United States Department of Agriculture

Draft Infrastructure Assessment

Tongass National Forest Plan Revision

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Cover Photo: Roads, like this one in Ketchikan, are important infrastructure on the Tongass National Forest.

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Forest Service, Alaska Region

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Introduction

The Tongass National Forest aims to maintain an appropriately sized and environmentally sustainable transportation and infrastructure system that is responsive to ecological, economic, and social concerns. Infrastructure on the Tongass National Forest including roads, trails, recreation infrastructure, administrative facilities, docks, bridges, and dams. The transportation system is defined as this system of National Forest System roads, trails, and airfields (36 CFR 212.1).

The transportation system should provide access for recreation and resource management, as well as support watershed restoration and resource protection to sustain healthy ecosystems. Recreation infrastructure includes facilities and infrastructure such as developed campgrounds, picnic areas, rental cabins, and associated facilities (e.g., outhouses), boat launches, trailheads which is discussed in the Recreation and Tourism assessment section.

Resource Importance

Many small landlocked communities, particularly on Prince of Wales Island, only have road access over a National Forest System Road. This is somewhat unique to the Tongass National Forest, and maintaining this infrastructure is critical to maintaining and supporting Alaskan lifestyles. Maintaining infrastructure to meet the needs of forest users is also important to the local economies which contributes to the quality of life for those living in surrounding communities. These National Forest System roads and infrastructure provide for important access to a variety of resource management activities, harvest and gathering, subsistence, and recreational opportunities.

Resource History and Current Management Direction

Resource History

Roads and Bridges

National Forest System (NFS) roads are under the jurisdiction of the Forest Service and are wholly or partly within or adjacent to NFS lands. The Forest Service determines the necessity of these roads for the protection, administration, and utilization of NFS lands and the use and development of its resources. Roads managed by other public agencies (such as states, boroughs, and municipalities) that provide access to NFS lands are also considered part of the overall regional transportation system, but do not fall under the jurisdiction or direction of the Forest Service.

NFS roads are designated by their intended use. Roads are grouped into use categories to provide a hierarchy that allows for the development of an efficient transportation system. These different categories range between level 1 (closed), level 2 (suitable for high-clearance vehicles), level 3 (suitable for passenger vehicles, rough surface), level 4 (suitable for passenger vehicles, smooth surface), and level 5 (suitable for passenger cars, dust free, possibly paved) (USDA 2016b). Except for a few administrative sites and campgrounds, most NFS roads are single lane, constructed with blasted quarry rock, and designed for off highway loads (USDA 2016b).

Most of the roads on the Tongass National Forest were built and maintained to access and remove timber. Timber sale contracts typically included road building components where roads were designed by the Forest Service and built by the contractor to those specifications. This resulted in the construction of many high-quality roads for hauling timber and accessing different parts of the Forest by vehicle. Over

the years many of these roads have gained value as they provide access for other uses such as recreation, harvest and gathering, as well as to provide critical community access to private lands within or adjacent to the Forest. Some of these roads are now used for guided tours and mass tourism related activities (related to the cruise industry) which were not the original intent of these roads. A reduction in timber sales has resulted in fewer roads being constructed, and existing roads receiving less resources for maintenance.

Dams

There are two obsolete dams owned and managed on the Tongass National Forest, the Nugget Creek Dam and the Osprey Lake Dam. Nugget Creek Dam located in Juneau was built in 1914 to provide hydroelectric power to serve mining operations. It was in service from 1915 to the early 1940's and abandoned when mine operations ceased. It is no longer in operation and functionally serves as a weir on Nugget Creek. The Osprey Lake Dam located in Port Walter was constructed in 1984 to support a cooperative study of barriered lakes and their potential of Chinook smolt production. The project was ultimately a failure with over 90% mortality from tapeworm parasitism.

Other private and public entities manage 56 permitted dams located on the Tongass National Forest. These dams are used to generate power for communities or for water storage. Hydroelectric dams are licensed under the Federal Energy Regulatory Commission. Water storage facilities are permitted and monitored under the Alaska Department of Natural Resources. The transmission lines and facilities for these dams also have special use permits to utilize Forest Service land. This renewable electricity generation source utilizes natural power of water to provide a basic need for communities.

Administrative Buildings

Administrative facilities include buildings and their appurtenances necessary to support the employees, equipment, and activities necessary for the management of National Forests. These are separate from recreation facilities. Administrative buildings house Forest Service workers, equipment, and serve as public facilities for forest visitors seeking information and education. Some examples include Tongass National Forest Ranger Stations, equipment warehouses, and employee housing. Administrative facilities can include offices, warehouses, and shops as well as transient and non-transient living quarters such as barracks and individual residences. Living quarters are partially supported by rental receipts, while administrative and other facilities are financially supported through annual budget appropriations.

The management of buildings and other structures is directed by Forest Service Manual 7310. Forests must develop a facilities master plan as a guide to facilities planning. These documents are continuously updated. A primary goal of facilities planning is to provide safe, clean, attractive, efficient, and accessible facilities for employees and the public.

Marine Access Facilities and Log Transfer Facilities

A marine access facility (MAF) is an area used to transfer items from land to saltwater or vice versa, made up of a structure such as a mooring buoy, dock, log transfer facility, boat ramp, or a combination of these (USDA 2016b). Historically the majority of use of an MAF was usually tied to log transfer facility (LTF) activities (USDA 2016b). The transport of harvested timber from isolated islands in Southeast Alaska requires both land and water routes to reach processing facilities and LTFs are used to transfer logs to barges or rafts for towing (USDA 2016b). There were 100 LTFs identified on the Tongass in the 2016 Forest Plan (USDA 2016b) with only 45 of them having current active permits.

Log transfer facilities are placed in locations that will avoid or minimize potential impacts on water quality, aquatic habitat, and other resources (USDA 2016a). Construction and use of these sites are

required to follow both regulatory guidelines established by the Clean Water Act (40 CFR Part 230), and the Alaska Timber Task Force Log Transfer Facility Guidelines (USDA 2016a, Appendix G). Appendix G of the 2016 Forest plan (USDA 2016a) provides the guidelines for planning and permitting of LTFs, delineating the physical requirements necessary to construct a log transfer and associated facilities and the methods to avoid or control potential impacts from these facilities on water quality, aquatic, and other resources (USDA 2016a Appendix G).

Recreation Sites

Recreation facilities and infrastructure are defined in this analysis as public facilities that have been designed and built for the primary purpose of public recreation such as campgrounds and trails (recognizing roads, bridges and other infrastructure also provide access for recreational activities, as discussed above). Generally, campgrounds, cabins, trails, picnic areas, roadside interpretive sites, visitor centers, and similar recreation infrastructure are some of the most heavily utilized and highly valued infrastructure, other than roads. As detailed in the Recreation and Tourism Assessment, public recreational use of the Forest has increased. The bulk of this increase can be attributed to the increase in Cruise Ship activity with new services being added to communities such as Kake and Klawock and increased cruise ship activity in the traditional ports of call. This increase in recreation use will create the need to increase the maintenance level of the roadways to account for the increased cruise ship and special uses traffic. Recreation infrastructure is covered in greater detail in the Recreation and Tourism Assessment.

Current Management Direction

Legal and Regulatory Compliance

The current Tongass Forest Plan contains management direction for roads, trails, cross-country travel, and snowmobile use through goals, objectives, and standards. The management direction for trails is relatively general, and provides emphasis on maintenance and construction, while providing the necessary resource protection measures. Travel Management Plans and other site-specific plans are used to designate roads, trails, and areas for off- highway vehicles in accordance with the final rule for Travel Management (USDA 2016a); Designated Routes and Areas for Motor Vehicle Use published in the Federal Register (FR) on November 9, 2005 (70 Federal Register 68264). Current direction also requires that opportunities to manage road use cooperatively with applicable state, tribal, and other federal agencies to meet resource management objectives must be considered (USDA 2016a).

The current desired condition for the roads for the transportation infrastructure is to provide access for Forest users, access to Southeast Alaska communities, and access points to facilitate implementation of the State of Alaska's Southeast Transportation Plan (USDA 2016a). Design, construction, and maintenance or decommissioning of roads is to support Forest resource management activities to provide access to Forest resources and opportunities (USDA 2016a).

Management or constructions of roads are to include considerations for a full range of access forms such as cars, trucks, bicycles, off-highway vehicles (OHVs), and foot travel (USDA 2016a). In November 2005, the Forest Service adopted a final rule for managing motor vehicle use, including OHV use, on National Forests throughout the United States (36 Code of Federal Regulations 212, USDA 2016b). Under this rule, the travel management plans designate a system of roads and trails for OHV use and identify areas for cross country travel that are appropriate and do not cause resource damage. Annually, each unit prepares an updated Motor Vehicle Use Map to display NFS routes (roads and trails) or areas designated as open to motorized travel (USDA 2016b).

In order to consider resource protection for any road, route or site, selection includes geotechnical investigations, survey, and design to a technical level sufficient to meet the intended use and is balanced with both ecological objectives and the investment to be incurred (USDA 2016b). The Tongass Forest Plan has specific standards and guidelines and best management practices that adhere to the National Core BMP Technical Guide FS-990a and Alaska Region Soil and Water Conservation Handbook FSH 2509.22. With this careful planning and investigation, road construction, reconstruction and/or maintenance is done in a way to minimize effects on wildlife and fish habitat, riparian habitat, and wetlands (USDA 2016a), including avoiding the introduction or spread of invasive species (Refer to FSM 2900, for specific guidance).

Scope and Scale of Assessment

Information on infrastructure will be presented at the Forest scale, detailing infrastructure that is under the responsibility of the Forest Service on the Tongass. Infrastructure categories included in this assessment report include, roads, bridges, administrative facilities, log transfer facilities and dams. Trails and recreational facilities are covered in the Recreation and Tourism Assessment section.

Status and Trends

The following overarching trends are identified for the current state of infrastructure on the Tongass National Forest:

- A reduction in timber sales has resulted in less resources for road maintenance which has created a deficit in adequate funding to maintain the transportation network and additional funding for deferred maintenance is needed.
- Funds for road and facility maintenance has decreased resulting in less miles of roads and facilities being maintained each year.
- Mobilization and construction costs have increased faster than inflation rates over the past five years.
- Increase recreation usage and cruise industry use have increased impacts to the infrastructure system.

Roads and Bridges

As of the 2016 Forest Plan, there were approximately 5,000 miles of roads on National Forest Service lands, approximately 3,100 miles of which were not maintained for passenger vehicles (maintenance level 1 and 2). As of this assessment, not including Maintenance level 1 roads, there are approximately 1,673 miles of road open for public use either seasonally or year-round (Table 1). Roughly 68% of this mileage is maintained for high clearance vehicles (maintenance level 2) and 30% is maintained for passenger vehicles (maintenance level 3). There are only approximately 30 miles maintained for moderate or high degrees of user comfort (maintenance levels 4 and 5).

Approximately 33 miles of road have been identified as roads that could be decommissioned per the last travel management analysis completed (Travel Management Subpart A). These roads will likely be decommissioned versus moved to storage. Removing roads from the system requires an area analysis as defined in Forest Service Manual 7700 and National Environmental Policy Act analysis. The greatest opportunity to remove roads from the system is by looking at the extremities of the road network. Of the road segments considered for “remove, storage, or conversion,” the highest priority for removal would be

those segments considered high risk and located in a high priority watershed. Road decommissioning has been ongoing for nearly 20 years. As decommissioning continues, there will likely be fewer opportunities to remove roads from the transportation system.

The Tribes and other community members in Southeast Alaska have expressed a need for increased consultation and broader community conversations whenever road closures are proposed, as these have become community assets used for subsistence harvesting after periods of resource extraction. For example, increased government-to-government consultation and increased public involvement in Access Travel Management (ATM) plans would be beneficial.

The Tongass National Forest has acquired large acreages of land over the last few decades and these acquisitions have included road infrastructure. A portion of these roads have been evaluated in one or more project-specific travel analyses, with some roads subsequently added to the transportation atlas during project decision-making.

Table 1—Miles of National Forest System roads open to public use (year-round or seasonally) on the Tongass National Forest, by Ranger District and maintenance level

Ranger District	Operational maintenance level 2 (miles)	Operational maintenance level 3 (miles)	Operational maintenance level 4 (miles)	Operational maintenance level 5 (miles)	Total miles
Prince of Wales	511.0	183.3	10.8	0.02	705.1
Hoonah	82.3	58.1	11.1	0.00	151.4
Juneau & Admiralty National Monument	42.3	3.2	2.6	1.44	49.5
Ketchikan Misty Fjords	93.3	16.1	2.2	0.00	111.6
Petersburg	231.9	107.8	0.2	0.11	340.0
Sitka	61.2	4.9	1.5	0.00	67.5
Wrangell	93.0	107.6	0.1	0.00	200.7
Yakutat	30.5	17.0	0.0	0.00	47.5
Total	1,145	498	28.5	1.56	1,673.4

Maintenance levels are: 2 (high clearance vehicles); 3 (suitable for passenger cars); 4 (moderate degree of user comfort); and 5 (high degree of user comfort). Data source is the INFRA database, July 2024.

The maintenance level of roads and the amount of attention roads receive annually varies widely. Some roads are in poor locations, which increases maintenance needs and the risk that sediment from the road surface could enter adjacent streams. The Forest Service works to prioritize road maintenance in annual maintenance plans. These plans are based on projected budgets, the amount of traffic individual roads receive, and damage created by environmental factors such as flooding and erosion. Routine road and bridge maintenance work (brushing, blading, ditch, culvert cleaning, deck cleaning, etc.) is periodically performed on maintenance level 2, 3, 4, and 5 roads as funding allows and in most cases, they are kept in a drivable condition for their designed use. However, they do not all receive routine maintenance work.

The Tongass National Forest implements water quality best management practices and many other design features and resource protection measures when implementing projects. Use of the water quality best management practices ensures compliance with the Clean Water Act. The Forest also engages with the agency's National Best Management Practice Monitoring Program. Program data shows that management practices have increasingly provided adequate protections for soil and water resources through restoration efforts.

Currently, road maintenance funds are focused on roads open to public travel that access administrative sites and high use recreation sites. The primary maintenance items are surface blading, ditching, and roadside brushing. Replacing lost surfacing aggregate is also a priority and occurs occasionally across the Forest. With a reduction in timber sales and changes in how funds are allocated to National Forests has come a reduction in miles of road maintained during the past five years. When roads are no longer needed for timber harvest and there is no recreation potential, the cost of keeping them open outweighs the service to the public so these roads are often slated to be decommissioned. This decision process is supported through Travel Management analysis. Roads in each district are reviewed to see if the maintenance level needs to be changed to match the existing conditions (e.g. increased use with recreation). Mainline roads need to be prioritized for recreation and future timber sales. In accordance with approved Access and Travel Management plans, non-mainline spur road maintenance can be paused until a need arises to access the road to reduce non-critical maintenance costs. With decreasing funds, it is paramount to find a balance with available budget to keep as many roads open as possible while using the allocated funds wisely.

With this reduction of road maintenance, deferred maintenance of the roadway infrastructure has increased significantly over the past five years. Much of this deferred maintenance is the result of reductions in contractual road work tied to timber sales along with an increased emphasis placed on asset identification and management. This creates a need to use appropriated funds to maintain access on roads for recreation, subsistence and other public activities, even though they were originally designed and built to access and haul timber. Mobilization and construction costs have also increased faster than inflation rates which has also contributed to increases in deferred maintenance. With current budgets, maintenance of roads is taking longer than it used to. The status of roadway infrastructure deferred maintenance is estimated at around $375M with bridges at around $60M. Alternate funding opportunities (e.g. from recreation, from the tourism industry) will need to be identified to maintain a sustainable transportation network on the Forest.

Tribes have expressed concerns about the ability of the agency to maintain infrastructure like roads and facilities. Many Tribes have incorporated National Forest System roads into their road inventories so that they can undertake maintenance responsibilities in order to keep roads open to important harvest areas.

Bridges

Although bridges can be considered part of the road system, it is discussed here as a distinct part of this system because of their importance. There are 491 road bridges present on the Tongass National Forest, some of which are owned by the Forest Service and some of which are in place through a variety of special use permits such as 17B easements, Tribal agreements, and other methods of sharing construction and maintenance costs. Complications with property ownership have strained resources. A simplified way to transfer and receive property is crucial to future efficiency. Many bridges in the planning area were constructed to support the timber program and are over 40 years old.

Older bridges were often built with the abutments, at the very edge of streams, causing constrictions and scour. These bridge abutments often encroach on the stream and are no longer in compliance with best management practices. With the new Federal Highway Administration (FHWA) Specifications for the National Bridge Inventory (SNBI) these scour vulnerable bridges will be identified and a Scour Critical Plan of Action created. Bridge replacements are designed to replace under-sized culverts and bridges with structures that allow for aquatic organism passage. In many instances, safe design practices, that also meet best management practices, dictate that the only suitable replacement structure for a site is a bridge.

Of the approximately 491 road bridges under the jurisdiction of the Forest Service on the Tongass National Forest, most of these structures meet or exceed the minimum criteria outlined in the Bridge Inspection Guide and the SNBI for bridge condition. Forest Service policy and Federal Law requires routine inspections on every bridge under Forest Service jurisdiction. Bridges must be promptly removed, repaired, or replaced when routine inspections show significant deficiencies that affect public safety. These deficiencies known as 'critical findings' follow a strict reporting process identified in the National Bridge Inspection Standards (NBIS) regulation. A SNBI component condition code rating of 3 or less is considered a 'critical finding'. There are currently under 10 structures that have a code of 3 or less on the Tongass National Forest that are structurally deficient and critically in need of replacement. There are over 60 defunct log structures that are considered obsolete and require decommissioning which are currently abandoned on closed road systems. The funding to do this work comes from the road maintenance budget, while a small amount of structures are being replaced through the capital investment program budget.

Administrative Facilities

The number of Forest Service owned buildings has steadily declined over the past decades. The Tongass is no exception to this. Budgets for maintenance and personnel have declined and facilities have also followed suit. Buildings most frequented by the public, that are currently operating, are Ranger Stations and visitor centers. They are located in local communities or are adjacent to the Forest and provide work facilities for employees, and serve as sites for in-person education, information and services to the public. Developed recreation facilities can include campgrounds, cabins, picnic sites, day use areas, trailheads, visitor centers and other areas where developed facilities are important to recreation as detailed in the Recreation and Tourism Assessment section.

There are 123 facilities currently distributed across the Tongass National Forest according to the 2024 Draft Facilities Master Plan. Of all facilities on the Forest, roughly 2 percent are planned for decommissioning to improve alignment with administrative needs and to reduce operating costs. The draft facilities master plan also identifies the condition of facilities. This condition rating is an industry standard based on the formula to show a percentage of the repairs needed compared to the replacement value. Nearly 37% of the facilities are rated in a poor condition, while 63% are in a good or fair condition. The facilities plan also provides information on the historical status of the facilities, based on the Forest's assessment and consultation with the State Historic Preservation Office. Only one of the 123 facilities on the Tongass is eligible to be listed in the National Register of Historic Places. The remaining facilities are not eligible or have not been evaluated. The Tongass facilities portfolio also includes administrative and former administrative buildings which are now used or are planned to be used for recreation purposes.

There are also two buildings planned for decommissioning. Some Tribes have expressed a desire to take over management of underutilized Forest Service facilities. The Organized Village of Kake has done just this, with an old administrative building in Portage Bay.

Log Transfer Facilities

LTF construction and operations have been found to affect benthic resources and fish-rearing habitat primarily through the accumulation of bark from dumping, storage, and rafting of logs (USDA 2016b). Some shoreline disturbance can occur from the development of these sites, including modification or loss of habitat through the addition of rock or other structures on the shoreline (USDA 2016b). Historically, LTFs have affected approximately 2 acres of marine benthic habitat for the average site, mostly due to bark accumulation (Faris and Vaughan 1985). The bark can remain for extended periods (decades) but, based on dive survey results for LTF sites of concern, the bottom area covered with bark (based on

bottom area with continuous coverage) can be greatly reduced within a few years (e.g., 1 to 10) after operations cease (ADEC 2008). While many sites historically were found to violate the state standards for water quality (residue standards), all evaluated sites have improved. The past state standard for residue accumulation was for LTF sites to have less than 1.5 acres of continuous bark coverage. ADEC (2008) reported the results of evaluating 15 sites of concern and found that none of the sites exceeded this standard and did not warrant 303(d) listing. Current requirements for any permitted site are more stringent, requiring less than 1.0 acre of continuous bark coverage at an LTF site (USDA 2016b). Appendix G of the Forest Plan has detailed requirements that future LTF sites must meet to be developed including several factors that would reduce potential adverse effects to marine fish and shellfish resources. Generally, effects to marine aquatic resources at LTFs would be proportional to the amount of timber harvest, as the harvest amount would typically indicate amount of logs transferred through LTFs (USDA 2016b).

Dams

There are two obsolete Forest Service owned dams (USDA 2024c) on the Tongass National Forest, including the Nugget Creek Dam and the Osprey Lake Dam. Forest Service owned damns on the Tongass are primarily maintained for preservation of habitat, public safety and historical value. These dams are inspected by the Forest Service or by private contractors and records are held at the supervisor's office. These dams are the responsibility of the Forest Service and should be decommissioned when there is no longer habitat, public safety and historical value.

The Nugget Creek Dam currently has a significant hazard classification. Inspection and monitoring schedule generally consists of three informal site visits per year, happening between May and September. An Operation and Maintenance inspection is required every five years and a Special Inspection only after severe rain or earthquake events. The structures used to support the Osprey Lake Dam project, including the small dam, were abandoned and are currently in a state of disrepair. The retention pond holds roughly two feet of head, and it currently has a low classification hazard.

Drivers and Stressors

Landslides are a major geologic hazard in much of Southeast Alaska, due to high rainfall and steep slopes. Because of these potential hazards the current Forest Plan includes restrictions on road building activities to minimize mass failures. With current trends showing that mean annual precipitation on the Forest is projected to increase in the coming years, continuing these types of restrictions will be important to consider. Increased amount of rainfall will also potentially create the need for larger culverts and bridges on the Tongass. Any increase in landslide frequency and/or severity will increase re-construction, maintenance, and mitigation costs for roads under Tongass National Forest jurisdiction. Because many Tongass roads access communities and other high value infrastructure, cooperative relationships are developed at the local level to respond to such incidents. Occasional natural catastrophic events occur; however, properly functioning watershed condition and riparian areas, and careful design and location of roads will minimize resource degradation due to such events (USDA 2016a). See the Geology and Geologic Hazards assessment section for more information on landslides hazards.

Key Takeaways

- The 1673 miles of National Forest System roads currently open to public use is an approximation of the minimum amount of road system needed, given present needs, to meet current Forest Plan direction, statutory and regulatory requirements, and funding expectations

- Approximately 33 miles of road have been identified as roads that could be decommissioned per the last travel management analysis completed (Travel Management Subpart A).
- Current and projected road budgets do not fully fund road maintenance needs. Alternate funding opportunities will need to be identified to maintain a sustainable transportation network on the Forest.
- The increase in recreation use will create the need to increase the maintenance level of the roadways to account for the increased cruise ship and special uses traffic.
- Alternate funding opportunities (e.g. from recreation, from the tourism industry) will need to be identified to maintain a sustainable transportation network on the Forest.
- Many Tribes have incorporated National Forest System roads into their road inventories so that they can undertake maintenance responsibilities in order to keep roads open to important harvest areas.
- There are currently 123 administrative facilities on the Tongass National Forest 37% of the facilities are rated in a poor condition, while 63% are in a good or fair condition.
- There are 491 bridges on the Tongass; less than 10 structures are structurally deficient and critically in need of replacement.
- There are two obsolete Forest Service owned dams (USDA 2024c) on the Tongass National Forest.

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Glossary

Infrastructure
The facilities, utilities, and transportation systems needed to meet public and administrative needs.

Forest transportation system
The system of National Forest System (NFS) roads, trails, and airfields on NFS lands (36 CFR 212.1).