CITY OF KOTZEBUE
RESOLUTION NO. 24-02

"A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KOTZEBUE APPROVING AND ADOPTING THE JANUARY 2024 LONG RANGE TRANSPORTATION PLAN ("LRTP")

WHEREAS, the City of Kotzebue ("City") hired DOWL to facilitate the process of developing a Long Range Transportation Plan ("LRTP"). DOWL working with City Staff, members of the City Council and the City Planning Commission created a working group to help guide the content of the LRTP and the planning process and to incorporate the needs of the community into the LRTP. The Working Group met twice – first in September 2022 and again in February 2023. Members of the Working Group included representatives from the Native Village of Kotzebue, Northwest Arctic Borough, Department of Transportation and Public Facilities, NANA Regional Corporation, Kikiktagruk Inupiat Corporation, Crowley Marine and Vitus Marine. The result of this two-year endeavor is the 61-page January 2024 Long Range Transportation Plan attached hereto as Exhibit "**A**" and incorporated by reference herein; and,

WHEREAS, the City's Planning Commission has participated in this effort over the past two-years and has reviewed the final January 2024 Long Range Transportation Plan attached hereto as Exhibit "**A**" and does recommend adoption of this LRTP by the City Council.

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Kotzebue approves and adopts the 61-page January 2024 Long Range Transportation Plan attached hereto as Exhibit "**A**" and thanks DOWL, City Staff, the Planning Commission and members of the Working Group for their efforts on this most important project.

PASSED AND APPROVED by a duly constituted quorum of the City Council of the City of Kotzebue, Alaska, this 18th day of January, 2024.

CITY OF KOTZEBUE

_____
Saima Chase, Mayor

[SEAL]

ATTEST:

_____
Rosie Hensley, City Clerk

Attachment: Exhibit "A" – City of Kotzebue January 2024 LRTP [61 pages]

CITY OF KOTZEBUE

Long Range Transportation Plan

JAN 2024

Prepared for:

CITY OF KOTZEBUE
"Gateway to the Arctic"

PO Box 46
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Prepared by:

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ACRONYMS

AADT	Annual Average Daily Traffic
ADEC	Alaska Department of Conversation
ADOLWD	Alaska Department of Labor and Workforce Development
AIP	Airport Improvement Program
AML	Alaska Municipal League
ANCSA	Alaska Native Claims Settlement Act
ATV	All-terrain vehicle
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
City	City of Kotzebue
Crowley	Crowley Fuels, LLC
DCRA	Alaska Division of Community and Regional Affair
DEW	Distant Early Warning
DOT&PF	Alaska Department of Transportation and Public Facilities
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
HPCM	Alaska Highway Preconstruction Manual
IIJA	Investment and Jobs Act
IRA	Indian Reorganization Act
KIC	Kikiktagruk Inupiat Corporation
KMC	Kotzebue Municipal Code
LF	Linear feet
LOS	Level of service
LRTP	Long-Range Transportation Plan
MPH	Miles per hour
NAB	Northwest Arctic Borough
NPS	National Park Service
NWATP	Northwest Alaska Transportation Plan
NWI	National Wetlands Inventory
SDC	Seismic Design Category
SOP	Standard Operating Procedure
TBD	To be determined
TTP	Tribal Transportation Program
UAS	Unmanned Aerial Systems
USACE	U.S. Army Corps of Engineers

1.0 INTRODUCTION

1.1 Planning Process

The City of Kotzebue's (City) 2022 Long-Range Transportation Plan (LRTP) provides a unified vision for the transportation network in the City by setting out existing transportation conditions and needs, identifying and prioritizing projects, and identifying funding opportunities to support the delivery of transportation improvements. The LRTP should be used in conjunction with the City of Kotzebue Comprehensive Plan 2012.

The preparation of the LRTP is supported by significant public input. In support of this LRTP, the City formed a working group to provide detailed input into the plan development, and it also hosted two public open house meetings. At the first public meeting and working group meeting, participants were asked to identify infrastructure projects the City should complete within the next ten years. They were also asked to provide feedback on the LRTP vision and goals, which assist to guide recommendations for transportation investment. During the second working group meeting, participants discussed and revised the proposed project list and project goals; and at the second open house meeting, the public provided their input that helped decide how identified projects would be prioritized.

This LRTP provides the City's transportation infrastructure program by providing:

- A document that identifies existing transportation facilities, issues and needs based on input from City staff and decision makers, community members, and key stakeholders.
- A plan for developing, maintaining, and funding roads, walking and bicycling facilities, trails, marine, and other transportation facilities.
- A prioritized list of projects to assist the City when funding opportunities arise through State and Federal funding opportunities, tribal transportation programs, or to be funded as capital improvement projects.

Alaska State law grants municipalities (cities and boroughs) the authority for planning, platting, and land use regulations. The responsibility for planning may be a function of the city or state, depending on the class of municipality and its organized structure. The City of Kotzebue is a second-class city operating a municipality form of government. It is located within the organized borough area of Northwest Arctic Borough. As such, the City is responsible for services including education, planning, and zoning. A LRTP forms part of the City's planning framework. A typical LRTP should be reviewed and updated every five years. It provides the foundation for the City to develop its yearly transportation budget and funding request to the State of Alaska Legislature. The vision statement for the LRTP is:

By 2040, the City of Kotzebue will have a cohesive transportation system for all users and transportation modes that supports safe, reliable, and affordable access to homes, businesses and other activities, and for goods and commerce.

The State of Alaska requires local governments to prepare comprehensive plans (AS 29.40.030). This LRTP addresses the needs of various modes of transportation (e.g., marine, aviation, surface). It updates planning for the transportation facilities since

the 1997 Kotzebue Transportation Plan and, and considers the impacts of transportation facilities, particularly for dust. The LRTP is a supplementary document to the City of Kotzebue Comprehensive Plan 2012.

1.1.1 Process Overview

The City began developing its LRTP in June of 2022. The planning process included:

- Establishing the vision and developing goals and objectives to help guide project recommendations and priorities.
- Evaluating the existing transportation system to support the identification of issues and needs.
- Stakeholder and community engagement to identify transportation priorities.
- Identifying funding sources and potential partnerships to assist with implementing the LRTP and the projects identified as priorities by the City.

Figure 1, illustrates the transportation planning process.

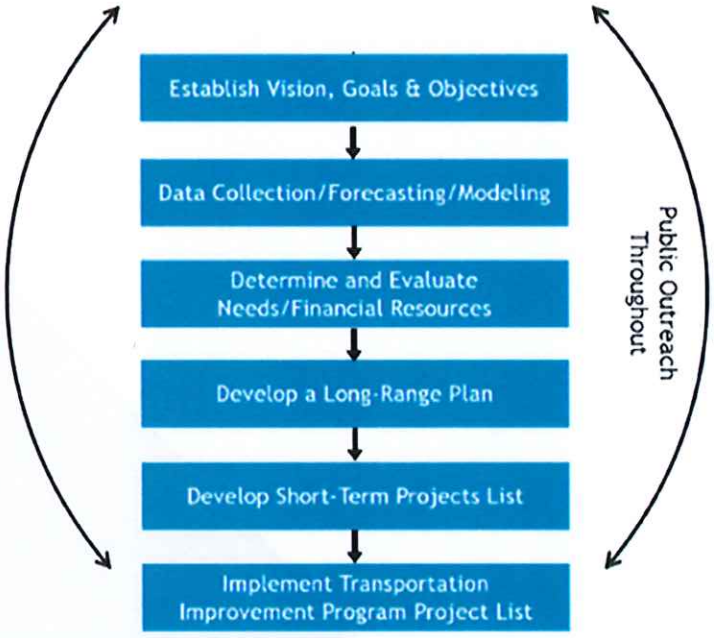

Figure 1: Transportation Planning Process[1]

1.1.2 Public Involvement

Public involvement is an essential element of the LRTP process. During the preparation of the LRTP, two public meetings and two working group meetings were held to solicit input on the transportation network and to help identify and understand current issues and needs.

[1] *The Transportation Planning Process Briefing Book, FHWA-hep-18-015, 2017 Update.*

Participants at the working group meetings helped to prioritize a list of projects the City should plan for implementation in the next five to ten years. Also, transportation organizations and key staff at the City were interviewed to gather feedback for the list of identified transportation issues, needs, and strategies to address them.

Figure 2: Community Meeting No. 1

The City hired DOWL to facilitate the planning process, working closely with City staff, members of the City Council, and the City Planning Commission. The working group was created to help guide the content of the LRTP and the planning process, and to incorporate the needs of the community into the plan.

The Working Group met twice, once in September 2022 and again in February 2023. The members included representatives from the following organizations and departments:

- Native Village of Kotzebue – Transportation Department
- Northwest Arctic Borough – Planning Department
- Department of Transportation and Public Facilities
- NANA Regional Corporation – Natural Resources Department
- Kikiktagruk Inupiat Corporation
- Crowley Marine – Project Facilities Engineering
- Vitus Marine

1.1.3 Plan Review

Several regional, local, and tribal transportation planning documents were reviewed to support the development of the LRTP. The following plans were reviewed and are available on request.

- City – City of Kotzebue Comprehensive Plan 2012
- City – Sanitation Utilities Master Plan Update, March 2022
- City – Hazard Mitigation Plan Update, November 2019
- Borough – Northwest Arctic Borough 2030: Planning for Our Future Comprehensive Plan Update, November 2021
- State – Northwest Alaska Transportation Plan Update 2022
- State – Kotzebue Airport Master Plan, 2015

2.0 VISION AND GOALS

2.1 Vision

The vision statement was developed by the City to support transportation objectives articulated in the City's Comprehensive Plan, and with input from the working group and the public. The vision statement guides the transportation and decision-making process for the public, elected officials, and City staff. The vision statement is:

By 2043, the City of Kotzebue will have a cohesive transportation system for all users and transportation modes that supports safe, reliable, and affordable access to homes, businesses, and other activities, and for goods and commerce.

This vision will be achieved by:

- Constructing and maintaining streets and roadways that provide facilities for all users, from automobiles and trucks to walkers and bicyclists.
- Providing street lighting, improved dust control, safer facilities, and transportation elements to improve the health and wellbeing of Kotzebue residents.
- Supporting existing barge landing facilities in Kotzebue and constructing infrastructure, including the Cape Blossom Road, to support the creation of a regional port facility at Cape Blossom.
- Supporting Kotzebue Airport as a regional air hub and gateway to smaller regional communities.
- Working with state and federal agencies and tribes responsible for transportation in and around Kotzebue to provide safer connections to surrounding communities and a reliable, well-marked, winter trail system.

2.2 Goals

The goals were developed based on feedback from the working group and public. The goals provide additional guidance for developing the City's transportation system and are divided on a facility or modal basis.

2.2.1 Roadway Goals

- Update and implement a staged plan to pave all roads throughout the City of Kotzebue and provide facilities for all modes of transportation.
- Address drainage issues as part of a staged plan to pave roads throughout the City of Kotzebue.

2.2.2 Non-Motorized Goals

- Construct a sidewalk along Airport Access Road to Third Avenue to improve walking access to Ralph Wein Memorial Airport.
- Improve walking and bicycling facilities on arterial and local roads, particularly where sidewalks are absent, or roadways are not paved.
- Provide safer walking facilities for children traveling to school facilities within the City.

2.2.3 Barge Landings, Ports and Harbors Goals

- Support and augment the existing City barge dock and associated operations.
- Construct port facilities at Cape Blossom.
- Support and maintain the small boat harbor facilities at Swan Lake.
- Continue to work with DOT&PF to construct the Kotzebue to Cape Blossom Road to support the movement of freight from Cape Blossom to the City and surrounding communities.

2.2.4 Aviation Goals

- Continue to work with DOT&PF to provide for safe, efficient, and reliable air transportation and transfer of airplane passengers and cargo.
- Plan for and provide shelter facilities for passengers and cargo at Ralph Wein Memorial Airport.

2.2.5 Transit Goals

- Consider a transit service providing public transportation within the City, particularly along Third and Fifth Avenue.

2.2.6 Trail Access Goals

- Work with the Northwest Arctic Borough to provide safe access to winter trails in and out of, and surrounding the City.

2.2.7 Maintenance Goals

- Extend the sea wall along Shore Avenue north of Rurik Way to assist with management of ice during winter and break-up and its associated impacts on the roadway and adjoining land uses.
- Continue the dust control application program using water trucks.
- Identify roads for paving to improve dust control and reduce maintenance costs.
- Implement snow removal and storage in accordance with City snow removal plans.
- Identify areas with drainage issues along roadways and program repair of drains.

2.2.8 Development Goals

- Support and improve access to and within Kotzebue for all modes of transportation, including walking and bicycling.
- Support and improve access to and within Kotzebue to assist with encouraging tourism opportunities and promoting visitor comfort and wayfinding within the City and surrounding area.
- Promote traffic safety and reduce delays/congestion.
- Complete construction of the Kotzebue to Cape Blossom Road.
- Develop port facilities at Cape Blossom to support freight movement to Kotzebue and surrounding communities.
- Provide facilities for landing fish that are conveniently located for existing fish processing facilities.

3.0 COMMUNITY OVERVIEW

3.1 Location

Kotzebue is located within Northwest Arctic Borough on the Baldwin Peninsula in Kotzebue Sound just northeast of the Bering Strait, 549 miles northwest of Anchorage (Figure 3). The current "core" community is located on the land designated as a town site under the Alaska Native Townsite Act of 1926 and contained in four United States surveys starting in 1952. Kotzebue lies on a three-mile-long spit at the end of the Baldwin Peninsula that varies from about 1,100 feet in width to 3,600 feet in width and is about 10 to 20 feet above sea level. Located at latitude 66 degrees, 54 minutes north and longitude 162 degrees, 38 minutes west, Kotzebue is approximately 26 miles north of the Arctic Circle.

Within the region are 2,000-foot-high mountains, four river systems, bluffs, sand dunes, muskeg, swampy lowlands, and even desert characteristics. This geographic, geological, vegetative, and ecosystem diversity allowed people to inhabit the area for thousands of years, living off the resources that could be gathered locally. The land's diversity has supported Kotzebue's predominately subsistence lifestyle, which has survived into the 21st century.

Because of its location as the gateway to the region, Kotzebue is also historically and currently the cultural hub of the region. The NANA Regional Corporation has conducted several Elder's Conferences in Kotzebue over the past decade. These conferences provide important information on the regional and community history, culture, and changes over time. They also provide the vehicle for social identification and pride in heritage amongst the region's native residents. A NANA museum located in Kotzebue capitalizes on this wealth of heritage and provides interpretation to visitors. The National Park Service has an office in Kotzebue because the community offers a gateway to national monuments and parks.

Figure 3: Project Location Map

3.2 Population

Kotzebue's resident population has grown since 1900, with rapid growth occurring immediately after World War II during construction of the Air Base, White Alice, and Distant Early Warning (DEW line) sites. The population grew from 372 in 1939, to 623 in 1950, and 1,290 in 1960, a 300 percent increase in a twenty-year period. That rate of growth has not been exceeded since then and has been inconsistent, and much slower.

In addition to the resident population, Kotzebue has historically had many visitors temporarily in residence. Today, Kotzebue still provides a significant number of services to visitors as they travel between villages or to larger cities such as Fairbanks and Anchorage.

The 2020 Census data population estimate for Kotzebue is 3,102 (ADOLWD, 2020). The population decreased by approximately 3.1 percent, or 99 people, since the last census in 2010. Table 1 below summarizes the change in population based on census data since 1950. Since 1950 the population in Kotzebue has increased, with the exception of the 2010 to 2020 period.

Even though the population of Kotzebue was estimated to decrease from 2010 to 2020, the Alaska Department of Labor and Workforce Development (ADOLWD) projects that the Northwest Arctic Borough (NAB) will grow steadily at an average annual rate of approximately 0.3 to 0.5 percent from 2020 to 2045, in part due to steady birthrates projected for the Alaska Native population. Based on an exponential growth rate of 0.4 percent calculated by ADOLWD for Kotzebue for the last 30 years (1990 to 2020), the estimated population of Kotzebue is approximately 3,497 people/residents by 2050.

Table 1: Kotzebue Census Population for Select Years

Year	Population	Percent Change	
		Overall %	Avg %/Year
1950	623	67.5	6.1
1960	1,290	107.1	10.7
1970	1,696	31.5	3.2
1980	2,054	21.1	2.1
1990	2,751	33.9	3.4
2000	3,082	7.1	1.4
2010	3,201	3.9	0.4
2020	3,102	(3.1)	(0.3)
2030*	3,228	-	0.4
2040*	3,360	-	0.4
2050*	3,497	-	0.4

* Growth rate at 0.4% annual growth

3.3 Community Demographics

Table 2 summarizes the demographic characteristics of the population of Kotzebue.

Table 2: Community Demographics

2020 Alaska DCRA Certified Population	3,102
Population 65 and Over	255
Population Under 18 Years	975
Median Age (Years)	31.3
Median Family Income	$81,188
Population Employed	1,032
Persons in Poverty	86.2%
Percentage Alaska Native	69.3%

The City's community demographic profile is summarized in Table 3.

Table 3: Kotzebue Demographic Profile by Type, 2019

Kotzebue Demographic Profile	Number/ Percentage
Total Households	948
Family Households	621
Households with individuals 65 years and over	153
Percent of households with individuals 65 years and over	30.6%
Households with individuals under 18 years	328
Percent of households with individuals under 18 years	45.2%
Average household size	3.23
Average family size	3.94

To accommodate the projected future population in 2050 a total of 1,083 housing units will be needed. The current estimate of housing units is 1,049 (ADOLWD, 2020); therefore, an additional 34 new housing units will be needed. This number is based on an estimate of an average household size of 3.23 (based on a five-year estimate of Kotzebue's housing by the 2019 American Community Survey (USCB, 2021)), and the assumption that all houses will be occupied.

3.4 Economy

The estimated growth of the population summarized above assumes that economic growth will continue in the region. The Red Dog Mine, the largest zinc mine in the world, is the largest economic driver for the region. The mine not only employs between 500 and 600 people in the NAB, but it also allows the local government to provide services and employment through taxes and fees. The mine also shares profits with NANA Alaska Regional Corporation as well as the only regional village corporation, Kikiktagruk Inupiat Corporation. The ADOLWD estimated that in 2019, prior to the start of the COVID-19 pandemic, mining, health care, and local government employed 73 percent of the workforce in Kotzebue. There is also a seasonal economy in the summer that is focused on limited tourism, hunting, and fishing.

Figure 4: Red Dog Mine

Red Dog Mine is currently evaluating development opportunities on adjacent underground prospects that could substantially extend the mine's life. The current mine is expected to operate until 2031 (NAB, 2021).

In addition to the continued operation of Red Dog Mine, additional recent and future proposed developments that have the potential to effect economic growth are listed below.

- **Cape Blossom Road:** To reduce freight costs associated with lightering, a deep-water port and two-lane gravel road to the port was proposed starting as early as the 1980s. After numerous studies and a decision by the US Army Corps of Engineers (USACE) agreeing that the proposed location for the port is feasible, the environmental assessment and additional permitting were recently completed for the road. The road is being constructed in multiple phases and work started in the summer of 2021. The first phase includes the section of road from Hillside Drive to Sadie Creek (DOT&PF, 2021).

- **Deep-Water Port:** The U.S Army Corps of Engineers (USACE) suspended a Harbor Feasibility Study in 2019, giving several options for types of facilities and locations of a deep-water Port at Cape Blossom. In September 2021, USACE completed a Planning Assistance to the States (PAS) Technical Report that examined possible port sites at Cape Blossom, eliminating some of them due to excessive erosion. The report identified seven sites for further study, with three considered most promising.

- **Crowley (Vitus) Dock Expansion:** The Kotzebue fuel and cargo dock, currently the only dock, was rehabilitated and expanded by 30 feet in 2021. The dock serves as the main location for the delivery of fuel and cargo to the Northwest Region. The upgrade allows for the continued delivery of fuel and cargo (estimated at approximately 5,000 tons each year) to the region and allows for larger vessels to access the dock and therefore additional economic opportunities (Figure 5).

Source: Crowley Dock (2021) https://www.crowley.com/kotzebue-dock/

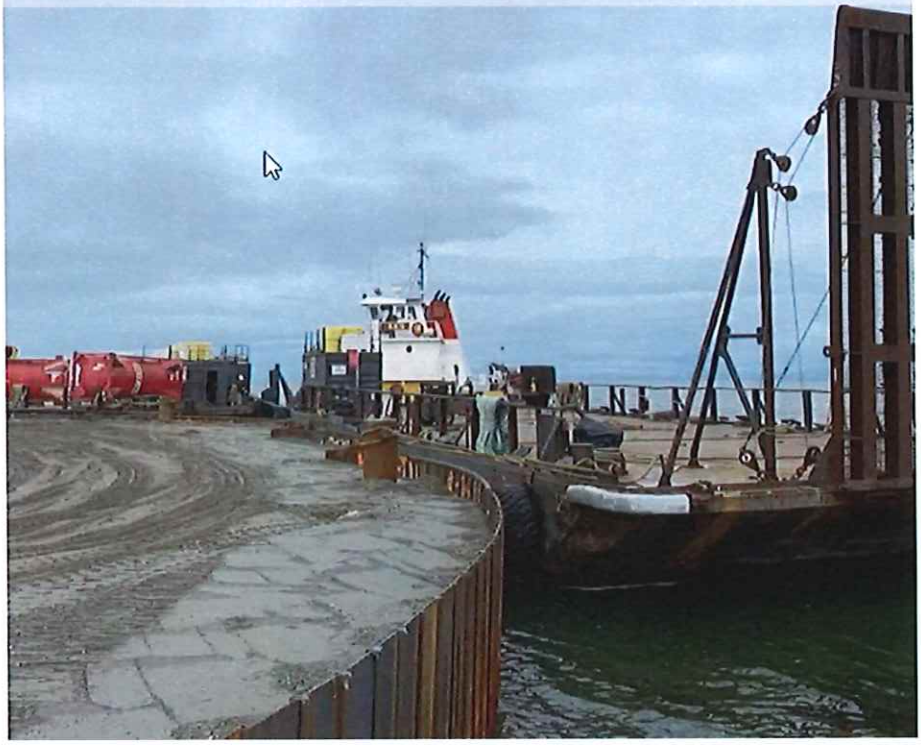

Figure 5: Crowley 120 series barge and tug tied up alongside newly built dock.

- **Ambler Access Project:** A 211-mile road is proposed between multiple mineral deposits near Ambler, Alaska, and the Dalton Highway. Kotzebue is located approximately 130 miles west of Ambler and future residents may benefit from employment generated by mining development made feasible by the road. The Bureau of Land Management and the National Park Service (NPS) granted the road a 50-year easement as of January 2021 (NPS, 2021) (Figure 6).

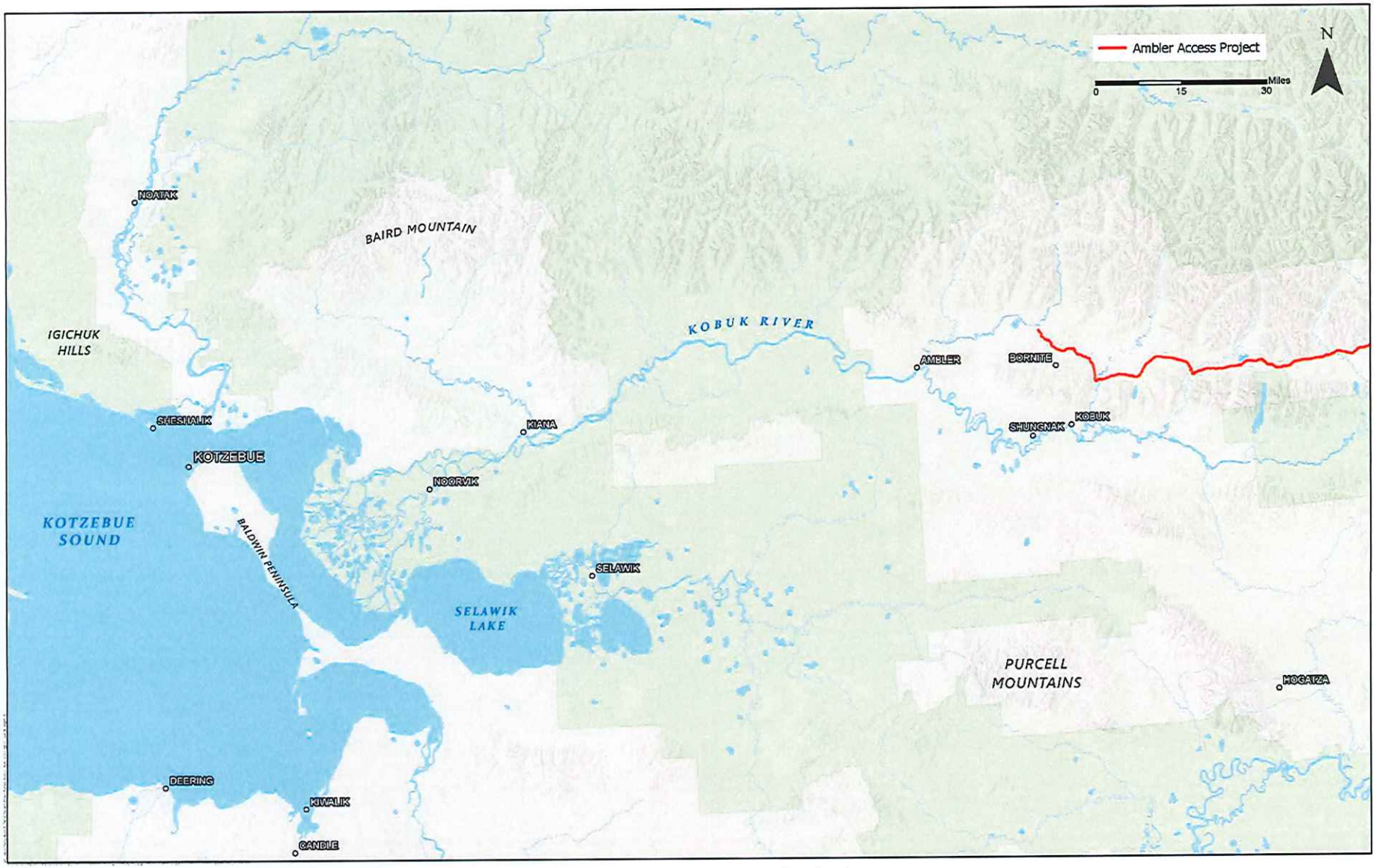

Figure 6: Ambler Access Project

Subsistence is assumed to continue at the same level as it is a vital economic contribution that offsets high living costs for the area. In 2014, a study by the Alaska Department of Fish and Game found that 99 percent of people in the NAB consume subsistence food and 88 percent of residents attempted subsistence activities (Weibold, 2019).

3.5 Employment

According to ADOLWD, 2,124 people were employed in Kotzebue in 2019, which is 489 more workers than in 2009. The 2009 average unemployment rate for the NAB is 12.6 percent. Kotzebue's unemployment rate is assumed to be less than the regional average because of the increased employment opportunities that don't exist in smaller communities. The labor force is grouped into nine major sectors. The majority of City residents are employed in the Mining, Education and Health Care Sector (52 percent); followed by local government (17 percent); then Trade, Transportation, and Utilities (14 percent).

The major employers of City residents according to the NAB (2021) include:

- Maniilaq Association, Inc.
- Northwest Arctic Borough Schools
- Alaska Commercial Company
- City of Kotzebue

4.0 ENVIRONMENT

4.1 Geology, Terrain, and Subsurface Conditions

4.1.1 Geology

The Baldwin Peninsula is composed of unconsolidated Quaternary sediments. These sediments are primarily eolian, glacial, and marine in origin. Illinioan glaciers deposited till and outwash over marine sediments. Loess (windblown silt) was deposited over the glacial sediments during the retreat of the Illinoian glaciers. The sea level rose following the glacial retreat, and in some areas, marine sediments were deposited over the eolian silts.

Late Wisconsin and Holocene sediments, primarily re-transported loess, and thaw-lake deposits, comprise the surface soils that cover virtually all the Baldwin Peninsula and the surrounding lowlands. The oldest sediments exposed in the coastal bluffs of the peninsula are marine clays, silts, and fine sands upon which the glacial sediments were deposited.

A petroleum exploration well, drilled 20 miles east of Cape Blossom near Numiuk Point (Figure 7) in 1974, encountered bedrock at a depth of 900 feet. The nearest bedrock outcrops at sea level are on the Choris Peninsula to the southeast, at Ekichuk Lake on Hotham Inlet to the northeast, and at Cape Krusenstern Lagoon northwest of the project site.

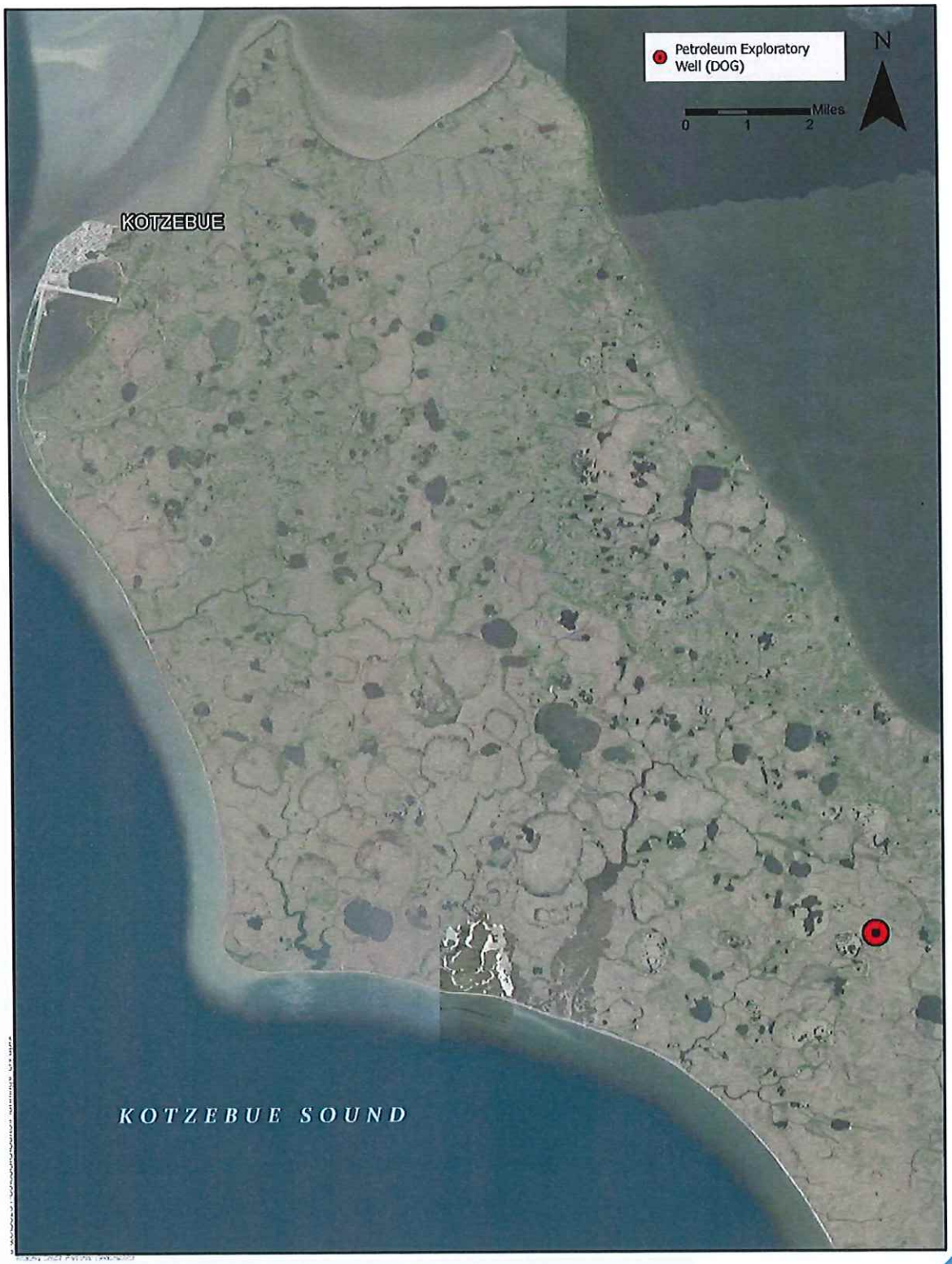

Figure 7: Petroleum Exploration Well

4.1.2 Topography

The Baldwin Peninsula presents a gently rolling, sometimes flat topography, the surface of which is marked by polygonal ground and thaw lakes. Broad morainal ridges, rising to 150 feet above the general surface, down the topographic backbone of the peninsula. This rolling topography typically is bordered at the coast by bluffs approximately 20 to 100 feet high. The core developed area of Kotzebue, and that south of town, is composed of a series of former beach ridges.

4.1.3 Soils

Limited soil information is available for the hillside portion of Kotzebue. This area is located along Ted Stevens Drive in the area close to Second Bridge (Kotzebue Slough). "Soils of the City," was a study completed in 1971 by the U.S. Department of Agriculture, Soil Conservation Service, for the area of the town site of Kotzebue. This study shows four main types of soil located in Kotzebue. The majority of the land contains "very gravely sand" where in upper elevations the dirt has good drainage, lower elevations have a poorly drained version of the "gravely sand." Another type of soil is silt loam, which is "poorly drained, non-acid soils with thick mats of organic material over stratified silty and sand alluvium." The last type of soil common to this area is peat, which is a poorly drained, neutral soil found in areas occasionally inundated by seawater.

4.1.4 Permafrost

The Baldwin Peninsula is located within the zone of continuous permafrost. Aerial photographs indicates wet tundra, thaw lakes, polygonal ground, and beaded drainage, which are all indicative of permafrost. The depth of the bottom of permafrost is probably between 200 and 300 feet. A well drilled on the spit at Kotzebue in 1949 and 1950 encountered the bottom of permafrost at a depth of 284 feet.

The presence of permafrost and ice in poorly drained, fine-grained, and organic soil is challenging for construction and may result in disturbance of the thermal equilibrium of such materials. The thawing of permafrost may result in differential settlement, subsidence of the ground surface, and movement of the soil mass either laterally or down slope. These phenomena can severely damage structures such as roads, buildings, and utilities.

4.2 Wetlands, Vegetation and Hydraulic Conditions

4.2.1 Wetlands and Vegetation

The predominant vegetation type on the Baldwin Peninsula is moist coastal tundra. Moist tundra ecosystems usually form a complete ground cover and are extremely productive during the growing season. They vary from almost continuous, uniformly developed cotton grass tussocks with sparse growth of other sedges and dwarf shrubs, to stands where tussocks are scarce or lacking and dwarf shrubs dominate. The northern region is often dissected by polygonal patterns created by underlying ice wedges (Figure 8).

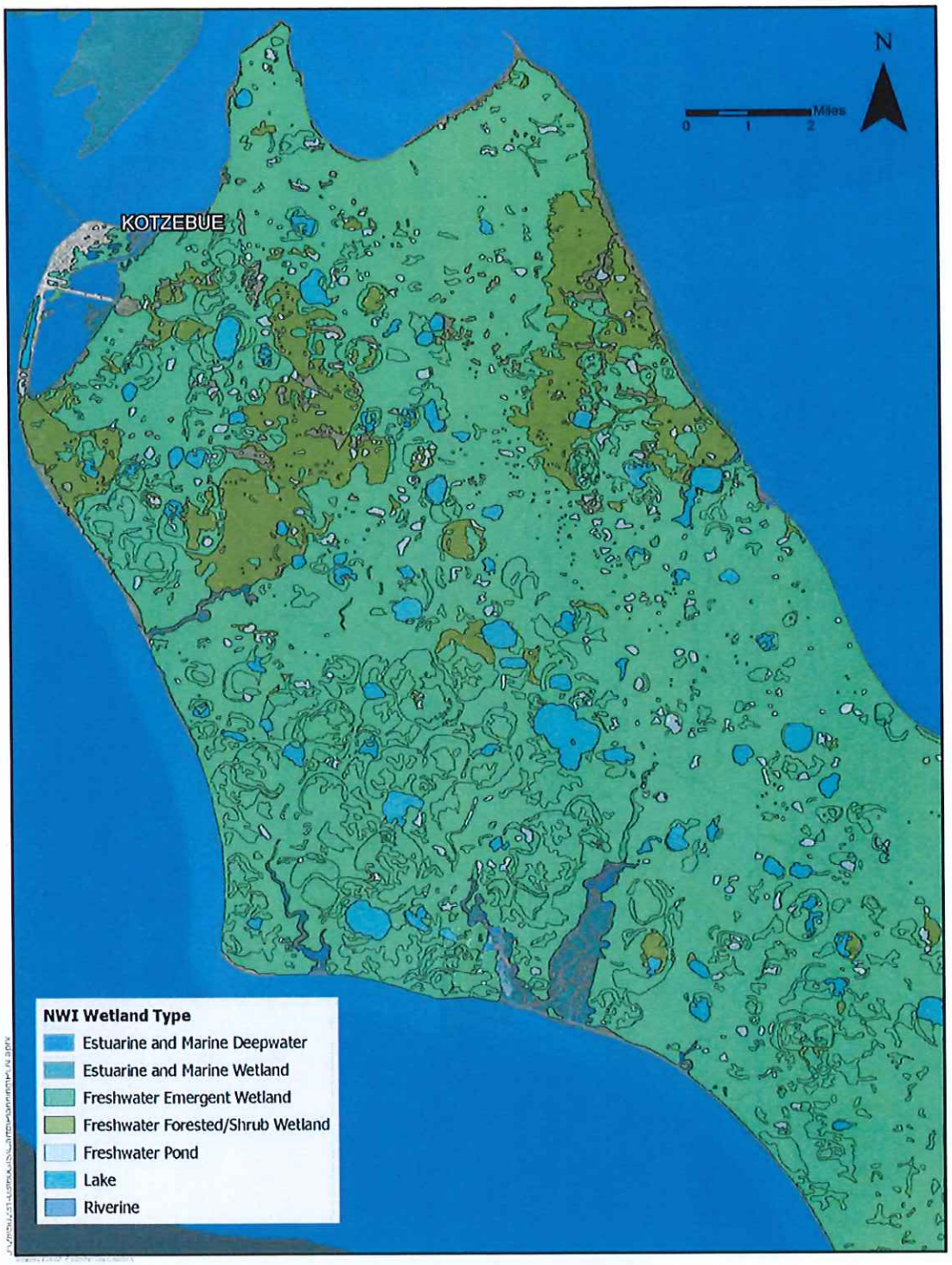

Figure 8: National Wetlands Inventory (NWI) Wetlands[2]

[2] *Source: https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/*

Few trees grow on the Baldwin Peninsula, particularly near Kotzebue. Stands of trees are found in the Noatak and Kobuk River drainages, and driftwood is scattered along the coast of the Chukchi Sea, the Baldwin Peninsula, and the south side of Kotzebue Sound. Local people use these renewable resources for fuel, drying racks, and temporary shelters.

People throughout the NANA region collects various edible plants for use during all seasons of the year. These include greens, berries (cranberries, salmonberries, blueberries, and blackberries), and roots (or tubers). "Eskimo potatoes," "spinach", "sourdock", cotton grass, wild rhubarb, wild onion, wild peas and willow leaves and sprouts are traditionally gathered. A survey published in 1993, estimated that residents of Kotzebue gathered over 20,000 pounds (of which 19,139 were berries) of edible plants in 1986. This calculates to approximately 27 pounds of berries, greens, and roots per Kotzebue household.

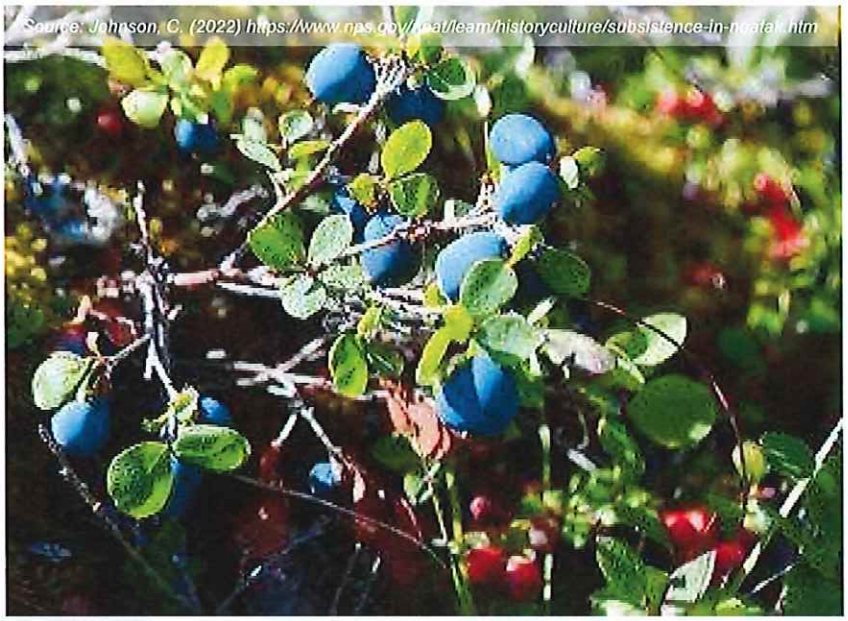

Figure 9: Wild blueberries and cranberries

The National Wetlands Inventory (NWI) held by the US Fish and Wildlife Service has classified most of the area within the City and south of Caribou Drive and Fifth Avenue as freshwater emergent wetland. The area east of Kotzebue Lagoon, such as Vortac Lake, has also been classified as freshwater forested/shrub wetland. Immediately south of Kotzebue Lagoon the wetlands are mostly freshwater forested/shrub near the coast.

4.2.2 Hydraulics and Hydrology

The lakes that dot the surface of the peninsula and the surrounding lowlands appear to be thaw lakes, formed from permafrost thaw. These lakes are typically shallow and freeze to the bottom in winter (with some exceptions, such as Devil's Lake, which has been dredged to a depth of over 50 feet and serves as the City of Kotzebue's main water source). A beaded drainage pattern indicative of permafrost and ground ice is apparent at scattered locations. While the geology of the peninsula does not appear favorable to the occurrence of springs, one was observed during a 1982-83 field reconnaissance. Known hot springs are also found on the Noatak River where the state had a fish hatchery, at Buckland, and elsewhere in the region.

In general, soils on the Baldwin Peninsula are poorly drained. The active layer, which may thaw to a depth of about two- to three-feet in summer, is typically saturated. The combination of fine-grained and organic soils, gentle to flat slopes, and permafrost at the base of a shallow, active layer, all contribute to poor drainage conditions. The flat spit area on which Kotzebue is built is the same and pooling and minor drainage problems occur when the snow melts faster than the water can be absorbed by the soil and/or runoff. Ponding water during break-up is pumped into Kotzebue Sound.

4.3 Climate

Climate change in recent years includes a delayed onset of winter. The later formation of ice cover in Kotzebue Sound has resulted in severe erosion of the Kotzebue shoreline from waves generated by high seasonal winds out of the northwest in October and even as late as November. The impacts of climate change on sea ice around Kotzebue are being studied in detail by the SIkaagvik Sikukun research project, which combines state-of-the-art geophysical observations from Unmanned Aerial Systems (UAS) with a community-engaged research approach. More extreme weather patterns are expected in general for the region.

Kotzebue has a transitional climate that typifies arctic tundra and marine biomes. During the ice-free season (approximately May through October), a maritime climate prevails. Skies are mostly cloudy, daily temperatures are relatively uniform, and the relative humidity is higher. The mean summer maximum temperature is approximately 56 degrees Fahrenheit (F), with 85 degrees F the warmest temperature recorded (WRCC, 2021). When Kotzebue Sound freezes, the climate characteristics approach continental type. Daily temperatures vary, skies are cloudy only about half the time, and relative humidity drops/decreases. Average winter temperatures are around -9 degrees F with an extreme low recorded at -52 degrees F (WRCC, 2021).

The Kotzebue area receives only very light precipitation, with the total rainfall for normal years at about 10 inches (WRCC, 2021). More than half of the yearly precipitation occurs in July, August, and September. The average snow fall is about 4.5 feet.

Local visibility exceeds three miles 92 percent of the time and exceeds one mile 97 percent of the time. About 93 percent of the time, ceilings are above 1,000 feet. Occasionally, heavy fog limits visibility during the summer, and high wind and blizzards during the winter. In an average year, visibility is limited to less than one-quarter mile on approximately 20 days. An average of 60 percent of these days occurs between April and July. Fog occurs approximately 90 days per year.

Since Kotzebue is located about 26 miles north of the Arctic Circle, the hours of daylight vary dramatically between summer and winter. In June and July, the sun does not drop below the horizon for six weeks. Conversely, the winter days are short, with the shortest day having about 1.7 hours of daylight. The low angle of the sun, especially in the winter, results in a longer light path through the atmosphere, which also reduces the light energy reaching the ground.

Winds in the Kotzebue area vary with the seasons. The prevailing annual wind direction is from the east (September through April). During the summer months westerly winds are dominant. The average wind speed at the Kotzebue Energy Association's (KEA) wind farm is 14.1 miles per hour (mph), with summer storms commonly producing winds of 28 mph for six-hour periods. Winds in the winter can be even stronger. The ten-year high wind speed is estimated to be 64 mph, and winds greater than 55 mph have been recorded from all directions except the north and northeast.

4.4 Natural Hazards

4.4.1 Seismic Hazards

Kotzebue is in Seismic Design Category (SDC) D, according to the 2003 International Building Code. While the risk of major seismic activity in Kotzebue is known to be low, structural design of significant buildings or other structures must comply with the requirements stipulated for this SDC rating.

4.4.2 Erosion

Erosion is a significant issue for the City and surrounding area and has been advancing since 2012. It has created challenges to the Cape Blossom Port project and caused a General Investigation study by the United States Army Corps of Engineers (USACE) being terminated as the average coastal bluff erosion rate resulting in a risk of an unsustainable future and/or deferred construction cost to maintain access to the dock. A Planning Assistance to States Technical Report on the site conditions in the vicinity of Cape Blossom[3] completed a desktop analysis of coastal erosion rates based on historical aerial photography and potential navigation channel dredge distances to the shoreline based on available bathymetry data. This information was used to identify locations with relatively low coastal erosion rates that were followed by site visit observations. Erosion rates were variable within the study area, with some rates of land loss as high as approximately 21-39 feet a year. Lower erosion rates were observed in other areas, including some areas that were relatively stable (erosion rates that were not measurable) or had low rates of erosion of approximately 3.5 feet a year.

The erosion issues documented at the proposed port site are similar to what is being observed at the City, which is creating challenges with coastal resiliency particularly at the north end of town. This area does not currently have a sea wall and is impacted significantly by coastal erosion during spring thaw, driven by south to south-west winds out of Kobuk Lake. Erosion and ice have caused damage to private housing and commercial facilities and a sea wall is needed to reduce erosion impacts and reduce safety hazards associated with property damage.

[3] *U.S. Army Corps of Engineers Alaska District (September, 2021)., Planning Assistance to States Technical Report, Site Conditions in the Vicinity of Cape Blossom Road Technical Assistance Kotzebue, Alaska.*


Source: Lawton, D. (2022) House with big ice

Figure 10: Damage to a house due to ice incursion

Permafrost degradation is further compounding erosion issues and there has been an acceleration in issues around the City over the last five years. Kotzebue Electric Association (KEA) has had to shore up utility poles that were set in permafrost and are beginning to move, and the earthen dam at Vortac Lake has moved as a consequence of permafrost degradation.

4.4.3 Flooding

Kotzebue participates with the Federal Emergency Management Agency to regulate building within flood zones. Flood prone areas are divided into three main categories. Zone A represents areas located within the 100-year flood, and is limited to areas adjacent to Shore Avenue, Swan Lake, and the Lagoon. Zone B represents areas located between the 100-year flood and the 500-year flood. The third category is Zone C, which are areas with minimal flooding.

4.4.4 Permafrost

The Baldwin Peninsula is located within the zone of continuous permafrost. A review of air photos indicates wet tundra, thaw lakes, polygonal ground and beaded drainage which are all indicative of permafrost. The depth of the bottom of permafrost is probably between 200 and 300 feet. A well drilled on the spit of Kotzebue in 1949 and 1950 encountered the bottom of permafrost at a depth of 238 feet. A well drilled near Nimiuk Point in 1974 encountered an interpreted bottom of permafrost at a depth of 284 feet.

4.4.5 Road Dust

ATVs and other vehicles driving on dirt roads contribute to airborne dust that can aggravate respiratory problems, settle on subsistence foods, and contribute to poor air quality. Road dust has become a severe issue in rural Alaska. The Clean Air Act established two types of national air quality standards for particulate pollution. Primary standards set limits to protect public health, including the health of "sensitive" populations such as people with respiratory diseases, children, and the elderly. Secondary standards set limits to preserve community welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings. The Environmental Protection Agency (EPA) health research confirms that dust, measured as PM10, can cause health problems including short term airway irritation, and aggravation of existing heart and lung disease and damage to lung tissue.

4.5 Historic Sites and Archaeology

Based on NANA nominations under section 14(h)(1) of the Alaska Native Claims Settlement Act (ANCSA), the Bureau of Indian Affairs (BIA) investigated many historical places and cemetery sites in the region. These, along with oral history tapes taken at the time of investigations, add to the base knowledge of the rich regional culture.

The modern City is built on and over a series of beach ridges. Each successive ridge has been found to have an earlier inhabitation period than the previous ridge, and nearly all have been found to have some potential for historical or pre-historical materials. However, no systematic survey of the historic and prehistoric resources in the Kotzebue town site has been undertaken. Based on excavations undertaken by Giddings in 1940, 1941, 1947 and the early 1960s before his death, the time of occupation has been determined to be of the Intermediate Kotzebue period (ca AD 1550) period (as well as present day) along the beach ridges between Isaac Lake and the shore.

Evidence of old Kotzebue (ca AD 1400) inhabitation has been found between the Intermediate Kotzebue area and the outskirts of the present-day City, thus tracing the current Eskimo ancestry for about 600 years. Buried cultural materials may be encountered anywhere along the ancient beach ridge crests (or even the slope according to Giddings and Anderson, 1986), not just along the present-day waterfront. Mention is made by Giddings of clusters of house pits south of the Federal Aviation Administration (FAA) facility. The burin spall reported by Newell and Stern (1976) from a test pit adjacent to Isaac Lake, in the vicinity of the Intermediate site, suggests the presence of earlier populations than the Kotzebue period (possibly even Denbigh or Choris).

Most Kotzebue archaeological work and excavation traces occupancy only back to the Late Western Thule (ca 300 AD) period. In Cape Krunsenstern (Giddings and Anderson, 1986), some 114 distinct beach ridges going back from the current beachfront indicate semi-permanent dwellings of Early and Lake Western Thule, Birnirk, Ipiutak, Choris, and Old Whaling cultures. The same pattern might exist in Kotzebue, although the extensive separate beach ridges are not the same.

As the community expands to the south along beach ridges or onto the hillside, people could make important new archaeological discoveries. At the same time, without a systematic, planned approach to archaeological investigation, such a discovery could significantly hold up development and expansion. Prior to the implementation of projects, publicly

available information for historic sites should be reviewed such as those available through the Alaska Heritage Resources Survey.

Construction and development activities, including excavation for building foundations, road widening, and utility installations, often uncover archaeological materials. If a planned approach to the archaeological investigation of the area and the cultural and historical significance is not included in this planning, unnecessary problems or loss of information could occur.

A proposal was made to include the "Kotzebue Historical District" in the National Register of Historic Places (Robert Gal, 1986). This proposed district would include the entire Kotzebue gravel spit, thus encompassing all beach ridges and the "Intermediate Kotzebue" excavation site. The nomination to the National Register could be completed if the community supports the proposal. Some benefits might include tax breaks or qualifications for special grants. A disadvantage might include limitations on development or increased expense to develop.

4.6 Mammals, Birds, and Fish

In addition to the plants and vegetation used by residents, hunting and fishing remain a vital part of the economy and subsistence lifestyle in Kotzebue. Kotzebue is a high subsistence use area compared to the resource harvest of other Alaska communities of similar size. U.S. Fish and Wildlife Service and the Alaska Department of Fish and Game should be consulted prior to the development of projects, particularly outside of the main City area.

Figure 11: Caribou

4.6.1 Land Mammals

Land mammals can be broken into two main categories: big game and fur bearers. Big game mammals located in this region include moose, caribou, and bear. Big game is used for both clothing and food for residents and is supplemented by reindeer herds. Furbearers are used for sale or trade, clothing, and for subsistence foods, representing an important resource in the area. These mammals include wolves, fox, lynx, mink, marten, wolverine, land otter, beaver, and muskrat.

4.6.2 Marine Mammals

The waters of Kotzebue Sound and the adjacent Chukchi Sea, during various seasons, contain several species of marine mammals. These are used for food and are an important aspect of Kotzebue's cultural heritage. The main marine mammals found in this region are the bearded seal, walrus, beluga whale, and other whales. A historic location for taking seal is on a point across the entrance to Hotham Inlet from Kotzebue (Sheshalik). Polar bears rarely venture this far south but have been seen in inner Kotzebue Sound.

While these marine mammals are protected by the Marine Mammal Protection Act, as amended, Alaska Natives are allowed to take them for customary and traditional purposes. However, because of international treaty arrangements this sometimes requires special cooperative agreements between the federal government and the Native people (e.g., those of the Alaska Eskimo Whaling Commission, the International Whaling Commission, and the Alaska Eskimo Walrus Commission).

4.6.3 Birds

Most birds are present in the area only between May and September. These birds come to the area primarily to breed and nest. Many come from as far away as Antarctica, South America, and Asia. Because of the proximity to Siberia and the effect of prevailing winds, there is an interchange between the Asiatic and North American flyways. Migration patterns vary with the weather and food supplies. Thus, occasionally rare Asiatic species will appear in and around Kotzebue.

Birds are categorized into four groups: seabirds, waterfowl, shorebirds, and upland birds. The Migratory Bird Treaty Act and the Russian and Canadian protocols require the protection of some migratory waterfowl species when they become endangered (e.g., Spectacled Eider, Black Brant, etc.).

4.6.4 Fish

Fish form an important part of the diet for residents of the region. Fish are usually dried or frozen and are sometimes used for dog food, although this is less common than in the past. Fish are caught by seining, hooking techniques, or sport fishing. The Kotzebue Sound and lakes and rivers are used for commercial and subsistence fishing. The region is an important habitat for more than 50 species including Arctic Char, Whitefish, Dolly Varden, Sheefish, Northern Pike, Grayling, Herring, Salmon, and Cod. The commercial fishery depends predominantly on the migrating salmon.

5.0 EXISTING CONDITIONS

5.1 Housing

Available housing is currently the greatest issue in Kotzebue, according to planning participants, employers, new hires, new residents, and visitors. The lack of land and infrastructure for new housing developments and the need for reasonably priced gravel for necessary pads constrain the development of housing.

The hillside housing development was the most recent attempt to develop a new subdivision; however, the chosen site was determined to have poor subsurface conditions that included ice-rich thawing permafrost. The City is now considering land to the south of the landfill for possible expansion because the Cape Blossom Road will provide access to the area starting in 2022.

The Kotzebue Indian Reorganization Act (federally recognized tribe) (IRA) has tribal housing responsibility under the Native American Housing and Self-Sufficiency Development Act. The Northwest Inupiaq Housing Authority has retained responsibility and authority for housing and property management of previously constructed projects. Maniilaq and Kikiktagruk Inupiat Corporation (KIC) are both major providers of rental housing and are active in the development of new housing projects in the City.

5.2 Land Use and Ownership

Land use and ownership patterns are a critical factor for long-term economic development, expansion, and planning for Kotzebue. The municipal boundaries extend beyond the area currently served by the roadway network, but the potential development of a port facility at Cape Blossom may require the annexation of new land to encompass additional areas of the Baldwin Peninsula, including the area south to Cape Blossom on the west to an area below Nimiuk Point on the east side of the peninsula (Figure 12).

Little land use designation or control has been established for locations outside of the original townsite area. This is partly because of the mixed ownership and control of land. The airport is owned and operated by the State of Alaska, and FAA lands are controlled by them. There is also several thousand acres of land that KIC is eligible to receive from the Bureau of Land Management under the provision of ANCSA.

Figure 12: Land Use and Ownership

5.2.1 Native Allotments and Townsite Lots

The 1906 Native Allotment Act and 1926 Alaska Native Townsite Act provided local residents title to some lands within the City. Although both Acts were subsequently repealed, lands already conveyed are not subject to state or local taxation and regulation. There are currently 24 restricted Native allotments and 48 restricted townsites within the Kotzebue municipal boundary. All these allotments were surveyed and have been transferred to the applicants or their heirs.

Allotments and restricted townsite lots in the core townsite area are only subject to municipal ordinances if the government finds it in the owner's best interests to be subject to those ordinances. The Native Village of Kotzebue, under what is known as a "638 contract" with the Bureau of Indian Affairs, assists the landowners in managing their land, including use as a home site, leasing for development, gravel sales, land sales, subdivision, or use and protection for subsistence.

5.2.2 Federal and State Lands

While there are only a few pieces of federally owned property in the City of Kotzebue, these areas comprise potentially developable land (the old FAA sites and the old Air Force/White Alice site). The FAA sites will likely continue to be used for their purposes (as redefined under section 3(e) of ANCSA. The Air Force site is prime real estate, and KIC has "top filed" for lands in the event they are "excessed" by the federal government. The area past the landfill is still designated as a military drop zone.

Other than tidelands and submerged lands adjacent to the community, the State of Alaska owns tidelands and submerged lands effectively giving the State management authority for areas below the mean high-water mark.[4] The State also has selected lands south of Kotzebue along the coast of Baldwin Peninsula, including lands adjacent to Cape Blossom. Since those uplands are top filed over Native Corporation lands, it is not certain if any of these areas will be conveyed to the State. The State manages most of its tidelands and submerged lands for multiple uses in the vicinity of Kotzebue except for the areas adjacent to the Noatak River, which are managed for habitat purposes. The State-selected areas around Cape Blossom are also managed for habitat purposes.

5.2.3 Land Uses and Designations

While the Kotzebue Municipal Code references a zoning map (KMC 17.12.010-17.12.020) and three zoning districts (KMC 17.16 – 17.24), a City Council has not approved an official zoning map with zoning districts. The current mix of commercial, retail business, light industrial, residential, parks, and offices has the potential for safety problems (traffic, fuel leaks, noise, dust, etc.).

[4] *The City owns the tidelands and submerged lands from the centerline of the main runway to Minerva Street on the north end of town (City of Kotzebue Comprehensive Plan, 2013).*

5.3 Public Utilities

The City has responsibility to provide and maintain the water supply and treatment systems, wastewater collection system, and solid waste disposal for the businesses and residents of Kotzebue.

5.3.1 Water Supply and Treatment System

The main drinking water source for the City is Devil's Lake, which is located approximately 2.5 miles southeast of the Public Works Compound (located along Third Avenue near the intersection of Bison Street). The lake is a natural waterbody measuring approximately 165 acres in area. Submersible pumps located in an elevated intake structure, supported on pipe piles, extract water from the lake. The water is then transported approximately 2.7 miles (14,400 linear feet (LF)) to the water treatment facility via an insulated eight-inch diameter water main, the majority of which is above ground. Based on observations made by the City, Devil's Lake levels have continued to rise over the years, providing adequate supply to the City. The back-up drinking water source for the City is Vortac Lake, which is an impounded lake located 1.5 miles southeast of the Public Works Compound.

The City water treatment system is classified as a Class A community water system using surface water. A new water treatment plant is currently under construction at the Public Works Compound, which will replace the aging plant in the same location. The new plant will be commissioned in 2023.

5.3.2 Sewer

Sewage is collected in buried gravity sewer mains, which flow to a system of 12 underground municipal lift stations located throughout the City. A ten-inch force main transports sewage to a three-cell lagoon treatment system located just south of the airport. The City leases the lagoon property from the DOT&PF.

5.3.3 Solid Waste Collection and Disposal

The City operates a garbage collection service, using compactor collection vehicles. The collected waste is delivered to a baler facility in the Public Works Compound. The bales are bagged and transferred to a Class II landfill located south of the City along Base Road. The landfill accepts municipal solid waste, construction and demolition debris, scrap metal, polluted soil, and some special wastes with Alaska Department of Conversation (ADEC) approval (ADEC, 2013). There are no current City sponsored recycling facilities or efforts, except for ordinances requiring separation of hazardous waste.

5.3.4 Electricity

KEA, a non-profit community cooperative, supplies power for Kotzebue. This cooperative has been innovative in adding wind generation, the use of waste heat, solar, and consideration of fuel cells; but the cost of electricity generation from diesel fuel is still high for the community. Residents and public facilities receive Power Cost Equalization, a state subsidy, to reduce costs.

5.4 Transportation System

Kotzebue became the regional transportation hub because of its location and the ability to provide the transition between deep-water and rivers during the three to four months of ice-free time. There were also some overland freight efforts, particularly over the ice using reindeer and dogs which continues with snow machines and sleds today. Kotzebue is also a major air hub with an expanded airport catering to schedule passenger jet services and bypass mail (subsidized as essential mail service). As the hub, it is the center of services for communication, administration, and education services for the villages of Noatak, Kivalina, Point Hope, Kiana, Noorvik, Selawik, Ambler, Shungnak, Kobuk, Buckland, and Deering.

5.4.1 Average Annual Daily Traffic

The DOT&PF maintains a traffic analysis and data application website[5] that presents data collected from the Alaska Traffic Monitoring Program. The data is collected from count stations located on public roads throughout the State. Data are reported for 22 count stations within Kotzebue, with the busiest count locations being Wolverine Drive (Fifth Avenue) north of Salmon Street (Station ID: 30031091), which recorded an actual Annual Average Daily Traffic (AADT) of 2,544 in 2014 and an estimated AADT of 2,670 in 2021; and Third Avenue near the intersection with Mission Street (Station ID: 37031000), which recorded an actual Average AADT of 2,556 vehicles in 2017 and an estimated AADT of 2,370 in 2021; and Third Avenue north of Bison Street (Station ID 30031001), which recorded an actual AADT of 2,483 in 2017 and an estimated AADT of 2,370 in 2021. The traffic data indicate that peak volumes occur around the morning commute (7:00-8:00am), around midday, and between 2:00 – 4:00pm.

Extensive traffic counts were conducted as part of the 1997 Transportation Plan. These counts (34 sites, most for a period of seven days) showed a peak use around 7:00 pm and continuing with significant counts until midnight. Although not documented, these counts were likely completed during summer months with extended daylight hours and clear road conditions. Counts, with visual confirmation and categorization of the type of vehicle, were used to prioritize roadway improvement projects.

5.4.2 Types of Roadways – Functional Classification

The network of roadways in the City is classified as local, minor collector, and major collector (Rural). This approach groups roads, streets, and highways into integrated systems, each ranked by the level of mobility and access they are intended to provide in the transportation system. Collector roads are higher level roadways that collect traffic from local streets and move it through the City. Local roads are lower volume, lower speed roadways that provide access from residential and other areas to collector streets.

Most roads in Kotzebue are classified as Local (Rural). Roads with a higher functional classification are summarized in *Table 4.*

[5] *https://alaskatrafficdata.drakewell.com/publicmultinodemap.asp*

Table 4: Roads with Functional Classification Higher than Local (Rural)[6]

Functional Classification	Road Name
Major Collector (Rural)	• Shore Avenue (First Avenue) south of Shore Lane • Third Avenue • Fifth Avenue • Turf Street (Crowley Dock Road) • Airport Access Road
Minor Collector (Rural)	• Ted Stevens Way • Shore Lane • Shore Avenue (First Avenue) north of Shore Lane • Second Avenue

5.4.3 Vehicle Fleet Mix

Select traffic count sites include data on the FHWA Vehicle Classification. The only site reporting vehicle classification data in Kotzebue is Third Avenue North of Mission Street (Station ID: 37031000). Vehicle mixes identified are predominantly motorcycles/all-terrain vehicles (2 axles, 2 or 3 wheels) and passenger vehicles and pick-up trucks, with only a small proportion being larger trucks and freight vehicles (less than 10 percent). These vehicles typically operate simultaneously on the roadway, which results in a mix of vehicles alongside pedestrians and bicycle traffic.

5.4.4 Roadway Capacity

As outlined in the Alaska Highway Preconstruction Manual (HPCM), capacity is described as a maximum sustainable hourly flow rate at which persons or vehicles can reasonably be expected to travel to a destination under typical conditions. Typical conditions in Kotzebue vary, but generally consist of two travel lanes (one in each direction), and dependent on the roadway, either shoulders and sidewalk, or little to no shoulders and sidewalk. Posted speed limits are set in Kotzebue Municipal Code Title 10.16.010 and vary throughout the City from a baseline of 15 miles per hour (MPH) to 35 MPH on roads beyond the built up area of the City.

Roadway capacity can be expressed using the level of service (LOS). Per the HPCM, LOS is defined as a quantitative layer of performance measure or measures that represent a quality of service, measured on an A – F scale, with LOS A representing best operating conditions from the traveler's perspective (free flowing) and LOS F the worst (stop and go traffic). The existing Kotzebue roadway system generally provides acceptable capacity for current traffic volumes.

Many locations in the community act as trip generators. The hospital, airport, grocery store, post office, state, tribal and federal offices, and other services or commercial areas are generally major trip generators. Trip modes may include walking, bicycle, ATV, snowmachine, car or truck, and taxi.

[6] *https://alaskatrafficdata.drakewell.com/publicmultinodemap.asp*

5.4.5 Connectivity

From a transportation perspective, connectivity refers to the density of connections in path or road networks, and the directness of links. A well-connected network has many short links, numerous intersections, and minimal dead-ends (cul-de-sacs). Kotzebue's transportation network within the developed City area is a grid network, which provides a well-connected network with alternative routes available to travelers. Other more remote locations are accessible via Ted Stevens Way and Air Force Base Road, which forms a ring road accessing municipal facilities such as the water source, dump, and military facilities. The future Cape Blossom Road connects to Air Force Base Road.

5.4.6 Safety Data and DOT&PF Traffic Safety Data

Safety for the traveling public is essential to Kotzebue's transportation system. The highest priority safety concerns determined by the City include:

- Dust control
- Road improvements, including paving roads
- Trail safety
- Distracted driving
- User conflicts

The DOT&PF, Alaska Highway Safety Improvement Program, in partnership with the National Highway Traffic Safety Administration, collects traffic safety statistics for all traffic fatalities and non-fatal motor vehicle accidents in Alaska. Traffic safety data is obtained through State Trooper and Police reports and collected in all urban cities and more populated rural communities, such as Kotzebue, Nome, and Bethel.

Traffic safety data can be used to identify issues and trends associated with an area's roadways. It can help identify roadway deficiencies such as width, curves, alignment, or grade, which can be modified to improve roadway safety. Roadway design and standards have changed over time, and many older roads do not meet current standards.
Crash data was provided by DOT&PF for 2010 to 2020. A total of 73 crashes occurred over the 10-year period. Table 5 summarizes the crash data.

Table 5: Reported Crashes in Kotzebue 2010 - 2020[7]

Year	Total No. of Crashes	Fatality Crashes	Serious Injury	Minor Injury	No Apparent Injury	Unknown Injury
2010	4	-	2*		2	-
2011	8	-	4*		4	-
2012	3	1	2*		-	-
2013	4	1	1	-	2	-
2014	7	-	1	2	4	-
2015	10	-	5	-	4	1
2016	8	-	3	4	1	-
2017	15	1	1	6	6	1
2018	6	-	2	-	3	1
2019	4	-	1	-	2	1
2020	4	-	1	-	1	2

* Data reporting for 2010 – 2012 differs to data from 2013 – 2020.

Approximately two-thirds of the incidents involved four-wheeled (or larger) motor vehicles. One-third involved ATVs. Eight of the reported incidents involved a pedestrian injury, and one involved a bicyclist.

5.4.7 Traffic Congestion/Conflicts

The 1997 Transportation Plan and traffic counts indicated some heavy use areas. The lunch hour and evening hours produced the most congestion at the post office, grocery store, and bank. Traffic in the summer has significantly higher volumes than in the winter. There is a slight increase during commuting hours to and from work. Many of the roads are too narrow to accommodate traffic lanes and on-street parking.

Conflicts arise between ATVs, pedestrians, and vehicles. In the winter, snowmachines drive off the sea ice, up over the steep beach bank and onto the road at high speed (for momentum), without time to see vehicular traffic on the road. After the roads are cleared of snow, snowmachines find it challenging crossing the cleared road corridor along Shore Avenue. Traffic congestion is greatest near the hotel and store with pedestrians, snowmachines or ATVs (depending on the season), and motor vehicles.

Kotzebue does not have oversize limits, or registration of any type of vehicle. Oversized vehicles can contribute to deterioration of roads during the spring thawing seasons or during the occasional rainstorm. Small trucks transport freight from the docks and from the airport through town. Kotzebue does not have commercial loading and unloading zones, or alleys as defined in larger urban areas. Street noises from different vehicles resonate throughout town. Vehicular traffic across the small aircraft airstrip conflicts with the airplanes.

[7] *Data supplied by DOT&PF on December 6, 2022.*

5.4.8 Roadway Maintenance

The City has a draft Standard Operating Procedure (SOP) for street maintenance (January 2012), which addresses road surfacing/grading, pothole repairs, road sweeping, drainage, culvert repair and maintenance, Spring drainage, road sign replacement, asphalt repair, chip sealing, pavement marking, road de-icing/sanding, snow removal and disposal, and access to utility areas (Devils/Vortac Lake, sewage lagoons, landfill). The intention of the SOP is to guide maintenance operations within the City's road maintenance service area. The update/completion of the SOP is a recommended project in this LRTP.

Snow removal is prioritized, with the highest priority given to Shore Avenue, Third Avenue, Fifth Avenue, Mission Street, Bison Street, and Lagoon Street. These streets were selected based on their level of use for emergency services. Lower volume local roads are given second and third priority according to the level of use of the road and adjoining land uses (*Figure 13*). In addition to the roadway priority, the snow removal plan provides that driveways of elders' homes are clear to assure access for necessary medical services, evacuation, and delivery of meals. Snow at the outside edges of town is pushed back to create a barrier to reduce snow drifting, and snow is then hauled from town to reduce drainage problems during thawing.

Figure 13: Snow Removal Priority Map

5.5 Transportation

5.5.1 Roadway

The Kotzebue area has few roads, as the overland regional transportation system is not well developed. No roads (other than winter ice roads or trails) connect Kotzebue with any other community. Currently, Kotzebue has approximately 22 miles of gravel roads, and about two miles of paved roads (Third, Fifth, and Shore Avenues). The newest road was the construction of 3.7 miles of elevated gravel road, now called Ted Stevens Way, in the early 2000s that connects the Devil's Lake area to the landfill. Ted Stevens Way and the "Base Road" link the core community to infrastructure located on the outskirts of the City. The Base Road, named for the old Air Force Base, extends across the airport and past the sewer lagoon and old dumpsite to the new landfill and the Air Base, and continues to KEA's wind generation facilities. Phase I of Cape Blossom Road is currently under construction connecting from Hillside Drive to Sadie Creek.

5.5.2 Non-Motorized Transportation

Facilities for walking and bicycling are provided along roadways within the city. Sidewalks are constructed along paved roadways for walkers, and bicycle facilities are available along road shoulders. Unpaved roads provide shared facilities for walking and bicycling. Ted Stevens Way and Base Road are popular for recreational walking, running, and bicycling.

5.5.3 Trails

There are trail easements for winter access to state and federal lands reserved under ANCSA. One of the trails follows a 25-foot easement that crosses KIC's land and Devil's Lake (City water supply). The City has petitioned the Bureau of Land Management (BLM) to move the trail easement to the east of Devil's Lake to mitigate the risk of a snowmachine falling into the City's primary drinking water source. The BLM is yet to issue a final decision, but the City is confident the easement will be adjusted east of Devil's Lake.

Additional trail easements include a 60-foot easement for the road south of town to the airport and from the airport property to the north boundary of Section 28, T 17 N, R 18 W, KRM. In addition, for winter travel, trails are marked across the Sound, the Inlet, and on rivers with stick or branches when the ice reaches a safe thickness for travel. Winter trails connect most of the villages across Hotham inlet and along the rivers, as well as subsistence sites.

Trails are used by residents and by visiting villagers on snow machines in the winter. Some trails service four wheelers or ATVs in the summer, particularly for beach access and along the beach. Few automobiles, trucks, or four-wheel drive vehicles leave the road system, except to travel on the ice in the winter. The City does not have any registration of vehicles, so it is difficult to determine the numbers and types of travel undertaken. Users have encountered some problems in the winter crossing roads and accessing the Sound due to snow berms. Some recreational trail users would like to have specific locations designated for their particular use, such as snow machines, skis, and dog sleds. Requests have also been made to clearly mark and maintain trails and trailheads.

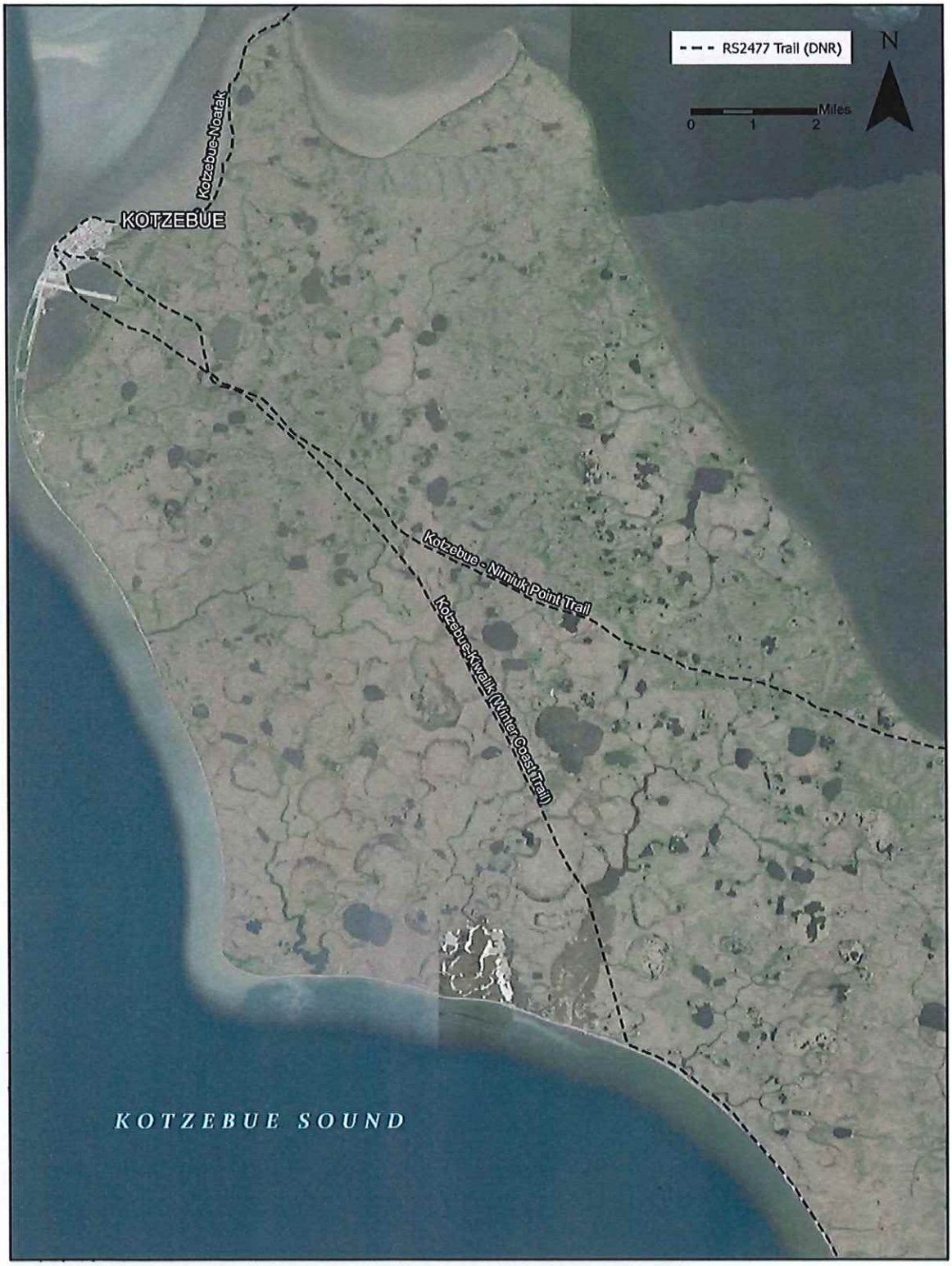

Figure 14: Trails

5.5.4 Aviation

Currently one major passenger carrier (Alaska Airlines) and a regional charter carrier (Bering Air) operate in Kotzebue. Air cargo carriers include Alaska Airlines, United States Postal Service, Bering Air, Northern Air Cargo, LLC, and Everts Air. Additional charter carriers and fish and game guides operate small aircraft in Kotzebue during the summer seasons.

The current airport was expanded from a small airstrip constructed in the 1950s to the current 5,900-foot paved runway with 3,876-foot gravel surfaced crosswind runway. The relocation of the airport has been thoroughly studied during investigations including the 2008 Kotzebue Airport relocation Feasibility Study and was found to be impractical. Runway lengthening and the construction of a full-length parallel taxiway way also found to be economically unfeasible. The existing acreage of the Kotzebue airport parcel was deemed to be adequate through 2035.

Projects included in the 2015 Airport Master Plan include:

- An apron expansion in the northeast corner of the terminal area that includes doubling the sand storage capacity, providing new lease lots, relocating transient parking, and expanding security fencing.
- Developing new and increased area for tie-downs for small floatplanes and float plane facilities on Isaac Lake or Kotzebue Lagoon. The preferred alternative is Kotzebue Lagoon.

5.5.5 Marine Transportation

The ocean waters near Kotzebue are quite shallow. In addition, the Noatak, Kobuk, and Selawik rivers drain into the Sound, which creates additional sediment runoff. The currents from these rivers keep a channel open near the Crowley dock. Because of this shallow water, Kotzebue does not have a deep-water port and ships anchor 12 to 15 miles south and west of Kotzebue. Barges for fuel and supplies must have a draft of no more than five feet to come into the current dock area.

Small boats are a major contributor to the economy as they have a major role in providing transportation to and from fish camps, sealing camps (some are reached by flying or snow machine while there is still ice), and elsewhere for subsistence, as well as for recreation. Boat docks for small boats are in place in the Swan Lake Boat Harbor. Some boats are simply pulled up on the beach, including along Front Street (Shore Avenue), by rolling them over pipes or small logs.

5.6 Transit

Kotzebue is a compact city where many residents walk for short trips. Motorized transportation without a privately owned vehicle relies on private taxicab. Two cab companies operate year-round: Kobuk Cab and Richard's Cab. Both are operated out of the owners' homes and are often unavailable without extremely long waits. A ride costs $7 per person anywhere in town, or $5 for seniors and students. Since Kotzebue is over a mile long and almost a mile ride, there is a good portion that is a difficult walk, especially in inclement winter weather. If the community expands to the hillside, the need for public transportation will increase.

The City does not currently provide transit services. Maniilaq Association provides elder transportation services within Kotzebue on an on-call basis. A Transit Development Study was completed in 1981, which outlined a possible bus system with deviations between designated points and fares nearly as high as the taxicabs. The study completed a limited feasibility analysis of operational costs. A bus barn was built (the current Public Works Department of the City), and vans purchased, but the system was only briefly implemented.

5.7 Structures

5.7.1 Bridges and Culverts

There are two bridges in the City. First Bridge (Swan Lake), spans the open waterway for the Swan Lake boat harbor (32-feet length and roadway width 24.0-feet), and has experienced serious erosion in the abutments, including the surrounding pavement being undercut (refer to Figure 15). The Second Bridge, Kotzebue Slough, is 180-feet in length and roadway width 24.0-feet. Both the bridge decks are maintained by DOT&PF, and the City supports repair work in conjunction with the Tribe, who own the road (Ted Stevens Way). Both First and Second Bridge are aging assets and in need of repair.

There is a lack of culverts in place across the City, and those that are in place have been installed to address known serious inundation issues. Culverts are needed to assist with run-off, particularly during spring thaw. The City hires a four-person pumping crew each spring to assist with managing water in low-lying areas, which reduces the risk of water entering people's homes. A hydrology study is needed to understand low points and assist with identifying locations for culverts to address water inundation.

Culverts that are present across the City do not form a comprehensive system, and some are difficult to maintain because of their location and some have maintenance challenges owing to the installation techniques used when they were placed. These culverts were intended to be temporary, and a long-term solution is needed.

Figure 15: Erosion at Second Bridge (Kotzebue Slough)

6.0 TRANSPORTATION NEEDS

6.1 Aviation

Aviation needs were comprehensively considered by DOT&PF as part of the Northwest Alaska Transportation Plan Update (2022) and the Kotzebue Airport Master Plan Update (2015). Aviation needs included:

- **Climate change:** Warming climate, permafrost thaw, sea ice retreats, increasingly severe storms, and higher than normal precipitation all contribute to increasing maintenance costs and accelerated degradation of aviation facilities.
- **Funding:** Demand for aviation funds has exceeded available program resources, resulting in needs that may not be able to be addressed through FAA's Airport Improvement Program (AIP).
- **Carrier restrictions:** Available carriers are limited, and any cessation of service can impact the ability to provide reliable air service to remote communities. The challenges associated with operating an air carrier service in northwest Alaska can also result in high costs.

- **Predicted pilot shortage:** The COVID-19 pandemic has exacerbated the pilot shortage caused by an aging workforce facing mandatory retirement, fewer pilots exiting the military, and the high cost of training.

- **Additional leasing opportunities:** The Kotzebue Airport Master Plan Update identifies that additional leasing opportunities are needed to accommodate user requests.

- **Non-standard conditions:** Tie-down facilities are located closer than standard to Runway 18-36, Taxiway E falls within the middle third of Runway 9-17, and Taxiway F extends from the end of Runway 18-36.

- **Pavement:** The apron pavement is failing and needs to be replaced/remediated.

Airport projects are programmed by DOT&PF, who complete Airport Master Plan Updates on a programmed basis to confirm conditions, needs and projects. Therefore, no aviation projects are recommended in this LRTP.

6.2 Roadway Facilities

Roadway needs were considered by DOT&PF as part of the Northwest Alaska Transportation Plan Update (2022), and by the City as part of developing this LRTP. Public comments also suggested roadway needs within the City. Roadway needs are summarized below.

6.2.1 Roadway Network

- **Complete street network connections:** The street network connections in Kotzebue have gaps, which require travelers to sometimes navigate around built development to connect to arterial roads within the city. The street network should be evaluated to consider whether new connections are needed, and where these should be prioritized.

- **Evaluate streetlights to improve safety and visibility:** Some areas of the City are not illuminated at night, resulting in safety concerns for pedestrians. The need for additional street lights should be evaluated and planned for to improve safety for all road users.

6.2.2 Maintenance

- **Thawing permafrost, erosion, and flooding:** Warming ambient and ocean temperatures are accelerating permafrost thaw, causing the ground underneath roads to subside, wash out, erode, or liquefy. Increasingly frequent storms are causing localized flooding, which creates further erosion and damages road infrastructure. These changes mean roadway maintenance is needed more frequently, and larger areas are being impacted.

- **Maintenance budget reductions:** Budget constraints mean the State and local government have insufficient funding to meet all the maintenance needs. It also creates challenges for local communities to purchase new or replace old road maintenance equipment.

The City has a partially completed standard operating procedure dating to 2012 for street maintenance. This needs to be updated and completed to assist with managing street maintenance activities across the City.

6.2.3 Material Sources

Access to material sources, particularly sand and gravel has long been an issue in Kotzebue owing to the geography, geology, and location of the City. Some gravel is available near the end of Baldwin Peninsula at Nimiuk Point, which is approximately 16 miles east of Kotzebue. A potential material site (not currently developed) is in an area known as Iggy Hill, located approximately 8.5 miles east of Kotzebue and north of Nimiuk Point. The surface rights for both resources are owned by Kikiktagruk Inupiat Corporation (KIC) and the subsurface gravel is owned by NANA. The resource is currently covered by overburden to a depth of 60-70 feet and requires significant excavation to enable access. A Material Site Investigation was completed by DOT&PF of the resource in 2011, which estimated that approximately 710,000 cubic yards of gravel resource is present at Iggy Hill. Refer to Figure 16 for the location of gravel resources.

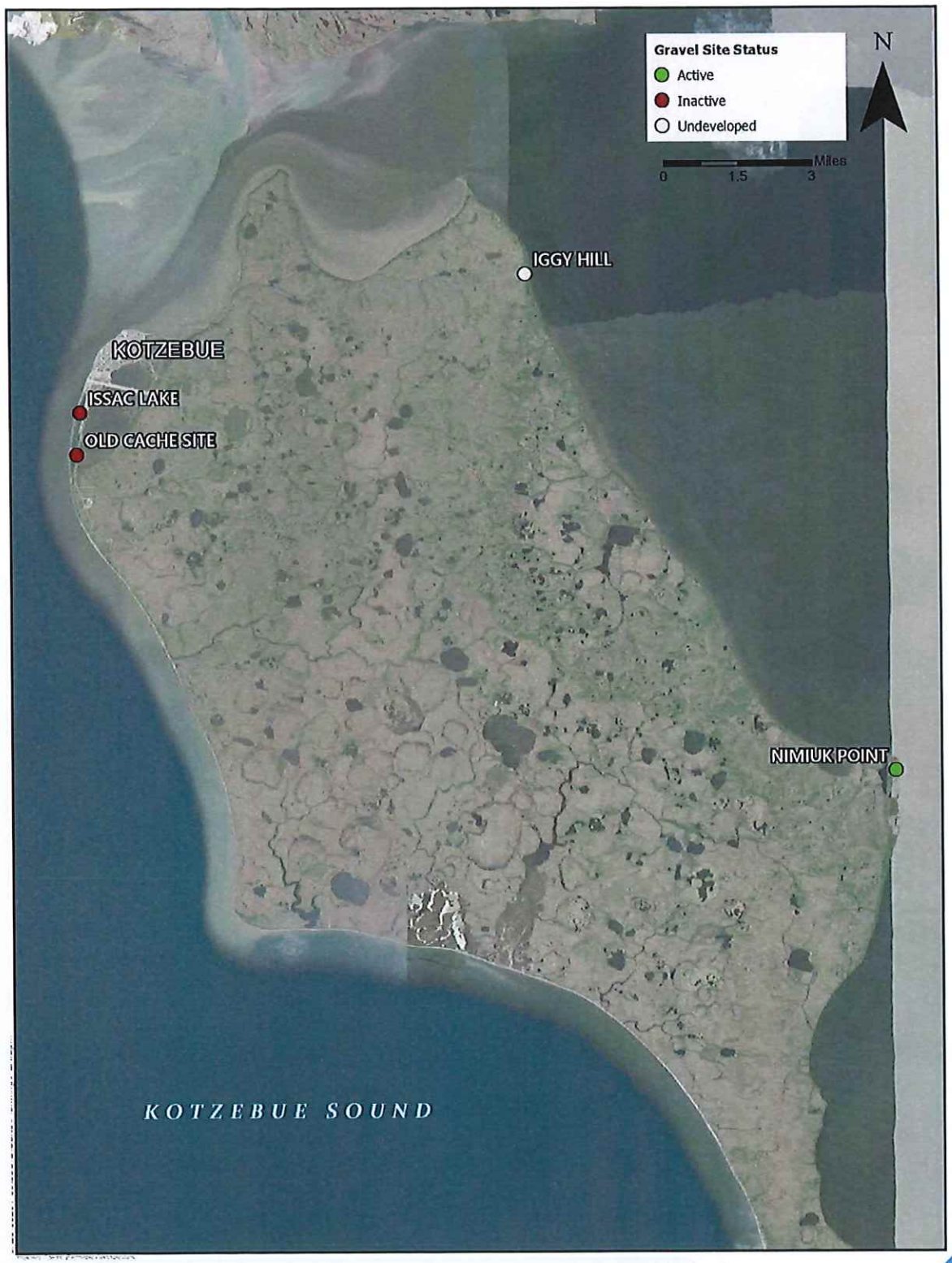

Figure 16: Gravel Resources Around Kotzebue

The cost of accessing gravel is significantly higher than in many other locations across Alaska and is increasing. Gravel demand over the last two years has been particularly high owing to the construction of the Kotzebue to Cape Blossom Road, which is necessitating the barging of gravel to Kotzebue.

6.2.4 Drainage

Drainage is a major challenge in Kotzebue because of the lack of culverts and formal drainage system. In addition to runoff challenges during Spring thaw, the City is only 7 feet above sea level and inundation is a problem during storm events. A hydrology study is needed to understand low points and assist with identifying locations for culverts and a comprehensive drainage system to address water inundation.

6.2.5 Safety Improvements

The City currently undertakes safety issues on an as-needed basis. The last comprehensive effort was prior to 2010, and since that time paving has been a preferred method to enhance roadway safety. This has created drainage challenges, as it has created impermeable surfaces that compound the lack of drainage system. A roadway safety plan is recommended to document needed safety improvements and create a long-term program for roadway safety improvements. Particular issues to be addressed include:

- Identifying locations in town where there are conflicts between transportation modes (i.e., drivers, ATVs, pedestrians) and program safety improvements.
- Identifying locations in town with narrow/minimal right-of-way and evaluate these to make sure minimum width facilities can be provided and address safety concerns caused by narrowing.
- Dust control and management.
- Creating a replacement schedule for radar/detection signs, warning lights, and other signs that need replacement.

6.2.6 Dust

The EPA standards for dust, and recent monitoring in Kotzebue indicate there may be locations within the city where dust exceeds acceptable limits. If the levels exceed EPA limits, the area could be classified as a "non-attainment" area. Currently, there are no villages or rural cities in Alaska that are classified as "non-attainment," but if this occurs, it can create challenges for securing funds for federal transportation projects.

Methods to reduce dust from roadways and surface transportation include:

- **Reduced vehicle speeds:** educate the community about the health effects of road dust and post signs to encourage drivers to use slower speeds during dry seasons.
- **Gravel or pave roads:** construct and resurface roads with gravel and paving is effective to mitigate dust.

- **Road watering:** provides for effective dust mitigation for short durations. Frequent watering is required for effective long-term dust suppression.

- **Chemical dust suppressants:** these substances are designed to bind road dust and reduce the amount of dust that becomes airborne. Regular application is needed for chemical dust suppressants to be effective.

6.3 Marine Facilities

6.3.1 Swan Lake Small Boat Moorings

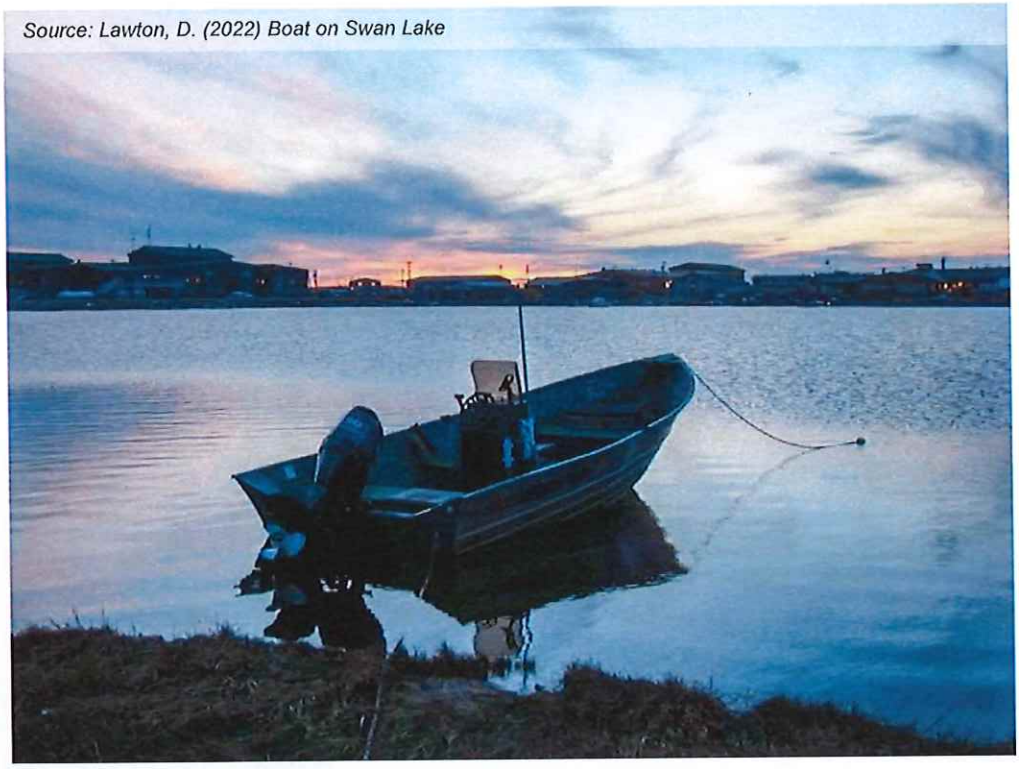

Figure 17: Swan Lake

The Swan Lake Small Boat Mooring facility was constructed in 2012 and inaugurated in 2017. The facility provides moorings for personal craft used for transportation. During high water events the water depths can prevent people from accessing the floats, and a design "fix" is underway to address this deficiency. Traffic and parking circulation work well around the facility, but boat trailers can be an issue when these are left. This is actively managed by asking people to remove their trailers. Non-motorized traffic is a problem owing to a lack of facilities for pedestrians accessing the small boat moorings.

6.3.2 Crowley Dock

The Crowley Dock is owned and managed by Crowley Fuels, LLC. (Crowley), as a fuel and cargo dock. The freeze/thaw cycle in Kotzebue Sound causes significant currents and causes ice to push
up on to the docks and over the adjoining sea wall. In October 2021, Crowley finished

expanding the dock by 30 feet. Work included adding safety features and fortifying the dock against the ice and associated environmental conditions. The new dock was designed to encapsulate the old dock and provide for reasonably foreseeable future operations. Other improvements included the erection of 40-foot light poles to illuminate the ends of the dock, and the installation of ladders at three areas along the dock face to provide safe access to and from the water.

The dock provides for Kotzebue's fuel needs, and additional fuel is brought into the City by Vitus Marine, LLC using the City's tidelands. Almost all the freight that comes into the community crosses the Crowley Dock. At least twice each open water season, a Crowley-chartered tanker brings fuel to Kotzebue Sound and anchors approximately 10 miles offshore. Crowley operates a local tug and two 120-foot barges to meet the ship offshore, transload, and deliver the fuel from the ship to the dock. At the dock, the fuel is transferred into a 6.1-million-gallon fuel storage tank farm via a cargo header and pipeline system built into the dock[8]. From Kotzebue, fuel is then transferred to villages up the Kobuk and Noatak rivers.

In addition to the fueling operations, Alaska Marine Lines and other operators also use the dock to transfer freight during the summer months. Approximately 5,000 tons of freight is barged into Kotzebue each year and about 2,000 tons of this is transferred to surrounding villages. The freight includes semi-perishable goods, basic construction supplies, and vehicles such as cars and all-terrain vehicles. This volume does not include fuel or materials and supplies for capital projects[9].

The only additional needs at the Crowley Dock are clearly demarcating land ownership and use to improve safety and connectivity, particularly when the dock is operational. The Crowley Dock will continue to be an important resource for the transfer of fuel and freight into the future.

6.3.3 Cape Blossom Port and Road

The Cape Blossom Road project is constructing a gravel road from Kotzebue across the Baldwin Peninsula to a beach access area near Cape Blossom. The project is being undertaken to reduce freight costs for Kotzebue and the surrounding communities. The road has been designed for commercial freight transport and recreational uses with an estimated volume of 100 vehicles per day or less. It will be a two-lane gravel road approximately 11.2 miles long, with a road surface width of 24 feet and side slopes of 3:1 or steeper. Turnouts and ramps down to the tundra will be constructed along the road near traditional trail crossings and potentially in other areas[10]. Construction started on the road in 2021, and additional funding has been allocated to support its completion by 2025.

Various studies have been undertaken in the last 40 years to explore the possibility of constructing a port at Cape Blossom. Cape Blossom has been explored because of its relatively deep near-shore bathymetry and its proximity to Kotzebue. In January 2019, the US Army Corps of Engineers released a Draft Integrated Feasibility Report and Environmental Assessment and Draft Finding of No Significant Impact for the Kotzebue Harbor Feasibility

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[8] *https://www.crowley.com/kotzebue-dock/ Accessed 10/31/2022.*

[9] *https://dot.alaska.gov/nreg/capeblossomroad/ Accessed 10/31/2022.*

[10] *https://dot.alaska.gov/nreg/capeblossomroad/ Accessed 10/31/2022.*

Study Navigation Improvements at Cape Blossom[11]. The USACE suspended a Harbor Feasibility Study in 2019, giving several options for facilities and locations of a deep-water Port at Cape Blossom. In September 2021, USACE completed a PAS Technical Report that examined possible port sites at Cape Blossom, eliminating some of them due to excessive erosion. The report identified three sites for further study.

The road and port continue to be high priority transportation needs for the City because of the high costs of freight and fuel. They are also seen as a way to respond to changes to the arctic climate as the port will be a deep-water facility and less impacted by climatic conditions.

6.4 Transit

The City does not currently provide transit services. A Transit Development Study was completed in 1981, which outlined a possible bus system with deviations between designated points and suggested fares. The Study completed a limited feasibility analysis of operational costs, and a bus barn was built (the current Public Works Department of the City) and vans were purchased, but the system was only briefly implemented.

Residents and community stakeholders have suggested a transit system would be beneficial. A feasibility study is needed to confirm whether the establishment and operation of transit services would be viable.

7.0 IMPLEMENTATION STRATEGY

The transportation planning process set forth by FHWA creates a long-term vision, goals, and objectives that are supported by a clear documentation of existing conditions, future needs and opportunities, and the creation of a long-range plan to achieve the vision, goals, and objectives. A key element of the long-range plan is the identification of key projects that will help achieve the vision for transportation through the life of the plan, temporal prioritization of the projects (short, medium, or long term), and documenting potential funding opportunities and partners to move the projects forward.

The next sections of the LRTP provide an overview of current transportation funding opportunities, which will change and evolve over the life of the plan. Transportation recommendations, including plans and projects are then identified and grouped into modes. Implementing these projects will be key to the City realizing its long-range vision for transportation in Kotzebue. Each project description provides an overview of the project need, potential funding partners, a cost estimate, and level of priority for implementation. The projects identified have been derived from a review of existing conditions and needs data, and through a series of workshops with City staff and partners. They have also been shared with members of the working group and with the public, and refinements have been made based on feedback received.

[11] *https://www.poa.usace.army.mil/Portals/34/docs/civilworks/publicreview/kotzebueharbor/KotzebueDRAFTFREA9JAN2019.pdf?ver=2019-01-09-152051-423. Accessed 10/31/2022.*

8.0 PROJECT FUNDING OPPORTUNITIES

Transportation funding opportunities include capital funding, project funding, Denali Commission, Tribal Transportation Program (TTP) Funds, Rural Transit Programs, other funding, and maintenance and operations funding. The Northwest Alaska Transportation Plan (NWATP) provides a comprehensive summary of funding opportunities that can be leveraged to support transportation projects in Kotzebue and the greater Northwest Arctic Borough[12].

Since the NWATP was developed, the passage of the Infrastructure Investment and Jobs Act (IIJA) in November 2021 has created additional transportation funding opportunities for Alaska. In order to maximize funding directed toward transportation investment in Alaska, the Alaska Municipal League (AML) and DOT&PF have partnered to create the Alaska Transportation Funding Opportunity Hub, which connects cities, boroughs and tribes to funding opportunities for surface transportation projects. The goal is to assist in developing strong project proposals for state programs and competitive federal grant opportunities, to maximize the amount and value of funding coming into Alaska[13].

9.0 TRANSPORTATION RECOMMENDATIONS

The following projects have the greatest need for completion over the 20-year plan horizon. Detailed project information is discussed below.

Roadway Projects

1. Cape Blossom Road
2. Municipal Road Dust Abatement / Asphalt Paving Priority Plan
3. Street Maintenance Standard Operating Procedure
4. North Shore Erosion Protection and Roadway Rehabilitation

Non-Motorized Projects

5. School Traffic Control Plan
6. Sidewalk Priority Planning, Design, Permitting, and Right-of-Way – Airport Access Road, Swan Lake Area

Marine Projects

7. Cape Blossom Port Site Development

Transit Projects

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[12] *https://dot.alaska.gov/nreg/nwatp/files/nwatp-executive-summary.pdf Accessed 10/31/2022.*

[13] *https://akfederalfunding.org/ Accessed 10/31/2022.*

8. Transit Plan and Program Development

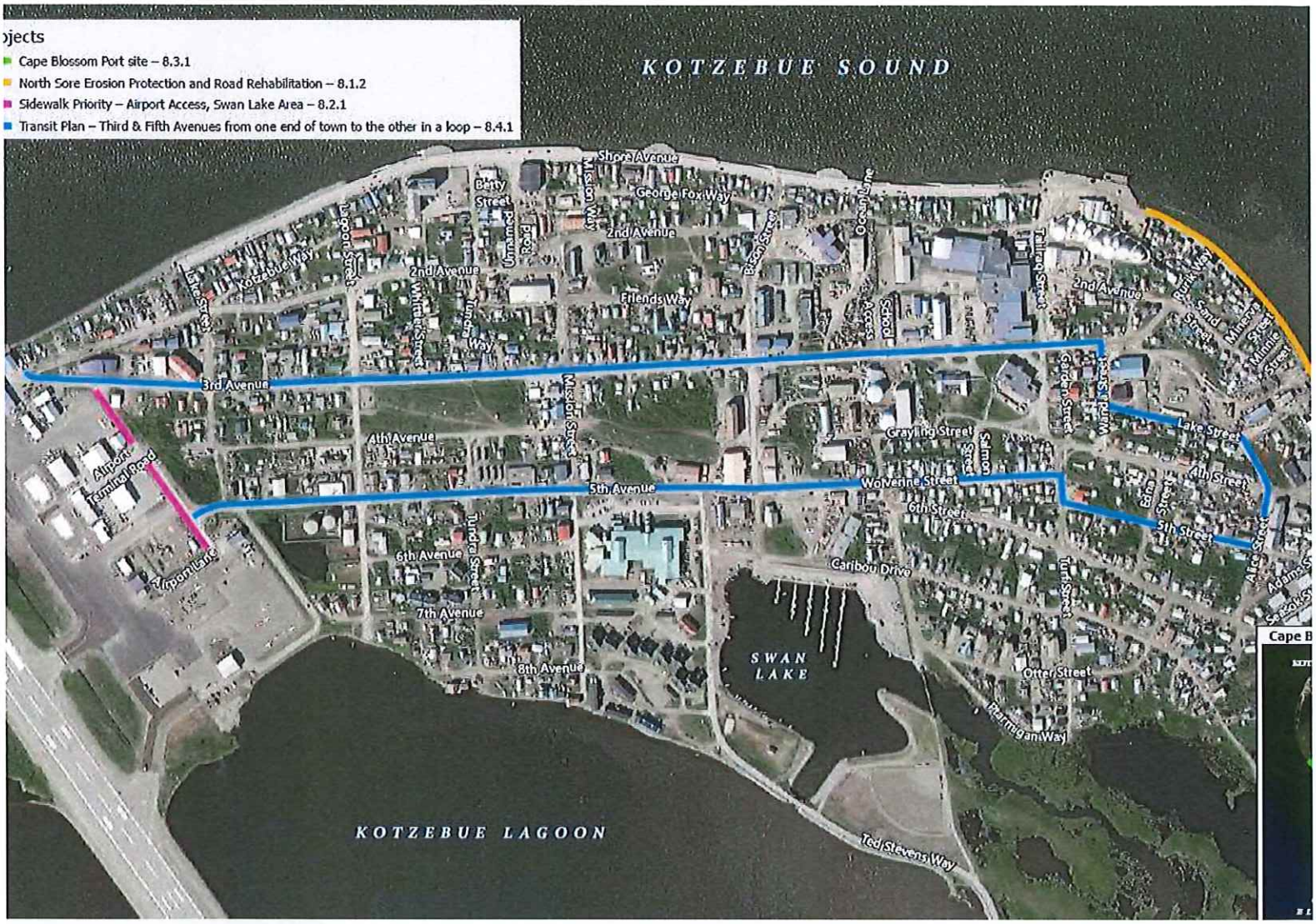

Figure 18: Transportation Recommendations

9.1 Priority List – Roadway Projects

9.1.1 Cape Blossom Road

Project Description:	This project entails the Stage II construction of the access road from Kotzebue to Cape Blossom, site of the proposed deep-water port. Stage I of the project is already in progress and will stop at Sadie Creek, 4.5 miles south of Kotzebue. Stage II will continue the road with a bridge across Sadie Creek, and then continue 6.5 miles further to Cape Blossom.
Project Need:	Completion of the road is needed to transport goods from the port to Kotzebue, to be distributed throughout the region. Transporting goods from a deep-water port at Cape Blossom will reduce transportation costs and expand opportunities for regional economic development.
Possible Funding Partners:	DOT&PF STIP
Total Cost Estimate:	$70,000,000
Priority:	Short-Term (action within 1-5 years)

9.1.2 Municipal Road Dust Abatement/Asphalt Paving Priority Plan

Project Description:	The Municipal Road Dust Abatement/Asphalt Paving Project will pave approximately 4,600 linear feet of road, perform asphalt repairs on existing paved roads, and apply dust suppression to gravel roads mitigating airborne dust-related problems in Kotzebue. The project will also develop a plan setting out the priority for paving remaining existing gravel roads within the City. The plan should prioritize roads based on the road's position within the road hierarchy, level of use, adjoining land uses, and safety priority. Design associated with any prioritized projects should also consider drainage improvements.
Project Need:	This project is needed to assist with programming funds to pave roads, which improves roadway safety, dust control, drainage, and maintenance. The road base in Kotzebue is predominantly constructed of sandy-silt and clay-like gravel causing dust pollution. During the summer months, airborne dust creates health and safety risks to the City's residents.
Possible Funding Partners:	Alaska Department of Transportation and Public Facilities, Northwest Arctic Borough Regional Planning Organization
Total Cost Estimate:	$10,000,000
Priority:	Short term (1-5 years)

9.1.3 Street Maintenance Standard Operating Procedure

Project Description:	Develop a street maintenance Standard Operating Procedure to complete the incomplete January 2012 Procedure. The procedure may address equipment inventory and training, road surface and facility maintenance procedures, road sign replacement, surface treatments, de-icing and snow removal/disposal, and access roads to utility areas including Devils/Vortac Lake, Sewage Lagoons, and the Landfill.
Project Need:	The current Standard Operating Procedure is incomplete, resulting in some street maintenance activities being conducted in an inconsistent and ad-hoc manner. A Standard Operating Procedure will outline standards for street maintenance and operations for all staff engaged by the City.
Possible Funding Partners:	N/A
Total Cost Estimate:	Can be completed by the City of Kotzebue's Public Works Department
Priority:	Short term (1-5 years)

9.1.4 North Shore Erosion and Ice Flow Protection and Road Rehabilitation

Project Description:	Provide erosion and ice flow protection for residential and commercial areas along 3,000 linear feet of Shore Avenue, north and east of the Crowley Dock
Project Need:	Erosion and ice flow has reduced road capacity, created unsafe driving conditions, and threatened residential and commercial buildings in the project area. The design of the project includes a combination of shore protection using both rip-rap revetment structures as well as sheet pile wall. The area has historically been hit hard by Fall storms, with large waves and ice blocks reaching adjacent residences and causing damage to homes along this stretch of coastline.
Possible Funding Partners:	This project will depend on a successful grant funding application.
Total Cost Estimate:	$21,500,000
Priority:	Medium term (5-10 years)

9.2 Priority List – Non-Motorized Projects

9.2.1 School Traffic Control Plan

Source: Northwest Arctic Borough School District, https://www.nwarctic.org/Page/19

Figure 19: June Nelson Elementary School and Kotzebue Middle High School

Project Description:	The Safe Routes to School Guide provides for School Traffic Control Plans to accommodate the needs of all modes of transportation within the roadway for trips to and from school, including walking, bicycling, and motor vehicles. The plan considers what improvements may be needed to the roadway environment to promote safer interactions between transportation modes, including clearly marked sidewalk facilities, crosswalks, signing, and pavement markings. All of Kotzebue's schools are clustered in one location along Third Avenue near Turf Street and are close to high traffic areas including the Department of Motor Vehicles, Chukchi Consortium Library, and the City's public works compound. Several school traffic control systems are aged and do not work consistently or in accordance with the school calendar.
Project Need:	Several existing school traffic control system features are aged and do not work consistently or in accordance with the school calendar. This project would update the School Traffic Control Plan to modernize facilities and coordinate its use with the annual school calendar.
Possible Funding Partners:	Northwest Arctic Borough School District
Total Cost Estimate:	$25,000 for plan and design; construction costs TBD.
Priority:	Short Term (1-5 years)

9.2.2 Sidewalk Priority Planning, Design, Permitting, and Right-of-Way– Airport Access Road, Swan Lake Area

Project Description:	Develop a plan prioritizing the extension of the sidewalk along Airport Access Road and around the Swan Lake Small Boat Harbor (Caribou Drive, Ptarmigan Way, Ted Stevens Way. The Plan should set forth the priorities for sidewalk creation and extension, to support design, permitting, and right-of-way activities.
Project Need:	This project is needed to address gaps in the existing non-motorized network, particularly in locations with higher non-motorized and traffic volumes and the potential for safety issues associated with bicycle and pedestrian conflicts.
Possible Funding Partners:	Department of Transportation and Public Facilities, Northwest Arctic Borough Regional Planning Organization
Total Cost Estimate:	Design: Construction: TBD
Priority:	Short to Medium Term, dependent on funding availability

9.3 Priority List – Marine Projects

9.3.1 Cape Blossom Port Site Development

Project Description:	The development of a regional deep-water port at Cape Blossom will eliminate the expense of barge lighterage services and potentially reduce the overall cost of transporting goods and services to the Northwest Arctic Borough. This project will continue efforts with the U.S. Army Corps of Engineers to confirm the best options for the port. The City of Kotzebue will work with local stakeholders to establish a port authority and will select an engineering firm to develop the port design.
Project Need:	Kotzebue serves as a transportation hub for the Northwest Arctic Borough. Because there are no roads or railroads to Kotzebue, fuel, building supplies, and groceries all need to be transported by airplane or barge. The insufficient depth of Kotzebue Sound means shallow draft barges, or "lighterages" are required to transfer fuel and freight from fifteen miles offshore. Lower shipping rates will promote economic development within Kotzebue and the region. Meeting the needs of a larger, future population is essential to the sustainability and future growth of the Northwest Arctic Borough. Food, dry goods, fuel, building materials, and services and amenities need to remain affordable since a high cost-of-living is a hindrance to economic growth and

	jobs. The next steps in project development includes hiring a consultant, establishing a Port Authority, determining the services a port will offer, and commencing the design process.
Possible Funding Partners:	This project will depend on a successful grant funding application.
Total Cost Estimate:	$300-500 million
Priority:	Long Term (action within 10+ years)

9.4 Priority List – Transit Projects

9.4.1 Transit Plan and Program Development

Project Description:	The City previously implemented a transit system, but operations only occurred for a limited period before ceasing. This project would complete a transit plan to explore the need for a transit system, size of the fleet, operational cost, revenue, service revenue hours, revenue miles, expenses, operating characteristics, capital expenditures and a potential operating plan. Dependent on the feasibility of developing a transit system, a transit program could be developed to progress the system toward operation.
Project Need:	Planning should occur first to consider whether transit system is needed and whether operations can be sustainable on an ongoing basis, potential costs, funding opportunities, and partners. Dependent on the outcome of the planning and whether a transit system is a viable opportunity in Kotzebue, this project could be extended to develop a full transit program with an associated asset and operations plan.
Possible Funding Partners:	Potential funding partners could include Northwest Arctic Borough, and Native Village of Kotzebue.
Total Cost Estimate:	$30,000
Priority:	Short-term for planning (action within 1-5 years)