



# INTERIOR ALASKA

## Transportation Plan

# TECHNICAL MEMORANDUM

Riverine Transportation System Analysis:  
Conditions, Issues, and Trends

MAY 2024

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## ACRONYMS AND ABBREVIATIONS

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2036 LRTP	Let's Keep Moving: Statewide Long-Range Transportation Plan 2036 Update (2016)
2050 LRTP	Alaska Moves 2050: Statewide Long-Range Transportation Plan
ARRC	Alaska Railroad Corporation
ASFP	Alaska Moves 2050: Statewide Freight Plan
BIL	Bipartisan Infrastructure Law
CAP	Continuing Authorities Program
CFR	Code of Federal Regulations
DOT&PF	Alaska Department of Transportation and Public Services
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Administration
FHWA	Federal Highway Administration
HPP	Tribal High Priority Projects
IATP	Interior Alaska Transportation Plan
IATP area	Interior Alaska Transportation Planning Area
MARAD	U.S. Maritime Administration
memo	technical memorandum
PAS	Planning Assistance to States
PIDP	Port Infrastructure Development Program
SIRA	Safe Ice Roads for Alaska
STBG	Surface Transportation Block Grant
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
WIFIA	Water Infrastructure Finance and Innovation Act

# 1.0 INTRODUCTION

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## 1.1 Purpose of the Memorandum

This technical memorandum (memo) provides results from the review of related plans and policies, documents existing conditions of riverine cargo system facilities, and identifies key issues and recommendations for a 20-year planning horizon within the boundaries of the Interior Alaska Transportation Plan (IATP) area (Figure 1). Riverine transportation includes commercial- or community-owned barge, harbor, and port transportation facilities. It may also include identified locations that lack formal facilities along with their intermodal connection points, which may be owned by entities such as the Alaska Department of Transportation and Public Facilities (DOT&PF) and the Alaska Railroad Corporation (ARRC).

Communities within the IATP area rely on the riverine system for many uses including subsistence, recreation, inter-community access and access to larger communities and shipment and delivery of goods via barge. The shipment of goods via barge is beneficial to communities on the riverine system that are off the road system within Alaska, as barge service offers an alternative to delivery by air, which is often more expensive for small communities.

This memo presents information to update the overall IATP, which will include recommended funding and implementation strategies for regional multi-modal transportation systems.

## 1.2 Interior Alaska Transportation Plan Riverine System, Past and Present

### 1.2.1 Past

The riverine system has been a significant resource for the transportation of goods and people within the IATP area. The Indigenous Athabascan populations have historically traveled the riverine system between camps and trading centers. Riverine traffic increased during the Klondike Gold Rush, mostly on the Yukon and Tanana rivers. As a result, small mining towns were established by prospectors and their counterparts along the riverbanks. Although many of these communities did not last long, those that remained became permanent locations for some of the remaining Native Alaskan communities.

Completion of the Alaska Railroad in the 1920s led to decreased dependency on the riverine system for both shipment of goods and travel. An additional decline in dependency on river transport occurred in the 1920s and 1930s as Nenana replaced Fairbanks as the principal port for the Yukon and Tanana rivers system, while Fairbanks remained the hub for the Alaska Railroad. This decreased dependency may also be attributed to an increase in the road network and an increase in aircraft accessibility in some regions of the Interior planning area.

### 1.2.2 Present

Today, cargo is delivered to communities within the IATP area through multiple modes of transportation including air, rail, and roads. In most cases, cargo is shipped using a combination of these modes. For example, bulk goods may be trucked from Anchorage to Fairbanks. Once in Fairbanks these goods are offloaded from trucks and loaded onto Alaska Railroad railcars bound for Nenana. Once the goods arrive at the Port of Nenana, Nenana Port Authority workers unload the goods, and they are either placed in dry storage at the port or loaded onto barges to go to their final destinations in communities along the Yukon and Tanana rivers.

In addition to barge and cargo uses, the riverine system in the interior planning area continues to be used for personal transport, recreation, and subsistence. These activities originate from public or private docks, boat ramps, and harbors throughout the region. These activities are able to traverse additional places in the interior that barges are unable to navigate as they require smaller vessels that are able to maneuver through shallow waters.

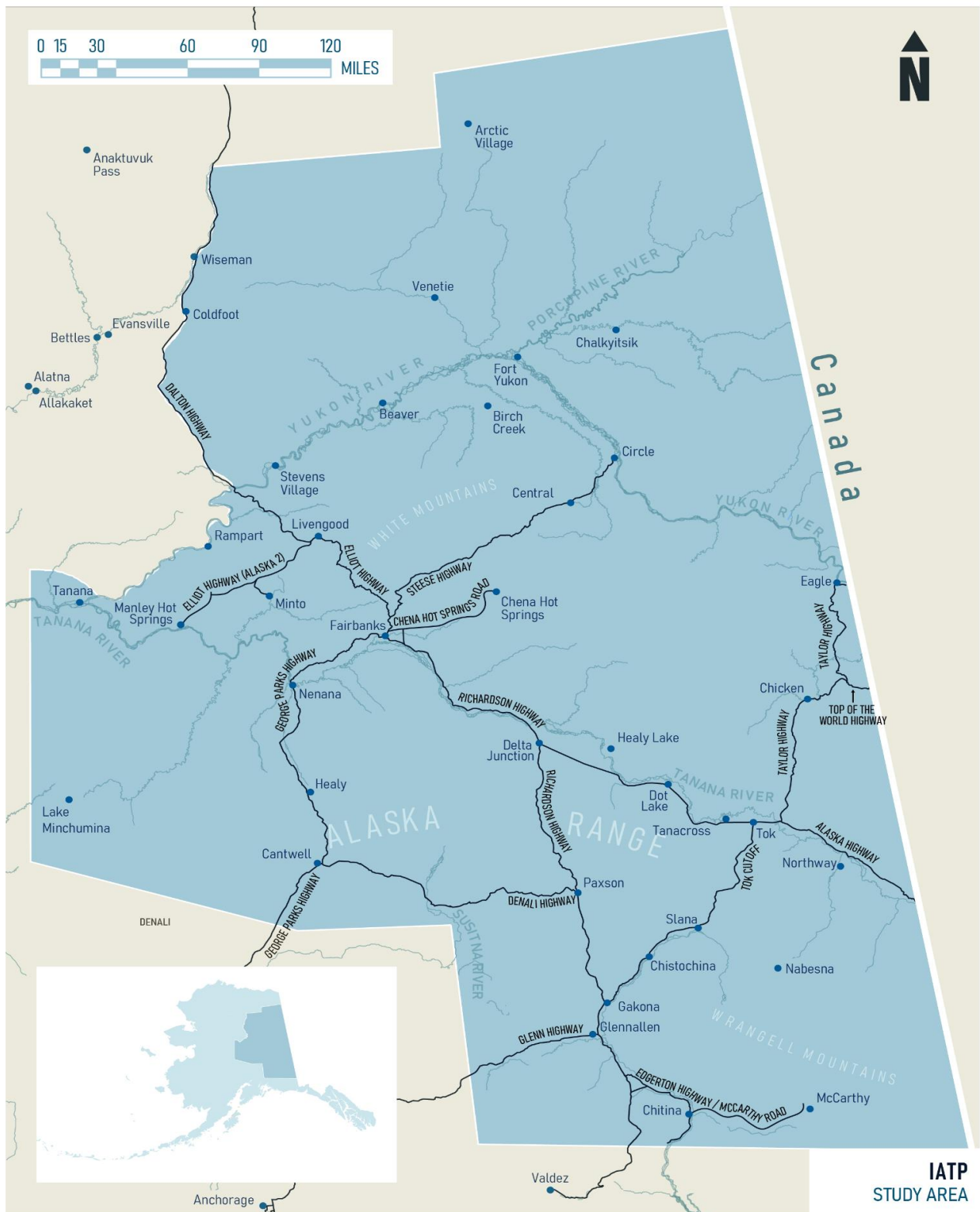


Figure 1 Interior Alaska Transportation Plan Area

## 2.0 REVIEW OF RELATED PLANNING DOCUMENTS

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### 2.1 Alaska 2036 Long-Range Transportation Policy Plan Update – (2016)

The Alaska 2036 Long-Range Transportation Policy Plan Update (2036 LRTP) operates under Title 23 Code of Federal Regulations (CFR) 450.216 and is a guide for the State of Alaska and the DOT&PF through the year 2036 to establish policies and investment priorities. The 2036 LRTP establishes a vision to provide a transportation system that enables a robust and growing economy and meets the mobility needs of all facility users in the state.

Policies, goals, and actions were determined by addressing trends for travel growth and demand, delivery and supply systems, existing public policy, public expectation, financial capacity, climate change, and extreme weather events.

### 2.2 Alaska Moves 2050: Statewide Long-Range Transportation Plan Update (2022)

The Draft Statewide Long-Range Transportation Plan Update, Alaska Moves 2050 (2050 LRTP) was released for public comment in June 2022. The plan is an update of the 2036 LRTP and incorporates a performance-based planning framework to support improved decision making, higher return on investments, better accountability, and transparency, and improve performance of the transportation system. The 2050 LRTP lists three top transportation priorities by region. The priorities identified for the Interior Region are as follows:

- Mobility for all Alaskans
- Operation and Maintenance of the System
- Resiliency

Future transportation challenges identified for the Interior Region include:

- Serving the fifty communities within the Interior
- Providing for how people move around, including transportation modes such as, using road/highway, rail, air, and water
- Supporting facilities for the transportation of goods, including on the road/highway, rail, air, and water
- Providing opportunities for economic prosperity, including mining, tourism, military, and for subsistence

The 2050 LRTP establishes a range of goals, policies, actions, and performance measures to guide future transportation investment and measure results. The plan guides future programming of funds for transportation investment in Alaska.

### 2.3 Alaska Moves 2050: Statewide Freight Plan (2023)

The Alaska Moves 2050 Statewide Freight Plan (ASFP) focuses on safely and efficiently moving people and goods while aligning with federal, state, and local transportation priorities. The ASFP uses a performance-based planning approach to identify improvements and develop implementation strategies to execute the ASFP. Trends, challenges, and opportunities related to freight traffic were identified in the ASFP by evaluating safety, travel mode, travel pattern, climate, existing surface condition, and existing facilities data.

The State of Alaska and the DOT&PF's freight system goals are:

- **Safety:** Increase safety for all modes during the movement of freight.
- **Mobility and Access:** Move goods safely, reliably, and cost-effectively across Alaska.
- **Economic Vitality:** Facilitate economic growth and lower the cost of goods and services.
- **State of Good Repair:** Keep what we have in a state of good repair.
- **Resiliency:** Have a freight network that can recover quickly from disruptions.
- **Sustainability:** Promote a sustainable, clean, equitable freight system.
- **Strategic Partners:** Collaborate with other levels of government, industry partners, and the public.
- **Stewardship of the Transportation System:** Find the best, most affordable ways to improve the freight network.
- **Performance-Based Management:** Have stable, flexible, and long-term funding sources.
- **Transportation Innovation:** Leverage innovations that benefit safety, efficient freight movement, and work force needs.

The intermodal connectors for riverine facilities within the IATP area identified in the Alaska Moves 2050 Statewide ASFP are:

- Fairbanks International Airport
- Port of Nenana
- Dalton Highway connecting Fairbanks to Coldfoot
- The Eisenhower Interstate System which includes:
  - George Parks Highway
  - Richardson Highway
  - Alaska Highway
  - Glenn Highway
  - Tok Highway
- The non-interstate portion of the Richardson Highway connection Delta Junction to Glennallen
- Alaska Railroad Corporation Fairbanks Rail Yard

Key trends related to riverine facilities and ports:

- Many riverine facilities and ports lack strong multimodal connections to transfer goods from the port to the community.
- Goods are transported via road/highway, rail, air, and water.
- Port infrastructure is aging and funding for improvements is limited.

Challenges related to freight truck traffic and the roadway system identified in the ASFP were previously identified in the Surface Transportation Technical Memorandum. However, several of those challenges are relevant to the riverine system because many communities are reliant on intermodal connection points where cargo is transferred from one mode of transport to another. These challenges are listed below.

- Limited funding, retiring personnel, studded-tire use, and climate change impacts
- Lack of road network redundancy leading to system-wide safety and access vulnerability
- Travel time reliability is impacted by external factors, such as extreme weather events, road maintenance and mitigation, lack of network redundancy, and road capacity.
- Bridge height, overhead clearance, load restrictions, and roadway seasonal weight restrictions
- Sole reliance on Highway Safety Improvement Program funds for safety improvements without additional state or more flexible federal funding.
- DOT&PF data is inconsistent with established DOT&PF boundaries and federally reported data.

A list of opportunities identified from the ASFP to address these challenges is provided in the Surface Transportation Technical Memorandum. For the purposes of this memo the opportunities listed below are those focused on the riverine system.

- Developing Tribal Safety Plans to improve coordination and alignment between DOT&PF, rural, and Tribal leaders
- Expanding of the data-driven safety approach to emphasize treatment cost-effectiveness assessments and Highway Safety Manual screening and evaluation methods at the project level
- Treating and rehabilitating pavements and bridges in good and fair condition before deteriorating to decrease a project's life cycle cost
- Continuing to allocate resources for improved data collection, management, and analysis to aid in accurately prioritizing investments, management of assets, and required reporting.



## 3.0 RIVERINE PORT SYSTEM OVERVIEW

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### 3.1 System Description

The riverine system within the IATP area is composed of many rivers that provide for subsistence-based living, recreational opportunities, and access between communities; however, most rivers are not suitable for barge traffic. In the IATP area, barge service is limited to the Yukon and Tanana rivers. Barge service is a seasonal dependent service, from mid-May through mid-October, when the rivers are typically ice-free.

The Yukon and Tanana rivers serve the IATP area from two hubs (i.e., cargo hubs) where most shipments of goods originate: Port of Nenana and community of Tanana. These communities are in areas with easy access from both Fairbanks and Anchorage, contain additional intermodal access points, and have ability to store goods prior to shipment.

During the winter season, when the rivers in the region freeze over and inhibit the ability for barge service, the Yukon and Tanana rivers are used as ice laden roadways connecting communities. These seasonal ice roads and winter trails are vital in providing communities on the riverine system access in many different ways depending on the capabilities. For some, like the community of Healy Lake Village and the surrounding communities of the Upper Tanana subregion that cannot receive barge service due to river conditions, these ice roads provide the ability to receive fuel and other bulk goods via truck transportation. This ability is more cost effective than having to depend solely on air cargo. For other communities, such as Fort Yukon that has an established barge service and receives fuel and bulk goods consistently during the service season, the use of the ice roads or winter trails are not so focused on stocking the community and reducing costs by avoiding air cargo fees; but on being able to have connection with other communities which boosts economic, social, cultural, and mental health during the potentially harsh winters of the IATP area.

#### 3.1.1 Yukon River

The source of the Yukon River is Llewellyn Glacier at Atlin Lake in Atlin District, British Columbia, Canada and flows through Canada and Interior Alaska then discharges into the Bering Sea at Kusilvak, Alaska. The average width of the Yukon River within the IATP area is about 0.50 miles. Average depth is 40 feet and the river's maximum depth within the IATP area is near the community of Rampart with a depth of 130 feet. Although most of the Yukon River is deep enough to enable barge traffic, there are areas such as Stevens Village where depths are measured at seven feet and Circle where depths are measured at five feet, both of which limit barge service.

#### 3.1.2 Tanana River

The Tanana River is a tributary of the Yukon River with headwaters that emerge at the confluence of the Chisana and Nabesna rivers within the IATP area near the community of Northway. Depths along the Tanana River are not as widely reported as they are for the Yukon River but data from the National Oceanic and Atmospheric Administration, Advanced Hydrologic Prediction Service shows a steady pattern of depth measurements of about 21 feet at Fairbanks. This depth is consistent along the Tanana River as it flows north from Nenana and provides a maximum draft for loaded river barges of about 4.5 feet. Even with a consistent depth providing the ability for barges to navigate, the shifting river channels continue to make navigation difficult.

This difficult navigation is even more problematic south of Nenana, specifically between Fairbanks and Delta due to velocity (elevation drop). This difficulty inhibits barges from navigating this section of the Tanana River, leaving communities such as Delta without barge service.

## 3.2 Community Profiles

There are 62 communities in the IATP area. Twelve (12) communities are within proximity to the riverine system, with seven identified as actively receiving cargo via barge service on the river system. Some communities are within proximity to the riverine system but are not active on the transportation system because of limitations within the river system. For example, at Manley Hot Springs, river depths are too shallow to sustain barge deliveries and at Chalkyitsik, where historically barge deliveries were made during high water times, changing water depths now restrict barge traffic.

Table 1 lists communities within the IATP area within proximity to the major riverine systems, status as an on- or off-road community, and whether they receive barge service. These specific identifiers enable comparison of communities considered off-road and use barge service. The cost of barging bulk goods such as fuel and heavy equipment can be less than other shipping options such as air freight. When limited to air cargo, shipping costs range from \$0.40 per pound to \$0.89 per pound according to the 2019 Tanana Chiefs Conference Regional Transportation Strategy, which includes many of the communities within the IATP area.

*Table 1 Communities in Proximity to the Riverine System*

Community	On Road/Off Road	Barge Service?	Riverine System
Beaver	Off Road	Yes	Yukon
Chalkyitsik	Off Road	No	Yukon
Circle	On Road	Yes	Yukon
Delta Junction Area	On Road	No	Tanana
Eagle City/Village	Seasonally On Road	No	Yukon
Fort Yukon	Off Road	Yes	Yukon
Healy Village	Off Road	No	Tanana
Manley Hot Springs	On Road	No	Tanana
Nenana	Seasonally On Road	Yes	Yukon & Tanana
Rampart	Off Road	Yes	Yukon
Stevens Village	Off Road	Yes	Yukon
Tanana	On Road	Yes	Yukon

Regardless of availability of seasonal barge service, as mentioned, some communities establish winter ice roads or winter trails on the river to facilitate the transport of goods using winter ready vehicles such as trucks, cars, snowmachines, and dog sled teams. These communities include Healy Lake, Fort Yukon, Tanana, and Rampart.

To help better understand the conditions, profiles of the seven communities identified as active on the riverine system during the barge season are provided below.

### 3.2.1 Beaver

Tsee Duu (Gwich'in)

Ts'aahudaaneekk'onh Denh (Koyukon)

**Translation of Alaska Native Village Name:** Beaver Village (Gwich'in)[1] Where the Forest Fire Burned Out (Koyukon)[1]

**Language:** Gwich'in & Koyukon Athabascan

**2022 Population:** 54

**Percent of Population Identified as Alaska Native:** 100 percent

**Median Household Income:** \$33,036

**Percent of Population Below Poverty:** 24.4 percent

**Main Employment Industry:** Utilities

**Air Cargo Price per Pound 2018:** \$0.52

**Community:** Beaver is situated on north bank of the Yukon River and does not have roads connecting to the rest of Alaska. Fuel, store-bought goods, mail, additional supplies, and people make their way to Beaver by aircraft or barge service.

**Summer Use:** The 2016 Beaver community plan mentions two trips up the Yukon River may be made by Ruby Marine out of Nenana during the summer. Ruby Marine operates as a contractor for Crowley Maritime to deliver fuel, heavy equipment, bulk goods, and other large freight. Although Beaver receives goods via barge, there is not an official barge landing facility. Other uses for the river during the summer months include recreational and subsistence activities by private boat.

**Winter Use:** The community relies on air service from Warbelow's Air in the winter. Service is offered Monday through Saturday with most flights originating from Fairbanks. Additional transportation methods in the winter include snowmachine and dog sled team.

### 3.2.2 Circle

#### Danzhit Hanlaj

**Translation of Alaska Native Village Name:** The Place Where the River Comes out of the Canyons and the Flats Start[1]

**Language:** Gwich'in Athabascan

**2022 Population:** 91

**Percent of Population Identified as Alaska Native:** 69 percent

**Median Household Income:** \$26,875

**Percent of Population Identified as Below Poverty:** 13.8 percent

**Main Employment Industry:** Public Administration

**Air Cargo Price per Pound 2018:** \$0.51

**Community:** Circle is situated on the west bank of the Yukon River and is accessible by road via the Steese Highway and air through Circle Airport and Circle Hot Springs Airport. Circle is 155 miles by road and 130 air miles from Fairbanks. The Circle 2020 to 2025 Community Plan identifies the community as a strategic location for the movement of freight, fuel, and additional goods transferred from the road network to river traffic along the Yukon River.

**Summer Use:** Summer barge transport on the Yukon River provides a cost-effective option for receiving shipments of fuel, heavy equipment, and goods. The river is also used for recreational and subsistence activities by private boat.

**Winter Use:** There is no substantial winter use of the riverine system for the movement of goods. Residents travel the surrounding areas by snowmachine and sled dog team.

### 3.2.3 Fort Yukon Gwichyaa Zhee

**Translation of Alaska Native Village Name:** House on the Flats[1]

**Language:** Gwich'in Athabascan

**2022 Population:** 499

**Percent of Population Identified as Alaska Native:** 75.6 percent

**Median Household Income:** \$36,250

**Percent of Population Identified as Below Poverty:** 12.1 percent

**Main Employment Industry:** Public Administration

**Air Cargo Price per Pound 2018:** \$0.60

**Community:** Fort Yukon is off the road system at the confluence of the Yukon and Porcupine rivers approximately 145 air miles northeast of Fairbanks. There is not a barge landing in Fort Yukon, instead there is only a barge off-loading area. The barge off-loading area in Fort Yukon was replaced in 2014 after adoption of the 2010 IATP that identified the off-loading area as non-existent due to erosion. Based on a conversation with an individual from the Gwichyaa Zhee Gwich'in Tribal Government office, the 2014 barge off-loading area is also being affected by erosion. A bulk fuel storage facility and office of Crowley Fuels are also at the landing. These facilities allow Crowley to provide delivery of heating fuel, Jet A fuel (during summer), unleaded gasoline, diesel fuel blend, and marine cargo delivery.

**Summer Use:** During the summer, fuel, heavy cargo, supplies, and goods are barged in by Ruby Marine. Residents use the river for recreational and subsistence activities by private boat.

**Winter Use:** During the winter, as the weather permits, the river is maintained as an ice road which promotes increased access between communities along the Yukon River and allows community members a chance to gather wood.

### 3.2.4 Nenana Toghotthele

**Translation of Alaska Native Village Name:** Mountain that Parallels the River[1]

**Language:** Tanana Athabascan

**2022 Population:** 355

**Percent of Population Identified as Alaska Native:** 32.2 percent

**Median Household Income:** \$43,750

**Percent of Population Identified as Below Poverty:** 27.6 percent

**Main Employment Industry:** Educational Services

**Air Cargo Price per Pound 2018:** N/A

**Community:** Nenana is a transportation hub for Interior Alaska, at the junction of the Parks Highway, Alaska Railroad, and the Tanana River. Nenana is on the Parks Highway, 55 miles southwest of Fairbanks and 302 miles northeast of Anchorage. Daily buses operate out of Nenana year-round providing connection to either Anchorage or Fairbanks.

The Nenana Port Authority, overseen by the municipality, is responsible for operating the facilities in Nenana which consist of a dry cargo loading and unloading area, dock, bulkhead, and warehouse. Due to the shallow depths of the Tanana River the maximum draft for loaded river barges is 4.5 feet. The Port is developed on both sides of the Tanana River, the south side is owned by ARRC and is operated by the City of Nenana, while the north side is a privately-owned riverine port.

**Summer Use:** Fuel is delivered by truck or railroad from Fairbanks and North Pole by Crowley Fuels. The Nenana Port hosts a 1,000,000-gallon petroleum product tank farm owned and operated by Crowley Fuels. Fuel is stored at the port then loaded onto barges for delivery by Ruby Marine (contracted by Crowley Fuels) to many communities along the Yukon and Tanana rivers.

A public boat launch and recreational area provide access to the Nenana and Tanana rivers. The 2019 to 2023 Nenana Community Development Plan indicated an update to infrastructure and facilities used for cargo would assist in attracting visitors and encourage tourism which could lead to increased revenue to help maintain Nenana's riverfront.

**Winter Use:** Ruby Marine does not provide service in the winter and operations typically start in May. All other storage operations continue out of the Port of Nenana.

### 3.2.5 Rampart Delel Taaneets

**Translation of Alaska Native Village Name:** Where the Moose Hides Hang[1]

**Language:** Upper Koyukon Athabascan

**2022 Population:** 63

**Percent of Population Identified as Alaska Native:** 77.6 percent

**Median Household Income:** \$43,750

**Percent of Population Identified as Below Poverty:** 23.9 percent

**Main Employment Industry:** Public Administration

**Air Cargo Price per Pound 2018:** \$0.49

**Community:** Rampart is on the south bank of the Yukon River, approximately 75 miles upstream of the confluence with the Tanana River. Roadway access to Rampart, off the Elliott Highway, is only available during the winter. Year-round access is available by air via the Rampart Airport. The 2018 Rampart Economic Development Plan identified the present and past goals for the community including focusing on dust control, brush removal, adding additional street lighting, identifying and implementing appropriate street signage, developing a search and rescue plan, and developing a plan for data collection.

**Summer Use:** Rampart currently receives fuel and other goods via barge two or three times a summer, but the location has potential for additional barge service if the right infrastructure were to be provided. The river is also used for recreation and subsistence by private boat.

**Winter Use:** During the winter, as conditions allow, an ice road provides access between Rampart and the Elliott Highway, making deliveries possible via the road system.

### 3.2.6 Stevens Village Dinyea

**Translation of Alaska Native Village Name:** People Who Live Where the River Comes out of the Canyon into the Flats[1]

**Language:** Upper Koyukon Athabascan

**2022 Population:** 28

**Percent of Population Identified as Alaska Native:** 100 percent

**Median Household Income** (estimated by American Community Survey): \$26,250

**Percent of Population Identified as Below Poverty:** 22.2 percent

**Main Employment Industry:** Utilities

**Air Cargo Price per Pound 2018:** \$0.45

**Community:** Stevens Village is on the north bank of the Yukon River, 17 miles upstream of the Dalton Highway bridge, 90 air miles northwest of Fairbanks. Access to Stevens Village is primarily via aircraft using the state-owned gravel airstrip.

**Summer Use:** Stevens Village receives fuel, freight, and goods via barge up to three times a year. Cargo is offloaded at the barge landing which is not a formal facility. Summer use also includes recreation and subsistence activities by private boat.

**Winter Use:** Stevens Village works to maintain an ice road to the Elliott Highway which provides road access to the community and allows for transport of goods such as fuel.

### 3.2.7 Tanana Nuchalawoyya

**Translation of Alaska Native Village Name:** Where the Two Rivers Meet[1]

**Language:** Central and Upper Koyukon Athabascan

**2022 Population:** 223

**Percent of Population Identified as Alaska Native:** 82.1 percent

**Median Household Income:** \$47,500

**Percent of Population Identified as Below Poverty:** 20 percent

**Main Employment Industry:** Public Administration

**Air Cargo Price per Pound 2018:** \$0.63

**Community:** Tanana is near the confluence of the Tanana and Yukon rivers, 129 air miles northwest of Fairbanks. Tanana's primary mode of all-season transportation is air travel, offered seven days a week from service providers such as Wright Air Services, Era Aviation, Everts Air Fuel, and privately operated aircraft. Air transportation is reliable, but not always economical.

In 2016 the Alaska DOT&PF opened the "Road to Tanana", connecting Manley Hot Springs to the south bank of the Yukon River, approximately six miles upstream from Tanana. The road has led to increased mobility for those within the community and reduced freight and cargo transport costs. However, the 2022 Tanana Community Plan noted the road has limitations such as additional maintenance, exposure to natural hazards, and seasonal use.

**Summer Use:** Tanana receives weekly barge deliveries at the main docking facility including fuel, freight, and supplies. The river is also used for recreational and subsistence activities.

**Winter Use:** Weather permitting, Tanana operates an ice road for the movement of goods and people. The operation and maintenance of the ice road provides the community with affordable transportation between larger community hubs such as Fairbanks.

### 3.2.8 Commonalities Among Communities

Common themes related to use of the riverine system are reflected in the community profiles. Most consistently, communities rely on the riverine system for the transport of people and goods between smaller camps and villages using skiffs and canoes, recreation and subsistence activities, seasonal barge, and winter access in specific communities.

Common issues and needs identified from the community plans are referenced in the community profiles such as need for increased access, concerns over eroding barge landings, and safety along the riverine systems including debris removal and wayfinding.

## 3.3 Facility Inventory and Intermodal Connection Points

Table 2 contains the riverine facility inventory, the facility type, operating authority, services offered, and the intermodal connection points. The first column identifies the specific riverine community while the second identifies the facility. There are three types of facilities identified for riverine communities within the IATP area, these include the following:

### INFORMAL BARGE OFF-LOADING AREAS

These facilities are barge landings that are not accompanied by a proper facility such as a harbor, port, or dock. The communities with informal barge facilities will frequently have goods delivered and unloaded at the river's edge. This is done by the anchoring systems such as a deadman being added close to the shoreline, in recent years these anchoring systems have been placed by barge service operators themselves.

### PUBLIC DOCKS USED AS BARGE LANDINGS

The use of public docks as barge landings is another informal barge facility. This use has been separated out from informal facilities as it provides infrastructure able to be used for barge activities, while informal facilities do not. However, the use of these public docks for barge landings come with their own set of challenges. For example, when a barge comes into a community to provide delivery at a public dock extra coordination needs to take place between the barge service operator and the community to ensure the vessels that are currently moored at the dock or waiting to launch are able to clear the area long enough to allow safe passage.

If vessels are not able to be cleared by the owners, the tugboats that assist in piloting the barge would be required to move the privately owned vessels that are using the dock to ensure delivery of goods to the community. This can cause tensions within the community and the barge service providers.

### CARGO HUBS

Cargo hubs are the other type of facility seen within the IATP area, specifically in Tanana and Nenana. These cargo hubs are areas where goods can be initially transported and receive temporary storage prior to being placed on barges to their final destination.

In addition to the community and the facility type, Table 2 includes columns that identify:

**Operating Authority** – If there is not an operating authority able to be identified, such as those informal barge facilities the operating authority is identified as “community (unorganized),” for others the official operating authority is identified.

**Services** – Any services offered at the facility are identified and provided, these services include delivery of various goods, winter activities, and recreational and subsistence use.

**Intermodal Connection Points** – This column identifies any intermodal connection point tied to the riverine facility, this includes airports, highways, railroads, and any winter ice roads or trails.

By identifying the facility type, operating authority, services, and intermodal connection points in Table 2 it serves to illustrate the ways in which these riverine communities and their facilities compare and contrast across the geography of the IATP area. The columns labeled, facility type, operating authority, and services, are a way to quickly view and easily examine the way in which communities that operate with informal facilities, and how unorganized community led operating authorities are able to offer some of the same services as communities that are identified as cargo hubs. While the intermodal connection point column is pertinent in providing a straightforward way to view other ways that a community can be accessed. This simple column possesses significant information on the way a community can move within the IATP area.



Table 2 Riverine Facility Inventory, Services, and Intermodal Connection Points

Community	Facility	Operating Authority	Services	Intermodal Connection Points
Beaver	Informal Off-Loading Area	Community (Unorganized)	Delivery of bulk goods, heavy equipment, and fuel from Port of Nenana Recreational and subsistence use	Beaver Airport
Circle	Boat launch at the eastern terminus of the Steese Highway	Community (Unorganized)	Delivery of goods Recreational and subsistence use	Steese Highway Circle City Airport Circle Hot Springs Airport
Fort Yukon	Informal Off-Loading Area	Community (Unorganized)	Delivery of bulk goods, heavy equipment, and fuel Recreational and subsistence use Winter use includes winter trail/ice road that serves as a connection between communities and access to necessities such as wood.	Fort Yukon Airport Porcupine River
<b>Nenana*</b>	Port of Nenana: dry cargo loading and unloading facilities, dock, bulkhead, and warehouse Public boat launch	Nenana Port Authority	Barge shipping headquarters for freight that continues on the Tanana or Yukon rivers Recreational use	George Parks Highway Alaska Railroad Nenana Municipal Airport Nenana and Tanana rivers
Rampart	Informal Off-Loading Area	Community (Unorganized)	Delivery of bulk goods, heavy equipment, and fuel Recreational and subsistence use	Elliott Highway (via ice road/ winter trail) Rampart Airport
Stevens Village	Informal Off-Loading Area	Community (Unorganized)	Delivery of bulk goods, heavy equipment, and fuel. Recreational and subsistence use	Stevens Village Airport Seasonal ice road connecting community to the Elliott Highway during winter
<b>Tanana*</b>	Main Docking Area Near Airport	City of Tanana	Weekly barge shipments of supplies including goods for local communities. Barged goods can be offloaded at staging and storage area	Seasonal roadway connects Manley Hot Springs to bank of the Yukon River near Tanana. Transportation still requires boat service to reach the community of Tanana. Winter ice road Ralph M. Calhoun Memorial Airport

\*Communities regarded as barge cargo hubs

### 3.4 Barge Facilities

Three categories of barge facilities are identified for the communities within the IATP area: Informal, Public Dock Barge Landing, and Cargo Hub. The categories are based on common characteristics in the facilities and capabilities across different communities and are further described in Section 3.1 System Description.

For the following section describing the current barge facilities and their conditions within the IATP area the definition for erosion – Erosion for these facilities refers to riverine erosion which is a breakdown of sediment due to flowing water. This erosion results in sedimentation, which is an increased accumulation of sediment on the bottoms of riverbeds, resulting in reduced depths (more shallow water).[2]

#### Beaver – Informal Off-Loading Area

Barge deliveries to Beaver by Ruby Marine occur two or three times in the summer and include fuel, bulk store goods, and additional supplies. The riverine system is navigated by local residents in private boats for purposes such as subsistence and recreation. Erosion and storage capacity are the predominant concerns for the barge facility in Beaver. Erosion would result in barge deliveries being unable to be completed due to the depths while storage is a concern as there are not enough fuel storage tanks that can accommodate large amount of fuel. The amount of fuel that is brought in must be calculated precisely to make sure the community has a sufficient supply. This must be done to ensure there is sufficient fuel to make it through the season until the next delivery.

#### Rampart – Informal Off-Loading Area

Rampart lacks a formal barge facility and, like the community of Beaver, has concerns about erosion. However, Rampart benefits in the winter by maintaining an ice road/winter trail that provides the opportunity for goods to delivered via truck from the Elliot Highway.

#### Fort Yukon – Informal Off-Loading Area

Fort Yukon lacks a formal barge facility, instead there is a concrete pad used as a landing for offloading barges. The landing was replaced in 2014 due to erosion, but the landing continues to be affected by erosion. Fort Yukon had a landing placed by the United States Army Corps of Engineers (USACE), but it is not used by Ruby Marine or Yukon Barge due to where it is located. The owner of Ruby Marine has instead installed his own equipment with coordination with the community that is better suited for the vessels operated in the community.[3]

Crowley Fuels maintains an office and bulk fuel storage facility in Fort Yukon and delivers heating fuel, unleaded gasoline (bulk only), diesel fuel blend, and Jet A aviation fuel in the summer. This allows Fort Yukon to be less dependent on barge service for fuel deliveries than some of the other communities within the IATP area. However, Fort Yukon still benefits from the lower cost of shipping by barge for bulk deliveries other than fuel such as construction materials and heavy equipment.

#### Stevens Village – Informal Off-Loading Area

Barge deliveries to Stevens Village by Ruby Marine occur two or three times in the summer and include fuel, bulk store goods, and additional supplies. The riverine system is navigated by local residents in private boats for purposes such as subsistence and recreation. Erosion and storage capacity are the predominant concerns for the barge facility in Stevens Village for the following reasons:

- Shallow depths resulting from erosion can inhibit barge deliveries from being completed.
- Limited storage tanks for large amounts of fuel prevents the community from being able to have a backstock during the winter months when delivery prices are at their peak.

Overstocking fuel in a community comes at a high expense, this includes the initial capital investment in addition to any increased storage costs to maintain an overage of fuel. Similar to Beaver, it is essential that the amount of fuel that is delivered via barge is precisely calculated to ensure the community has a sufficient fuel supply to make it through the season until the next delivery. As a result of this precise calculation Stevens Village does not have a backstock of fuel, which can put the community at risk in higher demand years.[3]

### Circle – Public Dock Barge Landing

The recreational boat launch at the terminus of the Steese Highway in Circle is used as a barge landing as well as public river access and mooring. This mixed-use is not ideal for barge service operators as it requires coordination with private vessel owners and extreme diligence when navigating closely with small vessels.

The location of Circle allows for easy movement of freight, fuel, and additional goods from a roadway network to river traffic along the Yukon River. The community of Circle is considering developing dry storage facilities and potentially could become a new hub for communities such as Venetie Landing, Fort Yukon, Birch Creek, and Chalkyitsik. Of the communities listed, Circle is the only one with access to the road system. By becoming a small hub for the communities located in the Yukon Flats subregion, Circle would become an intermodal connection point to the Steese Highway and the greater Alaska road system.

There are limitations that exist with the development of Circle as a riverine cargo hub, these include, the existing facilities, limited-service operators, a hard to navigate river basin, and erosion caused sedimentation.

### Port of Nenana – Cargo Hub

The Port of Nenana facilities include a sheet-pile dock and storage yards for cargo and barge access. Some of the storage offered at the port is climate-controlled allowing for safe long-term storage of goods. The Port of Nenana is owned and operated by the city of Nenana, the current mayor of Nenana is always the acting Port Director. Since the port is responsible for receiving international cargo, the Port Authority along with the Transportation Security Agency assist in operating the facility.

The Port of Nenana receives cargo bound for Interior communities from the Alaska Railroad or commercial trucks from Anchorage or Fairbanks via the Parks Highway. Goods can be stored prior to shipment but the season for barge shipments can be short and unpredictable due to unpredictable winter weather.

### Tanana – Cargo Hub

Tanana has a single centralized docking area close to the airport. The community receives almost weekly barge deliveries of goods and supplies during the ice-free months.

## 3.5 River Barging Service Providers

At the time the 2010 IATP was developed, there were three barging service providers within in the IATP area: Crowley, Ruby Marine, and Inland Barge Service. In 2016, Ruby Marine bought Inland Barge Service and incorporated Inland's equipment and staff into Ruby's fleet. This acquisition resolved staffing shortages and competition between the companies to fill technical positions that require a long apprenticeship. In the past few years Crowley has stepped away from the barging industry in the region but has maintained their status as a main provider and storage facilitator of fuel in the region. Crowley has contracted Ruby Marine to be the barge service provider for their fuel delivery. Additional service providers have been identified as Yukon River and Road, LLC based in the community of Galena and Yukon Barge, owned, and operated by Gerald James in the community of Fort Yukon. Gerald provides services to the community of Circle by way of Fort Yukon as the vessels operated by providers such as Ruby Marine are

too large to make the journey. Service by these providers depends on many factors including weather conditions such as wind, river conditions, and community need. In Table 3 below, column one includes the service provider while the second column identifies the community locations each specific service provider has anticipate barge service stops. The last column labeled stops includes a brief description on the estimated stops each community has the potential to receive during each season.

*Table 3 Interior Alaska Riverine Barge Service Providers*

Service Provider	Location	Stops
Ruby Marine	Port of Nenana	Based out of the Port of Nenana – all deliveries for Ruby Marine originate at Port of Nenana.
	Tanana	~19 Stop – All vessels that leave Nenana stop in Tanana before making their way east or west.
	Rampart, Stevens Village, Beaver, Fort Yukon	Up to three times during season.
Yukon Barge	Fort Yukon	Based in Fort Yukon
	Circle	On-Demand/Scheduled
Yukon River and Road, LLC	All IATP area riverine communities	On-Demand

## 4.0 RIVERBANK REALITIES AND BRIDGING THE GAPS

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The following key issues have been considered during the development of recommended actions, which seek to bridge the gaps these communities commonly face. This section describes the riverbank realities (key issues) and the ways to bridge the gaps (recommendations).

Key issues include shifting river dynamics, barge service providers feeling unheard, and historical funding limitations are all present throughout the interior planning area. Additionally, airports tend to receive more funding to provide services and programs, which means communities with airport facilities tend to experience better levels of service and this has exacerbated the challenges with providing services through traditional riverine facilities. These issues are present throughout the region.

### 4.1 Riverbank Realities

#### 4.1.1 Shifting River Dynamics

Communities such as Fort Yukon, Rampart, and Stevens Village have barge landing areas impacted by erosion. Erosion has either inhibited the creation of new formal barging facilities, washed-out existing formal barging facilities, or has caused sedimentation. This act of sedimentation caused by erosion has the potential to limit the size of vessel able to service the area. Combating sediment build up due to erosion caused sedimentation is to implement dredging, which is the act of removing sediments and debris from the riverbed to keep waterways navigable. Dredging can sometimes assist in flood management by helping to prevent rivers from overtopping their banks during flood events. There are some observed drawbacks when it comes to dredging which include increased erosion to riverbanks and surrounding infrastructure after the river has been dredged due to an increase in water volume able to flow. [4]

To address erosion, mitigation efforts start on the shoreline and include engineered solutions such as riprap, sandbags, concrete block retaining walls, log and earthen berms, and bioengineered stabilization.

#### 4.1.2 Beat by Aviation

The development and success of upgrades to all airports has provided riverine communities the opportunity of all-weather 24-hour capable service. In conjunction with state funded job development focused on aviation careers, in the last 25 years one single air service has been able to acquire 22 Cessna Caravan airplanes. One single Cessna Caravan costs about the same as a new tugboat, while the aviation service provider has been able to add 22 planes to their fleet, a barge service provider has been able to add two tugs to their fleet in the last 40 years. The aviation system also has programs such as the Bypass Mail which help to stimulate the system while the riverine system has “literally no programs that stimulate the marine [and riverine] transportation system,” as indicated during an interview in March 2024 with a barge service owner and operator. [3]

#### 4.1.3 Funding Opportunities and Limitations

Often the ability to access the funding opportunities provided for riverine systems prevents the construction of new facilities, the maintenance of existing facilities, and the ability to offer technical assistance to communities for services such as grant writing. Table 4 illustrates the identification funding opportunities for riverine systems, their organization, and the applicable programs and developments they support.

Table 4 Riverine System Funding Opportunities

Funding Opportunity	Organization	Description
NRCS Watershed Programs	United States Department of Agriculture (USDA)	Funds the use of good land management practices to contribute to watershed health.
Corps Water Infrastructure Financing Program	United States Army Corps of Engineers (USACE)	Authorized by the Water Infrastructure Finance and Innovation Act (WIFIA). Established Federal credit programs to be administered by USACE and the Environmental Protection Agency (EPA) for eligible water and wastewater infrastructure projects. Provides funding of up to 49% of project costs, or up to 80% of project costs for projects that serve and benefit economically disadvantaged communities. Requires a dedicated source of repayment. Available to projects or groups of projects with eligible costs in excess of \$20 million.
Continuing Authorities Program (CAP)	USACE	Focuses on smaller projects (typically under \$15 million), the intention of this program is to plan, design, and construct water resource projects of limited scope and complexity.
Planning Assistance to States (PAS)	USACE	States can write letters requesting technical assistance from USACE to enhance any water-related planning efforts currently underway by States, Tribes, Territories, and other governmental organizations. Services include developing, collecting, and conducting hydrologic, economic, or environmental data and risk analysis to support an entity's hazard mitigation plan, ecosystem restoration plan, water resources management plan, long-term recovery plan, climate action plan, etc. Technical assistance activities through PAS are cost shared with the study partner at a rate of 50 percent, non-federal partners may also voluntarily contribute funds in excess of the cost shared amount if they wish to increase the scope of work.
Denali Commission Grant Opportunities	Denali Commission	Partners with Tribal, Federal, state, and local governments and collaborate with all Alaskans to improve the effectiveness and efficiency of government services, to develop a well-trained labor force employed in a diversified and sustainable economy, and to build and ensure the operation and maintenance of Alaska's basic infrastructure.
Safe Ice Roads for Alaska (SIRA)	Alaska DOT&PF	SIRA is a competitive reimbursement-based grant opportunity funded by the FHWA and administered by the Alaska DOT&PF using STBG funding. SIRA provides funding for developing and maintaining seasonal roads and ice roads that are established on the riverine system.
Port and Infrastructure Development Program (PIDP)	FHWA	Focuses on improvements for coastal and riverine facilities under the following: Loading and unloading of goods at a port Movement of goods into, out of, around, or within a port Resilience (e.g., addressing sea-level rise, flooding, extreme weather events, natural disasters) Environmental and emissions mitigation measures (includes projects intended to reduce or eliminate port-related pollutants or greenhouse gas emissions).

Other funding opportunities are dependent on initiatives and resources within communities. An example of a funding opportunity that is dependent on a community and their conditions would be funding awarded from the Federal Emergency Management Agency (FEMA) under the Building Resilient Infrastructure and Communities (BRIC) Grant or their Flood Mitigation Assistance (FMA) Grant programs. For Tribal communities, Tribal Transportation Program (TTP), Tribal Transportation Program Safety Funds (TTPSF), or Tribal High Priority Projects (HHP) funds may be available. To verify eligibility for these programs communities are advised to work with their Bureau of Indian Affairs (BIA) representative.

Recent changes to the Surface Transportation Block Grant (STBG) allows for flexible funding. This includes up to five percent annually for rural barge landing, docks, and waterfront infrastructure in a rural community or Alaska Native village that is off the road system. This adjustment to STBG flex funding allows for a greater focus on the riverine system but does not account for the high needs of the region.

With the shift in grant programs made available for riverine facilities and communities there is the opportunity for growth, development, and rehabilitation of the riverine system in the IATP area if pursued and used in a manner to maximize their potential. A major roadblock remains without technical assistance for grant writing for small communities, however. Like many of the communities on the riverine system, and the rest of the IATP area, these grant opportunities and any new grant opportunities that would arise will often remain out of reach without technical support when pursuing competitive grants. The burden to find, pursue, and follow through on grant applications is significant for small communities to manage. Often these transportation departments are comprised of one or two individuals completing all the work.

## **4.2 Bridging the Gaps**

### **4.2.1 Protect and Provide Facilities**

Erosion control methods and mitigation such as dredging should be implemented for barge landings within the IATP area to ensure communities can continue to receive shipments via river barging.

Methods to provide for safe passage within the riverine system should be implemented.

These methods may include:

- Clearing debris causing jams
- Signage for when barges will be visiting the area so that personal vessels can be removed by their owners instead of needing to be removed by service providers while risking liability
- Signage to assist in wayfinding.

Work with local entities to design barge landing facilities that not only can be located in the best locations for service with the equipment needed, but also have features that assist in erosion and sediment control and mitigation. This could be accomplished by creating barge landing facilities are connected to and part of the functionality of a concrete retaining wall used for erosion mitigation and control.

### **4.2.2 Prioritize Service**

Barge facilities and corresponding barge service should be prioritized to off-road communities with access to the major riverine systems in order to help alleviate cargo shipping costs. While service in communities is dependent on the current market and demand, there is the ability to prioritize development of and funding for barge facilities while facilitating communication between service providers, alleviating one or more factors inhibiting ample access and service.

In communities that receive limited barge service opportunities should be explored to provide storage infrastructure allowing for an increase in goods to be delivered at a single time.

#### 4.2.3 Program Development & Management

Develop a section within DOT&PF that houses a *Riverine Program Manager*. This section, along with the Riverine Program Manager would be responsible for developing, implementing, and managing programs that stimulate the riverine transportation system, support the increase in the demand of services due to a stimulated riverine transportation system, and provide specialized technical assistance to support communities in finding and applying for grant funds that focus on projects that enhance the riverine system. Efforts with the DOT&PF focused on the riverine system will assist in meeting the goals and opportunities set forth by the ASFP including:

1. Help ports and barge terminals pursue targeted federal funding through the U.S. Maritime Administration (MARAD)
2. Partner with ports and barge terminals to track system performance

Recent changes in the structure of the DOT&PF planning department includes the addition of a *Waterways Planner*, who will maintain responsibility for the planning of riverine and marine systems within Alaska. The inclusion of this planning position and the efforts towards creating a Waterways Plan illustrates how the state and the DOT&PF understand the importance and capabilities these systems hold for future growth and economic development. There is the ability to integrate the newly created *Waterways Planner* position with the *Riverine Program Manager*, however it is highly recommended to not have this position be a single role, but rather two positions that work collaboratively and cohesively.

### 4.3 Summary

The seven active riverine communities found within the Interior planning boundary continue to receive barge service during the months of mid-May to early-October when the Yukon and Tanana rivers are free of ice and allow for easy passage. These communities operate with informal barge landings, utilize public docks, or are fully built up and considered to be cargo hub facilities. This memo has identified issues surrounding riverine erosion, competition with the aviation system, and funding for more reliable accessibility throughout the river system.

During the winter months a limited number of communities continue to receive goods at a lower cost than air cargo by constructing and maintaining ice roads. Communities that maintain ice roads often speak to the benefits these ice roads bring to their community, including reducing the costs of goods and services, maintaining positive mental health for community members, and allowing for cultural connectivity.

Although currently functioning for the communities' basic delivery needs for fuel and supplies, the system's users do not have a single point of contact or program manager to support the network's overall planning and development. The recommendations within this memo point to key challenges and possible solutions throughout the riverine system; however, this unique Alaskan way of transport needs additional data, robust stakeholder engagement, and a programmatic approach to addressing the entirety of needs not yet known throughout the Interior's vital riverine system.



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