scattered throughout the District
Spotted knapweed (<i>Centaurea maculosa</i>)	Scattered throughout the District

Cheatgrass occurs primarily below the 6,500 feet elevation in the foothills on the District, though it can be found at higher elevations. South-facing slopes are more vulnerable to cheatgrass invasion. Cheatgrass spreads by animals and vehicles moving through the grass and picking up seeds. Roads entering the District from low elevation areas have a risk of spreading cheatgrass seeds onto the District along these routes.

Environmental Consequences

Noxious and invasive species cause substantial resource damage by disrupting plant communities and replacing valuable wildlife forage. Transportation routes are the most significant corridors for the spread of weeds. Non-system and user-created routes spread weeds into adjacent areas. Federal and state laws direct the Forest to minimize the potential for spreading noxious weeds when planning projects (Federal Noxious

Wed Act 1974, National Strategy and Implementation Plan of Invasive Species System 2004, Executive Order on Invasive Species 1999, Forest Service Manual 2080, Nevada Revised Statues Section 555, Nevada Administrative Code Section 555).

The environmental effects for the expansion and control of noxious weeds are measured by miles of route through known infestations or high-risk areas and acres in medium risk areas.

To predict the risk of noxious weed spread from roads, the Forest overlaid all routes with known weed infestations. A 30-meter buffer was used around each infestation to account for the predicted rate of spread. The infestation plus the area within the 30-meter buffer is considered high-risk areas on the district. To determine areas with medium risk for spread of noxious weeds a five-mile buffer was used.

Alternative 1 - No Action Alternative

As shown in Table 16, this alternative has the highest potential to spread weeds through motorized travel because motor vehicles are allowed to travel cross-country, which moves seed into non-infested areas. In all, there is 168 miles of routes located in high-risk areas and 1,118 miles of routes in medium risk areas. All of the user-created routes remain open and weeds can become established along those routes. Weed treatments focus on the primary system routes that provide a corridor for weeds to establish and feather out from those routes. In more remote country, an infestation may go unnoticed and untreated.

Table 16: Miles of Motorized Routes in High-risk Noxious Weed Areas						
Alternative	Miles of route in high-risk areas	Percentage of proposed routes in high-risk areas	Acres in high-risk areas	Miles of route in medium-risk areas	Percentage of proposed routes in medium-risk areas	Acres in medium-risk areas
No Action Alternative	168	10.5%	5,213	1,118	69.7%	584,587
Proposed Action	130	15.9%	4,869	622	71.4%	570,319
Current System Alternative	113	18.1%	4,855	442	70.7%	564,535

Alternative 2 - Proposed Action Alternative

This alternative restricts use on 38 miles of user-created routes in high-risk areas and on 496 miles of user-created routes located in medium risk areas (Table 16). The Proposed Action Alternative also restricts motor vehicle use to forest transportation system routes. This restriction ends overland, off-road motorized vehicular travel and thereby eliminates one of the major methods for transmitting and spreading weeds in both high and medium risk areas. Weed treatments focus on the primary system routes that provide a corridor for weeds to establish and feather out from those routes.

Alternative 3 - Current System Alternative

This alternative restricts motor vehicle use to the current forest transportation system routes. This alternative restricts use on an additional 17 miles of user-created routes in high-risk areas and 676 miles of user-created routes in medium risk areas. However, there remain 113 miles in high-risk and 442 in medium risk. The alternative also prohibits cross-country motorized vehicular travel. These restrictions eliminate a major vector that spreads weeds. This alternative is an improvement over the No Action Alternative in working to control the spread of noxious weeds. Weed treatments focus on the primary system routes that provide a corridor for weeds to establish and feather out from those routes.

Cumulative Effects

There are a number of past, present and future projects that may affect noxious weeds when combined with this project.

Range analysis for the Ely Ranger District: The Ely Ranger District has nearly completed an analysis of the west side of the Ranger District (White Pine Range, Grant and Quinn Ranges) to determine whether to permit continued livestock grazing. Continued livestock management may contribute to the spread of noxious weeds because livestock are a vector for spread (Gelbard and Belnap 2003). The Forest will continue to employ integrated weed management to monitor and treat the spread of noxious weeds regardless of vector or location.

Construction of coal-fired plants: There are plans for two coal-fired plants west of the Schell Creek Range. Construction of coal-fired plants would not contribute to the spread of noxious weeds on the Ely Ranger District because they are located off NFS lands.

Passage of the White Pine County Conservation, Recreation, and Development Act of 2006: This legislation created 456,000 acres of new Wilderness on the National Forest, and 295,600 acres on the BLM in White Pine County. Passage of the White Pine County Land, Recreation, and Development Act of 2006 would have a positive effect in that large areas formerly open to travel are no longer accessible. With the development of Wilderness, management plans for all of the Wilderness areas

treatment of known noxious weed infestation would be identified and over time implemented.

Re-development of the Taylor Mill and Mine: The District has received an application to mine and mill at the old Taylor Mill. Re-development of the Taylor Mill and Mine has the potential to spread noxious weeds within the 717-acre project area. This mine development project is expected to have limited cumulative effect because Forest and Regional policy incorporates design criteria and Best Management Practices to address noxious weeds into the Plan of Operations, and the operators will be required to take preventative actions and treat areas when weeds are observed.

Restoration (vegetation treatments) in Ward Mountain and North Schells: The BLM and the Forest Service are planning landscape-scale vegetation projects on the lands on and near Ward Mountain, and the Forest Service is developing a landscape-scale vegetation project on the North Schells. Restoration (vegetation treatments) in Ward Mountain and North Schells has the possibility of cumulative effects as any ground disturbing activity increases the chance of noxious weed infestations. As with all proposed projects, Best Management Practices will be applied to reduce the risk.

Completion of an oil and gas EIS and Record of Decision for leasing on the White Pine Range and the Grant and Quinn Ranges: This EIS made some areas of the White Pine and the Grant and Quinn Ranges available for leases. The decision does not approve any surface disturbing activities or occupation. Before occupation or activities can proceed on a lease block there would need to be a complete NEPA analysis to review the plan of operations. It is in this process that cumulative effects from these activities may contribute to the spread of noxious weeds.

Implementation of the Ely BLM RMP: Implementation of the Ely BLM RMP, would eventually close BLM-administered lands to cross-country travel. This would limit motorized travel on adjacent BLM lands. Because of these closures, the transport of weeds from BLM to FS is expected to be reduced.

Wildlife/Threatened and Endangered Species

The District biologist addressed federally listed Threatened, Endangered, and Forest Service Sensitive (TES) species in a Biological Assessment/Evaluation. The report analyzed flammulated owl, bald eagle, peregrine falcon, northern goshawk, sage grouse, Townsend's big-eared and spotted bats, pygmy rabbit, and Bonneville Cutthroat Trout. The Wildlife Specialist Report analyzed the Forest MIS species mule deer and trout (goshawk and sage grouse were analyzed in the BA/BE as sensitive species), along with big game species elk and big horn sheep, and migratory birds as required by the Migratory Bird Species Act. These reports are on file in the project record.

Environmental Consequences

Gucinski (et al. 2001) identified several effects of forest roads on wildlife. Roads can cause fragmentation of wildlife habitat "by changing landscape structure, dissecting

vegetation patches, increasing the amount of edge, decreasing interior area, and increasing the uniformity of patch characteristics.” Roads may also cause some species to avoid habitat near roads and may attract other species to those areas. When populations become fragmented, it can produce greater fluctuation in the population, loss of genetic variability, and even local extinctions (Gucinski et al. 2001). The District measured the environmental effects on wildlife by:

- Miles of route in occupied and potential habitat.

Table 17 summarizes the miles in wildlife habitat that remain open to motor vehicle use.

Table 17: Miles of Route in Wildlife Habitat			
Habitat	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3 Current System
Sage grouse nesting	100	55	40
Pygmy rabbit	159	108	84
Goshawk nesting	178	132	114
Flammulated Owl	28	19	15
Townsend's big-eared bat and spotted bat	12	5	3
Bonneville Cutthroat Trout	4	2	2
Critical deer winter range	857	424	309
Rocky Mountain and desert bighorn sheep range	111	65	50.5
Peregrine Falcon	1,588	876	610
Bald Eagles	No nesting or winter habitat component important to bald eagles present on the Ely Ranger District.		

Elk	1,588	876	610
-----	-------	-----	-----

Roads and trails result in disjunctive habitat patches (i.e., fragmentation: the breaking up of large habitat or land areas into smaller parcels). Many species of wildlife cannot maintain viable populations in small habitat patches, which lead to extinction and loss of biodiversity (Forman 1998). There are areas on the District that are highly fragmented because of the roads and trails which are present. Roads and trails can function as barriers to movement by wildlife within the analysis area (e.g., reptiles and small mammals). For most non-flying terrestrial animals, motor vehicle routes equate to movement barriers that restrict the animals' range, make habitats inaccessible and can finally lead to an isolation of populations. The barrier effect is the most prominent factor in the overall fragmentation caused by roads and trails (Forman 1998).

Sage Grouse

Affected Environment

The primary species of upland game bird on the District is the sage grouse. There are 243,782 acres of sagebrush habitat on the District. Leks and nesting habitat are most common in the north central part of the White Pine Range and Duck Creek Basin in the Schell Range, but they also occur in the Mount Moriah and Ward Mountain areas. Five leks are known to exist in the White Pine Range, and additional lek sites are known to exist on BLM lands adjacent to the Forest across the District. In Nevada, sage grouse populations are monitored through lek counts during the spring and by analysis of hunter wing returns. Long-term population densities and distribution of sage grouse have been greatly reduced due to reduction of habitat from fire, overgrazing, and conversion to agriculture (USDA 2001). Sage grouse populations in the state of Nevada are currently estimated at over 100,000 adult birds (NDOW data, 2006); populations peaked during the late 1970's. Since then, they have been on a steady decline and are currently down an estimated 49% to 60% from their peak (Neel, 2001). These declines may have resulted from multiple factors that included the hard winters with heavy snow years during the early to mid-1980's which were followed by multiple drought periods during the last two decades. However, estimates for the entire conservation area of Nevada and eastern California in 2006 indicate the population increased 13% from the 2005 estimate (Nevada Sage-Grouse Conservation Project W-64-R-6, Federal Aid Report, pg. 3 and 11).

To measure the effects of NFS roads on sage grouse and to describe the existing condition, the District measured all of the forest transportation system and user-created routes within two miles of sage grouse leks. The District considers this the most important sagebrush habitat for nesting. Reduction of or alterations to this habitat can cause the most disruption to nesting adults and young sage grouse.

Environmental Consequences

Alternative 1 - No Action Alternative

Currently, there are 100 miles of forest transportation system roads and user-created routes in sage grouse nesting habitat (about 24,475 acres). Under this alternative, motor vehicle use on all these routes and cross-country travel would continue. Over time, routes would extend further into unroaded wildlife habitat. Sagebrush is the most impacted vegetative community from roads and cross-country travel. Many of these roads bisect important habitat for sagebrush dependent species such as sage grouse. Continued use from roads and cross-country travel would affect additional sagebrush habitats. This would result in additional habitat loss and altered habitat quality. Under this alternative, sage grouse population trends are expected to remain static, or decrease because of the continued use of user-created routes and the potential disturbance to habitat.

Alternative 2 - Proposed Action Alternative

This alternative restricts motor vehicle use to 55 miles of road in sage grouse nesting habitat and prohibits cross-country motorized travel. This would curtail the establishment of new roads and cross-country travel. The reduction of 45 miles of road would minimize the overall potential for disturbance to birds. Nesting and foraging habitat for sage grouse would improve with the restriction of motor vehicle use to designated routes. With the prohibition on cross-country travel, vehicles would not crush vegetation used for nesting or foraging, nor would displacement occur from disturbance by humans. This alternative would ultimately benefit sage grouse by allowing native plant communities to regenerate thereby restoring the connectivity of important habitat. Sage grouse population trends are expected to remain static or increase because route proliferation in nesting habitat would be curtailed and 45 miles of user-created routes would be closed. In addition, potential threats to sagebrush habitat, such as noxious weeds, would be reduced.

Alternative 3 - Current System Alternative

This alternative restricts motor vehicle use to 40 miles of road in sage grouse nesting habitat and prohibits cross-country motorized travel. This would curtail the establishment of new roads and cross-country travel. Sagebrush is the most impacted vegetative community from roads and cross-country travel. The reduction of 60 miles of road would also minimize the overall potential for disturbance to birds. Nesting and foraging habitat for sage grouse would improve with the restriction of motor vehicle use to designated routes. Vehicles would not crush vegetation used for nesting or foraging, nor would displacement occur from disturbances. This alternative would ultimately benefit sage grouse by allowing native plant communities to regenerate thereby restoring the connectivity of important habitat. Sage grouse population trends are expected to remain static or increase because route proliferation in nesting habitat would be curtailed and 60 miles of user-created routes would be closed. In addition, potential threats to sagebrush habitat, such as noxious weeds, would be reduced.

Pygmy Rabbit

Affected Environment

The pygmy rabbit is the smallest of North American rabbits. They can be distinguished from other rabbits by size alone, but also by their shorter ears and tails which are not white like cottontails. The pygmy rabbit has a discontinuous distribution occurring in Montana, Wyoming, Idaho, Utah, Nevada, California, Oregon, and Washington (USDA 2001). There is little information on the current distribution of pygmy rabbits in Nevada. On January 8, 2008 the US Fish and Wildlife Service initiated a status review to determine if listing the pygmy rabbit is warranted.

On the District, habitat for pygmy rabbits consists of broad sagebrush basins where thick and healthy Wyoming, Basin Big Sagebrush, and mountain big sagebrush communities occur adjacent to riparian areas, springs, or other sources of water. Old mine sites and/or homesteads may also provide potential habitats. There are pygmy rabbit populations in Currant Summit, Corduroy Basin, Ellison Basin, and Little Tom Plain Spring in the White Pines and in Garden Valley in the Grant-Quinn Ranges. Table 18 displays the pygmy rabbit habitat available on each mountain range across the District. Using the Remote Sensing Applications Center (RSAC) vegetation map, the District mapped habitat for pygmy rabbits using the following parameters:

- 1) Basin, mountain, and Wyoming big sagebrush stands that
- 2) Occur at elevations of 6000 to 8000 ft, and
- 3) Slopes less than 25%.

Table 18: Acres of Suitable Habitat for Pygmy Rabbits by Mountain Range	
Range	Existing Habitat
Grant-Quinn Range	10,433 acres
Mount Moriah Range	7,693 acres
Schell Creek Range	47,044 acres
Ward Mountain	4,200 acres
White Pine Range	46,174 acres

Overlaying the existing routes, the District identified 83.5 miles of NFS roads, and 75.1 miles of user-created routes in this potential habitat.

Environmental Consequences

Alternative 1 - No Action Alternative

Currently, there are 158.6 miles of forest transportation system roads and user-created routes within the 115,544 acres of potential pygmy rabbit habitat on the District. Within the potential habitat, 15,900 acres are affected by the roads (roads within the potential habitat were buffered by ¼ mile to determine affected acres). Under this alternative, motor vehicle use on all these routes and cross-country travel would continue. Over time, routes would likely extend further into unroaded pygmy rabbit habitat reducing the amount and quality of habitat. Pygmy rabbit population trends are expected to remain static, or decrease, because of the potential future loss of habitat.

Alternative 2 - Proposed Action Alternative

This alternative restricts motor vehicle use to 108 miles of road within potential pygmy rabbit habitat, affecting 12,754 acres. Along with the reduction in miles of road between the No Action Alternative and the Proposed Action is the prohibition of cross-country motorized travel. The prohibition of cross-country travel is expected to end the proliferation of unauthorized roads and the associated sagebrush habitat fragmentation resulting from pioneered roads. This would benefit pygmy rabbits, as they do not move great distances or across large areas that are not suitable habitat (Dobkin and Sauder 2004). Pygmy rabbit population trends are expected to remain static or increase because the number of user-created routes in potential habitat is reduced by 50 miles and cross-country travel would be prohibited. In addition, potential threats to sagebrush habitat, such as noxious weeds, would be reduced.

Alternative 3 - Current System Alternative

This alternative restricts motor vehicle use to 84 miles of NFS road within potential pygmy rabbit habitat, affecting 10,678 acres. Along with the reduction in miles of road between the No Action Alternative and the Current System is the prohibition of cross-country motorized travel. The prohibition of cross-country travel is expected to end the proliferation of unauthorized roads and the associated sagebrush habitat fragmentation resulting from pioneered roads. This would benefit pygmy rabbits as they do not move great distances or across large areas that are not suitable habitat. Pygmy rabbit population trends are expected to remain static or increase because the number of user-created routes in potential habitat is reduced by 50 miles and cross-country travel would be prohibited. In addition, potential threats to sagebrush habitat, such as noxious weeds, would be reduced.

Northern Goshawk

Affected Environment

In northern Nevada, goshawks occupy small stands of aspen surrounded by shrub-steppe occurring at elevations between 6,500 feet to 7,800 feet elevation during the warmer months, and in lower foothills and valley habitats during the winter. The goshawk in Nevada is considered a year-round resident (Herron et al. 1985).

The typical northern goshawk nest in Nevada occurs in aspen stringers about 600 feet long and 75 feet wide at 7,400 to 7,800 feet in elevation, and near small perennial streams (typically within 100 yards). Ninety-eight percent of nests are located within 100 feet of water (Herron et al. 1985). Aspen is the most commonly used nesting tree with over 85% of the observed nests found in this vegetative community (Herron, et al. 1985).

Goshawks have been known to nest within aspen stands in the Schell Creek, Ward Mountain and Mount Moriah Ranges, and within aspen and/or cottonwoods in the White Pine and Grant-Quinn Ranges. Field surveys in the spring of 2007 found no active nests in White River, Currant Creek, Ellison Creek, or Aspen Springs in the White Pine Range, Berry Creek in the Schell Creek Range, or Little Cherry Creek in the Quinn Canyon Range. An active goshawk nest was located in a large pinyon tree in 2007 on the east side of Ward Mountain. NDOW and the Forest Service completed surveys in the Schell Creek and Mount Moriah Ranges in 2004, 2005, and 2006. For the Ely Ranger District analyzing aspen, aspen/conifer, cottonwood, and riparian aspen communities, within ½ mile of perennial water sources and on slopes less than 25%, identified potential nesting habitat. This analysis revealed about 12,044 acres of suitable nesting habitat.

Environmental Consequences

Alternative 1 - No Action Alternative

Currently there are 178 miles of NFS roads and user-created routes within the 12,044 acres of potential goshawk habitat on the District. Within the potential habitat, about 2,975 acres are affected by the roads (roads within the potential habitat were buffered by ¼ mile to determine the affected acres). Under this alternative, motor vehicle use on all these routes and cross-country travel would continue. Over time, routes could extend further into unroaded goshawk habitat. In addition to the actual removal of habitat that occurs when the routes are established there is also an increased disturbance to wildlife from motor vehicles on the routes. As a result, habitat quality would be expected to decrease as new routes are created.

Alternative 2 - Proposed Action Alternative

This alternative restricts motor vehicle use to 132 miles of NFS road and user-created routes within potential goshawk habitat and prohibits cross-country motorized travel.

Habitat quality and quantity would be expected to decrease because of the use of routes and potential for them to worsen. With this alternative roads affect about 2,695 acres (22 % of the potential habitat). By restricting vehicles to a system of roads, future impacts to vegetation, disturbance, and habitat fragmentation would be reduced, especially in the riparian and aspen communities. The majority of the impacts to goshawks would be from disturbance associated with recreation activities since aspen areas are popular camping places. The prohibition of cross-country travel would help reduce disturbance to goshawk in the aspen areas. Under this alternative, goshawk population trends are expected to remain static or increase because of the reduction of routes in potential habitat and the reduction in disturbance related to routes. In addition, potential threats to goshawk habitat, such as noxious weeds, would be reduced.

Alternative 3 - Current System Alternative

This alternative restricts motor vehicle use to 114 miles of road within potential goshawk habitat and prohibits cross-country motorized travel. With this alternative, roads affect about 2,256 acres (18 % of the potential habitat). By restricting vehicles to a system of roads, future impacts to vegetation, disturbance, and habitat fragmentation would be greatly reduced, especially in the riparian and aspen communities. The majority of the impacts to goshawks would be from disturbance associated with recreation activities since aspen areas are popular camping places. The prohibition of cross-country travel would help reduce potential conflicts between goshawks and recreationists in the aspen areas. Goshawk population trends are expected to remain static or increase because of the reduction in miles of routes open for use. In addition, potential threats to goshawk habitat, such as noxious weeds, would be reduced.

Flammulated Owl

Affected Environment

Flammulated owls occur in limited areas in the mid to higher elevations within the Grant-Quinn, Mount Moriah, Schell Creek, and White Pine Mountain Ranges. There are known nesting sites for flammulated owls present within each of these ranges; they have been found in aspen, white fir, and some bristlecone pine stands in Scofield Canyon in the Grant Range, in Deadman and Big Canyons in the Mount Moriah Range in 2005 (Mika, 2007), in aspen and white fir habitats in Kalamazoo Canyon and Sagehen Canyon in the Schell Creek Range in 2005, in Berry Creek in the Schell Creek Range in 2006, and in McEllen and Seligman Canyons in the White Pine Range in 2005 (again in Seligman Canyon in 2006). Table 19 lists the distribution of potential habitat on the Ely Ranger district by mountain Range.

Using the Remote Sensing Applications Center vegetation map, the District identified potential habitat for flammulated owls using the following vegetation types: aspen; mixed aspen/conifer; riparian aspen; mixed conifer; white fir; whitebark/limber pine; and Bristlecone pine.

Most of the habitat in the Grant-Quinn, Mount Moriah, White Pine, and Schell Creek Ranges occurs in Wilderness Areas. There is additional habitat in the White Pine Range around the Mount Hamilton area and in the Schell Creek Ranges within Duck Creek Basin.

Table 19: Acres of potential Flammulated Owl habitat on the Ely Ranger District by Mountain Range	
Range	Acres of Potential Habitat
Grant/Quinn	3,084
Mount Moriah	30,489
Schell Creek Range	54,684
Ward Mountain	4,967
White Pine	6,468

Environmental Consequences

Alternative 1 - No Action Alternative

Under this alternative flammulated owl, population trends are expected to remain static, or decrease. Currently there are 28 miles of NFS roads and user-created routes within the 99,692 acres of potential flammulated owl habitat on the District. Within the potential habitat, about 9,000 acres (9% of the potential habitat) are affected by the roads (roads within the potential habitat were buffered by ¼ mile to determine the affected acres). Because the District would remain open to overland travel by vehicles, new routes could be developed in riparian and aspen habitats. In addition to the actual removal of habitat that occurs when the roads are established there is also an increased disturbance to flammulated owls and a decrease in habitat for their prey species when people travel overland. As a result, habitat quality would be expected to decrease as new routes are created. Under this alternative, motor vehicle use on all these routes and cross-country travel would continue. Over time, routes would likely extend further into un-roaded flammulated owl habitat reducing the amount and quality of habitat.

Alternative 2 - Proposed Action Alternative

Flammulated owl population trends are expected to remain static or increase because of reductions in miles of available travel route and the prohibition of cross-country travel.

This alternative restricts motor vehicle use to 19 miles of road within potential flammulated owl habitat. With this alternative, about 6,000 acres (6% of the potential habitat) are affected by roads. This represents a 3% decrease in the disturbance caused by the no Action Alternative and a 1% increase to the disturbance caused by the Current System Alternative. Along with the reduction in miles of road between the No Action Alternative and the Proposed Action is the prohibition of cross-country motorized travel. This would curtail the establishment of new roads and off-road, cross-country travel. By restricting vehicles to designated NFS roads and NFS trails, future impacts to vegetation and habitat fragmentation would be greatly reduced. Foraging habitat for flammulated owls would improve with the reduction in roads as disturbance to prey species and their habitats would decrease. In addition, potential threats to flammulated owl habitat, such as noxious weeds, would be reduced.

Alternative 3 - Current System Alternative

Flammulated owl population trends are expected to remain static or increase because of reduction in available routes and the prohibition of cross-country travel. This alternative restricts motor vehicle use to 15 miles of road within potential flammulated owl habitat. With this alternative, about 4,800 acres (5% of the potential habitat) are affected by roads. Along with the reduction in miles of road between the No Action Alternative and the Current System is the prohibition of cross-country motorized travel. This would curtail the establishment of new roads and off-road, cross-country travel. By restricting vehicles to a system of roads, future impacts to vegetation and habitat fragmentation would be greatly reduced. Foraging habitat for flammulated owls would improve with the reduction in roads as disturbance to prey species and their habitats would decrease. In addition, potential threats to flammulated owl habitat, such as noxious weeds, would be reduced.

Townsend's Big-eared Bat and Spotted Bat

Affected Environment

Townsend's big-eared bats are found throughout the state of Nevada, as well as the rest of the western United States. The Townsend's big-eared bat is highly associated with caves and mines. It roosts communally on the ceilings of cave-like structures (caves, mines, and buildings) and feeds primarily (>90%) on moths (Bradley et al., 2006 pg. 18 and Wisdom et al., 2000 pg. 120). Historical records for the White Pine, Grant-Quinn, Schell Creek, and Mount Moriah Mountain Ranges indicate the presence of Townsend's big-eared bat (Bradley et al., 2006, pg. 19).

There are no historical records for the spotted bat on the Ely Ranger District. The closest known sites are in the south Snake Mountain Range in Great Basin National Park and the Cherry Creek Range on BLM (Bradley et al., 2006, pg. 23). The spotted bat is closely associated with rocky cliffs and is found in a variety of habitats from low elevation desert scrub to high elevation coniferous habitats, including pinyon-juniper, sagebrush, riparian.

Environmental Consequences

Alternative 1 - No Action Alternative

Townsend's big-eared bat and spotted bat population trends are expected to remain, or decrease, because under this alternative, there are 12 miles of roads with sections within ¼ mile of hibernacula and/or maternity roost habitat on the District. Both species forage over larger areas, especially during the summer. Potentially suitable foraging habitats for both species include springs, seeps, and riparian areas. Under this alternative, motor vehicle use on all these routes and cross-country travel would continue. Over time, routes could potentially extend further into un-roaded wildlife habitat reducing amount and quality of habitat.

Alternative 2 - Proposed Action Alternative

This alternative restricts motor vehicle use to five miles of road near potential hibernacula and maternity roost habitat for Townsend's big-eared and spotted bats. Along with the reduction in miles of road between the No Action Alternative and the Proposed Action is the prohibition of cross-country motorized travel. This would curtail the establishment of new roads and off-road, cross-country travel. By restricting vehicles to a system of roads, future impacts to vegetation and habitat fragmentation would be greatly reduced. Foraging habitat for both bats would improve with the reduction in roads as disturbance to prey species and their habitats would improve. Townsend's big-eared bat and spotted bat population trends are expected to remain static or increase because of the reduction in miles of routes near roosting habitat and the prohibition of cross-country travel.

Alternative 3 - Current System Alternative

This alternative restricts motor vehicle use to three miles of road near potential hibernacula and maternity roost habitat for Townsend's big-eared and spotted bats. Along with the reduction in miles of road between the No Action Alternative and the Current System is the prohibition of cross-country motorized travel. This would curtail the establishment of new roads and off road, cross-country travel. By restricting vehicles to a system of roads, future impacts to vegetation and habitat fragmentation would be greatly reduced. Foraging habitat for both bats would improve with the reduction in roads as disturbance to prey species and their habitats would improve. Townsend's big-eared bat and spotted bat population trends are expected to remain static or increase because of the reduction in miles of routes near roosting habitat and the prohibition of cross-country travel.

Peregrine Falcon

Affected Environment

Peregrine falcons often nest on ledges or holes on faces of rocky cliffs or crags, with a sheltering overhang. Ideal locations include undisturbed areas with a wide view, and a

close proximity to water and plentiful prey. Substitute man-made sites include tall buildings, bridges, rock quarries, and raised platforms. They feed primarily on birds (medium-size passerines up to small waterfowl), but they may eat small mammals (e.g., bats, lemmings), lizards, fishes, and insects (by young birds). Foraging habitat includes wetlands and riparian habitats, meadows and parklands, croplands such as hayfields and orchards, gorges and mountain valleys, and lakes that support good populations of small to medium-sized terrestrial birds, shorebirds, and waterfowl. Peregrines may forage up to 12 miles from the nest site, but normally stay within 7 miles (USFWS 1977). Their prey consists almost entirely of birds that are usually taken on the wing.

Peregrine falcons nested in Cathedral Canyon in the White Pine Range in 2003. They may use other areas in the White Pine, Grant-Quinn, Schell Creek, Mount Moriah, or Ward Mountain Ranges for nesting, or during migration for resting and foraging.

Environmental Consequences

Alternative 1 - No Action Alternative

Potential nesting, foraging and/or migration habitat is present in all the mountain ranges on the District; therefore, the entire District is potential habitat for peregrine falcons. Currently, there are 1,588 miles of routes throughout the District. Under this alternative, motor vehicle use on all these routes and cross-country travel would continue. Over time, routes would extend further into unroaded wildlife habitat. Although roads would have a minimal effect on nesting habitat for peregrines, roads would reduce the available foraging habitat in good condition. The miles of road across the District decrease the number of prey for peregrine falcons, which would negatively affect falcons. Under this alternative Peregrine falcon, population trends are expected to remain static.

Alternative 2 - Proposed Action Alternative

This alternative restricts motor vehicle use to 876 miles of NFS road and NFS trails on the District. Along with the reduction in miles of road between the No Action Alternative and the Proposed Action is the prohibition of cross-country motorized travel. This would curtail the establishment of new roads and cross-country travel. By restricting vehicles to a system of roads, future impacts to vegetation and habitat fragmentation would be greatly reduced. Foraging habitat for Peregrine falcons would improve with the reduction in roads as disturbance to prey species and their habitats would improve. Peregrine falcon population trends are expected to remain static or increase because of this action. In addition, potential threats to peregrine falcon habitat, such as noxious weeds, would be reduced.

Alternative 3 - Current System Alternative

This alternative restricts motor vehicle use to 600 miles of road on the District. Along with the reduction in miles of road between the No Action Alternative and the Current System is the prohibition of cross-country motorized travel. This would curtail the establishment of new roads and cross-country travel. By restricting vehicles to a

system of roads, future impacts to vegetation and habitat fragmentation would be greatly reduced. Foraging habitat for Peregrine falcons would improve with the reduction in roads as disturbance to prey species and their habitats would improve. Peregrine falcon population trends are expected to remain static or increase because of this action. In addition, potential threats to Peregrine falcon habitat, such as noxious weeds, would be reduced.

Bald Eagle

Affected Environment

The Fish and Wildlife Service removed the bald eagle from the federal list of Endangered and Threatened Wildlife on August 8, 2007. Since then, they are considered a sensitive species. The bald eagle is a winter visitor to the Ely Ranger District (USFS, p. II-10, 1986). The Ely Ranger District does not provide any of the important wintering habitat requirements for bald eagles, and lies outside any known wintering areas. Eagles may use the areas of the District as travel routes between nesting and known wintering areas. The District has no nesting or winter habitat component important to bald eagles.

Environmental Consequences

Alternative 1 - No Action Alternative

The District is outside any known wintering areas but does provide minimal wintering habitat requirements for bald eagles. There is no nesting habitat within the project area, although summer habitat occurs at Illipah Reservoir north of the White Pine Range. Eagles may use the District as a travel route between nesting and known wintering areas. No winter habitat component important to bald eagles is present, thus no bald eagle wintering habitat is affected by the existing roads. Under this alternative bald eagle population trends are expected to remain static.

Alternative 2 - Proposed Action and Alternative 3 - Current System Alternatives

The District is outside any known wintering areas but does provide minimal wintering habitat requirements for bald eagles. There is no nesting habitat within the project area, although summer habitat occurs at Illipah Reservoir north of the White Pine Range. Eagles may use the District as a travel route between nesting and known wintering areas. Foraging habitat for bald eagles would improve with the reduction in roads as disturbance to the eagle would decrease and habitat for prey species would improve.

Bonneville Cutthroat Trout

Affected Environment

Bonneville Cutthroat Trout (BCT) require clear, cool water throughout their lives. Historically, BCT occurred throughout the Bonneville Basin; today they are restricted to less than 50 populations in Idaho, Nevada, Utah, and Wyoming. On the Ely Ranger District, BCT occupy Hendry's, Hampton, Smith, Deep Canyon, and Deadman Creeks in the Mount Moriah Range, and Deep Creek in the Grant-Quinn Range. A tributary to Silver Creek may also have Bonneville Cutthroat Trout. Genetic testing to determine if the trout from the Silver Creek tributary are indeed pure strains of BCT is currently in progress.

Environmental Consequences

Alternative 1 - No Action Alternative

Currently there are 5.8 miles of NFS roads and user-created routes within Bonneville Cutthroat Trout habitat on the District. Under this alternative, motor vehicle use on these routes and cross-country travel could continue. Over time, routes would extend further into unroaded wildlife habitat. Under this alternative, population trends of Bonneville Cutthroat Trout are expected to remain static because very little would change from the existing condition.

Alternative 2 - Proposed and Alternative 3- Current System Alternatives

These alternatives would limit motor vehicle use to 3.7 miles of NFS roads within potential Bonneville Cutthroat Trout habitat. Along with the reduction in miles of road between the No Action Alternative and the Proposed Action and Current System Alternatives is the prohibition of cross-country motorized travel. This would curtail the establishment of new roads and cross-country travel. By prohibiting motor vehicles from traveling off designated NFS roads or NFS trails future impacts to vegetation and habitat fragmentation would be greatly reduced, especially in the riparian areas. Because of the reduce miles of route in these alternatives and because of the prohibition of cross-country travel Bonneville Cutthroat Trout population trends are expected to remain static or increase.

Mule Deer

Affected Environment

Mule deer are one of the Management Indicator Species (MIS) in the Humboldt National Forest Land and Resource Management Plan, used to monitor habitat for mule deer and other species with similar habitats.

The Ely Ranger District contains both summer and winter ranges for mule deer. Mule deer winter range is at lower elevations, while they summer at higher elevations.

Winter range is typified by shrublands that do not accumulate large amounts of snow so that forage can be accessible to deer through most of the winter. The district provides a good distribution and diversity of vegetation for mule deer year-round. The most common browse plants are big sagebrush, antelope bitterbrush, snowberry, willow, and rubber rabbitbrush. Food habits of deer appear to be influenced by phenological changes in forage as well as the abundance of different species.

The District lies within the Nevada Department of Wildlife's (NDOW) Hunt Units 11 (111-115), 13 (131-134), and 22 (221-223).

The Forest Plan determined a minimum viable population level for mule deer at 11,247 with a maximum potential population of 88,200 deer for the entire Forest. NDOW's aerial surveys in 2007 for these units counted 4,083 deer, which indicated an increasing trend (NDOW 2006-2007 Big Game Status).

The long-term quality and quantity of summer ranges on the Ely Ranger District are slowly being reduced by pinyon/juniper forests taking over mountain brush zones. This lowers the carrying capacity for mule deer. This deteriorating condition also affects winter range. The designation of new Wilderness Areas on the district has a positive effect by restricting off-road travel, wind energy development, mining, and oil and gas exploration (NDOW 2006-2007 Big Game Status).

Environmental Consequences

Roads and other human developments adversely affect mule deer by introducing disturbance during a period when physical stress is already high (Canfield et al 1999). Researchers have reported decreased use of areas within ¼ to ½ mile from a road (Thomas 1979; Wasley 2004; Canfield et al. 1999). As road densities increase, mule deer habitat values decrease (Canfield et al. 1999). Restricting motor vehicles to designated routes within winter, summer, and fawning habitat are beneficial to mule deer by limiting overland travel and disturbance (Canfield et al. 1999).

Alternative 1 - No Action Alternative

Currently, there are 857 miles of roads within mule deer winter range on the District. The entire District is summer range for mule deer with 1,588 miles of road. Roads and trails can affect mule deer by reducing available forage and cover, and by creating migration barriers. Under this alternative, motor vehicle use on all these routes and cross-country travel would continue. Over time, routes could extend further into unroaded wildlife habitat. Mule deer population trends are expected to remain static or decrease because of number of routes open to motor vehicles.

Alternative 2 - Proposed Action Alternative

Mule deer population trends are expected to remain static or increase because of this alternative. In addition, potential threats to mule deer habitat, such as noxious weeds, would be reduced. This alternative restricts motor vehicle use to 424 miles of roads

within mule deer winter range on the District. The effects of disturbance to mule deer may be greater during the winter months when deer are often relying on energy reserves for survival. If disturbance levels are consistently high, deer may permanently avoid these areas. Under the Proposed Action, the other 433 miles of roads in winter habitat would be closed to motorized travel. Impacts to mule deer during the winter months would be reduced by prohibiting use of motor vehicles off designated routes. Vehicles would have to stay on designated routes, which would reduce harassment of deer during this critical and stressful period.

The entire District is summer range for mule deer. This alternative restricts motor vehicle use to 876 miles of route for the District. By allowing use on designated routes only, there would be a reduction in the overall level of habitat fragmentation and game harassment. Areas where routes were formerly established would eventually return to native brush communities suitable for mule deer.

The primary difference between the No Action Alternative and the Proposed Action is the prohibition of cross-country motorized travel. This would curtail the establishment of new roads and cross-country travel. By restricting vehicles to a system of roads, future impacts to vegetation and habitat fragmentation would be greatly reduced, especially in the brush communities.

Alternative 3 - Current System Alternative

This alternative restricts motor vehicle use to 309 miles of roads within mule deer winter range on the District. The effects of disturbance to mule deer may be greater during the winter months when deer are often relying on energy reserves for survival. If disturbance levels are consistently high, deer may permanently avoid these areas. Under the Current System, the use of 548 miles of route would be prohibited as off designated routes. Prohibiting travel on these roads would minimize disturbance to mule deer during the winter months.

The entire District is summer range for mule deer. This alternative restricts motor vehicle use to 600 miles of route for the District. By allowing use on designated routes only, there would be a reduction in the overall level of habitat fragmentation. These areas would be restored to native brush communities suitable for mule deer, and there would be reduction in disturbance to mule deer summering in the area.

The primary difference between the No Action Alternative and the Current System Alternative is the prohibition of cross-country motorized travel. This would curtail the establishment of new roads and off-road, cross-country travel. By restricting vehicles to a system of roads, future impacts to vegetation and habitat fragmentation would be greatly reduced, especially in the brush communities. Because of the reduction in the amount of route and the prohibition of motor vehicle use off designated routes mule deer population trends are expected to remain static or increase. In addition, potential threats to mule deer habitat, such as fragmentation, and the spread of noxious weeds, would be reduced.

Rocky Mountain Elk

Affected Environment

Rocky Mountain elk are very adaptive and live in many habitats, including sagebrush/grass, grasslands, shrub, pinion-juniper, and aspen vegetation communities. Elk have a broad dietary tolerance and consume grasses, other herbaceous plants, and browse (NOW Elk Species System Plan 1997). Elk continue to increase in numbers in east-central Nevada.

Rocky Mountain elk were released into the Schell Creek Range in 1932; the elk herd has reached the population objective of 1,200 animals (White Pine County Elk Plan, 2008). Elk became established in the Mount Moriah Range in the 1990s and the population is now about 200 animals with a population objective of 500 animals. The White Pine Range has an established elk herd and elk are moving south into the Grant-Quinn Ranges. The White Pine herd may have been established by animals from the nearby Schell Creek Range and is currently estimated at 220 animals. NDOW has identified year-round habitat in the White Pine Range and in the northeast corner of the Grant-Quinn Ranges. The population objective for elk in the White Pine and Grant-Quinn Ranges is 300. Although elk calving areas comprise a relatively small number of acres, they are a very important component of the elk range. The majority of the calving areas are within a half-mile of riparian areas or water sources. These areas also serve as deer fawning areas.

Environmental Consequences

Alternative 1 - No Action Alternative

Rocky Mountain elk occur throughout the District. The entire District is considered potential habitat for Rocky Mountain elk. Some habitats are more important than others, such as riparian areas and wet meadow vegetation. Potential foraging, calving, and/or winter habitat is present in all the mountain ranges. Currently, there are 1,588 miles of roads throughout the District. Under this alternative, motor vehicle use on all these routes and cross-country travel would continue. Over time, routes would extend further into unroaded wildlife habitat. These roads would reduce the available habitat through inadvertent effects to foraging habitat, fragmentation, and would increase the disturbance to elk. Rocky Mountain elk population trends are expected to remain static or decrease because of this action.

Alternative 2 - Proposed Action Alternative

Along with the reduction in miles of road between the No Action Alternative and the Proposed Action is the prohibition of cross-country motorized travel. The current number of user-created routes as described in the No Action Alternative has reduced available habitat and likely limited the distribution of elk. The Proposed Action would curtail the establishment of new roads and off-road, cross-country travel. By restricting vehicles to NFS roads and NFS trails, future impacts to vegetation and habitat

fragmentation would be greatly reduced, especially in the riparian and brush communities. This restriction would also allow previously impacted areas to recover over time. The overall potential for disturbance to elk would decline and foraging habitat would improve by allowing native plant communities to regenerate. Rocky Mountain elk population trends are expected to remain static or increase because of this action. In addition, potential threats to their habitat, such as noxious weeds, would be reduced.

Alternative 3 - Current System Alternative

Along with the reduction in miles of road between the No Action Alternative and the Current System Alternative is the prohibition of cross-country motorized travel. The number of user-created routes has reduced available habitat and likely limited the distribution of elk. This alternative would curtail the establishment of new roads and off-road, cross-country travel. By restricting vehicles to a system of roads, future impacts to vegetation and habitat fragmentation would be greatly reduced, especially in the riparian and brush communities. The overall potential for disturbance to elk would decline and foraging habitat would improve by allowing native plant communities to regenerate. Rocky Mountain elk population trends are expected to remain static or increase because of this action. In addition, potential threats to their habitat, such as noxious weeds, would be reduced.

Bighorn Sheep

Affected Environment

The Ely Ranger District supports both desert bighorn and Rocky Mountain bighorn sheep. The desert bighorn sheep in the White Pine Range live in the southwestern portion of the range, within and near the Currant Mountain Wilderness. The Grant-Quinn Ranges, around the Troy Peak area, also supports a herd of desert bighorn sheep. Since 1959, the sheep population has fluctuated, but overall has shown a declining trend. Rocky Mountain bighorn sheep occur in the North Snake Range (Mount Moriah).

A food study in Colorado showed bighorn sheep diets were 81% grasses and grass-like species with sedges, fescues, muhlys, and bluegrass as preferred species. Forbs and browse made up 19%. These percentages vary with each area, but bighorn are primarily grazers. Along with having preferred forage, bighorns also need escape cover. Good visibility and steep escape cover are structural habitat elements that provide bighorns with security from predators (Coates and Schemnitz 1994).

Environmental Consequences

Alternative 1 - No Action Alternative

Currently, there are 111 miles of roads within bighorn sheep habitat on the District. Roads and trails can affect bighorn sheep by reducing available forage and cover, and

by creating migration barriers. Roads allow direct access to bighorn escape terrain causing bighorn to flee when vehicles or people use an area. If disturbance levels are consistently high, sheep may permanently avoid these areas. Under this alternative, motor vehicle use on all these routes and cross-country travel would continue. Over time, routes extend further into unroaded wildlife habitat. Bighorn sheep population trends are expected to remain static or decrease because of this alternative.

Alternative 2 - Proposed Action Alternative

This alternative restricts motor vehicle use to 65 miles of roads within bighorn sheep habitat on the District. It would also curtail the establishment of new roads and off-road, cross-country travel. By restricting vehicles to a system of roads, future impacts to vegetation, habitat fragmentation and disturbance to bighorn sheep would be greatly reduced. The effects of disturbance to bighorn sheep may be greater during the winter months when sheep are often relying on energy reserves for survival. The overall potential for disturbance to bighorn sheep would decline and foraging habitat would improve by allowing native plant communities to regenerate. Bighorn sheep population trends are expected to remain static or increase because of this action. In addition, potential threats to bighorn sheep habitat, such as noxious weeds, would be reduced.

Alternative 3 - Current System Alternative

This alternative designates 50.5 miles of NFS roads and NFS trails for motor vehicle use, and would curtail the establishment of new roads and off-road, cross-country travel within bighorn sheep habitat. By restricting vehicles to a system of roads, future impacts to vegetation, habitat fragmentation and disturbance to bighorn sheep would be greatly reduced. The effects of disturbance to bighorn sheep may be greater during the winter months when sheep are often relying on energy reserves for survival. The overall potential for disturbance to bighorn sheep would decline and foraging habitat would improve by allowing native plant communities to regenerate. Bighorn sheep population trends are expected to remain static or increase because of this action. In addition, potential threats to bighorn sheep habitat, such as noxious weeds, would be reduced.

Neotropical Migratory Birds

Affected Environment

Executive Order (EO) 13186, signed January 10, 2001, lists several responsibilities of federal agencies to protect migratory birds, among them: Support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.

Additional direction comes from the Memorandum of Understanding (MOU) between USDA Forest Service and USDI Fish and Wildlife Service, signed January 17, 2001.

The MOU strengthens migratory bird conservation through enhanced collaboration between the Forest Service and the Fish and Wildlife Service, in coordination with state, tribal and local governments. The MOU identifies specific activities for bird conservation, pursuant to EO 13186 including: Strive to protect, restore, enhance, and manage habitat of migratory birds, and prevent the further loss or degradation of remaining habitats on National Forest System lands. This includes identifying management practices that affect populations of high priority migratory bird species, including nesting, migration, or over-wintering habitats, on National Forest System lands, and developing future specific protocols called for in an MOU implementing the Executive Order. This includes identifying practices that affect populations of high priority migratory bird species, including nesting, migration, or over-wintering habitats.

Neotropical migratory birds (NTMB) use all habitats within the Ely Ranger District during the breeding season. The Nevada Bird Conservation Plan (Neel, Nevada Partners in Flight 1999) identified primary species. Table 20 provides a list of the Neotropical migratory birds that may visit the Ely Ranger District. In 2002, the Forest, in partnership with the Great Basin Bird Observatory, Nevada Department of Wildlife, and Bureau of Land Management, began a long-term bird-monitoring program to determine bird distribution, abundance, and population trends for Neotropical migratory birds (GBBO 2002). The District has completed bird-monitoring samples each of the primary vegetation types and point counts annually since 2002. The District conducted their survey transects in pinyon-juniper, montane riparian, aspen, mountain mahogany, and coniferous forest habitats. The District detected the following species. Priority species identified in the Nevada Bird Conservation Plan are in bold print with their corresponding priority habitat types in parentheses.

Table 20: Neotropical Birds Detected on the Ely Ranger District			
Black-chinned hummingbird	Northern goshawk	Blue grouse*	Ash-throated flycatcher
Bank swallow	Black-throated gray Warbler (pinyon-juniper)	Black-throated sparrow	Clark’s nutcracker
Flammulated owl	Gray vireo (pinyon-juniper)	Greater sage* grouse	Juniper titmouse (pinyon-juniper)
Loggerhead shrike	Mountain bluebird (pinyon-juniper/aspen)	Olive-sided flycatcher	Pinyon jay (pinyon-juniper)
Red-naped Sapsucker (aspen/mtn. mahogany/coniferous forest)	Sage sparrow	Short-eared owl	Steller’s jay

Table 20: Neotropical Birds Detected on the Ely Ranger District

Virginia's warbler (pinyon-juniper/ montane riparian)	Williamson's sapsucker	Western scrub jay	Wilson's warbler
Brewer's sparrow	Vesper sparrow	Sage thrasher	Chukar*
Green-tailed towhee	American crow	Turkey vulture	American robin
American kestrel	Gray flycatcher (pinyon-juniper)	Common poorwill	Orange-crowned warbler
Northern flicker	MacGillivray's warbler (aspen)	Broad-tailed hummingbird	Dusky flycatcher
Mourning dove	Red-tailed hawk	Cordilleran flycatcher	Sharp-shinned hawk
Canyon wren	Cassin's finch	Lewis's woodpecker	Bushtit
Black-billed magpie	Common raven	Northern harrier	Yellow breasted chat (montane riparian)
Golden eagle	Fox sparrow	Killdeer	Cooper's hawk
Lark sparrow	Western meadowlark	Warbling vireo	Mountain chickadee
Brown-headed cowbird	Western tanager	Lazuli bunting	Hermit thrush
Dark-eyed junco	Yellow-rumped warbler	Black-headed grosbeak	Yellow warbler (aspen)
Spotted towhee	White-throated swift	Chipping sparrow	Violet green swallow
Song sparrow	Western wood- Pewee	Blue-gray gnatcatcher	Ruby-crowned kinglet

Table 20: Neotropical Birds Detected on the Ely Ranger District			
White-breasted nuthatch	Bewick’s wren	Western kingbird	Lesser Goldfinch
Plumbeous vireo	Black-capped chickadee	House finch	Red-breasted nuthatch
Pine siskin	Hairy woodpecker	House wren	Tree swallow
<p>Source: GBBO survey transects and sightings</p> <p>* Species included on the list but not considered Neotropical migratory species.</p>			

As the list shows, the Ely Ranger District has a great diversity of birds. Of the birds that have been detected, most range over broad geographic areas and it is difficult, if not impossible, to determine the effects of Forest management (Dobkin and Sauder 2004). Some birds breed and nest on the Ely Ranger District, some migrate off and through the District in the early fall (returning in the spring), and some remain on the district as year-round residents.

Direct effects to migratory birds from roads and off-road travel can occur from inadvertent trampling or flushing birds from perches and nest sties. Riparian and wet meadow vegetation is particularly critical to a number of migratory birds. The presence of roads may indirectly affect migratory birds by increasing habitat fragmentation. Habitat fragmentation is considered the major factor for population declines in migratory bird species, particularly when the fragmentation occurs within riparian zones. Habitat fragmentation can lead to an increase in predation and nest parasitism from the increase in edge habitat. Roads can also act as movement barriers for foraging birds if disturbance levels are consistently high.

Environmental Consequences

Alternative 1 - No Action Alternative

Neotropical migratory birds occur throughout the District. Some habitats are more important than others, such as riparian and wet meadow vegetation. Potential nesting, foraging and/or migration habitat is present in all the mountain ranges on the District; therefore, the entire District is considered potential habitat for Neotropical migratory birds. Currently, there are 1,588 miles of roads throughout the District. Under this alternative, motor vehicle use on all these routes and cross-country travel would continue. Over time, routes would extend further into unroaded wildlife habitat. These roads would reduce the available habitat through inadvertent crushing of nesting and foraging habitat, fragmentation and increase the disturbance to Neotropical migratory birds. As a result, habitat quality would be expected to decrease along roads as new

routes and dispersed sites are created. Neotropical migratory bird population trends are expected to remain static or decrease because of this action.

Alternative 2 - Proposed Action Alternative

This alternative restricts motor vehicle use to 876 miles of route on the District. Along with the reduction in miles of road between the No Action Alternative and the Proposed Action is the prohibition of cross-country motorized travel. The District assumed that the number of user-created routes has reduced available habitat and likely limited the distribution of some birds. When implemented the prohibition of cross-country travel would curtail the proliferation of unauthorized roads and associated habitat fragmentation. The reduction of 712 miles of road would also minimize the overall potential for disturbance to birds. Foraging habitat would improve with the reduction in roads as habitat for prey species would improve. These road closures would ultimately benefit migratory birds by allowing native plant communities to regenerate thereby restoring the connectivity of important habitat. Neotropical migratory bird population trends are expected to remain static or increase because of this action. In addition, potential threats to their habitat, such as noxious weeds, would be reduced.

Alternative 3 - Current System Alternative

This alternative restricts motor vehicle use to 600 miles of road on the District. Along with the reduction in miles of road between the No Action Alternative and the Current System is the prohibition of cross-country motorized travel. The District assumed that the number of user-created routes has reduced available habitat and likely limited the distribution of some birds. When fully implemented the prohibition of cross-country travel would curtail the proliferation of unauthorized roads and associated habitat fragmentation. The reduction of 978 miles of road would also minimize the overall potential for disturbance to birds. Foraging habitat would improve with the reduction in roads as habitat for prey species would improve. These road closures would ultimately benefit migratory birds by allowing native plant communities to regenerate thereby restoring the connectivity of important habitat. Neotropical migratory bird population trends are expected to remain static or increase because of this action. In addition, potential threats to their habitat, such as noxious weeds, would be reduced.

Cumulative Effects for All Wildlife Species

There are a number of past, present and future projects that may affect wildlife species when combined with this project.

Range Recession Project:

The Ely Ranger District has nearly completed an analysis of Range Management for the west side of the Ranger District (White Pine Range and Grant and Quinn Ranges). When that analysis is complete, the District will begin an analysis of the rest of the District. Management direction included as one alternative in the Range Management projects would increase wildlife habitat protections by making livestock management

decisions on based ecological conditions. Wildlife habitat condition is expected to improve over time the range management direction is implemented. When combined with the travel management decision to prohibit motor vehicles from traveling off NFS roads and NFS trails the improvements to wildlife habitats from both of these actions would combine to improve habitats. Under the No Action Alternative improvements related to the Range management project could be limited by the habitat fragmentation and disturbance associated with open routes and cross-country travel.

Coal Fired Electrical Plants:

Two coal-fired plants are under construction in Steptoe Valley on the west side of the Schell Creek Range. The construction of these coal-fired plants has minimal effects on the wildlife-occupying habitat on the Ranger District. The location of the plants may result in the reduction of mule deer winter range. However, when compared to positive aspects of the Proposed Action and Current System Alternatives of prohibiting motor vehicle use off designated NFS roads and NFS trails the loss of several hundred acres of habitat from the construction of the powerplants would be compensated by the improvement of several thousand acres of habitat on the National Forest.

White Pine County Land, Recreation, and Development Act:

The White Pine County Land, Recreation, and Development Act of 2006 created 456,000 acres of new Wilderness on the National Forest System lands, and 295,600 acres on the BLM in White Pine County. Passage of the White Pine County Land, Recreation, and Development Act of 2006 would have positive cumulative effects on wildlife, as motorized access to wilderness areas is restricted. This restriction and the prohibition of motor vehicle use off designated NFS roads and NFS trails would work together to decrease fragmentation disturbance in wildlife habitats.

Taylor Mine and Mill Development:

The District received an application to mine and mill at the old Taylor Mill located on the Southwest side of the Schell Creek range. This mineral development plan would affect approximately 717 acres in pinyon and juniper habitats. Cumulative effects to wildlife and wildlife habitat from the Taylor Mill and mine are expected to be minimal because of the size of the project when compared to the amount of available habitat. Project design criteria and the application of Best Management Practices (BMPs) required in order to avoid adverse impacts to wildlife and habitat will be part of the proposed action and alternatives.

Landscape Scale Vegetation Projects:

The BLM and the Forest Service are planning landscape-scale vegetation projects on the lands on and near Ward Mountain, and the Forest Service is developing a landscape-scale vegetation project on the North Schells. Restoration (vegetation treatments) in Ward Mountain and North Schells are being designed to change the predominately-late seral vegetation communities to a more balanced distribution of age classes. Treating vegetation, primarily with fire, would result in some changes to

wildlife habitats within the project areas. These projects are being proposed in part to improve wildlife habitat. Reducing the amount of routes and prohibiting motor vehicle use off the designated NFS roads and NFS trails when combined with the landscape treatments would combine to allow wildlife habitat to improve.

White Pine/Grant Quinn Oil and Gas:

In 2007, the Forest published the White Pine/Grant-Quinn Oil and Gas FEIS and Record of Decision. This decision allows oil and gas leasing in these areas, with stipulations for occupancy and timing of activities. While the ROD authorized leasing in these areas to date no leases have been awarded. The decision to authorize leasing does not result in activity occurring on the ground and therefore would not have any cumulative effects when combined with the effects of the travel management alternatives. All activities related to Oil and Gas exploration and development and transport will require additional site specific NEPA to determine the biological, physical, and cultural effects of the proposed action and alternatives. During that process, direct, indirect and cumulative effects will be assessed. At this time the District has no plans of operations from leaseholders. When the Forest receives a plan of operations, the District will conduct the appropriate level of NEPA.

Ely BLM Resource Management Plan (RMP):

Implementation of the Ely BLM RMP would eventually close BLM-administered lands to cross-country travel. This would limit motorized travel on adjacent BLM lands. When combined with this Travel Management Project the effect to wildlife habitat would generally have a positive impact in that both decision would decrease fragmentation disturbance in shared habitats and improve wildlife habitat conditions.

Forest Service Sensitive and State Protected Plants

There are 19 sensitive plant species with potential or occupied habitats on the Ely Ranger District. The Forest Botanist completed a predictive computer model through a GIS based on habitat attributes to identify potential habitat for the sensitive plant species.

These species include: *Asclepias eastwoodiana* (Eastwood milkvetch), *Astragalus uncialis* (Currant milkvetch), *Sphaeralcea caespitosa* var. *williamsiae* (Railroad Valley globemallow), *Botrychium ascendens* (Upswept moonwort), *Botrychium crenulatum* (Dainty moonwort), *Penstemon moriahensis* (Mount Moriah beardtongue), *Lewisia maguirei* (Maguire lewisia), *Trifolium andinum* var. *podocephalum* (Currant Summit Clover), and alpine habitat. The following sensitive species occur in the alpine habitat model: *Cymopterus goodrichii* (Goodrich biscuitroot), *Cymopterus nivalis* (Snowy Spring Parsley), *Draba oreibata* var. *serpentine* (Snake Range whitlowgrass), *Draba pennellii* (Pennell's draba), *Poa abbreviata* ssp. *marshii* (Marsh bluegrass), *Primula cusickiana* var. *nevadense* (P. nevadense) (Nevada primrose), *Silene nachlingerea* (Nachlinger catchfly), and *Viola lithion* (Rock violet). The following plants have the potential to occur within the modeled area for Eastwood milkweed/Currant milkvetch

or Maguire lewisia: *Jamesia tetrapetala* (Basin Jamesia), *Erigeron uncialis* var. *uncialis* (E. cavernensis) (Limestone daisy), *Astragalus lentiginosus* var. *scorpionis* (Scorpion milkvetch).

Detailed information for each of these species, its status, habitat requirement, areas(s) of occurrence and plant disturbance vectors can be found in the Wildlife Specialist Report in the Project Record.

Effects Common to All Alternatives

Forest Service Sensitive and State Protected Plants occur throughout the District in a variety of habitats. There are no direct or indirect effects from these alternatives. These roads were established years ago and if the plants occurred in these areas, the plants would have been impacted then.

Alternative 1 - No Action Alternative

Under this alternative, motor vehicle use on all these routes and cross-country travel would continue. Over time, new routes could be established in rare plant habitats. These routes would reduce the available habitat through inadvertent crushing of vegetation and fragmentation. As a result, habitat quality would be expected to decrease along roads as new routes are created.

Alternative 2 - Proposed Action and Alternative 3 - Current System Alternatives

The Proposed Action and Current System Alternatives would benefit these sensitive plants and other vegetation as vehicles would only be permitted on designated routes. Overland vehicular traffic would be prohibited, thus eliminating future impacts to plants and other vegetation from vehicles.

Other indirect beneficial effects include the reduction of noxious weed establishment in sensitive plant habitats caused from vehicles trans-locating noxious weed seed to uninfested areas; and limiting dispersed vehicle camping to designated routes and curtailing the establishment of new dispersed recreation sites, which are most evident from the compaction of soil and removal of vegetation in the immediate camp area.

Cultural Resources

Affected Environment

The Ely District contains numerous cultural resources. For the past 11,000 years, these mountain ranges have served man as 'islands' of lush vegetation, wildlife habitat and water, compared to the surrounding 'sagebrush ocean'. Man's use in the area is marked with prehistoric/ethnographic sites that include: artifact scatters (lithics, ground stone, fire-altered rock and ceramics), open campsites, trails, rock shelters, habitation sites, stone circles, lithic sources/quarries and rock art sites.

Historic archaeology sites include sites related to transportation (i.e., wagon roads and stage stations), mining (towns, buildings, foundations, shafts, adits, debris scatters, mines and mills), ranching/farming (corrals, water lines, fences and pastures), communication (telegraph lines and trails), government (Civilian Conservation Corps camps and projects) and numerous other site types. The majority of historic sites in the Ely Ranger District are related to mining. Most of the historic mining took place in the White Pine Mining District (ca. 1868 to 1885 and again in the 1920's) in the White Pine Division and at sporadic mining locations (ca. 1870 to 1950) in the Schell Creek Division.

In the fall of 2007 and in 2008, the District conducted a cultural resource inventory of the Proposed Action. The District conducted their inventory on foot and by vehicle depending upon the proposed use of the already existing route. The District developed this strategy with assistance of the Nevada State Historic Preservation Office. The purpose of their inventory was to locate cultural resources, and determine if they are eligible to the National Register of Historic Places and if the Proposed Action would have any adverse effects to those sites determined eligible.

This cultural resource inventory located 47 sites. Most of these sites were related to historic mining (19 total), followed by nine prehistoric sites (primarily lithic scatters); eight historic ranching/sheepherding sites, five historic residences, three historic debris scatters, two historic transportation sites, and one rock shelter that contained historic artifacts and that might have potential to contain prehistoric artifacts.

Of these 47 sites, 21 of them are eligible to the National Register of Historic Places either for their association with broad patterns of our history, a significant person, design, or are likely to yield important information in prehistory or history. Thirteen of them are not eligible to the National Register and a remaining thirteen will need further evaluation before their eligibility can be determined. The District will treat these 'unevaluated' sites as if they were eligible cultural resources.

Environmental Consequences

The District is measuring the environmental effects on cultural resources by the number of eligible or unevaluated sites that are adversely affected by each alternative. According to 36 CFR 801.3 (i) adverse effects on eligible cultural resources include destruction or alteration of the property itself. Cultural resources can be damaged by road construction and maintenance activities and increased erosion (May 2001). Roads also make sites more accessible to forest visitors who may accidentally or intentionally damage a cultural resource.

Alternative 1 - No Action Alternative

Under the No Action Alternative, motorized travel off forest transportation system routes continue to cross eligible cultural resources, resulting in sites being damaged either through the mechanical action of vehicles or through casual collection of surface

artifacts. Since cross-county travel is a part of this alternative, historic properties would be adversely affected.

Alternative 2 - Proposed Action Alternative

There are 21 eligible and 13 unevaluated cultural resources properties located along the routes identified for designation as NFS roads or NFS trails in the Proposed Action. Vegetation along the routes restricts motor vehicle impacts to the sites to the wheel tracks of the road. These impacts include compaction of site surface beneath those tracks and potential breakage of artifacts located in the tracks.

Adding the proposed routes to the forest transportation system does not result in additional adverse effects to significant historic properties or unevaluated properties located along the routes. Prohibiting motor vehicle use off forest transportation system routes protects sites from future disturbance resulting from off route travel and the creation of additional user-created routes.

Alternative 3 - Current System Alternative

Under the Current System Alternative, motor vehicle use is restricted to current NFS roads and trails. The limited impact to eligible cultural resources currently resulting from cross-country travel and use of user-created routes are reduced as the District enforces the travel rule. Prohibiting motor vehicle use from traveling off designated routes protects sites from future disturbance resulting from off-road travel and limits the creation of additional user-created routes.

Cumulative Effects

Designation of the routes described in the Proposed Action would not result in impacts to eligible cultural resources or cumulatively result in further degradation of sites located either along or off designated routes. In the absence of a prohibition on cross-country travel under the No Action Alternative, there may be an incremental increase in effects to potentially eligible sites if new routes are created that cross them.

Water Quality and Soil Erosion

Affected Environment

The project area includes all of the National Forest System land in the Ely Ranger District, except the Duck Creek area. The analysis area encompasses 101 sub-watersheds or 6th order hydrologic unit codes (HUC 6's). Drainage throughout the analysis area is controlled by north-south trending mountain ranges. On the east side of the District are the Moriah, Schell Creek, and Ward Mountain Ranges. The Moriah

Range, just north of Great Basin National Park, rises from about 6,000 to 12,000 feet ASL. Generally perennial streams originating in the Moriah Range drain off the east slopes. The Schell Creek Range has a similar elevation range, here perennial streams drain off both the east and west slopes. The Ward Mountain Range, adjacent to and immediately southwest of the town of Ely, has a few perennial springs and is void of perennial streams. The Elderberry Canyon Watershed, more commonly known as the Murry Canyon Watershed, is the source area for the City of Ely's municipal watershed; this watershed is 3,990 acres.

The White Pine and Grant-Quinn Ranges are on the west side of the District. Most of the perennial flow from the White Pine Range flows south and southeast from the southern half of the range. Ellison Creek and White River, the two major streams in this range, are part of the Colorado River Flow System. East of the analysis area, Ellison Creek converges with the White River and flows intermittently southward through the White River Valley. This river eventually joins the Muddy River, which flows into Lake Mead. All other streams in the analysis area are part of the Great Basin Hydrographic Province.

The Grant-Quinn Ranges, the southwestern portion of the analysis area are quite dry when compared to the rest of the District: there are a few perennial streams in the southeast corner and a few on the west side.

The amount of soil erosion associated with a road depends greatly on the erodibility of the soils that make up the road surface. Soils derived from volcanic parent materials, including pyroclastic andesite generally are more developed and less erosive because of their cohesiveness, but have a tendency for mass instability, compaction, rilling, and road maintenance problems. In contrast, soils developed from granitics are shallow to deep, poorly developed, loosely consolidated, and highly erosive. Given their large component of coarse sands, there is a low tendency toward compaction. In comparison, alluvium and lake deposits soils are a deep, well formed, mix of interbedded fine silt and sand with occasional gravel lenses. Alluvial fill dominated slopes are generally less susceptible to erosion because of their position on the slope and their gentle gradient.

Soils formed from carbonate parent material are highly compressible due to their weak nature and the crushability of the grains. In dry climates, carbonate derived soils can form hard and dense horizons similar to layers of cement. These layers inhibit plant growth but breakdown under low stress. Low stress is in the order of two pounds per square inch (psi). Two psi is approximately equivalent to a 180-pound person riding an average size ATV.

Grant-Quinn Range

The southern half of the Grant-Quinn Ranges consists mostly of volcanic rocks while the north half is a mixture of carbonates, quartzite, alluvial sediments, and small portions of volcanic rocks. Routes in the southern half are prone to hillslope erosion because of their particle size and steep slopes.

Mount Moriah

The majority of Mount Moriah consists of quartzite, which underlies most of the analysis roads. Some of the routes in the southern section overlie intrusive rocks and some are on alluvium. A few sections overlie limestone strata.

Schell Creek Range

The southern portion of the Schells consists mostly of carbonate rocks (limestone and dolomite), and some scattered volcanics. The middle section consists largely of quartzite, while the northwest flanks are largely volcanic. The northeast side is a mixture of quartzite and limestone, with some volcanics and alluvium at the northern tip. This range has more routes that traverse steep terrain than the other ranges in the analysis area.

Ward Mountain

The lower elevations of Ward Mountain are alluvium on gentle slopes. The area is also comprised of limestone, volcanic, and lacustrine (lakebed) substrates. Lack of organic matter, make soils in this area more susceptible to rain splash compaction and erosion. As slopes decrease in grade the potential for erosion is reduced.

White Pine Range

The geologic substrate of the White Pine Mountain Range consists mostly of a mixture of carbonates and volcanics. A few areas have alluvial sediments.

Environmental Consequences

In a synthesis of published literature, Elliot (2000) noted that, "on most forested watersheds, sediment is the most troublesome pollutant and roads are a major source of that sediment." Sediment runoff rates from watersheds with roads and other soil disturbances tend to be significantly higher than watersheds with their natural cover of vegetation intact (Elliot and Hall 1997).

The effect on water quality and the potential for increased sediment concentrations depend greatly on the location of routes within a watershed. Routes located within riparian areas produce more sediment that is available to be transported into the stream than those located further away from riparian areas. Table 16 lists the analyses routes within riparian zones. Riparian zones are areas 150 feet on either side of intermittent stream channels and 300 feet on either side of perennial streams. Most sediment from roads enters streams where roads cross streams, or where roads are close to streams (Elliot 2000).

The environmental effects on water quality are measured by:

- Number of acres of routes within riparian zones;
- Number of perennial and intermittent stream crossings; and

- Watershed disturbances as measured by the Equivalent Roaded Area (ERA) model.

Gucinski and others (May 2001) identified several ways forest roads can effect stream channel networks. They can affect streams by concentrating storm runoff and snowmelt onto road surfaces and into roadside ditches. Roads can extend stream channel networks through eroding gullies or intermittent channels on hillslopes and by linking road segments to small tributary streams (Weaver et al. 1995, Wemple et al. 1996a). The formation of rills and gullies due to concentrated runoff depends greatly on the erodibility of the soils that make up the road surface.

The environmental effects on soil erosion are measured by:

- Number of acres of routes within riparian zones;
- Number of perennial and intermittent stream crossings; and
- Watershed disturbances as measured by the Equivalent Roaded Area (ERA) model.

Alternative 1 - No Action Alternative

Under the No Action Alternative, there is continued use of all NFS roads and user-created travel routes and continued cross-county travel. This alternative would retain 473.7 miles of route within 150 feet of an intermittent watercourse (689 acres) and 167.8 miles of route within 300 feet of a perennial stream (610.1 acres). Out of those 167.8 miles, 153.6 miles would also be within 150 feet of riparian habitat (557.4 acres). There would also be 170 perennial and 1,561 intermittent water crossings. Table 21 provides the number of miles located in these topographic and vegetative settings as well as those for the Proposed Action and the Current System Alternatives.

This alternative also has 189.4 miles of route located on slopes greater than 30 percent (688.7 acres). Routes that contour across steep slopes are less likely to cause erosion than routes climbing straight up the slope. The orientation of the road on the slope as well as its position on the slope contributes to the erosion rate generated by the route. Mid-slope roads have the greatest rate of failure per mile.

When cross-country motorized travel is unrestricted route density increases over time. Given that user-created routes do not go through the environmental planning process, there is a risk that they will be in locations susceptible to soil erosion and prone to water quality issues. As road density increases so does the risk of erosion.

This alternative poses the greatest risk for erosion, loss of vegetative cover and sediment transportation to the stream system because of the miles of road that would remain, are in close proximity to streams, are poorly located, traverse steep slope, are on highly erosive soils and/or lack adequate design.

Table 21: Miles of route located in topographic or vegetative settings that contribute to soil and water quality			
	No Action	Proposed Action	Current System
Miles (acres) within 300 feet of perennial water	167.8 (610.1)	132.8 (482.9)	114.9 (417.8)
Miles (acres) within 150 feet of intermittent water	473.7 (1,722.5)	304.5 (1,107.27)	222.7 (809.8)
Miles (acres) of within 150 feet of riparian areas	153.6 (557.4)	119.6 (434.9)	103.7 (377.0)
Number of perennial water crossings	170	131	104
Number of intermittent water crossings	1561	977	733
Miles (acres) crossing slopes > 30%	189.4 (688.7)	92.7 (490.1)	66.9 (353.8)

Alternative 2 - Proposed Action Alternative

Under the Proposed Action Alternative, 250 miles of user-created routes are proposed to be added to the current forest transportation system. This action, also proposes to place a prohibition on cross-country motor vehicle use.

This alternative would designate 17.9 miles of user-created route that occur within 300 feet of a perennial stream (65.1 acres). Along these routes, there are approximately 27 perennial low water crossings. Along intermittent streams, this alternative would designate 76.8 miles of user-created route (297.4 acres) located within 150 feet of an intermittent stream and approximately 244 intermittent stream crossings. This alternative would designate 15.9 miles of route located within 150 feet of riparian habitat (57.9 acres) beyond what the current amount of NFS roads 103.7 miles (377.0 acres).

Compared to the No Action Alternative, this alternative results in a reduction of 34 miles of route in riparian zones (122.5 acres), a reduction of 39 perennial stream crossings and a reduction of 96.7 miles of road crossing on slopes greater than 30 percent (198.6 acres). These reductions result in lower potential for sediment production from routes crossing streams and steep slopes.

Compared to the Current System Alternative, analysis of the geologic substrate and road gradient the additional routes do not present a high risk of sediment runoff. Some of the proposed routes are located in areas with highly erodible soils, however the road densities within any given watershed is very low (See Appendix C). Degradation is unlikely to occur at the watershed scale or within riparian areas because only short

segments of most analysis routes are located within riparian buffers or across steep slopes and there is adequate vegetation to trap sediment.

In addition to adding new routes to the current road system, this alternative proposes to prohibit motorized travel off authorized routes. This action reduces the potential for erosion-causing disturbance related to motor vehicle use. Over time, lack of use and/or road obliteration on the routes not added to the system allows revegetation and stabilization, which results in restored hydrologic function and lower sediment.

Alternative 3 - Current System Alternative

Under this alternative, no routes are proposed to be added to the forest transportation system. This alternative also proposes the prohibition of cross-country travel. This alternative has the fewest miles of travel route in riparian zones (103.7 miles or 377 acres), the fewest stream crossings (104 perennial and 733 intermittent), and the least number of miles of travel route over slopes on excess of 30 percent (66.9 or 353.8 acres). In comparison, this alternative has the lowest potential for sediment runoff rates and least potential for soil erosion.

Since no new routes are added, the risk of soil erosion and stream sedimentation does not increase beyond that of the existing condition. The potential for erosion-causing disturbance and stream sedimentation in areas outside the existing system routes is reduced because undesignated routes will be eventually be closed, either through restoration or a natural process. This in turn decreases the route densities and miles of route over the landscape.

Cumulative Effects

This effects assessment addresses impacts to both the watershed resource and the soil resource. The following section introduces cumulative effects as they relate to watershed and soils.

A cumulative impact, as defined in 40 CFR 1508.7 is: The impact on the environment which results from the incremental impact of the action when added to other past, present, and foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (CEQ 1971).

Cumulative impacts may occur off-site and, in the case of the water resource, may affect downstream beneficial uses of water. Effects can be either beneficial or adverse and result from the synergistic or additive effects of multiple management activities within a watershed (USDA Forest Service 1988a, MacDonald 2000).

Disturbance related to roads, cross-country travel, fire, livestock grazing, and mineral exploration impact watershed condition. When these disturbances occur together in a watershed, they can have the cumulative adverse effect of increasing compaction and

soil erosion and impairing water quality. (Menning et al. 1996, McGurk and Fong 1995).

The analysis area contains a number of present and reasonably foreseeable future projects in the analysis area. The effects of on going projects are included in the analysis of cumulative effects as part of the existing condition. These projects along with the reasonably foreseeable future projects are discussed below:

- The Ely Ranger District has nearly completed a rangeland management Environmental Impact Statement for the west side of the Ranger District (White Pine Range and Grant and Quinn Ranges), and then will start an analysis of the rest of the District. Effects to soil and water quality from this activity are incorporated into the ERA model, which is discussed below.
- There are plans for two coal-fired electric plants west of the Schell Creek Range in Steptoe Valley. These proposed coal-fired electric plants will not cause ground-disturbing activities that would result in cumulative erosion or sedimentation within the analysis area.
- Passage of the White Pine County Land, Recreation, and Development Act of 2006. This legislation created 446,442 acres of new Wilderness on the Ely Ranger District. The results of this act have the potential to effect rates of soil erosion or water quality in a positive way. Because motor vehicle use is prohibited in the areas designated as Wilderness and existing travel routes will no longer be used, soil erosion will decrease and water quality will improve over time as hydrologic function and vegetation is restored.
- An application to mine and mill at the old Taylor Mill is currently under review. Cumulative effects from this project are isolated to a small portion of the Schell Creek Range. Implementation of this project may increase soil erosion through the construction of roads and drill pads and the expansion of the mine and waste rock dumps. There are no perennial streams in the proposed project area so there are no predicted impacts to water quality.
- The BLM and the Forest Service are planning landscape-scale vegetation treatment projects on and adjacent to Ward Mountain. The Forest Service is developing a landscape-scale vegetation project on the North Schells. Those projects are under development and could not be precisely analyzed this projects. The effects of this project will be analyzed with these projects in their cumulative effects analysis.
- A recently signed Record of Decision for leasing land for gas and oil exploration and development on the White Pine Range and the Grant and Quinn Ranges. This recent decision allows oil and gas leasing in these areas, with restrictions. Once a plan of operations to explore for oil and gas or develop a well to pump oil and gas is submit then the proposed activity will be analyzed.

Equivalent Roaded Area Model

There are numerous methods for assessing the effects of land use activities on the landscape. A discussion and comparison of different methodologies can be found in documents, such as, A Scientific Basis for the Prediction of Cumulative Watershed

Effects, Cumulative Watershed Effects: Applicability of Available Methodologies to the Sierra Nevada, and Research and Cumulative Watershed Effects. (Dunn et al. 2001, Berg et al. 1996, Reid 1998, USDA Forest Service 1988a). For the purpose of this CWE, the effects of past, present, and reasonably foreseeable future impacts were assessed using the Equivalent Road Acres model. Under this approach, the impacts of land management activities were evaluated on the basis of equivalent roaded acres.

“Equivalent roaded acres” (ERA) is a conceptual unit of measure used to assess ground-disturbing activities. One acre of road surface equals one ERA. Numeric coefficients are used to convert acres of management activities such as timber harvest, underburning and grazing to ERAs. For example, 1 acre of underburning equals 0.05 ERA. In a given watershed, disturbances are added together to determine a cumulative ERA for that watershed. This value is often expressed as a percentage of the Threshold of Concern (TOC). The TOC is an indicator used to assess the risk of cumulative watershed effects. The TOC is generally expressed as a percentage of watershed area. When the total ERA in a watershed exceeds the TOC, susceptibility for significant adverse cumulative effects are high. The cumulative ERA in a watershed is often expressed as a percent of the TOC. For example, in a 1,000-acre watershed where the TOC is 12 percent of the watershed area, 100 percent of the TOC represents a condition where the amount of disturbance is similar to 120 acres of road surface, 600 acres of mechanical harvest or 343 acres of group selects.

Analysis occurred at the sixth order HUC scale containing an analysis route. The model was modified to incorporate a recovery factor for roads that would not be authorized for continued use, the rationale is discussed below.

The rate of surface erosion is not constant throughout the life of a road (Dissmeyer, 2000; Luce and Black, 2001). As re-growth of vegetation occurs over time, disturbed soils stabilize and surface erosion decreases. Most surface erosion occurs within the first two years of construction, and tends to drop off significantly when a road is closed (Elliot 2000). The ERA model compensates the effect of roads and other disturbances for the gradual re-vegetation of disturbed areas over time by using a recovery factor.

In general, cumulative disturbance is not likely to be a concern until it reaches Threshold of Concern (TOC) of 10-12 % for the entire watershed (Menning and others 1996). Using the ERA model, the maximum disturbance was found in the Cathedral Canyon Watershed (HUC 6 160600120901). This watershed had a 3,400-acre wildfire in 2007; a large portion of this fire was high intensity. The Model showed that the total cumulative disturbance was 6.4% under the No Action Alternative, 6.3% under the Proposed Action Alternative, and 6.2% under the Current System Alternative. Only one other watershed (Upper Sherwood Wash, HUC 6 150100110701) had a total cumulative disturbance that exceeded 2%.

When the ERA analysis is limited to riparian areas, the cumulative soil disturbance is not likely to be a concern until it approaches 5% TOC (McGurk and Fong 1995). For any riparian area within a watershed, the maximum soil disturbance is 1.3% for the No Action Alternative and less for both the Proposed Action and Current System

Alternatives. (See Hydrology Specialist Report Travel Management EA, table 6 pp. 14-15, in the Project Record).

Soil disturbance for the analysis routes for any one watershed amounts to a maximum of less than one percent for both the No Action Alternative and the Proposed Action Alternative (Hydrology Specialist Report, pp. 15-16). None of the past, present or reasonably foreseeable projects, when added to the No Action Alternative, the Proposed Action Alternative, or the Current System Alternative, result in cumulative impacts that approach the threshold of concern (Hydrology Specialist Report table 9, page 26).

Appendix C shows the cumulative effects in selected watersheds. Threshold of concern values are only shown for watersheds with the greatest values from all disturbance or uses including travel routes. The Hydrologists Specialist Report includes a complete list of the Watersheds in the project area.

Native American Values

Affected Environment

The American Indian Religious Freedom Act of 1978, and Executive Order 13007, dictates that federal agencies consider the repercussions of their actions when the District may affect Native American traditions and religious practices. The District works with tribal governments to identify locations having traditional cultural or religious values to Native Americans and ensure that land management actions do not unduly or unnecessarily burden the pursuit of traditional religion or lifeways by inadvertently damaging important locations or hindering access to them.

On May 15, 2007, the District mailed a *Request for Comments* to the Duckwater Shoshone and the Ely Shoshone tribal organizations. The District also met and consulted with the Yomba, Duckwater Shoshone, and Ely Shoshone Tribes and described the project. In March 2008, the District again met with these three tribes and the Goshute Tribe.

Through consultation with tribes, the District identified no traditional cultural areas within the project area. The District knows of one area that is of interest and used by a local tribe. The route accessing that location would remain open under all alternatives.

Environmental Consequences

The environmental effects on Native American traditional values are addressed in a qualitative discussion of the potential effects to these properties from each of the alternatives.

Effects Common to All Alternatives

Tribal representatives did not identify the location or existence of any traditional cultural properties related to any of the routes. In addition to consulting with Tribes,

the District surveyed for cultural properties along all the existing forest transportation system and user-created routes. Although during consultation the route was not specifically identified, the District is aware of one potential area that is of interest to a Tribe. The route that Tribal members use remains open under all alternatives.

Alternative 1 - No Action Alternative

The District permits cross-country travel under this alternative. While there are no impacts to cultural properties by continued use of the existing routes, new user-created routes could result in concerns about increased public access or damage to Native American traditional cultural properties.

Effects Common to the Proposed Action and Current System Alternatives

Cross-country travel is prohibited under these alternatives. With motor vehicle use restricted to existing routes, the District expects no impacts to Native American traditional cultural properties.

Environmental Justice

Affected Environment

Executive Order 12898 requires federal agencies to consider impacts of proposed actions on minority and low-income populations. In accordance with EPA's Environmental Justice Guidelines (EPA 1998), minority and Native American populations are identified when either of the following exist:

- Minority population of the affected area exceeds 50%; or
- Minority population of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

The EPA's Environmental Justice Guidelines (EPA 1998) suggest that the District identify low-income populations by using annual statistical poverty thresholds.

Minority Populations

The U.S. Census Bureau collects demographic characteristics on five race groups: white, African-American, American Indian and Alaska Native, Asian, and Pacific Islander. This demographic information is summarized in Table 22. According to the U.S. Census Bureau, the African-American and Hispanic populations represented 4.1% and 11%, respectively, of the total population of White Pine County in 2000. American Indian, Asian, and Pacific Islanders comprised 3.3, 0.8, and 0.2%, respectively (U.S. Census 2008a). In Nye County African-American and Hispanic populations accounted for 1.2% and 8.4 % respectfully and American Indian, Asian, and Pacific Islanders comprised 2.0%, 0.8% and 0.3% of the whole (U.S. Census 2008a). For Nevada as a whole, African Americans and Hispanics represent 6.8 and 19.7%, respectively, in

2000. American Indian, Asian, and Pacific Islanders constituted 1.3, 4.5, and 0.4% of the State’s population in 2000, respectively (U.S. Census 2008a).

Table 22: Minority Populations Associated with the Project Area			
	White Pine County	Nye County	Nevada
African-American	4.1	1.2	6.8
American Indian	3.3	2.0	1.3
Asian	0.8	0.8	4.5
Hispanic	11.0	8.4	19.7
Pacific Islanders	0.2	0.3	4.5
Source: U.S. Census Bureau, 2000			

Low-Income Population

In 2000, the percentage of individuals below the poverty level in Nye and White Pine County was 10.7 % and 11%. This income data is compared to that of the state of Nevada in Table 23. This is only slightly higher than the State of Nevada, which was 10.5 % (U.S. Census Bureau 2008a).

Table 23: Income Comparison related to the Project Area.			
	White Pine County	Nye County	Nevada
Median Household Income	\$36,688	\$36,024	\$44,581
Individuals Below Poverty Level	11.0%	10.7%	10.5%
Source: U.S. Census Bureau, 2008			

In White Pine County, neither the population of African Americans, American Indian, Hispanics, Asian nor Pacific Islanders exceeds 50% of the population and none of the populations percentages is “meaningfully greater” than the minority population in the general population, in the State of Nevada. Therefore, for the purposes of screening for environmental justice concerns, minority populations are not a concern in Nye County or White Pine County. Likewise, the widely dispersed area over which this travel management effort takes place makes it unlikely that any particular minority population in either Nye County or White Pine County is disproportionately impacted.

Environmental Consequences

The Council on Environmental Quality guidance on environmental justice (Environmental Justice: Guidance Under the National Environmental Policy Act, 1997) advises agencies to consider the composition of an affected area to determine whether minority populations, low-income populations, or Indian tribes are present, and if so whether there may be disproportionately high and adverse effects to human health. The environmental effects on minority populations or low-income populations are measured by:

- The disproportionately high and adverse effects to human health on minority or low-income populations.

Effects Common to the Action Alternatives

The effects of all alternatives would not disproportionately effect minority or low income populations. There are no cumulative effects associated with other past present or reasonably foreseeable projects that would incrementally contribute to a disproportionately high and adverse effect on human health of either a minority or low-income population.

Socioeconomic

The project area is located in remote areas of Nye County, population 42,485, and White Pine County, population 9,150 (U.S. Census 2008b). The median household income in 2004 for Nye County was \$41,025 and \$39,420 in White Pine County (U.S. Census 2008b). Services in the region surrounding the project area are limited to those motels, grocery stores, and gas stations located in Ely, Baker, and Pioche Nevada.

Environmental Consequences

Environmental impacts to the socioeconomic well being of Nye and White Pine Counties would be significant if the alternatives resulted in:

- Substantial growth or concentration of population;
- Displacement of a large number of people;
- Substantial reduction in employment;
- Substantial reduction in wage and salary earnings;
- Substantial net increase in the Counties expenditures; or
- Substantial demand for public services.

Effects Common to All Alternatives

The Proposed Action would have little positive or negative effect on the local economies because it would not result in increases or decreases in population, wages, or employment. Use of the road system would not increase or decrease significantly because of these alternatives. To the extent that they receive maintenance at all, the Forest Service, not the counties, would maintain the routes identified for designation. As the proposed additions to the forest transportation system already exist and are in use, the proposal would not affect the demand for public services.

Public Health and Safety

Affected Environment

Safe travel for all users on routes that cross the District is a concern that was identified when developing the Proposed Action. The District considered the types of proposed routes, the types of vehicles traveling on the routes, the speeds at which vehicles can safely travel and the times of year the routes are open. At present, all routes on the Ely Ranger District are open to both highway-legal and non-highway legal vehicles. Route conditions off the main routes are generally rough and require slow speeds (<10 mph) in high-clearance vehicles. Main routes generally receive only light use through most of the year with the highest use period being during the hunting season in September and October. The District is not aware of any multi vehicle accidents occurring on current NFS roads.

With the exception of E1498 most of the transportation is located some distance from populated areas and does not result in noise or emission impacts. Low volume and slow speeds also contribute to the reduction of noise and emissions. In the case of E1498, access to this route crosses public land managed by the BLM, which passes residential properties located on the edges of Ely, Nevada. This route is also accessible from other routes that cross public land and that the Forest has a right-of-way.

Environmental Consequences

The environmental effects on public safety are addressed by a qualitative discussion on the potential effects of the proposed action.

Effects Common to All Alternatives

Because of the low speeds, low traffic volumes, and current open nature of all roads to all vehicles type the District was not required to complete an engineering analysis for the approval of mixed use. The inherent risk of traveling on forest transportation system routes is not increased under either of the Action Alternatives and may decrease under the No Action Alternative. The District does not anticipate that use of the routes in either of the Action Alternatives would increase the risk of multiple vehicle accidents. As for single vehicle accidents the District expects that the prohibition on cross-country travel under the Proposed Action and the Current System Alternatives

would reduce the risk of accidents associated with traveling across steep terrain and uneven ground. All of the routes analyzed under the Proposed Action Alternative are very low volume roads and travel speeds are kept low because of rough conditions. There is no increased risk of accident under any of the Action Alternatives because the use of these routes is not expected to change with designation. There would be no direct, indirect, or cumulative effects under any alternative. Under the Proposed Action Alternative route, E1498 would remain open. The portion of this route on NFS land is accessible from public land managed by the BLM from three routes, one of which is NFS road 59442.

Road Management

Affected Environment

The District currently has 600 miles of NFS road and NFS trails on the forest transportation system open to motor vehicles use. The majority of these roads are low speed, low volume native surface two track routes with non-engineered turnouts. Because of these conditions, these roads are open to all vehicle types. On an annual basis, the District maintains the primary access routes to a standard that provides safe and comfortable travel in a passenger vehicle. Table 24 shows the routes maintained by the Forest on a regular schedule. Some of the roads listed on Table 24 are part of the White Pine County transportation system. These roads are maintained by the Forest through an agreement with the County. This maintenance agreement is in the best interest of the Forest in that these routes provide safe and economical access to the National Forest. The District manages all other NFS roads, 437.3 miles to provide access into the remote areas of the District as primitive four-wheel-drive routes. These roads were constructed at low cost and typically require little or no maintenance. The District experienced severe road washouts in the spring of 2005, and while the District has repaired the major roads, many remain unrepaired due to the cost compared to the significance of, or need for the route. As similar situations occur, the District would continue to close roads or change the vehicle class on roads and trails based on both resource and economic considerations.

The District manages and maintains NFS trails following the same strategy as NFS roads. There is limited trail maintenance funds allocated to the District. Primary trails, that get most of the traffic, receive most of the maintenance. Other trails are maintained on an as needed basis.

Table 24: Primary Travel Routes on the Ely Ranger District that are Maintained to Provide Safe and Comfortable Travel in a Passenger Vehicle			
Mountain Range	Route #	Route Name	Length
Grant/Quinn	59410	Cherry Creek	13.4
	59411	Sawmill Canyon	8.6
	59415	Quinn Canyon	7.6

	59412	Scofield Canyon	4.9
	59420	Troy Canyon	2.2
Moriah	59460	Smith Creek	10.1
	59582	Hampton Creek	3.25
	59429	Hendrys Creek	1.5
	59151	Horse Canyon	1.3
Schells	59424	Berry Creek	4.9
	59435	Cleve Creek	4.1
	59425	Timber Creek	2.8
	59427	Kalamazoo	14.8
	59426	Bird Creek	2.5
	59564	East Creek	3.7
Ward	59440	Ski Hill	3
	59439	Ward Campground Road	0.6
	59620	Lower Terraces	3.4
White Pine	CR1163 (59405)	White River	21.6
	CR10 (59402)	Ellison Creek/Hamilton-Pioche	30.7
	CR1164	Current	10.9
	CR1165	Hamilton-Pioche	
	59400	Cottonwood Creek	16.8

Environmental Consequences

Environmental impacts to road management would be significant if alternatives resulted in an increased need to expend limited road maintenance resources to maintain the District’s transportation system.

Effects Common to All Alternatives

The District uses Forest road maintenance funds and the Forest road maintenance crew to maintain the primary access routes. This budget is finite, and the District does not

expect any increases. The District receives the services of the Forest road crew for twelve working days annually. Consequently, the District Ranger and staff make hard decisions every year as to where to work the road crew. The District's priority is the maintenance of routes that receive the most use or that have been damaged by flooding or heavy rains.

High-clearance four-wheel-drive roads and motorized trails make-up the majority of the routes on the District. This vehicle class is highly compatible with the road geometry and native surfaces on the Ely Ranger District. Speeds are slow on these routes and encounters with other vehicles are rare in most areas because of the distribution and traffic volume. These routes receive very little maintenance and the District does not expect that to change with the selection of any of the alternatives. This does not mean that the District does not monitor the conditions of the roads. If the District becomes aware of a road or motorized trail that is causing environmental impacts or is unsafe for the public, the District would assess the need for the route and make a determination on whether to repair or close the route.

The miles of road or motorized trail would increase with the Proposed Action. This however does not indicate an added burden on the already limited road maintenance resources. Given the current and projected level of road maintenance on the District, the District should be able to provide a similar level of maintenance for the forest transportation system under the No Action, Proposed Action or Current System Alternatives. Accordingly, none of the alternatives has direct, indirect, or cumulative effects on the District's ability to manage the forest transportation system on the District.

Livestock Management

Affected Environment

The Ely Ranger District currently has 38 livestock grazing permits on 33 allotments. The season of use varies on these allotments; however, use generally occurs between June 1 and October 15 of each year. Permitted livestock on the Ely Ranger district number 3,603 cattle and 16,311 sheep.

Most user-created routes on the Ely Ranger District were created by hunters and/or sportsmen or developed over many years for the management of livestock allotments. Livestock permittees generally use user-created routes as well as Forest Service System roads to access allotments on National Forest administered lands. These roads utilized to monitor livestock locations and use, to move livestock between pastures, to place salt supplements, and to maintain fences and water developments. In general, vehicle use on roads to maintain developments and to place salt supplements is limited to one trip per year for each activity and only occurs on select roads each year.

Vehicle use by livestock permittees to monitor and move livestock varies widely by allotment. This use of the roads generally occurs more frequently and occurs almost exclusively between mid-April and October. The user-created routes that are proposed

to remain open are generally used by livestock permittees to maintain allotment developments, place salt supplements, and monitor livestock locations.

Environmental Consequences

Environmental impacts to livestock management activities would be significant if alternatives resulted in a decreased ability of permittees to manage the livestock as specified in the terms and conditions of their grazing permits.

Effects Common to All Alternatives

Under all alternatives, livestock management would continue as specified in the terms and conditions of the grazing permits. The District is currently completing an Environmental Impact Statement addressing alternative grazing strategies. The Ely Westside Rangeland Project should be completed by the summer of 2008.

Motorized travel management would not significantly affect livestock management. Livestock permittees would continue to have access into their allotments as specified in their grazing permits. Access could be permitted off road to manage livestock and repair range structures such as fences and water developments.

