

Chapter 3

The Affected Environment and Environmental Effects

3.1 Introduction

Chapter 3 provides a summary of the affected environment including the physical, biological, and social-economic (human) resource conditions that could be affected by the proposed action and the alternatives to it. This information provides a baseline from which comparisons can be made for the effects analysis. The CEQ regulations direct agencies to succinctly describe the environment that could be affected commensurate with the importance of the impacts (40 CFR 1502.15).

This chapter also provides a summary of the direct, indirect, and cumulative effects on the physical, biological, and social-economic environment within the analysis area, and provides the scientific and analytical basis for comparison of the alternatives. The environmental effects section also includes disclosure of any unavoidable adverse effects, a discussion of effects on short-term versus long-term productivity, and any irreversible or irretrievable commitments, as applicable, for each resource area.

3.1.1 List of Past, Present, and Reasonably Foreseeable Future Actions

Table 3.1 shows the actions considered in the cumulative effects disclosure. Past, present, and ongoing activities have resulted in the resource's existing condition. Reasonably foreseeable future actions are also considered. As applicable to each resource, these conditions, actions, and effects are described in Chapter 3.

Table 3.1 Past, present and ongoing, and reasonably foreseeable activities in or near the project area

PAST ACTIONS		
Action	Description	Date
Livestock Grazing	Historic livestock grazing	1800s-early 1900s
Timber Harvest	Clearing for the original road; sporadic individual tree removal for firewood	1800s to present
National Forest System roads and motorized trails	Construction and/or management of about 19 miles of system road (including all roads classified as open, closed, and administrative use) within the analysis area.	1900s – present
Motorized Recreation Use	The Travel Plan for the Logan District was first approved in 1991. About 19 miles of motorized roads and trails are currently designated open. Roads designated as closed in the Travel Plan continue to be decommissioned through road obliteration, seeding, and signing. Unauthorized use of closed roads and trails and creation of new illegal trails continues to occur.	1991-present

Wilderness designation	Implementation of the Utah Wilderness Act of 1984 eliminated motorized travel on approximately 44, 563 acres in the Mount Naomi Wilderness and approximately 22, 986 acres on the Wellsville Mountain Wilderness on the Logan Ranger District.	1984-present
PRESENT AND ONGOING ACTIONS		
Action	Description	Date
Motorized Recreation Use	See previous description	Ongoing
Road maintenance	Clean culverts, blade existing roads where possible	Ongoing
Recreation Use	Hunting and camping at dispersed sites	Ongoing
Livestock grazing and management	Permitted sheep grazing on the White Rock Sheep Allotment and permitted cattle grazing on the Providence Cattle Allotment	Ongoing
Fire Suppression	Active fire suppression of human-caused fires. Lightening fires within wildland fire use consideration areas may be managed as wildland fire use	Ongoing
Noxious Weeds Treatment	Treatment of 50 acres annually primarily along roads of maintenance level 3 roads or above	Ongoing
Timber Sales	X4 Timber Sale (selective logging over 700 acres for spruce beetle suppression and regeneration of the spruce forest) about 15 miles to the northeast of project	2006-2008
REASONABLY FORESEEABLE ACTIONS		
Action	Description	Date
Prescribed Burns	Blacksmith (2007-2009), 4,780 acres Hells Hollow (2008-2010) 6,000 acres	2007-2010 2007-2010

In addition to the past, present and ongoing, and reasonably foreseeable activities listed in Table 3.1, other actions were considered and Table 3.2 presents the justification for elimination from further consideration in Chapter 3.

Table 3.2. Actions not considered in the cumulative effects analysis and the justification for elimination from consideration

Action	Justification
Road maintenance/repair of the Millville Canyon portion of the Millville Peak road (20168)	This potential action has had some preliminary discussion, but it is in the very early stages and somewhat speculative at this time. No firm proposal has been developed. Therefore, it is not considered further in this cumulative effects analysis.
Prescribed Burns	None have been implemented in the area
Wildfires	None have occurred in the area

3.2 Aquatic Resources

3.2.1 Introduction

The purpose of this section is to explain and clarify the existing conditions of the aquatic resources in the analysis area and to disclose the effects of the proposed action and the alternatives to it.

3.2.2 Area of Influence

The project area is located in portions of the Spring Hollow-Logan River and Providence Canyon sub-watersheds (see Project Area Map, Appendix A). From north to south, the area is within portions of Spring Hollow, Mill Hollow, Dry Canyon, and Providence Canyon drainages. The specific project area, for purposes of effects to aquatic species, is defined as the area immediately adjacent to existing or proposed relocated roads. Three ephemeral streams and several small ponds and springs occur within the project area. No perennial flows occur within the project area.

Aquatic resources (aquatic habitat, aquatic and semi-aquatic species) are directly related to available water sources. Specific water features within the analysis area are identified below:

Streams- Spring Hollow, Mill Hollow, and Providence Canyon are ephemeral streams tributary to the Logan River. Snowmelt provides most of the water in the Providence Canyon drainage, resulting in peak flows during spring runoff, with spring-fed low base flows for the remainder of the year. Providence Canyon/Spring Creek is shown to have perennial flow (for approximately 3.3 miles) downstream below Box Elder Hollow to the mouth of Providence Canyon.

Lakes and Springs- Providence Lake, an unnamed lake east of Logan Peak, and Providence road pond are used for stock watering. These features are ephemeral and have only seasonal water in them during spring snow melt. Spring Hollow spring is located at the headwaters of Spring Hollow canyon and is adjacent to Top Spring Hollow Road (20126). The upper Mill Hollow drainage is not fed by any spring. Two Providence Canyon springs are located outside the immediate project area, about 2 miles below the proposed improvements to the Millville Peak road (20168).

3.2.3 Affected Environment

Threatened, Endangered, and Sensitive Aquatic Species

No threatened or endangered aquatic species occur on the Wasatch-Cache National Forest. The Intermountain Region Sensitive Species list was last updated in December 2003. The Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*), Bonneville cutthroat trout (*Oncorhynchus clarki utah*), and Columbia spotted frog (*Rana luteiventris*) are the only sensitive species listed for the Wasatch-Cache National Forest.

Neither Colorado River Cutthroat trout nor Columbia spotted frog are found on the Logan Ranger District.

The Logan River drainage contains the largest remaining meta-population of Bonneville cutthroat trout (BCT). Spring Hollow is the only tributary within the analysis area that contains BCT. However, BCT are only found in the lowest 60 meters of this stream, because upstream movement beyond this point is blocked by a three meter tall waterfall.

Management Indicator Species

Bonneville and Colorado River cutthroat trout were the two aquatic species identified as management indicator species (MIS) in the Revised Forest Plan. Both of these subspecies have been petitioned for listing under the Endangered Species Act. Both subspecies were found to be “not warranted” for listing. However, in the fall of 2007, upon appeal, the US Fish and Wildlife Service (FWS) remanded the “not warranted” decision for the Bonneville cutthroat trout and will proceed with conducting another 12-month review for potential listing.

Of the two species, only Bonneville cutthroat trout are present on the Logan Ranger District (BCT are also a Forest Service Sensitive species; see above). As stated above, BCT are found only in the lowest 60 meters of Spring Hollow and are not found in the project activity area.

As noted in the 2006 MIS Monitoring Report for the WCNF (USDA Forest Service 2006) the trend for the BCT in the Logan River is “flat”. The 2006 MIS Monitoring Report is available in the project record.

In November 2007, Management Indicator Species of the Wasatch-Cache National Forest Version 2007-1 was completed. This version updates information regarding Forest MIS species monitoring and trend. The 2007-1 report was reviewed and findings in this analysis remain consistent with the most recent information. The 2007-1 version is also available in the project record.

Amphibians

Amphibian surveys were conducted on the Logan Ranger District during the summers of 2001 through 2004 (Thompson and Chase 2001, Thompson et al. 2003, Thompson and Chase 2003, Thompson and Chase 2004). Boreal toad (*Bufo boreas boreas*), tiger salamander (*Ambystoma tigrinum*), and boreal chorus frog (*Pseudacris triseriata maculate*) were all found on the District. However, only tiger salamanders were found in the project area, in Providence Lake and in the unnamed lake east of Logan Peak. This species is very common in northern Utah.

Riparian Habitat Conservation Areas

Designations of Riparian Habitat Conservation Areas (RHCAs), as described in the WCNF Revised Forest Plan and the Inland Native Fish Strategy (INFISH), are recommended to maintain the integrity of riparian areas and protect aquatic and semi-aquatic species. Riparian Habitat Conservation Areas include traditional riparian

corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by 1) influencing the delivery of coarse sediment, organic matter, and woody debris to streams; 2) providing root strength for channel stability; 3) shading the stream; and 4) protecting water quality (USDA Forest Service, 2003 p. GL-19).

RCHAs have been designated for riparian areas within the analysis area according to the following definitions:

- **Category 1. Fish-bearing streams:** RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to 300 feet slope distance (600 feet, including both sides of the stream channel).
- **Category 2. Permanently flowing non-fish-bearing streams:** RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to 150 feet slope distance (300 feet, including both sides of the stream channel).
- **Category 3. Ponds, lakes, reservoirs, and wetlands greater than 1 acre:** RHCAs consist of the body of water or wetland and the area to 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond, or lake.
- **Category 4. Seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides, and landslide-prone areas:** This category includes features with high variability in size and site-specific characteristics. At a minimum the interim RHCAs must include, landslides and landslide-prone areas, 100 feet slope distance in watersheds containing Bonneville or Colorado River cutthroat trout, and 50 feet slope distance for watersheds not containing Bonneville or Colorado River cutthroat trout.

A map showing locations of RHCAs for the analysis area is available in the project file. Table 3.3 shows the miles of road within RHCAs as designated for ephemeral streams (Category 4) within the analysis area.

ROAD NAME	MAINT LEVEL	Alt A	Alt B	Alt C	Totals
		Proposed Action	Gates/ Admin Use	No Action	Miles
Millville Peak	2		20168	20168	0.34
Millville Peak	2		20168	20168	0.34
Upper Providence Canyon 4x4	2		20022	20022	0.08
Providence Canyon	2	20090	20090	20090	0.12
Welches Flat 4X4	2	20152	20152	20152	0.13
Upper Providence Canyon 4x4	2	20022	20022	20022	0.54
Waterfall	2	20020	20020	20020	0.05
Logan Peak	2		20042	20042	0.00
		20168			0.02
		20022			0.09
Total Miles per Alternative		0.96	1.61	1.61	1.72

Table 3.4 shows the miles of road within 150 feet of ponds and lakes (Category 3) in the analysis area.

ROAD NAME	MAINT LEVEL	Alt A	Alt B	Alt C	Totals
		Proposed Action	Gates/ Admin Use	No Action	Miles
Millville Peak	2		20168	20168	0.06
Millville Peak	2	20168	20168	20168	0.05
Logan Peak	2		20042	20042	0.04
Total Miles per Alternative		0.05	0.14	0.14	0.14

3.2.4 Issues Addressed

Public and agency scoping, followed by Forest Service interdisciplinary team review identified the following issue to be addressed in this impact analysis:

- Roads may deliver sediment and impact aquatic resources

There are natural and manmade water features within the analysis area which provide habitat for tiger salamanders and aquatic invertebrates. Road construction associated with the relocation of portions of the Millville Peak and Logan Peak roads may affect aquatic habitat and these species. Relocation of existing roads may reduce sediment delivery and improve aquatic habitats.

Measurement indicator used to compare alternatives:

- Miles of road within Riparian Habitat Conservation Areas (RHCAs)

Roads can affect streams by accelerating erosion and sediment loading, by altering channel morphology, and by changing runoff characteristics of watersheds (Furniss et. al, 1991). In addition, loss of connectivity and accessible habitat can result from the improper installation of road culverts. Roads also act as an instrument, potentially allowing pollutants to enter a stream, or allowing access to areas which can impact aquatic species through fishing/collecting. The proximity of roads to streams can be a good indicator of the roads impact to stream habitat quality. Likewise this indicator can be an effective means of comparing the impacts of the various alternatives on stream habitat quality.

Roads can degrade adjacent amphibian habitat by altering water flow or vegetative communities. Roads can also fragment habitats or lead to direct mortality due to vehicle impacts. The probability of such impacts is directly related to road densities, season of use, and proximity to occupied habitat.

3.2.5 Effects Analysis Methods and Assumptions

Baseline conditions were determined through a review of related literature, topographical maps, aerial photographs, and field observations. Aerial photos, maps, and the WCNF GIS provided an indication of the proximity of existing and proposed roads to aquatic resources in the analysis area. Field observations were conducted to identify and quantify fish and amphibian populations (if any), and to characterize habitat conditions within the analysis area. This information was taken into consideration when determining potential effects to aquatic resources.

3.2.6 Direct and Indirect Effects

The following findings are common to all alternatives:

- No threatened or endangered aquatic or semi-aquatic species occur on the Logan Ranger District, and therefore, none will be affected by this project.
- Forest Service Intermountain Region Sensitive species, the Colorado River cutthroat trout and Columbia spotted frog, are not found on the Logan Ranger District. Therefore, all alternatives result in a “No Impact” determination for Colorado River cutthroat trout and Columbia spotted frog.

- While Bonneville cutthroat trout (a Sensitive species and WCNF MIS) are found on the Logan Ranger District, the nearest population is in the lowest 60 meters of Spring Hollow, over two miles away from either the existing road or the proposed re-route. There is no portion of the road or the proposed re-route within the Spring Hollow RHCA. In addition, no perennial flows are found within the project area. Because most of the existing and proposed routes are a long distance from water and located on dry ground near the tops of ridgelines, they will not impact BCT regardless of the alternative chosen. Therefore, a determination of “No Impact” is made for BCT.

3.2.6.1 Alternative A - Proposed Action

Alternative A would have the least amount of open road within RHCAs. A total of 0.96 miles of road (Tables 3.3 and 3.4) would be open within 50’ of an ephemeral stream in addition to the 0.05 miles of road open within 150’ of a pond. Under the proposed action as described in Chapter 2, several road sections would be relocated and old sections would be closed and revegetated. Until these sections of closed road are revegetated (one to two years), they would continue to contribute some sediment to area streams and ponds (See Table 3.5 in Section 3.6 for WEPP erosion modeling summary).

Within the project area, tiger salamanders utilize two small ponds (Providence Lake and the unnamed lake east of Logan Peak). The existing Logan Peak road (20042) runs adjacent to both ponds. Under Alternative A, the Logan Peak road would be rerouted away from both of these ponds. Because sedimentation would be reduced, impacts to amphibians at these sites would also be reduced (See Table 3.5 in Section 3.6 for WEPP erosion modeling summary).

3.2.6.1.1 Alternative A.1 – Proposed Action with Top of Spring Hollow Road

Sub-alternative A.1 is the same as the proposed action (described above) except it would construct a high clearance vehicle connector route between the existing Top of Spring Hollow high clearance road and the newly relocated Millville Peak road (instead of an ATV trail). This .25-mile section of road is not near any water source and is not in a riparian habitat conservation area. Since the type of connector route (high clearance vs. ATV) is the only difference between this sub-alternative and the proposed action, the effects of this alternative on aquatic resources would be the same as described for Alternative A.

3.2.6.2 Alternative B – Close Road (Admin Use Only)

Alternative B would continue to have 1.61 miles of road within 50’ of an ephemeral stream (Table 3.3) and 0.14 miles of road open within 150 feet of a pond (Table 3.4). While traffic would be reduced on roads within the project area, it is unlikely the roads would become revegetated and stop contributing sediment to area streams and ponds due to the steep gradient and past soil loss. Therefore, it is expected this alternative would

continue to contribute sediment to nearby ephemeral streams and ponds as shown in Figures 3.3 and 3.4.

Currently, the Logan Peak road (20042) is capturing water from melting snow and rain events. The water is running down the road and collecting material from the road (see Soils/Hydrologist Report). This material is currently being deposited in Providence Lake. Under this alternative, these conditions would be expected to continue (because the road will only be closed to public use, not revegetated). Under these conditions, the small water capacity of this pond would eventually be filled with sediment and would no longer be able to support amphibians.

3.2.6.3 Alternative C - No Action

The effects of the no action alternative would be the same as Alternative B (closing the roads to all but administrative use) because the road would not be revegetated and sedimentation would continue to occur.

3.2.7 Cumulative Effects

The cumulative effects analysis area for aquatic resources is as described above, and includes portions of the Spring Hollow-Logan River and Providence Canyon sub-watersheds. From north to south, the analysis area is within portions of Spring Hollow, Mill Hollow, Dry Canyon, and Providence Canyon drainages.

Since there would be no impacts to Bonneville cutthroat trout expected from any of the alternatives (as described above in Section 3.2.7) there would be no cumulative effects to the BCT, regardless of the alternative chosen.

Alternatives A and A.1

Within the cumulative effects analysis area, none of the areas proposed for road construction or decommissioning have been affected by previous timber harvests, wildfire, or prescribed fire, nor are any future treatments foreseen.

Existing system roads that would be abandoned as part of the proposed action currently provide access to a large network of user developed non-system trails, particularly in the Upper Providence watershed area. Implementation of required mitigation measures for the action alternatives would result in effective closure to further use of these system and non-system roads and a cumulative reduction in erosion and sedimentation.

The project area is within the White Rock sheep allotment. Sheep and cattle grazing resulted in considerable impacts to soil resources from the 1800s until the 1930s, when active grazing management took effect in the area. Since then, a gradual improvement in land conditions has occurred as indicated by increased ground cover and absence of active soil erosion in most areas within grazing allotments. While grazing still occurs in the area, it appears to have little impact on the few aquatic species within the proposed

project area. In fact, periodic dredging of Providence Lake and the unnamed pond east of Logan Peak provide the only habitat for amphibians in this area.

The effects associated with the proposed road construction and decommissioning in Alternative A would be beneficial to aquatic resources (particularly the tiger salamander) due to a reduction in road densities within RHCAs and the associated decrease in sedimentation into Providence Lake and the unnamed pond east of Logan Peak. Cumulatively, the incremental effect of implementing Alternative A or A.1, in addition to other activities described above for the analysis area, is expected to maintain or improve the quality of water and aquatic resources and the condition of riparian areas.

Alternatives B and C

Within the cumulative effects analysis area as described above, none of the areas proposed for closure (gating) have been affected by previous timber harvests, wildfire, or prescribed fire, nor are any future treatments foreseen.

Neither Alternative B nor C would improve current conditions for the few aquatic species in the proposed project area as described above. Although the road would be closed under Alternative B, it likely would not revegetate completely for a long time. Alternative C would involve no action and sedimentation from existing roads would continue. Therefore, it is expected these alternatives would continue to contribute sediment to nearby ephemeral streams and ponds as shown in Figures 3.3 and 3.4. However, installing gates and/or closing or rehabilitating non-system roads, particularly in the Upper Providence watershed area, would potentially result in a slight reduction in erosion and sedimentation in this area.

As described above, the proposed project area is within the White Rock sheep allotment and historic sheep and cattle grazing resulted in considerable impacts to soil resources from the 1800s until the 1930s, when active grazing management took effect in the area. Since then, a gradual improvement in land conditions has occurred as indicated by increased ground cover and absence of active soil erosion in most areas within grazing allotments. While grazing still occurs in the area, it appears to have little impact on the few aquatic species within the proposed project area.

Although it is expected Alternatives B and C would continue to contribute sediment to nearby ephemeral streams and ponds, because there are few amphibians found in this area, the incremental effect of implementing Alternatives B or C, in addition to other activities described above for the analysis area, would not cumulatively affect the quality of water and aquatic resources nor alter the condition of riparian areas in the analysis area.

3.2.8 Irretrievable or Irreversible Commitment of Resources

No irretrievable or irreversible commitments affecting aquatic resources are expected as a result of implementing any of the alternatives.

3.3 Recreation

3.3.1 Introduction

The purpose of this section is to explain and clarify the existing conditions of the recreation resources within the analysis area and to disclose the effects of the proposed action and the alternatives.

3.3.2 Area of Influence

The area of influence for recreation resource effects is the project specific area where the road changes are proposed, with consideration given to traffic entering the project area from Providence and Millville Canyon. Both of these routes enter the project area from the south.

3.3.3 Affected Environment

The Recreation Experience

The Millville Peak/Logan Peak project area provides for limited recreation use. The area is used mainly by motorized visitors in both summer and winter. Many of these visits involve driving for pleasure and those seeking a sense of challenge. There are three main motorized access points. The road system accessing the area from the south (Millville and Providence Canyons) is in a deteriorated condition. Due to the steep grade and narrow canyons, drainage is a problem. The roads have lost portions of their native surface, leaving gulleys in the road prism and large rocks exposed. Most vehicles accessing the area are high-clearance 4-wheel drive vehicles, ATV's, and motorcycles.

Access to the project area from the north is typically from Highway 89 up Cowley Canyon to the Millville Peak road. Some traffic also enters from the Blacksmith Fork Canyon up Herd Hollow to the Millville Peak road.

Visitors to the project area currently find challenging motorized travel routes. Access to the project area from Millville or Providence Canyons requires high-clearance four-wheel drive vehicles. Many stock four-wheel drive vehicles are not able to enter the project area from these canyons to the south due to the poor condition of the routes. The fact that these roads are open much of the year (depending on the snow pack) also contributes to the deteriorated condition of the road surfaces. Some visitors do travel with two-wheel drive trucks from north to south traveling mostly down hill through the project area and exiting Millville Canyon that is in better, but nevertheless poor, condition.

The existing route is also braided in some locations where drivers maneuver around obstacles such as mud holes, down trees, and deep ruts. The south end of the project area contains three stock ponds developed for watering cattle. These ponds are also favored areas for the local sport of "digging", where drivers intentionally splash through large wet areas on or next to roads. Upon entering the wet areas, drivers will spin all four tires,

spraying mud and water and leaving large permanent holes in the road surface or adjacent to the road surface.

Several unauthorized, motorized routes occur in or adjacent to the project area totaling about 4.25 miles. Many of these routes have been pioneered by four-wheel drive jeeps, trucks, and ATV drivers trying to access Logan Peak in the early spring when they create new routes to get around snowdrifts, down trees, or other debris blocking the road. Others have been pioneered to challenge the driver and the machines to see if they can climb the slopes, vegetation, or other obstacles. One such example includes the unauthorized route from Providence Canyon through Mathews Hollow and up the “road of the insane” (as locally known) to the top of Providence Peak.

Non-motorized use is limited in the project area. Mountain bikes are probably the largest group of non-motorized visitors to the area. They access by riding the roads or by entering the project area via the non-motorized Logan Dry Canyon Trail. There is limited use by hikers traveling to Logan Peak from Dry Canyon to the west or Providence Canyon to the south.

The busiest time of year in the project area is the fall when hunters access the area in search of big game. The area is also a popular bird hunting area. The Fourth of July is also a busy time as young visitors drive to park near Logan Peak and watch the fireworks in the valley below.

During the winter months, snowmobilers use the area extensively for hill climbing and socializing. The steep slopes on the east sides of Logan and Providence Peaks provide favored hill climbing areas. The Mount Logan Warming Hut was permitted (Special Use Permit issued by the Forest Service) to provide a warm safe area for winter visitors to find shelter and to store emergency avalanche rescue tools. The hut and tools have been used to save avalanche victims trapped on the slopes to the north and west of the warming hut. There is very little skiing in the area in the winter due to the distance from access points. Skiers use Logan Dry Canyon extensively and Providence Canyon also, but few venture further in to the project area. See the Recreation Technical Report in the project file for more detailed information.

The Recreation Opportunity Spectrum

The results of a recreation outing are often discussed in terms of the experience one has and the benefits one receives from the experience. The experience resulting from an outing can have many contributing components. Some components are personal such as if you become ill or if some element of the trip didn't meet prior expectations. Some elements are beyond management control such as the weather. Some elements are of a more personal nature and may relate to issues defined by one's individual values.

The Forest Service focuses on providing opportunities for individuals to engage in desired activities in appropriate settings. Opportunities, activities, and settings are part of the management system called the Recreation Opportunity Spectrum (ROS). The ROS provides land management agencies with defined or definable categories (zones) where

opportunities for certain activities are allowed. These zones then provide visitors with an understanding of what to expect when they chose to go to a certain area (setting) for a specific activity. Providing the information helps visitors chose the best location for their desired activity so they have the best chance of having a quality, satisfying experience. Often when visitor expectations are not met they have a less satisfying experience.

There are two current ROS settings in the project area. The designated-open motorized routes are in a *Semi-Primitive Motorized* designation. Under this designation visitors can expect to find a natural appearing landscape with minor improvements to protect resources. Managers provide limited numbers of signs that are rustic looking and made of natural materials. Visitors will expect to meet a low number of other people while traveling the routes. Roads are assigned a Maintenance Level 2 that means the roads are managed for use by high-clearance vehicles and are not suitable for passenger cars (USDA FS 2005 p.31-33).

The areas beyond a one-quarter mile buffer from a motorized route are mapped as *Semi-Primitive Non-Motorized*. This designation is similar to the motorized designation described above, except motorized vehicles are not allowed. These areas are also characterized as having a natural appearance, where visitors would find a limited number of natural appearing signs. Most information relating to these areas will be located at trailheads with minimal management in the interior of the areas.

Both of these ROS classes provide opportunities for visitors to experience closeness to nature, challenging travel, and a high degree of self-reliance with some risk involved. See the Recreation Technical Report in the project file for more detailed descriptions of these ROS classes.

3.3.4 Issues Addressed

Public and agency scoping, followed by Forest Service interdisciplinary team review identified the following issues to be addressed in this impact analysis:

- Relocating a portion of the Millville Peak and Logan Peak roads may affect the recreation experience for visitors to the area. Experiences may be affected by changes or loss of opportunities due to road closures or changes in allowed uses. Improvements to the road may change traffic patterns or increase use. There were also concerns for winter recreation in that creating a new road cut in the steep slopes of the project area might affect their experience.

Indicators used to compare alternatives:

- a. Changes in recreation and access opportunities and the relative effect on the recreation experience
- b. Changes in Recreation Opportunity Spectrum (ROS) in the project area

3.3.5 Effects Analysis Methods and Assumptions

An assumption made in the analysis of recreation effects is that visitors using the area obey the rules and regulations by traveling on designated-open routes only.

The analysis method used is to present the desired conditions for the project area from the Wasatch-Cache National Forest Revised Forest Plan; describe current conditions; and present likely effects to the desired recreation experience from the proposed action and alternatives along with recommended mitigation measures where applicable.

3.3.6 Direct and Indirect Effects

This section describes the direct and indirect effects to the recreation experience from the proposed action and alternatives.

On November 2, 2005 the Forest Service released the Travel Management Rule (36 CFR 212 and 261) which governs the use of motor vehicles on National Forest System lands. Alternative A, the proposed action, would change the “managed use” of a Forest road (Top Spring Hollow 4x4 #20126) from “high clearance vehicle” to an “ATV trail”. Alternative B would close portions of the Millville Peak and Logan Peak roads to public access. Alternative C, the no action alternative, would not change the “managed use” of any of the roads within the analysis area. In compliance with the Travel Management Rule, any changes would appear on a Motorized Vehicle Use Map, when prepared at a future time.

3.3.6.1 Alternative A - Proposed Action

Alternative A would realign the Millville Peak and Logan Peak roads per the Alternative A map in the Appendix. The maintenance level would remain at a Level 2. This alternative would eliminate “high clearance vehicle” access to “Inspiration Point” and would change that route (20126) to an ATV/motorcycle only route.

In general, implementing this alternative would have a relatively minor effect to visitors to the project area. All motorized visitors would experience a short-term loss of access from road closures during construction. Upon completion of construction of the new alignment the experience may be indirectly affected by the improvement to the road conditions. Rocky, steep pitches of the existing road would be eliminated. The sense of challenge experienced due to current road conditions would be decreased as the new smoother surface eliminates mud holes, rocks, and gulleys affecting current travelers. Over time, due to keeping the same road objectives and maintenance levels, some sense of challenge will reappear, but not to the same degree since the new location would be easier to maintain. The current resource issues would be avoided by the initial construction techniques and improvement in road locations and steepness of road grades.

Due to the location and difficulty of construction and maintenance, this alternative would eliminate “high-clearance vehicle” access to the Top Spring Hollow road (20126).

Instead, this alternative would construct an ATV trail to connect the new Millville Peak road to Forest Road 20126. The change in allowed uses would directly impact “high-clearance vehicle” drivers who do not have other modes of transportation. This impact would be most noticed during the fall bird and big game hunts when use in the project area increases.

The ROS designation of semi-primitive motorized would not be changed for any of the road realignments. Changes in the road alignments proposed in this alternative would require re-mapping of the ROS categories when the existing ROS buffers are changed to the new alignment. This mapping change would have no effect on the recreation experience for the motorized or non-motorized visitor as the classes stay the same, but there are small changes in amount of area due to the realigned road being slightly shorter than the existing route.

Since this alternative would avoid cutting a road across the steep slope to the east of Logan Peak, there would be no direct or indirect effects to winter recreation.

3.3.6.1.1 Alternative A.1 – Proposed Action with Top of Spring Hollow Road

This sub-alternative to the proposed action would be the same as the proposed action (Alternative A), but the connection to the Top of Spring Hollow Road (20126) from the new road alignment would be constructed to maintain high-clearance vehicle access to the Top of Spring Hollow Road.

In general, implementation of this alternative would have the same effects as Alternative A except there would be no loss of high-clearance motor vehicle access to Forest Road 20126. While there is a very small amount of the use on this route, that use would continue as currently allowed. Short term effects to use during construction would be the same as Alternative A. Changes to the ROS map would be the same as described for Alternative A.

This Alternative would have no direct or indirect affects to winter recreation.

3.3.6.2 Alternative B – Close Road (Admin Use Only)

Alternative B would close public access to portions of the Millville Peak and the entire Logan Peak road. Travel on the route would only be open to administrative use by the Forest Service or other entities, such as those needing access to the Logan Peak communications site for permitted activities. To implement the closure, 3 gates would need to be installed per the Alternative B map in the Appendix.

This alternative would have the greatest immediate and direct impacts to the recreation experience. Closing these roads would eliminate high-clearance vehicle, ATV, and motorcycle traffic to Logan Peak and through-traffic coming from the Cowley Canyon or Herd Hollow roads traveling out Millville Canyon or Providence Canyons. Due to the deteriorated conditions of the road in Millville and Providence Canyons, there is

currently little traffic driving this loop. Four-wheel drive enthusiasts would lose the challenge opportunity of driving up Providence Canyon to Logan Peak. Due to the need to place the gate closures at defensible locations, there would not be a loop opportunity from Providence Canyon to Millville Canyon.

Gate placement and installation would need to consider allowing snowmobile traffic to pass in the winter. Given correct placement of the gates, winter recreation in the area would not be affected.

The ROS mapping would not require changes because the semi-primitive motorized designation would still be in place for a road open to administrative use only.

Since this alternative would avoid cutting a road across the steep slope to the east of Logan Peak, there would be no direct or indirect effects to winter recreation.

3.3.6.3 Alternative C - No Action

Alternative C provides no change from current management per the Alternative C Map in the Appendix. The Millville Peak and Logan Peak roads would remain open in their existing condition. Safety concerns would remain and over time, the road would become impassible.

This alternative has the least amount of direct impact to the recreation experience. Current users would continue to drive the roads. Creation and use of unauthorized routes would continue as drivers, particularly in early spring, try to access Logan Peak and create routes around snowdrifts, down trees, or large mud holes. Patrol of the area would continue to be difficult, due to the current and deteriorating road conditions.

Over time, the road would deteriorate to the point where travel became impossible. Given the power cable beneath the road becoming increasingly exposed, safety would become an increasingly bigger concern. Road braiding would continue or increase, increasing the amount of disturbed area. At some point in the future, road closure would likely be necessary as the cable became more exposed and the safety hazard was not acceptable to management. This would also eventually require gates at undetermined locations to close the unacceptable road sections. Access to the Logan Peak communication site for supply and repair vehicles would likely be lost, affecting the ability to maintain this critical communication site.

No change in ROS designation would be required.

Since this alternative would avoid cutting a road across the steep slope to the east of Logan Peak, there would be no direct or indirect effects to winter recreation.

3.3.7 Cumulative Effects

The cumulative effects analysis area for recreation resources is the Logan Ranger District. This area is chosen because it represents the majority of the area visitors to this project area use the majority of the time.

Past, present and future actions that may affect the project area involve changes in opportunities for recreation. Implementation of the Utah Wilderness Act of 1984 eliminated motorized travel on approximately 44, 563 acres in the Mount Naomi Wilderness and approximately 22, 986 acres in the Wellsville Mountain Wilderness on the Logan Ranger District. Past actions pertaining to designation of Wilderness eliminated motorized access to portions of the Logan Ranger District. Elimination of motorized use in these areas had and continues to have an effect (relatively small) on the array of motorized opportunities and experiences on the District.

Since that time, motorized roads and trails not designated as “open” on the Logan District Travel Plan have been and continue to be decommissioned through road obliteration, seeding, and signing. Some changes to type and mix of motorized uses have occurred on the District, such as the change from single track to ATV use, affecting the experience of some motorized recreationists.

Alternatives A, A.1, and C

Since motorized routes would continue to be provided under Alternatives A, A.1, and C, there would be no effect on the availability of motorized recreation opportunities and experiences on the Logan Ranger District, and therefore, no cumulative effect.

Alternative B

Implementation of Alternative B, which would close portions of the Millville Peak and Logan Peak roads to all but administrative use, would close 5 miles of road to public motorized recreation use. When added to previous closures on the District (as described above) this closure would result in a relatively small cumulative effect on motorized recreation opportunities and experiences on the Logan Ranger District.

Summary

In summary, implementation of any of the alternatives in combination with past, present and future actions would not significantly affect recreation opportunities or experiences on the Logan Ranger District.

3.3.8 Irretrievable or Irreversible Commitment of Resources

No irretrievable or irreversible commitments affecting recreation opportunities are expected as a result of implementing any of the alternatives.

3.4 Roadless Areas

3.4.1 Introduction

The purpose of this section is to explain and clarify the existing conditions of roadless areas within the analysis area and to disclose the effects of the proposed action and the alternatives.

3.4.2 Area of Influence

The area under analysis for effects on roadless areas includes three roadless areas within which the proposed road relocation project lies. (See Roadless Area maps in the Appendix). The three roadless areas are:

- Mount Logan North (#0419013) 19,200 acres
- Mount Logan South (#0419029) 17,000 acres
- Mount Logan West (#041930) 5,300 acres

3.4.3 Affected Environment

“Roadless Areas” refer to areas that are without constructed and maintained roads, and that are substantially natural. Some types of improvements and past activities are acceptable to be included in roadless areas. They are managed according to the management prescriptions applied. Most are protected and maintained to conserve and preserve important values and benefits of them by prohibiting activities that have a likelihood of degrading desirable characteristics of inventoried roadless areas (USDA Forest Service 2003).

A roadless inventory for the WCNF completed in 1983 identified 22 roadless areas totaling 746,431 acres. Because different criteria were used for the 1999 inventory than those used in 1983, ten additional areas were identified as roadless and other areas were combined or split apart. Based on the 1999 inventory there are 34 roadless areas (totaling approximately 606,400 acres) on the Wasatch-Cache National Forest, representing almost half of the Forest. Because of developments following the 1983 inventory, the Mount Logan roadless area was split into three distinct units for the 1999 inventory (USDA Forest Service 2003).

A review of Appendix C1 and C2 of the WCNF Revised Forest Plan FEIS provided the following information about the three roadless areas within the Millville Peak/Logan Peak road relocation project.

In Appendix C1 (Evaluation of Roadless Areas for Wilderness), roadless areas were evaluated in terms of three criteria, including “capability”, “availability”, and “need”. For purposes of this evaluation, the three roadless areas were described together.

Regarding “the degree to which the area contains basic characteristics that would make it suitable as wilderness” (*capability*), the north unit was rated as “moderate” in its naturalness and described as being “quite biologically diverse”; the south and west units were described as being “less so”. Logan Peak was listed as a popular destination. Pertaining to manageability, several intrusions, such as a rock quarry, electronic site, roads, and private land were identified as potentially limiting factors.

As for “other resources demands or uses of an area” (*availability*), uses in the area included fuelwood gathering, prescribed fire, recreational use (hiking, camping, horseback riding, hunting, mountain biking, and heavy snowmobiling and summer motorized use). Other uses included cattle and sheep grazing, a utility corridor along the southern edge, and several miles of roads and trails designated open in the District Travel Plan.

In Appendix C2 (Evaluation of Roadless Area Values), roadless area values and the criteria by which they were assessed included: 1) soils and water; 2) drinking water sources; 3) diversity of plants and animals; 4) recreation opportunities; 5) landscape character and scenic integrity; 6) cultural properties; 7) locally identified unique characteristics; 8) size and context, and a summary statement.

Regarding the roadless value of soils and water, all three roadless areas contain a “few small wetlands along small, narrow streams”. There are no surface sources of public drinking water downstream from any of the roadless areas.

The area is rich in plant and animal diversity. The Mount Logan North roadless area is within the Logan Canyon Special Interest Area which contains the Douglas-fir ninebark habitat type (a type not well represented in the State of Utah). However, this habitat type occurs outside (to the east) of the Millville Peak/Logan Peak project area. All three roadless areas contain isolated populations of Bonneville cutthroat trout, although the nearest population is greater than 2 miles away from any proposed road relocations (see the Aquatics Technical Report).

The Recreational Opportunity Spectrum (ROS) maps indicate a mix of Semi-primitive Motorized and Semi-primitive Non-motorized for all three roadless areas. Utility corridors, cherry-stemmed roads, and the rock quarry contribute to the roadless areas’ Landscape Character rating of “medium-high”. Scenic integrity is “common” for the West and South units, and “distinct” for the North unit.

Regarding heritage resources, there was little data available at the time of the roadless area inventory. However, the potential for heritage resource sites for all three roadless areas is “low to moderate”. No locally identified “unique characteristics” were listed for any of the roadless areas.

In summary, the North unit had some high values, especially for plant and animal diversity, semi-primitive experience, and scenic integrity. The Mount Logan South had mostly medium values, with high values for fish, scenic integrity, and semi-primitive

experience. Mount Logan West had low to medium values, with the exception of high value for semi-primitive experience.

The Revised Forest Plan recommended no portion of the Mount Logan North, Mount Logan South, or Mount Logan West roadless areas for Wilderness (Revised Forest Plan FEIS, Appendix C1-10). Under the Plan, roadless values are maintained within management prescription categories 2.7 (Special Interest Area) and 3.1w (Watershed Emphasis).

See the Roadless Areas Technical Report in the project file for more information on the Mount Logan North, South, and West roadless areas.

3.4.4 Issues Addressed

Public and agency scoping, followed by Forest Service interdisciplinary team review identified the following issues to be addressed in this impact analysis:

- Relocation of portions of the Millville Peak and Logan Peak roads may affect roadless area values of the Mount Logan North and Mount Logan South roadless areas

Road construction and related activities (such as logging and vegetation removal, cut banks, fill slopes, and the closure of the old road with rocks and logs) associated with relocating portions of the Millville Peak and Logan Peak roads may affect roadless area values as described in the Revised Forest Plan. These values include soils and water; sources for drinking water; diversity of plants and animals communities; recreation opportunities spectrum; landscape character and scenic integrity; traditional cultural properties; and locally identified unique characteristics.

Indicator used to compare alternatives:

- a. Acres affected in each roadless area and the qualitative effect on roadless values

3.4.5 Effects Analysis Methods and Assumptions

The primary source of information used to analyze the effects of the proposed action and alternatives is the WCNF Revised Forest Plan and FEIS. GIS technology is used to map and determine differences in roadless areas acres between alternatives. Comments received during scoping guide the scope of the analysis and a literature review is used to inform the discussion.

3.4.6 Direct and Indirect Effects

There would be no change to roadless area boundaries under any of the alternatives. The next time the areas are inventoried, any changes resulting from implementation of the

proposed action would be noted as part of that inventory. The direct and indirect effects below are described relative to the effect of road construction or decommissioning in the roadless area within which the activity would occur. New road construction is described as acres disturbed (assuming a 30 foot buffer each side of the road) within the roadless area(s). Road decommissioning is described as a future potential addition to the roadless area within which the decommissioning takes place.

3.4.6.1 Alternative A - Proposed Action

This alternative would realign the Millville Peak and Logan Peak roads as shown on the Alternative A map. The Millville Peak road forms part of the boundary between the Mount Logan North Roadless Area (19,200 acres), the Mount Logan South Roadless Area (17,000 acres), and a small portion of the Mount Logan West Roadless Area (5,300 acres). The section of road to be relocated would be constructed within and near the edges of these three roadless areas.

The Logan Peak road (20142) would be relocated entirely within the Mount Logan North roadless area (5,300 acres). A small section (.2 miles) of the Upper Providence Canyon 4x4 road (20022) serves as a portion of the boundary between the Mount Logan West and Mount Logan North roadless areas. This section of road would be relocated slightly to the west (see Roadless Areas Alternative A Map in Appendix F).

As discussed in Chapter 2, Section 2.4.1, relocation of a portion of the Millville Peak and Upper Providence Canyon 4x4 roads and the entire Logan Peak road, where needed to prevent irreparable resource damage, is essential for public health and safety, as allowed for in an exception to the 2001 Roadless Rule (see Roadless Areas in Appendix B).

Under the proposed action, the old road sections would be closed with rock barriers, logs, and debris and would be revegetated with native seed. The old road surface would be visible in the short term, but eventually would not be distinguishable from the surrounding vegetation.

Relocation of the road sections would affect a very small portion of each of the three roadless areas involved. Old road sections would be reclaimed and become future potential addition to the roadless area in which it is located. New road sections would be considered as “disturbed areas” within the respective roadless area(s). According to Forest protocol, the affected area is a 30 foot buffer each side of the center line of roads occurring in roadless areas.

The following would result from implementation of the proposed action:

- The Millville Peak road (20168) relocation would construct 2.5 miles of road (18 acres) and decommission .3 miles of road (2 acres) in the 19,200-acre Mount Logan North roadless area. It would also construct .2 miles of road (2 acres) and decommission 2.4 miles of road (17 acres) in the 17,000-acre Mount Logan South roadless area. Given that road construction would “subtract acres” and

decommissioning would “add acres”, relocation of the Millville Peak road would result in a net loss of 16 acres and a net gain of 15 acres to the Mount Logan North and Mount Logan South roadless areas, respectively.

- The Logan Peak road (20042) reconstruction is entirely within the Mount Logan North roadless area. This would result in 2.5 miles of construction (18 acres) and 3.1 miles of decommissioning (23 acres) within this roadless area. Assuming a 60-foot buffer, construction of the new road and decommissioning of the old road would result in a net gain of 5 acres to the Mount Logan North roadless area.
- Decommissioning of .3 miles of the Logan Peak-A road (20042A) would result in a gain of 2 acres to the Mount Logan North roadless area.
- Relocation of .2 miles of the Upper Providence 4x4 road (20022) would construct .2 miles of road (2 acres disturbed) in the Mount Logan North roadless area. Decommissioning of .2 miles of the old road (2 acres gained) would be within the Mount Logan West roadless area.

To summarize by roadless area, there would be 5.2 miles of road constructed (38 acres affected) in Mount Logan North and .2 miles (2 acres) in Mount Logan South. There would be 3.6 miles of road decommissioned (26 acres affected) in Mount Logan North, 2.6 miles (19 acres) in Mount Logan South, and .2 miles (2 acres) in Mount Logan West.

In terms of net acres affected in each of the roadless areas, there would be a net loss of 12 acres within the 19,200-acre Mount Logan North roadless area (less than 1 percent). There would be a net gain of 17 acres within the 17,000-acre Mount Logan South roadless area (about 1 percent) and a net gain of 2 acres in the 5,300-acre Mount Logan West roadless area (less than 1 percent). Of the total 31,500 acres in the three adjacent roadless areas, there would be a total of 87 acres affected by the road relocation under Alternative A (the proposed action).

Given that road construction and decommissioning alternate between the three areas, there would be no negligible difference in the total amount of roadless area within the Mount Logan roadless area complex (87 acres affected within 31,500 acres total); the acres would just shift from one area to another.

The Millville Peak/Logan Peak road relocation project would have no overall effect on roadless area values. As described in the Revised Forest Plan FEIS, roadless area values ranged from low to high in the 1999 inventory (plant and animal diversity, semi-primitive experience, and scenic integrity rated high for Mount Logan North). These roadless values would not be adversely impacted and would be maintained because the old road would be decommissioned, revegetated and reclaimed. New road construction would be mitigated to maintain scenic integrity and protect plant and animal diversity.

3.4.6.1.1 Alternative A.1 – Proposed Action with Top of Spring Hollow Road

This sub-alternative to the proposed action (Alternative A.1) would be the same as the proposed action (Alternative A) except that the connection to the Top of Spring Hollow Road from the new road alignment would be constructed to maintain high-clearance vehicle access to the Top of Spring Hollow Road (20126) instead of conversion to an ATV trail. The high clearance vehicle route would be 12 feet wide (the ATV trail would be 50 inches wide). The connector route would be about .25 miles long in either case.

The sub-alternative would result in a slight increase in affected area (0.94 acres) over the proposed action, based on an assumed clearing width of 40 feet for the high clearance vehicle route vs. a 10-foot clearing width for the ATV trail. There would not be any change in the total miles of motorized routes.

The effects of the sub-alternative on roadless areas and roadless values are essentially the same as the proposed action described above. The slight increase in the affected area (less than 1 acre) is negligible when compared to the total acres of roadless area under consideration in this analysis (31,500 acres total). This alternative, like the proposed action, would have no significant effect on roadless acres or roadless values because of the small affected acreage relative to the total roadless acres in the analysis area.

3.4.6.2 Alternative B – Close Road (Admin Use Only)

This alternative would close access to portions of the Millville Peak and the entire Logan Peak road. Travel on the route would only be open to administrative use by the Forest Service or other entities needing access to the Logan Peak communications site for permitted activities. To implement the closure, 3 gates would need to be installed as shown on the Alternative B map in Appendix E.

Under this alternative, the roads would remain in place, but they would be gated closed to public traffic. There would be no change in acres for any of the roadless areas involved.

Gating and closing the roads to public use would affect recreation opportunities. The project area would no longer be accessible by motorized vehicles. Access could be by non-motorized activity, such as hiking, bicycling, or horseback. However, this change would not have any effect on the roadless value of “recreation opportunity”. This value is based on the amount of Semi-primitive Motorized and Semi-primitive Non-motorized recreation opportunities present within the roadless area. This amount would not change for any of the areas under this alternative. It would all remain “semi-primitive”. Therefore, neither this roadless value, nor any of the others, would be affected by this alternative.

3.4.6.3 Alternative C - No Action

This alternative provides no change from current management as shown on the Alternative C map in Appendix E. The road would remain open in the existing condition.

There would be no change to any of the roadless areas or roadless values under the no action alternative because there would be no roads relocated or decommissioned.

3.4.7 Cumulative Effects

The area of influence for the cumulative effects analysis for roadless areas is the Logan Ranger District. This area is used because it is the area by which roadless areas were evaluated in 1983, 1999 and for the Forest Plan Revision (by Ranger Districts).

Past, present and future actions that may affect the project area involve changes in opportunities for recreation. Implementation of the Utah Wilderness Act of 1984 eliminated motorized travel in approximately 44, 563 acres (Mount Naomi Wilderness) adjacent to the project area. The Utah Wilderness Act of 1984 also closed approximately 22, 986 acres (Wellsville Mountain Wilderness) on the west side of Cache Valley to motorized use.

As disclosed above, implementation of any of the alternatives (proposed action, close road, or no action) would have no measurable effect on either roadless acres or roadless values of any of the three roadless areas associated with the project area. Gain or loss of acres within each roadless area was less than 1 percent. This negligible amount would not affect any of the roadless areas or their roadless values. Consequently, because there are no direct or indirect effects associated with the proposed action or alternatives to it, there would be no cumulative effects on roadless areas.

3.4.8 Irretrievable or Irreversible Commitment of Resources

Construction of 5.6 miles of road replacing degraded sections lying over the power cable could be considered an irreversible commitment of resources. However, just as 6.3 miles of old road are being decommissioned and revegetated, these new roads could at some future time be closed and reclaimed. It is speculative at this point in time to make that assumption, and therefore, the 5.6 miles of road constructed would be considered an irreversible commitment of resources for purposes of this analysis. However, as described above, it has no net effect on roadless areas or roadless values relative to this project.

3.5 Scenery

3.5.1 Introduction

The purpose of this section is to explain and clarify the existing conditions of scenery resources within the analysis area and to disclose the effects of the proposed action and the alternatives.

3.5.2 Area of Influence

For direct, indirect, and cumulative effects of the proposal and alternatives on scenery and landscape character, the area of influence is contained within Sections 34 and 35 of Township 12N Range 2E and Sections 2, 3, 10, 11, 15, and 14 of Township 11N and Range 2E (see Project Area Map in Appendix A). The geographical features that define the boundaries of the viewsheds within the analysis area are the “Red Ridge” ridgeline on the east, Logan and Providence Peak ridgeline on the west, Millville Peak ridgeline on the south and the headwaters of Mill Hollow and Spring Hollow on the north. The duration of short term effects of the proposed action is considered to be 5 years or until revegetation of the understory is complete within the corridor of disturbance associated with the road construction activities. Long term effects to scenery are those that would last until conifer stands adjacent to construction areas reach mature heights.

3.5.3 Affected Environment

The analysis area is part of the Cache Front ecological subsection. The general landscape character is described as follows:

1. Landform: Sparsely dissected mountain front slopes with sharp straight, western base line abruptly marking the east side of Cache Valley; steep walled, east-west canyons cut the front; rugged uplands with glaciated cirques and upland basins.
2. Vegetation pattern: Douglas-fir forest type; dominant shrub communities include mountain brush and bigtooth maple on the front and canyon slopes; Douglas-fir, subalpine fir, lodgepole pine, and forb-grass meadows are on the upland slopes.
3. Land use pattern: Populations are located in the adjacent valley floor of Cache Valley.

Forestwide Desired Conditions – Scenery Management System

The Wasatch-Cache National Forest provides a balance of diverse landscapes and natural settings. The scenic environment within the Forests ranges from landscapes with high scenic quality displaying little or no evidence of management activities, to landscapes with different scenic quality that have dominant visible evidence of management activities. The high scenic quality in areas of outstanding value, and other highly used recreation areas and corridors are protected or enhanced.

The WCNF uses the Scenery Management System (SMS) *Landscape Aesthetics A Handbook for Scenery Management; 1995 Agriculture Handbook # 701* (USDA Forest Service, 1995b.) as a management tool to describe, allocate and provide direction for arranging, planning, and designing landscape attributes relative to the appearance of places and expanses in outdoor settings. SMS is one of four management direction elements with maps and descriptions in this Revised Forest Plan, the others being Management Prescription Categories (MPC), Winter Recreation Classes, and summer Recreation Opportunity Spectrum (ROS). SMS is a guideline intended to assist managers and help the public understand the scenic resource management framework for project level decisions and larger area analyses. The system is applied in combination with other management direction such as desired future conditions, standards, guidelines, goals, and objectives to define expectations about management of a particular area of the forest.

The information below from the WCNF Revised Forest Plan (pages 4-91-96) provides descriptions of the Landscape Character Theme (LCT) with landscape character descriptions and Scenic Integrity Object (SIO) applicable to the Management Prescription Categories within the Millville Peak/Logan Peak analysis area.

Scenery Conversion Table		
Management Prescription Categories	Landscape Character Theme	Scenic Integrity Objective
2.7 Special Interest Area	Natural Appearing	High
3.1w Watershed Emphasis	Natural Appearing	High

Landscape Character Theme

The applicable Landscape Character Theme (LCT) is “natural appearing”. By definition, this means the existing landscape character has been influenced by both direct and indirect human activities, but appears natural to the majority of viewers. Natural elements such as native trees, shrubs, grasses, forbs, rock outcrops and streams or lakes dominate the views. While there is evidence of human influence from historic use, (campgrounds and small organization camps, rustic structures and management activity) it is part of the *valued built environment* in the landscape to the majority of viewers (Revised Forest Plan, page 4-95).

Scenic Integrity Objective

A natural appearing landscape theme (LCT) with a “High” Scenic Integrity Objective (SIO) is one where the valued landscape character “appears” intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely, and at such scale, that they are not evident.

Landscape Character Description

The WCNF Revised Forest Plan includes the following landscape character descriptions for the natural appearing landscape with a scenic objective level of “high”, applicable to the Millville Peak/Logan Peak analysis area:

Land Form

- Roads where the geometry of road in cuts and fills would not be evident, but would appear to be part of the landscape.

Vegetation

- Manage vegetation for properly functioning condition at landscape scale

Water Form

- Stock ponds that mimic natural appearing lines, forms, and edges found in the landscape

Cultural Features

- Campgrounds, group sites, organization camps, picnic areas, recreation cabins, and organizational sites follow architectural themes and harmonize with the surrounding landscape
- Historic sites are maintained or enhanced to propagate their inherent values
- Parking lots, trailheads, restrooms are present. Architecture is thematic and borrows from the form, line, color and texture of the surrounding landscape. Parking lots, roads, and other amenities appear to be part of the natural appearing landscape by eliminating the geometry of the built feature upon the landscape. For example, road cuts do not slice through the landscape, but are shaped, contoured and constructed so that the landscape is only interrupted by the track of the road (Revised Forest Plan, page 4-96).

Scenic Attractiveness

Viewing scenery is one of the top five things to do on the Wasatch-Cache National Forest according to research conducted for the National Visitor Use Monitoring (NVUM) in 2002 and 2003. Within the analysis area, the Wasatch-Cache National Forest is managing the landscape character as Natural Appearing. The naturalness or apparent naturalness is the dominant image that people see, with some introduced positive cultural elements (such as, fences, roadways, parking lots, trails, campgrounds and structures) that are subordinate to the viewed landscape.

The viewshed is characterized by mountainous terrain and large, expansive stands of Douglas fir, subalpine fir and some Englemann spruce. For the most part the viewed landscape appears natural with incursion of minor roadways. There are a few primitive camping dispersed recreation sites located along the existing road.

3.5.4 Issues Addressed

Public and agency scoping, followed by Forest Service interdisciplinary team review identified the following issues to be addressed in this impact analysis:

- Road construction and road closure activities may affect the scenic integrity of the natural appearing landscape within the analysis area

Road construction and related activities (such as logging and vegetation removal, cut banks, fill slopes, and the closure of the old road with rocks and logs) associated with relocating new portions and closing old portions of the Millville Peak and Logan Peak roads may affect the scenic integrity of the viewshed.

Indicator used to compare alternatives:

- a. Miles of road construction (and acre equivalent) and the qualitative extent to which scenery of the landscape may be affected

3.5.5 Effects Analysis Methods and Assumptions

The environmental analysis for scenery resources makes the following assumptions:

- No actions associated with the proposed action or alternatives would be seen from outside of the scenic analysis area
- Landscape visibility is a function of many essential interconnected considerations, including: (1) context of the viewer, (2) duration of view, (3) degree of discernible detail, (4) seasonal variations, and (5) the number of viewers
- The degree of discernible detail is determined relative to the position or location of the observer
- Concern level is a measure of the degree of public importance placed on the landscapes viewed from the travel way and use area. The concern level for both the proposed action and other alternative for the Logan Peak and Millville roads is a concern level 3 because of the number of people that are able use the routes and the importance of the viewed landscapes. Views from overlook areas such as the top of Spring Hollow, Providence Peak, and Logan Peak are of local importance and are a concern level 2.
- Effects to the integrity of the viewed landscape analysis are based from the immediate foreground and foreground views
- Effects described in the analysis are based on snow-off season and after herbaceous plants are established within the disturbed areas
- The seed mix used in the project for revegetation would be from local sources that reflect the elevation and climate of the project area
- Any construction would meet Forest Plan direction

The following definitions are used for “distance zones”:

- Immediate foreground is 0 to 300 feet from the viewer
- Foreground is 300 feet to ½ mile from the viewer
- Middleground is ½ mile to 4 miles from the viewer
- Background is 4 miles to the horizon from the viewer

For purposes of the analysis of effects on scenery, a road width of 14 feet (from Engineering Field Reports) was used (see Scenery Technical Report).

3.5.6 Direct and Indirect Effects

Effects common to all Alternatives

Where cut slopes are greater than 1to1, revegetation has not occurred in the existing road alignment. It is anticipated the same would occur in the proposed alignment without mitigation using log cribbing or rock walls that would provide cells for plant growth to establish. In these sections of road, without mitigation, the cut banks over 5-10 feet in height may be dominant but will repeat the form, line and texture of the surrounding landscape and would be managed as a low integrity within the foreground, and moderate in the middleground, views of the landscape.

3.5.6.1 Alternative A - Proposed Action

The proposed action consists of the construction of a 14-foot wide road on mountain side slopes ranging from 0-75 percent, where vegetation is dense conifer, grass, and mountain forbs. Numerous mitigation measures are included in the proposed action to reduce the foot print of the proposed road (see Mitigation Measures, Section 2.5). These include such items as minor alignment changes, log cribbing, rock walls, tree wells (both rock and log), through cuts with 1:1 cuts, revegetation using native seed/plants, and vertical cuts in rock outcrop areas.

Because of potential high cost of road construction in a few areas, some sections of road may not allow all of the proposed mitigation measures to be used. Here, the scenic integrity of the roadway would not meet the goal of “high” scenic integrity and would be managed as “moderate” where “noticeable deviations remain visually subordinate to the valued landscape character being viewed”.

Timber that is removed from the proposed alignment would be decked, scattered on the old road alignment, and used in some locations to help inhibit unauthorized, cross-country travel, or be incorporated in log cribbing or tree wells.

About one third of the proposed alignment is located in dense conifer stands on 0 to 45 percent cross slopes. The conifer trees surrounding the proposed road location would screen a majority of the proposed road from views from other portions of the road that do

not have a dense overstory. Within approximately 5 years, once grasses and forbs are established on cut and fill slopes, the affected landscape would be visually subordinate to the surrounding landscape. Not until conifer begins to mature in disturbed areas would the goal of “high” scenic integrity be accomplished along the proposed road alignment.

On the remaining two-thirds of the proposed road alignments where dry, steeper slopes and areas with few trees make up the landscape, achieving the desired integrity level of high would be more difficult and may not be achieved in the long term. Using mitigation measures in these landscapes, the management of the road could achieve a “moderate” scenic integrity where the road would be visually subordinate to the surrounding landscape.

Road relocation of the first quarter mile of the Logan Peak road (where slopes range from 50 to 75 percent) could have a dominant effect on both foreground and middleground views. Because vegetation is sparse in this section of road, there would be minimal filtering from trees to minimize the effect as seen from middleground views. For about the last 1000 feet of this quarter-mile section, because of steep slopes, disturbance widths from road construction could be as much as 235 feet along the slope, creating a dominate change of color. There would also be through cuts with 1:1 slopes where it is difficult for vegetation to establish itself. Mitigating measures including revegetating, sculpting slopes, and installing timber crib walls could achieve the goal of “high” integrity in the long term. However, response to revegetation would be slow on this south facing slope.

Once the proposed alignment is completed, part of the removed conifer and vegetation from construction would be scattered down the old road alignments and into the landscape adjacent to the old road sections. For those walking cross-country, the viewed foreground landscape would not be intact for the short term, until vegetation is reestablished along the existing road alignment.

3.5.6.1.1 Alternative A.1 – Proposed Action with Top of Spring Hollow Road

This sub-alternative to the proposed action (Alternative A.1) would be the same as the proposed action (Alternative A) except that the connection to the Top of Spring Hollow Road from the new road alignment would be constructed to maintain high-clearance vehicle access to the Top of Spring Hollow Road (20126) instead of conversion to an ATV trail. The high clearance vehicle route would be 12 feet wide (the ATV trail would be 50 inches wide). The connector route would be about .25 miles long in either case.

The intersection of the proposed Top of Spring Hollow Road with the relocated Millville Peak Road (20168) may be dominant in the foreground and middleground views until vegetation is established and using mitigation measures (as described in Section 2.5).

For about 84% of the length of the proposed connecting road the average disturbance width is 22 feet with an average of a 2 foot high cut bank. It is anticipated that after vegetation is established the proposed road will meet the integrity of a High scenic integrity objective.

3.5.6.2 Alternative B – Close Road (Admin Use Only)

There would be no change from the existing condition along the existing road alignment. Portions of the existing roadways would not achieve the integrity of high in this natural appearing landscape because some existing cut banks are not holding vegetation and are apparent as viewed in the landscape. With no planned mitigation, these areas would meet a “moderate” scenic integrity level where the roadway in the foreground would be subordinate to the surrounding landscape.

3.5.6.3 Alternative C - No Action

The no action would have the same direct and indirect effects as Alternative B (Closed road administrative use only) except there would be no gates installed to limit access into the area.

3.5.7 Cumulative Effects

The area of influence for the cumulative effects analysis for scenery is the same as described above for direct and indirect effects. This area is chosen because all views of management activities are contained within these viewsheds.

The past, present, or reasonably foreseeable activity in this area that may cumulatively affect scenery includes permitted sheep and cattle grazing.

The effect of the proposed project on scenery is low to moderate because of mitigation measures included in the proposed action and alternatives to it. Because this effect is moderate and short-term, cumulatively, the effects of the proposed action or any of the alternatives in addition to permitted grazing will have little to no additional effect and will not significantly affect scenery in the analysis area. The landscape character and scenic integrity of the viewshed would be maintained with implementation of any of the alternatives.

3.5.8 Irretrievable or Irreversible Commitment of Resources

No irretrievable or irreversible commitment of resources is expected to occur to scenery resources from either the proposed action or its alternatives because mitigation measures would provide for revegetation of cut and fill slopes over time and the old road would be decommissioned and revegetated.

3.6 Soil and Water

3.6.1 Introduction

The purpose of this section is to explain and clarify the existing conditions of the soil and water resources in the analysis area and to disclose the effects of the proposed action and the alternatives.

3.6.2 Area of Influence

The 21,000-acre analysis area for soil and water resources is located within the 6th level watershed boundaries of Providence Canyon and Mill Hollow which are tributaries to the 5th level watershed boundary of the Logan River drainage (see Alternative Maps in the Appendix for delineation of the analysis area). For direct and indirect effects of the existing road and proposed road construction/decommissioning on soils and watershed resources, the area of influence is the immediate area where road construction and road rehabilitation takes place within the project area. This includes the following system roads:

- Millville Peak Road (20168) – Relocation of 2.7 miles and decommission of 2.7 miles of existing system road.
- Logan Peak Road (20042) - Relocation of 2.5 miles and decommission of 3.1 miles of existing system road.
- Logan Peak-A Road (20042A) - Decommission of .3 miles of existing system road.
- Upper Providence Canyon 4x4 Road (20022) - Relocation of .2 miles and decommission of .2 miles of existing 4x4 system road.
- Top of Spring Hollow (20126) - Construction of about .25 miles of new system ATV trail to connect to the existing route (20126). This new section is too steep for a system road; it is more conducive to an ATV trail. Therefore, Top of Spring Hollow road (20126) would become an ATV trail.

The duration of short term effects of the proposed action will be 5 years, or until revegetation is complete, within the corridor of disturbance associated with the road construction activities. Long term effects to soil productivity of the proposed action will last for the life of the constructed road and ditch prism, or until the road is decommissioned and rehabilitated.

3.6.3 Affected Environment

Water Resources

Specific water features within the analysis area are identified below:

Streams- Mill Hollow, Spring Hollow, and Providence Canyon are ephemeral streams tributary to the Logan River. Snowmelt provides most of the water in the Providence Canyon drainage, resulting in peak flows during spring runoff, with spring-fed, low base flows for the remainder of the year. Providence Canyon is shown to have perennial flow (for approximately 3.3 miles) downstream below Box Elder Hollow to the mouth of Providence Canyon.

Lakes and Springs-Providence Lake, the unnamed lake east of Logan Peak, and Providence Road pond are used for stock watering. All lakes are ephemeral and have seasonal water in them only during spring snow melt. Spring Hollow spring is located at the headwaters of the Spring Hollow canyon. Upper Mill Hollow drainage is not fed by any spring. Two Providence Canyon springs are located outside the immediate project area, about 2 miles below the proposed improvements to the Millville Peak Road (20168).

Water Quality

All surface waters located within the outer boundaries of National Forest system lands are designated as waters of high quality. These waters have been determined by the State of Utah to be of exceptional recreational or ecological significance or have been determined to be a State and National resource requiring protection. These waters shall be maintained at existing high quality through designation, by the Board after public hearing, as High Quality Waters - Category 1.

The State of Utah has established standards for the designated beneficial uses of water. Water quality is required by state regulation to be maintained at this level. The beneficial uses of streams within the project area, as designated by the Utah Department of Environmental Quality, Division of Water Quality, are:

- Class 2B – protected for recreation
- Class 3A – protected for cold water species of game fish and other cold water aquatic species
- Class 3D – protected for waterfowl, shore birds and other water-related wildlife, and the necessary aquatic organisms in their food chain
- Class 4 – protected for agricultural uses

The numeric water quality standards can be found in Section R317-2, Utah Administrative Code, *Standards of Quality of Waters of the State* (Utah, State of. 2000a). In the most recent assessment of water quality, the State of Utah has determined that the waters within the watersheds that drain the Millville Peak/Logan Peak Road Relocation project area fully support their beneficial uses (Utah, State of. 2004). No streams are listed as impaired that drain into, out of, or are within the project area and no streams are on Utah's 2002 303(d) list of impaired waters.

Soil

Information on the existing soil resource is contained within the 1995 draft Soil Survey of the Logan Ranger District (USDA Forest Service 1995). As indicated on the soil survey maps, the proposed Logan Peak road realignment would occur on the gently sloping

Fitzgerald soils; the moderately steep Bradshaw, Dagan, and Onkeyo soils; and the very steep Dateman, Keman, and Poleline soils. Potential soil erosiveness ranges from moderate on the Dagan and Onkeyo soils to high on the Bradshaw, Poleline, and Keman soils, to very high on the Fitzgerald and Dateman soils. Accelerated soil erosion is currently occurring on steeply sloping Dagan and Bradshaw soils, and on gently sloping Fitzgerald soils. Modeled erosion rates on these soil types, as a result of runoff from the existing road, range from 1 to 5 tons per year. Results of Forest Service WEPP erosion modeling are shown in Table 3.5. Results of multiple modeling runs, as well as methodology and assumptions used in the modeling, are contained in a separate report (Flood 2007a) available in the project record.

Table 3.5 30-Year Average Erosion Modeling Summary for All Alternatives

Alternative	Road Surface Erosion*	Sediment Leaving Buffer Strip	Road Surface Runoff from Snowmelt	Road Surface Runoff from Rain**
No Action Bradshaw Soil	9500	6000	3.93	1.11
No Action Dagan Soil	2100	1600	.87	.68
No Action Fitzgerald Soil	10800	7200	4.64	1.57
Proposed Action Fitzgerald Soil	2750	90	0	.07

* Pounds per year ** Inches

Existing Road Conditions

A field visit in September 2005 by WCNF forest hydrologists indicated the following conditions on the Millville Peak road (20168) and the Logan Peak road (20042) (USDA Forest Service 2005).

At the southern end of the analysis area, the Millville Peak road (20168) is very rough with large ruts and gullies formed in the center and at the sides of the road; large muddy areas have formed from poor drainage; road use during wet periods has created a braided system of tracks to skirt around the muddy, impassable areas. No defined stream channel was observed in the drainage bottom directly adjacent to the Millville Peak road (20168) between the saddle and the intersection with the Logan Peak road (20042).

The Logan Peak road (20042) runs within the ephemeral depression of Providence Lake for about 1,500 feet and directly adjacent to the lake shoreline for 550 feet. Farther along, the Logan Peak road (20042) runs within the ephemeral depression of the unnamed lake east of Logan Peak for 750 feet and runs through the lake bed for 250 feet. The lengths and acreages of Travel Plan roads in the upper Providence Canyon watershed are summarized in Table 3.6.

Table 3.6 Lengths and Acres of Travel Plan Roads

Forest Road #	Mill Hollow		Upper Providence		Total Miles	Total Acres
	Miles	Acres	Miles	Acres		
20168	2.92	4.2	1.73	2.5	4.65	6.7
20042	3.6	5.2	0	0	3.6	5.2
20126	1.0	1.5	0	0	1.0	1.5
Subtotal miles	7.52		1.73		9.25	
Subtotal acres		10.9		2.5		13.4

*Acreage based on 12 ft. road width

Soil and Watershed Conditions

Poor watershed health conditions currently exist in the upper watershed of Providence Canyon primarily due to poor location and conditions of the road network. In general, roads take land out of production for other uses, and poorly maintained or poorly designed roads can cause erosion and sedimentation (USDA Forest Service, 2003b).

As Figure 3.1 illustrates, sections of the Millville Peak and Logan Peak roads in the upper watershed of Providence Canyon were created in poor locations many years before Best Management Practices (BMP's) were in place. These sections lack proper drainage and erosion control features and tend to follow drainage bottoms where water collects and forms ruts and gullies in the road.



Figure 3.1 Logan Peak Road (20042) erosion and braided road

The presence of many unauthorized, user-created, non-system roads in the upper watershed increases the potential for sedimentation. For more specific information, consult the Soil and Water Technical Report in the project file.

3.6.4 Issues Addressed

Public and agency scoping, followed by Forest Service interdisciplinary team review identified the following issue related to soil and water resources to be addressed in this impact analysis:

- Road construction may affect soil productivity; road construction on steep slopes may cause erosion and sediment delivery, affecting water resources. Some degraded areas within the analysis area need to be improved.

Road construction and related activities (such as logging and vegetation removal, cut banks, and fill slopes) associated with relocating portions of the Millville Peak and Logan Peak roads may affect soil and water resources in the watershed. Relocation of current degraded portions of the roads may reduce sediment delivery and improve watershed conditions.

Indicators used to compare alternatives:

- a. The indicator for measuring improvement in soil quality is the degree to which alternatives stabilize and restore soils on existing roads made obsolete (decommissioned) by the proposed action or alternatives.
- b. The indicator for water quality is the relative potential for sediment delivery from roads into stream channels and lakes (based on the width and ground cover quality of the vegetation buffer strip separating the roads and waterways).

Poor watershed conditions (eroded slopes and gullies, as illustrated in Figure 3.2) exist at many locations along travel plan designated routes and non-system routes that will be rendered obsolete by construction of the new route.



Figure 3.2 Deep gullies in the Logan Peak Road (20042)

Abandonment of re-routed sections of the Millville Peak, Logan Peak, and Upper Providence Canyon roads (20168, 20042, and 20022, respectively) would include proper stabilization of the abandoned routes to restore and protect soil and water quality as part of the action alternatives.

Non system, user-developed roads and trails are also part of the existing condition within the project area. Motorized use of these non system trails is causing detrimental disturbance of soil quality and degradation of water quality, and is illegal under the current travel management plan for the Logan Ranger District. Where construction of the new route encounters these trails, as well as the previously mentioned system routes being rendered unnecessary by the realignment/construction, the district travel plan will be implemented by discouraging further illegal motorized use with effective closure measures.

3.6.5 Effects Analysis Methods and Assumptions

Erosion and Sediment Modeling Protocol - The protocol used to estimate soil erosion and sediment yield rates for various activities that might occur within the study area is the Forest Service Watershed Erosion Prediction Protocol (FSWEPP). This model has several user interfaces that allow for the prediction of soil erosion and sediment yields associated with various types of management activities that commonly occur on National Forest lands. This analysis used the WEPP:Road interface to compare erosion rates from the existing road and the relocated road. Three variables were considered: (1) an outsloped road surface on the existing road vs. an insloped surface and ditch on the relocated road; (2) the distance between cross drain features or road surface grade breaks; and (3) the width of the roadside vegetated buffer strip. User defined inputs into the model are discussed in detail in a separate report (Flood 2007a). This report includes information about data sources for each input, along with any study area specific assumptions that are made to improve the accuracy and functionality of output predictions from the model. For more information on the use and application of the model in this analysis, see the Soil and Water technical report in the project file.

Disclosure of effects for the proposed action assumes that all actions would be in compliance with Revised Forest Plan direction, and that effective closure of illegal non-system roads and trails would occur within 2 to 3 years, through accelerated implementation of the district travel plan. Disclosure of effects for the no action alternative assumes that very little maintenance and no drainage improvements would occur on the existing road where the power line is too close to the surface. Also, for the no action alternative, the assumption is that implementation of the district travel plan would occur at a much slower pace and that closure of non-system roads and trails within the Providence Lake basin would occur over a 10 to 15 year period and be less effective.

3.6.6 Direct and Indirect Effects

Direct effects of the existing and proposed roads are the effects to stream channel condition and to the condition of the lake environments within the upper watersheds of

Mill Hollow and Providence Canyon, at points where the roads cross through stream and lake features.

Indirect effects of the existing roads and proposed road construction are the effects to water quality from sedimentation from the present road surfaces and construction of the proposed road.

Effects on water quality were analyzed by measuring the distance of the water resource to the closest existing road within the drainage and comparing that distance to proposed road sections. The desired distance between water features and a road is approximately 200 feet, to ensure that sediment is trapped by upland vegetation well above the stream, lake, or spring.

Roads within 200 feet of a stream eliminate vegetation's natural function by preventing the filtering of water as it moves to the channel. This potentially increases sedimentation in the stream channel, can alter the macro-invertebrate community, and can cause direct and indirect mortality to fish. Roads can also provide direct routes for sediment to enter the stream.

3.6.6.1 Alternative A - Proposed Action

Effects to Soil Quality: Relocating the Millville Peak, Logan Peak, Upper Providence Canyon, and Top Spring Hollow roads (20168, 20042, 20022, and 20126, respectively) would result in a long term loss in soil productivity on about 8.5 acres of National Forest System land, based upon an assumed 12 foot width. This effect is an unavoidable adverse effect upon and an irretrievable commitment of soil productivity. However, the new roads could be decommissioned and restored at some future date, and therefore do not constitute an irreversible loss of future options.

Decommissioning the abandoned road segments would result in a long term restoration of soil productivity on about 9 acres of National Forest land, based upon an assumed 12 foot road width. Stabilizing vegetation can be expected to establish within 2 to 5 years of closure, depending on restoration methods used.

Effects to Water Features: In the short and long-term, the direct effects of relocating the Millville Peak and Logan Peak roads and decommissioning the abandoned road segments would be minimal because the new alignment would be located away from water features and would not cross stream channels or lake features.

Where stream channel and shoreline damage in the abandoned road segments can be repaired safely without impacting the power line cable, rehabilitation of decommissioned roads would improve the conditions of water features in the area.

Effects to Water Quality: In the short and long-term, the direct effects of relocating the Millville Peak and Logan Peak roads and decommissioning the abandoned road segments would be a large improvement to water quality in Providence Lake and Providence

Creek. The impact of the project on water quality would be large because the erosion potential of the existing road would be decreased through stabilization and rehabilitation work done as part of the decommissioning process. Also, the new alignment would be located away from water features and would not cross the stream channel or lake features, minimizing the potential for sedimentation into Mill Hollow, Providence Canyon, Providence Lake, the unnamed lake east of Logan Peak, and Providence Road Pond.

Table 3.7 shows the proximity of the proposed road to water features. In comparison to the existing road, the new road alignments would move all roads further away from water features, except Mill Hollow. However, the decrease in proximity (535 feet to 270 feet) in Mill Hollow is still greater than the minimum 200-foot buffer zone (See Mitigation Measures, Chapter 2).

Table 3.7 Proximity of roads to water features under Alternative A

Water Resource Name	Closest Proximity (in feet) to:	
	Forest Road 20168	Forest Road 20042
Headwaters of Mill Hollow	270	Not in watershed
Headwaters of Spring Hollow	4300	Not in watershed
Spring Hollow Spring	4160	Not in watershed
Providence Road Pond	680	2770
Headwaters of Providence Canyon	650	800
Providence Lake	Not in watershed	1350
Unnamed Lake East of Logan Peak	Not in watershed	300

Use of mitigation measures during rehabilitation of decommissioned roads and during construction of new the road would control erosion and sediment delivery by directing runoff into upland vegetated areas that would act as buffers to trap sediment and provide for infiltration. The surface of decommissioned roads would be further stabilized and rehabilitated by scarification, re-contouring, and seeding to improve the drainage condition.

Once constructed, drainage and sedimentation from the road surface would be mitigated using Best Management Practices (see Mitigation Measures, Chapter 2). For an explanation of BMP's, see Appendix II of the Revised Forest Plan.

The new road would be relocated in a better position on the landscape, avoiding low lying areas and drainage bottoms, to ensure that water would run off and not concentrate in the low lying areas. Also, the new road would be constructed at a gentler gradient than the existing road. The steepest sections of the Logan Peak road (20042) currently range between 14to 19 percent over sections of road ranging from 600 to 1000 feet in length. The new road would be designed with an average grade less than 8 percent. Results of FSWEPP erosion modeling indicate that with the incorporation of Best Management Practices (insloping the road to a ditch, installing road surface rolling dips/grade breaks, and a 200 foot vegetation buffer) as part of the proposed action would road surface

erosion by 75 percent and sediment delivery by 98 percent (see Erosion Modeling Summary, Table 3.5).

Therefore, potential erosion and sedimentation downslope of the project area to the unnamed lake east of Logan Peak, Providence Lake, and the headwaters of Mill Hollow and Providence Canyon would be negligible due to use of erosion, sedimentation, and drainage mitigation measures incorporated into the road design, construction, and decommissioning processes.

3.6.6.1.1 Alternative A.1 – Proposed Action with Top of Spring Hollow Road

This sub-alternative to the proposed action (Alternative A.1) would be the same as the proposed action (Alternative A) except that the connection to the Top of Spring Hollow Road from the new road alignment would be constructed to maintain high-clearance vehicle access to the Top of Spring Hollow Road (20126) instead of conversion to an ATV trail. The high clearance vehicle route would be 12 feet wide (the ATV trail would be 50 inches wide). The connector route would be about .25 miles long in either case.

This sub-alternative would result in a slight increase in affected area (0.94 acres) over the proposed action, based on an assumed clearing width of 40 feet for the high clearance vehicle route vs. a 10-foot clearing width for the ATV trail. There would not be any change in the total miles of motorized routes. Because the difference between this alternative and the proposed action is negligible, the effect of implementing either of these alternatives relative to soil and water quality would be essentially the same.

3.6.6.2 Alternative B - Close Road (Admin Use Only)

Under this alternative, the Millville Peak and the Logan Peak Roads would be gated closed to public traffic and open only for Administrative use (see Alternative B Map in the Appendix). This alternative would meet the purpose and need of removing public vehicles from driving over the exposed cable, but would still poses a risk to Administrative users and public pedestrian use. This alternative would not provide for any changes to the existing soil erosion and sediment delivery conditions of the road surface. Therefore, this alternative would have the same effect on water and soil resources as the no action alternative. The indirect and unintended effects of this alternative would be at the gate locations. There, individuals may try to go around the gates or even try to break the gates, thus causing isolated damage to the soil and vegetation at these locations.

3.6.6.3 Alternative C (No Action)

The following would be expected to occur from the no action alternative.

- Accelerated soil erosion on the existing road surface and on the slopes below it would persist (Erosion Modeling Summary available in the Soil and Water Technical Report in the project file)

- Long-term potential for sediment delivery would persist
- Run off (and associated erosion) is currently concentrated where the road runs through Providence Lake and the un-named lake, and along Millville Peak road (20168) where the road is in drainage bottom

Table 3.8 shows the proximity of existing roads to water features. The existing roads are located within the minimum 200-foot buffer for the Spring Hollow Spring, Providence Road Pond, Headwaters of Providence Canyon, Providence Lake, and the unnamed lake east of Logan Peak.

Table 3.8 Proximity of existing roads to water features under Alternative C

Water Resource Name	Closest Proximity (in feet) to:	
	Forest Road 20168	Forest Road 20042
Headwaters of Mill Hollow	535	Not in watershed
Headwaters of Spring Hollow	435	Not in watershed
Spring Hollow Spring	70	Not in watershed
Providence Road Pond	63	75
Headwaters of Providence Canyon	30	42
Providence Lake	Not in watershed	35
Unnamed Lake East of Logan Peak	Not in watershed	0

3.6.7 Cumulative Effects

For cumulative effects of the existing road and proposed road construction on watershed resources in the Logan Peak Road Relocation project area, the area of influence is the immediate area where road construction and road rehabilitation takes place within the project area (as described in Section 3.6.2). The analysis area for cumulative effects on water resources includes those hydrologic systems affected by the project (as described in Section 3.6.3).

Within the cumulative effects analysis area, none of the areas proposed for road construction or decommissioning have been affected by previous timber harvests, wildfire, or prescribed fire, nor are any future treatments foreseen.

Alternatives A, A.1, and B

With the implementation of recommended mitigation measures and project design features, Alternative A, A.1 (proposed action) or Alternative B (close road) would have very little net direct or indirect effect on soil quality. While the proposed action would result in some adverse impacts to soil quality, none of the detrimental compaction or erosion that would occur associated with road construction of system roads would exceed 15 % of the activity area (as outlined in the Revised Forest Plan Guideline G4).

The effects of road construction and road decommissioning on watershed health would be beneficial due to a net decrease in potential sedimentation into Providence Lake, the unnamed lake east of Logan Peak, and Providence Canyon and Mill Hollow.

Constructing a new maintainable road to Logan Peak and decommissioning and rehabilitating the old Logan Peak road (20042) along with other non-Travel System roads in the upper watershed of Providence Canyon would also improve watershed health by decreasing the acreage of bare and compacted soil associated with these roads and improve the physical properties for vegetative growth and soil hydrologic function.

Existing system roads that would be abandoned as part of the proposed action currently provide access to a large network of user developed, non-system trails, particularly in the Upper Providence watershed area. These roads and trails have been previously identified and analyzed under the Section 3.6.4. Implementation of required mitigation measures for the action alternatives would result in effective closure to further use of these system and non-system roads and a cumulative reduction in erosion and sedimentation.

The project area is within a permitted livestock grazing allotment. Sheep and cattle grazing resulted in high impacts to soil resources from the 1800s until the 1930s when active grazing management took effect in the area. Since then, a gradual improvement in land conditions has occurred as indicated by increased ground cover and absence of active soil erosion in most areas within grazing allotments. Current grazing activities are not having an effect upon the soil resources within the cumulative effects analysis geographic area.

Alternative C

The effects of previous and current management activities are disclosed under the existing conditions (See Section 3.6.3).

Summary

Cumulatively, the effect of road construction and road decommissioning in addition to other activities that have occurred or continue to occur in the cumulative effects analysis area for soil productivity and watershed health (as described above) is expected to maintain or even improve the quality of water, soil productivity, and watershed health.

3.6.8 Irretrievable or Irreversible Commitment of Resources

As noted above, relocating the Millville Peak, Logan Peak, Upper Providence Canyon, and Top Spring Hollow roads would result in a long term loss in soil productivity on about 8.5 acres of National Forest System land, based upon an assumed 12 foot width. This effect is an unavoidable adverse effect upon and an irretrievable commitment of soil productivity. However, the new roads could be decommissioned and restored at some future date, and therefore do not constitute an irreversible loss of future options.

Decommissioning the abandoned road segments would result in a long term restoration of soil productivity on about 9 acres of National Forest land, based upon an assumed 12 foot road width. Stabilizing vegetation can be expected to establish within 2 to 5 years of closure, depending on restoration methods used.

3.7 Vegetation

3.7.1 Introduction

The purpose of this section is to explain and clarify the existing conditions of the vegetation in the analysis area and to disclose the effects of the proposed action and the alternatives.

3.7.2 Area of Influence

For direct effects, the area influenced by this project includes the forested stands immediately surrounding the proposed road clearing for the road relocation, which comprise approximately 374 acres (see map below). These stands are also discussed in the context of the larger landscape in which they are situated; in terms of how this project relates to the balance of structural stages in the Douglas-fir forest type overall in the landscape.

3.7.3 Affected Environment

The stands in the analysis area are primarily older Douglas-fir and subalpine fir, with a small amount of Englemann spruce at the northern portions of the area. Regeneration is sparse throughout. The stands have been logged in the past, probably in association with the construction of the existing road. This historic logging appears to have been selective and left trees of smaller diameter, and in many cases, poor form. Sweep, crook, multiple tops and rot are common in this stand. The subalpine fir is quite rotten in most cases and many trees are losing their tops to wind and snow damage or are blowing over.

A typical concern with the clearing of trees for road construction from the forest vegetation standpoint is the potential for buildup of Douglas-fir bark beetles in the newly fallen trees. Bark beetles are attracted to fresh fallen trees (or wind thrown, in a natural setting) and larvae populations can build rapidly in these logs unless appropriate measures are taken (USDA 1996).

According to the 2006 USDA Aerial Detection Survey Map (available in the project file), there are no populations of the Douglas-fir bark beetle within 5 miles of the clearing site. Concerns generally arise when beetles are active within the watershed, thus this situation does not present a serious threat. However, measures should still be taken to prevent any possible buildup. (See Mitigation Measures in Chapter 2).

3.7.4 Issues Addressed

Forested vegetation within the analysis area is composed primarily of older Douglas-fir, subalpine fir, and a few Englemann spruce trees. Cutting and clearing some of these older trees for the proposed new road sections may affect the age class distribution of forested cover types across the ecological section and may affect the relative mix of age classes in

forested cover types across the ecological section within which the project area lies (refer to S13, page 4-39, in the Revised Forest Plan).

Public and agency scoping, followed by Forest Service interdisciplinary team review identified the following issues to be addressed in this impact analysis:

- Clearing trees for the new road sections may affect the age-class distribution of forested cover types across the ecological section

Indicators used to compare alternatives:

- a. Percentage of stand acres affected
- b. Percentage (by age class) of forested cover type affected within the ecological section

3.7.5 Effects Analysis Methods and Assumptions

For the proposed action, an estimate of the forested area from which trees would be removed to relocate portions of the Millville Peak road (20168) was made using an assumption of a 40-foot width and road length of 1.5 miles, resulting in an estimate of 7 acres of forested vegetation affected.

3.7.6 Direct and Indirect Effects

The following information discloses the direct and indirect effects on the overstory vegetation within the project area.

3.7.6.1 Alternative A - Proposed Action

A field reconnaissance conducted by Forest personnel during the summer of 2006 provided an estimate of the number, species, and size of trees that would likely need to be cut to clear the way for the Millville Peak road (20168) relocation. The estimate is as follows:

- Douglas fir - 314 trees, average 19.0" Diameter Breast Height (DBH) and 68 feet tall
- Engelmann spruce - 45 trees, average 16.4" DBH and 63 feet tall
- Subalpine fir - 377 trees, average 12.9" DBH and 51 feet tall

This clearing would have essentially "no effect" on the overall forested environment in the analysis area because the acreage involved along the forested portions of the re-route is only 7 acres. Stand delineations show that approximately 374 acres comprise the forested stands contiguous and of similar characteristics to this stand. The 7 acres cleared would amount to only 2% of the contiguous stands. Many more acres of similar forested type are adjacent to these stands, primarily to the north and west of the proposed road

relocation sections. This minor amount of clearing in relation to the total would not alter the overall stand characteristics in terms of age or stand structure.

The proposed clearing of 7 acres of forested vegetation for the Millville Peak road relocation would represent 1/100th of 1 percent of the Douglas-fir forest type within the ecological section. There are approximately 79,460 mapped acres of the Douglas-fir forest type within the Overthrust Mountains Ecosection (USDA 2006). Given this minor percentage (by age class) of forested cover type affected within the ecological section, in essence, there would be “no effect” on the old forest landscape structure within the ecological section.

3.7.6.1.1 Alternative A.1 – Proposed Action with Top of Spring Hollow Road

This sub-alternative to the proposed action (Alternative A.1) would be the same as the proposed action (Alternative A) except that the connection to the Top of Spring Hollow Road from the new road alignment would be constructed to maintain high-clearance vehicle access to the Top of Spring Hollow Road (20126) instead of conversion to an ATV trail. The high clearance vehicle route would be 12 feet wide (the ATV trail would be 50 inches wide). The connector route would be about .25 miles long in either case.

For the purpose of the effects analysis, a clearing width of 10 feet is assumed for the 50-inch ATV trail and a 40-foot clearing width is assumed for the 12-foot high clearance vehicle road. The sub-alternative would result in a slight increase in affected area (0.94 acres) over the proposed action. The connecting route would be located in a sparsely vegetated area; approximately 1-2 trees would be cut to clear for either the 50-inch or 12-foot wide routes.

Regarding stand acres affected and effects on the ecosection, the effects of the sub-alternative would be essentially the same as for the proposed action described above.

3.7.6.2 Alternative B - Close Road (Admin Use Only)

This alternative would have no effect on the age class distribution at either scale (stand or ecological section). No clearing would occur under this alternative since no roads would be relocated.

3.7.6.3 Alternative C - No Action

This alternative would have no effect on the age class distribution at either scale (stand or ecological section). Under the no action alternative, no clearing would occur since no roads would be relocated.

3.7.7 Cumulative Effects

The area of influence for the cumulative effects analysis for vegetation is the Overthrust Mountains Ecosystem, the ecological section within which the project area lies (refer to Revised Forest Plan S13, page 4-39).

Within the cumulative effects analysis area, none of the areas proposed for road construction or decommissioning have been affected by previous timber harvests, wildfire, or prescribed fire, nor are any future treatments foreseen.

Since there are no direct or indirect effects on vegetation age class diversity, as disclosed above, there would be no cumulative effects. The effect of cutting the enumerated trees to provide clearing for the road relocation is negligible in relation to the ecological section within which the project area lies. There would be no incremental or additive effect on the age class distribution of vegetation within the ecological section resulting from this project.

3.7.8 Irretrievable or Irreversible Commitment of Resources

The clearing of 1.5 miles (about 7 acres) of conifer trees to relocate the Millville Peak road could be considered an irretrievable and irreversible commitment of 7 acres of conifer forest. However, as indicated above this represents only 2% of the contiguous stands and 1/100th of the ecological section.