

Chapter 3: Affected Environment and Environmental Consequences

Introduction

This chapter summarizes the physical, biological, social, and economic environments that are affected by the proposed action and alternatives (“Affected Environment”) and the effects on that environment that would result from implementation of any of the alternatives (“Environmental Consequences”). This chapter also presents the scientific and analytical basis for comparison of the alternatives presented in “Chapter 2: The Alternatives.” The environmental consequences discussion centers on direct, indirect, and cumulative effects, along with applicable mitigation measures. These terms are defined as follows:

- **Direct effects** are caused by the action and occur at the same place and time as the action.
- **Indirect effects** are caused by the action and are later in time, or further removed in distance, but are still reasonably foreseeable.
- **Cumulative effects** are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

Analysis Process

The environmental consequences presented in Chapter 3 address the impacts of the actions proposed under each alternative for the TNF. This effects analysis was done at the site-specific and forest scales (the scale of the proposed action as discussed in Chapter 1). Each affected road, trail, and area proposed in the alternatives has been reviewed by resource specialists. These findings are summarized in Appendix A (Site Specific Road, Trail and Open Area Information). Readers seeking information concerning the environmental effects associated with a specific road, trail, or area are directed to this Appendix, where details concerning any mitigation measures or any other findings are documented.

For ease of documentation and understanding, the effects of the alternatives are described separately for three discrete actions and then combined to provide the total direct and indirect effects of each alternative (see below). The combination of the effects of these discrete actions is then added to effects of the past, present, and reasonably foreseeable actions in the cumulative effects analysis. The five discrete actions common to all action alternatives are:

Cross Country Travel: All of the action alternatives prohibit wheeled motor vehicle travel off designated NFTS roads, NFTS motorized trails, and areas by the public except as allowed by permit or other authorization. Prohibition of cross country travel is included in order to address the need to regulate unmanaged motor vehicle use.

Additions to the NFTS: Some action alternatives would add unauthorized routes as roads and trails to the NFTS by vehicle class and season of use. Additions are considered in order to respond to the need to provide motor vehicle access to dispersed recreation opportunities and to provide a diversity of motorized recreation opportunities. For purposes of this analysis, each of these roads and trails is identified by a unique number. Resource specialists conducted their site specific review of each proposed

route. All road additions have a proposed road management objective (RMO). All proposed additions would receive the appropriate level of routine maintenance such as brushing, signing, cleaning and clearing debris. For some routes, no work beyond routine maintenance would be needed. For others, additional mitigation would be needed to bring the route up to a safe and environmentally sustainable condition. The specific mitigations must be completed prior to designation of the route on the MVUM for public motorized use. All proposed route additions have assigned road or trail management objectives. Appendix A shows the specified vehicle class, season of use and mitigations for all proposed route additions. Additional details on each route are contained in the Project Record.

Establishment of Motorized “Open Areas”: Some action alternatives would establish motorized “Open Areas” by vehicle class and season of use. Establishments are considered in order to respond to the need to provide motor vehicle access to dispersed recreation opportunities and to provide a diversity of motorized recreation opportunities. For purposes of this analysis, each of these established “Open Areas” is identified by name. Resource specialists conducted their site specific review of each proposed “Open Area.” All established “Open Areas” would receive the appropriate level of routine maintenance such as brushing, signing, cleaning and clearing debris. For some “Open Areas”, no work beyond routine maintenance would be needed. For others, additional mitigation is needed to bring the route up to a safe and environmentally sustainable condition. The specific mitigations must be completed prior to establishment of the “Open Area” on the MVUM for public motorized use. Appendix A shows the specified vehicle class, season of use and mitigations for all proposed established “Open Areas.” Additional details on each “Open Area” are contained in the Project Record.

Changes to the NFTS: Changes to the existing NFTS include Vehicle Class, Season of Use and Reopening Maintenance Level 1 roads.

Vehicle class - The action alternatives may include limited changes to the vehicle class allowed on existing NFTS roads and/or trails. Vehicle class indicates the type of vehicle (passenger car, motorcycle, all-terrain vehicle, etc) allowed to operate on a road or trail. Some alternatives add vehicle classes to roads and/or trails where that use is currently prohibited. Some alternatives add vehicle classes resulting from changes in maintenance levels. These changes respond to the need to provide a diversity of wheeled motorized recreation opportunities and access.

Season of Use - The action alternatives vary in terms of which roads, trails and areas would have motorized travel prohibited during specified times of year. Wet weather seasonal restrictions are specified in some of the alternatives to minimize erosion and protect water quality.

Reopening Maintenance Level 1 Roads - Some alternatives include opening Maintenance Level 1 roads to public use where such use is currently prohibited to enhance motorized recreation opportunities. These changes respond to the need to provide a diversity of wheeled motorized recreation opportunities and access. Appendix A (Site Specific Road, Trail and Open Area Information) shows the specified vehicle class, season of use and mitigations for all proposed changes to the existing NFTS.

Amendments to the Forest Plan: Some of the action Alternatives include an amendment to The Tahoe National Forest Land and Resource Management Plan (LRMP) to remove the November 1 to May

1 seasonal closure in the Sugar Pine area (Management Area 84 Humbug Sailor) on key winter deer range to improve motorized recreation opportunities.

Cumulative Effects

According to the Council on Environmental Quality (CEQ) NEPA regulations, “cumulative impact” is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions (40 CFR 1508.7).

The cumulative effects analysis area is described under each resource, but in most cases includes the entire TNF including private and other public lands that lie within the Forest boundary. Past activities are considered part of the existing condition and are discussed in the “Affected Environment (Existing Conditions)” and “Environmental Consequences” section under each resource.

In order to understand the contribution of past actions to the cumulative effects of the proposed action and alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects.

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a catalog and analysis of all past actions would be impractical to compile and unduly costly to obtain. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one can not reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human action risks ignore the important residual effects of past natural events, which may contribute to cumulative effects just as much as human action. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects. Third, public scoping for this project did not identify any public interest or need for detailed information on individual past actions. Finally, the Council on Environmental Quality issued an interpretive memorandum on June 24, 2005 regarding analysis of past actions, which states, “agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.” Past actions are treated similarly in the recently published Forest Service Regulations for implementing the National Environmental Policy Act (36 CFR 220). For these reasons, the analysis of past actions in this section is based on current environmental conditions.

Appendix H (Reasonably Foreseeable Projects and Cumulative Effects) lists present and reasonably foreseeable future actions potentially contributing to cumulative effects. While the appendix lists all

actions, every resource is not affected by every action. For example, a future project may affect wildlife but not affect water quality. Appendix H indicates which resources are potentially affected by each action.

In addition to considering the effects of this proposal on other lands, this EIS considers the likely effects on lands administered by the Forest Service from past, ongoing, and reasonably foreseeable management actions occurring on other forest lands. Management of other lands could directly affect terrestrial and aquatic wildlife species that move between ownerships during the year or during their life cycle. The possible contribution of management actions on other lands has been considered in analyzing the effects of the alternatives on species and habitats that are not confined to national forests. This information is presented in this chapter, which describes likely environmental consequences of the alternatives.

Affected Environment Overview _____

There are many aspects of the affected environment that are shared by all resources. In order to avoid repeating these shared elements of the affected environment in each resource section, the following general elements of the affected environment are provided.

Unmanaged OHV use has resulted in unplanned roads and trails, erosion, watershed and habitat degradation, and impacts to cultural resource sites. On some Tahoe National Forest System (NFS) lands, long managed as open to cross-country motor vehicle travel, repeated use has resulted in unplanned, unauthorized roads and trails. These routes generally developed without environmental analysis or public involvement, and do not have the same status as NFTS roads and NFTS trails included in the forest transportation system.

On October 26, 2007, a temporary forest order was implemented which prohibited travel off of existing routes shown on a forest order exhibit map. The order was established for a period not to exceed one year to protect resources and help prevent additional user-created routes from being established while the TNF undertook implementation of the Travel Management Rule and the production of their Motor Vehicle Use Map (MVUM). This Forest Order was reissued for an additional year on July 13, 2009.

Appendix A (Site Specific Road, Trail and Open Area Information)

Appendix A lists each road, trail and “Open Area” proposed for addition to the NFTS and identifies the alternative(s) under which the route is proposed, the type of vehicle(s) allowed, and the season when the route would be open. In addition, Appendix A identifies any resource concerns and necessary mitigation measures.

Law Enforcement _____

Law enforcement authority and jurisdiction, cooperation, implementation and tracking, implementation strategy, assumptions and measures of success are discussed in detail in Appendix K (Law Enforcement).

Law Enforcement Assumptions Common to Effects Analysis:

- Enforcement of the laws and regulations related to Travel Management will be enforced equally in authority and weight as with all other Federal laws and regulations.
- As with any change in a regulation on NFS lands, there is usually a transitional period for the public to understand the changes. It is anticipated there will be a higher number of violations to the Travel Management Rule the first few years and the number of violations will decline as the users understand and comply with the rules.
- Once the motor use vehicle map is published, the implementation of the established dedicated network of roads, trails, and areas with signs, and user education programs, will reduce the number of violations.
- Providing motorized recreation opportunities in popular, key areas will help relieve pressure to travel off of designated routes.

Climate Change

The Environmental Protection Agency (EPA) (2007) developed a “State of Knowledge” paper that outlines what is known and what is uncertain about global climate change. The following elements of climate change are known with near certainty:

- Human activities are changing the composition of Earth’s atmosphere. Increasing levels of greenhouse gases like carbon dioxide (CO₂) in the atmosphere since pre-industrial times are well-documented and understood.
- The atmospheric buildup of CO₂ and other greenhouse gases is largely the result of human activities such as the burning of fossil fuels.
- An “unequivocal” warming trend of about 1.0 to 1.7 F occurred from 1906-2005. Warming occurred in both the Northern and Southern Hemispheres and over the oceans (IPCC, 2007).
- The major greenhouse gases emitted by human activities remain in the atmosphere for periods ranging from decades to centuries. It is therefore virtually certain that atmospheric concentrations of greenhouse gases will continue to rise over the next few decades.
- Increasing greenhouse gas concentrations tend to warm the planet.

According to EPA (2007), however, it is uncertain how much warming will occur, how fast that warming will occur, and how the warming will affect the rest of the climate system including precipitation patterns. Given what is and is not known about global climate change, the following discussion outlines the cumulative effects of this project on greenhouse gas emissions and effects of climate change on forest resources.

Carbon Dioxide (CO₂), Methane (CH₄) and Nitrous Oxide (N₂O) emissions generated by public motorized vehicle travel on NFTS facilities are expected to contribute to the global concentration of greenhouse gases that affect climate change. Projected climate change impacts include air temperature increases, sea level rise, changes in the timing, location, and quantity of precipitation, and increased frequency of extreme weather events such as heat waves, droughts, and floods. 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 greenhouse gases from vehicle emissions mix readily into the global pool of greenhouse gases, it is not currently possible to discern the effects of this project from the effects of all other greenhouse gas 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.

Short Term Uses and Long Term Productivity _____

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). As declared by the Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

Alternatives 3, 4, 7, 6, 2 and 5 respectively from most to least, all have the potential to improve the long-term productivity by reducing the number of existing routes on the landscape. Routes that are not designated for public motor vehicle use will have the potential to revert to vegetated conditions, which will reduce many of the adverse effects related to these routes.

Unavoidable Adverse Effects _____

Implementation of any of the alternatives would result in some unavoidable adverse environmental effects. Although formation of the alternatives included avoidance of some potential adverse effects, some adverse effects could occur that cannot be completely mitigated. The environmental consequences section for each resource area discusses these effects.

Irreversible and Irretrievable Commitments of Resources _____

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road.

It is not anticipated that designating, or not designating, some existing NFS and unauthorized routes for public motor vehicle use would cause an irreversible or irretrievable commitment of resources.

Incomplete and Unavailable Information _____

The Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) describes how Federal agencies must handle instances where information relevant to evaluating reasonably foreseeable adverse impacts of the alternatives is incomplete or unavailable.

Federal agencies must make clear that such information is lacking, and decide whether this incomplete or unavailable information is “essential to a reasoned choice among alternatives” (Title 40 of the Code of Federal Regulations, 40 CFR, Part 1502.22). If the information is deemed essential to a reasoned choice among the alternatives, it must be included or addressed in the environmental impact statement.

Incomplete or unavailable information is made clear in sections titled Assumptions and Limitations so the reader understands how unavailable information was addressed. The EIS summarizes existing credible scientific evidence relative to environmental effects and makes estimates of effects on theoretical approaches or research methods generally accepted in the scientific community.

Knowledge about the biological, physical, and social aspects of ecosystems is, and always will be, incomplete. The ecology, inventory, and management of large landscapes are complex and constantly changing. For example, analysis of the impacts of alternatives on specific plant or animal species prompts questions about population dynamics and habitat relationships. Key relationships and basic data are well established for only a few Tahoe National Forest ecosystems and species. The alternatives were analyzed using the best available information. As data gaps were encountered during analysis, the interdisciplinary team posed the question of whether the missing information was “essential to a reasoned choice among alternatives.” The team concluded that while new information could add precision to estimates or better specify relationships; it would be unlikely to significantly change our understanding of the basic relationships that were used to analyze the effects of the alternatives. New information is always welcome, but no missing information was deemed essential to making a reasoned choice among the alternatives being considered in this EIS. In some instances, information was unavailable to confidently estimate environmental effects; the text indicates that this information is incomplete or unavailable. In such situations, the EIS summarizes existing credible scientific evidence relative to the significant effects and makes estimates of effects on theoretical approaches or research methods generally accepted in the scientific community.

Other Required Disclosures _____

National Environmental Policy Act of 1969: NEPA at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with ...other environmental review laws and executive orders.”

This EIS has been prepared in accordance with the following regulations:

National Historic Preservation Act (NHPA) of 1966: Section 106 of the NHPA of 1966 requires federal agencies to consider the potential effects of a Preferred Alternative on historic, architectural, or

archaeological resources that are eligible for inclusion on the National Register of Historic Places and to afford the President's Advisory Council on Historic Preservation an opportunity to comment. Section 110 of the Act requires federal agencies to identify, evaluate, inventory, and protect National Register of Historic Places resources on properties they control. Potential impacts to archaeological and historic resources have been evaluated in compliance with Section 106 of the NHPA.

Executive Order 11644 ORV Management: Executive Order 11644 – Use of Off-Road Vehicles on Public Lands (issued February 8, 1972) – provides for the establishment of policies and procedures that will ensure that the use of OHVs on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands. Agency heads are directed to provide for administrative designations of the specific areas and trails on public lands on which the use of OHVs may be permitted, and areas in which the use of OHVs may not be permitted.

Executive Order 11989 ORV Management: Executive Order 11989 – Use of Off-Road Vehicles on Public Lands (issued May 24, 1977) – clarifies agency authority to define zones of use by OHVs on public lands. Agency heads, when they determine that the use of OHVs will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat, or cultural or historic resources to immediately close such areas or trails to the type of OHV causing such effects, until such time that it is determined that such adverse effects have been eliminated and that measures have been implemented to prevent further recurrences.

Executive Order 12898 Environmental Justice: Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (issued February 11, 1994) – requires that each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high or adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. None of the alternatives disproportionately affect minority and low-income populations.

Clean Water Act: The Clean Water Act, as amended, regulates the dredging and filling of freshwater and coastal wetlands. Section 404 (33 USC 1344) of the Clean Water Act prohibits the discharge of dredged or fill material into waters (including wetlands) of the United States without first obtaining a permit from the U.S. Army Corps of Engineers. Wetlands are regulated in accordance with federal Non-Tidal Wetlands Regulations (Sections 401 and 404). No dredging or filling is part of this proposed action and no permits are required.

Clean Air Act of 1970: The Clean Air Act of 1970 and its amendments provide for the protection and enhancement of the nation's air resources. No exceeding of the federal and state ambient air quality standards is expected to result from any of the alternatives.

Endangered Species Act (ESA) of 1973: The Endangered Species Act of 1973 (16 USC 1531 et seq.) requires that any action authorized by a federal agency not be likely to jeopardize the continued existence of a threatened or endangered species, or result in the destruction or adverse modification of habitat of such species that is determined to be critical. Section 7 of the ESA, as amended, requires the responsible federal agency to consult the USFWS and the National Marine Fisheries Service concerning

endangered and threatened species under their jurisdiction. Biological evaluations for Proposed, Endangered, Threatened, and Sensitive (PETS) species have been prepared for the proposed action and informal consultation with the USFWS is ongoing.

National Forest Management Act (NFMA) of 1976: The National Forest Management Act of 1976 amends the Forest and Rangeland Renewable Resources Planning Act of 1974 and sets forth the requirements for Land and Resource Management Plans (Forest Plans) for the National Forest System. The alternatives are consistent with the NFMA.

