3.7 Air Quality

The SNF Travel Management project is intended to designate routes for public motor vehicle use on the SNF, as required by the new Travel Management Regulation. The regulation requires that each National Forest or ranger district designated the roads, trails and areas on National Forest System lands that are open to motor vehicles, including off-highway vehicles (OHV).

This section contains an evaluation of how air resources will be affected by the actions identified in Chapter 2 of this FEIS. The document contains policy and direction as well as a discussion of the affected environment and existing air quality conditions. This section describes the plausible environmental consequences of different alternatives. Further details are available in the project record.

Climate change has become a national concern. Gases which contribute to climate change such as carbon dioxide, methane, nitrous oxides and ozone are addressed in this section. The changes in greenhouse gasses will be reflective of impacts to climate change.

3.7.1 Introduction

Policy and Direction

Federal Air Quality Laws Relevant to Travel Management Projects

Federal Clean Air Act

The Federal Clean Air Act (CAA) is the Federal law passed in 1963 and last amended in 1990, (42 U.S.C. §7401 et seq.) which is the basis for National control of air pollution. The CAA was designed to "protect and enhance" the quality of the Nation's air resources. Basic elements of the CAA include National ambient air quality standards (NAAQS) for criteria air pollutants, technology based emission control standards for hazardous air pollutants (HAPs), State implementation plans (SIPs), a comprehensive approach to reducing motor vehicle emissions, control standards and permit requirements for stationary air pollution sources, acid rain control measures, stratospheric ozone protection and enforcement provisions (California Air Resources Board [CARB], 2007).

Regional Haze Rule (1990 Clean Air Act Amendments), 40 CFR Part 51

In 1999, U.S. EPA passed the Regional Haze Rule, which calls for states to establish goals for improving visibility in mandatory Class I areas and to develop long-term strategies for reducing the emissions of air pollutants that cause visibility impairment.

General Conformity Rule (1990 Clean Air Act Amendments) (Section 176 (c) of the Clean Air Act (part 51, subpart W and part 93, subpart B.)

U.S. EPA passed the final General Conformity rule in 1993. Under the rule, Federal agencies must work with State and local governments in a non-attainment or maintenance area to ensure that Federal actions conform to the initiatives established in the applicable SIP (U.S. EPA 2008). A project is non-conforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. The rule divides the conformity process into two phases: applicability and determination. The San Joaquin air basin is in non-attainment for ozone and particulate matter, therefore a determination under the Conformity Rule must be made.

The EPA created de minimis emission levels to limit the need to conduct conformity determinations for actions with minimal emission increases. When the total direct and indirect emissions for the project are below the de minimis levels, the project would not be subject to a conformity determination. The de minimis levels can be found at http://www.epa.gov/oar/genconform/deminimis.htm (http://www.epa.gov/oar/genconform/ March 2010).

State Air Quality Laws Relevant to Travel Management Projects

California Clean Air Act (H&S §§ 39660 et seq.)

California adopted the California Clean Air Act (CCAA or Act) in 1988. The Act provides the basis for air quality planning and regulation in California independent of Federal regulations and establishes ambient air quality standards for the same criteria pollutants as the Federal clean air legislation (CARB 2007a). Under the Federal CAA, States can adopt air quality standards that are more stringent than the Federal NAAQS. California has chosen to adopt standards for criteria pollutants that are generally more restrictive than the Federal standards. The California Air Resources Board (CARB) is the agency responsible for establishing California ambient air quality standards (CAAQS), setting vehicle emission standards and fuel specifications and regulating emissions from certain types of mobile equipment and consumer products.

Table 3- 47. Pertinent California Air Quality Standards

Pollutant	Averaging Time	State Standards
Ozone	1-hour	0.09 ppm
	8-Hour	0.07 ppm
Respirable Particulate Matter (PM10)	24-Hour	50 µg/m3
	Annual Arithmetic Mean	20 µg/m3
Nitrogen Dioxide (NO2)	Annual Arithmetic Mean	0.030 ppm
	1-Hour	0.18 ppm
Fine Particulate Matter (PM2.5)	Annual Arithmetic Mean	12 ug/m3
Carbon Monoxide (CO)	8-Hour	9 ppm
	1-Hour	20 ppm
Sulfur Dioxide (SO2)	24-Hour	0.04 ppm
	1-Hour	0.25 ppm
Lead	30 Day average	1.5 µg/m3

ppm= part per million, µg/m3= micrograms per cubic meter; Source: CARB 2008.

California Air Resources Board (CARB) Off-Road Recreational Vehicle Emissions Standards Rulemaking

In 1994 the CARB approved new off-highway recreational vehicle regulations (since amended in 1998). The rulemaking established emission standards for OHVs including off-road motorcycles (dirt bikes) and ATVs (CARB 2006). OHV registration became contingent on vehicle compliance to California emissions standards. Dirt bikes and ATVs that meet emission standards are eligible for OHV Green Sticker registration and have a year-round operating period, while noncompliant vehicles fall under the OHV Red Sticker program which has a limited operational season.

Local Regulations

The San Joaquin Valley Air Pollution Control District (Valley Air District) is responsible for implementing and regulating air quality programs for the Madera and Fresno county portions of the SNF. The Valley Air District regulations can be found at: http://www.valleyair.org/index.htm. The Valley Air District has set rules to limit fugitive dust emissions. However, activities conducted at elevation of 3,000 feet or higher above sea level are exempt.

The Mariposa County Air Pollution Control District (APCD) is responsible for implementing and regulating air quality programs for the Mariposa county portion of the SNF. No local regulations related to travel management on the SNF are defined by the Mariposa APCD.

Public Health

Pollutants of Concern

Some of the pollutants regulated under the NAAQ Standards and the CAAS are created by motor vehicles and can cause detrimental effects to public health ecosystems. The air pollutants of concern in this area include particulate matter (PM), ozone (O3) and nitrogen oxides (NOx) and natural occurring asbestos (NOA). PM, O3, NOx, and NOA may pose a threat to human health and forest ecosystems in the SNF and Sierra Nevada. Some locations due to elevation, topography, geology may pose a greater risk than others.

The San Joaquin Valley Air Basin is in non-attainment for O3 and PM. As population and temperature increases in California and particularly in the foothills of the Sierra Nevada mountain range, concentrations of O3, NOx and possibly PM2.5 concentrations are expected to increase.

Particulate Matter (PM)

Particulate matter (PM) in ambient air is composed of complex mixtures of inorganic and organic substances. The mixture is made up of liquid or solid particles suspended in the air. These particles vary in origin, size and composition.

In the regulatory framework PM is divided into fine and coarse particles. Fine particles (PM2.5) are defined as particles with an aerodynamic diameter of less than 2.5 PM. Fine particles are made up of combustion particles and recondensed organic and metal vapors and contain secondarily formed aerosols from gas to particle conversion (Liu and others 2003, Harrison and others 2001, WHO 2003). Coarse particles (PM10) are defined as particles with an aerodynamic diameter between 2.5-10 PM. The coarse particles are mostly composed of crust materials and dust from roads and industries (Liu and others 2003, WHO 2003).

PM comes from a variety of sources. The San Joaquin Valley's sources of PM and PM precursor emissions, coupled with its geography and climate, support the formation and trapping of particulates in the atmosphere. The effects from the resulting PM10 levels in the atmosphere include health hazards to Valley residents (particularly sensitive groups), decreased visibility, and damaged vegetation. Although PM10 levels have decreased substantially in the San Joaquin Valley in the past few years, levels of PM measured in the Valley's atmosphere at some locations still exceed federal standards set to protect public health and welfare. (SJVAPCD, March 2010)

PM10 sources hundreds or even thousands of miles away can contribute to visibility problems at remote locations, such as the Sierra Nevada Mountain Range. Regional haze, haze that impairs visibility in all directions over a large area, consists of sufficient smoke, dust, moisture, and vapor suspended in air to impair visibility. These particles often grow in size as humidity increases,

further impairing visibility. (Valley Air District, March 2010) In the mountains in the west, visual range has decreased from 140 miles to 35-90 miles (EPA, March 2010).

PM HEALTH EFFECTS

Short-term exposure to PM has been associated with negative effects to human health. Long-term exposure to PM is believed to have a much greater impact on human health, but has more uncertainty because less is known about it (Koelemeijer et al. 2006).

There is strong evidence to suggest that PM2.5 is more hazardous to human health than PM10 in terms of cardio pulmonary disease and mortality (WHO 2003).

Ozone

First discovered in the 1840s, O3 was shown to be toxic to animals in the 1870s and to cause crop damage in the 1940s (Caroll et al., 2003). O3 is produced photo chemically by NOx (oxides of nitrogen) and VOC (volatile organic compounds) emissions from combustion engines and from some plants in the Sierra Nevada when coupled with strong sunlight and high temperatures (Murphy et al. 2007). Emissions occur in the foothills of the western Sierra Nevada from a dense population of oak trees, and from pines at a higher elevation (Steiner et al. 2008). O3 exposure in the SNF is higher than in the valley locations (Cisneros and Perez 2007). The increased temperature in this region caused by climate change will create more O3. There are other factors that are important for local O3 production in the central valley, including: large-scale meteorology, mixing depths and transport of O3 formed in other areas such as San Francisco (Steiner et al. 2008).

HEALTH EFFECTS

According to Hayes (1993) a number of health effects have been documented or suspected to occur due to ground level O3 exposure. Some of the effects were: lung function decrements, airway hyper-reactivity, cell damage and lung inflammation. All are known to occur during the exposure of humans to low levels of O3.

EFFECTS ON FORESTS AND ECOSYSTEMS

O3 can also affect forest health and change biodiversity (Bytnerowicz et al. 2002). In the Sierra Nevada Mountains of California atmospheric monitoring suggests that O3 concentration occurs in doses sufficient to damage pines (Bytnerowicz et al. 2002). Most of the significant injuries continue to be evident in the Sierra and Sequoia National Forests. Ozone also affects the production of chlorophyll. Ozone may be toxic to vegetation at concentration greater than 30 to 40 ppb and the severity of plant damage depends on the characteristics and length of exposure as well as abiotic and biotic factors (Bytnerowicz et al. 2002).

NITROGEN OXIDES (NOX)

Nitrogen oxides form when fuel is burned at high temperatures and come principally from motor vehicle exhaust and stationary sources such as electric utilities and industrial boilers. Nitrogen oxides can negatively affect aquatic systems, can affect visibility and are a precursor compound to O3 and to PM2.5.

The primary releases of nitrogen compounds (oxides, ammonium and nitrates) to the air in the natural environment were from microbial activity, lightning and wildfires. The historical levels have almost doubled on a global basis as a result of fossil fuel combustion, animal husbandry practices and fertilization.

EFFECTS ON FORESTS AND ECOSYSTEMS

Nitrogen oxides in the air are a significant contributor to nitrogen deposition which causes a number of environmental effects such as acid rain and eutrophication of lakes. Eutrophication occurs when a body of water suffers an increase in nutrients that reduce the amount of oxygen in the water, producing an environment that is destructive to aquatic life. Even moderate concentrations of NOx and other nitrogen compounds could contribute substantial amounts of deposited nitrogen to the forests affecting their growth, species composition, surface and groundwater quality (Fenn et al. 2003; Bytnerowicz and Fenn 1996; Tarnay et al. 2001).

NITROGEN DIOXIDE (NO2)

Health Effects

Nitrogen dioxide can irritate the lungs and lower resistance to respiratory infections such as influenza.

NATURAL OCCURRING ASBESTOS

Natural Occurring Asbestos (NOA) is a generic term for multiple types of naturally-occurring fibrous minerals distributed throughout California. Although chrysotile is the most common form of asbestos, other types (such as amphibole) are also found in California. Chrysotile asbestos is usually found in serpentine rock and its parent material, ultramafic rock, which is located in abundance in the Sierra Nevada foothills, the Klamath Mountains and Coastal Ranges. Additionally, asbestos is commonly found near fault zones. The quantity of asbestos in serpentine and ultramafic rock ranges from less than 1 percent to about 25 percent and occasionally an even higher concentration is found.

Health Effects of NOA

Asbestos fibers may be released from ultramafic and serpentine rock when the rock is broken or crushed; for example, when cars drive over unpaved roads or when land is graded for development purposes, asbestos can be released. Also, it may be released naturally through weathering and erosion. The long, thin fibers may remain airborne for as long as ten days, posing a human exposure hazard. Ambient atmospheric concentrations of NOA vary greatly depending on proximity to a local source.

Most of the scientific data on health effects of asbestos comes from occupational exposure. The challenge is that people who recreate in the forest will most likely be exposed in an episodic manner to very different concentrations of NOA depending on their activity. How and whether this very different non-occupational exposure pattern may alter disease outcomes and latency periods is unknown due to the uncertainty surrounding NOA and the lack of data.

Over the course of several decades, a vast body of asbestos-related research has been conducted in an attempt to characterize the mechanisms of asbestos and how they may depend upon the specific properties of different fiber types. What conclusions may be drawn from the available data remains the subject of much debate (Vu and Lai 1997). Asbestos is known to cause several forms of respiratory disease including asbestosis, mesothelioma and lung cancer (Smith and Wright 1996; Suzuki et al 2005; Stayner et al 1996). What is less clear, however, is the exposure level(s) at which asbestos poses a significant health risk. Although chronic exposure is a primary factor in the development of asbestos-related diseases and tobacco smoke clearly increases risk, it is likely that other unknown factors are involved as well, since individuals with similar exposures do not universally experience similar health effects.

Climate Change

The climate system is often defined as average weather. The climate system is complex and interactive. Climate is usually described in terms of mean and variability of temperature, precipitation and wind over a period of time. The periods of time, range from months to millions of years. The climate system evolves under its own internal dynamics and external factors that affect climate. External factors include human caused changes in atmospheric composition through the increase of green house gases (GHGs) as well as natural events such as solar variations and volcanic eruptions.

The most important GHGs are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), several synthetic halocarbons (chlorofluorocarbons (CFCs), hydrofluorocarbons, perfuorocarbons, halons and sulphurhexafluoride), H2O (water), O3 (ozone), and aerosols. The most important GHGs related to motor vehicle travel in this project are CO2, CH4, and N2O.

The Environmental Protection Agency (EPA) (2007) developed a "State of Knowledge" paper that outlines what is known, what is very likely and what is uncertain about global climate change.

The following elements are known about climate change: human activities are increasing the levels of GHGs since pre-industrial times thus changing the composition of Earth's atmosphere; the buildup of CO2 and other GHGs are largely due to the burning of fossil fuels; an unequivocal global warming trend of about 1 to 1.7 degrees Fahrenheit occurred from 1906-2005. Green house gases emitted by human activities remain in the atmosphere for periods ranging from decades to centuries, therefore atmospheric concentrations of GHGs will continue to rise over the next few decades; and increasing GHGs concentrations tend to warm the planet.

The following is very likely about climate change: The increase of human caused GHGs concentrations have resulted in most of the observed increase in global average temperatures since the mid-20th century; the average global temperatures and sea levels will continue to rise and precipitation patterns will change as GHGs in the atmosphere continue to rise.

The following is uncertain about climate change: how much and how fast warming will occur; and how warming will affect precipitation patterns and the rest of the climate system.

3.7.2 Affected Environment

Most of the land in the SNF is located in the San Joaquin Valley Air Basin (SJVAB). A small portion of the SNF is located in the Mariposa County which forms part of the Mountain Counties Air Basin. The SJVAB is recognized as one the most polluted areas in the United States. Because of the current situation this area is susceptible to air pollution impacts from different sources. Currently the SJVAB is designated as a non attainment area for O3 and PM2.5 under National and California air quality standards. This has resulted in conservative policies that the Valley Air District uses to protect valley air quality conditions.

The SJVAB is the second largest air basin and represents 16 percent of California's geographic area basin delineated by the CARB. The population in the SJVAB is expected to reach 4.2 million by 2010, 5.3 million by 2020, 6.5 million by 2030 and 7.9 million by 2040 (California Department of Finance 2007).

There are three Class 1 air sheds protected by the Regional Haze Rule near the project area, They are the Ansel Adams (previously Minarets), John Muir, and Kaiser Wildernesses. Air quality and air quality related value monitoring is ongoing. Visibility in the Ansel Adams and John Muir wildernesses has been monitored since 1991.

Intercontinental Transport

Asian dust has a big impact on air quality on high elevation sampling sites in the western United States (Liu et al. 2003). Significant amounts of the Asian aerosols were observed at high elevation mountain location sites in the western United States which includes a site in the SNF (VanCuren and Cahill 2002; VanCuren 2003; Liu et al. 2003). This is an important factor because it constitutes about 10 percent for PM10 and about 9 percent for PM2.5 of CAAQS. Ozone in air arriving from Asia during the spring time (spring time is the season of strongest transport of Asian emissions) has increased by 10 ppbv or 30 percent since the 1980s (Jaffe et al. 2003).

Existing Condition

Currently part of the SNF is located in an area designated as a non-attainment for O3 and PM2.5 under the national and California air quality standards. Fresno, Madera and Mariposa counties are within the Federal non-attainment area for ozone 8 hour. Fresno and Madera counties are within the Federal non-attainment area for PM2.5. A small portion of the SNF currently under attainment is the north part of the forest located in the Mariposa County and regulated by the Mariposa County APCD.

Motor vehicles (including OHV) emit criteria pollutants such as NOx, SO2, CO and volatile organic compounds (VOCs) (Ouren et al. 2007). Both NOx and VOCs are the precursors for the nonattainment pollutant O3. Motor vehicle exhaust and travel on unpaved roads and trails emits particulate matter. Inhalable coarse particles (PM10) are emitted directly from the source (such as soot from engine exhaust, windblown dusts from bare soil and reentrained dust from vehicle travel on unpaved roads). Fine particles (PM2.5) are associated with the products of engine exhaust including the reaction of NOx with ammonia and diesel soot. Inhalable particulate matter poses a serious health hazard, since it can be deposited in the lungs and can cause permanent damage by interfering with the body's mechanism for clearing the respiratory tract or by acting as a carrier of a toxic substance. Dust from motor vehicle use on unpaved surfaces can directly reduce plant photosynthesis near roads and trails by coating needles and leaves (Ouren et al. 2007). PM2.5 is one of the major causes of reduced visibility in the southern Sierra Nevada, including in National Forest Class I wilderness areas (EPA 2007).

Most of the proposed motorized trails and all of the areas are located in igneous intrusive rocks that do not have occurrences of NOA. There are some proposed motorized trails and areas with low potential for NOA to occur within the project boundary. These areas include ultramafic to mafic igneous intrusive rocks and marble bodies mapped within metamorphic roof pendants. No serpentinite or serpentinized igneous bodies are found within the project area. Only low potential NOA rock bodies intersecting routes in alternatives were identified. The Minerals Resource Data System (MRDS) was evaluated to determine the presence of known asbestos at inventoried mines in the project area (USGS, 2005). Two asbestos mine sites were identified in the MRDS database and are near and within the project area. These two mines are known as the Ralph Hill Mine and a reported mine on Kaiser Ridge. No proposed routes are located at these sites. The Kaiser Ridge mine is located in the Kaiser Peak quadrangle, near Sample Meadow Campground. The Ralph Hill mine is located within 300 feet of the SNF boundary, in the Trimmer quadrangle, near Lakeview Campground and Secata ridge in an undifferentiated metasedimentary unit. Several inventoried, unauthorized routes and proposed motorized trails are located in the same geologic map unit as the Ralph Hill Mine (Gallegos and McGuire 2009, Gallegos 2010). Rock samples from the Ralph Hill Mine were collected and sent to a lab to determine presence of asbestos. The results of the lab testing were negative for asbestos (see geology report). No Open Areas, parking or staging areas proposed in any of the action alternatives were found to be located on potential NOA terrain. Five proposed motorized trails including OHV routes ZZ25, ZZ26, TH-20w, TH-

28z, and TH-29z have been field reviewed and determined to not have NOA along the routes. Therefore, these routes are no longer a concern for potential NOA.

3.7.3 Environmental Consequences

Impacts to Air Quality

The effects of the alternatives are analyzed to determine the potential for public motor vehicle travel to cause or contribute to violations of NAAQs, for degradation of air quality, affect Class I areas or to cause or contribute to visibility impairment beyond the existing conditions. Air quality impacts would be considered significant if they are expected to cause or contribute to an air quality violation in a non-attainment or maintenance area. However, if total direct and indirect project emissions fall below designated applicability threshold levels established under the Conformity Rule, no adverse change in attainment status is expected.

Effects Common to All Alternatives

Direct and Indirect Effects

Based on the four actions 1) prohibition or continued cross-country motor vehicle use, 2) additions to the NFTS, 3) changes to the NFTS, and 4) non-significant LRMP amendments, the number of vehicle miles traveled annually by forest users is not expected to change in any of the alternatives through the prohibition of cross-country travel and the redirection of motor vehicle use onto a designated system of roads, trails and areas.

A summary of proposed additions to the NFTS for Alternatives 2, 3, 4 and 5 is listed below in Table 3- 48. Some of the miles added will require mitigation and/or design feature work. Under Alternative 1, 605,000 acres of SNF lands would remain open to motorized cross-country travel. NFTS road and trail miles and acres of areas will increase under Alternatives 2, 4 and 5; no additional miles or acres of NFTS would be made available in Alternative 3. Releases of PM10/PM2.5 into the environment occur from motor vehicle travel on NFTS roads and trails and from some associated prescriptive actions. Tailpipe emissions from motorized equipment will produce criteria pollutants such as CO, as well as the precursor gases for O3 and PM2.5.

No new visits per year are projected under each of the action alternatives. Thus it will not affect the number of vehicle miles traveled (VMT) annually within the study area.

Table 3- 48. Proposed Additional NFTS Miles per Alternative

	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Additional miles (roads and trails) available for motorized use	44	0	51	85

Criteria pollutant emissions from recreational vehicle use (which includes both engine exhaust and fugitive dust) are expected to stay the same for all action alternatives.

Mitigation and design feature activities will include road and trail bed work using heavy equipment and fencing or blocking of some unauthorized routes. The use of heavy equipment and worker vehicles will produce exhaust emissions, while travel on unpaved roads will produce fugitive dust. Insignificant increases in short-term, localized emissions will occur under each action alternative during these activities.

Because the criteria pollutant emissions are projected to remain the same as current conditions under all alternatives there will be no increase in emissions due to the project. Therefore the project is below the de minimis levels and is exempt from the requirement to perform a conformity determination.

Cumulative Effects

Potential cumulative impacts of the proposed project in conjunction with other past, present or reasonably foreseeable probable actions are the focus of this section. The actions analyzed for potential cumulative impacts include activities listed in Appendix E. The project is expected to have limited cumulative impacts to air quality. Road and trail maintenance will create small localized, temporary increases in fugitive dust and emissions from motorized equipment. Overall, Alternatives 1 through 5 will not impact air quality since the implementation of any alternative will not change the amount of vehicle miles traveled.

CO2, CH4 and N20 emissions generated by public motor vehicle travel on NFTS facilities are expected to contribute to the global concentration of greenhouse gases that affect climate change. The intensity and severity of these effects are expected to vary regionally and even locally, making any discussion of potential site-specific effects of global climate change on forest resources speculative.

Because GHGs from vehicle emissions mix readily into the global pool of GHGs, it is not currently possible to discern the effects of this project from the effects of all other GHG sources worldwide, nor is it expected that attempting to do so would provide a practical or meaningful analysis of project effects. Potential regional and local variability in climate change effects add to the uncertainty regarding the actual intensity of this project's effects on global climate change. Further, emissions associated with this project are extremely small in the global atmospheric CO2 context, making it impossible to measure the incremental cumulative impact on global climate from emission associated with this project. In summary, the potential for cumulative effects is considered negligible for all alternatives because none of the alternatives would result in measurable direct and indirect effects on air quality or global climatic patterns.

Impacts to Public Health from Natural Occurring Asbestos

Direct, Indirect and Cumulative Effects

Alternative 1

Continued use and proliferation of the unauthorized routes that are underlain with potential NOA terrain would be open and available for motor vehicle travel. There is a low potential for NOA to occur in the project area and along these routes, because NOA is known to occasionally occur in similar geology. If NOA is present along any of these routes, it will occur in short, discrete sections along the routes. The exposure of NOA to the public will be minimal if at all, therefore the public health risk is low to no risk from NOA. See Table 3- 49 and Table 3- 50 for a summary of proposed trails with potential NOA by alternative and a list of proposed motorized trails.

Alternative 2, 4 and 5

Twelve motorized trails proposed in Alternatives 2, 4 and 5 are identified as having a low potential for NOA (see Table 3- 50). There is a low potential for NOA to occur in the project area and along the twelve proposed motorized trails. If NOA is present along any of these proposed trails, it will occur in short, discrete sections along the trails. The exposure of NOA to the public will be minimal. These twelve proposed motorized trails will have a level 1 geologic

assessment for Natural Occurring Asbestos (NOA), prior to being added to the NFTS. If any of these routes are found to have NOA on or adjacent to the trail, mitigation and a human health assessment will be conducted prior to adding to the NFTS. Alternatives 2, 4 and 5 have eight proposed motorized trails with potential NOA that total 2.9 miles, 3.4 miles, and 3.4 miles, respectively.

Alternative 3

There will no direct, indirect or cumulative effects to public health from exposure to NOA because there are no proposed additions to the NFTS and cross-country travel will be banned.

Table 3- 49. Summary of Inventoried, Unauthorized Routes in Potential NOA Terrain

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Number of Routes in potential NOA terrain	152	8	0	8	8
Miles	43.2	2.9	0	3.4	3.4

Table 3- 50. Unauthorized Routes Located in Potential NOA Terrain, by Alternative

Route	Length	Alt 2	Alt 4	Alt 5
KD-219	0.29	Y	Y	Y
KD-220	0.05	Y	Y	Y
TH-145z	0.34		Y	Y
TH-146z	0.04		Y	Y
TH-3y	0.79		Y	Y
TH-41y	0.65	Y	Y	Y
TH-67y	1.08	Y	Y	Y
TH-7y	0.19		Y	Y
KD-197	0.10	Y		
KD-218	0.05	Y		
TH-25w	0.25	Y		
TH-97	0.43	Y		