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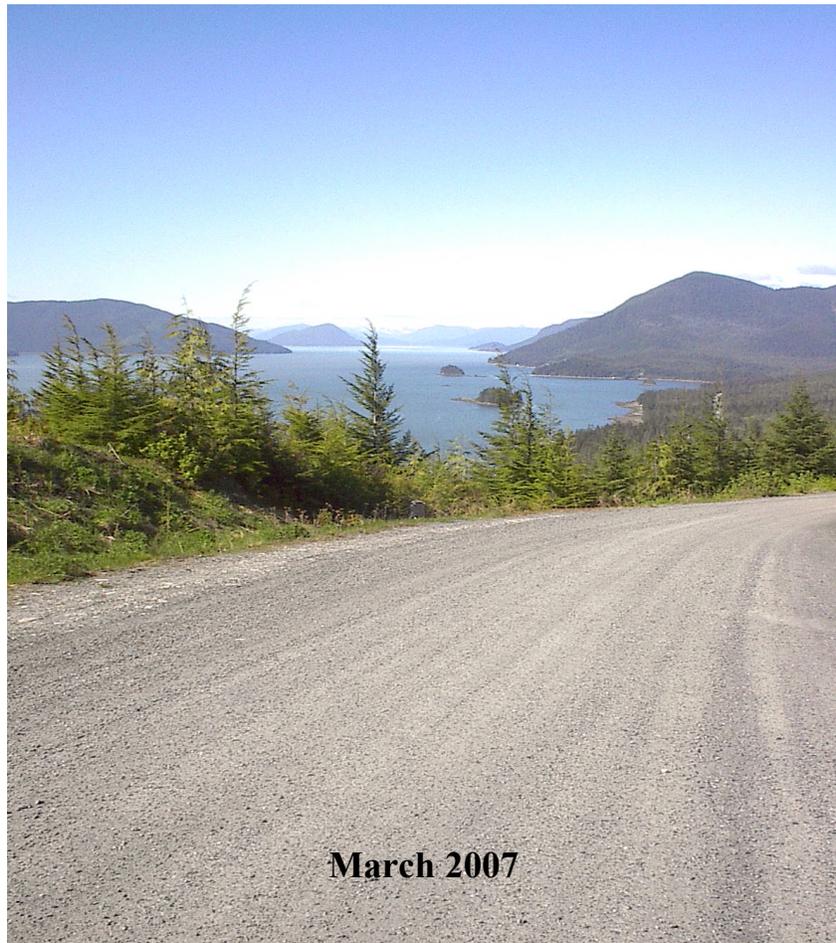
Forest Service

Tongass National Forest
Wrangell Ranger District



Wrangell Ranger District

Access And Travel Management Plan Environmental Assessment



March 2007

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CHAPTER 1 — PURPOSE AND NEED

1.1 INTRODUCTION

This Access and Travel Management Plan (ATMP) Environmental Assessment (EA) was prepared to evaluate management of the National Forest System (NFS) roads in the Wrangell Ranger District (WRD). This analysis complies with the provisions of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, the National Forest Management Act (NFMA), and other relevant federal and state laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts that may result from the proposed action and alternatives. Public comments, resource concerns, and present and future access needs were considered in this analysis. The information in this EA will be used to decide on a course of action for the proposed project.

The proposed action is based on the recommended road system developed in two Roads Analysis (RA). The WRD initiated access and travel management planning by conducting the Zarembo Island RA (USFS 2005a) and the WRD (excluding Zarembo Island) RA (USFS 2006a). The RAs provided an assessment of the extent and condition of the existing roads in the WRD, compared the current road system with the desired future condition for the Tongass National Forest (TNF; the Forest), and identified recommendations for meeting those goals. Appendix A in each of these RA documents presents details of the existing roads, and Appendix C in each of these documents presents details of the recommended road system. In addition to U.S. Forest Service (USFS) internal scoping, the WRD conducted public scoping for these RAs and for this EA to identify issues related to the road system. Recommendations documented in the RAs, supplemented by the input from public comment, led to the proposed action developed for this ATMP EA.

The Tongass Land and Resource Management Plan (TLMP) (USFS 1997a) identifies the parameters of motorized access and resource protection considered in this analysis. Additional documentation, including more detailed analyses of project area resources, is on file in the project planning record located at the WRD office in Wrangell, Alaska. A list of acronyms and a glossary of terms are provided in **Appendices A and B**, respectively.

1.2 PROJECT AREA DESCRIPTION

The project area is the WRD of the TNF, which is located in the south-central portion of the Alexander Archipelago of Southeast Alaska. The WRD borders Canada on the east; to the south is Ketchikan Ranger District and Misty Fjords National Monument Wilderness; to the west is Prince of Wales Island; and to the north is Petersburg Ranger District and Mitkof Island (**Figure 1**). The WRD includes a portion of mainland that connects to Canada and numerous islands separated by sea channels and straits. The main islands in the district include Wrangell, Etolin, Zarembo, Woronkofski, Rynda, Kadin, Greys, Lesnoi, Sokolof, Vank, Bushy, Shrubby, and Deer. The straits include Sumner, Stikine, Clarence, Zimovia, Chichagof Pass, and Snow Pass.

Residents of Wrangell, Petersburg, and surrounding communities and tourists are the users of the district land and resources. The WRD provides resources that support many uses, including recreation, subsistence, timber harvest, commercial fishing, and tourism. Maintaining these resources while also providing opportunities for their use is a concern for the USFS and the public.

Figure 1 Project Area

1.3 CURRENT NATIONAL FOREST SYSTEM ROADS

Within the project area, there are roads on the mainland around Frosty Bay and on Wrangell, Etolin, Woronkofski, Sokolof, Rynda, Bushy, Shrubby, and Zarembo Islands. Travel between land masses is by aircraft or by water. The 18 Marine Access Points (MAPs) are important features that connect NFS roads and allow public access to TNF lands. The existing roads were built primarily for timber management with log transfer facilities (LTFs) located at the MAPs. Most of the roads were built between the 1960s and 1980s.

Currently, there are 320 miles of NFS roads in the project area, shown in **Table 1-1** by location. NFS roads are broken down by maintenance level. Detailed definitions of each maintenance level are provided in the glossary, and are summarized below.

- Maintenance Level 5 – Double-lane paved road
- Maintenance Level 4 – Single-lane paved or dust abated roads
- Maintenance Level 3 – Open to low-clearance vehicles such as passenger cars
- Maintenance Level 2 – Open to high-clearance vehicles (HIC) and off-highway vehicles (OHV)
- Maintenance Level 1 – Closed to motorized traffic

There are approximately 0.1 mile of maintenance level (ML) 5 road in the project area and 0.0 miles of ML 4 roads. There are 180.2 miles of ML 3, 96.2 miles of ML 2, and 43.5 miles of ML 1 roads. The focus of this EA is the NFS roads with a ML of 1, 2, or 3 within the project area. This includes ten existing roads (5.68 miles of road) that are not currently in the NFS. These roads were recommended to be added to the NFS by the two RAs.

Other roads in the project area include non-system roads, such as state and municipal roads, and temporary roads. On the WRD, temporary roads (145.3 miles) were typically constructed to provide access between NFS roads and timber harvest units. Except for a few cases, these roads have been decommissioned. State and municipal roads total 34.7 miles and are shown on the maps because they provide connectivity to NFS roads; however, these roads are not analyzed in detail in the EA. The Mill Creek Trail on the mainland is discussed in this EA because it allows motorized access by OHVs.

Table 1-1 Current Road System by Location and OPML¹ (miles)

Location	ML5	ML3	ML2	ML1	No ML ²	Total
Bushy Island		3.6			0.4	4.0
Etolin Island		11.9	51.5	3.5	14.2	81.1
Frosty Bay		12.5			5.4	17.9
Rynda Island		2.3			0.3	2.6
Shrubby Island			6.2		10.7	16.9
Sokolof Island					4.5	4.5
Woronkofski Island					4.7	4.7
Wrangell Island	0.1	64.4	33.6	6.7	37.5	142.3
Zarembo Island		85.5	4.9	33.3	67.6	191.3
Total	0.1	180.2	96.2	43.5	145.3	465.3

1. OBML - Objective Maintenance Level (OBML)

2. These were built as temporary roads; most are now decommissioned.

Rounding accounts for slight variation in values.

There are 3.6 miles of ML 3 roads on Bushy Island (**Figure 2, in map pocket**). These ML 3 roads include three segments that originate from a MAP on the southwestern side of the island and allow access to the interior. The roads are used for recreation, subsistence, and timber production.

There are 66.9 miles of NFS roads on Etolin Island (**Figure 2, in map pocket**), with the majority being ML 2. The road system was constructed primarily for timber transportation needs but is also used for recreation and subsistence. Hunters transport motorized vehicles to the island. The road system is in the northern portion of the island because the southern portion of Etolin is a designated wilderness area. There are four MAPs on Etolin Island, two in Anita Bay and two off Zimovia Strait, all on the east side near Wrangell Island. From the MAPs, roads lead to the interior and to the west side of the island. The Olive Cove roads are accessed from the Olive Cove MAP, and the King George roads are accessed from the Honeymoon MAP. The remaining roads are accessed from the two MAPs in Anita Bay.

The Frosty Bay roads (**Figure 2, in map pocket**) are the only NFS roads on the mainland analyzed in this EA. Frosty Bay is located in the southeast region of the WRD, east of Deer Island, and east of Ernest Sound. One MAP is at Frosty Bay, and there are 12.5 miles of ML 3 roads that go inland to access timber stands. The roads are primarily used for silvicultural activities.

There are 2.3 miles of ML 3 road on Rynda Island (**Figure 2, in map pocket**). The road begins at a MAP on the southwest side of the island and parallels the coast to the north. Rynda Island is in the Scenic Viewshed Land Use Designation (LUD). The road system was constructed and primarily used for timber management. Recreation is now a secondary use.

There are 6.2 miles of ML 2 roads on Shrubby Island (**Figure 2, in map pocket**). There is an additional 10.8 miles of roads on the island that are decommissioned. One MAP is located on the north side of the island. Roads spread out to cover most of the island from this point. The roads are used for timber management, recreation, and subsistence.

There are 4.5 miles of decommissioned roads on Sokolof Island (**Figure 2, in map pocket**). There are no NFS roads. There is one MAP on the island. The entire island is in the Scenic Viewshed LUD. The roads cross the island from east to west with small spurs accessing interior regions to the north and south.

There are 4.7 miles of decommissioned roads on Woronkofski Island (**Figure 2, in map pocket**) with no NFS roads. There is one MAP located on the northwest side of the island. The island is mostly in the Scenic Viewshed LUD with a small area of Old-Growth LUD.

Wrangell Island (**Figure 2, in map pocket**) has an extensive road system with 104.8 miles of NFS roads, most of which are ML 3. There are five MAPs on the west, north, and east sides of the island. The road system connects to the MAPs and loops around the island. A popular loop road is the Nemo Loop. There are several developed recreation sites along the loop, as well as walking trails and saltwater access. The road is popular as a route for sightseeing and driving for pleasure. The road system is used for subsistence, recreation, and timber management. The NFS roads connect to the state highway along the west side of the island and to municipal roads around the City of Wrangell.

There are 123.7 miles of NFS roads on Zarembo Island (**Figure 2, in map pocket**), most are ML 3. Zarembo's roads cover a large portion of the island. There are three MAPs which connect to a loop road around the northern half of the island. There are two main spurs off the loop road that head south to the southern portions of the island. The roads are used for recreation, subsistence, and timber management.

1.3.1 Land Use

The TLMP assigns specific management direction through Land Use Designations (LUDs). The roads in the project area are located in five LUDs: Modified Landscape, Non-National Forest, Old-Growth Habitat, Scenic Viewshed, and Timber Production. **Table 1-2** shows the miles of roads in each LUD for all roads in the project area (not including state and municipal roads). Most of the roads are in the Timber Production LUD, reflecting the need for access to timber stands. The TLMP (USFS 1997a) designations and guidelines for these LUDs helped to determine the proposed action for this EA.

Table 1-2 Current Road System, Miles of NFS Roads by LUD

LUD	Miles of Roads*
Modified Landscape	37.5
Non-National Forest	24.4
Old-Growth Habitat	43.9
Scenic Viewshed	58.7
Timber Production	155.3
Total	319.8

* Miles of ML 1, ML 2, and ML 3 roads.
Rounding accounts for slight variation in values.

Modified Landscape: Develop and manage cost-effective transportation systems which integrate resource requirements consistent with LUD direction. To meet the Visual Quality Objectives (VQOs), give special consideration to minimizing apparent landform modification during road and LTF location, design, and construction. Give special emphasis to maintaining fish and wildlife habitat values, especially during road location and development of road management objectives. Provide recreation access where appropriate. Seek to avoid road crossings on existing trails or locating roads parallel to trails.

Non-National Forest: TLMP guidelines and standards do not apply to Non-National Forest lands.

Old-Growth Habitat: New road construction is generally inconsistent with this LUD, but new roads may be constructed if no feasible alternative is available. Existing roads should be managed to meet the LUD objectives. Sites for LTFs may be considered in this LUD. If there are no other feasible alternative sites, locate, design, construct, and manage these LTFs in a manner that is compatible with LUD objectives.

Scenic Viewshed: Cost-effective transportation systems that integrate resource requirements consistent with LUD direction may be developed and managed. To meet the VQOs, special consideration should be given to minimizing apparent landform modification (as seen from sensitive travel routes) during road and LTF location, design, and construction. Recreational access may be provided where appropriate. Road crossings on existing trails or location of roads parallel to trails should be avoided.

Timber Production: Cost-effective transportation systems that integrate resource requirements consistent with LUD direction may be developed and managed. Future recreational access should be considered when locating and designing roads. Road crossings on existing trails or location of roads parallel to trails should be avoided.

1.3.2 Other Planning Efforts

The road system analyzed in this EA also includes 36.1 miles located on Zarembo Island for the purposes of accessing the Skipping Cow and Baht timber sales. The Baht timber sale is proposed on Zarembo Island (USFS 2006b). Roughly 21 miles of potential road construction are proposed at this time. The roads reported in this document are those reported in the Zarembo RA. The proposed Skipping Cow and Baht roads would be in two LUDs: Scenic Viewshed and Timber Production.

No other project plans are known in sufficient detail to allow discussion of potential new road construction. Other proposed roads in the WRD include the Canal-Hoya and Madan roads. These roads have been approved through the NEPA process, but are not included in this analysis due to the strong possibility of changes anticipated because of sale economics. Both of these NEPA documents are currently in litigation. The Bradfield roads will be studied in their own NEPA process and are not included in this analysis. The Navy project on Etolin Island could affect the use of roads on that island and is in the NEPA process. Future projects may include additional timber sales, mineral exploration, or mineral development. Non-National Forest lands may also be developed for residential, recreational, or commercial use, which may include use of existing roads or construction of new roads.

1.4 PURPOSE AND NEED FOR ACTION

The road system in the WRD is essential for forest management and provides access for commodity production, subsistence, recreation, and other uses. The road system needs to be safe and responsive to public needs and desires, be affordable and efficiently managed, have minimal negative environmental effects on the land and other natural resources, and be in balance with available funding. The WRD is assessing the NFS road management practices because of growing resource concerns, changing patterns of road usage, and decreasing funds for road maintenance. The ATMP that is determined through a decision on this EA will provide a forest transportation system that best serves the current and anticipated management objectives and public uses on the WRD. The purpose of this project is to:

- Provide sustainable, efficient, and safe access to the Forest for all users.
- Provide adequate and reasonable access to state and private land, valid mining claims, and other valid occupancies.
- Provide an infrastructure of roads that will be useful for future timber management, possible mineral exploration and development, other management activities, and for public access for subsistence and recreation purposes.
- Provide a forest transportation system that will be economically feasible given the reduced road maintenance budgets.
- Provide a forest transportation system that reduces the ecological costs of road-related effects and addresses environmental concerns, especially fish passage.
- Provide a consistent framework for road-based decisions that will prioritize the reconstruction and maintenance of needed roads, store roads that are needed for future uses, decommission unneeded roads, or convert roads to a maintenance level that is less costly.
- Provide recommendations for roads that could allow legal motorized use by OHVs.

An ATMP is needed to support the goals and objectives of the road maintenance, watershed, fisheries, wildlife, timber, and recreation programs on WRD, as identified in the TLMP (1997a). The analysis process will identify the minimal road system required for forest management. These objectives will include changing MLs for some NFS roads to reduce road maintenance costs and identifying NFS roads that could allow legal motorized use by OHVs. The implementation of OHV decisions in this document will not take place until an engineering study for motorized mixed use has been completed. The study would involve a technical evaluation of the road and recommendations regarding motorized mixed use of the road including mitigation measures. Depending on the complexity of the situation, the analysis may range from documenting engineering judgment to an engineering report that addresses many factors related to motorized mixed use. Decisions regarding motorized mixed use will be reflected on a Motor Vehicle Use Map (MVUM) and documented in road management objectives (RMOs). The current USFS OHV policy of, open unless designated closed, will continue until a MVUM is produced.

NFS roads that are not needed for resource management in the short term would be closed by gates or other means to prohibit motorized traffic. Roads to be closed can be stored. For road storage, drainage

structures and bridges would be removed, and water bars, rolling dips, and other necessary measures would be constructed to protect resources including soils, water quality, fisheries, and wildlife. Roads to be restricted to HICs, such as 4-wheel-drive trucks and OHVs, can be storm-proofed. Road storm-proofing would leave most small drainage structures in place, but provide water bars, rolling dips, out slopes, and other features to ensure controlled runoff until the road is needed.

Roads that are not needed for long-term management would be decommissioned. Decommissioning activities stabilize and restore unneeded roads to a more natural state. Decommissioned roads are not drivable by motorized vehicles, but may be accessible to non-motorized users. Road drainage structures would be removed and stream channels restored to their original contours. These roads would not be NFS roads.

The road management strategies analyzed in this EA are guided by the TLMP (USFS 1997a). Goals include providing reasonable public access to the Forest and maintaining a system of roads that will meet timber objectives and management objectives while minimizing effects on natural resources and operating within the Forest's budget constraints.

1.5 PROPOSED ACTION

The proposed action (Alternative 2) is one possible alternative for managing the NFS roads on the WRD. The road system under the proposed action addresses identified concerns and reflects the desired future condition. In many cases, the recommendations for specific roads are based on more than one identified concern. The road system under the proposed action reflects the need to maintain an infrastructure of roads that will be useful for future timber management, possible mineral exploration and development, and other management activities as well as activities that support tourism; will meet the needs of the public for access for subsistence and recreation purposes; and will address environmental concerns, especially fish passage. To change the existing road system to the desired future condition will require upgrading, downgrading, storm-proofing, storing, decommissioning, adding, and removing roads from the system. Chapter 2 provides a detailed description of the proposed action along with other alternatives considered in detail.

1.6 DECISION FRAMEWORK

The District Ranger for the WRD will review the proposed action and other alternatives to decide how the WRD NFS roads would be best managed to meet TLMP (USFS 1997a) objectives, public needs, and budget limitations. The decision would include appropriate changes in road maintenance levels and the types of allowable access on NFS roads. A finding of the significance of the effects and consistency with standards, guidelines, goals, and objectives of the TLMP and other laws and regulations would be included in this decision.

The road files would be updated to reflect any changes made to the road management objectives. The Forest road database would also be updated to reflect any changes that result from these decisions. The ATMP would be subject to periodic review and any amendments needed to meet the changing needs of the WRD and public.

1.7 PUBLIC INVOLVEMENT

A proposed action was defined to briefly describe the project's actions. This served as a starting point for the EA and gave the public and other agencies specific information on which to focus comments. Accordingly, scoping was conducted to determine the potential issues associated with the proposed action and to further identify those issues that are substantial and relevant to the decision. Comments were received from the public and government agencies to develop potential issues that should be considered.

These comments were reviewed by the interdisciplinary team (IDT) to determine the substantial issues to be analyzed in detail and the issues that are not substantial or that have been covered by prior environmental review and should be eliminated from detailed analysis.

Public involvement is a process that continues throughout the development and refinement of the EA. However, there are two specific periods when public and agency comments are solicited: before the environmental analyses are conducted to define the scope of the studies (scoping) and following publication of the EA.

Public involvement for the Zarembo Island RA (USFS 2005a) and the WRD (excluding Zarembo Island) RA (USFS 2006a) was used to develop issue statements to provide focus for the roads analyses, which were subsequently used to develop the proposed action for this EA. In addition, the scoping for this EA was conducted between December 22, 2005 and January 27, 2006. A scoping report is included (**Appendix C**) which details the process and comments received. The following public involvement activities were implemented to inform the public about this project and to provide an opportunity to comment:

- A project web site was developed for this EA (www.greystone.us/wrangell). The web site allows public access to project maps and documents, and includes a link to a comment form and dedicated email account for public comments.
- Two public meetings were held in Wrangell on January 26, 2006 for the purpose of explaining the EA project and soliciting comments from the public. The meetings were held in an open-house format that allowed local residents and interested parties to review maps and have one-on-one discussions with IDT members. Those attending the meetings were asked to complete feedback sheets that requested input on the project such as questions, concerns, and suggestions.
- A press release and a legal notice for this EA were published in the Wrangell Sentinel and the Petersburg Pilot on December 22, 2005 and ran for 1 week. These publications provided references to the project web site, comment email account, and other means of providing input.
- A scoping newsletter and maps were mailed to interested and affected parties for this EA; 258 were mailed on December 22, 2005. The letters described: 1) a brief background for the project; 2) potential actions; 3) the purpose of, and need for, the proposed project; and 4) opportunities to provide comments.
- Notices of the public meetings for the EA were also posted on the TNF web site, the project's web site, and published in the Wrangell Sentinel and in the Petersburg Pilot. Announcements were made on the public radio stations in Wrangell (KSTK) and Petersburg (KFSK) to increase public awareness of the project.
- Notice of the project was listed in the Schedule of Proposed Actions (SOPA) for the TNF.

For the WRD (excluding Zarembo Island) RA (USFS 2006a) and this EA, five of the 13 people who attended the public meetings returned comment forms, and 12 additional written comments were submitted. Commenters included residents from Wrangell, Petersburg, Juneau, Sitka, Anchorage, and Washington; local businesses and organizations; and federal and state government agencies.

Additionally, the IDT members initiated consultation with several agencies regarding resource issues to consider during alternative development, including the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and Alaska Department of Fish and Game (ADFG).

1.8 ISSUES

Issues were identified using two sources: internal Forest Service scoping and the comments received during external scoping, as described above. Not all comments led directly to issue development. For

example, comments expressing general support for the road system or the project were not used to develop issue statements. Likewise, an expressed interest in being informed of project progress was not incorporated into issue statements. After the issues were identified, they were each placed into one of two categories: 1) Non-Key Issues because it does not define any specific alternative or 2) Key Issues because it defines an alternative;. All key issues were considered in all alternatives.

1.8.1 Non-Key Issues

These are issues that do not drive any one specific alternative and are discussed to some extent in this EA. These issues are important and were considered when determining the proposed action and alternatives. These issues include transportation, timber management, wildlife, water quality/soil stability/fisheries, off-road OHV use, scenic values, heritage resources, and invasive exotic plants.

- **Transportation:** This is a broad-based issue relating to the general transportation system as a portal to access National Forest land. The road system needs to meet the needs of the Forest and the public while balancing resource protection, public safety, and costs. This EA, in effect, is a response to this issue. All of the alternatives offer a variety of actions that would alter the transportation system. The proposed action is recommended as the alternative with the best balance to meet all needs. The other alternatives reflect particular aspects that can be enhanced or modified.
- **Timber Management:** This issue addresses the need for a sustainable, economically viable timber management program with a road system that supports treatment activities. Management decisions regarding the road system should consider the access needed for future timber harvest and silviculture activities. This issue is common to all of the alternatives, including the no action alternative. Roads needed in the short term for these management activities are recommended to be kept open.
- **Wildlife:** This issue relates to the effects roads may have on wildlife. Roads can directly affect wildlife through habitat loss and fragmentation. Roads provide access for management activities, which can affect vegetation diversity, and subsequently wildlife diversity, both positively and negatively. Roads can affect hunting pressure, which may cause wildlife populations to decline. There are no threatened and endangered (T&E) species directly affected by roads, and there are no designated critical habitats for T&E species or other species. This issue is common to all alternatives. Effects to wildlife are considered in the recommendations made for all alternatives.
- **Water Quality/Soil Stability/Fisheries:** This issue relates to the concerns for water quality and fish habitats that can be adversely affected by roads, especially roads constructed in erosive soils. Inadequately maintained roads or roads built on unstable soils are more likely to have erosion and landslide problems. Erosion and landslides can contribute large amounts of sediments into streams and wetlands, degrading water quality and fish habitats. Roads facilitate some human activities, such as off-road OHV use, that damage vegetation, expose soil, cause erosion, and can lead to sediment input to streams. Roads can alter natural drainage patterns and intercept groundwater. Road drainage structures can restrict fish passage. This issue is common to all of the alternatives. Roads with chronic water quality and fish passage concerns are identified with recommendation to minimize effects to aquatic habitats, water quality, fish populations, and aquatic biodiversity in the project area.
- **Off-Road OHV Use:** This issue is common to all alternatives. Off-road OHV use in sensitive habitats, such as muskegs and wetlands, would be minimized by reducing open roads that lead to these sensitive habitats. In the short term, monitoring of areas unauthorized for off-road OHV use would increase the need for law enforcement activity. A new OHV rule requires that routes or

areas be designated for legal use of OHVs. Implementation of this rule may help to minimize unauthorized off-road OHV use.

- **Scenic Values:** This issue relates to the visual effects of the project in the WRD. Visual effects are typically assessed from visual priority routes such as the Alaska Marine Highway. Projects are assessed as to whether they are meeting the objectives of visual quality from these routes. For a roads-based project, new road construction that could be viewed from these routes may be seen as impacting the visual quality. The alternatives proposed in this EA do not recommend any new road construction, and no new visual impacts would result. Changing the ML of a road would have an indiscernible effect to the visual quality. Decommissioning a road would allow a road to return to its natural state and could be seen as having a positive effect to visual quality over time. All action alternatives proposed a varying number of roads to have ML changes and to be decommissioned. Therefore, there would be no negative impacts to visual quality, and all have positive long-term changes to visual quality. The proposed roads discussed in this EA have been analyzed under NEPA, and their visual impacts were assessed.
- **Heritage Resources:** This issue relates to assessing whether the project will have any impact on heritage resources. Road-related impacts to heritage resources can be positive or negative. Roads provide an opportunity to record, protect, and interpret heritage resource sites. Roads can increase the risk of vandalism, unauthorized collection, and unintended physical damage. The current NFS roads do not cross any known sites, but there are a few sites near roads. No heritage resources would be impacted from this project.
- **Invasive Plants:** This issue relates to the spread of invasive plants along the roadways. This is an issue that is common to all of the alternatives. Weeds are reported along only a few NFS roads. Road management objectives have been recommended that would help mitigate the spread of exotic plants. This issue is not discussed in detail in the EA, but is discussed in detail in the WRD (excluding Zarembo Island) RA (USFS 2006a).

1.8.2 Key Issues

These are issues that drive an alternative. These issues are considered to some degree in all of the alternatives, but drive the development of an alternative to the proposed action. These two issues are the motorized access for recreation and subsistence and road maintenance costs.

- **Motorized Access for Recreation and Subsistence:** Comments relating to keeping roads open for motorized use for recreation and subsistence purposes were the most prevalent received from the public. Recreation uses include driving for pleasure, wildlife viewing, camping, hiking, hunting, fishing, and OHV driving. Subsistence use of the TNF includes hunting, particularly deer hunting, and gathering of other resources such as blueberries and firewood. Recreation and subsistence activities are important and contribute to the standard of living for the residents of the area. Recreation opportunities, in particular having good available motorized access, contribute to the attractiveness of the area for tourism. Alternative 3 maximizes the roads open and available for motorized vehicle use. *Measurement:* The miles of roads open to motorized use can be used to evaluate opportunities for motorized recreation and subsistence activities by the residents and visitors to WRD. The comparison of existing open roads versus open roads among alternatives provides a comparison of the changes in the mileage of roads available for motorized use. The comparison of roads open to OHV use among alternatives provides an evaluation of the quantity of roads that would be available for OHV motorized use.
- **Road Maintenance Costs:** The cost of maintaining the current NFS roads is greater than the budget allocation, and the allocated funding will be decreasing in the future. Current funding is inadequate to prevent further resource damage to open roads at the current objective maintenance

level (OBML). With inadequate funding, road maintenance is deferred. Deferring maintenance can result in increased resource impacts and can lessen the value of the roads. As a consequence of this shortfall, Alternative 4 proposes an action alternative that would bring the maintenance costs in line with proposed budget allocations. *Measurement:* A comparison of the estimated implementation costs for each alternative (reducing ML, storing, storm-proofing, and decommissioning), in conjunction with annual maintenance costs for the NFS roads, provides a basis for comparison among alternatives.

1.9 FEDERAL AND STATE PERMITS, LICENSES, AND CERTIFICATIONS

1.9.1 State of Alaska, Department of Natural Resources

The Department of Natural Resources, Office of Project Management and Permitting (OPMP) coordinates state agency review of the Forest Service determination of project consistency with the Alaska Coastal Zone Management Plan and other state standards. Federal lands are not included in the definition of the coastal zone as prescribed in the Coastal Zone Management Act. However, the act requires that, when federal agencies conduct activities or developments that affect the coastal zone, the activities or developments be consistent to the maximum extent practicable with the approved State Coastal Management Program. The Forest Service makes this determination.

1.9.2 Coastal Zone Management Act

This project falls under the category of “Forest Service Activities That Do Not Normally Require a Consistency Determination” (MOU Sec. 202C). Most of the newly planned roads closures are outside of the coastal zone and would have no direct impact. In the instance that culverts and bridges would be removed in the project area, roads might temporarily increase turbidity in the affected stream, but it is likely the sediment would settle before reaching the coast. This project has been categorized as “FAA (3) - Forest Service does not expect to provide a consistency determination or a negative determination” on the Schedule of NEPA Proposed Actions since 1997.

1.9.3 State Historic Preservation Officer

Consultation with the State Historic Preservation Officer to fulfill requirements of Section 106 of the National Historic Preservation Act is pending. The Forest Service archaeologist has determined through a review of the literature and previous monitoring efforts that an additional survey is not required.

1.9.4 Applicable Laws and Executive Orders

- National Historic Preservation Act of 1966 (as amended)**
- National Environmental Policy Act (NEPA) of 1969 (as amended)**
- Endangered Species Act (ESA) of 1973 (as amended)**
- Bald Eagle Protection Act**
- Clean Water Act of 1977 (as amended)**
- Archeological Resource Protection Act of 1980**
- Magnuson-Stevens Fishery Conservation and Management Act of 1996**
- Executive Order 11988 (floodplains)**
- Executive Order 11990 (wetlands)**
- Executive Order 12898 (environmental justice)**
- Executive Order 12962 (aquatic systems and recreational fisheries)**

1.10 PLANNING RECORD

The project planning record is located at the Wrangell Ranger District and contains more detailed resource analyses. Other reference documents; such as the Tongass Forest Plan and the Tongass Timber Reform Act are available at public libraries throughout southeast Alaska, as well as at the Forest Supervisor' Office in Petersburg, Alaska. The Forest Plan is available on the internet on the TNF web site and on CD-ROM.

CHAPTER 2 — ALTERNATIVES

2.1 INTRODUCTION

This chapter describes and compares the alternatives considered for the Wrangell Ranger District (WRD) Access and Travel Management Plan (ATMP). Two alternatives were considered but eliminated from detailed analysis. Four alternatives are discussed in detail. Alternative 1 (No Action) describes the current management practices. Alternative 2 (Proposed Action) describes the recommended road system as developed from two Roads Analyses (RAs) completed for the (WRD). Alternative 3 (Motorized Access) describes the road system based on the public's desire to keep open for public motorized use the maximum number (miles) of roads. Alternative 4 (Maintenance Costs) describes the road system based on the need to maintain a road system within budget allocations.

2.2 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Two alternatives were considered but eliminated from detailed analysis.

1. **Implement Existing RMOs:** This alternative would require the roads to be open, closed, or decommissioned according to the current Road Maintenance Objectives (RMOs). This would require changing use on the existing roads to match RMOs on record (OBML) and decommissioning all temporary roads (unauthorized roads) to match RMO requirements. Not all RMOs are up to date with current management practices due to changes in maintenance funding and the new Travel Management Rule.
2. **Change RMOs:** This alternative would require the RMOs to be changed to reflect the current access and OPML of the existing road system.

Neither of these alternatives would meet the purpose and need as detailed in Chapter 1 (page 7). The cost of maintaining the current road system is higher than the present and future budget allocations. The goals of good road management strategies would not be met with these alternatives, and so they were dropped from further consideration. Road management goals include providing reasonable public access to the Forest and maintaining a system of roads that will meet timber objectives and management objectives while minimizing effects on natural resources and operating within the Forest's budget constraints.

2.3 ACTIONS COMMON TO ALL ACTION ALTERNATIVES

The status of each road on the WRD was carefully reviewed in this EA. There are several actions common to all three action alternatives, excluding the No Action Alternative that maintains the road system as it currently exists. These common actions include maintaining roads at the same ML, changing MLs on roads, opening roads to use by OHVs, storm-proofing roads to be open for OHV use, closing roads to motorized use, and decommissioning roads not needed in the long term. The no action alternative would not invalidate any actions associated with past NEPA decisions. All alternatives include maintaining the Mill Creek Trail as a motorized trail. Priority for maintenance activities will follow the recommendations in the two Roads Analyses (Zarembo Island RA [USFS 2005a] and the WRD [excluding Zarembo Island] RA [USFS 2006a]). The funds required to store and storm-proof roads would need to come from other budget sources. Current funding is inadequate to cover all maintenance, storage, and stormproofing needs.

2.3.1 Maintain Open Roads

Open roads are roads that are approved for motorized traffic and are maintained at ML 2 or higher. Open roads are drivable by passenger vehicles, though some roads or portions of roads may only be drivable by HICs such as 4-wheel-drive pickup trucks. Road drainage structures are intact.

Roads open to motorized traffic can also be storm-proofed. Storm-proofing is used to help reduce yearly maintenance cost and improve water quality issues. This process leaves most small drainage structures in place, but provides water bars, rolling dips, out slopes, and other features to ensure controlled runoff until use of the roadway is required. Storm-proofed roads may be open to HICs and OHVs.

2.3.2 Roads Open to OHV Use

Roads that are currently used by OHVs could remain open for OHV use pending a study of motorized mixed-use. Some of these roads will be open to OHV use but will be storm-proofed. Roads that are stored under the action alternatives may be closed to motorized vehicles and no longer available for OHV use in order to meet budgetary constraints. Under the Travel Management Rule (36 CFR parts 212, 251, 261 and 295), roads will not be open to mixed-use until an engineering study is conducted and the district ranger approves or denies motorized mixed-use based on the study. At the time of the Travel Management Rule implementation, a Motorized Vehicle Use Map (MVUM) will be produced to show the NFS roads and the appropriate motorized use allowed. The WRD will implement the Travel Management Policy and publish the accompanying MVUM by December 2009.

2.3.3 Closing Roads to Motorized Use

Specified NFS roads have been recommended for closure or storage (closure until their use is needed). Closure can prohibit all motorized traffic or can prohibit access by the public for certain periods. Closing a road can include some or all of the following methods and varies by road: removal of drainage structures and bridges, including demolition with explosives; construction of water bars, rolling dips, and other necessary measures to protect resources including soils, water quality, fisheries, and wildlife. This is typically a long-term condition. The road remains as an NFS road and may be reopened at a later date. Roads can also be closed through installation of a gate to manage access on a year-round basis or for a specified seasonal period. In addition, roads may also be closed if they are not placed on the MVUM, as described in the above section.

Road storage and closure practices on the WRD typically include removal of most drainage structures, and installation of water bars. Bridges, culverts and fills are removed from surface waters unless it is determined that other measures will provide adequate protection. The goal of storage is to put the road in a self-maintaining condition. For a road with very few problems, this may simply include installing a water bar. However, for other roads, it may include fixing erosion problems, removing bridges and culverts, installing water bars on steep grades, and scarifying the road. Road storage and closure practices on the WRD also include demolition with explosives. This is necessary when trees have established on the road, and use of mechanical equipment would be counter-productive to the storage process. Blasting is sometimes the most efficient and sometimes the most cost effective method to meet road storage or closure objectives.

Forest Service Best Management Practices (BMPs), listed in Section 2.5.1 of this document, are implementing during road storage and closure procedures.

2.3.4 Decommissioning Roads

Roads that are not needed in the long term are to be decommissioned. This action is recommended for any unauthorized road unless that road has been identified to be added to the NFS. Decommissioning activities stabilize and restore unneeded roads to a more natural state. Decommissioned roads are not drivable by motorized vehicles, but may be accessible for non-motorized users. Road drainage structures have been removed and stream channels restored to their original contours. These roads are not NFS roads.

2.4 ALTERNATIVES CONSIDERED IN DETAIL

2.4.1 Alternative 1: No Action

Under the No Action Alternative, the existing road system and current management practices would continue unchanged. There would be no change to passenger vehicle access or OHV access. Previous decisions made in other NEPA documents, which may include road storage and decommissioning, would be implemented. The Travel Management Rule requires a documented engineering study for roads proposed for mixed use. Mixed-use roads are those used by OHV and passenger vehicles. NFS roads are open to OHV access with the exception of roads where access is prohibited by state law or where there is inadequate passage across anadromous fish streams. The operation of motorized vehicles, tracked vehicles, or other equipment in or across streams or other waters important for spawning, rearing, or migration of fish is unlawful unless permitted by the Alaska Department of Natural Resources.

Alternative 1 would require the OBML of each road to match the current Operational Maintenance Level (OPML) (existing condition). Under this alternative, there would be 43.5 miles of ML 1 (stored) roads, 96.2 miles of ML 2 roads, 180.2 miles of ML 3 roads, 0.1 mile of ML 5 road, and 145.3 miles of decommissioned roads. In the current road system, there are 213.5 miles of roads used by OHVs. The current road system does not include the mileage for the proposed roads, which are included in the other three alternatives. A seasonally closed gate on Etolin Island is proposed for Newlywed (6549) at the MAP, and a second gate is proposed near the Queen (51493) Road, which will restrict motorized access year round. The estimated annual maintenance cost for the current road system is \$283,214. **Figure 2** (in map pocket) depicts the current road system in the WRD.

One of the purposes of this EA, as described in Chapter 1, is to provide a forest transportation system that will be economically feasible given the reduced road maintenance budgets. The No Action Alternative does not meet this purpose.

2.4.2 Alternative 2: Proposed Action

The road system under the proposed action addresses identified concerns and reflects the desired future condition, as described in the Purpose and Need Section in Chapter 1. In many cases, management objectives for specific roads are based on more than one identified concern. To change the existing road system to the desired future condition would require upgrading, downgrading, storm-proofing, storing, and decommissioning roads.

Under this alternative, there would be 65.6 miles of ML 1 (stored) roads, 143.6 miles of ML 2 roads, 105.7 miles of ML 3 roads, 0.1 mile of ML 5 road, and 186.2 miles of decommissioned roads. Under this alternative, 110.8 miles of roads would be open to OHV use (mixed use), pending approval by an engineering study. The estimated annual maintenance cost for the road system would be \$203,963. The costs associated with the storing or storm-proofing of roads would be \$575,015. If this cost is averaged over 10 years, it would add \$57,501 to the annual maintenance costs. This would make the total annual costs for the roads \$261,464. **Figure 3** (in map pocket) depicts the road system under this alternative.

Appendix D lists NFS roads with the OBML and access by alternative. The following is a brief description of the NFS roads by location.

Wrangell Island would have several ML 3 roads including Pats Creek (6259), McCormick Creek (6265), Nemo (6267), Fools Inlet (6270), Thoms Creek (6299) (to campsite), Highbush (50040), and Salamander (50050) (to campsite). This would allow motorized access to campsites, trailheads, and many points around the island. The ML 2 routes would be open to either HIC or OHV access and would include West Fork Creek (6263), Long Lake (6271), Stumble Creek (6273), Bozo Creek (6275), Paw (6276), Thoms Creek (6299) (past campsite), Jug (50016), Garnet (50022), Salamander (50050) (past campsite), Lost Joe (50054), Nufie (50055), and Big Hollow (50060). The remaining roads would be closed to motorized traffic and would be stored or decommissioned. There is a permanently closed gate closing the Turn road (50034), which would be storm-proofed. Road 6267_0.87R and 6267_3.43R would be added to the NFS as ML 2 roads.

Etolin Island would have no ML 3 roads. The ML 2 routes would be open to HIC and OHV access and would include Kindergarten Bay (6538), Mussel Shell (6540), Anita Bay Access (6541), Almost Quiet (6545), East Mossman Inlet (6546), Burnett Inlet (6547), Fishtrap (51540), and Anita (51720). The ML 2 roads that would be storm-proofed and probably would be accessible only to OHVs include Mossman Inlet (6542), Little Lake (6543), 6544, Kindergarten Pass (51009), East Sortyard (51401), North Fork Creek (51544), Wetbeck (51581), and Upper Anita (51723). There is a permanently closed gate on Fishtrap (51540). A seasonally closed gate is proposed for Newlywed (6549) at the MAP, and a second gate is proposed near the Queen (51493) Road, which will restrict motorized access year round. The remaining roads would be closed to motorized traffic and would be stored or decommissioned.

Zarembo Island would have two ML 3 roads including West Zarembo (6585) and Saint Johns (6590). The ML 2 routes would be open to either HIC or OHV access and include Lower Outback Run (6578), Northwest Zarembo Connection (6588), Zarembo Lake (6592), Meter Bight (6593), South Zarembo Connection (6594), Stikine Strait (6597), Bade (52008), Barred Owl (52019), and Deer Lake (52021). Roads added to the NFS include roads for the Skipping Cow timber sale, the Baht timber sale, and 52014, 6585_5.353L, 52026, 52036, and 6592. Roads for Skipping Cow may be storm-proofed and left accessible for OHVs and HICs. The remaining roads would be closed to motorized traffic and would be stored or decommissioned.

The remaining areas with roads include Frosty Bay. The Frosty (6850) and Golden Pond (6851) roads would be storm-proofed and would probably be accessible only to OHVs. The remaining roads in the Frosty Bay area would be closed to motorized traffic and would be stored or decommissioned.

Rynda (7000) on Rynda Island would be stored. On Shrubby Island, Shrubby Island Road (6550), Middle Shrubby (6551), East Shrubby (6552), and South Shrubby (6554) would be kept at ML 2 and open to HICs and OHVs. The remaining roads would be closed to motorized traffic and would be decommissioned.

Bushy (53000) and Bookoo (53001) would be ML 2 storm-proofed and would probably be accessible only to OHVs. The remaining roads would be closed to motorized traffic and would be stored or decommissioned.

2.4.3 Alternative 3: Motorized Access

The most prevalent public comment received was to keep roads open to motorized use for recreation and subsistence purposes. Recreation uses include driving for pleasure, wildlife viewing, camping, hiking, hunting, fishing, and OHV driving. Subsistence use of the TNF includes hunting (particularly deer) and

gathering of other resources such as blueberries and firewood. Recreation and subsistence activities are important and contribute to the standard of living for the residents of the area. Recreation opportunities, in particular having good available motorized access, contribute to the attractiveness of the area for tourism. Alternative 3 maximizes the number (miles) of roads open and available for motorized vehicle use.

This alternative could maximize the number of NFS roads that would be considered for OHV use. Roads that have been traditionally used by OHVs are likely to remain open for OHV use. Roads that are approved by an engineering study and that have approved fish passage structures would be open to OHV use. Roads that are approved by an engineering study but that do not currently have approved fish passage structures would be given a high priority for remedial or maintenance action.

Under this alternative, there could be 33.0 miles of ML 1 (stored) roads, 181.5 miles of ML 2 roads, 105.7 miles of ML 3 roads, 0.1 mile of ML 5 road, and 180.9 miles of decommissioned roads. Under this alternative, there would be 249.5 miles of roads open to OHV use, pending approval by an engineering study. The estimated annual maintenance cost for the road system would be \$216,990. The costs associated with the storing or storm-proofing of roads would be \$505,263. If this cost is averaged over 10 years, it would add \$50,526 to the annual maintenance costs. This would make the total annual costs for the roads \$267,516. **Figure 4** (in map pocket) depicts the road system under this alternative. **Appendix D** lists NFS roads with the OBML and access by alternative. The following is a brief description of the NFS roads by location.

For Wrangell Island, the ML and access would be the same as those for Alternative 2 (Proposed Action) with the following changes. The same roads that would be ML 3 would be ML 3 under this alternative, except for Fools Inlet (6270) and the first portion of Thoms Creek (6299), which would be open to OHV use. This would allow additional OHV use on Wrangell Island. The ML 2 routes would be the same as those in Alternative 2, with the addition of Elder (50009), Barb (50024), Basin (50030), Beaver Creek (50041), 50051, and 50052 as ML 2 roads that would be storm-proofed and most likely be accessible only to OHVs. The remaining roads would be closed to motorized traffic and would be stored or decommissioned. There is a permanently closed gate closing the Turn road (50034) which would be storm-proofed. Road 6267_0.87R and 6267_3.43R would be added to the NFS as ML 2 roads. This alternative concentrates the maximum number of open roads on Wrangell Island.

Under this alternative, the Zarembo Island roads would be the same as the roads under Alternative 2 with one exception. The unnumbered timber sale road off of the Zarembo Lake Road (6592) would be ML 2 and open to HIC and OHV rather than storm-proofed as in Alternative 2.

The road system for Etolin, Rynda, Bushy, Shrubby Islands and Frosty Bay would be the same as that listed under Alternative 2, Proposed Action.

One of the purposes of this EA, as described in Chapter 1, is to provide adequate and reasonable access to the Forest for all users and to provide an infrastructure of roads that will be useful for future management and recreation activities. Alternative 3 meets this purpose, and possibly even exceeds it. However, other purposes such as the need to provide a forest transportation system that will be economically feasible and reduce the ecological costs are not met with Alternative 3.

2.4.4 Alternative 4: Maintenance Costs

The cost of maintaining the current NFS roads is greater than the budget allocation, and the allocated funding will be decreasing in the future. The current annual budget allocation for 2006 is \$243,379. The proposed budgets are \$182,534 for 2007 and \$121,690 for 2008 and 2009. Under this alternative, the estimated annual maintenance cost for the road system would be \$116,970. The costs associated with the

storing or storm-proofing of roads would be \$1,417,660. If this cost is averaged over 10 years, it would add \$141,766 to the annual maintenance costs. This would make the total annual costs for the roads \$258,736.00. The maintenance budget portion would meet future budget allocation needs. The funds required to store and storm-proof roads would need to come from other budget sources. Current funding is inadequate to cover all maintenance needs. With inadequate funding, road maintenance is deferred. Deferring maintenance can result in increased resource impacts and can lessen the asset value of the roads. As a consequence of this shortfall, Alternative 4 would bring the maintenance costs in line with budget allocations.

Under this alternative, there would be 163.5 miles of ML 1 (stored) roads, 117.3 miles of ML 2 roads, 35.1 miles of ML 3 roads, 0.1 mile of ML 5 road, and 185.2 miles of decommissioned roads. Under this alternative, there would be 117.3 miles of roads open to OHV use, pending approval by an engineering study. **Figure 5** (in map pocket) depicts the road system under this alternative. **Appendix D** lists NFS roads with the OBML and access by alternative. The following is a brief description of the NFS roads by location. Priority for implementation of this alternative would proceed with those roads that are listed as critical for repair or replacement of red pipes followed by the completion of the engineering study for OHV use on NFS roads. Closing (storing) and decommissioning of roads would occur first in the outer islands and Frosty Bay, then on Etolin, Zarembo, and Wrangell Islands, consecutively. This would allow the roads to be open in areas used most often for the longest period of time. It would be assumed that the storing, storm-proofing, and decommissioning of roads according to this alternative would take up to 10 years to complete.

Under this alternative, the number and extent of roads open to motorized use would be concentrated on Wrangell Island. Wrangell Island would have the only ML 3 roads in the WRD. The Pats Creek (6259), McCormick Creek (6265), Nemo (6270), and Salamander (50050) (to campsite) Roads would be maintained at ML 3. The ML 2 routes would be open to either HIC or OHV access and would include West Fork Creek (6263), Fools Inlet (6270), Long Lake (6271), Stumble Creek (6273), Thoms Lake (6299) (to campsite), Jug (50016), Highbush (50040), Lost Joe (50054), and Big Hollow (50060). Nufie (50055) and the southern portion of Fools Inlet (6270) would be ML 2 that would be storm-proofed and probably accessible only to OHVs. The remaining roads would be closed to motorized traffic and would be stored or decommissioned.

Under this alternative, there would be no ML 3 roads on Etolin Island. The ML 2 routes would be open to either HIC or OHV access and include Mussel Shell (6540), Anita Bay Access (6541), East Mossman Inlet (6546), Burnett Inlet (6547), and Fishtrap (51540) (to seasonally closed gate). The ML 2 roads that would be storm-proofed and would probably be accessible only to OHVs and HICs include Fishtrap (50540) (past the gate), North Pump (51541), Anita (51720), and Upper Anita (51723). A seasonally closed gate on is proposed for Newlywed (6549) at the MAP, and a second gate is proposed near the Queen (51493) Road, which will restrict motorized access year round. The remaining roads would be closed to motorized traffic and would be stored or decommissioned.

Zarembo Island will have no ML 3 roads. One ML 2 route would be open to both HIC or OHV access, Saint Johns (6590). One ML 2 road (West Zarembo [6585]) would be storm-proofed and probably accessible only to OHVs and HICs. Skipping Cow and Baht timber sale roads would be added to the NFS and then closed to motorized use (stored or decommissioned) upon completion of those projects. The remaining roads would be closed to motorized traffic and would be stored or decommissioned.

The remaining areas with roads would include Bushy and Shrubby Islands and Frosty Bay. These roads would be closed to motorized traffic and would be stored. Rynda (7000) on Rynda Island would be decommissioned.

Alternative 4 meets nearly all of the purposes for this EA, as described in Chapter 1. It continues to provide access to the forest, although considerably less than the other alternatives. Additionally, it provides for a forest transportation system that will be economically feasible and ecologically sound.

2.4.5 Comparison of Alternatives

A summary of the relative impacts by alternative relating to the key issues and other resource considerations is presented in **Table 2-1**. The effects associated with each alternative are discussed in Chapter 3. In general, the focus of each alternative is as follows; Alternative 1 – no change to the road system; Alternative 2 – balanced access and costs; Alternative 3 – maximize access; Alternative 4 – minimize maintenance costs. Alternatives 3 and 4 were developed to highlight particular needs (access and costs, respectively). Alternative 3 opens 287 miles of roads, and Alternative 4 reduces the annual road maintenance costs by nearly half over the long-term. Alternative 2 was developed as a balanced solution, which comes closest to meeting all purposes and needs.

Issue	Alternative			
	1	2	3	4
Motorized Access				
ML3	180.2	105.7	105.7	35.1
ML2	96.2	143.6	181.5	117.3
ML1	43.5	65.6	33.0	163.5
Decommissioned	145.3	186.2	180.9	185.2
Total open roads	276.4	249.3	287.2	152.4
Total roads open to OHV	213.5	110.8	249.5	117.3
Maintenance Costs				
Annual Road Maintenance	\$283,214.00	\$203,963.00	\$216,990.00	\$116,970.00
Cost to store and storm-proof*		\$ 57,501.00	\$ 50,526.00	\$141,766.00
Total	\$283,214.00	\$261,464.00	\$267,516.00	\$258,736.00
Long-term Annual Maintenance Costs	\$283,214.00	\$203,963.00	\$216,990.00	\$116,970.00
Other Resource Considerations				
Fish Streams Crossed by Open Roads	227	207	244	119
Wetlands**	125.24	110.67	124.04	72.81
* Cost is an estimated yearly amount based on spreading the expense over a 10-year period. The funds required to store and storm-proof roads would have to come from other budget sources.				
** Miles of open roads.				

2.5 MITIGATION AND MONITORING

The Forest Service uses specified mitigation and protective measures for all land management activities. The standards and guidelines, BMPs, and other specific mitigation measures are recommended to prevent or reduce potential impacts associated with the alternatives in this ATMP. The TLMP (1997) describes standards and guidelines for the protection or management of the different forest resources. BMPs are defined as land management methods, measures, or practices intended to reduce water pollution. The application of the BMPs is designed to fully protect and maintain soil, water, and water-related beneficial uses, and to prevent or reduce non-point source pollution. The state approved the BMPs in the Forest Service's Soil and Water Conservation Handbook FSH 2509.22 (USFS 1996b), as consistent with the Alaska Forest Resources and Practices Regulations.

2.5.1 Mitigation Common to All Alternatives

The following mitigation measures would be implemented for each of the alternatives to protect resources.

- Avoid activity around bald eagle nests during nesting season (March 1 to May 31 and June 1 to August 31).
- Preserve nesting habitat around all confirmed and probable goshawk nests, whether or not they are currently occupied.
- Avoid activity around heron and raptor nests during the nesting season (March 1 to July 31).
- In high-quality wolf and marten habitat, implement effective road closure if mortality concern is identified.
- Provide site-specific stream protection prescriptions consistent with objectives identified under BMPs 12.6 and 12.6a. Objectives may include the following: 1) maintain the natural flow regime, 2) provide for unobstructed passage of stormflows, 3) restore the natural course of any stream that has been diverted as soon as practicable, 4) maintain natural channel integrity to protect aquatic habitat and other beneficial use, and 5) prevent adverse changes to the natural stream temperature regime (BMP 13.16).
- Minimize erosion potential by restricting the operating schedule and conducting operations during lower risk periods (BMP 14.6).
- Minimize the erosive effects of concentrated water flows from transportation facilities and the resulting degradation of water quality through proper design and construction of drainage control systems (BMP 14.9).
- Reduce sedimentation from unconsolidated excavated and sidecast material caused by road construction, reconstruction, or maintenance activities (BMP 14.12).
- Minimize the impact on water quality, stream course, and fisheries resources from the installation of bridges, culverts, and other stream crossings (BMP 14.17).
- Incorporate soil and water resource consideration into planning for fish and wildlife improvement projects (BMP 18.10).
- Minimize stream channel disturbances and related sediment production from fish and wildlife habitat improvement projects through identification of, and compliance with project specifications (BMP 18.30).
- Identify degraded watershed conditions, plan and prioritize watershed rehabilitation projects and minimize soil erosion improve water quality (BMP 12.3)
- Maintain all roads in a manner that provides for soil and water resource protection by minimizing rutting, road prism failures, sidecasting, and blockage of drainage facilities (BMP 14.20).
- Protect surface and subsurface soil and water resources from harmful nutrients, bacteria, and chemicals through proper disposal of solid waste and use of alternative construction materials.
- Conduct instream operations outside the spawning windows for fish.
- Minimize the erosion from cutslopes, fillslopes, and the road surface and consequently reduce risk of sediment production.
- Minimize soil erosion in disturbed areas through revegetation (BMP 12.17). Reseed or replant disturbed areas along roadsides with non-invasive plants following ground-disturbing activities.

2.5.2 Monitoring

Monitoring and evaluation is a quality control process for implementation of the TLMP (USFS 1997a). Monitoring and evaluation allows a means to respond to changing conditions and a process for implementing corrective measures. The TLMP identifies three types of monitoring and evaluation: implementation, effectiveness, and validation. One of the primary purposes for monitoring will be to identify use for the annual adjustment of the MVUM.

Monitoring common to all alternatives would include the creation of a monitoring program to assess the use of the NFS roads by OHV traffic. Monitoring the use by road segment could be accomplished through traffic counters, video cameras, or informal means such as self-regulated log books or spot checks to determine number of users and roads used. Other information to monitor includes road conditions and areas of concern or resource impacts associated with motorized use. Annual field inspections of representative sample areas could be used to estimate overall use. This monitoring may overlap with Road Condition Surveys (RCS) and with monitoring of recreation and tourism activities.

CHAPTER 3 — AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter describes the affected environment and the environmental consequences of each project alternative by issue, including those identified as “key” and “non-key”. This chapter presents a comparison of the alternatives and discloses their potential direct, indirect, cumulative, and unavoidable adverse effects on the resources of concern, including aquatic resources, fisheries, geological resources, vegetation, wildlife, transportation, scenic values, and heritage resources. Effects are quantified where possible, but qualitative discussions are also included.

The following discussion of resources and potential effects is based on existing literature, including the TLMP (USFS 1997a), the Tongass Land Management Plan revision final Environmental Impact Statement (USFS 1997b), resource reports for other projects, and roads analyses and resource reports for this project. Information was also obtained via consultation with agencies and other local resource specialists. Where applicable, project-specific information is briefly summarized and referenced to minimize duplication.

This EA hereby incorporates by reference the project planning record and the resource specialist reports contained in the project planning record (40 CFR 1502.21). The planning record is located at the WRD office in Wrangell, Alaska and is available for review during regular business hours. Information from the record is available upon request.

3.1.1 Environmental Consequences

Environmental consequences are the effects of implementing an alternative on the physical, biological, social, and economic environment. The CEQ regulations for implementing the NEPA process identify specific categories to use for the analysis of environmental consequences as described below.

- Direct environmental effects occur at the same time and place as the initial cause or action.
- Indirect effects occur later in time or are spatially removed from the action.
- Cumulative effects result from the incremental effects of actions when added to other past, present, and reasonably foreseeable future actions. Cumulative effects can result from individually minor, but collectively significant, actions taking place over time.
- Unavoidable adverse effects are those that cannot be totally mitigated or avoided when implementing an alternative. The application of Forest Plan Standards and Guidelines, BMPs, and project-specific mitigation measures are all intended to further limit the extent, severity, and duration of potential effects. Such measures are discussed throughout this chapter and in the resource reports for this project.

3.1.2 Available Information

Much of the TNF resource data resides in an electronic database formatted for a geographic information system (GIS). The Forest uses GIS software to assist in the analysis of these data. GIS data are available in tabular (numerical) format and as plots displaying data in map format. For this EA, all of the maps and numerical analyses are based on the GIS resource data. The RCS database was used to obtain information for all NFS roads and some non-system roads in the project area. The RCS database provides information for: 1) identification of maintenance trends, 2) problem analysis, and 3) priority setting for work

scheduling and funding. GIS data are useful for comparing alternatives; however, the numbers presented in this analysis may not be exact, and road miles may slightly differ from actual distances measured on the ground.

3.1.3 Issues

As presented in the public scoping summary for this project (**Appendix C**) and in Chapter 2 of this EA, issues for this project were divided into key issues and non-key issues. Key issues are those that define an alternative, and non-key issues are those that do not define any specific alternative. The non-key issues are discussed in Section 3.2, and the key issues are discussed in Section 3.3.

3.2 NON-KEY ISSUES

The non-key issues for this project include transportation, timber management, wildlife, water quality/soil stability/fisheries, off-road OHV use, scenic values, heritage resources, and invasive exotic plants. The non-key issues are discussed in the following general resource sections; aquatic resources, fisheries, geological resources, vegetation resources, wildlife, transportation (including off-road OHV use), scenic values, heritage resources, and socioeconomics. Direct and indirect effects are presented for each subsection, whereas cumulative effects are presented for each major resource heading. Unavoidable adverse effects are summarized in Section 3.4.

3.2.1 Aquatic Resources

The aquatic resources addressed in this section include: watersheds, wetlands, riparian areas, and floodplains. The next section (3.2.2) addresses fisheries, an associated resource. Additional information regarding the existing aquatic resources, including fisheries, in the project area is provided in the Fisheries and Watersheds Resource Report completed for this project.

The RCS data record a variety of problems that can occur on roads, such as erosion or sedimentation, water flow, and blockage; provide information on where these problems exist; and help prioritize repair. Additionally, information regarding the water resources in the project area was obtained from the USFS GIS stream layer. These stream data were compiled by USFS fish and watershed specialists who identified the locations and classes of streams within the project area using a combination of aerial photo interpretation and field visits. The GIS and RCS data, along with specialist reports previously written for the project area, are the principle basis for the aquatic resources and fisheries analyses in this EA.

Stream types in the project area were classified by the process groups within the Alaska Region Channel Type Classification System (USFS 1992). The system includes nine basic fluvial process groups that describe the interrelationships among watershed runoff, landform relief, geology, and glacial or tidal influences on fluvial erosion and deposition processes.

3.2.1.1 Watersheds

Affected Environment

There are 51 sixth-level watersheds in the project area. A watershed is the area of land that catches rain and snow and drains or seeps into a marsh, stream, river, lake, or groundwater. Watersheds are delineated by USGS using a nationwide system based on surface hydrologic features. Watershed boundaries for the EA were developed from the WRD GIS layer based on Hydrologic Unit Code (HUC) sixth-level watersheds. A table presenting the current road mileage and density by watershed in the project area is provided in the Fisheries and Watersheds Resource Report (Resource Report) completed for this EA. The mileage of roads (open and closed) and total road density varies greatly among watersheds. Open road

length, in miles, ranges between 0 and 33 miles per watershed. Density (miles of roads per square mile of watershed) ranges between 0.07 and 3.09.

There are 2,327 road-stream crossings in the project area, 834 of which are on open roads. A table with their locations, by watershed, is provided in the Resource Report. Many watersheds in the WRD have numerous road-stream crossings. The Salamander Creek watershed has over 100 road-stream crossings. An unnamed watershed on Zarembo Island has over 400 crossings, however most of these occur on closed roads. Most watersheds in the WRD have between 10 and 50 road-stream crossings on open roads.

Environmental Consequences

Direct and Indirect Effects

Roads can affect the surface and subsurface hydrology in several ways. The natural flow pattern of a watershed can be routed or rerouted by the construction of a road. The change in flow pattern can affect water quality and quantity. The road system intercepts surface and subsurface flows and routes them more quickly to stream channels (Luce 2002). In addition, roads have lower infiltration rates, generate greater runoff, and cause increased soil erosion from road surfaces, cuts, and fills. This can increase sediment delivery to surface drainages, cause higher peak flows, and accelerate timing of peak flows. Changes in runoff generation and routing have been documented at the site scale and several studies have concluded that roads can increase the size of peak flows at the watershed scale (Jones and Grant 1996, Jones, 2000, La Marche and Lettenmaier, 2001). The infiltration rates for unpaved roads are usually no more than 1 millimeter (mm) or 0.04 inches per hour, compared with forested areas, which have infiltration rates high enough that most or all of the precipitation and snowmelt infiltrates into the soil (MacDonald and Stednick 2003).

Roads also indirectly affect hydrology through the loss of surface vegetation, which uses water through evapotranspiration (loss of water from the soil through evaporation and from plants through transpiration). Water otherwise used by vegetation becomes available for runoff rather than returning to the atmosphere, which may increase stream flow and possibly flood peaks. Increased flood frequency and higher flood levels can occur because of the reduced infiltration and hydrological modifications caused by existing roads (USFS 2001).

Table 3-1 shows the change in road mileage and density by watershed under each of the action alternatives.

Under the no action alternative, there would be no changes to the road system. Effects from existing roads would continue at or near current levels. Watersheds in the WRD would continue to be hydrologically modified by roads and, as such, could exhibit lower infiltration rates, greater runoff, and increased soil erosion. These modifications are likely to be evident in watersheds with greater densities of roads, as tabulated in the Resource Report.

Under the proposed action, roads would continue to affect surface and subsurface hydrology in the project area; however, the effects are expected to be slightly reduced through storm-proofing, storage, and decommissioning. Initially, increases in sediment could be expected due to activities required for storing and storm-proofing roads, however Best Management Practices (BMPs) would be implemented to minimize these effects. Storm-proofing roads would reduce sediment entering streams, changes in channel dynamics, and effects to wetlands and floodplains and, over time, would return the natural flow pattern of the watershed. Additionally, hydrological alterations caused by the loss of vegetation on roads would be eliminated once vegetative cover was reestablished on closed roads. Under the proposed action, 65.6 miles of road would be closed to motorized vehicles (ML1); an additional 22.1 miles from the current condition (no action alternative). Approximately 41 miles of road would be decommissioned. An

additional 36.1 miles of new roads proposed for the Skipping Cow and Baht timber sale on Zarembo Island would occur under this alternative. They are described in greater detail in their respective EISs.

Effects to watersheds in the project area would slightly increase under alternative 3. Approximately 33 miles of road would be closed to motorized vehicles (ML1). An additional 10.5 miles of roads that were previously closed to motorized use (ML1) would be open to OHVs and HICs. Approximately 36 miles of roads would be decommissioned. Under this alternative, 74.5 miles of ML 3 roads would be downgraded to ML 2 roads, for a total of 249.5 miles of roads open to OHVs; however, it is not anticipated that the change from ML 3 to ML 2 would have a noticeable effect on watersheds. Effects from the 36.1 miles of new roads proposed for the Skipping Cow and Baht timber sales on Zarembo Island would also occur under alternative 3.

Effects to watersheds in the project area would be largely reduced over the long term under alternative 4. Short-term effects may increase as roads are stored and storm-proofed, however BMPs are expected to minimize these effects. Approximately 163.5 miles of roads would be closed to motorized traffic (ML1); an additional 120 miles from the current condition (no action alternative). Approximately 40 miles of roads would be decommissioned. Effects from the 36.1 miles of new roads proposed for the Skipping Cow and Baht timber sales on Zarembo Island would also occur under alternative 4.

Roads in the project area modify the hydrology of the area primarily where they cross streams, riparian areas, and wetlands. Stream crossings are discussed in this section (3.2.1.1), and riparian and wetland crossings are discussed in the following sections (3.2.1.2 and 3.2.1.3).

Table 3-1 Changes to Road Density and Mileage by Watershed*¹

Watershed	Acres	Sq. miles	PROPOSED ACTION ALTERNATIVE 2				MOTORIZED ACCESS ALTERNATIVE 3				MAINT. COST ALTERNATIVE 4			
			Open Roads (miles)	Open Road Density	Closed Roads (miles)	Closed Road Density	Open Roads (miles)	Open Road Density	Closed Roads (miles)	Closed Road Density	Open Roads (miles)	Open Road Density	Closed Roads (miles)	Closed Road Density
190101010111	3299.0	5.2	10.10	1.96	7.72	1.50	10.10	1.96	7.72	1.50	0.00	0.00	17.82	3.46
190101010112	1005.0	1.6	44.29	28.21	36.75	23.40	52.47	33.42	28.57	18.19	26.97	17.17	54.07	34.44
190101010201	217178.0	339.3	82.46	0.24	60.01	0.18	93.33	0.28	49.14	0.15	69.72	0.21	72.75	0.21
190101010202	43859.0	68.5	0.00	0.00	11.82	0.17	0.00	0.00	11.81	0.17	0.00	0.00	11.81	0.17
190101010203	1224.0	1.9	101.83	53.26	125.35	65.56	120.92	63.24	106.25	55.57	44.27	23.16	182.90	95.66
190101010204	2752.0	4.3	7.63	1.77	13.20	3.07	7.52	1.75	13.20	3.07	0.00	0.00	20.72	4.82
190101010300	18134.0	28.3	-1.63	-0.06	1.63	0.06	-1.63	-0.06	1.63	0.06	-2.65	-0.09	2.65	0.09
190101010308	11552.0	18.0	-0.21	-0.01	0.21	0.01	-0.21	-0.01	0.21	0.01	-9.28	-0.51	9.28	0.51
190101030100	7045.0	11.0	-2.46	-0.22	2.46	0.22	-2.46	-0.22	2.46	0.22	-9.98	-0.91	9.98	0.91
190102010600	31661.0	49.5	-2.34	-0.05	2.34	0.05	-2.34	-0.05	2.34	0.05	-2.34	-0.05	2.34	0.05
190102020700	35217.0	55.0	-2.48	-0.05	6.05	0.11	0.45	0.01	3.12	0.06	-6.96	-0.13	10.53	0.19
190102020701	1780.0	2.8	-0.29	-0.11	0.29	0.11	-0.29	-0.11	0.29	0.11	-2.73	-0.98	2.73	0.98
190102020702	1190.0	1.9	0.00	0.00	0.63	0.34	0.00	0.00	0.63	0.34	0.00	0.00	0.63	0.34
190102020703	2397.0	3.7	-0.30	-0.08	0.30	0.08	-0.28	-0.08	0.28	0.08	-2.47	-0.66	2.47	0.66
190102020704	3188.0	5.0	-1.61	-0.32	3.24	0.65	1.82	0.37	-0.19	-0.04	-2.28	-0.46	3.91	0.78
190102020705	2272.0	3.5	-0.13	-0.04	0.13	0.04	0.00	0.00	0.00	0.00	-0.18	-0.05	0.18	0.05
190102020706	15189.0	23.7	3.68	0.16	6.09	0.26	5.27	0.22	4.51	0.19	-6.35	-0.27	16.13	0.68
190102020708	15516.0	24.2	-3.07	-0.13	6.43	0.27	1.98	0.08	1.38	0.06	-10.77	-0.44	14.13	0.58
190102020709	2154.0	3.4	-1.60	-0.47	2.79	0.83	0.00	0.00	1.20	0.36	-1.60	-0.47	2.79	0.83
190102020710	2876.0	4.5	0.00	0.00	0.77	0.17	0.27	0.06	0.50	0.11	-1.77	-0.39	2.54	0.57
190102020711	4514.0	7.1	-2.63	-0.37	3.91	0.55	1.45	0.21	-0.18	-0.03	-4.65	-0.66	5.93	0.84
190102020713	4718.0	7.4	0.89	0.12	0.36	0.05	0.89	0.12	0.36	0.05	-2.59	-0.35	3.85	0.52
190102020714	5300.0	8.3	-0.16	-0.02	0.16	0.02	-0.16	-0.02	0.16	0.02	-0.29	-0.04	0.29	0.04
190102020715	10449.0	16.3	1.89	0.12	2.44	0.15	1.89	0.12	2.44	0.15	-3.80	-0.23	8.13	0.50
190102020716	2991.0	4.7	2.02	0.43	0.90	0.19	2.02	0.43	0.90	0.19	0.00	0.00	2.92	0.63
190102020719	3580.0	5.6	3.55	0.63	1.22	0.22	3.55	0.63	1.22	0.22	0.00	0.00	4.77	0.85

Table 3-1 Changes to Road Density and Mileage by Watershed*!

Watershed	Acres	Sq. miles	PROPOSED ACTION ALTERNATIVE 2				MOTORIZED ACCESS ALTERNATIVE 3				MAINT. COST ALTERNATIVE 4			
			Open Roads (miles)	Open Road Density	Closed Roads (miles)	Closed Road Density	Open Roads (miles)	Open Road Density	Closed Roads (miles)	Closed Road Density	Open Roads (miles)	Open Road Density	Closed Roads (miles)	Closed Road Density
190102020720	591.0	0.9	0.00	0.00	0.37	0.40	0.00	0.00	0.37	0.40	0.00	0.00	0.37	0.40
190102020800	113835.0	177.9	-1.12	-0.01	1.12	0.01	-1.12	-0.01	1.12	0.01	-2.16	-0.01	2.16	0.01
190102020803	2224.0	3.5	-0.25	-0.07	0.25	0.07	-0.25	-0.07	0.25	0.07	-3.07	-0.88	3.07	0.88
190102020805	5234.0	8.2	-2.65	-0.32	2.65	0.32	-0.46	-0.06	0.46	0.06	-5.84	-0.71	5.84	0.71
190102020807	7040.0	11.0	2.26	0.21	-2.26	-0.21	2.26	0.21	-2.26	-0.21	2.26	0.21	-2.26	-0.21
190102020809	5543.0	8.7	-0.38	-0.04	0.38	0.04	0.26	0.03	-0.26	-0.03	-2.19	-0.25	2.19	0.25
190102020811	1106.0	1.7	-0.18	-0.10	0.18	0.10	-0.18	-0.10	0.18	0.10	-0.61	-0.35	0.61	0.35
190102020812	629.0	1.0	-0.25	-0.25	0.25	0.25	-0.25	-0.25	0.25	0.25	-0.98	-1.00	0.98	1.00
190102020814	1097.0	1.7	0.75	0.44	-0.75	-0.44	1.34	0.78	-1.34	-0.78	0.75	0.44	-0.75	-0.44
190102020815	6788.0	10.6	-3.89	-0.37	3.89	0.37	-1.33	-0.13	1.33	0.13	-10.24	-0.97	10.24	0.97
190102020816	1538.0	2.4	-0.89	-0.37	0.89	0.37	0.00	0.00	0.00	0.00	-0.89	-0.37	0.89	0.37
190102020819	2402.0	3.8	-1.11	-0.30	1.11	0.30	-0.35	-0.09	0.35	0.09	-1.11	-0.30	1.11	0.30
190102020825	2264.0	3.5	-0.24	-0.07	0.24	0.07	-0.24	-0.07	0.24	0.07	-1.68	-0.48	1.68	0.48
190102020900	53278.0	83.2	-7.47	-0.09	7.47	0.09	-3.72	-0.05	3.72	0.05	-11.05	-0.13	11.05	0.13
190102020904	4701.0	7.3	-3.02	-0.41	3.02	0.41	-2.11	-0.29	2.11	0.29	-3.02	-0.41	3.02	0.41
190102020905	4193.0	6.6	-1.74	-0.27	1.74	0.27	-1.74	-0.27	1.74	0.27	-1.74	-0.27	1.74	0.27
190102020906	11425.0	17.9	-3.50	-0.20	3.50	0.20	-2.00	-0.11	2.00	0.11	-5.53	-0.31	5.53	0.31
190102020907	9997.0	15.6	-0.91	-0.06	0.91	0.06	0.12	0.01	-0.12	-0.01	-0.91	-0.06	0.91	0.06
190102020909	2871.0	4.5	-1.94	-0.43	1.94	0.43	-0.86	-0.19	0.86	0.19	-1.94	-0.43	1.94	0.43
190102020910	14277.0	22.3	-2.23	-0.10	2.23	0.10	-0.78	-0.04	0.78	0.04	-4.63	-0.21	4.63	0.21
190102020911	2765.0	4.3	2.41	0.56	-2.41	-0.56	2.41	0.56	-2.41	-0.56	0.03	0.01	-0.03	-0.01
190102020912	6131.0	9.6	-2.38	-0.25	2.38	0.25	-1.23	-0.13	1.23	0.13	-2.38	-0.25	2.38	0.25
190102020915	11087.0	17.3	-1.25	-0.07	1.25	0.07	-1.25	-0.07	1.25	0.07	-3.61	-0.21	3.61	0.21

* Only watersheds with changes are displayed.
! Negative numbers represent reductions from the current condition. Positive numbers represent increases from the current condition.

Road-stream crossings can influence stream channels and water quality by contributing coarse and fine sediment and chemical pollutants to streams and by changing natural stream flow patterns and channel formation. Road-stream crossings can be a major source of sediment to streams from high-flow events, the road surface, or cut-slope and fill-slope erosion. Diversion of streamflow at road-stream crossings is a key factor contributing road failure and erosional consequences during large floods (Furniss et al. 1998, Weaver et al. 1995). The sediment produced from roads depends on a number of factors, including the amount of traffic, ground cover, precipitation, surface material, and slope. In addition to the delivery of sediment, pollutants such as oil, anti-freeze, or fuel from vehicles can be delivered to streams at road-stream crossings.

Table 3-2 shows the change in number of road-stream crossings by watershed under each of the project alternatives. Under the no action alternative, there would be no changes to the road system. Effects from existing roads would continue at or near current levels. The number of road-stream crossings would remain the same. However, current funding is inadequate to cover all maintenance needs, and therefore if road maintenance is needed at a road-stream crossing, it could be deferred. In this case, effects from the no action alternative, such as sedimentation, could increase.

Under the proposed action, roads would continue to modify hydrology where they cross streams; however, the effects are expected to be slightly reduced through road closures. The proposed action would eliminate 37 road-stream crossings on open roads.

Effects to watersheds in the project area would slightly increase under alternative 3. Approximately 10.5 miles of roads that were previously closed to motorized use would be open to OHVs and high-clearance vehicles. This would create an additional 16 road-stream crossings on open roads.

Effects to watersheds in the project area would be largely reduced over the long term under alternative 4. This alternative would eliminate 151 road-stream crossings on open roads.

The 36.1 miles of new road construction on Zarembo Island would add 47 stream crossings to the five different watersheds. Effects from these roads would occur under all alternatives and are further evaluated in the Baht and Skipping Cow Timber Sale EISs.

3.2.1.2 Wetlands

Affected Environment

For regulatory purposes under Section 404 of the Clean Water Act (CWA), the term “wetlands” is defined as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands vary widely because of regional and local differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors, including human disturbance. Effects to wetlands are regulated by the U.S. Army Corps of Engineers (USACE) and the EPA. Wetlands are regulated under Sections 401 and 404 of the CWA. However, roads in wetlands are exempted under Section 404(f)(1) for normal silviculture activities and road maintenance when the roads are constructed in accordance with BMPs.

Table 3-2 Changes to Road-Stream Crossings by Watershed*¹

HUC Sixth-Level Watershed	Watershed Name	Alternative 1 No Action		Alternative 2 Proposed Action		Alternative 3 Motorized Access		Alternative 4 Maintenance Costs	
		Crossings on Open Roads	Total Crossings	Crossings on Open Roads	Total Crossings	Crossings on Open Roads	Total Crossings	Crossings on Open Roads	Total Crossings
190102020700		0	0	-2	1	0	1	-6	1
190102020703		0	0	0	0	0	0	-4	0
190102020704		0	0	0	1	2	1	0	1
190102020705		0	0	0	0	0	0	0	0
190102020706		0	0	4	7	7	7	-6	7
190102020708		0	0	-2	4	2	4	-14	4
190102020709		0	0	-3	1	0	1	-3	1
190102020710		0	0	0	1	0	1	-3	1
190102020711		0	0	-4	1	2	1	-6	1
190102020713		0	0	0	2	0	2	0	2
190102020714		0	0	0	0	0	0	-1	0
190102020715		0	0	3	5	3	5	-5	5
190102020716		0	0	3	5	3	5	0	5
190102020719		0	0	10	12	10	12	0	12
190101010300	Mainland Unconsolidated	0	0	-1	0	-1	0	-1	0
190101010308	Frosty Creek	0	0	-1	0	-1	0	-10	0
190101030100	Bushy/Shrubby Islands	0	0	0	0	0	0	-6	0
190102020600	Rynda/Sokolof Islands	0	0	-4	0	-4	0	-4	0
190102020800	Etolin Unconsolidated	0	0	1	0	1	0	0	0
190102020803	Honeymoon Creek	0	0	0	0	0	0	-7	0
190102020805	King George Creek	0	0	-4	0	-2	0	-9	0
190102020807	Fishtrap Creek	0	0	5	0	5	0	5	0
190102020811	Granite Creek	0	0	0	0	0	0	-1	0
190102020812	Kindergarten Bay Creek	0	0	0	0	0	0	-2	0
190102020814	Anita Creek	0	0	-17	0	-17	0	-17	0
190102020815	Log Jam Creek	0	0	10	0	14	0	0	0
190102020816	Thrucut Creek	0	0	1	0	6	0	1	0
190102020819	Duckbill Creek	0	0	0	0	1	0	0	0
190102020825	Wetbeck Creek	0	0	0	0	0	0	-5	0
190102020900	Wrangell Unconsolidated	0	0	-11	0	-2	0	-15	0
190102020904	Hermit Creek	0	0	-10	0	-6	0	-10	0
190102020905	Pats Creek	0	0	-4	0	-4	0	-4	0
190102020906	Salamander Creek	0	0	-3	0	-1	0	-8	0
190102020907	Earl West Creek	0	0	-1	0	2	0	-1	0
190102020909	McCormick Creek	0	0	-5	0	-2	0	-5	0

Table 3-2 Changes to Road-Stream Crossings by Watershed*¹

HUC Sixth-Level Watershed	Watershed Name	Alternative 1 No Action		Alternative 2 Proposed Action		Alternative 3 Motorized Access		Alternative 4 Maintenance Costs	
		Crossings on Open Roads	Total Crossings	Crossings on Open Roads	Total Crossings	Crossings on Open Roads	Total Crossings	Crossings on Open Roads	Total Crossings
190102020911	Fools Creek	0	0	1	0	1	0	0	0
190102020912	Turn Creek	0	0	-3	0	-3	0	-3	0
190102020915	Skip Creek	0	0	0	0	0	0	-1	0
Totals		0	0	-37	40	16	40	-151	40

*Only watersheds with changes are displayed.

¹ Negative numbers represent decreases from the current condition. Positive numbers represent increases from the current condition.

Wetlands are common in the WRD. General wetland types in the WRD include estuarine wetlands, forested wetlands, muskeg, forested wetland/muskeg complex, forested wetland/upland mosaic, tall sedge wetlands, and alpine/sub-alpine forested wetland/meadow mosaic (USFS 2005b).

Roads in the project area have been built to avoid wetlands to the extent practicable. However, some road-wetland crossings are inevitable because of the extent of wetlands caused by the high precipitation that is typical of the TNF. The road system provides access from MAPs to many locations in and near wetlands. Wetlands associated with saltwater, lakes, or streams are usually the most biologically important, primarily because of the diversity of habitat they provide and their relative scarcity (USFS 1998a). Additionally, floating bog soils are extremely sensitive to disturbance by vehicles.

Based on USFS soils data, there are approximately 168 miles of roads currently in wetland areas in the project area, 125 miles of which are open roads. A table with the current road mileage and density in wetlands by watershed is provided in the Resource Report. The watershed with the most open roads in wetlands is Salamander Creek with nearly 14 miles.

Environmental Consequences

Direct and Indirect Effects

Roads can affect wetlands by modifying the surface and subsurface hydrology, which subsequently changes wetland moisture regimes. Changes in hydrology can directly affect vegetation species and growth in wetlands. Roads built across wetlands reduce the value and function of wetlands and can cause flooding without proper drainage consideration. Sedimentation from road construction and use can fill in wetlands, suffocate vegetation and lead to excessive nutrient loads. Road building in wetlands can affect water quality, ecosystem productivity, aquatic species habitat, natural runoff and flooding, groundwater recharge and discharge, and species diversity. Of particular concern is off-road motorized use, which has been documented to cause damage to wetland habitats in some open areas in the project area.

Roads also act as a vector for the introduction and spread of noxious weeds into wetland areas. These areas generally have long recovery cycles and are susceptible to invasion by exotic species.

Storing, storm-proofing, or decommissioning roads would minimize impacts to wetlands by reducing the level of motorized access in these areas. **Table 3-3** shows the change in open road mileage and density in wetlands by watershed under each of the project alternatives.

Under the no action alternative, there would be no changes to the road system. Effects from existing roads in wetlands would continue at or near current levels. The amount of roads in wetlands would remain the same (125 miles on open roads). However, current funding is inadequate to cover all maintenance needs, and therefore if road maintenance is needed where roads occur in wetlands, it could be deferred. In this case, effects to wetlands from the no action alternative, such as hydrologic modification, sedimentation, and off-road motorized use, could increase.

Effects to wetlands would increase over the short-term under the proposed action (alternative 2) due to the activities associated with decommissioning and storing roads. Long-term effects to wetlands would be reduced under alternative 2. Approximately 15 miles of roads in wetlands would be closed. Total open road mileage in wetlands would be reduced to 110. Approximately 111 miles of roads would be open to OHVs (a reduction of 103 miles from the no action alternative). Road closures would reduce the amount of sediment entering wetlands and changes to wetland moisture regimes and, over time, would return the natural conditions of the wetlands.

Table 3-3 Changes to Road Mileage and Density in Wetlands by Watershed*

HUC Sixth-Level Watershed	Name	Alternative 1 No Action		Alternative 2 Proposed Action		Alternative 3 Motorized Access		Alternative 4 Maintenance Costs	
		Open Road Length (miles)	Density	Open Road Length (miles)	Density	Open Road Length (miles)	Density	Open Road Length (miles)	Density
190101010300	Mainland Unconsolidated	0.00	0.00	-0.89	-0.03	-0.89	-0.03	-0.89	-0.03
190101010308	Frosty Creek	0.00	0.00	-0.34	-0.02	-0.34	-0.02	-4.38	-0.24
190101030100	Bushy/Shrubby Islands	0.00	0.00	-0.14	-0.01	-0.14	-0.01	-0.14	-0.01
190102020700		0.00	0.00	-1.13	-0.02	-0.07	0.00	-1.79	-0.03
190102020701		0.00	0.00	-0.05	-0.02	-0.05	-0.02	-0.22	-0.08
190102020703		0.00	0.00	-0.07	-0.02	-0.07	-0.02	-0.29	-0.08
190102020704		0.00	0.00	-0.46	-0.09	0.25	0.05	-0.46	-0.09
190102020705		0.00	0.00	-0.12	-0.04	0.00	0.00	-0.18	-0.05
190102020706		0.00	0.00	2.40	0.10	3.08	0.13	-0.39	-0.02
190102020708		0.00	0.00	-2.05	-0.08	0.33	0.01	-6.45	-0.27
190102020709		0.00	0.00	-0.40	-0.12	-0.26	-0.08	-0.40	-0.12
190102020710		0.00	0.00	0.00	0.00	0.04	0.01	-1.31	-0.29
190102020711		0.00	0.00	-0.96	-0.14	0.81	0.11	-1.39	-0.20
190102020713		0.00	0.00	-0.20	-0.03	-0.20	-0.03	-2.31	-0.31
190102020714		0.00	0.00	0.00	0.00	0.00	0.00	-0.13	-0.02
190102020715		0.00	0.00	0.61	0.04	0.61	0.04	-2.16	-0.13
190102020716		0.00	0.00	0.83	0.18	0.83	0.18	0.00	0.00
190102020719		0.00	0.00	1.70	0.30	1.70	0.30	0.00	0.00
190102020800	Etolin Unconsolidated	0.00	0.00	-1.30	-0.01	-1.30	-0.01	-1.87	-0.01
190102020803	Honeymoon Creek	0.00	0.00	-0.25	-0.07	-0.25	-0.07	-1.86	-0.53
190102020805	Honeymoon Creek	0.00	0.00	-1.60	-0.20	-0.08	-0.01	-3.20	-0.39
190102020807	Fishtrap Creek	0.00	0.00	0.20	0.02	0.20	0.02	0.20	0.02
190102020809	Pump Creek	0.00	0.00	-0.26	-0.03	-0.01	0.00	-1.68	-0.19
190102020811	Granite Creek	0.00	0.00	-0.08	-0.05	-0.08	-0.05	-0.08	-0.05
190102020812	Kindergarten Bay Creek	0.00	0.00	0.00	0.00	0.00	0.00	-0.20	-0.21
190102020813	Quiet Creek	0.00	0.00	0.00	0.00	0.00	0.00	-0.06	-0.04
190102020814	Anita Creek	0.00	0.00	0.26	0.15	0.34	0.20	0.26	0.15
190102020815	Log Jam Creek	0.00	0.00	-0.79	-0.07	-0.27	-0.03	-3.53	-0.33

Table 3-3 Changes to Road Mileage and Density in Wetlands by Watershed*

HUC Sixth-Level Watershed	Name	Alternative 1 No Action		Alternative 2 Proposed Action		Alternative 3 Motorized Access		Alternative 4 Maintenance Costs	
		Open Road Length (miles)	Density	Open Road Length (miles)	Density	Open Road Length (miles)	Density	Open Road Length (miles)	Density
190102020816	Thrucut Creek	0.00	0.00	-0.35	-0.14	0.00	0.00	-0.35	-0.14
190102020819	Duckbill Creek	0.00	0.00	-0.83	-0.22	-0.38	-0.10	-0.83	-0.22
190102020825	Wetbeck Creek	0.00	0.00	-0.01	0.00	-0.01	0.00	-0.40	-0.11
190102020900	Wrangell Unconsolidated	0.00	0.00	-2.55	-0.03	-1.12	-0.01	-4.06	-0.05
190102020904	Hermit Creek	0.00	0.00	-1.26	-0.17	-0.98	-0.13	-1.26	-0.17
190102020905	Pats Creek	0.00	0.00	-0.36	-0.06	-0.36	-0.06	-0.36	-0.06
190102020906	Salamander Creek	0.00	0.00	-1.23	-0.07	-0.87	-0.05	-2.85	-0.16
190102020907	Earl West Creek	0.00	0.00	-0.60	-0.04	-0.31	-0.02	-0.60	-0.04
190102020909	McCormick Creek	0.00	0.00	-0.55	-0.12	-0.45	-0.10	-0.55	-0.12
190102020910	Fools Creek	0.00	0.00	-0.82	-0.04	-0.50	-0.02	-2.73	-0.12
190102020911	Turn Creek	0.00	0.00	1.01	0.23	1.01	0.23	0.03	0.01
190102020912	Skip Creek	0.00	0.00	-1.27	-0.13	-0.74	-0.08	-1.27	-0.13
190102020915	Thoms Creek	0.00	0.00	-0.68	-0.04	-0.68	-0.04	-2.29	-0.13
Totals		0.00	0.00	-14.57	-1.08	-1.20	0.30	-52.43	-5.01

* Negative numbers represent decreases from the current condition. Positive numbers represent increases from the current condition.

Alternative 3 would decrease the amount of roads in wetlands by 1.5 miles, and total road mileage in wetlands would be reduced to 123.5. However, approximately 10.5 miles of roads that were previously closed to motorized use would be open to OHVs and high-clearance vehicles. As more roads are open to OHVs, the potential for effects to wetlands increases, particularly with illegal off-road use. Under this alternative, 74.5 miles of ML 3 roads would be downgraded to ML 2 roads, for a total of 249.5 miles of roads open to OHVs.

Alternative 4 would provide the greatest protection to wetlands by closing nearly 53 miles of roads currently in wetlands. Total open road mileage in wetlands would be reduced to 72. Approximately 117 miles of roads would be open to OHVs. Effects to wetlands would increase over the short-term under alternative 4 due to the activities associated with decommissioning and storing roads, and their potential to create sediment.

Under all of the action alternatives, an additional 36.1 miles of new roads would be constructed on Zarembo Island. Approximately 5.6 miles would be located in wetlands, impacting approximately 14 acres of wetland habitats (assuming a 20-foot-wide disturbance area buffer, temporary and permanent disturbance combined).

3.2.1.3 Riparian Areas

Affected Environment

Riparian areas are defined as a form of wetland that is transitional between permanently saturated wetlands and upland terrestrial areas. They are characterized by visible vegetation or physical features reflective of permanent surface or subsurface water influence. Riparian areas are the zones along water bodies that serve as interfaces between terrestrial and aquatic ecosystems. They are among the most productive ecosystems in the watershed. Properly managed riparian areas offer wildlife habitat, bank stability, dissipated flood energy, and improved water quality through the filtering and trapping of sediment. Water flow volume, longevity, and timing are all closely tied to riparian condition.

Riparian management areas (RMAs) are developed by the WRD on a project scale using a model, which combines stream and lake data including sensitive channel types, and riparian soils data. There are currently 27,993 acres of RMAs in the project area. Approximately 31 miles of roads occur in these RMAs and 858 acres of riparian areas are within 100 feet of a road. The Resource Report completed for this EA provides the mileage and density of roads in RMAs by watershed. The most sensitive riparian areas in the project area occur in certain process groups including low gradient floodplain, estuarine, and palustrine streams. **Table 3-4** provides the mileage of streams occurring in these particular process groups in the project area.

Table 3-4 Distribution of Stream Process Groups Relevant to Riparian Areas (Stream Miles by Island)*

Island	Estuarine	Flood Plain	Palustrine
Bushy	0.1	0.3	0.2
Etolin	3.0	27.1	18.5
Frosty Bay	0.2	2.8	0.4
Mainland	78.7	129.0	112.8
Other Islands	0.6	0.4	2.2
Rynda	0.0	0.0	0.0
Shrubby	0.0	0.3	0.0
Sokolof	0.0	0.2	0.0
Woronkofski	0.0	0.4	1.1
Wrangell	0.7	29.9	7.8
Zarembo	1.3	21.6	12.2

*Table represents mileage only for relevant process groups and is not intended to be all-inclusive for each island.

Environmental Consequences

Direct and Indirect Effects

Riparian areas are directly affected by the clearing of trees and brush for roads. This can reduce shading and litterfall and indirectly affect the habitat for aquatic and riparian species. It can also alter the hydrology and the elevation of the water table. A reduction in organic debris inputs from litterfall can affect habitat quality and food supply. Roads that run parallel to streams pose the greatest threat to stream shading and litterfall because of the lack of canopy cover. Roads also act as a vector for the introduction and spread of noxious weeds into wetland areas. These areas generally have long recovery cycles and are susceptible to invasion by exotic species. **Table 3-5** presents the changes in open road mileage and density in RMAs in the project area under each alternative.

There would be no changes to the road system under the no action alternative. Effects from existing roads would continue at or near current levels. There would continue to be 31 miles of roads in riparian areas. Riparian areas in the WRD would continue to be affected by alterations in hydrology and water table elevations. Streams and fisheries would continue to be indirectly affected by roads in riparian areas.

Under the proposed action, roads would continue to alter riparian areas in the project area; however, the effects are expected to be slightly reduced in the long-term through road decommissioning and storing. Under the proposed action, approximately 3 miles of roads in RMAs would be decommissioned and closed to motorized vehicles, reducing the total mileage of roads in RMAs to 28. Effects to riparian areas may increase in the short-term due to the activities associated with decommissioning and storing roads. Of the additional 36.1 miles of new roads proposed for the Skipping Cow and Baht timber sales on Zarembo Island, 21 miles would occur in RMAs impacting approximately 51 acres of riparian habitat (assuming a 20-foot-wide disturbance area buffer, temporary and permanent disturbance combined). Effects from these roads are further described in their respective EISs.

Table 3-5 Changes to Open Road Mileage and Density in RMA by Watershed*¹

HUC Sixth-Level Watershed	Name	Alternative 1 No Action		Alternative 2 Proposed Action		Alternative 3 Motorized Access		Alternative 4 Maintenance Costs	
		Open Road Length (miles)	Density	Open Road Length (miles)	Density	Open Road Length (miles)	Density	Open Road Length (miles)	Density
190101010300	Mainland Unconsolidated	0.00	0.00	-0.05	0.00	-0.05	0.00	-0.05	0.00
190101010308	Frosty Creek	0.00	0.00	-0.06	0.00	-0.06	0.00	-0.78	-0.04
190101030100	Bushy/Shrubby Islands	0.00	0.00	0.00	0.00	0.00	0.00	-0.66	-0.06
190102020600	Rynda/Sokolof Islands	0.00	0.00	-0.29	-0.02	-0.29	-0.02	-0.29	-0.02
190102020701		0.00	0.00	0.00	0.00	0.00	0.00	-0.02	-0.01
190102020704		0.00	0.00	0.00	0.00	0.13	0.03	0.00	0.00
190102020706		0.00	0.00	-0.12	-0.01	-0.02	0.00	-0.45	-0.02
190102020708		0.00	0.00	-0.25	-0.01	0.03	0.00	-1.34	-0.06
190102020709		0.00	0.00	-0.23	-0.07	-0.07	-0.02	-0.23	-0.07
190102020710		0.00	0.00	0.00	0.00	0.00	0.00	-0.09	-0.02
190102020711		0.00	0.00	-0.07	-0.01	0.30	0.04	-0.23	-0.03
190102020714		0.00	0.00	-0.03	0.00	-0.03	0.00	-0.06	-0.01
190102020715		0.00	0.00	0.13	0.01	0.13	0.01	-0.38	-0.02
190102020716		0.00	0.00	0.09	0.02	0.09	0.02	0.00	0.00
190102020719		0.00	0.00	0.13	0.02	0.13	0.02	0.00	0.00
190102020800	Etolin Unconsolidated	0.00	0.00	0.02	0.00	0.02	0.00	-0.13	0.00
190102020803	Honeymoon Creek	0.00	0.00	0.00	0.00	0.00	0.00	-0.25	-0.07
190102020805	Honeymoon Creek	0.00	0.00	-0.12	-0.02	-0.05	-0.01	-0.35	-0.04
190102020807	Fishtrap Creek	0.00	0.00	0.26	0.02	0.26	0.02	0.26	0.02
190102020811	Granite Creek	0.00	0.00	0.00	0.00	0.00	0.00	-0.02	-0.01
190102020812	Kindergarten Bay Creek	0.00	0.00	0.00	0.00	0.00	0.00	-0.10	-0.10
190102020814	Anita Creek	0.00	0.00	0.18	0.11	0.18	0.11	0.18	0.11
190102020815	Log Jam Creek	0.00	0.00	-0.43	-0.04	0.02	0.00	-1.25	-0.12
190102020816	Thrucut Creek	0.00	0.00	-0.12	-0.05	0.00	0.00	-0.12	-0.05
190102020819	Duckbill Creek	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00
190102020825	Wetbeck Creek	0.00	0.00	0.00	0.00	0.00	0.00	-0.08	-0.02
190102020900	Wrangell Unconsolidated	0.00	0.00	-0.21	0.00	-0.03	0.00	-0.28	0.00
190102020904	Hermit Creek	0.00	0.00	-0.23	-0.03	-0.13	-0.02	-0.23	-0.03
190102020905	Pats Creek	0.00	0.00	-0.79	-0.12	-0.79	-0.12	-0.79	-0.12
190102020906	Salamander Creek	0.00	0.00	-0.05	0.00	-0.05	0.00	-0.46	-0.03

Table 3-5 Changes to Open Road Mileage and Density in RMA by Watershed*[†]

HUC Sixth-Level Watershed	Name	Alternative 1 No Action		Alternative 2 Proposed Action		Alternative 3 Motorized Access		Alternative 4 Maintenance Costs	
		Open Road Length (miles)	Density	Open Road Length (miles)	Density	Open Road Length (miles)	Density	Open Road Length (miles)	Density
190102020907	Earl West Creek	0.00	0.00	-0.09	-0.01	0.03	0.00	-0.09	-0.01
190102020909	McCormick Creek	0.00	0.00	-0.35	-0.08	-0.26	-0.06	-0.35	-0.08
190102020910	Fools Creek	0.00	0.00	-0.06	0.00	0.00	0.00	-0.09	0.00
190102020911	Turn Creek	0.00	0.00	0.04	0.01	0.04	0.01	-0.03	-0.01
190102020912	Skip Creek	0.00	0.00	-0.22	-0.02	-0.11	-0.01	-0.22	-0.02
190102020915	Thoms Creek	0.00	0.00	0.00	0.00	0.00	0.00	-0.10	-0.01
Totals		0	0	-2.91	-0.31	-0.53	0.00	-9.09	-0.95

* Only watersheds with changes were included.

[†] Negative numbers represent decreases from the current condition. Positive numbers represent increases from the current condition.

Effects to riparian areas in the project area would slightly increase under the alternative 3. The change in the mileage of roads occurring in RMAs is negligible; however, as more roads are open to OHVs, the potential for effects to riparian area increases, particularly with illegal off-road use. Approximately 10.5 miles of roads that were previously closed to motorized use would be open to OHVs and high-clearance vehicles. Under this alternative, 74.5 miles of ML 3 roads would be downgraded to ML 2 roads for a total of 249.5 miles of roads open to OHVs. Effects described under the proposed action for the additional 36.1 miles of new roads proposed for the Skipping Cow and Baht timber sales on Zarembo Island would also occur under alternative 3.

Under alternative 4, effects to riparian area in the project area would be largely reduced over the long term through the decommissioning and storing of roads. Approximately 9 miles of roads in RMAs would be closed under this alternative, reducing the total mileage of roads in RMAs to 14 miles. Effects to riparian areas may increase in the short-term due to the activities associated with decommissioning and storing roads. Effects described under the proposed action for the additional 36.1 miles of new roads proposed for timber sales on Zarembo Island would also occur under alternative 4.

3.2.1.4 Floodplains

Affected Environment

Floodplains are the level land along the course of a river formed by the deposition of sediment during periodic floods. Floodplain communities are classified as wetlands, despite their proximity to rivers, because they contain still water. Floodplains provide numerous benefits including groundwater recharge, fertile soils, wildlife habitat, and flood control. As a river's water exceeds its banks and enters a floodplain, it is forced to spread out, losing most of its velocity and capacity for rising, which is especially important following large storm events. The floodplains in the project area are generally constrained by topography to narrow bands along streams. They occur on lower gradient Class I and Class II streams of certain process groups (Palustrine, Floodplain, and Moderate Gradient-Mixed Control) (Table 3-6). Table 3-7 shows the current number of road-stream crossings in floodplains.

Table 3-6 Distribution of Stream Process Groups Relevant to Floodplains (Stream Miles by Island)*

Island	Flood Plain	Palustrine	Moderate Gradient
Bushy	0.3	0.2	0.0
Etolin	27.1	18.5	25.3
Frosty Bay	2.8	0.4	0.0
Mainland	129.0	112.8	51.7
Other Islands	0.4	2.2	0.3
Rynda	0.0	0.0	0.0
Shrubby	0.3	0.0	0.0
Sokolof	0.2	0.0	0.0
Woronkofski	0.4	1.1	0.0
Wrangell	29.9	7.8	14.8
Zarembo	21.6	12.2	23.0

*Table represents mileage only for relevant process groups and is not intended to be all-inclusive for each island.

Table 3-7 Current Road-Stream Crossings in Floodplains

Island	Roads	
	Open	Closed
Bushy	0	0
Etolin	3	3
Frosty Bay	1	1
Mainland	0	0
Other Islands	0	0
Rynda	0	0
Shrubby	0	0
Sokolof	0	2
Woronkofski	0	0
Wrangell	19	1
Zarembo	14	7
Totals	37	14

Environmental Consequences

Direct and Indirect Effects

Roads channel dynamics and flow patterns can change (Furniss et al. 1991). Culverts and bridges at stream crossings can restrict flow, channels can lose their ability to migrate, and portions of the floodplain can become isolated. Additionally, during periods of peak or flood flows, crossings may become blocked so that the water backs up above the crossing, causing greater than normal flooding. Flow downstream of the crossing can be reduced, and normal flooding events can be altered. Woody debris and sediment can be trapped, restricting its movement downstream and affecting aquatic habitats. Road construction can also remove woody debris near stream channels. Without woody debris, trees, and root masses to armor banks and stabilize point bars, a stable floodplain cannot be sustained. Stream channels can become destabilized, and streams may not be able to handle high-flow events because of the lack of energy dissipation (USFS 1998b, USFS 1992). The interaction between the road system and stream channels is discussed in Section 3.2.1.1 (Watersheds) and Section 3.2.1.3 (Riparian Areas). **Table 3-8** shows the changes in the number of road-stream crossings in floodplains that would occur under each alternative.

Overall, it is not expected that any of the action alternatives would have significant impacts to floodplains. Alternative 4 might slightly improve the conditions by removing three road-stream crossings in floodplains.

Table 3-8 Changes in Road-Stream Crossings in Floodplains *

Island	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	Open	Closed	Open	Closed	Open	Closed	Open	Closed
Bushy	0	0	0	0	0	0	0	0
Etolin	0	0	0	0	0	0	0	0
Frosty Bay	0	0	-1	1	-1	1	-1	1
Mainland	0	0	0	0	0	0	0	0
Other Islands	0	0	0	0	0	0	0	0
Rynda	0	0	0	0	0	0	0	0
Shrubby	0	0	0	0	0	0	0	0
Sokolof	0	0	0	0	0	0	0	0

Table 3-8 Changes in Road-Stream Crossings in Floodplains *

Island	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	Open	Closed	Open	Closed	Open	Closed	Open	Closed
Woronkofski	0	0	0	0	0	0	0	0
Wrangell	0	0	0	0	0	0	0	0
Zarembo	0	0	1	-2	2	-3	-2	1
Total	0	0	0	-1	1	-2	-3	2

* Negative numbers represent decreases from the current condition. Positive numbers represent increases from the current condition.

3.2.1.5 Cumulative Effects to Aquatic Resources

Cumulative impacts of this project include changes in the overall level of road maintenance in the project area and the accessibility of the project area for public use and resource management. Overall, numerous factors specific to the WRD, such as the filtering and buffering capacity of muskegs, the steep and simple stream networks, the high volumes of water, and the small and simple fish communities, lead resource specialists to believe that roads in the WRD may not have a negative effect on aquatic resources (Cady, T. 2006). The proposed action (alternative 2) and alternative 4 may also provide beneficial effects to aquatic resources through the decommissioning and storing of roads.

In addition to the proposed project, other planning efforts in the WRD include the following projects:

- The Canal-Hoya roads have been approved.
- The Bradfield roads will be studied in their own NEPA process.
- The Navy project on Etolin Island will include timber harvest and could affect the use of roads on that island.

Future projects may include additional timber sales, mineral exploration, or mineral development. Non-National Forest lands may also be developed for residential, recreational, or commercial use, which may include use of existing roads or construction of new roads. Projects such as timber harvests and road-building potentially have negatively affected and potentially will negatively affect aquatic resources. **Table 3-9** provides the proposed road mileage by maintenance level for other planning efforts in the WRD.

Table 3-9 Proposed Road Mileage for Other Planning Efforts in the WRD

Canal-Hoya		Navy		Madan	
ML*	Miles	ML	Miles	ML	Miles
0	6.22	0	11.15	0	4.35
1	0.00	1	1.57	1	0
2	0.00	2	36.57	2	0.01
3	11.28	3	11.94	3	15.46
Total	17.50	Total	61.23	Total	19.82

* Maintenance Level.

3.2.2 Fisheries

Affected Environment

The State of Alaska has designated one of several beneficial uses of fresh and marine waters as the growth and propagation of fish and shellfish (A8 AAC 70). The USFS must maintain these uses, protect riparian habitat, and prevent detrimental changes in water temperatures, water chemistry, stream channel stability, and sediment loads that adversely affect these uses. Streams in the project area provide spawning and rearing habitats for coho (*Onchorynchus kisutch*), chum (*O. keta*), pink (*O. gorbushca*), and sockeye (*O. nerka*) salmon; steelhead and rainbow trout (*O. mykiss*); cutthroat trout (*O. clarki*); and Dolly Varden char (*Salvelinus malma*).

Streams within the project area have been categorized according to the types of fish present or potentially present (USFS 1992). Class I streams meet one of two conditions: 1) they provide anadromous fish habitat; or 2) they would provide anadromous fish habitat if passage structures or other modifications allowed fish to negotiate barriers. Class II streams only support resident fish populations and generally have steeper gradients that limit the available anadromous fish habitat, or are of low gradient but are upstream of migration barriers considered unsuitable for passage facilities. Class III streams do not contain fish habitat. Although Class III streams contain no fish, they may impact fish-bearing streams by affecting downstream water quality and habitat through changes in water temperature, dissolved oxygen, pH, and the delivery of sediment and large woody debris (LWD). The Fisheries and Watersheds Resource Report completed for this project provides detailed information regarding the extent of streams in the project area watersheds. There are 1,451.8 total miles of streams in the project area, 330.8 miles of which are Class I, and 294.8 miles of which are Class II. **Table 3-4** in the riparian areas section further describes fisheries; it presents streams that represent the most important and sensitive riparian areas in the project area. These low-gradient streams also contain the highest quality fish habitat and are the most sensitive to sediment deposition.

With regard to fisheries, the RCS database provides information for: 1) problems analysis and 2) priority setting for work and scheduling funding (USFS 2000). The RCS data record a variety of problems that can occur on roads, and for fisheries the problem is often culverts, known as “red pipes,” that hinder or obstruct passage of aquatic species. Impediments to fish passage are compliance issues with Clean Water Act regulations and TLMP (USFS 1997a) guidelines. RCS data identified 138 fish passages in the project area that do not meet the TLMP standard for fish passage. The Resource Report completed for this EA provides a table with locations of red pipes by watershed. The TLMP directs managers to “maintain, improve, and restore the opportunities for fish migration” in Class I and II streams. Recent fish passage improvement projects are described in the Fisheries and Watersheds Resource Report completed for this project. Appendix C of the Zarembo Island RA (USFS 2005a) and Appendix C of the WRD (excluding Zarembo Island) RA (USFS 2006a) present each individual road in the project area that was identified as having a red pipe.

Environmental Consequences

Direct and Indirect Effects

Roads can affect fish habitats in several ways. Freshwater and marine habitats can be affected by sedimentation, changes in stream dynamics, and introduction of road-related pollutants into the water supply.

Fish migration barriers related to roads, water quality impairments from road construction, vehicle traffic, vegetation removal, and water quantity changes from road-stream crossings can alter habitats for aquatic species (Furniss et al. 1991). LWD and sediment can be trapped by road crossings, restricting its movement downstream and affecting aquatic habitats. LWD serves several purposes for aquatic habitats.

Often, a single piece of wood or root wad offers benefits to multiple life stages and species. Habitat complexity and diversity are created by in-channel LWD through pool formation, sediment storage and sorting, channel stabilization, flow dissipation, nutrient production, and cover (Morgan and Smith 1997). Flow patterns around complex LWD can also lead to deposition of gravel in patches, creating spawning habitat (Morgan and Smith 1997). Culverts and road-stream crossings can also affect the ability of aquatic species to migrate in the streams. Increasing numbers of culverts have been correlated with decreasing fish densities (Eagin and Hubert 1993). However, as no research has been done in Southeast Alaska, these results have only a weak implication for the area. It is currently unknown if aquatic species are being affected by road-stream crossings in the WRD (Cady, T. 2006). The aquatic habitats most likely to be affected by the road system would be the Class I and II streams. The extent of road-stream crossings in the current road system and under each of the alternatives is presented in Section 3.2.1.1 (Watersheds).

Research has shown that erosion results in sedimentation of streams and declines in spawning habitat when too high a proportion of fine sediment is deposited (Furniss et al. 1991). Macroinvertebrate populations, the primary food source of juvenile fish, also decline when large amounts of sediment are present (Furniss et al. 1991). Roads also increase the potential for slope failure, which can increase sedimentation of aquatic systems, adversely affecting aquatic communities. Sediment entering stream channels can clog streambed gravels, reducing oxygen concentrations critical to incubating eggs, young fish, and macroinvertebrates; fill deep pools; and change channel shape and form (USFS 2001). The current erosion conditions and the conditions under each alternative are presented in Section 3.2.3.2 (Erosion).

Road-derived pollutants are likely to increase and decrease in parallel with the level of motorized access, the distance of the stream from the road, and the amount of traffic on the road. The extent of open roads in the project area under the current and alternative conditions is presented in Section 3.1.1 Watersheds.

The most substantial direct impact of roads on fish species is through the presence of red pipes, which can prevent migration of fish. Cutthroat trout are at highest risk because they occupy smaller headwater streams during some parts of their lives (USFS 1997b). The condition under all of the project alternatives is the presence of a road system; therefore, the potential for the presence of red pipes remains an issue under all of the alternatives. This issue is also similar for all of the alternatives in that none of the alternatives specifically addresses repairing red pipes. For the Zarembo Island RA (USFS 2005a) and the WRD (excluding Zarembo Island) RA (USFS 2006), the RCS database was used to prioritize fish passage problems on the WRD. A budget separate from that analyzed in this report would be used for repairing red pipes, therefore, those effects are independent of the comparison of alternatives for this report. Ongoing programs to replace red-pipes would continue under all alternatives.

Of the actions analyzed for the proposed project, the one that would affect the presence of red pipes is the decommissioning of roads. Decommissioning activities result in the stabilization and restoration of unneeded roads to a more natural state. These roads are not drivable by motorized vehicles, but may be accessible to non-motorized users. Road drainage structures are removed and stream channels restored to their original contours. Decommissioned roads do not have the potential to contain red pipes and therefore would improve fish habitat.

There would be no changes to the road system under the no action alternative. Effects from existing roads would continue at or near current levels. Fisheries in the WRD could continue to be affected by fish migration barriers related to roads, water quality impairments from road construction, vehicle traffic, vegetation removal, and water quantity changes from road-stream crossings. However, as previously stated, it is currently unknown if aquatic species are being affected by road-stream crossings in the WRD (Cady, T. 2006). There are 24 roads currently scheduled for decommissioning under the no action alternative.

Under the proposed action, roads could continue to affect fisheries in the project area; however, the effects may be slightly reduced through road decommissioning. Under the proposed action, 65.6 miles of roads would be closed to motorized vehicles (ML1); an additional 22 from the current condition (no action alternative). An additional 41 miles of roads would be decommissioned. Beneficial effects from storing and decommissioning roads may occur through the elimination of fish migration barriers, water quality impairments from roads, and vehicle traffic. The impacts to fisheries from the additional 36.1 miles of new roads proposed for the Skipping Cow and Baht timber sales on Zarembo Island are described in their respective EISs.

Effects to fisheries in the project area would slightly increase under alternative 3. Approximately 10.5 miles of roads that were previously closed to legal motorized use would be open to OHVs and high-clearance vehicles, for a total of 33 miles of ML1 roads. There are 24 road stream crossings (Class I and II streams) on the 10.5 miles of roads that were previously closed. Under this alternative, 74.5 miles of ML 3 roads would be downgraded to ML 2 roads, for a total of 249.5 miles of roads open to OHVs; however, it is not anticipated that the change from ML 3 to ML 2 would have a noticeable effect on fisheries. Implementation of this alternative would decommission 36 miles of roads. Effects from the additional 36.1 miles of new roads proposed for the Skipping Cow and Baht timber sales on Zarembo Island would also occur under alternative 3.

Effects to fisheries in the project area could be largely reduced over the long term under alternative 4. Approximately 163.5 miles of roads would be closed to motorized traffic (ML1); an additional 120 miles from the current condition. Approximately 40 miles of roads would be decommissioned. Beneficial effects from storing and decommissioning roads may occur through the elimination of fish migration barriers, water quality impairments from roads, and vehicle traffic. Effects from the additional 36.1 miles of new roads proposed for timber sales on Zarembo Island would also occur under alternative 4.

3.2.2.1 Management Indicator Fish Species

Affected Environment

NFMA regulations direct the use of Management Indicator Species (MIS) in forest planning to help display the effects of forest management. MIS are species whose population changes are believed to indicate the effects of land management activities. Through the use of MIS, the total number of species that occur within a planning area is reduced to a manageable set of species that represents, collectively, the complex of habitats, species, and associated management concerns (USFS 1997b).

MIS fish species for the TNF include pink and coho salmon, cutthroat trout, and Dolly Varden char. These species are considered MIS due to their commercial and recreation importance, their reliance on freshwater habitat for spawning and egg incubation, and their need for 1 year or more of pre-smolt rearing (coho and Dolly Varden). Range and habitat for these species are described in the MIS report for this project.

Environmental Consequences

Direct and Indirect Effects

Each MIS was assessed for its potential to be affected by the proposed project. This assessment is presented in the MIS report completed for this project; therefore, only a summary is presented in this section.

Based on species range and habitat characteristics, it was determined that the coho and pink salmon are not expected to be affected by the proposed project; therefore, these species are not analyzed in detail in

the MIS report. The MIS report discusses the potential direct, indirect, and cumulative effects of the WRD ATMP project alternatives on the cutthroat trout and Dolly Varden char.

Improved motorized access may increase the risk of over-harvest of fish by anglers (USFS 1997b). Regarding the overall access to Forest land, the following lists the alternatives in order from those providing the most access to those providing the least access: Alternative 3, Alternative 1, Alternative 2, and Alternative 4. Only Alternative 4 is substantially different from the other alternatives.

The most substantial direct impact of roads on fish species would be caused by the presence of red pipes, which can prevent migration of fish. Cutthroat trout and Dolly Varden char are at highest risk because they occupy smaller headwater streams during some parts of their lives (USFS 1997b). The condition under all of the project alternatives is the presence of a road system; therefore, the potential for the presence of red pipes remains an issue under all of the alternatives.

Of the actions analyzed for the proposed project, the one that would affect the presence of red pipes is the decommissioning of roads. Decommissioning results in the stabilization and restoration of unneeded roads to a more natural state. These roads are not drivable by motorized vehicles, but may be accessible to non-motorized users. Road drainage structures are removed and stream channels restored to their original contours. Decommissioned roads do not have the potential to contain red pipes, and therefore, would be considered improved fish habitat.

There would be no changes to the road system under the no action alternative. Effects from existing roads would continue at or near current levels. There are 24 roads currently scheduled for decommissioning under the no action alternative.

Under the proposed action, roads could continue to affect Cutthroat trout and Dolly Varden char in the project area; however, the effects may be slightly reduced through road decommissioning. An additional 41 miles of roads would be decommissioned.

Effects to Cutthroat trout and Dolly Varden char would slightly increase under alternative 3. Approximately 10.5 miles of roads that were previously closed to legal motorized use would be open to OHVs and high-clearance vehicles, for a total of 33 miles of ML1 roads. There are 24 road stream crossings (Class I and II streams) on the 10.5 miles of roads that were previously closed. Implementation of this alternative would decommission 36 miles of roads.

Effects to Cutthroat trout and Dolly Varden char in the project area could be largely reduced over the long term under alternative 4. Approximately 163.5 miles of roads would be closed to motorized traffic (ML1); an additional 120 miles from the current condition. Approximately 40 miles of roads would be decommissioned.

Table 3-10 summarizes the District-wide habitat and population trends for each MIS. These post-project trends are based on the current (pre-project) trends for each species and the anticipated effects of each alternative of the proposed project.

Table 3-10 Summary of District-wide Habitat and Population Trends for Management Indicator Fish Species in the Project Area

Species	Current Trend	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3 Motorized Access	Alternative 4 Maintenance Costs
Cutthroat trout	Stable	Stable	Increase	Stable	Increase
Dolly Varden char	Stable	Stable	Increase	Stable	Increase

3.2.2.2 Threatened, Endangered, And Sensitive Fish Species

Affected Environment

As part of the NEPA decision-making process, proposed USFS programs or activities are to be reviewed to determine how a proposed action would affect any threatened, endangered, proposed, or sensitive (TEPS) species. The effects analysis is required to address any direct, indirect, and cumulative effects of an action on federal TEP species or their critical habitat (50 Code of Federal Regulation [CFR] 402.02) and on sensitive species or their habitat (Forest Service Manual [FSM] 2672.42). In addition, the USFS has established direction and policy in FSM 2670 to guide habitat management for TEPS species.

The Biological Assessment and Biological Evaluation (BABE) for wildlife and fisheries resources completed for this project describes the range and habitat characteristics of all TEPS species that are listed for the TNF. No federal TEP or candidate fish species occur in the WRD (ADFG 2006a; USFWS 2005a, b; USFWS 2006), nor do any USFS sensitive fish species (USFS 2003a).

Environmental Consequences

Direct and Indirect Effects

The BABE for this project complies with Section 7 of the ESA of 1973, as amended, and meets the objectives set forth in FSM 2672.41; therefore, this section only presents a summary of the potential effects to TEPS species from the project alternatives.

Because no TEPS fish species occur within the project area, no effects are expected under any of the project alternatives.

3.2.2.3 Cumulative Effects to Fisheries

Cumulative impacts of this project include changes in the overall level of road maintenance in the project area and the accessibility of the project area for public use and resource management. Roads pose the greatest risk to fish resources on the TNF (USFS 2003). However, overall, numerous factors specific to the WRD, such as the filtering and buffering capacity of muskegs, the steep and simple stream networks, the high volumes of water, and the small and simple fish communities, lead resource specialists to believe that roads in the WRD may not have a negative effect on aquatic resources (Cady, T. 2006). The proposed action (alternative 2) and alternative 4 may also provide beneficial effects to aquatic resources through the decommissioning and storing of roads.

In addition to the proposed project, other planning efforts in the WRD include the following projects:

- The Canal-Hoya roads have been approved.
- The Bradfield roads will be studied in their own NEPA process.
- The Navy project on Etolin Island will include timber harvest and could affect the use of roads on that island.

Future projects may include additional timber sales, mineral exploration, or mineral development. Non-National Forest lands may also be developed for residential, recreational, or commercial use, which may include use of existing roads or construction of new roads. Projects such as timber harvests and road-building potentially have negatively affected and potentially will negatively affect fisheries. **Table 3-9** provides the proposed road mileage by maintenance level for other planning efforts in the WRD.

3.2.3 Geological Resources

The geological resources presented in this section include soils, erosion, and geology. While soils provide the foundation for forest growth and ecosystem health, they can also damage valuable aquatic resources when transported into streams and rivers. Roads can damage the ability of soils to support the forest. For this reason, soils and geomorphic processes that transport soils to the aquatic environment are discussed together. Geomorphic processes active in the forests of Southeast Alaska include a variety of landslide types (mass wasting) and erosion of exposed soil (surface erosion).

3.2.3.1 Soils

Affected Environment

Soil development in Southeastern Alaska is influenced by high levels of rainfall, cool marine temperatures, and moderately low yearly soil temperatures. Under these conditions, organic material decomposes slowly resulting in an accumulation of organic material. A thick organic surface horizon composed of forest litter is common on mineral soils. Deep organic soils develop where the movement of water is impeded by bedrock or other restrictive soil horizons. All areas with organic soils are considered wetlands. Mineral soils develop as bedrock, glacial, and alluvial deposits weather. These soils are generally thin and poorly developed on the recently glaciated landforms of Southeast Alaska.

The soils resources issue of concern for the proposed project is represented by roads that cross unstable soils, active alluvial fans, or high-gradient contained stream channels because these conditions present a higher potential for slope failure and risk of introducing sediment to associated streams than roads that cross stable soils and channel types. Unstable soils in the project area are described in the erosion section of this report (Section 3.2.3.2). Sensitive stream crossings are crossings located on alluvial fans or that span high-gradient contained channels. The high-gradient channels carry high bed-loads or are prone to shifting channels, high debris transport, and mass movement. Crossings on these types of streams have a high potential for failure and present a high risk to downstream water quality and fish habitat. **Table 3-11** presents the number of sensitive stream crossings for the current road system.

Table 3-11 Sensitive Stream Crossings in the Project Area

Watershed	Roads		
	Open	Closed	Total
Bushy	0	0	0
Etolin	54	24	78
Frosty Bay	3	1	4
Mainland	0	0	0
Other Islands	0	0	0
Rynda	3	1	4
Shrubby	0	0	0
Sokolof	0	0	0
Woronkofski	0	11	11
Wrangell	103	35	138
Zarembo	105	118	223
Total	268	190	458

Environmental Consequences

Direct and Indirect Effects

Overall, the proposed project would not significantly affect soils in the WRD because the majority of project activities would occur at existing roads where soil resources have already been altered. The only project activity that would affect soil resources is the new road construction. More information about the proposed road construction on Zarembo Island is presented in the Soils Resource Report for the Skipping Cow Timber Sale EA. All of the alternatives include this road construction; therefore, the effects to soils would not differ among the alternatives.

Closing roads on unstable soils, removing sensitive stream crossing structures, and reducing the level of motorized access in these areas would reduce the long-term risks associated with soil resources, including degradation of water quality and fish habitat. These risks would increase over the short-term from activities associated with storing and storm-proofing roads. **Table 3-12** summarizes the changes in sensitive stream crossings under each of the project alternatives.

There would be no changes to the road system under the no action alternative. Soils in the WRD would continue to be affected by roads in areas of unstable soils. There would be 268 sensitive road-stream crossings on open roads in the project area.

Roads would not significantly affect soils in the project area under the proposed action (alternative 2). One sensitive road-stream crossing would be added.

Effects to soils in the project area would slightly increase under alternative 3. Forty-eight sensitive road-stream crossings would be added.

Effects to soils in the project area would be largely reduced over the long term under alternative 4. There would be 140 sensitive road-stream crossings removed.

Further descriptions on the effects of the alternatives on soils are presented in the aquatic resources section and in the following section on erosion.

Table 3-12 Changes in the Number of Sensitive Stream Crossings by Island*

Island	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	Open	Closed	Open	Closed	Open	Closed	Open	Closed
Bushy	0	0	0	0	0	0	0	0
Etolin	0	0	1	-1	10	-10	-28	28
Frosty Bay	0	0	0	0	0	0	-3	3
Mainland	0	0	0	0	0	0	0	0
Other Islands	0	0	0	0	0	0	0	0
Rynda	0	0	-3	3	-3	3	-3	3
Shrubby	0	0	0	0	0	0	0	0
Sokolof	0	0	0	0	0	0	0	0
Woronkofski	0	0	0	0	0	0	0	0
Wrangell	0	0	-38	38	-19	19	-57	57
Zarembo	0	0	41	67	60	48	-49	157
Totals	0	0	1	107	48	60	-140	248

* Negative numbers represent decreases from the current condition. Positive numbers represent increases from the current condition.

3.2.3.2 Erosion

Affected Environment

There is almost no surface erosion in forested and non-forested areas of the TNF. Dense vegetation, a thick organic layer, and deep litter on the surface provide effective erosion protection. The organic soil horizon allows for nearly complete infiltration of rainfall and eliminates overland flow, which is one of the primary components of surface erosion. Additionally, if overland flow does occur from snowmelt or extreme precipitation events, the cohesive nature of the soils resists erosion.

While surface erosion is not a pervasive problem on the TNF, erosion associated with roads can occur. Roads expose the mineral soils underlying the surface organic layer to overland flow. Surface erosion from the road system is related to several factors including loss of vegetation cover, road gradient, cut-and-fill slopes, drainage structures, soil types, traffic levels, and climate.

The RCS data indicate that there are 201 occurrences of surface erosion and 409 occurrences of cut-slope and fill-slope erosion in the project area (**Table 3-13**). Additionally, there are 46 occurrences of water on roads and 57 missing structures. A detailed table which includes erosion occurrences for each watershed in the project area is included in the Wrangell Ranger District (excluding Zarembo Island) RA.

Table 3-13 Summary of Current Erosion Occurrences by Island

Island	Surface Erosion	Cut-and-Fill Slope Erosion	Water on Road	Missing Structure	Total
Wrangell	24	56	14	29	123
Etolin	12	60	30	16	118
Woronkofski	0	0	0	0	0
Rynda	2	0	2	0	4
Shrubby	6	3	0	8	17
Bushy	3	4	0	1	8
Frosty Bay	1	11	0	3	15
Zarembo*	153	275	NA	NA	428
Totals	201	409	46	57	713

* Erosion occurrences for Zarembo Island were only determined for Surface Erosion and Cut-and-Fill Erosion.
NA – Not Available

Mass wasting in the form of debris avalanches and flows, landslides, rock fall, and soil creep is a natural occurrence in Southeast Alaska. Roads, especially those on steep slopes, are subject to mass wasting. The most hazardous areas are steep slopes that have soils with distinct slip-planes, such as compacted glacial till or bedrock sloping parallel to the surface. Approximately 66 percent of the slopes in the project area are low (0 to 15 percent grade); therefore, the landslide potential is relatively low. Approximately 46,240 acres of land (2.6 percent) in the project area occur on steep slopes (between 35 and 55 percent grade). The remaining land (31 percent of the project area) occurs on areas with moderate slopes (between 15 and 25 percent grade). There are 2,353 acres of landslides in the project area. Only 14 percent of the landslide areas have a high hazard rating. Additionally, most of these landslides appear to have occurred independent of roads, as only 1.2 miles of roads occur in existing landslide areas. However, 31 roads (six on Etolin Island and 25 on Wrangell Island) are in close proximity to landslides (within 100 feet).

Sediment enters the aquatic environment at streams either from mass wasting or from surface erosion of roads. In Southeast Alaska, debris avalanches and failure of steep side slopes of the inner gorges of V-notches can deliver sediment directly to streams. Management activities, such as road building, can result in failure of steep side slopes of the V-notches. Class III streams are defined as non-fish-bearing and steeply incised. The amount of Class III streams indicates the sediment delivery potential in the watersheds of the project area. There are 2,858 miles of mapped Class III streams in the project area.

Sediment also enters the streams at road-stream crossings. There are 2,327 road-stream crossings in the project area.

Finally, road density can also be used as an indicator of surface erosion. Watersheds with higher road densities may have more surface erosion occurrences and greater sedimentation of streams. The Fisheries and Watershed Resources Report completed for this project presents the current road mileage and density by watershed.

Environmental Consequences

Direct and Indirect Effects

Surface erosion from road systems occurs mostly during and immediately following construction activities and following heavy precipitation events. Heavy equipment traffic on these roads from logging operations and maintenance activities can contribute sediment to streams.

Sedimentation of streams is most prevalent where roads encroach on streams. Among other effects, road-stream crossings can influence stream channels and water quality by contributing coarse and fine sediment. Road-stream crossings can be a major source of sediment to streams from high-flow events, the road surface, or cut-slope and fill-slope erosion. Diversion of streamflow at road-stream crossings is a key factor contributing to road failure and erosional consequences during large floods (Furniss et al. 1998, Weaver et al. 1995). **Table 3-4** summarizes the changes in the extent of open road-stream crossings from the current condition under each of the project alternatives.

There would be no changes to the road system under the no action alternative. Effects of erosion from existing roads, as measured by the number of road stream crossings, would continue at or near current levels. The number of road-stream crossings would remain the same.

The proposed action (alternative 2) would eliminate 37 road-stream crossings on open roads. Negative effects from erosion would be reduced by the closure or decommissioning of roads and the subsequent removal of road-stream crossings.

Under alternative 3, an additional 16 road-stream crossings would be created. Negative effects from erosion are expected to increase due to the creation of additional road-stream crossings.

Under alternative 4, negative effects from erosion would be reduced by the closure or decommissioning of roads and the subsequent removal of road-stream crossings. There would be 151 road-stream crossings on open roads removed.

The 36.1 miles of new road construction on Zarembo Island would add 47 stream crossings to the five different watersheds. Effects from these roads would occur under all alternatives, and are further evaluated in the Baht and Skipping Cow Timber Sale EISs.

Overall, the effects from erosion are expected to be slightly reduced under the alternatives 2 and 4, which involve measurable road closure or storage. Decommissioning roads would reduce sediment entering streams and, over time, would return the natural contours of the land. Additionally, some hydrological alterations caused by the loss of vegetation on roads would be eliminated once vegetative cover was reestablished on stored roads.

3.2.3.3 Geology

Affected Environment

Although the TNF has substantial mineral deposits including gold, silver, molybdenum, zinc, lead, and limestone, there are currently no active mines and valid mining claims are limited to Zarembo Island in the project area. Additionally, mineral activity tracts with high development potential have been identified on Zarembo Island, and Etolin Island has been identified as one of the areas with the most significant mineral development potential in the region (State of Alaska 2006).

An inventory of karst resources was completed for the Stikine area, including the WRD, in 1995 (USFS 1997b). The inventory determined that the area has a limited but significant cave resource. There are mapped karst resources in the central coast range in the northern part of the District, on the Kashevarof Islands, and on the western side of Etolin Island. Most caves in the area are known as solution caves. They form from water dissolving soluble carbonate bedrock, usually limestone. Another type of cave found in the Stikine area is littoral caves, which are sea caves usually found on shores and formed by wave action.

Environmental Consequences

Direct and Indirect Effects

There would be no effect to mineral resources in the project area as a result of any of the alternatives. No mining currently occurs in the project area, and the mineral potential would not be altered by any of the alternatives. The closure of roads would indirectly decrease the accessibility of the area for prospecting if economical mineral deposits exist. However, any future mineral development in the project area would be subject to Forest Plan guidelines and environmental review under NEPA.

Roads in the project area do not currently affect karst and cave resources; as such, road closures and maintenance level changes to the road system would have no measurable effects. Additionally, none of the proposed roads would be built near caves.

3.2.3.4 Cumulative Effects to Geological Resources

Cumulative impacts of this project include changes in the overall level of road maintenance in the project area and the accessibility of the project area for public use and resource management. Disturbance to geological resources related to this project is not expected to contribute substantially to cumulative effects in the project area.

In addition to the proposed project, other planning efforts in the WRD include the following projects:

- The Canal-Hoya roads have been approved.
- The Bradfield roads will be studied in their own NEPA process.
- The Navy project on Etolin Island will include timber harvest and could affect the use of roads on that island.

Future projects may include additional timber sales, mineral exploration, or mineral development. Non-National Forest lands may also be developed for residential, recreational, or commercial use, which may include use of existing roads or construction of new roads. Projects such as timber harvests and road-building potentially have affected and potentially will affect geological resources. **Table 3-9** provides the proposed road mileage by maintenance level for other planning efforts in the WRD.

3.2.4 Vegetation Resources

The vegetation resources discussed in this section include habitat types; threatened, endangered, and sensitive species; invasive plants; timber harvest; and forest health.

3.2.4.1 Habitat Types

Affected Environment

On an ecosystem scale, the WRD is composed of five biogeographic provinces. Most of the mainland is within the Central Coast Range Province and the Ice Fields Province, and portions are within the North Misty Fjords Province and the Revilla Island/Cleveland Peninsula Province. The islands in the WRD are within the Etolin Island and Vicinity Provinces. Each province is described in the TLMP (USFS 1997a).

Vegetation in the WRD is typical of southeast Alaska's temperate rain forest, exhibiting a naturally fragmented mosaic of open muskeg, scrub forest wetlands, riparian areas, and old-growth forest. Western hemlock, Sitka spruce, western red cedar, and Alaska yellow cedar are the primary tree species and occupy most of the productive soils. Mountain hemlock and shore (lodgepole) pine grow at higher elevations and on poorly drained, forested, wetland sites. Red alder is common on recently disturbed sites. The closed-canopy forest and high humidity make the understory an ideal place for moss, which covers the ground, fallen logs, trees, and forest openings. Muskeg communities dominate the lowlands and consist of a variety of vegetation, including sphagnum moss, sedges, rushes, forbs, and low-growing shrubs. The alpine community occurs on high-elevation ridge tops and consists of scrubby lodgepole pine and mountain hemlock. These trees exhibit krummholz appearance and are found with an understory of sub-alpine plants (USFS 2005b).

Table 3-14 present the habitat types found in the project area and the extent of the current road system within each habitat type, assuming a 14-foot road width for temporary roads and a 16-foot road width for NFS roads. Figures of these habitat types can be found in the Biological Assessment for Plants associated with this project. These habitat types were identified using data contained in the USFS GIS vegetation layers. Roads that are open are currently converted habitat, whereas roads that are now closed are at some stage of regrowth.

Table 3-14 Current Road System by Habitat Type

Habitat Type	Acres in Project Area ¹	Percent of Project Area ²	Open* Roads (acres ^{**})	Closed*** Roads (acres)	All Roads (acres)
Alder brush	20,108.7	1.1	0	0.1	0.1
Alpine	398,120.0	2.3	0	0	0
Borrow pit	9.0	0	0.4	0.1	0.5
Brush	88,845.9	5.1	0	0.1	0.1
Census freshwater	17,076.5	1.0	0	0	0
Forested no structure	419,090.7	23.9	126.7	36.6	163.4
Freshwater	9,224.1	0.5	0	0	0
Ice-Snow	226,852.0	13.0	0	0	0
Muskeg-Meadow	4,352.7	0.2	4.5	0.8	5.3
Natural grassland	10,601.6	0.6	0.3	0.4	0.7
No assigned habitat type	28,758.7	1.6	57.1	65.5	122.6
Other	6,693.0	0.4	0.3	0	0.3
Productive forest	480,496.8	27.5	160.0	77.6	237.6
Recurrent slide	29,024.0	1.7	0	0	0
Rock	277,554.2	15.9	0	0	0
Salt water	70,369.2	4.0	97.6	40.0	137.6

Table 3-14 Current Road System by Habitat Type

Habitat Type	Acres in Project Area ¹	Percent of Project Area [‡]	Open* Roads (acres ^{**})	Closed ^{***} Roads (acres)	All Roads (acres)
Scrub forest	20,459.6	1.2	99.9	98.1	198.0
Uplifted beach	19.4	0	0.5	0	0.5
Urban-Agricultural	70.1	0	0.1	0	0.1
Willow	683.8	0	0	0	0
Total	1,750,110.0	100.0	547.4	319.3	866.7

* Open roads include all NFS and unauthorized roads that are used by motorized traffic.
 ** Acreage is based on 16-foot width for NFS roads and 14-foot width for temporary roads.
 *** Closed roads are closed to motorized traffic and are stored or decommissioned.
[‡] Rounding accounts for slight variations in values.
¹ Habitat acreages based on USFS GIS vegetation coverage.

Old-growth forests are an important ecosystem that can be negatively affected by roads through habitat fragmentation, habitat loss such as timber harvest, and by allowing access for future habitat fragmentation. Old-growth forests provide a very high level of biodiversity, serve as genetic reservoirs, and provide a variety of habitats for thousands of species including many that are not found elsewhere. The TLMP (USFS 1997a) designated the Old-Growth Habitat LUD within the WRD, which is also known as the system of old-growth habitat reserves (OGRs). One purpose of this LUD is to provide relatively large, unfragmented blocks of natural habitats. Roads in the Old-Growth Habitat LUD are to be limited to those that are compatible with old-growth management objectives. New road construction is generally inconsistent with the objectives of this LUD unless no feasible alternatives are available (USFS 1997a). In addition to the OGRs, there is a large amount of old-growth habitat that exists in the project area but that is outside of OGRs. **Table 3-15** summarizes the current road system in OGRs and additional old-growth habitat in the project area.

Table 3-15 Road System in Old-Growth Habitats

Location	OGRs				Additional Old-Growth Habitat*			
	All OGRs (acres)	Open** Road Density ^{***}	Closed [†] Road Density	All Roads Density	All Old-Growth (acres) ¹	Open ** Road Density ^{***}	Closed [†] Road Density	All Roads Density
Bushy	0	0	0	0	754.1	0.14	0	0.14
Etolin	48,284.6	0.03	0.01	0.04	96,106.0	0.11	0.06	0.17
Frosty Bay	2,564.5	0	0	0	4,535.0	0.59	0.12	0.72
Rynda	0	0	0	0	1,312.4	0.12	0.01	0.13
Shrubby	0	0	0	0	1,110.2	0	0.05	0.05
Other Mainland	35,866.8	0	0	0	252,529.6	0	0	0
Other Islands	1,896.4	0	0	0	20,659.2	0	0	0
Sokolof	0	0	0	0	489.1	0	0.01	0.01
Woronkofski	1,364.2	0	0	0	7,215.3	0	0.04	0.04
Wrangell	32,400.3	0.40	0.12	0.52	31,922.9	0.29	0.06	0.35
Zarembo	36,946.7	0.15	0.32	0.47	52,055.16	0.37	0.12	0.49

* Additional old-growth habitat includes that which is located within the project area but not within the designated Old-Growth LUD.
 ** Open roads include all NFS and unauthorized roads that are used by motorized traffic.
 *** Density (miles per square mile) is based on the acreage of old-growth habitat or Old-Growth LUD on each island and the Frosty Bay sub-analysis area. Rounding accounts for slight variations in values.
[†] Closed roads are closed to motorized traffic and are stored or decommissioned.

Environmental Consequences

Direct and Indirect Effects

A full analysis of effects to habitat types is provided in the BE for vegetation resources completed for this project. A full analysis of effects to old-growth habitats in particular is provided in the MIS report completed for this project.

Table 3-16 summarizes the changes to the road system by habitat type under each of the four project alternatives. Because the value for all roads includes both open and closed roads, the total acres of roads in the WRD would not change under any of the alternatives; therefore, **Table 3-16** presents only open roads and closed roads (separately).

There would be no changes to the road system under the no action alternative, and therefore no direct effects to habitat types in the WRD. The indirect effects from roads would be most prevalent in the forested, muskeg, and scrub forest habitat types.

Under the proposed action, effects to habitats in the project area would be reduced through road decommissioning. Open road acreage in the project area would be reduced by 73.2 acres. The majority of these acres would occur in the forested and scrub forest habitat types.

Effects to habitat types under alternative 3 would be negligible. The open road acreage in the project area would be reduced by 0.6 acre. Under this alternative, 74.5 miles of ML 3 roads would be downgraded to ML 2 roads for a total of 249.5 miles of roads open to OHVs, however the change from ML 3 to ML 2 would not affect habitat types.

Under alternative 4, effects to habitats would be largely reduced through road decommissioning. Open road acreage in the project area would be reduced by 252.3 acres under alternative 4. The majority of these acres would occur in the forested and scrub forest habitat types.

Table 3-16 Changes to Road System by Habitat Type^{!!}

Habitat Type [!]	Alternative 1 No Action			Alternative 2 Proposed Action			Alternative 3 Motorized Access			Alternative 4 Maintenance Costs		
	Open* Roads (acres)**	Closed*** Roads (acres)	All Roads (acres)	Open Roads (acres)	Closed Roads (acres)	All Roads (acres)	Open Roads (acres)	Closed Roads (acres)	All Roads (acres)	Open Roads (acres)	Closed Roads (acres)	All Roads (acres)
Alder brush	0	0	0	0	0	0	0	0	0	0	0	0
Alpine	0	0	0	0	0	0	0	0	0	0	0	0
Borrow pit	0	0	0	-0.2	+0.2	0	-0.1	+0.1	0	-0.2	+0.2	0
Brush	0	0	0	0	0	0	0	0	0	0	0	0
Census freshwater	0	0	0	0	0	0	0	0	0	0	0	0
Forested no structure	0	0	0	-13.1	+27.2	+14.1	+0.3	+13.6	+13.9	-52.3	+66.2	+13.9
Freshwater	0	0	0	0	0	0	0	0	0	0	0	0
Ice-Snow	0	0	0	0	0	0	0	0	0	0	0	0
Muskeg-Meadow	0	0	0	-0.9	+0.9	0	-0.5	+0.5	0	-1.8	+1.8	0
Natural grassland	0	0	0	0	0	0	+0.4	-0.4	0	0	0	0
No assigned habitat type	0	0	0	-16.5	+16.5	0	-11.2	+11.2	0	-47.3	+47.3	0
Other	0	0	0	0.0	0	0	0	0	0	0	0	0
Productive forest	0	0	0	+0.8	+42.9	+43.7	+16.9	+26.5	+43.4	-60.2	+103.6	+43.4
Recurrent slide	0	0	0	0	0	0	0	0	0	0	0	0
Rock	0	0	0	0	0	0	0	0	0	0	0	0
Salt water	0	0	0	-21.0	+21.0	0	-6.4	+6.4	0	-33.8	+33.8	0
Scrub forest	0	0	0	-22.2	+25.5	+3.3	-0.1	+3.3	+3.2	-56.5	+59.8	+3.2
Uplifted beach	0	0	0	0	0	0	0	0	0	0	0	0
Urban-Agricultural	0	0	0	0	0	0	0	0	0	-0.1	+0.1	0
Willow	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	-73.2	+134.3	+61.1	-0.6	+61.1	+60.5	-252.3	+312.8	+60.5

* Open roads include all NFS and unauthorized roads that are used by motorized traffic.

** Acreage is based on 16-foot width for NFS roads and 14-foot width for unauthorized roads.

*** Closed roads are closed to motorized traffic and include stored and decommissioned roads.

[!] Habitat acreages based on USFS vegetation coverage.

^{!!} Negative numbers represent decreases from the current condition. Positive numbers represent increases from the current condition.

In addition to the current road system, there would be 36.1 miles of new road construction in the project area, which would occur under all action alternatives. Assuming a 20-foot-wide disturbance area buffer for new roads (temporary and permanent disturbance combined), construction of the new roads would impact a total of 35.7 acres of habitats in the project area including 23.7 acres of productive forest habitat, 4.1 acres of non-vegetated habitats, 0.3 acre of scrub forest habitat, and 7.6 acres of forested habitat with no assigned structure level.

Table 3-17 summarizes the changes in road density from the current condition under each of the project alternatives for OGRs and additional old-growth habitat combined. The existing road system in OGRs and additional old-growth habitat exists primarily on Wrangell and Zarembo Islands, and to some extent on Etolin Island. Roads also occur in low numbers on Bushy and Rynda Islands, and in Frosty Bay in additional old-growth habitat.

Location	Alternative 1 No Action		Alternative 2 Proposed Action		Alternative 3 Motorized Access		Alternative 4 Maintenance Costs	
	Open* Road Density**	Closed*** Road Density	Open Road Density	Closed Road Density	Open Road Density	Closed Road Density	Open Road Density	Closed Road Density
Bushy Island	0	0	-0.04	+0.04	-0.04	+0.04	-0.14	+0.14
Etolin Island	0	0	0	0	-0.01	+0.01	-0.06	+0.06
Frosty Bay	0	0	-0.11	+0.11	-0.11	+0.11	-0.59	+0.59
Rynda Island	0	0	-0.12	+0.12	-0.12	+0.12	-0.12	+0.12
Shrubby Island	0	0	0	0	0	0	0	0
Other Mainland	0	0	0	0	0	0	0	0
Other Islands	0	0	0	0	0	0	0	0
Sokolof Island	0	0	0	0	0	0	0	0
Woronkofski Island	0	0	0	0	0	0	0	0
Wrangell Island	0	0	-0.07	+0.07	-0.04	+0.04	-0.16	+0.16
Zarembo Island	0	0	+0.05	+0.25	+0.12	+0.19	-0.19	+0.50

* Open roads include all NFS and unauthorized roads that are used by motorized traffic.
 ** Density (miles per square mile) is based on the acreage of landmass in each WAA.
 *** Closed roads are closed to motorized traffic and include stored and decommissioned roads.
 !! Negative numbers represent decreases from the current condition. Positive numbers represent increases from the current condition.

Creation of roads causes habitat loss and fragmentation. Road construction converts habitats into open areas for a potentially long period. Storing and decommissioning roads decreases this habitat loss and fragmentation over time as vegetation develops.

There would be no additional effects to old-growth reserves or additional old-growth habitat in the project area under the no action alternative. Effects from existing roads, including habitat fragmentation, would continue.

Under the proposed action, effects to old-growth reserves or additional old-growth habitat would be slightly reduced. Open road density would be reduced by 0.29 miles per square mile.

Under alternative 3, effects would also be slightly reduced. Open road density would be reduced by 0.18 miles per square mile.

Under alternative 4, effects to old-growth would be reduced. Open road density would be reduced by 1.26 miles per square mile.

None of the new road construction that would occur under the action alternatives is proposed in the Old-Growth Habitat LUD. However, 7.8 miles would be located in the additional old-growth habitat. Assuming a 20-foot-wide disturbance area buffer (temporary and permanent disturbance combined), 18.9 acres of this habitat would be impacted by the new road construction.

Overall, old-growth habitats will not be reduced as a result of this project. As well, changes to amount and distribution of coarse canopy are not expected as a result of any alternative in this project (Cady, M. 2006).

3.2.4.2 Threatened, Endangered, And Sensitive Plants

Affected Environment

No federal TEP plant species occur in the WRD (NatureServe 2005, USFWS 2005a), nor do any federal candidate species (USFWS 2005b).

The only USFS sensitive plant species that is known to occur in the WRD is Davy mannagrass (*Glyceria leptostachya*). Davy mannagrass is present on Wrangell Island and Etolin Island in the project area. Davy mannagrass is very common in Wrangell, where it is especially abundant on wet disturbed sites such as roadside ditches. Several other sensitive plants are suspected to occur in the WRD, including bog orchid (*Platanthera gracilis*), calder lovage (*Ligusticum caldera*), edible thistle (*Cirsium edule*), goose-grass sedge (*Carex lenticularis* var. *dolia*), loose-flowered bluegrass (*Poa laxiflora*), Wright filmy fern (*Hymenophyllum wrightii*), and truncate quillwort (*Isoetes x truncata*), (USFS 2003a, 2005a). These species are suspected to occur in the project area because the project area contains appropriate habitat and is within the historical range of these plants. These species are described in the BE for vegetation resources completed for this project.

TLMP (USFS 1997a) direction for sensitive plants is to provide for the conservation of habitats that support populations of sensitive plant species to maintain representative populations across all islands or all terrestrial landscapes throughout their range.

Environmental Consequences

Direct and Indirect Effects

A full analysis of effects to TEP and sensitive plant species is provided in the BE for vegetation resources completed for this project; therefore, only a summary is provided in this section.

Because no federal TEP plant species occur in the WRD, no effects to TEP plants species would result from any of the project alternatives.

Because surveys for sensitive plants would not be conducted before project implementation, there is a small chance that individual plants or small populations may be directly affected by project activities. If a sensitive species is present in the area of potential effect, direct effects may include disturbance, trampling or crushing or incidental removal during work on existing roads. In addition, if a sensitive species is present in the areas of new road construction, individuals or small populations may be destroyed.

Indirect effects vary by plant species, and detailed descriptions of these effects can be found in the BE for vegetation resources. In general, alternatives that reduce open roads in suitable habitats for sensitive plant

species may slightly improve the long-term habitat conditions by increasing the availability of suitable habitats, reducing the level of disturbance, and reducing the potential for invasion by non-native weedy species. Another potential indirect effect to sensitive plant species is removal of suitable habitats by road construction.

Table 3-18 presents a summary of determinations for USFS sensitive plant species evaluated for the WRD ATMP project under each alternative. The effects of open roads in suitable sensitive plant habitats would remain nearly the same as the current condition under alternative 2. The acreage of open roads in suitable habitat would only slightly increase under alternative 2. Under alternative 3, there would be additional acres of open roads in these habitats. Alternative 4 would reduce the acreage of open roads in suitable habitats to zero acres for some species.

Table 3-18 USFS Sensitive Species Effect Determinations	
Species	Determination (under all alternatives)
Bog orchid	May adversely impact individuals, but not likely to result in a loss of viability on the planning area
Calder lovage	May adversely impact individuals, but not likely to result in a loss of viability on the planning area
Davy mannagrass	May adversely impact individuals, but not likely to result in a loss of viability on the planning area
Edible thistle	May adversely impact individuals, but not likely to result in a loss of viability on the planning area
Goose-grass sedge	May adversely impact individuals, but not likely to result in a loss of viability on the planning area
Loose-flowered bluegrass	May adversely impact individuals, but not likely to result in a loss of viability on the planning area
Truncate quillwort	No impact
Wright filmy fern	May adversely impact individuals, but not likely to result in a loss of viability on the planning area

3.2.4.3 Invasive Plants

Affected Environment

Currently, invasive plants are only a problem along some roads in the WRD; however, several species have become established. Documented infestations of invasive species are assigned, by the Alaska Natural Heritage Program (ANHP), an invasive ranking that falls within the range of 0 (low) to 100 (high) (ANHP 2006). Management guidelines regarding invasive species are not included in the TLMP (USFS 1997a); however, the TNF current management strategy includes; prevention, early detection and rapid response, control and management, and rehabilitation and restoration (Lerum and Krosse 2005). The Tongass National Forest Invasive Plant Management Plan (Lerum and Krosse 2005) describes strategic action elements and provides a list of priority invasive plants. Six roads (totaling 16.8 miles of roads) in the project area have documented non-native plant infestations ranked higher than 60. All of these occurrences are for reed canary grass (invasiveness ranking of 83) and occur on Etolin Island. These roads are identified in the WRD (excluding Zarembo Island) RA (USFS 2006a). Other locations in the WRD have occurrences of reed canary grass, but there are no data to show its location or spread. Generally, this species can be found on many of the older roads but not on the newly constructed roads because, in locations such as Zarembo Island, it was originally introduced for erosion control on roads.

Environmental Consequences

Direct and Indirect Effects

Roads can provide a corridor for the transport of non-native, invasive plant species into new areas. The cleared area that encompasses a road right-of-way provides suitable habitat for many species of invasive plants. Traffic and maintenance activities along roads also serve to spread invasive species. The action of downgrading, particularly in conjunction with storing, would decrease the potential for spread of reed canary grass and other invasive plants along the roads by preventing motorized access.

Overall, the project alternatives would have little effect on the presence of invasive species in the project area, and the resulting conditions would not differ significantly among the alternatives. There is the potential for introduction of invasive species during activities related to storing and decommissioning roads under the action alternatives, however these effects are expected to be reduced through Best Management Practices (BMPs).

The most effective measures to control the proliferation of invasive plants are prevention and early detection. Regardless of the alternative selected, an invasive plants monitoring program should be developed and implemented to identify the presence of invasive plants along NFS roads.

3.2.4.4 Timber Management

Affected Environment

The forest products industry has been a major part of the economy of Southeast Alaska since the 1950s. The existing road system in the WRD was primarily developed to support past timber sales, and it is capable of supporting reasonably foreseeable timber sale projects. The primary use of the road system is and will continue to be for supporting a sustainable, economically viable timber management program. Approximately 319,309 acres (18 percent) of land in the project area is in the Timber Production LUD. The primary commercial tree species present in the project area are western hemlock, mountain hemlock, yellow cedar, western redcedar, and Sitka spruce. Appendix C in both the Zarembo Island RA (USFS 2005a) and the WRD (excluding Zarembo Island) RA (USFS 2006a) identify the roads in the WRD that are needed for future silvicultural activities.

Environmental Consequences

Direct and Indirect Effects

New NFS and temporary roads would be built under all of the alternatives and existing roads would be maintained or reconstructed for future timber harvest projects. Present needs for some roads are based on when silvicultural activities would occur. Some of these roads would be left open until the silvicultural activities have been completed, and then they would be stored. Some roads with later proposed dates for silvicultural activities would be storm-proofed or stored with the understanding that they may be re-opened for future timber management and silvicultural activities.

Under the no action alternative, there would be no effects to timber management. Existing roads would be maintained for future timber harvest projects.

Under the proposed action, there would be some negative effects to timber management. Approximately 22 miles of roads that are currently open, would be stored. There would be 41 miles of roads decommissioned. The costs of re-opening stormproofed or stored roads will be born by the purchaser of the timber sale. These costs may be a deterrent for future timber sales.

Under alternative 3, there would be no effects to timber management. Approximately 33 miles of road would be closed to motorized vehicles (ML1). Approximately 10.5 miles of roads that were previously

closed to motorized use would be open. Under this alternative, 74.5 miles of ML3 roads would be downgraded to ML2 roads, however, it is not anticipated that this change would affect timber management. Approximately 36 miles of roads would be decommissioned.

Under alternative 4, there would be negative effects to timber management. Approximately 120 miles of roads that are currently open would be stored. The costs of re-opening stormproofed or stored roads will be born by the purchaser of the timber sale. These costs may be a deterrent for future timber sales. In some situations, the cost to re-open some roads for smaller salvage sales would be prohibitive. Additionally, there would be 40 miles of roads decommissioned.

3.2.4.5 Forest Health

Affected Environment

There are several pathogens and fungi in the project area. High occurrence of these pathogens and fungi can negatively affect forest health and, at times, require management to improve stand vigor; however, these populations rarely cause noticeable large-scale damage. Disturbance factors most likely to affect forest health are described below.

Dwarf-mistletoe (*Arceuthobium tsugense*) is a parasitic flowering plant that reduces growth rate, kills trees directly, or predisposes them to attack by insects thereby accelerating the death of the tree. Practices such as the incomplete removal of infested trees in timber harvest areas and the perpetuation of uneven-aged stand conditions have promoted its spread.

There is decay fungi throughout the project area. Western hemlock is the most common conifer affected by several different species of decay pathogens. Most notable among decay pathogens on the TNF are *Heterobasidion annosum* and *Phellinius weiri*, which are both root rots that can quickly affect the bole of trees.

There has also been considerable mortality of Alaska yellow cedar in Southeast Alaska. Mortality can occur in small patches or can cover expansive areas. Affected trees may die quickly within the first 2 or 3 years or more slowly over a 15-year period. The cause of Alaska yellow cedar decline is not completely understood, but the occurrence is generally associated with boggy conditions, usually near muskegs.

Environmental Consequences

Direct and Indirect Effects

The proposed project is not expected to significantly affect forest health, and the resulting conditions would not differ among the project alternatives.

3.2.4.6 Cumulative Effects to Vegetation Resources

Cumulative impacts of this project include changes in the overall level of road maintenance in the project area and the accessibility of the project area for public use and resource management. Disturbance to vegetation resources related to this project is not expected to contribute substantially to cumulative effects in the project area.

In addition to the proposed project, other planning efforts in the WRD include the following projects:

- The Canal-Hoya roads have been approved.
- The Bradfield roads will be studied in their own NEPA process.
- The Navy project on Etolin Island will include timber harvest and could affect the use of roads on that island.

Future projects may include additional timber sales, mineral exploration, or mineral development. Non-National Forest lands may also be developed for residential, recreational, or commercial use, which may include use of existing roads or construction of new roads. Projects such as timber harvests and road-building potentially have affected and potentially will affect vegetation. **Table 3-9** provides the proposed road mileage by maintenance level for other planning efforts in the WRD.

3.2.5 Wildlife

Wildlife resources discussed in this section include MIS and threatened, endangered, and sensitive species.

3.2.5.1 Management Indicator Species

Affected Environment

Terrestrial MIS that occur on the WRD include: the mountain goat, Sitka black-tailed deer, river otter, marten, black bear, brown bear, Alexander Archipelago wolf, red squirrel, bald eagle, red-breasted sapsucker, hairy woodpecker, brown creeper, and Vancouver Canada goose (USFS 2003a). Of the above species, the brown bear, marten, deer, and wolf have been identified as having special management concerns (USFS 2003a). Range and habitat descriptions for these species can be found in the MIS report for this project.

Many wildlife populations in the TNF are typically analyzed at the level of Wildlife Analysis Areas (WAAs) rather than by island. **Table 3-19** presents the current road system in each WAA in the project area. The associated figures can be found in the Biological Assessment associated with this project.

Table 3-19 Current Road System by WAA

WAA	Location	Acres in Project Area	Open* Road Density**	Closed*** Road Density	All Roads Density
0	Other Mainland	32,424.8	0	0	0
1605	Other Mainland	31,194.3	0	0	0
1706	Other Mainland	98,658.0	0	0	0
1707	Other Mainland	80,725.2	0	0	0
1708	Other Mainland	208,424.5	0	0	0
1809	Other Mainland	128,611.9	0	0	0
1810	Other Mainland	59,365.0	0	0	0
1811	Other Mainland	92,365.5	0	0	0
1812	Other Mainland	99,478.2	0	0	0
1813	Other Mainland	237,538.6	0	0	0
1814	Other Mainland	69,411.1	0	0	0
1815	Frosty Bay sub-analysis area and other mainland	43,750.0	0	0	0
1816	Other Mainland	35,998.4	0.21	0.10	0.32
1901	Etolin Island (north)	133,147.8	0.25	0.14	0.39
1902	Deer Island	9,555.5	0	0	0
1903	Wrangell Island	134,814.8	0.50	0.18	0.68
1904	Rynda, Sokolof, Woronkofski, Vank, Grey's, and Kadin Islands	23,149.3	0.07	0.26	0.33
1905	Zarembo Island	117,789.3	0.55	0.49	1.04

Table 3-19 Current Road System by WAA

WAA	Location	Acres in Project Area	Open* Road Density**	Closed*** Road Density	All Roads Density
1906	Bushy Island, Shrubby Island, and adjacent islands	11,371.6	0.57	0.61	1.17
1910	Etolin Island (south)	102,336.2	0	0	0
Total	WRD	1,632,320.7	-	-	-

* Open roads include all NFS and unauthorized roads that are used by motorized traffic.
 ** Density (miles per square mile) is based on the acreage of landmass in each WAA.
 *** Closed roads are closed to motorized traffic and include stored and decommissioned roads.

Environmental Consequences

Direct and Indirect Effects

Table 3-20 summarizes the changes to the road system under each of the project alternatives. Because the density value for all roads includes both open and closed roads, the total road density in the WRD would not change under any of the alternatives; therefore, **Table 3-20** presents only open road density and closed road density (separately). Overall, reductions in open road density from the current condition (alternative 1) would occur in all affected WAAs under alternatives 2 and 4, with the greatest reductions occurring under alternative 4. Alternative 3 would increase the open road density in some WAAs and decrease it in others.

Table 3-20 Changes to Road Density by WAA¹¹

WAA	Alternative 1 No Action		Alternative 2 Proposed Action		Alternative 3 Maximize Access		Alternative 4 Maximize Budget	
	Open* Road Density**	Closed*** Road Density	Open Road Density	Closed Road Density	Open Road Density	Closed Road Density	Open Road Density	Closed Road Density
0	0	0	0	0	0	0	0	0
1605	0	0	0	0	0	0	0	0
1706	0	0	0	0	0	0	0	0
1707	0	0	0	0	0	0	0	0
1708	0	0	0	0	0	0	0	0
1809	0	0	0	0	0	0	0	0
1810	0	0	0	0	0	0	0	0
1811	0	0	0	0	0	0	0	0
1812	0	0	0	0	0	0	0	0
1813	0	0	0	0	0	0	0	0
1814	0	0	0	0	0	0	0	0
1815	0	0	0	0	0	0	0	0
1816	0	0	-0.03	+0.03	+0.03	-0.03	-0.21	+0.21
1901	0	0	-0.04	+0.04	0	0	-0.12	+0.12
1902	0	0	0	0	0	0	0	0
1903	0	0	-0.11	+0.11	-0.05	+0.04	-0.17	+0.17
1904	0	0	-0.07	+0.07	-0.07	+0.07	-0.07	+0.07
1905	0	0	0	+0.19	+0.10	-0.10	-0.31	+0.51

Table 3-20 Changes to Road Density by WAA^{!!}

WAA	Alternative 1 No Action		Alternative 2 Proposed Action		Alternative 3 Maximize Access		Alternative 4 Maximize Budget	
	Open* Road Density**	Closed*** Road Density	Open Road Density	Closed Road Density	Open Road Density	Closed Road Density	Open Road Density	Closed Road Density
1906	0	0	-0.14	+0.14	-0.15	+0.14	-0.57	+0.56
1910	0	0	0	0	0	0	0	0

* Open roads include all NFS and unauthorized roads that are used by motorized traffic.
** Density (miles per square mile) is based on the acreage of landmass in each WAA.
*** Closed roads are closed to motorized traffic and include stored and decommissioned roads.
!! Negative numbers represent decreases from the current condition. Positive numbers represent increases from the current condition.

In general, roads can directly affect terrestrial MIS in any of the following ways, depending on the species: disturbance from frequent loud noise from the road system, harassment, or general increased human presence; road kill; fragmentation of habitat, invasive species introduction, habitat loss; and increased access for hunting, trapping, and fishing activities. Open roads have the greatest potential to impact wildlife via human activities because they are accessible to motorized and non-motorized traffic. To a lesser extent, closed roads may impact wildlife via human activities when accessed by non-motorized means and accessed illegally by motorized vehicles. In general, roads indirectly affect MIS by causing habitat loss and fragmentation. Road construction converts habitats into open areas for a potentially long period of time. Storing and decommissioning roads decreases this habitat loss and fragmentation over time as vegetation develops. For this reason, open roads are considered to have greater potential to affect wildlife habitats compared with closed roads. However, closed roads have greater impact compared with unroaded areas. Closed road density would increase under all action alternatives.

Each MIS was assessed for its potential to be affected by the proposed project. This assessment is presented in the MIS report completed for this project; therefore, only a summary is presented in this section. Based on species range and habitat characteristics, it was determined that the proposed project has the potential to affect five terrestrial MIS: the Alexander Archipelago wolf, black bear, brown bear, marten, and Sitka black-tailed deer. The MIS report discusses the potential direct, indirect, and cumulative effects of the WRD ATMP project alternatives on these species.

In general, none of the alternatives in this project will contribute to population reductions of any wildlife species under consideration. District-wide habitat and population trends for MIS species would continue to be stable under all of the alternatives and would possibly increase under alternative 4.

3.2.5.2 Threatened, Endangered, And Sensitive Species

Affected Environment

Two federal TEP wildlife species occur within the boundaries of the WRD: the humpback whale and the Steller sea lion; however, these species occur primarily in the marine environment (NatureServe 2005; USFWS 2005a, 2006; ADFG 2006b; NMFS 2006a, b), and Steller sea lion haulouts are not located near any NFS roads (NMFS 2006c). The Kittlitz's murrelet is a federal candidate species that has potential nesting habitat in the WRD (NatureServe 2005; USFWS 2005b, 2006; Cady, M. 2006). Terrestrial USFS sensitive species that are found in the WRD include: northern goshawk, osprey, Peale's peregrine falcon, and trumpeter swan (USFS 2003a). The Queen Charlotte goshawk has been identified as having additional special management concerns (USFS 2003a).

Literature reviews and agency consultations with the USFWS (Steve Brockmann), NMFS (Kaja Brix and Erika Phillips), and ADFG (Rich Lowell) were conducted to determine which of these species may be present in the project area and potentially affected by the proposed project.

Environmental Consequences

Direct and Indirect Effects

The BABE for wildlife and fisheries resources completed for this project complies with Section 7 of the ESA and meets the objectives set forth in FSM 2672.41; therefore, the following section only presents a summary of the potential effects to TEPS from the project alternatives.

Table 3-20, above summarizes the changes to the road system by WAA under each of the project alternatives. No effects to TEP wildlife species would result from any of the project alternatives because these species do not occur in habitats affected by this project.

Each USFS sensitive species was assessed for its potential to be affected by the proposed project. This assessment is presented in the BABE for wildlife and fisheries resources. Based on species range and habitat characteristics, it was determined that the proposed project may have the potential to affect five USFS sensitive wildlife species: the Kittlitz’s murrelet, osprey, Peale’s peregrine falcon, goshawk, and trumpeter swan. The BABE discusses the potential direct, indirect, and cumulative effects of the WRD ATMP project alternatives on these species.

Table 3-21 presents a summary of determinations for USFS sensitive wildlife species under each alternative. For each species, the effect determination does not differ among alternatives.

Table 3-21 USFS Sensitive Species Effect Determinations

Species	Determinations			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Kittlitz’s murrelet	No Impact	No Impact	No Impact	No Impact
Osprey	No Impact	No Impact	No Impact	No Impact
Peale’s peregrine falcon	No Impact	No Impact	No Impact	No Impact
Queen Charlotte (Northern) goshawk	No Impact	Beneficial Impact	May adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range wide	Beneficial Impact
Trumpeter swan	May adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range wide	May adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range wide	May adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range wide	May adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability range wide

3.2.5.3 Cumulative Effects to Wildlife

Cumulative impacts of this project include changes in the overall level of road maintenance in the project area and the accessibility of the project area for public use and resource management. Disturbance to wildlife resources related to this project is not expected to contribute substantially to cumulative effects in the project area.

In addition to the proposed project, other planning efforts in the WRD include the following projects:

- The Canal-Hoya roads have been approved.
- The Bradfield roads will be studied in their own NEPA process.
- The Navy project on Etolin Island will include timber harvest and could affect the use of roads on that island.

Future projects may include additional timber sales, mineral exploration, or mineral development. Non-National Forest lands may also be developed for residential, recreational, or commercial use, which may include use of existing roads or construction of new roads. Projects such as timber harvests and road-building potentially have affected and potentially will affect wildlife. **Table 3-9** provides the proposed road mileage by maintenance level for other planning efforts in the WRD.

3.2.6 Transportation

Affected Environment

The communities in the project area include the City of Wrangell and Thoms Place on Wrangell Island, and Olive Cove on Etolin Island. Thoms Place and Olive Cove are accessed via water. State Highway 943 (also known as Forest Highway 16) and municipal roads within the City of Wrangell connect to the NFS roads. The state and municipal roads are on Non-National Forest lands and not under the jurisdiction of the TNF. Local residents and visitors use these routes for commuting to and from work, for pleasure driving, for hunting access, for subsistence use, and for recreation access. Most of the roads in the project area are NFS roads or temporary roads built by the USFS. Approximately 35 miles of roads in the project area are State and municipal roads. These roads provide connectivity to NFS roads, but are not analyzed in detail in this EA. Local residents and visitors use these routes for pleasure driving, hunting access, subsistence use, and recreation access.

Environmental Consequences

Direct and Indirect Effects

All of the alternatives offer a variety of actions that would alter the transportation system. The proposed action was developed in the RA as a way to balance all needs, with the other alternatives reflecting different aspects that can be enhanced or modified.

There would be no effects to transportation under the no action alternative. The amount of roads currently open for access would not change.

Under the proposed action (alternative 2) negative effects to transportation would increase slightly, as access would decrease through the closure and decommissioning of roads. Approximately 22 miles of roads that are currently open would be closed to motorized access. Nearly 41 miles of roads would be decommissioned. There would be 103 less miles of roads open to OHVs.

Under alternative 3, there would be beneficial effects to transportation and access. Approximately 10.5 miles of roads that are currently closed to motorized access would be open to use. Under this alternative, 74.5 miles of ML 3 roads would be downgraded to ML 2 roads, for a total of 249.5 miles of roads open to OHVs. That is an increase of 36 miles from the current condition.

Alternative 4 would increase effects to transportation and access through the decommissioning and storage of roads. Approximately 120 miles of roads that are currently open would be closed to motorized

access (ML1). Approximately 40 miles of roads would be decommissioned. There would be 96.2 less miles of roads open to OHVs.

The 36.1 miles of road construction would be used only for timber management. There would be no change to general transportation with these proposed roads.

Other effects to transportation, including effects to timber harvest and recreation are provided in their respective sections. Regarding the overall access to forest land, the following lists the alternatives in order from that which would provide the most access to that which would provide the least access: alternative 3, alternative 1, alternative 2, and alternative 4 (**Table 2-1**). Only alternative 4 is substantially different from the other alternatives (**Table 2-1**).

3.2.6.1 Off-Road OHV Use

Affected Environment

OHV use on the Forest is limited due to topography, lush vegetation, and wet soils (USFS 1997a). Trails are generally planked or involve excessive grades and are not designed for OHVs. However, as the road system expands and technology and design improves, so have opportunities for OHV use. Road systems connected to communities, such as the Wrangell Island road system, are used most often with riders seeking primitive roads or spurs usually associated with timber harvest. Use of remote road systems on islands is increasing, with lighter-weight OHVs and bigger more powerful boats to transport them (USFS 1997a).

Increased concern for resource impacts has surfaced with increased use. The limitations on accessibility often result in OHV use on muskegs, beaches, tidal areas, river channels during low flows and sensitive wildlife habitats. Executive Order 11644, as amended, directs that federal public land agencies “will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands.”

Environmental Consequences

Off-road use of OHVs can present serious impacts on the environment and incompatibility with other users of the land. Off-road use of vehicles may result in one or more of the following effects: physical soil damage, disruption and disturbance to wildlife, and damage to other significant sites. Physical soil damage from OHVs, which is often readily visible, results in erosion, soil loss, and damage to stream banks, streams, and fish habitat. Soil compaction can have serious adverse impacts on flora and its regeneration. Disruption of wildlife breeding and nesting habitats from OHVs, especially of vulnerable species, can result in loss of young, and disturbance of wildlife can lead to weakened physical condition, death, and possible extinction of some species. Damage to archaeological, scientific, historical, and other significant sites and damage to natural features (sometimes with irreversible effects), especially on rare features of interest for scientific study, can also occur with off-road OHV use.

Impacts related to off-road OHV use on the WRD is shown in some minor damage to gravel surfaces and wetlands. Damage to gravel surfaces has occurred at the Nemo Recreation sites on Wrangell Island when small OHVs were ridden through developed recreation areas. Damage to wetlands has occurred on Wrangell Island at the Upper Salamander Recreation site where small OHVs were ridden through a muskeg next to the access trail; and on Zarembo Island where hunters travel across muskegs on small OHVs.

Direct and Indirect Effects

The effects caused from off-road OHV use, including damage to wetlands and other natural features, are common to all alternatives. Under the no action alternative, off-road OHV use would continue at or near current levels. The proposed action and alternative 4 could minimize off-road OHV use in sensitive habitats, such as muskegs and wetlands, by reducing open roads that lead to these sensitive habitats. Alternative 3 would potentially increase these impacts by opening more roads to OHVs and increasing the access for potential off-road use. However, the proposed action and alternative 4 could also potentially increase off-road OHV use through the reduction in legal OHV routes.

The new Travel Management Rule that requires routes be designated for legal use of OHVs may help to minimize unauthorized off-road OHV use under all alternatives, assuming users abide by the laws.

3.2.6.2 Cumulative Effects to Off-Road OHV Use

Cumulative effects would result from existing roads and trails available for OHV use and from newly constructed roads anticipated with future projects, which would provide access to new areas and increase the potential for illegal off-road use.

In addition to the proposed project, other future planning efforts in the WRD include the following projects:

- The Canal-Hoya roads have been approved.
- The Bradfield roads will be studied in their own NEPA process.
- The Navy project on Etolin Island will include timber harvest and could affect the use of roads on that island.

Other future projects may include additional timber sales, mineral exploration, or mineral development. Non-National Forest lands may also be developed for residential, recreational, or commercial use, which may include use of existing roads or construction of new roads. **Table 3-9** provides the proposed road mileage by maintenance level for other planning efforts in the WRD.

3.2.7 Scenic Values

Affected Environment

The WRD provides a variety of scenic settings to its visitors from the spectacular mountain ranges and the glaciers of the mainland to low-lying marine landscapes composed of intricate waterways, bays, and island groups. The TNF is viewed from a variety of vantage points: the communities of Southeast Alaska; the Alaska Marine Highway ferry route, cruiseship routes, existing road systems, and popular small boat routes; and anchorages, developed recreation sites and facilities, and remote hiking trails.

Management Direction for Scenic Values

Forest-wide general direction for visual resource management is to provide Forest visitors with visually appealing scenery with emphasis on areas seen along the Alaska Marine Highway, state highways, major NFS roads, and from popular recreation places; recognize that, in other areas where landscapes are altered by management activities, the activity may visually dominate the characteristic landscape.

The five VQOs used for the analysis area are preservation, retention (with 1997 TLMP direction), partial retention, modification, maximum modification, and preservation. Each VQO, in the order listed, allows

an increasing amount of alteration of the natural landscape character. In terms of forest management, the VQO can be defined as follows:

- Preservation - Management activities are generally not allowed in this setting. The landscape is allowed to evolve naturally.
- Retention - Activities are designed so as not to be visually evident to the casual forest visitor.
- Partial Retention - Activities may be evident, but will remain visually subordinate to the characteristic landscape.
- Modification - Activities may dominate the characteristic landscape, but will borrow from existing form, line, color, and texture. Alterations appear to be natural when viewed as foreground or middleground.
- Maximum Modification - Activities may dominate the characteristic landscape. Alterations appear to be natural when viewed as background.

The Preservation VQO occurs only in Wilderness within the WRD. Most of the existing road system on Wrangell Island is located on TNF lands managed with Partial Retention and Maximum Modification objectives. On Zarambo and Etolin Islands, most of the existing road system is on lands managed with Modification and Maximum Modification VQOs. In Frosty Bay, existing roads that are accessible to OHVs are located on Maximum Modification lands.

The TLMP (USFS 1997a) assigns specific management direction through LUD standards and guidelines. The Scenic Viewshed LUD comprises 125,408 acres (7 percent) of the project area, and contains 58.7 miles of the roads in the project area. The Desired Condition for areas managed under the Scenic Viewshed LUD is that forest visitors, recreationists, and others using identified popular travel routes and use areas will view a natural-appearing landscape. Management activities in the foreground will not be evident to the casual observer. Activities in the middleground and background will be subordinate to the characteristic landscape. Areas topographically screened from Visual Priority Travel Routes and Use Areas may be heavily modified.

Standards and guidelines to achieve the Desired Condition for this LUD are as follows. Cost-effective transportation systems that integrate resource requirements consistent with LUD direction may be developed and managed. To meet the VQOs, special consideration should be given to minimizing apparent landform modification (as seen from sensitive travel routes) during road and LTF location, design, and construction. Recreational access may be provided where appropriate. Road crossings on existing trails or location of roads parallel to trails should be avoided (USFS 1997a). The LUD is managed to maintain scenic quality as seen from Visual Priority Travel Routes and Use Areas.

The Forest inventoried all travel routes and use areas using the process outlined for the Visual Management System. The inventory was used to identify Visual Priority Travel Routes and Use Areas, listed in Appendix F of the TLMP, to which adopted VQOs will be applied. Most recreation places, communities, cabins, trails, other developed recreation sites, major roads, boat routes, anchorages, and saltwater use areas are listed as Visual Priority Travel Routes and Use Areas.

All of the public use routes listed in the inventory are located on Wrangell Island. They include McCormick Creek to Earl West Cove (6265), Fools Inlet (6270), Thoms Lake Access (6290), Thoms Creek Crossing (6299), Big Hallow (50060), Long Lake Access (6271), and Zimovia Highway on the Wrangell to McCormick Creek Bridge (FH#16).

Environmental Consequences

For those who value undisturbed natural conditions over roads and resource production, scenic quality and opportunities to experience solitude in undisturbed conditions of the project area would decrease with new road construction and would increase with road closures. While there are slight differences among the alternatives in the number of open roads, the change from the current condition would not be substantial to consider any of the alternatives as having significant long-term effects on the scenic quality of the landscape. The new roads discussed in this EA have had a NEPA process completed that assessed visual impacts.

There would be no significant long-term effects to scenic values under any action alternative. Effects on scenic resources from road upgrading or downgrading activities would be primarily short-term and construction-related, and would consist of the sight of construction equipment, installation activities, and temporary disruptions of road access.

Relative to existing conditions and the no action alternative, alternatives 2 and 4 would result in a positive change to the visual quality of landscapes, as there would be a decrease in the total mileage of open roads (see Table 2-1 Comparison of Alternatives). Alternative 3 would increase the mileage of open roads and total roads open to OHV.

Direct and Indirect Effects

Under the no action alternative there would be no additions to the road system within the WRD; therefore, there would be no effect on the existing visual condition. Existing management activities and recreational use of the area would continue, and the project area would be managed to protect and maintain existing improvements and uses.

Under alternative 2, access opportunities would change on some roads inventoried in the Visual Priority Travel Routes and Use Areas (Appendix F of the TLMP). Thoms Creek (6299) would be an ML 3 road between Uproot (6277) and the campsite, which is a continuation of the current management. West of the campsite, Thoms Creek (6299) would be downgraded from an ML 3 road to an ML 2, which would be open to OHV use. Long Lake (6271) would be downgraded to an ML 2 road, and Salamander (50050) to the campsite would be upgraded to ML 3. North of the campsite, FS #50050 would be downgraded from ML 3 that is currently drivable by HIC to ML 2; however, this change would not modify the scenic quality.

Once modifications to roads have been completed, the overall appearance of the proposed action would be very similar to the existing condition. The proposed action would meet the adopted VQOs of Retention, Partial Retention, Modification, and Maximum Modification and would comply with the Forest-wide direction for visual resource management. None of the proposed action is within the wilderness or on lands managed with Preservation objectives.

Under alternative 3, access opportunities would change on some roads inventoried in the Visual Priority Travel Routes and Use Areas (Appendix F of the TLMP). For the travel routes on Wrangell Island, the ML and access would be the same as those for alternative 2 (proposed action) with the following changes. The same roads that would be ML 3 under alternative 2 would be ML 3 under this alternative, except for Fools Inlet (6270) and the first portion of Thoms Creek (6299), which would be open to OHV use. This would allow additional OHV use on Wrangell Island. The scenic quality of the landscape would not be affected by these changes.

Under alternative 4, access opportunities would change on some roads inventoried in the Visual Priority Travel Routes and Use Areas (Appendix F of the TLMP). For the travel routes on Wrangell Island, the

ML and access would be the same as those for alternative 2 (proposed action) with the exception that Long Lake (6271) would be downgraded to an ML 2 road; however, this change would not modify the scenic quality.

3.2.7.1 Cumulative Effects to Scenic Values

The WRD has been managed for timber treatment, fuel wood gathering, grazing, and recreational activities. This area has become a regional resource for many recreational activities and is a destination for tourists. The disturbances caused by human activity in this area have had a visual impact on the experiences of visitors. Evidence of human activity occurs primarily on Wrangell Island.

Other management activities that have occurred within the viewing area include road construction, vegetation management, communication sites, campgrounds, day use facilities, trailheads, hiking trails, ski areas, and fuel wood gathering. Concurrent management activities, which are taking place at the present time, are a continuation of existing uses including a variety of recreational activities and subsistence activities.

Anticipated management activities that have projected effects on the scenic integrity of the WRD landscape include:

- The Canal-Hoya roads have been approved through the NEPA process but there is a strong possibility of changes because of sale economics.
- The Bradfield roads will be studied in their own NEPA process.
- The Navy project on Etolin Island will include timber harvest and could affect the use of roads on that island.

Future projects may include additional timber sales, mineral exploration, or mineral development. Non-National Forest lands may also be developed for residential, recreational, or commercial use, which may include use of existing roads or construction of new roads. **Table 3-9** provides the proposed road mileage by maintenance level for other planning efforts in the WRD.

If economic and population growth were to occur, it would increase recreational uses of public lands in the WRD including facilities within the WRD. Residential and commercial construction is anticipated to continue throughout the area on private lands. These actions would increase the evidence of human activity in the WRD and the surrounding region. Growth would also increase the number of residents and recreationists who have a concern for scenic resources.

Based on the past, concurrent, and anticipated actions discussed above, the cumulative effects of activities in the WRD would not raise the visual impact to a significant level. Timber management, campground, and other recreation facility reconstruction have some potential to result in the long-term enhancement of the scenic quality of the landscape.

3.2.8 Heritage Resources

Section 106 of the National Historic Preservation Act (NHPA) and the Advisory Council on Historic Preservation's implementing regulations (36 CFR Part 800) require that federal agencies take into account the effect of their activities (undertakings) on heritage resources (historic properties) eligible for or listed on the National Register of Historic Places (National Register). The Wrangell Ranger District, as a federal agency, generally must provide the Alaska State Historic Preservation Office (SHPO) and possibly the Advisory Council on Historic Preservation (Advisory Council) with an opportunity to comment when a proposed action is determined to be an undertaking (as defined by 36 CFR Part 800).

A National Forest Service policy, developed in consultation with the Advisory Council, suggests that existing, formally established, system (NFS) roads and trails already open to motor vehicle access generally need not be evaluated under Section 106 of the NHPA (USFS 2005c). The national policy also notes that designation of routes on a motor vehicle use map, with no related ground disturbance, will not generally be considered an undertaking for the purposes of NHPA and thus not subject to Section 106 review.

Construction of a new road is considered an undertaking with the potential to affect historic properties, triggering evaluation under Section 106 of NHPA and applicable programmatic agreements (PAs). The proposed roads on Zarembo Island are associated with timber sales that would complete a review of historic properties in the project area and conduct intensive pedestrian investigations as needed to meet the Section 106 responsibilities.

Affected Environment

Numerous heritage resource investigations have been completed on the WRD since 1975. These investigations have recorded hundreds of heritage resource (cultural) sites. Existing roads do not go through any known cultural sites, and most of the known sites are not near the road system; however, a few sites are near roads. There are two sites on Etolin Island that are considered eligible for the National Register and one site on Etolin Island listed on the National Register that is near a road. The Etolin Canoe is on the National Register and is 250 feet from Burnett Inlet (6547). On Zarembo Island there are two sites accessible from Macnamara (6587) and six near Saint Johns (6590). Two sites are eligible for the National Register. There are no known sites of traditional, symbolic, sacred, spiritual, or religious significance near any NFS roads that are planned for construction, closure, or decommissioning. Known heritage resource sites indicate that the Tlingit population traditionally used the WRD. Subsistence use by native people is an important cultural and traditional use of the area. Subsistence is discussed in more detail in Section 3.7 Subsistence.

Environmental Consequences

Direct and Indirect Effects

The WRD ATMP is considered an undertaking as defined by Section 106 of the NHPA because the proposed action entails more than designating road status on a map. In accordance with state and federal regulations regarding the protection of heritage resources, surveys are completed before any activity that may disturb significant archeological sites. Significant sites are those that may be eligible for the National Register. The existing roads in the WRD were cleared by surveys when they were built. Prior to the construction of any new roads, a heritage investigation that includes an intensive pedestrian survey would be completed.

Changes to the roads system can provide both beneficial and negative effects to heritage resources. Roads provide an opportunity to record, protect, and interpret sites. They also increase the risk of vandalism, unauthorized collection, and unintended physical damage. The sites that are near NFS roads could have slightly increased risk of unauthorized visitation or unintended damage because of the access that roads provide. However, it is expected that no heritage resources would be impacted from this project under any alternative.

3.2.8.1 Cumulative Effects to Heritage Resources

Cumulative effects may include creating access to heritage resources by the public, which may increase the risk of unauthorized visitation or unintended damage to historic properties. Cumulative effects to heritage resources would depend on the amount of new management activities in the near future and would likely not have negative impact.

Future planned actions may include timber management activities, possible mining-related exploration or development, and recreation-related improvements or developments. **Table 3-9** provides the proposed road mileage by maintenance level for other planning efforts in the WRD

Any future management activities related to the NFS roads would trigger a separate Section 106 review. New management activities could require intensive pedestrian investigations that could increase our knowledge of the history and prehistory of the area through the systematic collection of data. Avoidance of identified historic properties would minimize potential direct negative impacts to heritage resources.

3.3 KEY ISSUES

The key issues discussed in this section include motorized access for recreation and subsistence, and road maintenance costs.

3.3.1 Recreation

The NFS roads to be analyzed in this document provide access to recreation opportunities on the mainland around Frosty Bay and on Wrangell, Zarembo, Etohin, Woronkofski, Sokolof, Rynda, Bushy, and Shrubby Islands.

Affected Environment

TNF lands in the WRD provide a spectacular setting for a variety of developed and dispersed recreational opportunities. The difficult and steep terrain, wetlands, icefields, glaciers, and heavy vegetation confine most of the recreation activities to the accessible shorelines, river and stream bottoms, and alpine areas. The recognition of the settings and the groups who are seeking the opportunities for recreation in these settings define the recreation places. These are geographic areas with physical characteristics that are particularly attractive to people engaging in recreation activities. Recreation places are those areas that are easy to access and that are used for recreation activities. These places constitute the effective supply of recreation opportunities in the WRD.

The roads in the analysis area are located in five LUDs: Modified Landscape, Non-National Forest, Old-Growth Habitat, Scenic Viewshed, and Timber Production. The 11 other LUDs in WRD do not have roads. NFS roads in the WRD provide access to a variety of developed and dispersed recreation uses.

Developed Recreation

Most developed recreation in the WRD is located on Wrangell Island, although a limited number of facilities are located on the mainland within or near to Frost Bay and on Etohin Island. **Table 3-22** lists the number and type of developed recreation sites in the WRD sorted by geographic location and the primary access roads to the sites.

Dispersed Recreation

The majority of the TNF is undeveloped and is primarily used for dispersed recreation activities. A broad spectrum of dispersed outdoor recreation opportunities is available in the WRD. Recreation activities include OHV riding, Christmas tree harvesting, berry picking, hiking, camping, hunting, fishing, wildlife viewing, scenic viewing, and kayak camping. Hunting is the most common activity, but it is difficult to separate hunting for recreation or subsistence purposes. Some favor access for roaded recreation, while others favor maintaining areas for undeveloped recreation. Some were concerned about maintaining motorized access on roads that currently exist. Off-road motorized use has been documented in some open areas in the analysis area, causing damage to wetlands, muskeg, estuaries, and alpine habitats. The WRD needs to provide a road system that provides a balance of motorized and non-motorized recreation

opportunities while minimizing negative effects to other resources. Several outfitters and guides use the analysis area under special-use permit including using the NFS roads for hunting, fishing, and other activities.

Table 3-22 Developed Recreation Sites in the Wrangell Ranger District

Location	Type	Primary Access Road
Wrangell Island	4 recreation shelters	State Road 943 accesses three shelters FS 6270 accesses one shelter
	5 trailheads	State Road 943 accesses one trailhead. FS 6267 accesses one shelter via FS 6271
	1 observatory	State Road 943 accesses observatory
	10 campgrounds	FS 6265 (Nemo Loop) access three campgrounds FS 6267 accesses five campgrounds FS 6299 accesses one campground
	1 information site	FS 6267 accesses one information site
Etolin Island	1 recreation cabin	No road access
	1 recreation shelter	No road access
	1 trailhead	No road access
Mainland	3 recreation cabins	FS 6850 access one cabin at Frost Bay No road access for other two cabins
	2 trailheads	No road access
	1 observatory	No road access

Recreation User Groups

The primary use groups of the recreation opportunities of the analysis area can be broadly divided into two groups: tourists and resident recreationists.

The TNF, including the analysis area, is the major backdrop and destination for nearly all tourism to the region. The outstanding scenery is a popular reason for visiting the region.

The tourism industry has grown substantially. The economic contribution to state and local economies from tourism is substantial. The tourism industry is the second largest employment sector in Southeast Alaska.

Residents of Wrangell, Petersburg, and surrounding communities are the primary residential users of the WRD land and resources. Wrangell and Petersburg are small rural communities that are in or near the district. Many local residents purposely live in close proximity to the recreation and subsistence opportunities provided by the WRD as a part of their lifestyle. Viewing scenery and wildlife, boating, fishing, beachcombing, hiking, and hunting are the principal dispersed recreation activities undertaken by resident users.

Access to Recreation Opportunities

Access is a key aspect to the use of the recreation opportunities in the analysis area. Access is typically by boat or by vehicle on NFS roads. Vehicles are brought to the islands via boats. Road systems exist in locations where timber harvests have occurred, but if there is no or limited interconnecting access to a community, then there is generally limited recreation use. Because of the important role of access to the recreational use of an area, the NFS roads are an important factor to the supply of roaded or unroaded recreational opportunities. Most of the roads were built between the 1960s and 1980s. In addition to timber management activities, the existing roads are used for general transportation, recreation activities, sightseeing, and subsistence activities.

Obstacles to access, both physical and economic, greatly influence the patterns and intensity of use throughout the Forest. The distance traveled to participate in outdoor recreation activities is typically limited by either the available community road system or by the distance capable of being covered by small boats during a day's activities.

The MAPs are important features that connect NFS roads and allow public access to TNF lands. The existing roads were originally built for timber management with LTFs located at each MAP.

The islands in the analysis area provide dispersed recreation and subsistence opportunities, primarily to resident users. NFS roads on the islands are primarily used for recreation. Etohin Island provides the largest land area for dispersed recreation uses. Hunters transport motorized vehicles to the island. The road system is in the northern portion of the island because the southern portion of Etohin is a designated wilderness area. The road system on Wrangell Island provides access to a variety of developed recreation sites and dispersed uses that include sightseeing.

The Frosty Bay roads are the only NFS roads on the mainland analyzed in this EA. Most developed recreation sites are accessed by boats. The NFS roads are used primarily for silvicultural activities.

Recreation Management

The analysis area has the potential to provide a wide variety of recreation settings. The USFS has developed the Recreation Opportunity Spectrum (ROS) system to help identify, quantify, and describe these settings. The ROS spectrum portrays the appropriate combination of activities, settings, and experience expectations for the area. There are seven ROS classifications in the analysis area: Urban, Rural, Roaded Natural (RN), Roaded Modified (RM), Semi-Primitive Motorized (SPM), Semi-Primitive Non-Motorized (SPNM), and Primitive. The ROS is a tool used to inventory the potential supply of the recreation opportunities.

The Stikine Area Outfitter and Guide EA (USFS 1997b) reported the recreation capacity of the analysis area in Net Recreation Visitor Days (RVDs). An RVD is equal to one person visiting the TNF for 12 hours. RVDs offer a means of estimating the effective supply of recreation opportunities in the area. There are 23,838 net RVDs in the areas that also have NFS roads. The entire WRD has a total of 108,358 net RVDs. Assessing demand for roaded and unroaded recreation is more problematic. There are no specific figures for visitor use of the WRD separate from the TNF in general. The Supplemental Environmental Impact Statement (SEIS) (USFS 2003b) uses the statistics compiled in 1996 to estimate the existing and future conditions. This data indicates that SPM is the only recreation class in which demand is expected to exceed supply over the next decade.

Environmental Consequences

Direct and Indirect Effects

Direct effects to the recreation opportunities would come from changing a road from a motorized to non-motorized use. A road with ML 2 or greater is available for motorized use. Changes in the road system could result in a change of recreation opportunities from a motorized roaded use to a non-motorized use. The road would still be present until re-vegetation completely obscures the decommissioned roads and would still be available for non-motorized uses such as hiking, biking, and horseback access.

There would be no change to the existing road system and current management practices under alternative 1. Current access to all developed and dispersed recreation activities would remain the same under this alternative. Under implementation of the no action alternative, there would be no changes to current access for OHV-use.

Under the proposed action (alternative 2), roads in the analysis area will provide a balance between roaded and unroaded areas to provide access for recreation. A network of open roads will be maintained for use by those who prefer motorized access for recreation purposes. Where practical, most storm-proofed roads will be managed to allow OHV access. Unroaded areas and stored and decommissioned roads will be available for those who prefer non-motorized access for recreation purposes. The road system will be managed to minimize the potential for off-road OHV use that could damage sensitive resources such as wetlands. Motorized access on NFS roads within the five affected LUDs in the analysis area would decrease by 27.1 miles from the existing miles of 276.4 to 249.3 miles, as shown in **Table 2-1**, under alternative 2. ML 3 – Open roads, which provide existing road access to developed recreation sites, would decrease by 74.5 miles. All of the developed recreation sites that are currently accessed by ML 3 roads would be unaffected by the proposed action and would continue to be accessible by ML 3 roads. Some roads used for dispersed recreation would be closed; however, as numerous roads would remain open, this alternative is not expected to significantly reduce access to dispersed recreation.

The number (miles) of roads open and available for motorized vehicle use and the number (miles) of roads considered for OHV use and dispersed recreation, would be maximized under alternative 3. Motorized access on NFS roads within the five affected LUDs in the analysis area would increase by 0.3 mile from the existing miles of 276.4 to 287.2 miles, as shown in **Table 2-1**. ML 3 – Open roads, which provide existing road access to developed recreation sites, would decrease by 74.5 miles. All of the developed recreation sites that are currently accessed by ML 3 roads would be unaffected by alternative 3 and would continue to be accessible by ML 3 roads. ML 2 roads would increase by 85.3 miles, which would increase OHV opportunities in the analysis area.

Alternative 4 addresses the costs of maintaining current NFS roads in the WRD, which is greater than current and future proposed budgets for road maintenance. The alternative is intended to balance the needs for bringing funding costs in line with budget allocations with the recreation needs of the public. Under this alternative, the number and extent of roads open to motorized use and dispersed recreation areas would be concentrated on Wrangell Island. This would make open roads accessible to residents and tourists in an area where they are most likely to be used. Motorized access on NFS roads within the five affected LUDs in the analysis area would decrease by 124 miles from the existing 276.4 miles to 117.3 miles, as shown in **Table 2-1**. ML 3 – Open roads, which provide existing road access to developed recreation sites, would decrease by 145.1 miles. All of the developed recreation sites on Wrangell Island that are currently accessed by ML 3 roads would be unaffected by alternative 4 and would continue to be accessible by ML 3 roads. Existing ML 3 roads on Zarembo Island would be closed (stored), which would not affect access to any existing developed recreation site. Some roads used for dispersed recreation would be closed, and access to dispersed recreation areas would be reduced under alternative 4.

3.3.1.1 Cumulative Effects to Recreation

Past, ongoing, or reasonably foreseeable activities or events would have cumulative effects on recreation. Road construction and maintenance, logging, and recreation uses have historically affected the land. The effects from these past activities and land uses have included surface disturbance that has affected the recreation experience by changing the appearance of the project area.

Cumulatively, ongoing or projected activities or uses on adjacent lands that may affect recreation would include vehicle traffic, highway maintenance, recreational activities, residential areas, commercial developments, vegetation management, and fuels reduction.

In addition to the proposed project, other future planning efforts in the WRD include the following projects:

- The Canal-Hoya roads have been approved through the NEPA process but there is a strong possibility of changes because of sale economics.
- The Bradfield roads will be studied in their own NEPA process.
- The Navy project on Etolin Island will include timber harvest and could affect the use of roads on that island.

Future projects may include additional timber sales, mineral exploration, or mineral development. Non-National Forest lands may also be developed for residential, recreational, or commercial use, which may include use of existing roads or construction of new roads. **Table 3-9** provides the proposed road mileage by maintenance level for other planning efforts in the WRD

3.3.2 Subsistence

Affected Environment

Many people in Alaska rely on subsistence hunting, fishing, and gathering to provide needed food and to supplement income. Native communities view subsistence activities as important ways of preserving cultural customs and traditions, reflecting deeply held attitudes, values, and beliefs. Under the Alaska National Interest Lands Conservation Act (ANILCA), the USFS is required to maintain reasonable access to National Forest lands for residents who depend on subsistence. Increased road access can create greater opportunities for subsistence hunting but may also lead to greater competition and decreases in the populations of the species on which rural residents depend.

Subsistence use occurs in areas where the resources can be readily accessed. Motorboats and road construction have greatly influenced where subsistence activities occur. The road system provides greater access to areas previously unavailable and can affect subsistence both positively and negatively (USFS 1997b). Roads can have positive influence by dispersing subsistence activities to more areas and can have negative influence by creating the potential for increased competition. Increased competition may occur when road access to abundant resources is provided or when communities have easy road access, which is true with the City of Wrangell and the extensive road system on Wrangell Island.

The communities that have used the WRD for subsistence include Wrangell, Petersburg, and Coffman Cove. Residents of other communities, such as Port Protection, Edna Bay, Meyers Chuck, and Hydaburg, may use the area infrequently. Petersburg residents often use Zarembo Island and may use other areas of the analysis area infrequently. Coffman Cove residents show the Islands of Bushy, Shrubby, and Etolin as part of their traditional use areas. Wrangell residents are the most likely to use Wrangell, Etolin, and Zarembo Islands.

Coffman Cove, Wrangell, and Petersburg residents harvest a variety of resources for subsistence (**Table 3-23**) (AEIS 2006). The per capita harvest of all subsistence resources is 276 pounds for Coffman Cove, 160 pounds for Wrangell, and 198 pounds for Petersburg based on 1987 data. The populations of Wrangell, Petersburg, and Coffman Cove are shown in **Table 3-24**. **Table 3-24** shows that all three communities have declined in number of residents since 1990.

Table 3-23 Subsistence Resource Use by Wrangell, Petersburg, and Coffman Cove Residents

Resource	Per Capita Subsistence Harvest (pounds per person)		
	Coffman Cove	Wrangell	Petersburg
Salmon	63	30	45
Other Fish	83	43	44
Land Mammals (primarily deer)	66	32	57
Marine Mammals	1	7	0
Birds and Eggs	3	1	4
Shellfish	49	42	39
Plants	11	4	9
All Resources	276	160	198

Table 3-24 Population Statistics for Wrangell, Petersburg, and Coffman Cove

Community	1990 ¹	1995 ¹	2005 ²
Wrangell	2,179	2,758	1,974
Petersburg	3,207	3,350	3,155
Coffman Cove	186	254	156

¹ Data from USFS 1997b (US Census Data). ² From AEIS 2006, State Demographer estimate.

Deer are the primary subsistence resource of the land mammals. Use of Wrangell Island for deer hunting is important because the road system allows easy access. **Table 3-25** shows the total number of deer harvested by Wrangell residents between 1987 and 1997.

Table 3-25 Deer Harvest for Wrangell

Year	Number of Deer Harvested on Wrangell Island	Number of Deer Harvested by Wrangell Residents from Wrangell Island	Total Deer Harvested by Wrangell Residents	Wrangell Island Deer Harvested by Wrangell Residents
1992	30	28	423	7%
1993	59	59	436	14%
1994	68	68	456	15%
1995	100	93	586	16%
1996	34	33	472	7%
1997	34	34	418	8%
1998	49	49	625	8%
1999	86	77	599	13%
2000	102	No Data	No Data	No Data
2001	76	76	747	10%

For 1996-2001, from ADFG Deer Hunter Survey Summary Statistics, 1997-2002 (Aluzas 2003)

Wrangell Island is well roaded. Most hunters on Wrangell Island are residents of the City of Wrangell. Hunters from other areas can access the island from one of the MAPs. Subsistence access is an important

issue that has received several comments during public scoping for various projects. Most people want roads that currently exist to remain open. Road construction in unroaded areas was considered by some people as positive and by others as negative.

Fish are also an important subsistence resource, although fishing often occurs close to communities in local waters. Besides deer and fish, other resources that have been harvested from the WRD include moose, seal, goat, black bear, birds, shellfish, and plants (especially berries).

OHVs are often used in the WRD for subsistence activities. A new travel management policy (USFS 2005c) requires each National Forest to identify and designate those roads, trails, and areas that are open to motor vehicle use. The designation will identify the roads that will be considered for use by OHVs. For roads that are open to mixed use (i.e., use by high- or low-clearance vehicles and OHVs) an engineering study is required to show that the road is appropriate to the mixed use. The study is required prior to the final designation of the route as being acceptable for OHV use. The engineering study will help to ensure user safety for all the road users. In addition, appropriate signage will be installed for the NFS roads of ML 3 or higher that are designated for motorized mixed use.

Environmental Consequences

Three factors related to subsistence uses are specifically identified by ANILCA: resource distribution and abundance, access to resources, and competition for the use of resources. The following sections address each of these factors for each of the alternatives.

The following analysis and discussion is based on detailed subsistence information contained in the Forest Plan FEIS (pp. 3-565 to 3-569; Appendix H-18 and H-19). Additional information was gathered during scoping for this project.

Section 810 of ANILCA requires the Forest Service to evaluate the potential effects of proposed land use activities on subsistence uses and needs. An ANILCA 810 analysis must include several components. The proposed actions must be analyzed to determine if they significantly restrict subsistence uses. This analysis must be concluded with a draft determination either of “no significant effect” or a determination that clearly describes possible effects. For any conclusion other than “no significant effect,” formal ANILCA hearings must be conducted. Following these hearings, a final determination based on an analysis of the potential effects of the final proposed action must be published.

The Alaska Land Use council defined “significant restriction of subsistence use” as a substantial reduction in the opportunity to continue subsistence uses of renewable resources expected to result from a proposed action and alternatives to the proposed action. Abundance and distribution of resources, access, and competition (with non-rural residents) need to be considered in the analysis. The U.S. District Court further clarified the definition in its Decision of Record (*Kunaknana v. Watt*). It states in part, “restrictions for subsistence use would be significant if there were large reductions in abundance or major redistribution of these resources, substantial interference with harvestable access to active subsistence use sites or major increases in non-rural resident hunting.”

This evaluation determines whether subsistence uses within the analysis area or portions of the area may be significantly restricted by any of the alternatives. Evaluation criteria used to assess the effects of the alternatives are: 1) changes in abundance or distribution of subsistence resources; 2) supply and demand; 3) changes in access to subsistence resources; and 4) changes in competition from non-subsistence users for those resources.

The Forest Service makes distinct findings by alternative and resource category on whether there is a significant possibility of the significant restriction of subsistence use. These findings are based on

information in the Forest Plan EIS (1997) and comments from the public. The resource categories evaluated are wildlife, fish, and plants.

Wildlife: Populations of deer, brown bear, furbearers and small game range throughout the project area. About 23 percent of the edible pounds of subsistence resources harvested by Hoonah households is deer meat.

Fish: The harvest of salmon provides 26 percent of the meat supply of Hoonah residents and other finfish provide 19 percent of the meat supply.

Plants: The residents supplement their diets by harvesting berries, seaweed, and other edible plants. Other plants are harvested for use in cultural or handicraft projects. Firewood is an important source of heat for Hoonah residents.

Direct and Indirect Effects

Resources Distribution and Abundance

Impacts to wildlife are described in detail in Section 3.2.5 of this document and also in the MIS Report and the wildlife BABE prepared for this project, but are summarized generally below relative to subsistence use.

The availability of suitable winter range is believed to be the most limiting factor for deer populations in Southeast Alaska (Aluzas 2004). The acreage of road impacts to deer winter range habitat would vary only slightly (between 0 and 2 acres) from the current condition for alternatives 2 and 3. Increased road access under alternative 3 could increase opportunities for subsistence hunting, but could also increase competition and decrease the deer population. Alternative 4 would reduce the acreage of open road impacts in deer winter range habitat to nearly half of the current condition, but would also limit the access to deer for hunting.

The road system has the potential to affect fish habitats by reducing populations of resident and anadromous fish used for subsistence. TLMP standards and guidelines address concerns for fish habitats as well as requiring mitigation for the potential effects of logging activities, including road building, on fish streams. The USFS has standards and BMPs for repair and maintenance of roads. Impacts to aquatic resources are described in detail in Section 3.2.1 of this document, but are summarized generally below relative to subsistence use.

The most substantial direct impact of roads on fish species is through the presence of red pipes, which can prevent migration of fish. The proposed action and alternative 4 would have positive impacts on fish habitat in the project area. Under these alternatives, nearly 40 roads would be decommissioned and closed to motorized vehicles; an additional 14 from the current condition (no action alternative). Alternative 3 has the potential to negatively affect fisheries. Approximately 8.5 miles of roads that were previously closed to motorized use would be open to OHVs and high-clearance vehicles. It is likely that, with more roads open to OHVs, there would be more off-road use, increasing the negative effects. Where this use occurs near streams and riparian areas, it is likely to degrade fish habitat.

The road system and timber harvesting affect in a positive way the availability and accessibility of some plant materials, especially berries. Areas harvested between 5 and 20 years ago are prime areas for berry picking and the road system offers easy access. None of the alternatives are expected to impact the resource abundance and distribution of berries.

No habitat alteration is planned in this project. Closing roads decreases disturbance and creates refuge areas that would increase the abundance and maintain the distribution of wildlife populations. Removing culverts or structures that impede fish passage or have a high risk of negative effects on fish habitat would improve the abundance and distribution of salmon and other resident fish. Road management would not affect the abundance and distribution of the various plants used for subsistence purposes.

No negative effects on the abundance and distribution of wildlife, fish, or plants are anticipated from this project.

Access to Resources

Under the no action alternative, the existing road system would continue unchanged. There would be no change to passenger vehicle access or OHV access. Alternative 2 would reduce the amount of open roads by nearly 30 miles. Approximately 285 miles of roads would be open to motorized access under alternative 3, an increase of 9 miles from the current condition. Alternative 4 would reduce the amount of open roads to 152 miles, a reduction of 124 miles from the current condition. As such, access to resources for subsistence use would be largely unaffected by alternative 3, and would be reduced under alternatives 2 and 4.

The new travel management policy (USFS 2005c) that requires OHVs to stay on designated OHV trails or roads is common to all alternatives. Regarding the overall OHV access to Forest land, the following lists the alternatives in order from that which would provide the most OHV access to that which would provide the least OHV access: alternative 3 (substantially more than the other alternatives), alternative 1, alternative 4, and alternative 2 (substantially less than the other alternatives) (**Table 2-1**).

None of the alternatives will significantly restrict subsistence access in the project area. The extensive road system maintains the opportunity for subsistence users to disperse across the project area.

Competition

Increased access to an area can result in an increase in competition for resources. The new roads proposed under the action alternatives for the Skipping Cow and Baht timber sales on Zarembo Island could increase the opportunities for access and directly affect subsistence use. Details on these effects can be found in their respective EISs. Alternatively, greatly reducing access can also increase competition by forcing all subsistence to occur in fewer areas. Road closures are generally distributed throughout the entire WRD for all action alternatives, however some increases in competition could be seen by the large amount of closed roads under alternative 4.

None of the alternatives will increase competition for subsistence resources.

ANILCA 810 Finding

The effects of this project have been evaluated to determine potential effects on subsistence opportunities and resources. Reduction in access due to road closures may result in restricted access to favored hunting and berry picking areas, particularly under alternative 4. **This analysis leads to the conclusion that there may be the significant possibility of a significant restriction on access to terrestrial subsistence resources, particularly deer and berries, under alternative 4.** The analysis does not find a significant impact on subsistence use of fish, shellfish, marine mammals, or any other subsistence resource associated with the marine environment.

Wildlife: Closing roads would enhance wildlife resources because disturbance from motorized vehicles and associated hunting pressure would decrease.

Fish: Salmon and other resident fish habitat would improve by the removal of impediments to fish passage and stream structures that reduce habitat if not properly maintained.

Plants: Protection of plant resources would increase with more road closures. The introduction of non-native plants along roads would decrease and the increased difficulty of access would limit the amount of plant material gathered.

This finding is not to be confused with significance as used in the context of NEPA assessments.

3.3.2.1 Cumulative Effects to Subsistence

Changes in subsistence activities can occur as a result of the cumulative effects of past and future management activities. In the WRD, these activities primarily include timber harvest and road-building. In addition to the proposed project, other future planning efforts in the WRD include the following projects:

- The Canal-Hoya roads have been approved through the NEPA process but there is a strong possibility of changes because of sale economics.
- The Bradfield roads will be studied in their own NEPA process.
- The Navy project on Etolin Island will include timber harvest and could affect the use of roads on that island.

Future projects may include additional timber sales, mineral exploration, or mineral development. Non-National Forest lands may also be developed for residential, recreational, or commercial use, which may include use of existing roads or construction of new roads.

Aside from habitat modifications, the greatest effects from these projects would be the potential to increase human access. This could prove favorable for subsistence users; however, it could lead to further impacts to resources. Activities that reduce the value of existing deer winter range and increase vulnerability to harvest or predation and negatively impact the deer population would also impact subsistence users. **Table 3-9** provides the proposed road mileage by maintenance level for other planning efforts in the WRD

3.3.3 Road Maintenance Costs

Affected Environment

Financial efficiency analysis assesses the revenues and costs associated with a project or program. The alternative that produces the greatest increase in net revenue is the most financially efficient. Costs are associated with constructing new roads, upgrading existing roads, maintaining existing roads, and closing roads. Revenues are receipts from the sale of commodities such as timber and minerals or from the collection of receipts associated with recreation and special-use permits. Cost-benefit analysis for roads could consider differences in costs for maintaining a road system which would include maintenance costs at different maintenance levels and costs associated with mitigating environmental problems such as red pipes. Road closure and decommissioning can help to reduce maintenance costs and unacceptable environmental effects. Reducing costs can help to improve net revenue District-wide. Decommissioning roads and storing roads could increase costs associated with future timber sales, but could decrease maintenance costs and negative environmental effects.

It is not possible to perform an economic efficiency analysis on the existing road system because data for costs and revenues are not collected in a way that represents specific roads with any degree of accuracy.

The absence of data on specific costs and revenues also means that it is not possible to assess the changes in net revenue that would be associated with changes in the current road system. In general, this section examines the costs associated with the road system. Road-related revenue is primarily derived from timber sales. A financial efficiency analysis is completed for timber sales which includes road-related costs.

Costs associated with the current road system include normal maintenance costs and costs to fix fish passage problems. Costs were estimated for the road system based on information from the Forest-wide RA (USFS 2003a) and from the RCS database. The RCS data include costs for fixing fish passage problem areas by replacing culverts or bridges. **Table 3-26** shows the estimated annual maintenance costs for the existing road system. Roads with no ML listed have been closed for more than 1 year, and no maintenance is required. **Table 3-27** shows the costs for fixing fish passage problems by road system. The funding for repair of fish passage problems is not from the annual maintenance budget but is a factor in determining the cost-benefit for a road.

Table 3-26 Estimated Annual Maintenance Costs, Current Road System

OBML	Miles of Road	Cost per Mile	Total Cost
ML 3	180.2	\$1,138.00*	\$205,067.00
ML 2	96.2	\$806.00*	\$77,537.20
ML 1	43.5	\$14.00**	\$609.00
Total	319.9		\$283,213.00

* Base annual maintenance costs are from Table E3 of Forest-wide RA (USFS 2003a).
 ** Cost from Q. Smith, personal communication (Smith 2006).

Table 3-27 Cost for Fixing Fish Passage Problems by Road System

Road System	Cost (from RCS data)
Etolin	\$ 645,668.00
Frosty Bay	\$ 793,987.00
Wrangell	\$2,710,028.00
Zarembo	\$4,870,000.00
Total	\$9,019,683.00

The annual maintenance budget covers costs for general road repair. The average maintenance contract for repair of flood events, landslides, and other critical repair items is \$35,000 to \$40,000 per year. In addition, cost of an annual contract for cutting roadside brush is approximately \$50,000.

Environmental Consequences

The current annual budget allocation for 2006 is \$243,379. The proposed budgets are \$182,534 for 2007 and \$121,690 for 2008 and 2009. Reducing the number of roads and downgrading roads will be important to bring the needed maintenance in line with the proposed allocated funds. Roads that are not well-maintained can lead to deterioration of performance, increased risk to natural resources, increase in the cost of repairs, and a decrease in the asset value.

The cost to convert a current road to a stored or storm-proofed road is a one-time cost. Roads that are stored or storm-proofed may be needed for future timber sales. Costs of reconstruction associated with stored or storm-proofed roads are estimated at \$45,207.00 per mile for stored roads and \$28,624.00 per mile for storm-proofed roads. The cost data indicate that it is more expensive to store a road than to storm-proof one. The difference in costs is primarily a result of culvert removal and subsequent re-

installation for reconstruction of stored roads. It is assumed that only half the small structures are removed for storm-proofed roads.

Road-related revenue is derived primarily from timber harvests, though the potential for mining exists, which could bring in future revenue. Special-use permits, including Outfitter and Guide permits, bring in minimal revenue and are not included in this discussion. Timber Production LUD encompasses 261,381 acres of the WRD, and timber management is a primary objective of the TLMP for the TNF. The road system is an integral part of timber harvest, allowing access to suitable timber stands. Road construction costs are considered a purchaser cost of National Forest timber. TNF timber management strategy helps to provide economic diversity and stability in southeast Alaska (USFS 1997b). Economics of timber sales are important. However, financial efficiency analysis is not feasible without specific information on the sale. Economic conditions fluctuate greatly. A species may be uneconomical to harvest one year, and in another year, market conditions may change to make it highly economical. Maintenance associated with timber sales may also contribute to fixing problem areas on roads as identified in the RCS database.

Direct and Indirect Effects

Current funding is inadequate to cover all maintenance, storage, and stormproofing needs. With inadequate funding, road maintenance is deferred. Deferring maintenance can result in increased resource impacts and lessen asset value of the roads.

Under the no action alternative (alternative 1), the existing road system and current management practices would continue unchanged. The estimated annual maintenance cost for the current road system is \$283,214. This is approximately \$40,000 greater than the allocated budget for 2006, more than \$100,000 greater than the proposed budget for 2007, and more than \$160,000 greater than the budgets for 2008 and 2009.

Under the proposed action, the estimated annual maintenance cost for the road system would be \$203,963. The costs associated with storing and storm-proofing roads would be \$575,015. However, some of these roads are recommended to be converted over time because they are being used for activities such as silviculture. Therefore, not all of this expense is likely to occur in one budget year. If this cost is averaged over 10 years, it would add \$57,501 to the annual maintenance costs. This would make the total annual costs for the roads \$261,464. **Table 3-28** shows the costs associated with storing and storm-proofing the roads under the proposed action.

Table 3-28 Costs To Store or Storm-proof Roads for the Recommended Road System

	Miles of Road	Cost per Mile	Total Cost
Stored	33.8	\$9,624.00*	\$325,291.20
Storm-proofed	43.4	\$5,754.00*	\$249,723.60
Total	77.2		\$575,501.48

* Cost from Q. Smith, Transportation Planner, personal communication (Smith 2006)

Table 3-29 shows the estimated annual maintenance costs for the road system under the proposed action. This road system would cost \$230,962.60, a decrease of 39 percent from the current condition.

Table 3-29 Estimated Annual Maintenance Costs for the Recommended Road System

OBML	Miles of Road	Cost per Mile	Total Cost
ML 3	105.7	\$1,138.00*	\$120,286.60
ML 2 Open to HCV	100.2	\$806.00*	\$80,761.20
ML 2 Storm-roofed	43.4	\$46.00**	\$1,996.40
ML 1 Stored	65.6	\$14.00**	\$918.00
Total	314.9		\$203,962.60

* Base annual maintenance costs are from Table E3 of Forest-wide RA (USFS 2003a).
** Cost from Q. Smith, Transportation Planner, personal communication (Smith 2006)

In general, under the proposed action, a net increase in revenue from the current condition would be created by reducing the maintenance levels of roads to the minimal level needed for future management activities. This would reduce road maintenance costs and undesirable environmental effects. However, the estimated annual maintenance budget combined with the costs of storing and storm-proofing under the proposed action would still be approximately \$79,000 over the proposed budget for 2007 and nearly \$140,000 over the proposed budget for 2008 and 2009. The funds required to complete some of the storing and storm-proofing of roads would need to come from other budget sources.

The number (miles) of roads open and available for motorized vehicle use would be maximized under the motorized access alternative (alternative 3). The estimated annual maintenance cost for the road system would be \$216,990. The costs associated with the storing or storm-proofing of roads would be \$505,263. However, some of these roads are recommended to be stored or storm-proofed over time because they are being used for activities such as silviculture management. Therefore, not all of this expense is likely to occur in one budget year. If this cost is averaged over 10 years, it would add \$50,525 to the annual maintenance costs, making the total \$267,516. This is approximately \$16,000 less than the current annual costs, and \$85,000 and \$146,000 greater than the budgets for 2007 and 2008, respectively. The funds required to complete some of the storing and storm-proofing of roads would need to come from other budget sources.

Under the maintenance costs alternative (alternative 4) the estimated annual maintenance cost for the road system would be \$116,970. The costs associated with storing and storm-proofing would be \$1,417,660. If this cost is averaged over 10 years, it would add \$141,766 to the annual maintenance costs. This would make the total annual costs for the roads \$258,736. The maintenance budget portion would meet future budget allocation needs. The funds required to complete some of the storing and storm-proofing of roads would need to come from other budget sources.

3.3.3.1 Cumulative Effects to Road Maintenance Costs

Cumulative effects include the combination of past, present, and foreseeable management actions in the project area. In addition to the proposed project, other future planning efforts in the WRD include the following projects:

- The Canal-Hoya roads have been approved through the NEPA process, but there is a strong possibility of changes because of sale economics.
- The Bradfield roads will be studied in their own NEPA process.
- The Navy project on Etolin Island will include timber harvest and could affect the use of roads on that island.

Future projects may include additional timber sales, mineral exploration, or mineral development. Non-National Forest lands may also be developed for residential, recreational, or commercial use, which may include use of existing roads or construction of new roads. **Table 3-9** provides the proposed road mileage by maintenance level for other planning efforts in the WRD

It is expected that this project will contribute substantially to the cumulative effects to road maintenance costs, as it is one of the primary purposes of this project. It would provide a forest transportation system that best serves the current and anticipated management objective and public uses on the WRD, and allows the Forest Service to operate and maintain roads within their budget.

3.4 UNAVOIDABLE ADVERSE EFFECTS

Implementation of any action alternative would cause some adverse environmental effects that cannot be effectively mitigated or avoided. Unavoidable adverse effects often result from managing the land for one resource at the expense of the use or condition of other resources. Many adverse effects can be reduced, mitigated, or avoided by limiting the extent or duration of effects. The interdisciplinary procedure used to identify specific road recommendations and resource concerns was designed to eliminate or lessen the significant adverse consequences. The application of Forest Plan Standards and Guidelines are intended to further limit the extent, severity, and duration of potential effects.

CHAPTER 4 — CONSULTATION AND COORDINATION

4.1 SUMMARY OF PUBLIC INVOLVEMENT AND PUBLIC SCOPING

Public scoping is a key part of the public involvement process and was vital to the NFS's analysis of the issues surrounding the Wrangell Ranger District (WRD) Access and Travel Management Plan (ATMP) Environmental Assessment (EA). Scoping for the EA was conducted between December 22, 2005 and January 27, 2006. **Appendix C** describes the scoping process, public comments received, and issues identified for the WRD ATMP EA. The public scoping process is summarized in the following paragraphs.

The legal notice and press release for this project were published on December 22, 2005 and ran for 1 week in the Petersburg Pilot and the Wrangell Sentinel. A scoping newsletter describing the proposed project was mailed to 258 interested and affected parties as provided by the Tongass National Forest (TNF) WRD on December 22, 2005. The scoping letter described: 1) a brief background for the project; 2) potential actions; 3) the purpose of, and need for, the proposed project; and 4) opportunities to provide comments. Notices of the public meetings were also posted on the TNF web site, the project's web site (www.greystone.us/wrangell), the Wrangell Sentinel, and the Petersburg Pilot. The public meetings were also announced on the public radio stations in Wrangell (KSTK) and Petersburg (KFSK).

Two public open houses were held on January 26, 2006 for the purpose of explaining the project and soliciting comments from the public. Comments were accepted on the proposed project until January 27, 2006.

4.2 CONSULTATION WITH AGENCIES

The following federal and state agencies were consulted during the preparation of this document.

Federal Agencies

U.S. Army Corps of Engineers
U.S. Department of Agriculture, Forest Service
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Fish and Wildlife Service

State Agencies

Alaska State Historic Preservation Officer
Alaska Division of Governmental Coordination
Alaska Natural Heritage Program
State of Alaska, Department of Natural Resources, Office of Habitat Management and Permitting
State of Alaska, Department of Fish and Game, Division of Wildlife Conservation

4.3 AGENCIES, TRIBES, AND NATIVE CORPORATIONS CONTACTED

The following federal, state, and local agencies, tribes, and native corporations were contacted during preparation of this document.

Federal Agencies

Federal Aviation Administration, Office of Regional Administrator
U.S. Army Corps of Engineers
U.S. Coast Guard, Seventeenth District
U.S. Congress
U.S. Department of Agriculture, National Agricultural Library
U.S. Department of Agriculture, Forest Service
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Department of Energy, Director, Office of Environmental Compliance
U.S. Department of Interior, Bureau of Land Management
U.S. Department of Interior, National Park Service, Alaska Area Region
U.S. Environmental Protection Agency, Region 10
U.S. Fish and Wildlife Service
U.S. House of Representatives
U.S. Navy, Office of Chief Navy Operations
Wild and Scenic Rivers Program

State Agencies

Alaska Coastal Management Program
Alaska Congress
Alaska Department of Environmental Conservation
Alaska Department of Natural Resources
Alaska Department of Transportation
Alaska Division of Governmental Coordination
Alaska Natural Heritage Program
Alaska State Library
Resource Development Council of Alaska
State of Alaska, Department of Natural Resources, Office of Habitat Management and Permitting
State of Alaska, Department of Fish and Game, Division of Wildlife Conservation
University of Alaska, Land Management

Local Agencies

City of Kake
City of Petersburg
City of Wrangell
Juneau Convention and Visitor's Center
Ketchikan Gateway Borough
Wrangell Chamber of Commerce

Tribes and Native Corporations

Wrangell Cooperative Association
Kake Tribal Heritage Foundation
Kake Tribal Logging & Timber

4.4 LIST OF REVIEWERS AND CONTRIBUTORS

Table 4-1 lists the interdisciplinary team (IDT) members assigned to facilitate preparation of this document and the responsibilities of each member. USFS IDT members were primarily involved in

providing data and reviewing work products for accuracy and completeness. Greystone specialists were assigned major EA topics.

Table 4-1 IDT Members

Name	Title	Responsibility
USFS, Tongass National Forest		
Linda Christian	Team Leader	Team Leader
Dan Barnett	Engineering	Contracting Officer's Representative
Melissa Cady	Wildlife Biologist	Terrestrial wildlife
Dee Galla	Recreation Planner	Recreation
William T. Messmer	Engineering	Contracting Officer's Representative
Jackie de Montigny	Soil Scientist, Ecologist	Soils and sensitive plants
Austin O'Brien	Forester, Logging Systems	Timber management; forest products
Robert (Mike) Reed	Silviculturalist, Timber Management	Timber management
Quentin Smith	Transportation Planner	Transportation system
Kevin Weinner	Hydrologic Technician	Road Condition Survey (RCS) database, aquatic ecology, and watershed
Susan Wise Eagle	GIS Coordinator	GIS data
Greystone Environmental Consultants		
Selina Koler	Forester / Watershed Scientist	Timber management, geology, soils, aquatic resources, public involvement
Susan Riggs	Project Manager / Senior Environmental Specialist	Project management, document review, quality control
Kathryn Cloutier	Environmental Scientist	Technical review
Pat Golden	Senior Biologist	Technical review and oversight
Jason Gregory	Assistant Project Manager / GIS Analyst	Project management, GIS analysis, mapping
Elaine Porter	Biologist / Ecologist	Vegetation, management indicator species, threatened and endangered species, wildlife, public involvement
Melissa Sartorius	GIS Specialist	GIS analysis, mapping
Randy Schroeder	Principal-in-Charge	Document review, quality control
Matt Schweich	Project Manager / Senior Biologist	Project Manager, document review, quality control, technical review and oversight
Cherie Walth	Project Manager / Cultural Resources Specialist	Project management, document review, quality control, technical review and oversight, public involvement, economics, transportation, road maintenance costs, cultural and heritage resources
Lisa Welch	Senior Resource Specialist	Recreation and Visual Resources
Deb Ballheim	Editor	Editorial review
Carrie Womack	Project Assistant	Word Processing, Document Production

CHAPTER 5 — REFERENCES

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APPENDIX A — ACRONYMS

ADFG	Alaska Department of Fish and Game
ADGC	Alaska Division of Governmental Coordination
ANHP	Alaska Natural Heritage Program
ANILCA	Alaska National Interest Lands Conservation Act
ATMP	Access and Travel Management Plan
BA	Biological Assessment
BABE	Biological Assessment and Biological Evaluation
BE	Biological Evaluation
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FSH	Forest Service Handbook
FSM	Forest Service Manual
GIS	Geographic Information Systems
HIC	High Clearance Vehicle
HUC	Hydrologic Unit Code
IDT	Interdisciplinary Team
LTF	Log Transfer Facility
LWD	Large Woody Debris
LUD	Land Use Designation
MAP	Marine Access Point
MIS	Management Indicator Species
ML	Maintenance Level
mm	millimeters
MOU	Memorandum of Understanding
MVUM	Motorized Vehicles Use Map
NEPA	National Environmental Policy Act
NFMA	National Forest Management Area
NFS	National Forest System
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service

OBML	Objective Maintenance Level
OHMP	Alaska Department of Natural Resources, Office of Habitat Management and Permitting
OGR	Old-Growth Habitat Reserve
OHV	Off-Highway Vehicle
OPML	Operational Maintenance Level
OPMP	Office of Project Management and Permitting
PA	Programmatic Agreement
RA	Roads Analysis
RCS	Road Condition Survey
RMA	Riparian Management Area
RMO	Road Maintenance Objective
RM	Roaded Modified
RN	Roaded Natural
ROS	Recreation Opportunity Spectrum
RVD	Recreation Visitor Day
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Office
SOPA	Schedule of Proposed Action
SPM	Semi-Primitive Motorized
SPNM	Semi-Primitive Non-Motorized
T&E	Threatened and Endangered
TEPS	Threatened, Endangered, Proposed or Sensitive Species
TLMP	Tongass National Forest Land and Resource Management Plan
TNF	Tongass National Forest
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFS	United States Department of Agriculture, Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VQO	Visual Quality Objective
WAA	Wildlife Analysis Area
WRD	Wrangell Ranger District

APPENDIX B — GLOSSARY

Access Type

Access types defined for the EA are as follows:

Open. Drivable by passenger vehicles, though some roads or portions of roads may only be drivable by high-clearance vehicles (HIC) like pickup trucks. These roads are also approved for use by off-highway vehicle (OHV) use. Road drainage structures are intact.

Open to OHV. Routes designated as approved for use by OHV use.

High Clearance. Open and maintained for use by high-clearance vehicles.

Closed. Not open to motorized vehicles, but may be accessible to non-motorized users. Road drainage structures may or may not be removed.

Stored. Road storage may include the removal of drainage structures and bridges, and construction of water bars, rolling dips and other necessary measures to protect resources including soils, water quality, fisheries, and wildlife. This is typically a long-term condition. The road remains in the NFS and may be reopened at a later date.

Storm-proofed. This process leaves most small drainage structures in place, but provides water bars, rolling dips, out slopes, and other features to ensure controlled runoff until use of the roadway is required. These roads are typically accessible to OHV use.

Decommissioned. Decommissioning activities result in the stabilization and restoration of unneeded roads to a more natural state. Not drivable by motorized vehicles, but may be accessible to non-motorized users. Road drainage structures have been removed and stream channels restored to their original contours. These roads are not part of the NFSR.

Unauthorized. A road that is not a forest road or a temporary road and that is not included in a forest transportation atlas.

Estuarine

The environmental system of an estuary and those transitional areas which are consistently influenced or affected by water from an estuary.

Estuary

All or part of the mouth of a river or stream having an open, natural connection with the sea and within which sea water is measurably diluted by freshwater runoff (the tide meets with river currents or flows).

Floodplain

That portion of a stream valley adjacent to the channel which is built by sediments of the stream and which is covered with water when the stream overflows its banks at flood stage. Also, the nearly level land situated on either side of a channel which is subject to overflow flooding.

Functional Class

There are three functional classes in the USFS road system:

Arterial. Provides service to large land areas. Connects with other arterials or public highways.

Collector. Serves smaller land areas than arterials. Connects arterials to local roads or terminal facilities, such as MAPs.

Local. Single-purpose road. Connects terminal facilities with collectors or arterials.

Krummholz

Krummholz is found at treeline where the trees grow as low, dense, twisted mats or shrubs. Trees grow in this pattern because the vertical growth breaks off, especially when frozen, and the tree then bushes out.

Maintenance Level

There are five maintenance levels in the USFS road system.

ML 1. Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are “prohibit” and “eliminate.” Roads receiving ML1 maintenance may be of any type, class, or construction standard, and may be managed at any other ML during the time they are open for traffic. However, while being maintained at ML1, they are closed to vehicular traffic, but may be open and suitable for non-motorized uses.

ML 2. Assigned to roads open for use by HIC. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either to (1) discourage passenger cars or (2) accept or discourage HIC.

ML 3. Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this ML are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either “encourage” or “accept.”

ML 4. Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double-lane and aggregate surfaced; however, some roads may be single-lane. Some roads may be paved or dust abated.

ML 5. Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double-lane, paved facilities. Some may be aggregate surfaced and dust abated.

Marine Access Point (MAP)

MAPs are shoreline locations where the public commonly accesses the Forest. Many MAPs were, or are, log transfer facilities when timber harvest activities occur in the area and are associated with a local road system. Some MAPs may not have any associated structures, but they still receive regular public use.

National Forest System (NFS) Road

A NFS road other than a road which has been authorized by a legally documented right-of-way held by a state, county, or other local public road authority. NFS roads form the primary transportation network.

Objective Maintenance Level

OBML describes the long-term level of maintenance a road receives between active project activities. It considers the future road management objectives, including traffic needs, budget constraints, and environmental concerns.

Operational Maintenance Level

OPML describes the level of maintenance a road receives during active project activities. It is often higher than the OBML, especially for local roads. It considers the needs of typical projects and the types of vehicles that will use the road during project activities.

Palustrine

Pertaining to shallow low velocity backwater sloughs, swamps, bogs, and muskeg ponds and their outlet streams or any ponded environment. Ponded is a condition in which free water covers the soil surface and is removed only by percolation, evaporation, or transpiration.

Roaded Area

A roaded area is a designated area which contains NFS roads.

Road Management Objective

Defines the intended purpose of a road based on resource and access management needs as determined through land management planning; contains operation and management criteria for existing roads; and contains design, operation, and maintenance criteria for new roads. RMOs integrate road classification, functional class, traffic service level, and maintenance level. RMOs originate in NEPA planning documents.

Stream Class

A means to categorize stream channels based on their fish production values. There are five stream classes on the Tongass National Forest:

Class I. Streams and lakes with anadromous or adfluvial fish habitat; or high-quality resident fish waters listed in Appendix 68.1, Region 10 Aquatic Habitat Management Handbook (FSH 2609.24), June 1986; or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.

Class II. Streams and lakes with resident fish populations and generally steep (6 to 15 percent) gradient (can also include streams from 0 to 5 percent gradient) where no anadromous fish occur, and otherwise not meeting Class I criteria. These populations have limited fisheries values and generally occur upstream of migration barriers or have other habitat features that preclude anadromous fish use.

Class III. Perennial and intermittent streams with no fish populations but which have sufficient flow or transport sufficient sediment and debris to have an immediate influence on downstream water quality or fish habitat capability. These streams generally have bankfull widths greater than 5 feet and are highly incised into the surrounding hill slope.

Class IV. Intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to have an immediate influence on downstream water quality or fish habitat capability. These streams are generally shallowly incised into the surrounding hill slope.

Non-streams. Rills and other watercourses, generally intermittent and less than 1 foot in bankfull width, little or no incision into the surrounding hill slope, and with little or no evidence of scour.

Temporary Road

A road necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road and that is not included in a forest transportation atlas. These roads are intended for short-term use and maintained for a limited time. Temporary roads are decommissioned at the completion of the project for which they were constructed by removing culverts and bridges and restoring the natural surface drainage patterns after a timber harvest. Temporary roads that continue to be used by motorized vehicles are unauthorized roads.

Traffic Service Level

There are four traffic service levels:

A. Free-flowing, mixed traffic; stable, smooth surface; provides safe service to all traffic.

B. Congested during heavy traffic, slower speeds and periodic dust; accommodates any legal-size load or vehicle.

C. Interrupted traffic flow, limited passing facilities, may not accommodate some vehicles. Low design speeds. Unstable surface under certain traffic or weather.

D. Traffic flow is slow and may be blocked by management activities. Two-way traffic is difficult, backing may be required. Rough and irregular surface. Accommodates high-clearance vehicles. Single-purpose facility.

Unauthorized Road

A road that is not a forest road or a temporary road and that is not included in a forest transportation atlas.

Unroaded Area

An area that does not contain classified roads.

APPENDIX C — SCOPING REPORT

WRANGELL RANGER DISTRICT
ACCESS AND TRAVEL MANAGEMENT PLAN
ENVIRONMENTAL ASSESSMENT

PUBLIC SCOPING SUMMARY
AND
IDENTIFICATION OF ISSUES

This document describes the scoping process, public comments received, and issues identified for the Wrangell Ranger District (WRD) Access and Travel Management Plan Environmental Assessment (EA).

Scoping

Scoping for the EA was conducted from December 22, 2005 to January 27, 2006. The legal notice and press release for this project were published on December 22, 2005 and ran for one week in the Petersburg Pilot and the Wrangell Sentinel. A scoping newsletter describing the proposed project was mailed to a list of 258 interested and affected parties as provided by the Forest Service on December 22, 2005. The scoping letter described: 1) a brief background for the project; 2) potential actions; 3) the purpose of, and need for, the proposed project; and 4) opportunities to provide comments. Notices of the public meetings were also posted on the Tongass National Forest web site, the project’s web site (www.greystone.us/wrangell), the Wrangell Sentinel, and the Petersburg Pilot. Announcements were made on the public radio stations in Wrangell (KSTK) and Petersburg (KFSK). Two public open houses were held on January 26, 2006 for the purpose of explaining the project and soliciting comments from the public. Tables 1 and 2 list the individuals who attended the public open houses, and identify those who provided written comments. Table 3 lists additional individuals who provided written comments regarding the proposed project. Comments were accepted on the proposed project until January 27, 2006.

Table 1
Wrangell Ranger District Access and Travel Management Plan
Environmental Assessment
Public Open House Attendance List, January 26, 2006, 10:00 am to 1:30 pm

Commenter	Name	Affiliation	Street	City, State, Zip	Phone	Email
#1	Roberta Floyd		310 1 st Avenue	Wrangell, Alaska 99929	907-874-3845	
#2	Joyce Phillips		Box 583 3 1/8 mile Zimovia Highway	Wrangell, Alaska 99929	907-874-3855	
	Dick Buhler	Silver Bay Logging		Wrangell, Alaska 99929	907-874-4100	
	Kenneth Vautauo	Silver Bay Logging		Wrangell, Alaska 99929	907-874-4100	

Table 1
Wrangell Ranger District Access and Travel Management Plan
Environmental Assessment
Public Open House Attendance List, January 26, 2006, 10:00 am to 1:30 pm

Commenter	Name	Affiliation	Street	City, State, Zip	Phone	Email
#3	Brennun Eagle		5.5 mile Zimovia Box 576	Wrangell, Alaska 99929	907-874-2162	bseagle@gci.net
#4	Bruce Eagle		9.3 mile Zimovia	Wrangell, Alaska 99929	907-874-2497	wiseeagle@aptalaska.net
	Todd and Catherine White		115 3 rd Street	Wrangell, Alaska 99929	907-874-2106	whiteent@gci.net

Table 2
Wrangell Ranger District Access and Travel Management Plan
Environmental Assessment
Public Open House Attendance List, January 26, 2006, 5:00 pm to 8:00 pm

Commenter	Name	Affiliation	Street	City, State, Zip	Phone	Email
	Karl Welch		P.O. Box 1643	Wrangell, Alaska 99929	907-874-4224	
#5	Marlin E. Benedict		P.O. Box 301	Wrangell, Alaska 99929	907-874-2590	marlin@aptalaska.net
	Jim Nelson		P.O. Box 581	Wrangell, Alaska 99929	907-874-3188	nelsonss@gci.net
	Otto Florschutz		P.O. Box 547	Wrangell, Alaska 99929	907-874-2522	flrschtz@aptalaska.net
	Pat Roppel		P.O. Box 1998	Wrangell, Alaska 99929	907-874-2627	

Table 3
Wrangell Ranger District Access and Travel Management Plan
Environmental Assessment
Additional Commenters List

Commenter	Name	Affiliation	Street	City, State, Zip	Phone	Email
#6	Jim Cariello	State of Alaska, Department of Natural Resources, Office of Habitat Management and Permitting	16 Sing Lee Alley, P.O. Box 667	Petersburg, Alaska 99833	907-772-5224	
#7	Steve Connelly		11860 Nebesna Drive	Anchorage, Alaska 99507		

Table 3
Wrangell Ranger District Access and Travel Management Plan
Environmental Assessment
Additional Commenters List

Commenter	Name	Affiliation	Street	City, State, Zip	Phone	Email
#8	Kay Jabusch	Irene Ingle Public Library	P.O. Box 679	Wrangell, Alaska 99929	907-874-3535	
#9	John E. Jensen		P.O. Box 681, 714 Sandy Beach Road	Petersburg, Alaska 99833	907-772-4635	omasou@gci.net
#10	Jim Leslie	Alaska Waters, Inc.	326 1 st Avenue, P.O. Box 1978	Wrangell, Alaska 99929	907-874-2378	jim-leslie@alaskawaters.com
#11	Erik Lie-Nielsen		P.O. Box 22876	Juneau, Alaska 99802		
#12	Michele Metz	Sealaska Corporation	One Sealaska Plaza, Suite 400	Juneau, Alaska 99801	907-586-9270	michele.metz@sealaska.com
#13	William B. Privett		P.O. Box 775	Wrangell, Alaska 99929	907-874-3276	
#14	Brenda Schwartz	Alaska Charters and Adventures	P.O. Box 1996	Wrangell, Alaska 99929	907-874-4157	info@alaskaupclose.com
#15	Fred J. Shaw		401 Peterson Road	Forks, Washington 98331		
#16	Brian McNitt		2214 SMC Road	Sitka, Alaska 99835		bmcnitt@akrain.org
#17	Robert Mecum	National Marine Fisheries Service	P.O. Box 21668	Juneau, Alaska 99802-1668	907-586-7585	

Comment Content Analysis

During the scoping period, five individuals that attended the open houses provided written comments. Additional comments received for the proposed project included 10 letters or faxes, and two comments received by email or from the project website. The following section identifies the comments given by each person. These comments are paraphrased from the letters received.

Comments Received from Open Houses

➤ Commenter #1

These comments refer to road numbers 50051, 6259, 6299, and 6271:

- o Comment 1-1: Uses and concerns include off-highway vehicle (OHV) use, scenic values, wildlife, recreation, and subsistence.
- o Comment 1-2: Would like to see road #50051 maintained.

- o Comment 1-3: The side roads going to the lakes are important. Continue a road to the lakesides with picnic areas. Provide access for people to bring canoes, skiffs, etc. to the lakes. Provide better access for people who are not able to hike in.
- o Comment 1-4: Keep the trails up and add more.
- o Comment 1-5: Appreciate the hosts that keep the campsites so clean and stocked with firewood.

➤ Commenter #2

- o Comment 2-1: Uses and concerns include scenic values, wildlife, and recreation.
- o Comment 2-2: Road #6299 – camp area on end.
- o Comment 2-3: Road #6271 could go into Long Lake.
- o Comment 2-4: Enjoy the drive out on logging roads.
- o Comment 2-5: Road #50051 needs help. It is beautiful up there.

➤ Commenter #3

These comments refer to all roads on Wrangell Island:

- o Comment 3-1: Uses and concerns include general transportation, scenic values, wildlife, recreation, subsistence, and Christmas tree harvesting.
- o Comment 3-2: Would like all of the current roads on Wrangell Island to stay open providing access for outdoor activities (hunting, fishing, berry gathering, picnics, and Christmas tree cutting). Would be much more crowded if roads were closed.
- o Comment 3-3: Cannot list specific road closures because berry gathering and hunting areas change over time as clear cuts mature.

➤ Commenter #4

- o Comment 4-1: Uses and concerns include recreation and subsistence.

These comments are for Wrangell Island:

- o Comment 4-2: No road closures because of economic reasons (firewood gathering), and do not want to focus all people in one area.
- o Comment 4-3: Forest Service roads tend to become highways. Would prefer that Forest Service build roads rather than the State.
- o Comment 4-4: Want access for recreation for older folks that cannot climb trails.

These comments are for Etolin Island:

- o Comment 4-5: The road closure at King George was not based on any scientific evidence. The gate was supposed to be further down the road, not at the Log Transfer Facility (LTF).
- o Comment 4-6: Build a gate well enough that it cannot be cut down, or use signage to keep people out, telling them they will be fined.
- o Comment 4-7: No berms or tank traps. (Wants roads to be either drivable by OHVs or gated).

This comment is for Zarembo Island:

- o Comment 4-8: The loop road should be paved.

This comment is for Frosty Bay:

- o Comment 4-9: The roads should be closed because they do not lead to anything.

➤ Commenter #5

- o Comment 5-1: Uses and concerns include OHV use, general transportation, scenic values, timber harvest, wildlife, fish passage and water quality, recreation, subsistence, and tourism.
- o Comment 5-2: The road system is the only way for Wrangell residents to have access to the heart of the inlands for hunting moose, deer, and grouse. The road system is a vital part of recreation and firewood.
- o Comment 5-3: I own two OHVs, which we use for inland hunting and recreational driving on Wrangell, Etolin, and Zarembo. With fuel prices so high, an OHV makes good sense to use. I believe that with proper road handling OHVs are safe and quiet. For the inlands of Etolin and Zarembo, these OHVs are the only way some of us have to travel the road systems. Wrangell inland is a little different in that the USFS roads are hooked up with a highway. It is my opinion that recreational OHV use should be allowed on the gravel roads, as long as they are driven safely. There is no harm in allowing this activity on Wrangell or any other inland.
- o Comment 5-4: Off-road riding of OHVs should hold a stiff fine for activities that would destroy the landscape.
- o Comment 5-5: If there were places or trails for off-road OHV riding, this would be a different thing. The sand pit just off of McCormack Creek, if cleaned up and made a little bigger, is a great place for off-road OHVs.
- o Comment 5-6: Regarding road closures, water bars and the removal of bridges from roads not currently being used for logging make very little sense to me. Tree thinning, hunting, and access to these areas are just as important to us as logging is. The logging clear cuts provide great food sources for deer, moose, and bear, which provide us with food and recreation. There was a study published by the USFS stating that waterbars and culverts do not affect erosion. In S.E. Alaska, there is a stream draw every 10 feet already. Road closures mean putting hunting pressure on fewer road systems.

Comments Received as Letters or Faxes

➤ Commenter #6

The Department of Natural Resources Office of Habitat Management and Permitting has reviewed the information provided concerning the project. We have discussed the project with the Alaska Department of Fish and Game (ADF&G) Division of Wildlife Conservation and support this integrated science-based approach to road management. We do not have any site-specific comments at this time; however, we have the following general comments concerning the project:

- o Comment 6-1: The Roads Analysis should include identification of culverts restricting fish passage, and alternatives that will restore fish passage.
- o Comment 6-2: The Roads Analysis should include analysis of water quality related information which is included in the Road Condition Survey database, such as ditch erosion, ditch plugging, blockage of ditch relief culverts, cut-slope/fill-slope erosion, road surface erosion, and culvert inlet and outlet erosion. Roads with chronic water quality concerns should be identified.

- o Comment 6-3: The Roads Analysis should include an evaluation of road densities with regard to the TLMP Standards and Guidelines for wolf and marten viability.
- o Comment 6-4: The Roads Analysis should consider the position of existing roads with regard to small, medium, and large Old-Growth Reserves and whether or not these roads should be closed.
- o Comment 6-5: Please include ADF&G Area Wildlife Biologist Rich Lowell on the project mailing list (ADF&G, Box 667, Petersburg, Alaska 99833).
- Commenter #7
 - o Comment 7-1: Uses and concerns include general transportation and timber harvest.
 - o Comment 7-2: Keep roads open in areas that will have future timber sales.
- Commenter #8
 - o Comment 8-1: Uses and concerns include general transportation.
- Commenter #9
 - o Comment 9-1: Uses and concerns include OHV use, scenic values, timber harvest, wildlife, recreation, and subsistence.
 - o Comment 9-2: As many roads left open as possible for hunting and recreational use, to provide many different uses for a wide variety of people.
- Commenter #10
 - o Comment 10-1: Uses and concerns include general transportation, scenic values, wildlife, fish passage and water quality, recreation, subsistence, and tourism.
 - o Comment 10-2: Maximize road access to the public for the above uses.
 - o Comment 10-3: Improve arterial roadways to enhance development and commerce where communities are connected to roads.
- Commenter #11
 - o Comment 11-1: Uses and concerns include scenic values, wildlife, fish passage and water quality, recreation, and tourism.
 - o Comment 11-2: You used three different map legends for the five maps furnished.
- Commenter #12
 - o Comment 12-1: Sealaska Corporation owns or has an interest in several Native historical sites located near the proposed project area. All of these sites are of record with the State of Alaska archeologist and the USDA Forest Service. Sealaska is relying on your office coordinating with the necessary agencies to assure that no entry is made onto these historic site areas. If it is determined that entry must be made, Sealaska requires that you notify Sealaska Corporation with the idea that a meeting in Juneau may be necessary in order to show that appropriate protection of the sites is being taken to assure site integrity.
- Commenter #13
 - o Comment 13-1: Uses and concerns include OHV use, general transportation, scenic values, wildlife, recreation, and subsistence.

- o Comment 13-2: Keep all roads open and maintained for public use as well as commercial applications such as logging, guiding, tourism, and any others.
- Commenter #14
 - o Comment 14-1: Uses and concerns include OHV use, general transportation, scenic values, wildlife, recreation, subsistence, and tourism.
 - o Comment 14-2: Use the roads on Wrangell, mainland (Cleveland Peninsula), and Etolin regularly for personal enjoyment, recreation, hunting, and subsistence.
 - o Comment 14-3: We operate a small tour company. While our current activities are not using the roads, we are planning some that may. We frequently suggest that our clients use the road system to get to the Forest on days they are on their own. Our island roads put the National Forest at the “doorstep” for many visitors.
- Commenter #15
 - o Comment 15-1: Uses and concerns include timber harvest.

Comments Received from Email or Project Website

- Commenter #16
 - o Comment 16-1: Uses and concerns include scenic values, wildlife, and recreation (including recreational hunting and fishing, and kayak camping).
 - o Comment 16-2: I spend a lot of time kayaking and camping in the general area of Zarembo, Woronkofski, Vank, Rynda, and Kadin Islands. It is a shame to see all of the roads and clear cuts from the water. I strongly support closing all of the roads that are visible from the water.
 - o Comment 16-3: Please keep me informed.
- Commenter #17

National Marine Fisheries Service (NMFS) offers these comments for your consideration:

- o Comment 17-1: Federally Managed Species – For information on federally managed species and essential fish habitat (EFH), NMFS directs you to the following web site: <http://www.fakr.noaa.gov/habitat/efh.htm>.
- o Comment 17-2: Anadromous Fish – The planning area contains numerous anadromous fish streams. The Forest Service maintains a channel type database with some anadromous fish distribution data and the State of Alaska maintains a Catalog of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes and an associated atlas (Anadromous Waters Catalogue/AWC). The AWC is located electronically at: http://www.sf.adfg.state.ak.us/SARR/FishDistrib/FDD_catalogs.cfm. Anadromous fish distribution maps can be found at: http://www.sf.adfg.state.ak.us/SARR/FishDistrib/FDD_catalogs.cfm.
- o Comment 17-3: Red Culverts – The Forest Service investigated the culverts across the Tongass National Forest as part of a survey to determine which streams with resident or anadromous fish the culverts are working properly and passing fish to state standards. Culverts were classified as red, green, or gray. Red culverts have complete or partial blockage of fish (juvenile and/or adult) at some or all flows. Green culverts pass fish to state standards. Culverts classified as gray need further analysis to determine if they meet state standards. A database with this information is available from John McDonnell, Assistant Forest Fish Biologist, Tongass National Forest. He can be contacted at: P.O. Box 309, Petersburg, AK 99833-0309, jmcdonell@fs.fed.us, (907) 772-5862, FAX (907) 772-5896. This information should be included in the WRD Roads Analysis.

The data in this database is a critical part of a science-based approach to road management. For example, the number of red culverts in a section of road and the cost of replacement is valuable information in determining whether a road should be closed or left open. The Forest Service is in the process of prioritizing which of these red culverts to replace, retrofit, or repair to provide for fish passage. Strong consideration should be given to decommissioning roads or putting roads in storage where there are a significant number of red culverts and low rejected use either for timber management, recreation, or subsistence. Negative road effects on stream channel stability, water quality, and fish passage can be minimized by closing low use roads and directing limited road maintenance dollars to roads that must remain open for timber management and connectivity purposes.

- o Comment 17-4: If you have any questions regarding our comments please contact Cindy Hartmann at (907) 586-7585 or at cindy.hartmann@noaa.gov.

Identification of Issues

Issues were identified using two sources: internal Forest Service scoping, and the comments received during external scoping, as listed above. Not all comments led directly to issue development. For example, comments expressing general support for the road system or the project were not used to develop issue statements. Likewise, an expressed interest in being informed of project progress was not incorporated into issue statements. After the issues were identified, they were each placed into one of three categories: 1) *Dismissed* as not relevant to the decision or beyond the scope of the project; 2) *Eliminated from Detailed Study* because a detailed analysis is not required to address the issue; or 3) *Analyzed in Detail* because it is a substantial issue to receive full analysis and disclosure. The order in which the issues are presented is not intended to imply importance or level of interest on the part of the public or the agencies.

Issues Dismissed

- Issue #1: Out-of-scope Comments
 - o Source: Comments 1-4, 1-5, 2-2, 4-3, 4-5, 4-6, 4-7, and 5-5, and Forest Service internal scoping
 - o Three of these comments concern the trail system and campsites, which are beyond the scope of the project. One comment suggested the creation of a site for off-road OHV use, which is beyond the scope of the project. Other comments that are not within the scope of the proposed project concern construction of roads by the State of Alaska and a past Forest Service project. Two of these comments concern the construction of gates and road features, which will not be analyzed in the EA but may be a part of more detailed project planning at a later time.
- Issue #2: Mailing List
 - o Source: Comment 6-5
 - o This comment is within the scope of the project, but is not relevant to the decision. This comment identified a contact at the ADF&G to be added to the mailing list, which will be corrected during the next phase of public scoping.
- Issue #3: Figures
 - o Source: Comment 11-2
 - o This comment is within the scope of the project, but is not relevant to the decision. This comment identified inconsistencies in the legends of the figures produced for the newsletter. Maps produced for this project will be reviewed to ensure that legends and other map features are consistent throughout the documents.

Issues Eliminated from Detailed Study

- Issue #4: Off-road OHV use
 - Source: Comment 5-4 and Forest Service internal scoping
 - Forest Service internal scoping identified off-road OHV use as a concern, particularly because of the resulting disturbance to muskegs and other wetlands. One public comment suggested that off-road riding of OHVs should hold a stiff fine for activities that would destroy the landscape. This issue will be addressed by specific recommendations for management of roads that lead to areas where this activity is occurring. Although this issue will not be analyzed in detail in the EA, law enforcement related to this issue may be a part of more detailed project planning at a later time.

Issues Analyzed in Detail

The issues analyzed in detail have been divided into two categories: 1) Resources, which are broad, resource-based categories; and 2) Roads, which are issues or concerns related to specific roads. Each of these categories is discussed below. Resource issues will be discussed in detail in the EA, while specific road issues will be used primarily in the development of alternatives.

Resources

- Issue #5: Transportation
 - Source: Comments 3-1, 5-1, 7-1, 8-1, 10-1, 13-1, and 14-1, and Forest Service internal scoping
 - The EA will address the adequacy of the existing and proposed road systems for general transportation needs on the WRD. The EA will address the types of maintenance and access levels (passenger vehicle, high-clearance vehicle, OHV, or non-motorized) for the road system for the proposed action and alternatives.
- Issue #6: Recreation
 - Source: Comments 1-1, 2-1, 2-4, 3-1, 4-1, 4-4, 5-1, 5-2, 5-3, 5-6, 9-1, 10-1, 11-1, 13-1, 14-1, and 16-1, and Forest Service internal scoping
 - The EA will analyze the effects of the proposed action and alternatives on access to recreation opportunities. The effects of changes to the method of access (passenger vehicle, high-clearance vehicle, OHV, or non-motorized) on recreational opportunities will be addressed. Recreation activities of interest include OHV riding, Christmas tree harvesting, hiking, camping, hunting, fishing, wildlife viewing, scenic viewing, and kayak camping.
- Issue #7: Subsistence
 - Source: Comments 1-1, 3-1, 3-3, 4-1, 4-2, 5-1, 5-2, 5-3, 5-6, 9-1, 10-1, 13-1, and 14-1, and Forest Service internal scoping
 - The EA will analyze the effects of the proposed action and alternatives on access for subsistence activities. The effects of changes to the method of access (passenger vehicle, high-clearance vehicle, OHV, or non-motorized) on subsistence activities will be addressed. Subsistence activities of concern include firewood gathering, berry picking, hunting, and fishing. One commenter stated that areas used for berry gathering and hunting change over time as clear cuts mature. This point will be considered in the development of alternatives. For some recent timber sale roads, both a short-term and a long-term goal may be identified, based on the anticipated change in level of use over time.
- Issue #8: Vegetation

- o Source: Comment 6-4 and Forest Service internal scoping
- o Several concerns related to vegetation will be analyzed in the EA. These include:
 1. Effects of the proposed action and alternatives on vegetation, including biodiversity
 2. Effects of the proposed action and alternatives on Old-Growth Reserves. One comment requests considering road closures based on their presence in Old-Growth Reserves. This issue will be considered in the development of alternatives.
 3. Invasive, non-native plant species management
 4. Effects of the proposed action and alternatives on access for vegetation management activities (timber harvest or silviculture)
- Issue #9: Wildlife
 - o Source: Comments 1-1, 2-1, 3-1, 5-1, 5-6, 9-1, 10-1, 11-1, 13-1, 14-1, and 16-1, and Forest Service internal scoping
 - o Several concerns related to wildlife will be addressed in the EA. These include:
 1. Effects of the proposed action and alternatives on wildlife populations
 2. Effects of the proposed action and alternatives on biodiversity
 3. Effects of access level (passenger vehicle, high-clearance vehicle, OHV, or non-motorized) on the level of illegal hunting
- Issue #10: Fish Passage and Water Quality
 - o Source: Comments 5-1, 5-6, 6-1, 6-2, 10-1, 11-1, 17-2, and 17-3, and Forest Service internal scoping
 - o Several concerns related to fish passage and water quality will be addressed in the EA. These include:
 1. Effects of the proposed action and alternatives on all fish habitats and populations
 2. Effects of the proposed action and alternatives on anadromous fish habitats and populations, in particular
 3. Effects of the proposed action and alternatives on aquatic biodiversity
 4. Effects of the proposed action and alternatives on fish passage. Culverts restricting resident or anadromous fish passage (red culverts) on the WRD will be identified. During the development of alternatives several factors related to fish passage will be considered, including: opportunities and constraints for restoration of fish passage; the number of red culverts in a section of road; and the cost of replacement.
 5. One commenter stated that strong consideration should be given to decommissioning or storing roads that have a significant number of red culverts and low projected use for timber management, recreation, or subsistence. This commenter also stated that negative road effects on stream channel stability, water quality, and fish passage can be minimized by closing low use roads and directing limited road maintenance dollars to roads that must remain open for timber management and connectivity purposes. These comments will be considered in the development of alternatives.
 6. Analysis of water quality-related information, such as ditch erosion, ditch plugging, blockage of ditch relief culverts, cut-slope and fill-slope erosion, road surface erosion, and culvert inlet

and outlet erosion. Roads with chronic water quality concerns will be identified and considered in the development of alternatives.

7. One commenter referenced a study published by the USFS stating that waterbars and culverts do not affect erosion. The WRD is not familiar with such a study. Typically, the view of the WRD is that the short-term sedimentation impact of removing structures is overall less of an effect than the long-term impacts of leaving structures in place, and that waterbars reduce the amount of sediment transported to streams. The costs and benefits of removing structures and constructing waterbars will be considered for each road during the development of alternatives.
- Issue #11: Special Status (Threatened/Endangered/Sensitive) Species
 - o Source: Comment 17-1 and Forest Service internal scoping
 - o Effects of the proposed action and alternatives on special status wildlife and plant species, Designated Critical Habitat, and Essential Fish Habitat will be addressed in the EA. A separate BA and BE will be prepared for the project.
 - Issue #12: Management Indicator Species (MIS)
 - o Source: Comment 6-3 and Forest Service internal scoping
 - o Effects of the proposed action and alternatives on MIS species will be addressed in the EA. A separate Wildlife Specialist Report will be prepared for the project. Among other species discussions, the document will include an evaluation of road densities with regard to the Tongass National Forest Land Management Plan (TLMP) Standards and Guidelines for wolf and marten viability.
 - Issue #13: Scenic Values
 - o Source: Comments 1-1, 2-1, 3-1, 5-1, 9-1, 10-1, 11-1, 13-1, 14-1, 16-1, and 16-2
 - o The EA will analyze the effects of the proposed action and alternatives on visual resources. One of the comments supports closing all of the roads that are visible from the water. This comment will be considered in the development of alternatives.
 - Issue #14: Cultural Resources
 - o Source: Comment 12-1 and Forest Service internal scoping
 - o Effects to cultural resources will be analyzed in the EA. Native historical sites will be identified and avoided.
 - Issue #15: Economics
 - o Source: Comments 5-1, 7-1, 7-2, 9-1, 10-1, 11-1, 13-2, 14-1, 14-3, and 15-1, and Forest Service internal scoping
 - o An economic analysis will be a component of the alternatives analysis in the EA. Economic factors to be considered include:
 1. Road construction costs
 2. Road maintenance costs
 3. Effects of the proposed project on tourism
 4. Effects of the proposed project on the timber industry, including access to current and future timber sales

Roads

- Issue #16: No Road Closures; Maximize Road Access
 - Source: Comments 3-2, 4-2, 5-3, 5-6, 9-2, 10-2, and 13-2, and Forest Service internal scoping
 - This comment will be incorporated into the alternatives analysis in the EA. Alternatives may include, but are not limited to:
 1. No road closures throughout the WRD
 2. No road closures on Wrangell Island or other specific geographic areas
 3. Road closures of some temporary and unauthorized roads throughout the WRD
 4. Road closures of all temporary and unauthorized roads on the WRD
 5. Road closures of some National Forest System (NFS) roads on the WRD
- Issue #17: Arterial Roadways
 - Source: Comment 10-3
 - This comment suggests improving arterial roadways to enhance development and commerce where communities are connected to roads. This comment will be considered in the development of alternatives.
- Issue #18: Lake Access Roads (specifically, in the vicinity of roads #6259, 6299, and 6271)
 - Source: Comments 1-3 and 2-3
 - These comments make requests that will be considered in the development of alternatives. These include:
 1. Keeping open the side roads that access lakes
 2. Extending these roads such that they provide closer access to lakesides
- Issue #19: Road #50051
 - Source: Comments 1-2 and 2-5
 - This comment requests better maintenance of road #50051, and will be considered in the development of alternatives.
- Issue #20: Zarembo Island Loop Road
 - Source: Comment 4-8
 - This comment requests that this road be paved, and will be considered in the development of alternatives.
- Issue #21: Frosty Bay Roads
 - Source: Comment 4-9
 - This comment suggests that these roads should be closed because they do not lead to anything. This issue will be considered in the development of alternatives.

APPENDIX D — OBML

The following table lists the objective maintenance levels (OBML) and access for the National Forest System (NFS) Roads by Alternative. This table is organized by island and includes roads to be added to the NFS. Roads to be open to off-highway vehicle (OHV) use are indicated in each alternative. The designation for these roads as OHV accessible would be pending an engineering study of the feasibility of these roads for mixed-use. The Priority column is described as Critical, High, Moderate, and Low and applies to the Proposed Action, Alternative 2. Definitions of the acronyms used in the table are as follows; HIC: High Clearance Vehicle (truck or 4-wheel-drive vehicle); NMA: No Motorized Access; OBML 0: Decommissioned Road; N/A: Not Applicable; LOC: Low Clearance Vehicle (passenger car); UNA: Unauthorized.

Wrangell Ranger District - NFS Roads OBML and Access by Alternative* ¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
BUSHY ISLAND												
53000	Bushy	A	1.70	Moderate	3	HIC ¹	2	OHV	2	OHV	1	NMA ²
53001	Bookoo	A	0.19	High	3	HIC	2	OHV	2	OHV	1	NMA
53001	Bookoo	B	0.87	High	3	HIC	1	NMA	1	NMA	1	NMA
53002	Slugs	A	0.82	High	3	HIC	1	NMA	1	NMA	1	NMA
ETOLIN ISLAND												
6272	Olive Cove	A	4.34	Critical	2	NMA	1	NMA	1	NMA	1	NMA
6272	Olive Cove	B	2.47	Critical	1	NMA	1	NMA	1	NMA	1	NMA
6274	Menefee Inlet	A	0.27	Low	2	NMA	0 ³	NMA	0	NMA	0	NMA
6538	Kindergarten Bay	A	0.76	Moderate	2	HIC	2	HIC OHV	2	HIC OHV	1	NMA
6538	Kindergarten Bay	B	0.46	Low	2	HIC	1	NMA	1	NMA	1	NMA
6539	Snow Ridge	A	1.37	Moderate	2	HIC	1	NMA	2	OHV	1	NMA
6540	Mussel Shell	A	10.23	Critical	3	HIC	2	HIC OHV	2	HIC OHV	2	HIC OHV
6541	Anita Bay Access	A	0.49	Critical	3	HIC	2	HIC OHV	2	HIC OHV	2	HIC OHV

Wrangell Ranger District - NFS Roads OBML and Access by Alternative* ¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
6541A		A	0.04	High	0	HIC	2	HIC OHV	2	HIC OHV	2	HIC OHV
6542	Mossman Inlet	A	0.78	Low	2	HIC	2	OHV	2	OHV	1	NMA
6543	Little Lake	A	1.68	High	2	HIC	2	OHV	2	OHV	1	NMA
6544		A	2.25	Critical	2	HIC	2	OHV	2	OHV	1	NMA
6544		B	0.45	Low	1	HIC	2	OHV	2	OHV	1	NMA
6545	Almost Quiet	A	1.42	Moderate	2	HIC	2	HIC OHV	2	HIC OHV	1	NMA
6546	East Mossman Inlet	A	2.07	Moderate	2	HIC	2	HIC OHV	2	HIC OHV	2	HIC OHV
6547	Burnett Inlet	A	0.89	Critical	3	HIC	2	HIC OHV	2	HIC OHV	2	HIC OHV
6547	Burnett Inlet	B	0.31	Low	3	NMA	1	NMA	1	NMA	0	NMA
6548	Tidal Flat	A	0.66	Moderate	2	HIC	1	NMA	1	NMA	1	NMA
6549	Newlywed	A	4.56	Critical	2	HIC	2	HIC OHV	2	HIC OHV	1	NMA
6549	Newlywed	B	1.73	High	2	HIC	2	OHV	2	OHV	1	NMA
6549	Newlywed	C	0.46	Low	2	HIC	1	NMA	1	NMA	1	NMA
6558	Mossman Spur	A	0.57	Moderate	2	HIC NMA	1	NMA	1	NMA	1	NMA
6560	Lake Spur	A	0.52	Moderate	2	HIC	1	NMA	1	NMA	1	NMA
51000	Harbor Creek	A	0.37	Moderate	2	NMA	0	NMA	0	NMA	0	NMA
51001	Harbor Creek Spur	A	0.26	Moderate	2	NMA	0	NMA	0	NMA	0	NMA

Wrangell Ranger District - NFS Roads OBML and Access by Alternative*¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
51009	Kindergarten Pass	A	1.22	Moderate	2	HIC	2	OHV	2	OHV	1	NMA
51011	Cedar Cliff	A	1.20	Critical	2	HIC	1	NMA	2	OHV	1	NMA
51011	Cedar Cliff	B	0.12	Low	2	NMA	0	NMA	2	OHV	0	NMA
51381	Kindergarten	A	0.28	Low	2	HIC	1	NMA	1	NMA	1	NMA
51401	East Sortyard	A	0.53	Moderate	2	HIC	2	OHV	2	OHV	2	OHV
51401	East Sortyard	B	0.21	Low	2	HIC	1	NMA	1	NMA	1	NMA
51402	West Sortyard	A	0.60	Moderate	2	HIC NMA	1	NMA	2	OHV	1	NMA
51421	West Mossman Inlet	A	0.45	Moderate	2	HIC	1	NMA	2	OHV	1	NMA
51441	Upgrade	A	1.24	High	2	HIC	1	NMA	2	OHV	1	NMA
51491	Prince	A	0.82	High	2	HIC	1	NMA	1	NMA	0	NMA
51493	Queen	A	2.19	Critical	2	HIC	1	NMA	2	OHV	1	NMA
51540	Fishtrap	A	6.91	Critical	2	HIC	2	HIC OHV	2	HIC OHV	2	HIC OHV
51540	Fishtrap	B	1.50	High	2	NMA	1	NMA	1	NMA	1	NMA
51541	North Pump	A	0.91	Moderate	2	HIC NMA	1	NMA	2	OHV	1	NMA
51543	East Fishtrap	A	0.53	N/A ⁴	1	NMA	1	NMA	1	NMA	1	NMA
51544	North Fork Creek	A	1.97	Critical	2	HIC	2	OHV	2	OHV	1	NMA
51581	Wetbeck	A	1.44	Moderate	2	HIC	2	OHV	2	OHV	1	NMA
51720	Anita	A	3.58	High	2	HIC	2	HIC OHV	2	HIC OHV	2	OHV

Wrangell Ranger District - NFS Roads OBML and Access by Alternative*¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
51723	Upper Anita	A	1.85	High	2	HIC NMA	2	OHV	2	OHV	2	OHV
FROSTY BAY												
6850	Frosty	A	6.35	Critical	3	OHV NMA	2	OHV	2	OHV	1	NMA
6851	Golden Pond	A	3.75	Critical	3	OHV	2	OHV	2	OHV	1	NMA
54500	Pass	A	1.63	Critical	3	OHV	1	NMA	1	NMA	1	NMA
54504	Pond View	A	0.68	Low	3	OHV	1	NMA	1	NMA	1	NMA
RYNDA ISLAND												
7000	Rynda	A	2.34	Moderate	3	OHV	1	NMA	1	NMA	0	NMA
SHRUBBY ISLAND												
6550	Shrubby Island	A	2.29	Moderate	2	OHV	2	HIC OHV	2	HIC OHV	1	NMA
6550	Shrubby Island	B	0.14	Low	2	OHV	0	NMA	0	NMA	0	NMA
6551	Middle Shrubby	A	1.64	Moderate	2	OHV	2	HIC OHV	2	HIC OHV	1	NMA
6552	Shrubby East	A	1.21	Moderate	2	OHV	2	HIC OHV	2	HIC OHV	1	NMA
6553	Shrubby West	A	0.26	Moderate	2	OHV	0	NMA	0	NMA	0	NMA
6554	Shrubby South	A	0.73	High	2	OHV	2	HIC OHV	2	HIC OHV	1	NMA
WRANGELL ISLAND												
6250	Pats TTF	A	0.34	Critical	3	HIC	3	LOC	3	LOC	3	LOC
6255	Pats Pit	A	0.56	Moderate	1	NMA	1	NMA	1	NMA	1	NMA

Wrangell Ranger District - NFS Roads OBML and Access by Alternative* ¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
6259	Pats Creek	A	5.43	Critical	3	LOC ⁵	3	LOC	3	LOC	3	LOC
6259	Pats Creek	B	0.39	Low	1	NMA	0	NMA	0	NMA	0	NMA
6260	Ridge	A	0.97	Moderate	2	HIC	1	NMA	1	NMA	1	NMA
6260	Ridge	B	0.88	N/A	1	NMA	1	NMA	1	NMA	1	NMA
6262	Monkey	A	0.14	Low	2	HIC	0	NMA	0	NMA	0	NMA
6263	West Fork Creek	A	2.45	High	2	HIC	2	HIC OHV	2	HIC OHV	2	HIC OHV
6263	West Fork Creek	B	0.35	Low	2	HIC	0	NMA	0	NMA	0	HIC OHV
6265	McCormick Creek	A	0.12	Low	5	LOC	3	HIC OHV	3	HIC OHV	3	HIC OHV
6265	McCormick Creek	B	14.59	Critical	3	LOC	3	HIC OHV	3	HIC OHV	3	HIC OHV
6267	Nemo	A	13.91	Critical	3	LOC	3	HIC OHV	3	HIC OHV	3	HIC OHV
6267_0.73R	Yunshookuh Loop	A	0.08	Low	3	LOC	2	HIC OHV	2	HIC OHV	2	HIC OHV
6267_0.73R	Yunshookuh Loop	B	0.02	Low	2	HIC OHV	2	HIC OHV	2	HIC OHV	2	HIC OHV
6267_3.43R		A	0.15	Moderate	2	NMA	2	HIC OHV	2	HIC OHV	2	HIC OHV
6270	Fools Inlet	A	8.09	Critical	3	LOC	3	LOC	3	LOC	2	HIC OHV
6270	Fools Inlet	B	1.83	Moderate	3	LOC	2	HIC OHV	2	HIC OHV	2	OHV
6271	Long Lake	A	0.35	High	3	LOC	2	HIC	2	HIC	2	HIC

Wrangell Ranger District - NFS Roads OBML and Access by Alternative* ¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
								OHV		OHV		OHV
6271	Long Lake	B	0.27	Low	3	LOC	0	NMA	0	NMA	0	NMA
6273	Stumble Creek	A	1.29	Moderate	2	HIC OHV	2	HIC OHV	2	HIC OHV	2	HIC OHV
6275	Bozo Creek	A	0.89	Moderate	2	HIC	2	OHV	2	OHV	1	NMA
6276	Paw	A	2.67	High	2	LOC	2	HIC OHV	2	HIC OHV	1	NMA
6277	Uproot	A	1.38	Moderate	2	HIC	2	OHV	2	OHV	1	NMA
6296	Wacke	A	1.18	High	2	HIC	1	NMA	2	OHV	1	NMA
6296_1.18R		A	0.27	Low	2	NMA	0	NMA	2	OHV	1	NMA
6299	Thoms Creek	A	5.56	Critical	3	LOC	3	LOC	3	LOC	2	HIC OHV
6299	Thoms Creek	B	3.39	Critical	3	LOC	2	HIC OHV	2	HIC OHV	1	NMA
50001	Boulder	A	0.53	Low	2	HIC	0	NMA	0	NMA	0	NMA
50002	Deer Ridge	A	1.54	Low	2	HIC	0	NMA	0	NMA	0	NMA
50003	Nugget	A	0.25	Low	2	HIC	0	NMA	0	NMA	0	NMA
50004		A	0.20	Low	2	HIC	0	NMA	0	NMA	0	NMA
50005	Coy	A	0.80	Low	1	OHV	0	NMA	0	NMA	0	NMA
50006	Cozy	A	0.42	Low	1	NMA	0	NMA	0	NMA	0	NMA
50008	Dash	A	1.95	N/A	0	NMA	0	NMA	0	NMA	0	NMA
50009	Elder	A	0.55	Moderate	2	HIC	1	NMA	2	OHV	1	NMA
50009	Elder	B	0.41	Moderate	2	HIC	1	NMA	2	OHV	1	NMA

Wrangell Ranger District - NFS Roads OBML and Access by Alternative*¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
50010	Elf	A	0.32	Low	1	HIC	0	NMA	0	NMA	0	NMA
50011	Gig	A	0.46	Low	1	HIC NMA	0	NMA	0	NMA	0	NMA
50012	Gill	A	0.15	Low	1	HIC NMA	0	NMA	0	NMA	0	NMA
50013	Jag	A	0.46	Low	1	NMA	0	NMA	0	NMA	0	NMA
50014	Jig	A	0.29	Low	1	NMA	0	NMA	0	NMA	0	NMA
50015	Jog	A	0.21	Low	1	NMA	0	NMA	0	NMA	0	NMA
50016	Jug	A	0.27	Low	3	HIC	2	HIC OHV	2	HIC OHV	2	HIC OHV
50022	Garnet	A	2.03	Moderate	2	HIC	2	HIC OHV	2	HIC OHV	1	NMA
50024	Barb	A	1.40	Moderate	2	HIC NMA	1	NMA	2	OHV	1	NMA
50025	Skip	A	0.35	Low	1	NMA	0	NMA	0	NMA	0	NMA
50030	Basin	A	0.72	High	2	HIC	1	NMA	2	OHV	1	NMA
50031	L H Dome	A	0.50	Low	2	HIC	1	NMA	1	NMA	1	NMA
50032	Point	A	0.20	Low	2	HIC	1	NMA	1	NMA	1	NMA
50032	Point	B	0.10	Low	0	HIC	1	NMA	1	NMA	1	NMA
50033	Anita View	A	0.32	N/A	3	HIC	3	LOC	3	LOC	3	LOC
50034	Turn	A	1.35	Critical	2	HIC NMA	2	OHV	2	OHV	1	NMA
50034	Turn	B	1.03	High	0	NMA	2	OHV	2	OHV	1	NMA
50040	Highbush	A	1.36	Critical	3	LOC	3	LOC	3	LOC	2	HIC

Wrangell Ranger District - NFS Roads OBML and Access by Alternative*¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
												OHV
50041	Beaver Creek	A	0.95	High	2	HIC	1	NMA	2	OHV	1	NMA
50041	Beaver Creek	B			1	NMA	1	NMA	2	OHV	1	NMA
50050	Salamander	A	0.54	Low	3	HIC	3	LOC	3	LOC	3	LOC
50050	Salamander	B	4.77	Critical	2	HIC	2	HIC OHV	2	HIC OHV	2	HIC OHV
50050	Salamander	C	0.42	High	2	HIC	1	NMA	1	NMA	1	NMA
50051		A	1.49	High	2	HIC	2	HIC OHV	2	OHV	1	NMA
50051		B	1.18	High	2	HIC	1	NMA	2	OHV	1	NMA
50051		C	0.52	Low	2	HIC	1	NMA	2	OHV	0	NMA
50052		A	1.10	Moderate	3	HIC	2	HIC OHV	2	OHV	1	NMA
50053	Shotgun	A	0.37	Moderate	2	HIC	1	NMA	1	NMA	1	NMA
50053	Shotgun	B	0.54	Low	1	NMA	0	NMA	0	NMA	0	NMA
50053_0.04 R		A	0.04	Low	2	HIC OHV	1	NMA	1	NMA	1	NMA
50054	Lost Joe	A	1.93	Critical	3	HIC	2	HIC OHV	2	HIC OHV	2	HIC OHV
50055	Nufie	A	2.54	High	2	HIC	2	HIC OHV	2	HIC OHV	2	OHV
50060	Big Hollow	A	3.70	Critical	3	HIC	2	HIC OHV	2	HIC OHV	2	HIC OHV
50060	Big Hollow	B	0.69	Low	3	HIC	1	NMA	1	NMA	1	NMA

Wrangell Ranger District - NFS Roads OBML and Access by Alternative*¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
50061		A	0.47	Moderate	1	HIC	1	NMA	1	NMA	1	NMA
50061		B	0.28	Moderate	0	HIC	1	NMA	1	NMA	1	NMA
ROADS TO ADD TO NFS												
6267_0.87R		A	0.09	Low	0	NMA	2	HIC OHV	2	HIC OHV	2	HIC OHV
6267_3.43R		A	0.15	Moderate	2	NMA	2	HIC OHV	2	HIC OHV	2	HIC OHV
ZAREMBO ISLAND												
52000	Roosevelt Harbor	A	0.20	Critical	3	LOC	3	LOC	3	LOC	2	HIC OHV
52001	Deep Bay TTF Access	A	0.40	Critical	3	LOC	3	LOC	3	LOC	2	HIC OHV
52002	Strut	A	0.63	High	1	NMA	1	NMA	1	NMA	1	NMA
52003	Can	A	1.51	High	1	NMA	1	NMA	1	NMA	1	NMA
52004	Bezel	A	1.21	Moderate	1	NMA	0	NMA	0	NMA	0	NMA
52005	Bias	A	0.21	High	1	NMA	0	NMA	0	NMA	0	NMA
52006	Aura	A	0.62	Moderate	1	NMA	0	NMA	0	NMA	0	NMA
52007	Azure	A	1.61	Moderate	1	HIC	1	NMA	2	HIC OHV	1	NMA
52007	Azure	B	0.63	Low	1	NMA	1	NMA	2	HIC OHV	1	NMA
52008	Bade	A	0.74	Critical	1	HIC	2	HIC OHV	2	OHV	1	NMA
52008	Bade	B	0.98	Critical	1	NMA	2	OHV	2	OHV	1	NMA

Wrangell Ranger District - NFS Roads OBML and Access by Alternative*¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
52008	Bade	C			0	NMA	2	OHV	2	OHV	1	NMA
52009	St. John Knob	A	0.58	Low	1	HIC	1	NMA	2	OHV	1	NMA
52009	St. John Knob	B	0.44	Moderate	0	NMA	1	NMA	2	OHV	1	NMA
52010	Muskeg Run	A	1.40	Moderate	3	LOC	1	NMA	2	OHV	1	NMA
52011	Zarembo Flats	A	0.75	Moderate	3	LOC	1	NMA	2	OHV	1	NMA
52011	Zarembo Flats	B	0.19	Low	1	NMA	1	NMA	2	OHV	1	NMA
52012	Zarembo West	A	0.58	Moderate	1	HIC	1	NMA	2	OHV	1	NMA
52012	Zarembo West	B	0.15	Moderate	0	HIC	0	NMA	2	OHV	0	NMA
52012	Zarembo West	C	0.48	Moderate	0	NMA	0	NMA	2	OHV	0	NMA
52014	West Face	A	1.25	Moderate	1	HIC	1	NMA	2	OHV	1	NMA
52015	Outback Down	A	0.09	Moderate	2	HIC	1	NMA	1	NMA	1	NMA
52015	Outback Down	B	0.89	Moderate	1	NMA	1	NMA	1	NMA	1	NMA
52016	Upper Outback Down	A	0.64	Moderate	3	LOC	1	NMA	1	NMA	1	NMA
52019	Barred Owl	A	2.33	High	3	LOC	2	HIC OHV	2	HIC OHV	1	NMA
52020	Nowhere	A	0.44	Moderate	3	LOC	1	NMA	2	HIC OHV	1	NMA
52020	Nowhere	B	0.45	Low	3	NMA	0	NMA	2	HIC OHV	0	NMA
52021	Deer Lake	A	2.54	Moderate	3	LOC	2	HIC OHV	2	HIC OHV	1	NMA
52021	Deer Lake	B	0.27	Low	0	NMA	0	NMA	2	HIC	0	NMA

Wrangell Ranger District - NFS Roads OBML and Access by Alternative* ¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
										OHV		
52022		A	3.45	Moderate	3	LOC	2	HIC OHV	2	HIC OHV	1	NMA
52022		B	0.29	Low	3	NMA	0	NMA	2	HIC OHV	0	NMA
52023		A	0.59	Moderate	3	LOC	1	NMA	1	NMA	1	NMA
52024	Muskeg Mama	A	1.02	High	3	LOC	1	NMA	2	HIC OHV	1	NMA
52025		A	1.20	Moderate	2	HIC	1	NMA	2	HIC OHV	1	NMA
52030	Eyeopener	A	0.71	Moderate	3	LOC	1	NMA	2	OHV	1	NMA
52031	Zarembo North	A	0.24	Moderate	3	LOC	0	NMA	0	NMA	0	NMA
52031	Zarembo North	B	0.42	High	3	LOC	0	NMA	0	NMA	0	NMA
6578	Lower Outback Run	A	0.79	Moderate	3	LOC	2	HIC OHV	2	HIC OHV	1	NMA
6585	West Zarembo	A	11.35	Critical	3	LOC	3	LOC	3	LOC	2	OHV
6585	West Zarembo	B	0.66	High	2	HIC	2	HIC OHV	2	HIC OHV	1	NMA
6585	West Zarembo	C	2.06	Low	1	NMA	0	NMA	0	NMA	0	NMA
6585_0.620L	West Zarembo Temporary Spur	A	1.79	High	0	UNA ⁶	1	NMA	2	HIC OHV	1	NMA
6587	Macnamara Point	A	1.75	Moderate	3	LOC	2	HIC OHV	2	HIC OHV	1	NMA
6587	Macnamara	B	1.14	Low	2	OHV	2	OHV	2	OHV	1	NMA

Wrangell Ranger District - NFS Roads OBML and Access by Alternative*¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
	Point											
6588	Northwest Zarembo Connection	A	3.19	Moderate	3	LOC	2	HIC OHV	2	HIC OHV	1	NMA
6589	Snow Creek	A	4.39	N/A	1	NMA	0	NMA	0	NMA	0	NMA
6590	Saint Johns	A	8.24	Critical	3	LOC	3	LOC	3	LOC	2	HIC OHV
6590	Saint Johns	B	13.63	Critical	3	LOC	3	LOC	3	LOC	2	HIC OHV
6590	Saint Johns	C	20.51	Critical	3	LOC	3	LOC	3	LOC	2	HIC OHV
6590_02.518 R	Saint Johns	A	10.4	Moderate	0	NMA	1	NMA	1	NMA	1	NMA
6591	West Snow Creek	A	1.27	N/A	1	NMA	0	NMA	0	NMA	0	NMA
6592	Zarembo Lake	A	5.16	High	3	LOC	3	LOC	3	LOC	2	HIC OHV
6592	Zarembo Lake	B	0.16	Low	3	LOC	2	HIC OHV	2	HIC OHV	1	NMA
6592	Zarembo Lake	C	0.76	N/A	3	LOC	2	HIC OHV	2	HIC OHV	1	NMA
6592	Zarembo Lake	D	0.69	Moderate	1	NMA	1	NMA	2	HIC OHV	1	NMA
6592_0.689L	Zarembo Lake	A	1.08	Moderate	0	UNA	2	HIC OHV	2	HIC OHV	1	NMA
6592_0.689L	Zarembo Lake	B	0.31	Low	0	UNA	1	NMA	2	HIC	1	NMA

Wrangell Ranger District - NFS Roads OBML and Access by Alternative*¹

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
										OHV		
6593	Meter Bight	A	4.37	Critical	3	LOC	2	HIC OHV	2	HIC OHV	1	NMA
6593	Meter Bight	B	0.73	Moderate	1	NMA	0	NMA	2	HIC OHV	0	NMA
6594	South Zarembo Connection	A	4.68	Critical	1	OHV	2	HIC OHV	2	HIC OHV	1	NMA
6594		B			0	NMA	2	OHV	2	OHV	1	NMA
6597	Stikine Strait	A	0.87	Moderate	1	HIC	2	HIC OHV	2	HIC OHV	1	NMA
6597	Stikine Strait	B	1.94	Low	1	NMA	0	NMA	0	NMA	0	NMA
6598	Round Point Ridge	A	1.07	Moderate	1	NMA	0	NMA	0	NMA	0	NMA
6599	Baht Harbor	A	1.82	High	1	OHV	1	NMA	2	HIC OHV	1	NMA
6599	Baht Harbor	B	1.07	High	1	NMA	1	NMA	2	HIC OHV	1	NMA
ROADS TO ADD TO NFS												
52014	West Face Spur 1.262	A	0.15	Moderate	1	HIC OHV	1	NMA	2	HIC OHV	1	NMA
6585_5.353L	West Zarembo Spur 5.353	A	1.54	Moderate	0	NMA	2	OHV	2	HIC OHV	1	NMA
6592	Zarembo Lake Spur 0.689	A	1.08	Moderate	0	UNA	2	HIC OHV	2	HIC OHV	1	NMA
6592	Zarembo Lake Spur 0.689	B	0.31	Low	0	UNA	1	NMA	2	HIC OHV	1	NMA

Wrangell Ranger District - NFS Roads OBML and Access by Alternative*[†]

Route Number	Route Name	Segment	Length (miles)	Priority	OBML by Alternative							
					Alt. 1		Alt. 2		Alt. 3		Alt. 4	
					OBML	Access	OBML	Access	OBML	Access	OBML	Access
6585	West Zarembo Spur 0.620	A	0.66	High	0	UNA	1	NMA	2	HIC OHV	1	NMA
6590	Saint Johns Spur	A	1.04	Moderate	3	LOC	2	HIC OHV	2	HIC OHV	1	NMA
SKIPPING COW NFS ROADS 6												
52033	Nesbitt Ridge	A	4.15	N/A	0	NMA	1	NMA	1	NMA	1	NMA
52034	Middle Meter Bight	A	3.69	N/A	0	NMA	2	OHV	2	OHV	1	NMA
6594	Vial Creek	A	2.30	N/A	N/A	N/A	2	OHV	2	OHV	1	NMA
52034_1	Middle Meter Bight Branch 1	A	0.50	N/A	N/A	N/A	2	OHV	2	OHV	1	NMA
BAHT NFS ROADS 7												
Baht 3	Baht 3	A	1.24	N/A	N/A	N/A	2	HIC OHV	2	HIC OHV	1	NMA
Baht 3	Baht 3	B	3.22	N/A	N/A	N/A	2	OHV	2	HIC OHV	1	NMA
Baht 14	Baht 14	A	0.82	N/A	N/A	N/A	1	NMA	2	HIC OHV	1	NMA

* Table includes 10.5 miles of Skipping Cow roads on existing FS roads, the other 15.1 miles will be temporary roads and are not listed.

[†] Table includes 5.3 miles of Baht roads on existing FS roads, the other 15.7 miles will be temporary roads and are not listed.

1. HIC: High Clearance Vehicle (truck or 4-wheel-drive vehicle)
2. NMA: No Motorized Access
3. OBML 0: Decommissioned Road
4. N/A: Not Applicable
5. LOC: Low Clearance Vehicle (passenger car)
6. UNA: Unauthorized