



**CHENA RIVER LAKES FLOOD CONTROL
PROJECT MASTER PLAN UPDATE**
Draft Master Plan

October 26, 2022

Prepared for:
U.S. Army Corps of Engineers

Prepared by:
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CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Stantec has completed the Quality Control Review of this version of the Chena River Lakes Flood Control Project Master Plan Update. Certification is hereby given that all quality control activities defined in the task order appropriate to the level of risk and complexity inherent in the product have been completed. Documentation of the quality control process is enclosed.

Compliance with clearly established policy principles and procedures, utilizing clearly justified and valid assumptions, has been verified. This includes: assumptions, methods, procedures, and materials used in analyses; alternatives evaluated; the appropriateness of data used and the level of data obtained; and the reasonableness of the results, including whether the product meets the customer's need consistent with the law and existing US Army Corps of Engineers (USACE) policy.

As noted above and in the attachment(s), all issues and concerns resulting from the checks/ reviews of the product have been considered and incorporated, as appropriate.

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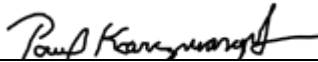


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CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

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Executive Summary

The Chena River Lakes Flood Control Project (project) was created in response to the 1967 flood that devastated Fairbanks and the surrounding lower Chena River area. The flood control features became operational in 1979. The project consists of an earthen embankment dam (Moose Creek Dam) with concrete control works on the Chena River. The project provides flood protection to the cities of Fairbanks and North Pole, and the cantonment area of Fort Wainwright.

In addition to a primary mission of flood protection, the project provides recreation facilities to the public and manages environmental stewardship programs. A recreation area, including parks and a recreational lake, is operated by the Fairbanks North Star Borough (FNSB). Within the project lands, the US Army Corps of Engineers (USACE) also actively manages thousands of acres of public land for various recreational activities and as habitat for a variety of wildlife, including resident mammals, migratory waterfowl, other migratory and year-round resident birds, and resident and anadromous fishes. The project actively promotes water safety, watchable wildlife, and public safety programs.

The Master Plan is a strategic land use management document that guides the comprehensive management and development of all project recreational, natural, and cultural resources throughout the life of the project. The Master Plan guides and articulates USACE responsibilities pursuant to federal, state, and other applicable borough and municipal laws to preserve, conserve, restore, maintain, manage, and develop project lands, waters, and associated resources.

Beyond the primary mission of protecting communities from floods, recreation at the project has increased over time. The project recorded 83,000 users in 1984, which had increased to at least 270,000 users in 2020. New infrastructure has also been built, including the Visitor Center and Moose Creek Landing.

The original Master Plan was published in September of 1984. A supplement was published in September of 1989. The 1989 Supplement consisted of excerpts of the original plan, with edited language.

This Master Plan Supplement updates the previous plans and provides management guidelines to allow the project to continue to protect the communities from flood damage.



Acronyms

ADA	Americans with Disabilities Act
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADLWD	Alaska Department of Labor and Workforce Development
AFB	air force base
AFPMB	Armed Forces Pest Management Board
AHRS	Alaska Heritage Resource Survey
AKEPIC	Alaska Exotic Plant Information Clearinghouse
ARPA	Archeological Resources Protection Act
BMP	best management practices
CDP	census-designated places
cfs	cubic feet per second
DoD	Department of Defense
DOT&PF	Department of Transportation and Public Facilities
FNSB	Fairbanks North Star Borough
GMU	game management unit
MP	Master Plan
msl	mean sea level
NEPA	National Environmental Policy Act
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
O&M	operations and maintenance
OMP	Operational Management Plan
ORV	off-road vehicle
PCB	polychlorinated biphenyls
PFAS	per- and polyfluorinated substances
RV	recreational vehicle
SHPO	State Historic Preservation Officer
TVSF	Tanana Valley State Forest
USACE	US Army Corps of Engineers
USCB	US Census Bureau
USFWS	US Fish and Wildlife Service
WSS	Web Soil Survey



1 Introduction

1.1 Project Authorization

The Flood Control Act of 3 July 1958 (Public Law 85-500) authorized the US Army Corps of Engineers (USACE) to build a flood control project to protect the Fairbanks, Alaska area. In August 1967, prior to the beginning of project construction, a devastating flood inundated 95 percent of the Fairbanks community causing \$85,000,000 in damage. Subsequently, the flood control project was revised to meet changed conditions and reauthorized as the Chena River Lakes Flood Control Project (project) by the Flood Control Act of 1968 (Public Law 90-483). This authorization provided for the construction of:

- (1) a dam and reservoir on the Chena River for flood control, recreation, and fish and wildlife enhancement;
- (2) a dam and retention reservoir on the Little Chena River for flood control; and
- (3) a levee along the Tanana River from Moose Creek Bluff to the confluence of the Chena River, continuing upstream along the Chena River to the vicinity of University Avenue.

A post-authorization report issued 24 September 1971 moved the location of the Chena River damsite to the current site, approximately 10 miles downstream. Although this change reduced floodwater storage capacity from 700,000 to 150,000 acre-feet, it provided the same flood protection at a substantially reduced cost with fewer negative environmental impacts. Similar in concept to the initial upstream design, the project as changed provided for:

- (1) a dam and retention reservoir on the Chena River,
- (2) a dam on the Little Chena River, and
- (3) a levee system along the Tanana.

A subsequent survey of geologic and soil conditions concluded that permanent water retention behind a dam would not be possible because of high soil permeability. The concept of a flood pool at the Moose Creek site was abandoned in favor of a floodway, which is typically dry except during flood events.

Extensive recreational development had been planned under the permanent retention reservoir concept. To compensate for the recreational resource development opportunities lost with abandonment of the permanent pool, the major project material operations were consolidated into one area. These material pits were recontoured to create a natural-appearing artificial lake, now known as Chena Lake.

Further study indicated that the dam across the Little Chena River had an incremental economic benefit-to-cost ratio of less than one. Since the Moose Creek Dam and Floodway in combination with the Tanana



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

1 INTRODUCTION

levee system provided the desired flood protection for the present time, the proposed dam on the Little Chena River was indefinitely deferred.

1.2 Project Purpose

The Chena River Lakes Flood Control Project (project) was created in response to the 1967 flood that devastated Fairbanks and the surrounding lower Chena River area to control flooding in the Fairbanks, Alaska Area. The flood control features became operational in 1979. The project consists of an earthen embankment dam (Moose Creek Dam) with concrete control works on the Chena River. The project provides flood protection to the cities of Fairbanks and North Pole, and the cantonment area of Fort Wainwright.

In addition to a primary mission of flood protection, the project provides recreational opportunities and manages environmental stewardship programs. A USACE-designed recreation area, including parks and a recreational lake, is operated by the FNSB. Within the project lands, USACE also actively manages thousands of acres of public land for various recreational activities and as habitat for a variety of wildlife, including resident mammals, migratory waterfowl, other migratory and year-round resident birds, and resident and anadromous fishes. The project actively promotes water safety, watchable wildlife, and public safety programs.

1.3 Purpose and Scope of Master Plan

The Master Plan (MP) is a strategic land use management document that guides the comprehensive management and development of all recreational uses as well as natural (e.g., wildlife) and cultural resources throughout the life of the project. The MP guides and articulates USACE responsibilities pursuant to federal, state, other applicable borough, and municipal laws to preserve, conserve, restore, maintain, manage, and develop project lands, waters, and associated resources.

MP goals include the following:

- Employ the best management practices to respond to resource use limitations and the ecological suitability of such uses and the expressed public interests consistent with authorized project purposes
- Protect and manage project natural and cultural resources through sustainable environmental stewardship programs
- Provide outdoor public recreation opportunities that support project purposes and public demands created by the project itself while sustaining project natural resources
- Recognize the particular qualities, characteristics, and potentials of the project
- Provide consistency and compatibility with national objectives and other state and regional goals and programs



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

1 INTRODUCTION

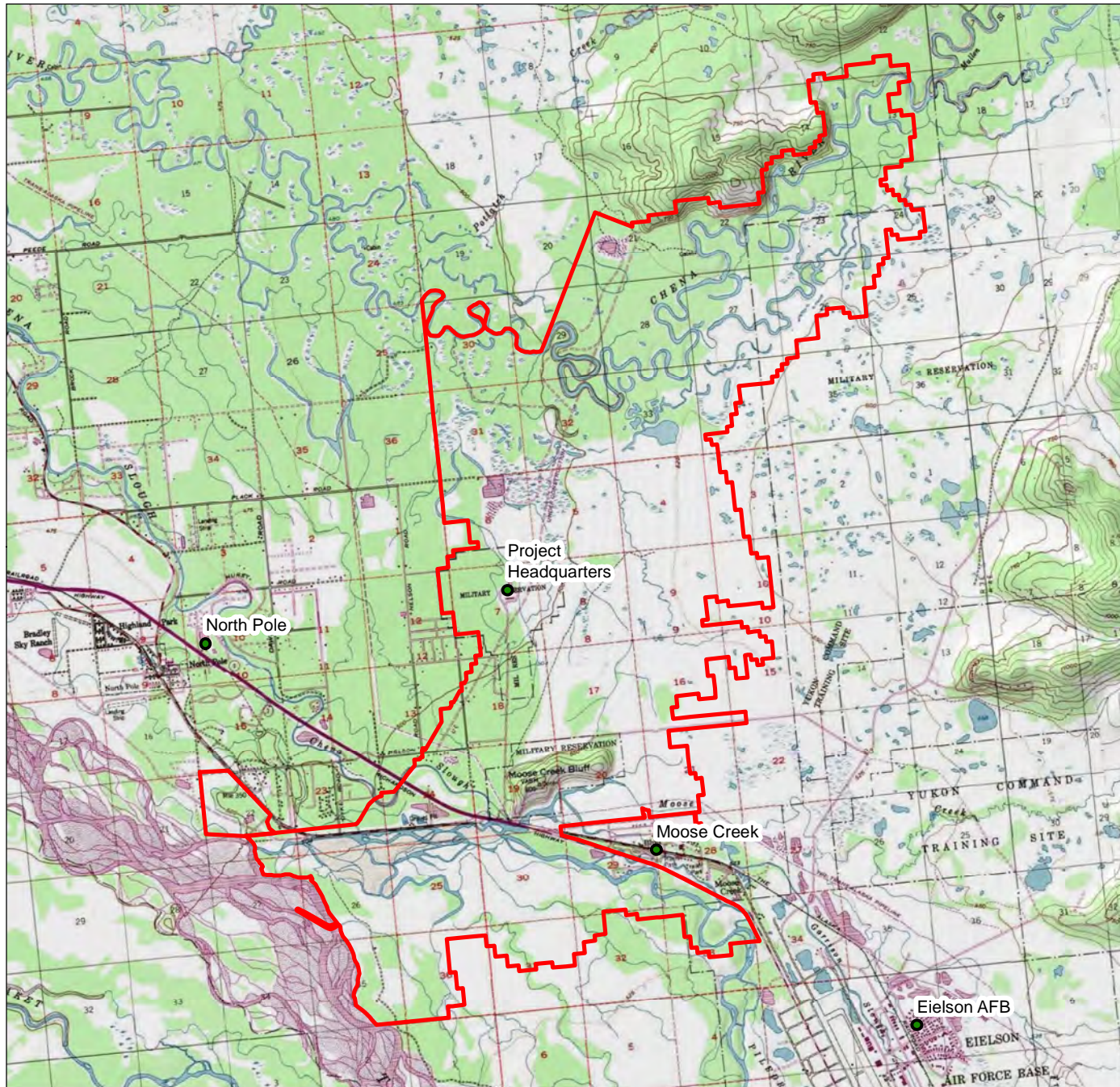
The original Master Plan was published in September of 1984.

A supplement was published in September of 1989. The 1989 supplement served to only provide and discuss Master Plan language that was revised or altered from the original 1984 Master Plan. This update provides the entire Master Plan text in electronic format, enabling more efficient updates into the future.

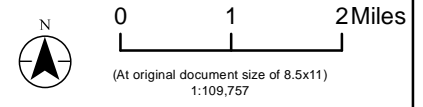
1.4 Brief Watershed and Project Description

The Chena River Lakes Flood Control Project is located 17 miles east of Fairbanks, Alaska (Figures 1 and 2). The second largest city in Alaska, Fairbanks is about 100 miles south of the Arctic Circle, and approximately 260 miles north of Anchorage. It lies at the northern edge of the broad, flat Tanana River Valley (a.k.a. Tanana Flats) on the banks of the Chena River. Gently rolling slopes characterize the area topography. The project elevation is at approximately 500 feet mean sea level (msl). The most significant topographic features are a low ridge of hills along the northern periphery of the project; and Moose Creek Bluff, a low hill which dominates the terrain at the south end of the project. The former reaches 1,000 feet msl just outside the project boundary, while the latter rises to 805 feet msl. The project provides flood protection for the City of Fairbanks, City of North Pole, Fort Wainwright Military Base, and the surrounding area.

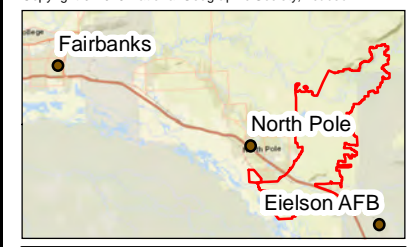




 Flood Control Boundary



Notes
1. Coordinate System: NAD 1983 Alaska Albers
2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
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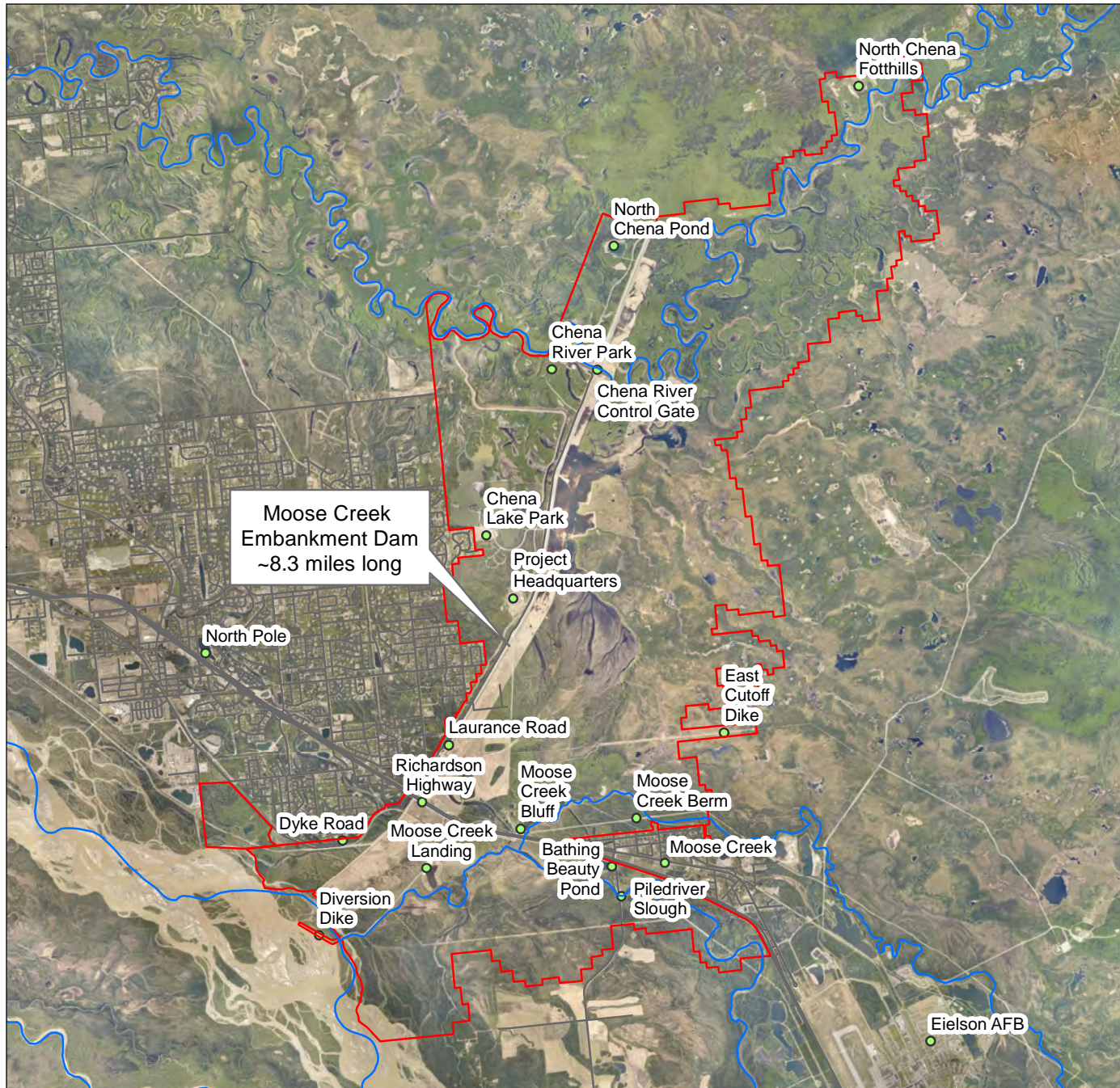


Project Location
North Pole, Alaska

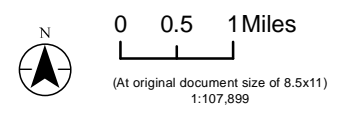
Client/Project
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Master Plan Update

Figure No.
1

Title
Vicinity Map



- Flood Control Boundary
- Roads
- Points of Interest
- Anadromous Streams



- Notes**
1. Coordinate System: NAD 1983 Alaska Albers
 2. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
Master Plan Update

Figure No.
2

Title
Site Map

2 Project Setting and Factors Influencing Management and Development

2.1 Description of Moose Creek Dam

Moose Creek Dam (Figure 3) is an approximately 8.3-mile-long earth fill structure and lays approximately 46 river miles upstream from mouth of the Chena River. The dam extends across the Chena River floodplain from the north bank of the Tanana River to a low ridge just north of the Chena River. It serves to divert floodwaters from the Chena River southward through the Moose Creek drainage into the Tanana River at a point approximately 20 river miles upstream of the natural confluence of the Tanana and Chena Rivers. The downstream dam face is covered with coarse gravel while the upstream face is covered with rock armor to protect it during flood events. A gravel-surfaced and partially paved roadway along the top of the dam allows access to the outlet control structure, low-point drain, and other features along the dam.



Figure 3. Moose Creek Dam, Laurance Road, and Pedestrian Stair Access

A paved roadway (Laurance Road) located along the downstream edge of the dam above the Richardson Highway, provides operations access, and acts as the primary access for recreational use. Below the Richardson Highway, access is provided by the Dyke Road.

Access ramps have been constructed from the roadway over the dam. These include five vehicle ramps and one pedestrian staircase ramp. These ramps provide operations access, but also provide seasonal recreation access over the dam.

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Seepage through the earth fill dam structure is actively managed. Adjacent to the upstream side of the dam, in areas of permeable soils, impervious silt blankets slow floodwater seepage under the dam. These blankets have an average depth of 5 feet and range up to 1,000 feet in length.

The earth fill dam structure is undergoing a multi-year modification to fill the center of the structure with impervious material, to decrease seepage through the dam. This Moose Creek Dam Barrier Wall Modification Project began in 2022.

2.2 Outlet Control Structure

The dam's outlet control structure (Figure 4) at the Chena River consists of four 25-foot-wide concrete bays divided by piers. The structure is designed to pass flows in the Chena River of up to 9,000 cubic feet per second (cfs.). At normal (non-flood) flows, the bays can pass small recreational boats. Vertical lift gates, which drop down from the overhead gallery of the structure, control flows through the bays.

Fish passage facilities in the outlet control structure include fishways and a fish ladder.



Figure 4. Outlet Control Structure on the Chena River

2.3 Project Floodway

During a probable maximum flood, the entire project area upstream of Moose Creek Dam would be flooded and therefore is part of the project floodplain (Figure 2). The term "floodway" refers to the cleared and/or excavated channel upstream of the dam where floodwaters are concentrated for diversion to the Tanana River. The floodway extends from the south bank of the Chena River to the north bank of the Tanana River.



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE 2 PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

For the floodway to properly divert floodwaters, large trees have been removed. The floodway is periodically maintained to keep it cleared of larger vegetation. Major low spots in the floodway have been filled to prevent ponding as flood waters recede.

2.4 Seepage Collection Channels

Downstream of the dam, a system of seepage collection channels direct surface flows from below-dam seepage and water discharge through control gates (Figure 5), back into the Chena River. These channels generally run parallel to the embankment, approximately 400 feet downstream of it.



Figure 5. South Seepage Channel Control Gate

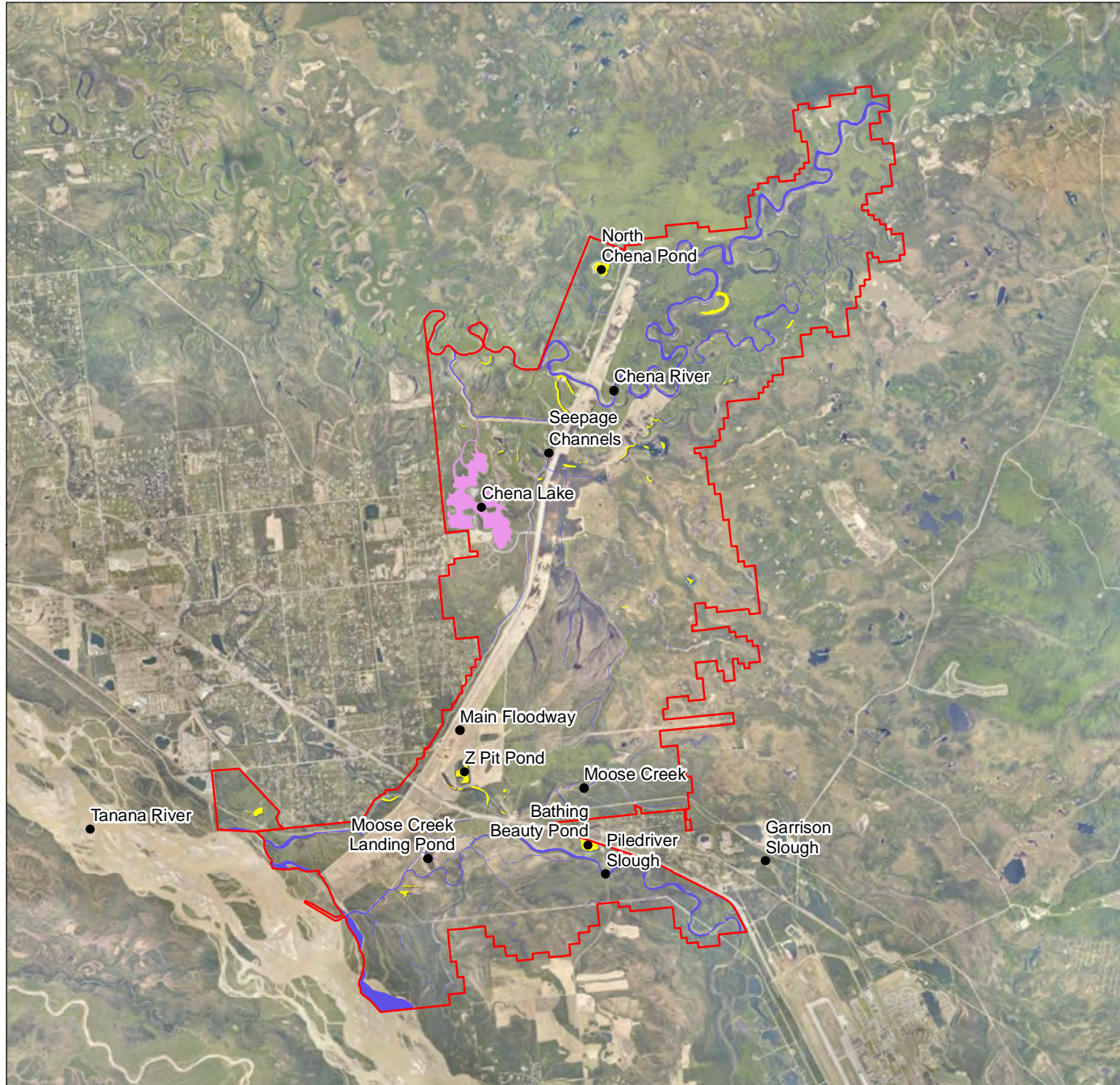
2.5 Floodway Control Structures


The floodway also has two embankment berm control structures installed to protect the properties along the east of the project (e.g., East Cutoff Dike and Moose Creek Berm). These are minor topographic berms that have been installed to prevent project floodwaters from impacting local communities when floodwaters fill the floodway.


2.6 Hydrology (Surface Water, Groundwater)

The Project area contains several hydrology features including rivers, floodway channels, sloughs and ponds/lakes. Figure 6 depicts the different hydrology points of interest and are discussed below.





 Flood Control Boundary

 Hydrology Points

Project Waterbodies

 Pond

 Lake

 Riverine

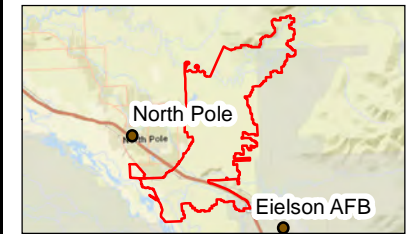


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Notes

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Project Location
North Pole, Alaska

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Figure No.
6

Title
Hydrology Points

CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE 2 PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

2.6.1 CHENA RIVER

The Chena River arises in the Yukon-Tanana uplands northeast of the project. In the foothills, the Chena River consists of multiple branches (e.g., North Fork, West Fork, Middle Fork) and is fast-moving with some moderate rapids. As it enters the alluvial valley in the vicinity of the project, it becomes deeper and slower. The river wanders through the project area along its northern periphery. The meandering character of the river has created numerous oxbow lakes, sloughs, channels, and bogs in the project lowland.

2.6.2 TANANA RIVER

The Tanana River flows along the southwest corner of the project. The river is braided, wide-spreading and silt-laden; it also contains innumerable sand bars, islands, and sloughs.

2.6.3 PILEDRIVER SLOUGH

Piledriver Slough (Figure 7) is a secondary channel of the Tanana River. It roughly parallels the river along its north shore for approximately 20 miles, crosses through the southern portion of the project and reenters the Tanana at the project's southwest corner. The slough has been blocked at its upstream end to prevent the entry of Tanana floodwater, resulting in a clear, groundwater fed, very slow-moving stream.



Figure 7. Piledriver Slough

**CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE
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2.6.4 MOOSE CREEK

Moose Creek is a slow, slough-like stream that drains lands to the southeast of the project. It enters the project just east of Moose Creek Bluff, skirts the base of the bluff along its southeast edge, and then gradually becomes a wide body of ponded water. From the base of the bluff, Moose Creek passes under the Alaska Railroad and Richardson Highway bridges and into Piledriver Slough through a narrow man-made channel.

2.6.5 SEEPAGE CHANNELS

Seepage channels exist along the northern and southern portions of the project. These are generally either dry or contain low levels of standing water. They collect seepage moving through the Moose Creek Dam structure and drain them into the Chena River. Control gates can allow water to accumulate in the seepage channels, acting as backpressure to prevent seepage through the Moose Creek Dam, providing additional control during operations.

2.6.6 CHENA LAKE

Chena Lake (Figure 8) was formed through consolidation of several material pits used for construction of the Moose Creek Dam and is now a primary recreation area. The lake is located near the western boundary of the project and has been contoured to present the appearance of a natural lake with an irregular shoreline featuring coves, peninsulas, and islands.



Figure 8. Chena Lake

CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE 2 PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

2.6.7 NORTH CHENA POND

North Chena Pond (Figure 9), located north of the Chena River and just east of the north abutment of the Moose Creek Dam, was also created through gravel removal operations for construction of the dam. The pond could be enlarged by additional extraction of gravel. Revegetation has given it the appearance of a natural waterbody. It is regularly stocked by the Alaska Department of Fish and Game (ADF&G) with fish (e.g., rainbow trout, Chinook salmon). Public access is not available by road, and usually occurs by crossing the Chena River via boat or winter ice.



Figure 9. North Chena Pond, with pedestrian vegetated boat launch on lower left of image

2.6.8 BATHING BEAUTY POND

Bathing Beauty Pond (Figure 10) is a small gravel pit located adjacent to the Richardson Highway. It is road accessible and was historically stocked with fish by ADF&G through 2018; after which stocking was suspended in part due to the discovery of Per- and Polyfluorinated Substances (PFAS) contamination originating at Eielson Air Force Base.



Figure 10. Bathing Beauty Pond

2.6.9 MOOSE CREEK LANDING POND

Moose Creek Landing Pond is another small gravel pit located adjacent to the lower floodway. It is an active material site and when not in use, is road accessible to the public and a popular recreational facility for launching boats.

2.6.10 Z PIT POND

Z Pit Pond is a small gravel pit near the Richardson Highway's crossing of the project. It has been stocked with fish since 1999 by ADF&G; however, stocking has not occurred since 2020 due to the discovery of PFAS contamination.

2.6.11 GROUNDWATER

Groundwater conditions were studied extensively in conjunction with design and construction of Moose Creek Dam and the project's recreational facilities. The project facilities (e.g., administration buildings, campground wells) currently operate on well water.

Originally no municipal water system existed in the area, but Moose Creek and North Pole have recently installed municipal water systems due to groundwater contamination concerns. Project wells haven't been tested.

2.7 Sedimentation and Shoreline Erosion

Sedimentation and shoreline erosion is not a significant factor on the project. Sedimentation is limited to sediment boils which occur downstream of the dam when groundwater pressure forces a path through the local geotechnical conditions.

2.8 Water Quality

2.8.1.1 Chena River

In 1972 and 1973, prior to construction of the Chena River Lakes Flood Control Project, USACE and the US Geological Survey undertook an assessment of the biological quality of the Chena River and Little Chena River in the vicinity of the project. The Chena River, in the vicinity of the project, typifies subarctic streams in Interior Alaska. The preconstruction evaluation concluded that the construction and operation of the Moose Creek Dam would not alter water quality from previous conditions, except for temporary effects from construction.

2.8.1.2 Chena Lake

Nutrient levels in the lake are fairly low. However, the recontoured lake has a shallow underwater shelf around its edge that creates a littoral zone which allows for increased solar warming of lake water and provides aquatic wildlife habitat. Chena Lake now also supports a cold-water game fishery for Arctic char and rainbow trout which are periodically stocked by ADF&G. Relatively low productivity in Chena Lake results in a corresponding low probability of algal bloom or nuisance vegetation.

The landlocked condition of this artificial lake makes it susceptible to various forms of external pollution such as oil spills from motorized boats. While the lake water undergoes interchange through infiltration and seepage action from the area groundwater table, continued management of water quality parameters is necessary to control potential debris and pollutants introduced by recreationists.

The parasitic infection known as schistosomiasis, or swimmers itch, presents another potential water quality problem. This condition is common in other material pit lakes of the Fairbanks area.

2.8.1.3 Garrison Slough

Outside of the project area, ADEC classifies Garrison Slough as a Category 4 impaired water due to Polychlorinated biphenyls (PCBs). Category 4 waters are impaired but are managed using one of several different types of waterbody recovery plans. Garrison Slough is a tributary to Moose Creek, which is a tributary to Piledriver Slough. Moose Creek and Piledriver Slough are not rated as impaired in any category.



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2.8.1.4 Slough Blockages

Piledriver Slough and other area sloughs were blocked during project construction at several upstream locations where they join the Tanana River. The blockages were an integral component of the project hydraulic system, functioning to settle Tanana River sediment out which could otherwise hinder hydraulic performance of the floodway. Because the blockages so efficiently settle river sediment, water quality dramatically improved to the point that the sloughs now can support populations of game fish, which ADF&G began to stock. Consequently, Piledriver Slough has become an important local fishery and one of the few accessible, wadable fly fishing and spin cast fishing streams in the area.

2.8.2 PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Potable water supplies are a related concern. Wells are used as a potable water source within project. PFAS are an emerging contaminant of concern. PFAS contamination is present in groundwater downstream of the adjacent Eielson Air Force Base due to the historic use of aqueous film forming foam containing PFAS as a fire suppression agent. This is an evolving subject of interest and has also been impacting Bathing Beauty Pond and Z-Pit Lake. As a result, fish are no longer stocked at these locations, and only catch and release practices are allowed. This topic could have further impacts on water quality as understanding of the chemical and its distribution in the area evolves.

2.9 Project Access

2.9.1 ROAD ACCESS ROUTES

The Richardson Highway passes through the project, linking it with downtown Fairbanks and other local population centers. The vast majority of access to the project recreational facilities is via the Richardson Highway to Laurance Road, which is located at the base of the earthen berm dam.

The Richardson Highway bridge across the floodway is not rated for oversized loads. Oversized highway vehicles must exit the highway via gated ramps, and cross on a paved heavy haul road across the floodway.

Road access is also available along the southwest (e.g., Old Richardson Highway), and the Richardson Highway Corridor (e.g., Moose Creek Access Road, Moose Creek Bluff, and Eielson Farm Road).

2.9.2 PEDESTRIAN ACCESS

Pedestrian access is facilitated throughout the project by sidewalks, gravel paths, and informal trails. The adjacent North Pole neighborhoods' residents access the project directly from their own properties along informal social trails.



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE 2 PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

2.9.3 WATER ACCESS

Project-facilitated public water access is an important component of recreation. Access is available along numerous project waterways (e.g., the Chena River, Piledriver Slough, and Moose Creek). Access is also available to the local lakes and ponds (e.g., Chena Lake, Bathing Beauty Pond).

2.9.4 TRAIL SYSTEM

Trails are a primary means of travel in much of the project area. Trails are utilized for a wide variety of activities including hiking, jogging, bicycling, cross-country skiing, snowmobiling, horse riding, dog-mushing, hunting, trapping, and off-road vehicle activities. Utility rights-of-way often are used as preferred routes for overland access.

The Chena River State Recreation Area, located 8 miles northeast of the project, provides trail access to portions of the project north of the Chena River. This includes the Chena Lakes Trail, which is identified as a RS2477 trail (Identification Number: RST 1598). RS2477 trails are protected by the Mining Law of 1866, providing unrestricted rights-of-way over federal lands.

2.10 Climate

Climatic features having the greatest influence at the Chena project include temperature, humidity, precipitation, cloudiness, wind conditions and sun angle. Collectively, these features create a subarctic climatic condition which exerts a strong influence on site use and design.

Project climatological data is summarized in the following table (Table 1).



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Table 1. Monthly Climate Summary

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average
Average Max. Temperature (F)	-3.3	9.5	25.8	44.7	61	71.1	72.6	66	54.3	31.6	9	0.6	36.9
Average Min. Temperature (F)	-21.1	-14.3	-3.5	17.8	34	45.1	48.5	42.9	32.1	14.6	-8.5	-17.1	14.2
Average Total Precipitation (in.)	0.59	0.41	0.49	0.32	0.64	1.5	1.89	1.83	1.13	0.91	0.73	0.73	11.16
Average Total Snow Fall (in.)	7.8	5.4	4	2.1	0.3	0	0	0	1.1	9.1	11.3	10.1	51.2
Average Snow Depth (in.)	17	20	20	11	0	0	0	0	0	3	9	14	8

North Pole, Alaska, 10/01/1968 to 06/09/2016 (WRCC 2022)



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE 2 PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

Seasonal climatic variations influence and constrain the overall mix of project uses that may occur. Warm summers promote a variety of water recreation activities, including water sports, fishing, camping, and picnicking. Long winters with sub-freezing temperatures and plentiful snow cover promote winter sports uses, including dog-mushing, cross-country skiing, snowmobiling, hunting, trapping, ice-fishing, tobogganing and other winter activities.

Many of these activities are being actively facilitated within the project. This seasonality of use ensures that project facilities are utilized year-round, for example summer hiking trails may be used in winter for cross-country skiing.

Wildlife habitats and their uses also vary with the seasons. Moose traverse the project, both resident individuals and migratory individuals that occupy the project during the summer. Waterfowl are visible in large numbers during spring and fall staging and migration periods and in lesser numbers during the summer nesting season. Hunting for these species may occur during appropriate federal and State regulated seasons. Some trapping for furbearers takes place on the project during winter.

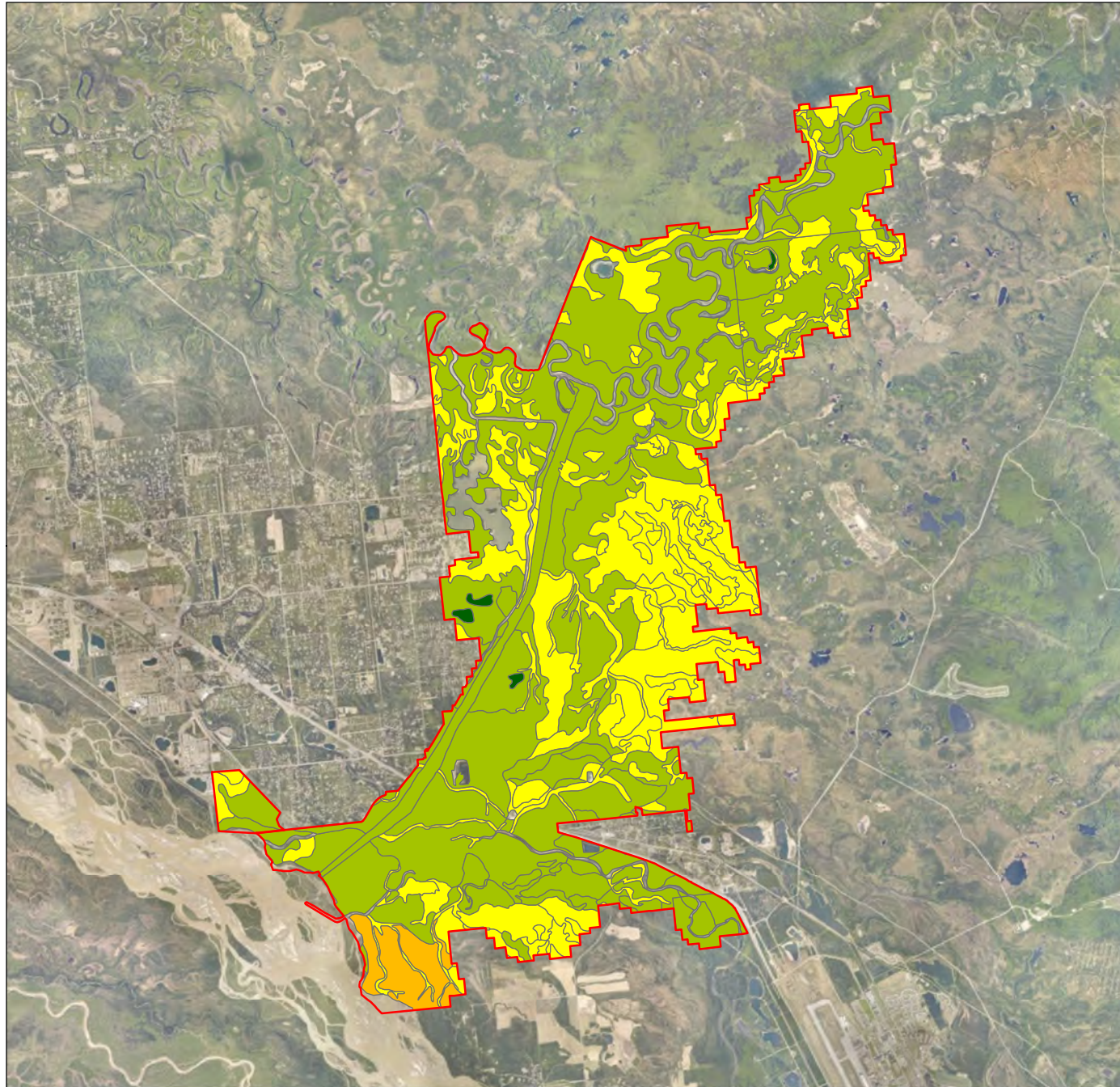
2.11 Topography, Geology, and Soils

2.11.1 SOILS

The Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS) divides the project area into 64 separate soil units each with their own distinctive characteristics (NRCS 2020). All of the soils are rated by NRCS as having 'Very Limited' utility for use in the construction of embankments, dikes, or levees; and 'Severely Limited' utility for used as unlined water retention systems. For the purposes of this plan, NRCS soil data have been summarized and mapped by hydrologic soil group (Figure 11):





- Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.
- Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.
- Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.
- Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high-water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.





 Flood Control Boundary

Infiltration Rate

-  High Infiltration Rate
-  Moderate Infiltration Rate
-  Slow Infiltration Rate
-  Very Slow Infiltration Rate



0 0.5 1 2 Miles

(At original document size of 8.5x11)
1:115,030

Notes

1. Coordinate System: NAD 1983 Alaska Albers
2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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11

Title
Soil Infiltration Rates

CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE 2 PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

Soil management Group B dominates the area around the Chena River and the earth fill embankment dam (Table 2). These soils have a moderate rate of water transmission, which allows groundwater to flow through the dam. It is for this reason that the project's purpose is to redirect water into the Tanana River and why it is not designed for the long-term retention of water.

Table 2. Soil Map Units

Hydrologic Soil Group	Acres
A: High Infiltration	58.2
B: Moderate Infiltration	11905.9
C: Slow Infiltration	491.8
D: Very Slow Infiltration	6642.5
Waters/Gravel Pits	1083.9

2.11.2 TOPOGRAPHY AND SLOPE

The project is dominated by a lowland floodplain with slopes of less than 1 percent. Relief between high and low elevations on the floodplain surface varies by only about 4 to 5 feet. In contrast to this generally undulating topography over most of the floodplain, the relief between sloughs and channels and their bank elevations is generally greater, ranging up to 10 feet or more, and often very abrupt (see Figure 1).

Two distinctly hilly areas occur within the project. These include the south-facing foothill slopes of the Yukon-Tanana Uplands along the northern fringe of the project area, and Moose Creek Bluff at the south end of the project area. The soil within these areas become muddy when wet, and powdery when dry. Bedrock in these hill areas is typically composed of Birch Creek Schist which has a tendency to break down rapidly under frost and/or physical stressing such as compression caused by repeated foot or vehicle traffic. Development in these areas should disturb as little of the overlying vegetative cover as possible.

Moose Creek Bluff covers an elevated area, accessible by a constructed gravel road. The limited surface area and steepness of the bluff's location impedes infrastructure development, although a historic material site and telecommunication tower are sited in the area.

The foothills along the Chena River at the northern periphery of the project are inaccessible by road, although some State of Alaska forestry trails are present in the vicinity.

2.11.3 FROZEN GROUND

Permafrost commonly occurs to varying depths over much of the project area. Permafrost is often rich in ice content and exhibits an extremely low bearing strength upon thawing. The presence of ice rich permafrost is often a barrier to construction.



2.11.4 WATER TABLE

Poorly drained soils over permafrost zones tend to have perched water tables. This results in a wet surface condition which is also susceptible to annual frost action. These areas provide extremely poor foundations and generally are not well-suited to recreational use without significant site improvement. Such areas are characterized by black spruce bog or muskeg vegetation and are most prevalent on project lands east of the cleared floodway. Wet marsh conditions through much of the summer constrain travel in these areas. Hence, their most suitable uses are winter recreation and wildlife management.

Project areas without high water table conditions are found where shallow, well drained soils rest on floodplain alluvium with a relatively deep-water table. These areas provide good to excellent foundations and construction materials (i.e., gravel), despite the frequent presence of permafrost. They are well-suited to recreational use and development.

Residential and other structures in the area of the project can experience groundwater emergence in subsurface structures (e.g., cellars, crawlspaces, basements). Yards can also flood from groundwater during inundation of the floodway.

2.12 Resource Analysis

2.12.1 FISH AND WILDLIFE RESOURCES

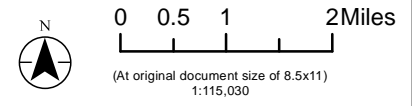
2.12.1.1 Fisheries

The aquatic ecosystem of the region primarily contains subarctic streams and lakes that freeze over during the winter. Productivity declines in streams when ice cover exists but improves in the spring and summer following break-up of the ice. The Tanana River and its tributaries provide habitat for both resident and anadromous fish species (Figure 12). Dominant resident game species include Arctic grayling, burbot, northern pike, and a variety of whitefish species. Grayling are one of the most important game fish in Interior Alaska, and the Chena River is a major grayling fishery in the state.





- Anadromous Fish Streams
- Fishing Access
- Flood Control Boundary



Notes
 1. Coordinate System: NAD 1983 Alaska Albers
 2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Title
**Anadromous Fish Streams and
 Fishing Access**

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The dominant anadromous species in the region are chum, and Chinook salmon. Chinook salmon runs reach the Chena River in July and August. Chum salmon migrate into the region in August and September. The Chena River control gate has a fish ladder for use as needed during flood control operations. Coho salmon move through the region in the Tanana River just outside of the project boundaries. The salmon sport fishery focuses on Chinook salmon and occurs in the summer when the adults migrate upstream.

The ADF&G maintains an anadromous waters catalog, listing the anadromous bodies of water in the state (Giefer and Blossom 2022). The catalog lists anadromous species as occupying Piledriver Slough (i.e., chum salmon), Moose Creek (i.e., chum salmon), and the Chena River (i.e., Arctic lamprey, Chinook salmon, chum salmon).

The ADF&G also maintains the Aquatic Freshwater Fish Inventory (ADF&G 2022). This is an inventory of documented data on fish and fish habitat collected by biologists throughout the state. The inventory contains four reports documenting the presence of juvenile Chinook salmon in the Chena River upstream of the control works, but inside of the project.

The ADF&G regularly stocks North Chena Pond (i.e., rainbow trout, Chinook salmon, Arctic grayling), and Chena Lake (i.e., Arctic char, rainbow trout). In the past, they have stocked the Chena River (i.e., Arctic grayling), Z pit (i.e., Arctic grayling, rainbow trout), and Bathing Beauty Pond (i.e., rainbow trout, Chinook salmon, Arctic char). Stocking at Z pit and Bathing Beauty Pond was stopped after 2018 due to the discovery of PFAS contamination, and in October 2020 an emergency order was issued by ADF&G that restricted fishing effort to catch-and-release only.

Elodea, commonly known as Waterweed, is an invasive aquatic plant that can be established in waterbodies by transferal of only small parts of its stems and leaves via boat hulls, bilge water, boat trailers, footwear, and even fishing tackle. Elodea was first discovered in Chena Slough in 2010 and is now found in Chena Lake, Chena River, Chena Slough, and Bathing Beauty Pond. It can degrade fish habitat and is actively being managed for control through partnerships with the Fairbanks Soil & Water Conservation District.

2.12.1.2 Wildlife

2.12.1.2.1 Moose

The region provides important seasonal habitats for resident and migrant moose populations. While the migrant population winters outside of the project, the resident population winters in riparian areas. along the Chena River, including project lands.

The ADF&G estimates that average annual moose densities are approximately 1.0 to 1.5 moose per square mile within the Project (Tony Hollis, ADF&G Habitat Biologist for Unit 20, personal communication, June 23, 2022). As of November 2020, ADF&G estimated Unit 20B had approximately 1.4 moose per square mile (Tony Hollis, personal communication).



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE 2 PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

2.12.1.2.2 Waterfowl

The project supports breeding waterfowl and other migratory birds enroute to breeding grounds in northern Alaska. The greater Tanana Valley constitutes a major breeding and migration concentration area. Open fields, marshes and ponds that become free of snow and ice early in the spring comprise important habitats for incoming migrants.

Waterfowl in the region are used for both subsistence and recreational hunting. Hunters have about 30 fall days before cold weather and ice drive birds south.

Discussion with ADF&G and US Fish and Wildlife Service (USFWS) biologists revealed no recent, formal surveys have been conducted that estimate the density of migratory birds on the project. The previous versions of the Master Plan used past density estimates from the 1980s, which helped set management objectives. Future surveys could serve as an updated foundation for management of the project.

2.12.1.2.3 Upland Gamebirds

Little is known about the project's upland gamebird populations (i.e., grouse species). Their populations are known to fluctuate from abundance to scarcity in successive years depending upon weather, food, predation, diseases, and other factors. Some gamebird habitat has been lost or altered by urbanization not associated with the Project. Wildfire suppression has reduced habitat for sharp-tailed and ruffed grouse but increased it for spruce grouse.

Recreational hunting is the primary use of small gamebirds in the region. Most hunting occurs along roads close to population centers.

2.12.1.2.4 Raptors

Resident and migrating raptors found in Interior Alaska include bald and golden eagles, osprey, red-tailed hawk, Harlan's hawk, rough-legged hawk, Swainson's hawk, Northern harrier, sharp-shinned hawk, and Northern goshawk, kestrel falcon, merlin falcon, American and Arctic peregrine falcons, and gyrfalcon. Also included are great horned owl, great grey owl, snowy owl, hawk owl, boreal owl and short-eared owls. Excepting the owl species, American goshawk and gyrfalcon, the remainder of these raptors are only summer breeding residents of Interior and Arctic Alaska.

2.12.1.2.5 Bats

The US Army has been studying bat presence in the region. Bat detectors deployed in the project along the Chena River foothills identified the largest concentration of little brown bats found on Fort Wainwright lands (Savory 2016). The detectors recorded 1,000 to 2,000 detections per month in May, June, July, and August; whereas sampling in other areas of Interior Alaska had many fewer detections per month (i.e., tens to hundreds of detections [Savory 2016]).



2.12.2 VEGETATIVE RESOURCES

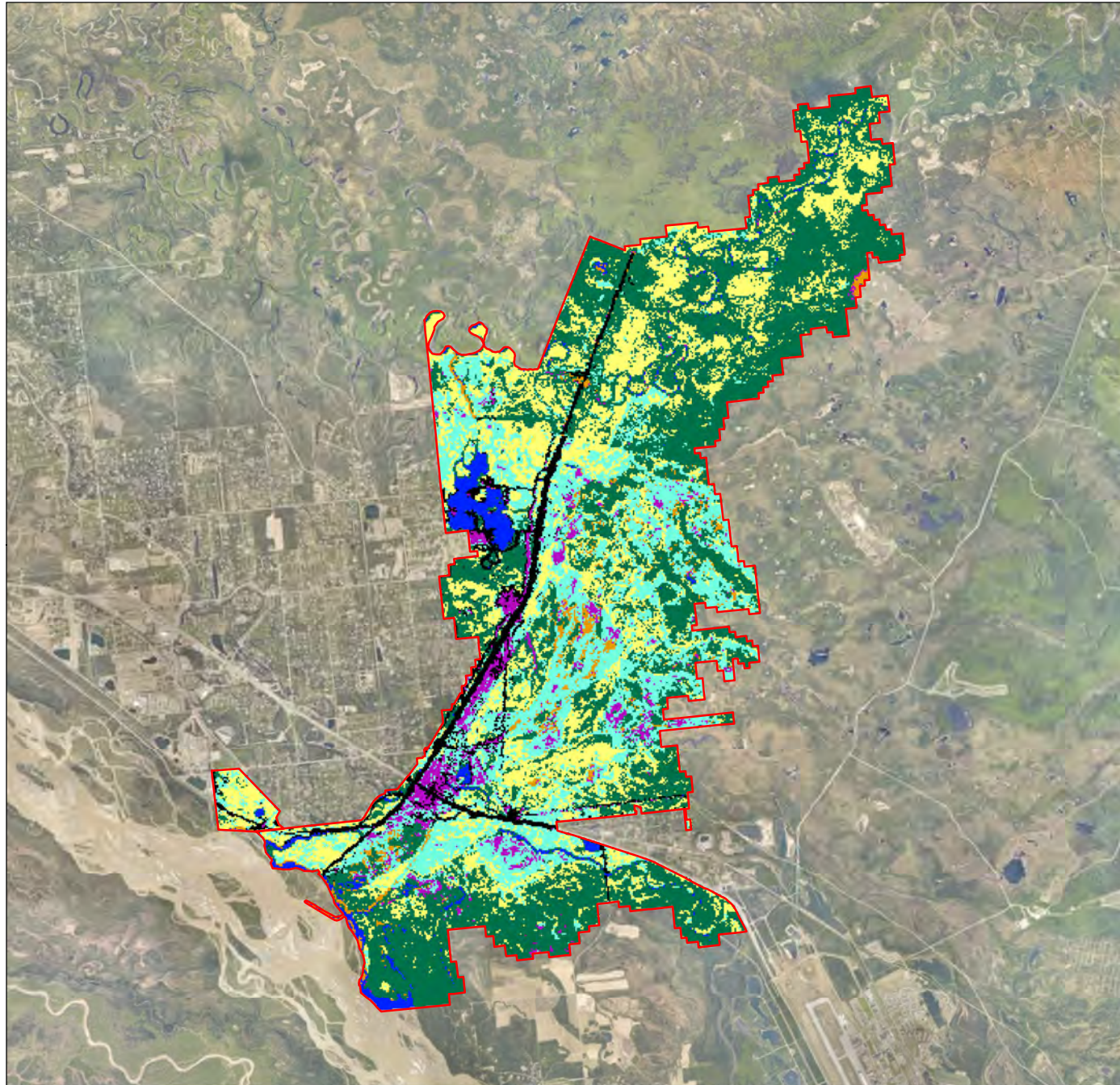
The Alaska Vegetation and Wetland Composite (Boggs et al. 2019) represents the best available statewide vegetation data. It is derived from 28 regional land cover maps developed over the last 31 years. These 30-meter pixel composite vegetation land cover data are classified to Level IV of Alaska Vegetation Classification (Viereck et al. 1992) and describe 343 coarse-scale, and 2,756 fine-scale, vegetation classifications. These classifications have been grouped and simplified to those displayed in the vegetation figure (Figure 13).

The suite of vegetation types present in the project is typical for Interior Alaska. The Interior's climate is a subarctic one, with much of the land below 2,500 to 3,000 feet. It supports regionally common taiga forest, which is a moist coniferous white/black spruce forest, with deciduous birch-aspen upland forest. Lowland shrubs (i.e., Tall, Low, Dwarf) are dominated by willow-alder riparian areas proximate to river and stream channels.

Interrelated factors such as wildfire, the presence of permafrost, alluviation, soil type, slope, aspect, water, and active management (i.e., mowing) have created this vegetative mosaic.

Bluffs and foothills on the Chena and Tanana River floodplains provide sharp topographic breaks. Soil texture and moisture, strongly influenced by topography, drive the basic vegetative and forest cover type patterns. These areas are characterized by well-drained warm soils that support a current ecological niche of wildfire-maintained early successional stands of quaking aspen.





 Flood Control Boundary

Vegetation

-  Bare Ground
-  Deciduous Forest
-  Shrub
-  Water
-  Herbaceous
-  Developed
-  White/Black Spruce



0 0.5 1 2 Miles
(At original document size of 8.5x11)
1:115,030

Notes

1. Coordinate System: NAD 1983 Alaska Albers
2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Figure No.
13

Title
Vegetation

2.12.3 THREATENED & ENDANGERED SPECIES

No federal threatened or endangered species are listed as occurring within the project (USFWS 2022a, NMFS 2022).

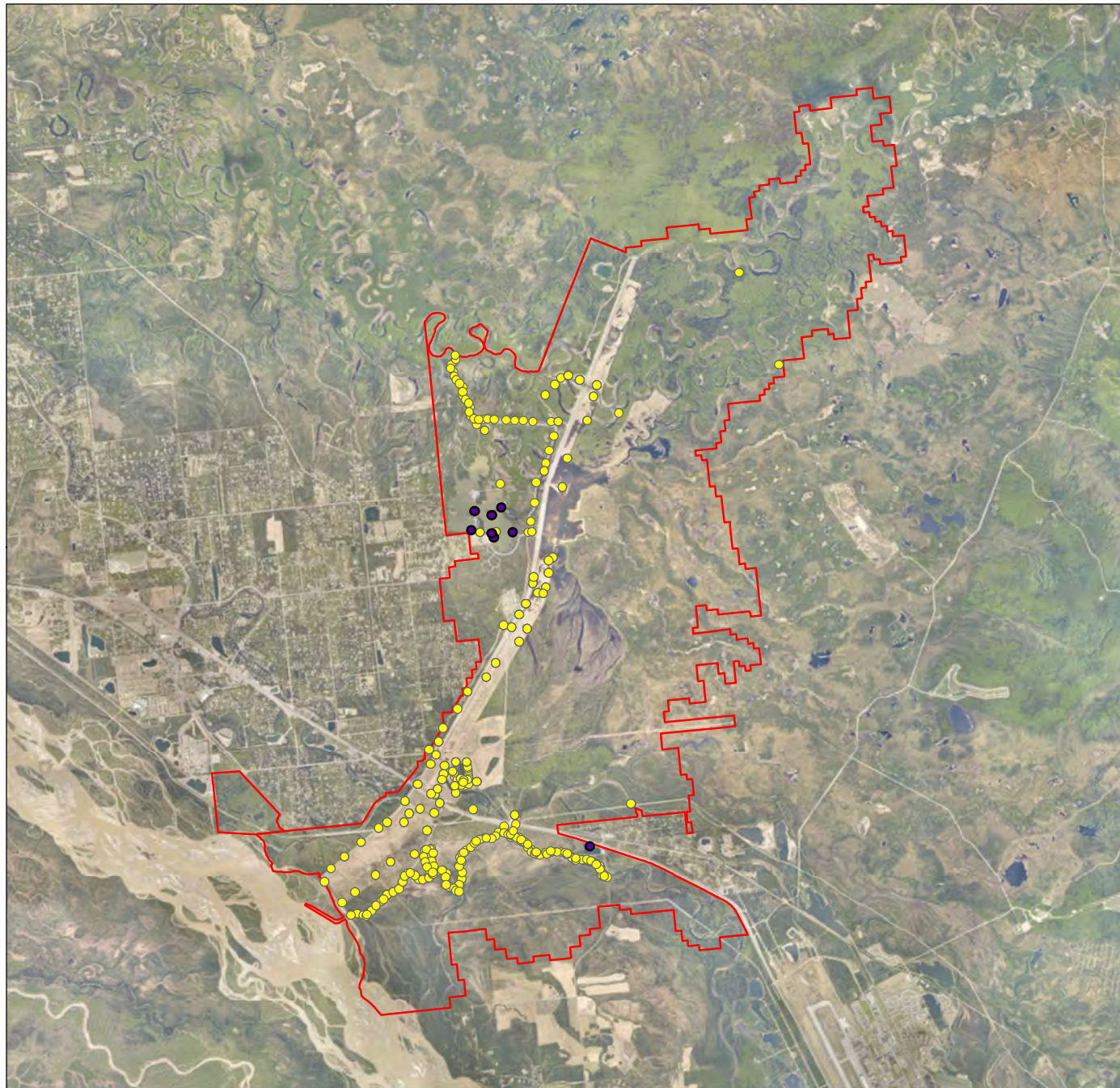
2.12.4 INVASIVE SPECIES

The Alaska Exotic Plants Information Clearinghouse (AKEPIC 2022) provides a clearinghouse for non-native plant reports in Alaska (Figure 14).

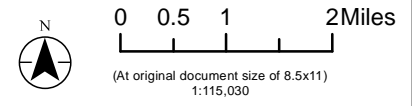
AKEPIC has 533 reports of 21 non-native species in the project (Table 3). It is important to note, however, that the surveys are not systematic; they are anecdotal reports by interested citizens typically centered around areas of easy access (e.g., roads, waterways, and trails).

The USFWS publishes invasive species management guidance, including strategies for managing aquatic invasives (including elodea), terrestrial invasives, and rapid response actions (USFWS 2022b). These resources can be useful for project managers in combating invasives species.





- Reported Invasive Species
- Elodia Presence (2020)
- Flood Control Boundary



Notes
1. Coordinate System: NAD 1983 Alaska Albers
2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
3. Alaska Exotic Plants Information Clearinghouse (2022)
4. Elodea Species Presence 2020, BLM Alaska Interagency Coordination Center



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Figure No.
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Title
Invasive Species

**CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE
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Table 3. Non-Native Species

Common Name	Number of Reports
Smooth Brome	4
Lambsquarters	10
Narrowleaf Hawksbeard	44
Waterweed	230
Narrowleaf Hawkweed	12
Foxtail Barley	33
Common Pepperweed	1
Butter and Eggs	2
Pineappleweed	8
White Sweetclover	14
Yellow Sweetclover	2
Common Plantain	34
Prostrate Knotweed	2
European Bird Cherry	5
Common Chickweed	1
Common Dandelion	61
Alsike Clover	40
Red Clover	4
White Clover	11
Bird Vetch	14
Unnamed	1



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2.12.5 ECOLOGICAL SETTING

The project is located in the FNSB and is situated 17 miles east of the city of Fairbanks, between the city of North Pole and the community of Moose Creek. The FNSB is located in Interior Alaska between 64° and 66° north latitude and 150° and 180° west longitude. The FNSB's dominant physiographic feature is the Tanana River, with tributaries draining the Alaska Range to the south and the Yukon-Tanana Upland to the north. Much of the southern portion of FNSB lies on the wide floodplain of the Tanana River. Rising up from the floodplain to the north and northeast are the foothills of the Yukon-Tanana Upland. Several tributaries of the Tanana River, including the Chena River, flow out of the uplands.

The Chena River runs through the northern part of the project, emptying the gently rolling foothills outside of the project area. The project is constructed to divert the Chena River's high flows across the flat mixed wetland/forest to the Tanana River. There is only limited topographic relief on the project, primarily provided to the north by hills along the Chena River, and to the south by Moose Creek Bluff.

2.12.6 WETLANDS

The USFWS National Wetland Inventory (NWI) provides desktop-based wetland type mapping for the project from aerial imagery ranging from 1997 to 2007 (USFWS 2022c). The majority of the project is classified as uplands (Table 4, Figure 15).

The most common project wetland habitat is Freshwater Forested/Shrub Wetland, typical of Interior Alaska, consisting of black spruce forest on low-permeability soils.

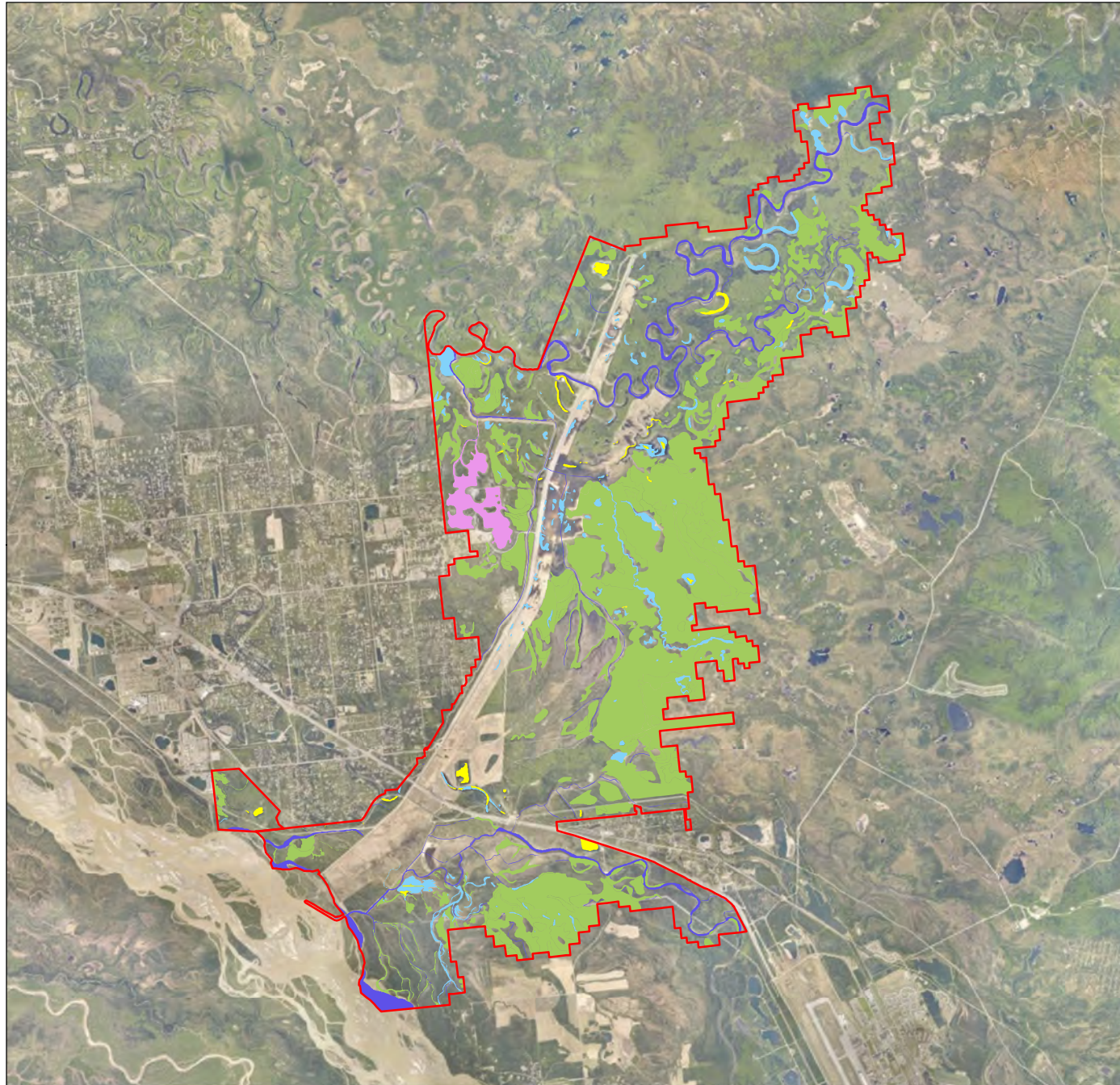
Freshwater emergent wetlands are also present, consisting of herbaceous habitats supporting grasses, sedges, and other seasonal plants. These often have high water levels and can support a diverse wildlife.

Summer recreation can be limited in wetlands due to difficulty in moving through shallow marshes. Waterfowl hunting can be popular, as can some wildlife viewing. Wetland habitat areas become more accessible in the winter, when the frozen water bodies and ground can support transportation routes for many types of recreation (e.g., Off-Road Vehicle [ORV] and snowmachine use, skiing, dog sledding, etc.).

Table 4. Wetland Types






Habitat Types	Acres
Freshwater Emergent Wetland	543.6
Freshwater Forested/Shrub Wetland	5950.3
Freshwater Pond	105.3
Lake	229.4
Riverine	604.2
Total	7432.8





 Flood Control Boundary

Wetlands

-  Emergent Wetland
-  Forested/Shrub Wetland
-  Pond
-  Lake
-  Riverine



0 0.5 1 2 Miles
 (At original document size of 8.5x11)
 1:115,030

Notes

1. Coordinate System: NAD 1983 Alaska Albers
2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Title
Wetlands

2.13 Material Areas and Utilities

2.13.1 MATERIAL AREAS

Material areas are locations from where gravel is excavated. The project's major lakes are all created from historic material areas (i.e., Chena Lake, North Chena Pond, Z Pit Pond, Bathing Beauty Pond, Moose Creek Landing Pond).

The current (2022) Moose Creek Dam Barrier Wall Modification Project is establishing a new borrow area North of Chena Lake. This new material area is likely to be made available for recreation when the project is completed.

Material areas can be used for recreation when not in active use, but some should remain open to the potential for future use for material extraction. These include:

- North Chena Pond is likely to be used as a material source in the future. If it is used in the future, the shoreline can be recontoured to improve the shallow water habitat, providing the opportunity for plant growth to oxygenate the lake water and provide improved overwintering fish habitat.
- Moose Creek Landing Pond also has the potential to be a future material area.
- A material area also exists along the northwest of Moose Creek Bluff.

2.13.2 UTILITIES AND RAILROAD

Several utilities cross through the project, as does the Alaska Railroad. Utilities include the Alyeska Pipeline, the Eielson jet fuel line, Golden Valley Electric Association power transmission lines, Moose Creek water line, fiber optic cable, and other utility lines. Though they offer no major constraints to project resource use, cleared rights of way can have both positive and negative effects on entrances for both recreational and transient visitation.

2.14 Mineral and Timber Resources

There are no significant known mineral resources in the project (USGS 2022).

There are no significant timber resources in the project. The State of Alaska, Tanana Valley State Forest (TVSF) abuts the northern portion of the project. The TVSF hillsides proximate to the project have regularly supported timber sales focused on harvesting white spruce. Due to the stark topographic change from the TVSF uplands to the project's lowlands, similar timber resources on the project are limited.



As floating timber commonly accumulates on the upstream portion of the Chena River outlet control structure gates, the project does generate some timber resources from its regular maintenance clearing. The public can obtain a free firewood cutting permit to harvest this timber from an adjacent laydown yard.

2.15 Cultural Resources

The project area has been surveyed several times for cultural resources. Most of these surveys have been conducted in areas directly affected by project construction. Sites have been located, and are under management of the project's Cultural Resource Management Plan (CRMP). This document provides specific goals and guidance for the management of known cultural resources on the project, including provisions for their testing, evaluation and protection.

Additional information on cultural resources sites is confidential to protect the sites. This information is available to authorized users on request.

2.16 Interpretation/Visual Qualities

2.16.1 INTERPRETATION

Interpretive infrastructure is placed throughout the project to improve public understanding and appreciation for the project and its natural resources. Along Laurance Road, interpretive signs and maps are placed at the entrance parking lot, fee booth, dump station parking lot, and River View Park. Numerous interpretive exhibits are present in the Chena Lake Park and Chena River Park campgrounds (further described in Section 2.20 below), day use areas, boat launches, nature trails, and beaches.

A modern visitor center is open to the public at the project office off Laurance Road. The center contains interpretive displays, natural history exhibits (e.g., area mammal furs and mounts), meeting space, project history information, and an indoor fireplace with a gathering area.

2.16.2 VISUAL

Visual quality is a resource that directly enhances the enjoyment of a variety of potential visitor activities. People are psychologically attracted to landscapes containing aesthetically pleasing views, often choosing these types of areas to participate in camping, picnicking, swimming, boating, sightseeing, snowshoeing, cross-country skiing, and many other outdoor recreational activities. The visual quality of the project area is influenced by its diversity of natural landscape features and man-made structures.

The dominant project focal point, easily seen from miles away from much of the project lowlands and the Richardson Highway, is Moose Creek Bluff. The summit of the bluff is gated but is accessible by foot and provides a 360-degree panorama of surrounding landscape and project features.



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The low foothills at the northern periphery of the project also provide a highly visible break from the surrounding terrain and are important reference points as viewed from the project lowlands. Vegetated primarily by aspen, they provide a significant visual contrast to the spruce-dominated lowlands. Since these slopes are steep and dry, they are susceptible to erosion damage.

The remainder of the project lies in a flat floodplain, with small river terraces forming the only variations in topography. The lowlands are vegetated by thickly vegetated spruce bogs interspersed with open grass and sedge inclusions, and dotted with ponds, peat bogs, oxbow lakes and meandering streams. Due to its limited topography, visual diversity in the lowlands is provided mainly through the contrasts created by different vegetation types, land and water interfaces, and project flood control features.

The earthen dam gravel embankment creates a continuous, linear form across the project landscape. This form is quite conspicuous due to the light-colored exposed gravel and rock surfaces on the dam. Alternatively, the design of the cleared floodway minimizes its visual impact. The floodway follows a meandering path through the project area upstream of the dam such that it suggests organic, rather than man-made origins. Because most of the area remains in a vegetated state, the openings and edge effects created by the floodway enhance visual diversity.

2.17 Demographics

Demographic data is available from the State of Alaska (Alaska Department of Labor and Workforce Development [ADLWD] 2022a) and United States Census Bureau (USCB, Figure 16). Demographic data for the FNSB is reported by geographic areas, specifically the FNSB and subunits of the FNSB, called Census-Designated Places (CDPs, including Fairbanks City, Badger, Moose Creek, Eielson Air Force Base, and North Pole).

In 2020, the population of the FNSB (95,655) was primarily dominated by Fairbanks City (32,515), with Badger CDP (19,031), Moose Creek CDP (534), Eielson Air Force Base CDP (2,610), and North Pole CDP (2,243) providing smaller contributions. Moose Creek, Eielson Air Force Base, and North Pole surround the project, and provide a representation of the different demographic areas in the vicinity (Table 5).

Construction of the project began in 1973 and ended in 1979. Since that time, the FNSB's population has doubled, from 45,864 to 95,655. In 2020, Eielson announced a large expansion, and the surrounding population is expected to grow by 1,000 to 4,000 people.

The projections of the 1989 Master Plan Supplement, which anticipated a year 2000 population of 94,278, closely match the actual 2020 population of the FNSB (95,655).



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Table 5. Population in the Area of Analysis: 2000-2019

	Population						Population Change				
	1970	1980	1990	2000	2010	2020	1980	1990	2000	2010	2020
Fairbanks North Star Borough	45,864	53,983	77,720	82,840	97,581	95,655	18%	44%	7%	8%	-2%
Badger CDP*				14,258	19,482	19,031				37%	-2%
Eielson Air Force Base CDP*			5,251	5,388	2,647*	2,610			3%	-51%*	-1%**
Fairbanks City CDP			30,843	30,215	31,535	32,515			-2%	4%	3%
Moose Creek CDP			610	542	747	534			-11%	38%	-29%
North Pole City CDP			1,456	1,570	2,117	2,243			8%	35%	6%

*Eielson Air Force Base CDP geographic boundary changed between 2000 and 2010. Badger CDP did not exist in 1990.

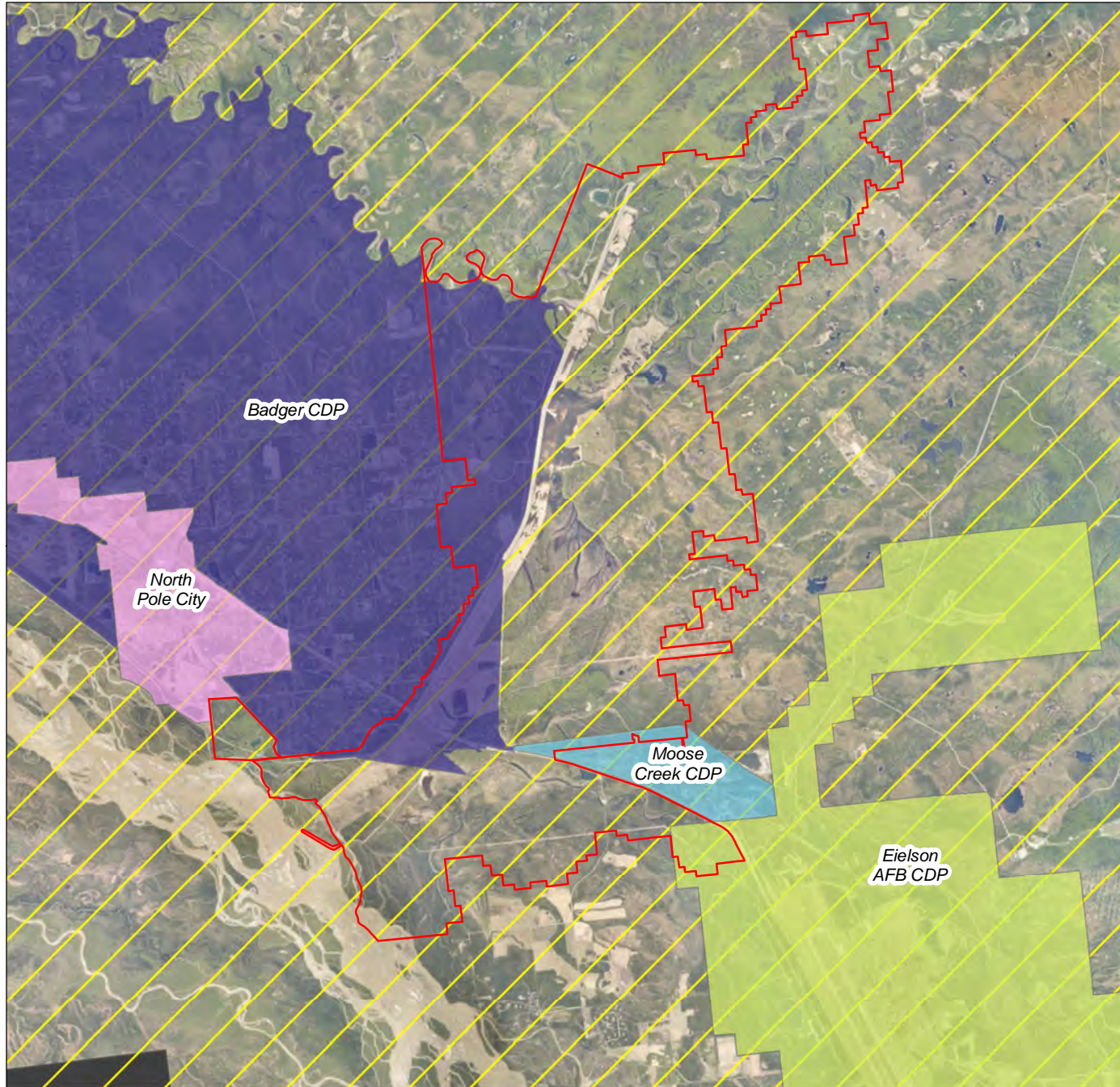
** Expansions in 2021 and 2022 at Eielson are expected to increase the local population

Construction began in 1973 and ended in 1979

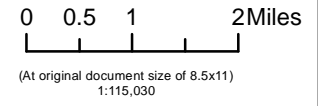
No CDP population available for 1970, 1980

Source: ADLWD 2022a

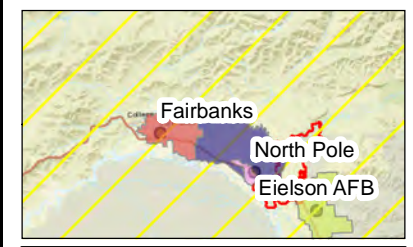




- Badger CDP
- Eielson AFB CDP
- Fairbanks City
- Moose Creek CDP
- North Pole City
- Fairbanks North Star Borough
- Flood Control Boundary



Notes
 1. Coordinate System: NAD 1983 Alaska Albers
 2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Figure No.
16

Title
Demographics

2.18 Socioeconomics

Socioeconomic data is available for 2020 from the US Census Borough (USCB 2020a, 2020b, 2020c). The 2020 data is analyzed because 2020 estimates are the most recent numbers available for project area CDPs.

The FNSB had a poverty level of 6.5 percent. Eielson Air Force Base has the lowest poverty level, likely because the CDP is centered on the military base, which provides a steady source of employment. Moose Creek and Fairbanks have higher poverty levels at 10.3 percent and 9.3 percent respectively. North Pole has a poverty level of 5.1 percent, and Badger has a rate of 6.1 percent.

Unemployment rate measures the number of people actively searching for a job who do not have a job. The FNSB has an unemployment rate 7.1 percent. Eielson Air Force Base has the highest unemployment rate of 13.4 percent. Fairbanks, Badger, and North Pole have an unemployment rate of 8.3 percent, 8.0 percent, and 7.6 percent, respectively. Moose Creek has an unemployment rate of only 0.4 percent. Moose Creek's relatively high poverty and low unemployment rate indicate many individuals are not actively searching for a job. In contrast, Eielson's low poverty rate and higher unemployment rate may indicate single earner households which contain other household members who are looking for a job but are unable to find one.

Income levels are presented below, by both the mean (e.g., average) income and median (e.g., middle value when all data are listed in order). The mean can be influenced by very extreme lows or high earners. The median provides a more robust example of the distribution.

The mean income of Fairbanks is \$98,769, and the median income is \$76,464. This indicates there are a number of high earners in Fairbanks, skewing the income distribution upward. A similar difference in mean and median incomes are evident in Badger, Eielson Air Force Base, Fairbanks, and Moose Creek. Moose Creek actually has the largest difference between mean and median incomes (e.g., \$96,056 vs \$59,869). This indicates Moose Creek has a few very high earners skewing the distribution.

The median income is highest for Badger (\$92,872), and lowest for Moose Creek (\$59,869). Badger is often seen as a bedroom community for the more metropolitan Fairbanks, with commuters driving each morning into Fairbanks for employment. Moose Creek is slightly farther from Fairbanks, and would have a longer commute, but also have a shorter commute to Eielson Air Force Base employment.



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Table 6. Socioeconomic Characteristics (2020)

	Percent below poverty level	Unemployment Rate	Mean household income	Median household income
Fairbanks North Star Borough, Alaska	6.5%	7.1%	\$98,769	\$76,464
Badger CDP, Alaska	6.1%	8.0%	\$116,801	\$92,872
Eielson AFB CDP, Alaska	0.6%	13.4%	\$81,508	\$71,622
Fairbanks City, Alaska	9.3%	8.3%	\$82,366	\$64,397
Moose Creek CDP, Alaska	10.6%	0.4%	\$96,056	\$59,869
North Pole City, Alaska	5.1%	7.6%	\$89,563	\$81,491

Source: USCB 2020a, b, c



2.18.1 2022 ECONOMIC OUTLOOK

The January 2022 State of Alaska economic forecast predicted that the FNSB would add 1,000 jobs, for a 2.8 percent growth rate (ADLWD 2022b). The FNSB lost jobs due to the Covid pandemic of 2020–22 but has a strong predicted future of growth. This future includes at least 1,000 additional service members associated with the F-35 fighter jet squadrons being brought to Eielson Air Force Base. This has already impacted the housing market, with vacancy rates dropping from 19 percent in 2020 to 9.5 percent in 2021.

Construction is also helping the FNSB economy. Construction has included increases in new housing, \$15 million in Fairbanks' road construction, and \$148 million in construction at the project for the improvements to the Moose Creek embankment dam.

2.19 Recreation Facilities, Activities, and Needs

2.19.1 ZONES OF INFLUENCE

The majority of project visitors originate from FNSB. The population of FNSB has almost doubled since the project was opened (from 53,983 in 1980 to 95,655 in 2020). The project is easily road accessible from the adjacent Richardson Highway and within a 30-minute drive of the majority of FNSB residents and a 1-hour drive of virtually all FNSB residents. This allows the project to be accessible for half-day trips by residents of Fairbanks, North Pole, and the large population of military personnel and dependents from nearby Ft Wainwright and Eielson Air Force Base.

The remainder of project visitors are tourists. As the northern terminus for major tourism transportation routes in Alaska, Fairbanks is a destination for many out-of-state travelers. Denali National Park also draws large numbers of visitors to the Fairbanks area.

2.19.2 VISITATION PROFILE

The project contains one of the only large-scale flat water and beach-related outdoor recreation facilities within a day-user's driving radius of the FNSB.

Interviews with onsite park rangers indicate the majority of visitor use is from local FNSB residents. The community feedback is that residents enjoy the facilities and consider the project one of the "hidden gems" of outdoor recreation in the FNSB. Park rangers report that there is generally nothing but appreciation from the community for the facility and its services.

The typical project visitor fits into any of three general profiles:

- Local Residents and Families



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- Day use of the Chena Lake beach is particularly popular for families
- State of Alaska Disabled Veterans
 - Local veterans may obtain a pass for free access
- Non-Local Tourists
 - Those visiting Alaska, or Alaska residents visiting the Fairbanks area. These users often utilize recreational vehicles or are tent camping.

2.19.2.1 Visitation Numbers

The original 1984 Master Plan projected that initial recreational demand would reach 244,013 participants. However, project buildout of the facility was slower than projected, and demand was correspondingly lower. The MP’s reconstructed actual visitation numbers are provided in Table 7 below.

Table 7. Socioeconomic Characteristics (2020)

Government	Percent Below Poverty Level	Unemployment Rate	Mean Household Income	Median Household Income
FNSB, Alaska	6.5%	7.1%	\$98,769	\$76,464
Badger CDP, Alaska	6.1%	8.0%	\$116,801	\$92,872
Eielson AFB CDP, Alaska	0.6%	13.4%	\$81,508	\$71,622
Fairbanks City, Alaska	9.3%	8.3%	\$82,366	\$64,397
Moose Creek CDP, Alaska	10.6%	0.4%	\$96,056	\$59,869
North Pole City, Alaska	5.1%	7.6%	\$89,563	\$81,491

AFB = Air Force Base
 CDP = Census Designated Place
 Source: USCB 2020a, 2020b, 2020c



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Table 8. Visitation Numbers: Traffic and Trail Counts

Visitation Year	Main Entrance (Users)	Main Entrance (Vehicles)	Lake Park Road (Users)	River Park Trail (Users)
1984	83,400			
1988	100,900			
1997	~150,000			
2017	291,970	97,323		1,991
2018	241,731	80,577		3,383
2019	230,280	76,760	184,110	3,880
2020	274,449	91,483	181,312	6,346

* A large construction project is taking place in 2022 and 2023, which will cause traffic counts to be much larger than normal.

** Counts are for calendar year (January – December).

*** A worldwide Covid pandemic started in December 2019

****1988 number is from 1989 MP update. 1997 number is based on a historical statement celebrating 150,000 visitors mark being passed that year. 2017–2020 numbers are reported from FNSB activity trackers.

These visitation numbers were developed from:

- The Master Plan Supplement reported the 1984 and 1988 user numbers.
- A public announcement was made in 1997 that the 150,000-user mark was broken.
- In 2017, the FNSB installed traffic and trail counters at the Main Entrance/Fee Station, Lake Park Road, and the River Park Trail. These provided more accurate numbers on visitor use. It is important to note:
 - Vehicles entering the project are the actual items counted at the Main Entrance and Lake Park Road. User estimates are generated by assuming an average of three users per vehicle.
 - The River Park Trail counter is not positioned to count all users of the trail. That trail counter provides an idea of use trends but undercounts the actual trail use.
- In December of 2019, the Covid-19 pandemic began, which subsequently affected Alaska beginning in the Spring of 2020. As a result, 2020 was characterized by severe travel restrictions, which dramatically changed visitation patterns. Local residents increased their pursuit of outdoor recreation, resulting in a large increase of use at the facility. This more than offset the complete lack of use by out-of-state tourists, who were generally unable to enter Alaska.

Use of project facilities continued to increase in 2021 and use in 2022 is expected to be even greater. It appears that resident users who discovered the project in 2020 and 2021 have continued their use patterns into 2022. Visitation in 2022 will also include a resumption of use by out-of-state tourists.



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Together, these trends predict that 2022 will be the year with the largest visitation numbers in the project's history.

2.19.3 REVENUE

Revenue is collected by the FNSB to support the Chena Lake Park facility. Camping and boat rental are the primary sources of fees at the facility (Tables 9 and 10). USACE does not collect revenue.

USACE does not collect day use fee revenue because historically, the costs to collect these fees were greater than fee revenue. This was both due to the cost of staffing fee collection, and many users likely exempted from day use fees per their military or other status.

Day use fees are charged at other comparable parks in the area. A comparison could be made with the neighboring State of Alaska parks. The State of Alaska collects a \$5 per vehicle day use fee at parks located in the vicinity of the project. The State also has a year-long day use pass, which is available for \$60 per vehicle.

2.19.4 RECREATION ANALYSIS

The physical and scenic diversity of the area can accommodate a variety of recreational activities. The project's available recreation suite includes a variety of intensive high-density uses within developed park sites, as well as more passive low-density uses dispersed throughout the project (Figures 17, 18, 19, and 20).



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Table 9. Recreational Revenue Items Sold

Rental	2019	2020	2021
Boat Rentals (Hourly)	2,180	3,373	2,949
Boat Rentals (Daily)	195	250	254
Season Pass (Camping)	45	56	107
RV Camping (Night)	900	1,038	744
Tent Camping (Night)	930	1,456	1,256
Extra Vehicle (Night)	1	4	10
Firewood (Bundle)	384	1,054	1,440
Ice Houses (Day)	219	304	340

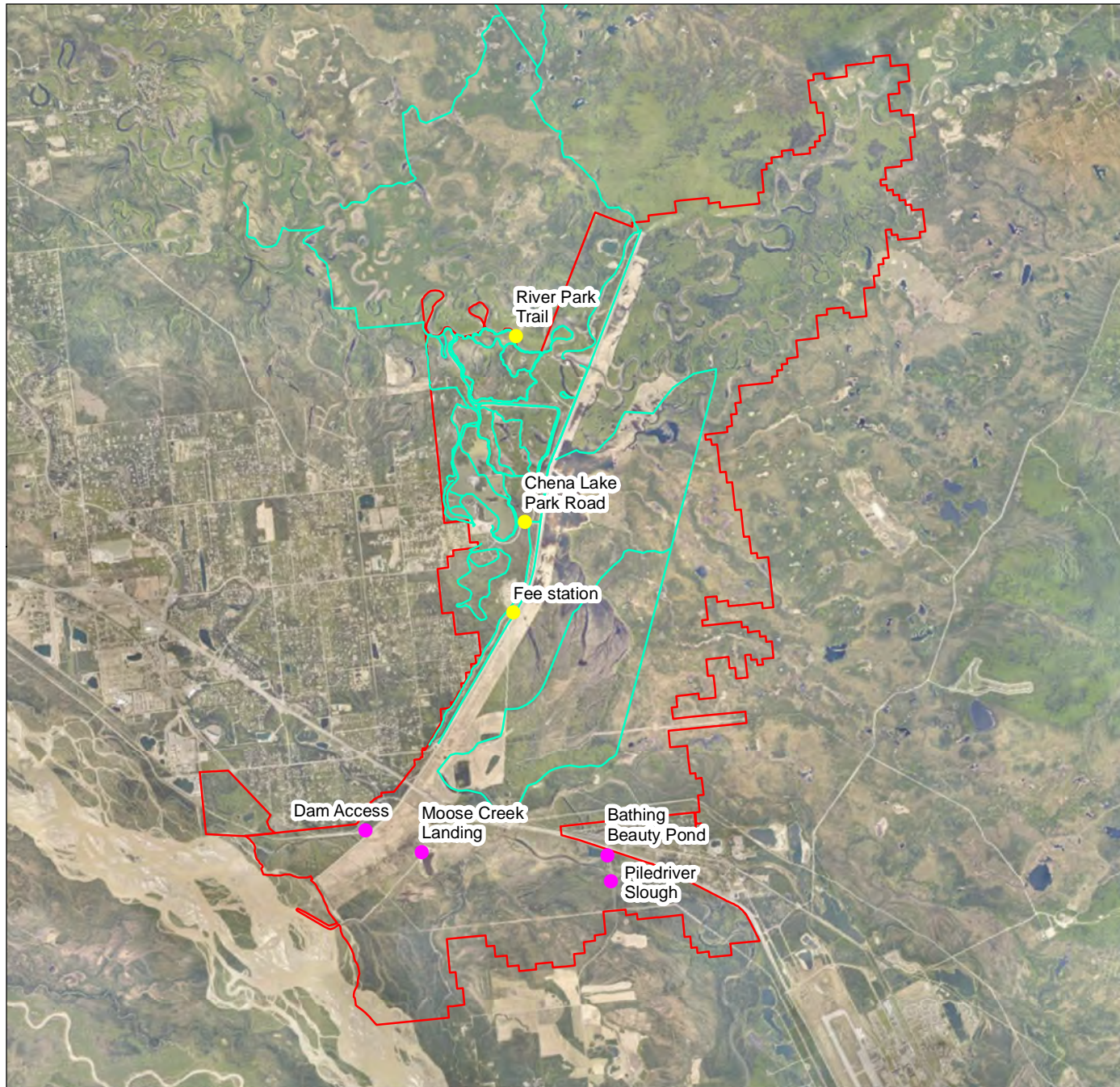
* Counts are for calendar year
RV = Recreational Vehicle

Table 10. Recreational Revenue

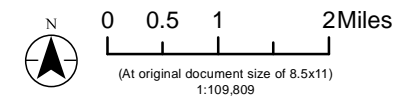
Rental	Cost	2019	2020	2021
Boat Rentals (Hourly)	\$10	\$21,800	\$33,730	\$29,490
Boat Rentals (Daily)	\$40	\$7,800	\$10,000	\$10,160
Season Pass (Camping)	\$130	\$5,850	\$7,280	\$13,910
RV Camping (Night)	\$20	\$18,000	\$20,760	\$14,880
Tent Camping (Night)	\$15	\$13,950	\$21,840	\$18,840
Extra Vehicle (Night)	\$5	\$5	\$20	\$50
Firewood (Bundle)	\$5	\$1,920	\$5,270	\$7,200
Ice Houses (Day)	\$30	\$6,575	\$9,105	\$10,190
Day Use Field	Sliding Scale	\$432	\$40	\$280
Island View Pavilion	Sliding Scale	\$1,780	\$100	\$645
Riverside Nature Area	Sliding Scale	\$50		
Riverside Pavilion	Sliding Scale	\$600	\$120	\$465
Road and Trail System	Sliding Scale	\$80		\$160
Swim Beach Pavilion	Sliding Scale	\$2,105	\$100	\$1,260
Total		\$80,947	\$108,365	\$107,530

* Counts are for calendar year

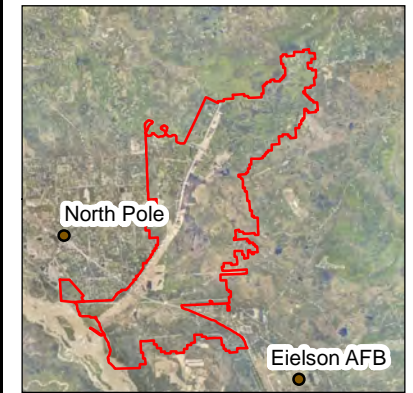




- Data Counter
- Facility
- Trails
- Flood Control Boundary



- Notes**
1. Coordinate System: NAD 1983 Alaska Albers
 2. Background:



Project Location
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Figure No.
17

Title
Recreation Facilities (Overview)

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- Data Counter
- Facility
- Trails
- Flood Control Boundary



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- Notes**
1. Coordinate System: NAD 1983 Alaska Albers
 2. Background:



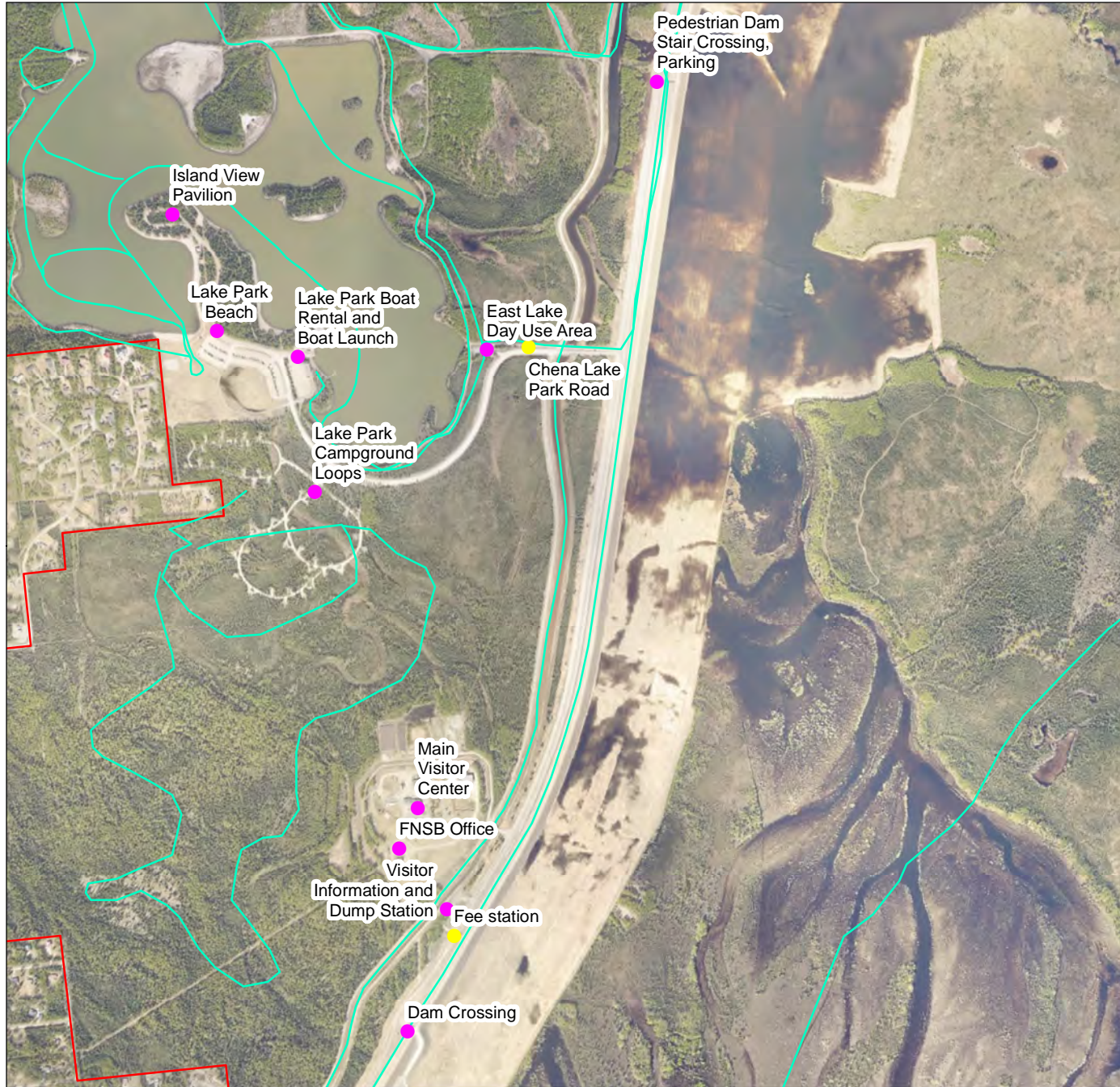
Project Location
 North Pole, Alaska

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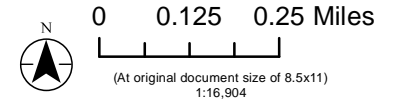
Figure No.
18

Title
Recreation Facilities (River Park)

\\us0308-pp1ss02\shared_projects\185705967\03_data\gis_cad\gis\mxd\draft_mp\FIG19_Recreation_Facilities_lakepark.mxd Revised: 2022-09-20 By: rycopper



- Data Counter
- Facility
- Trails
- Flood Control Boundary



- Notes**
1. Coordinate System: NAD 1983 Alaska Albers
 2. Background:



Project Location
North Pole, Alaska

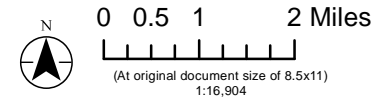
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Figure No.
19

Title
Recreation Facilities (Lake Park)



- Data Counter
- Facility
- Trails
- Flood Control Boundary



- Notes**
1. Coordinate System: NAD 1983 Alaska Albers
 2. Background:



Project Location
North Pole, Alaska

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Figure No.
26

Title
Recreation Facilities (Laurance Rd Entrance)

2.19.4.1 Chena River Park, Chena Lake Park, River View Park

The Chena Parks consist of the River View Park (located on the Chena River just downstream from the outlet control structure), Chena River Park (just downstream from the River View Park) and Chena Lake Park (located adjacent to Chena Lake) (Figure 21). These parks provide facilities for camping, picnicking, swimming, boating, fishing, trail activities, and winter activities. Such facilities meet an identified need in the FNSB for a large regional park close to the urban population.



Figure 21. River View Park (Left), Chena River Park (Center), Chena Lake Park (Right)

USACE designed and constructed the parks under a cost-sharing agreement with the local sponsor, the FNSB. Under this agreement, USACE leases the parks and land to the FNSB for recreational purposes. The FNSB is responsible for operation and maintenance of the parks and the lands within the lease area.

The Chena River Park and Chena Lake Park contain campground loop roads. At Chena Lake Park, two separate campground loop roads provide access to 45 camp sites (Figure 18, 19, 22), while two main loop roads at Chena River Park provide access to 35 additional sites. In addition, the two parks combined have approximately 100 individual picnic sites that include tables and fireboxes with grills. There are also three group picnic shelters, with one located in Chena River Park and two located at Chena Lake Park. The roads to both parks are plowed and maintained all winter.



Figure 22. Typical Chena River Park Campground Site

Boat launching ramps are provided at both the Chena Lake and Chena River parks. Chena Lake's ramp is sited east of the swimming beach with convenient access to the prime day use area. The Chena River ramp is located on a slough connected by a navigable channel to the downstream end of the Chena River outlet structure.

The Chena River's waters generally remain too cold for swimming. However, Chena Lake is warmed substantially by solar absorption in the summer and is popular for swimming. A swimming beach has been constructed in a cove near the southwest corner of the lake. Portions of the beach are covered with turf and sand. Combination changing facilities and restrooms are provided near the beach.

Trails have been constructed to permit access between various sections of the parks. These same scenic paths also serve as cross-country ski trails in winter. Other trails are high use routes that provide access between parking lots and main recreation facilities within both parks.

2.19.4.2 Additional Developed Facilities

Beyond the three parks, Laurance Road provides access to additional developed facilities. These include (Figure 23):

- The Laurance Road entrance parking lot, trail access, and public toilet facilities
- The Silt Blanket parking lot, with an adjacent fee booth, interpretative signage, and RV dump station
- Visitor Center



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

- Dike access stairs, with an adjoining parking lot



Figure 23. Laurance Road Entrance (left), Fee Booth (center), Visitor Center (right)

The project also has parking lots located at other areas distant from Laurance Road, to provide access to:

- Piledrive Slough (two parking lots)
- Bathing Beauty Pond
- Moose Creek Landing Pond

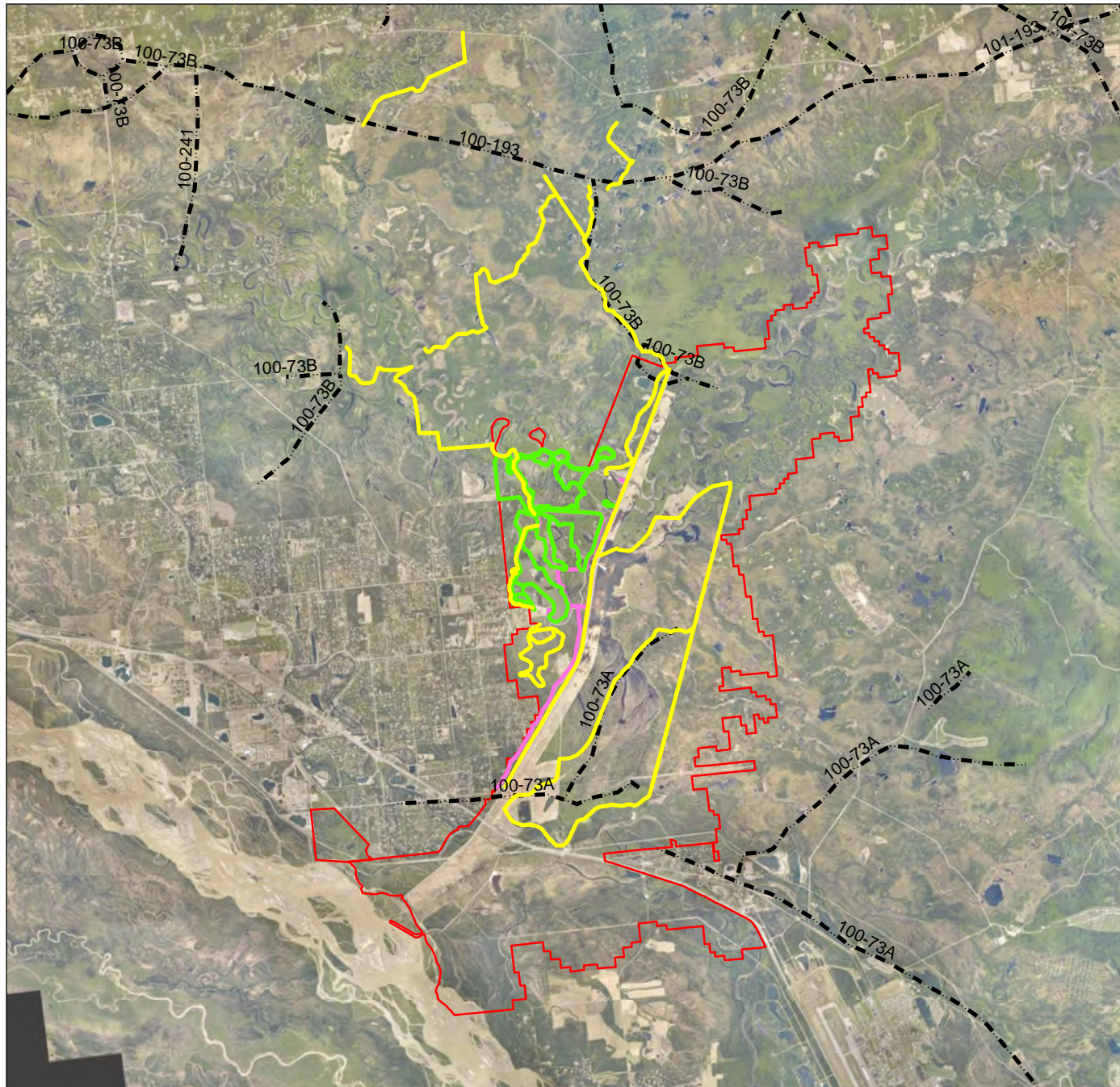
2.19.4.3 Trails






There are numerous formal trails in the project (Figures 24, 25, and 26). In the summer, these are used for biking and walking paths. During the winter, trails are used for skiing and multi-use. These trails include:

- Laurance Road paved bike path
- East Chena Lake gravel bike paths
- Chena River Park Nature Trails
- Chena Lake and Chena River Park Winter Trails

There are also numerous informal trails, paths, and routes throughout the project. These are not maintained but are used for dispersed recreation.





-  RS2477 Trails
-  Chena Lake Bike Path
-  Chena Lake - Trails
-  FNSB 2022 Draft Trails Plan
-  Flood Control Boundary



0 0.5 1 2 Miles
 (At original document size of 8.5x11)
 1:135,213

Notes
 1. Coordinate System: NAD 1983 Alaska Albers
 2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

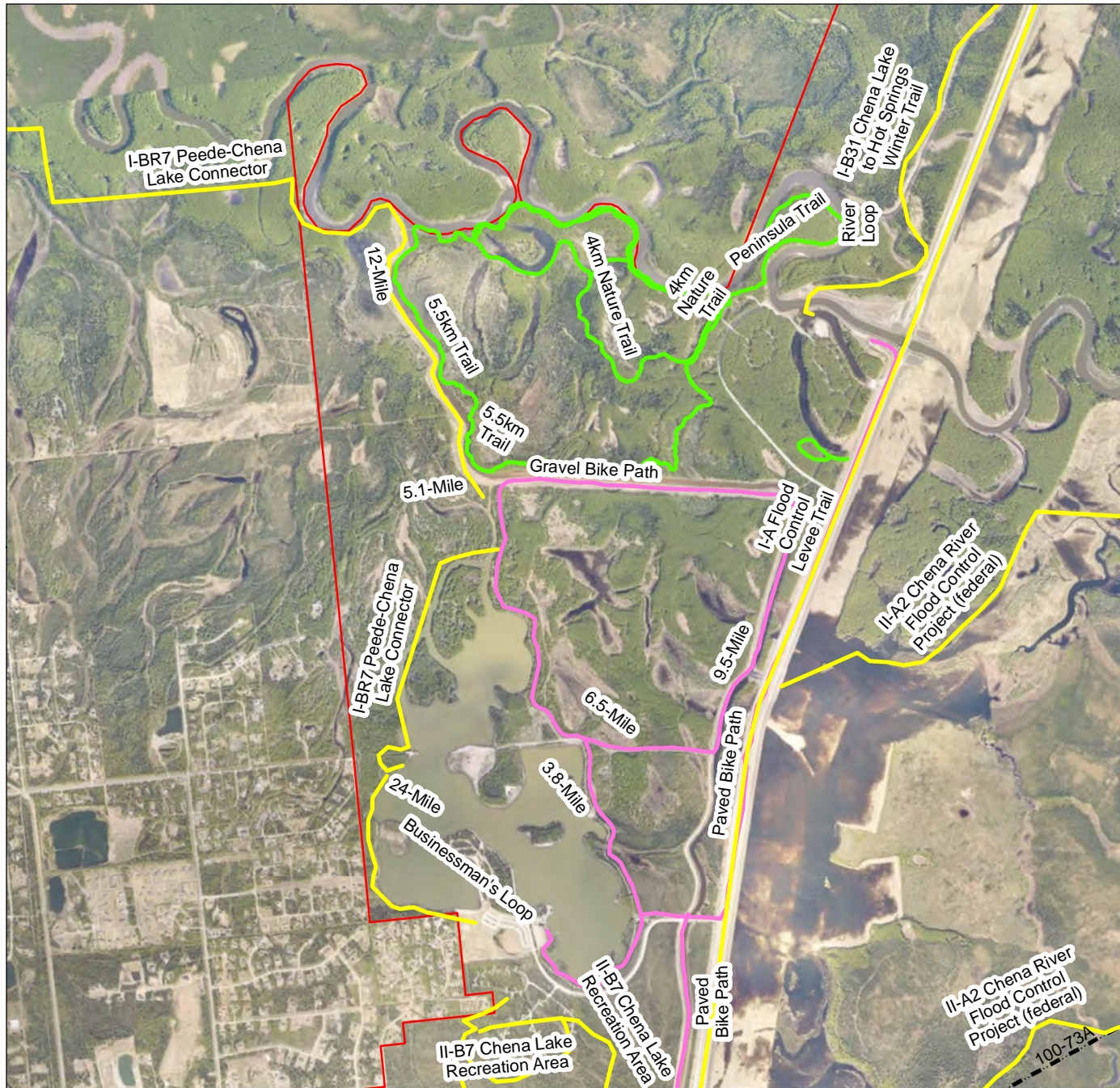


Project Location
 North Pole, Alaska

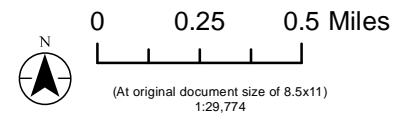
Client/Project
 Chena River Lakes Flood Control Project
 Master Plan Update

Figure No.
24

Title
Trails: Overview



- Chena Lake Bike Path
- Chena Lake - Summer Trails
- FNSB 2022 Draft Trails Plan
- - - RS2477 Trails
- Flood Control Boundary



Notes
 1. Coordinate System: NAD 1983 Alaska Albers
 2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



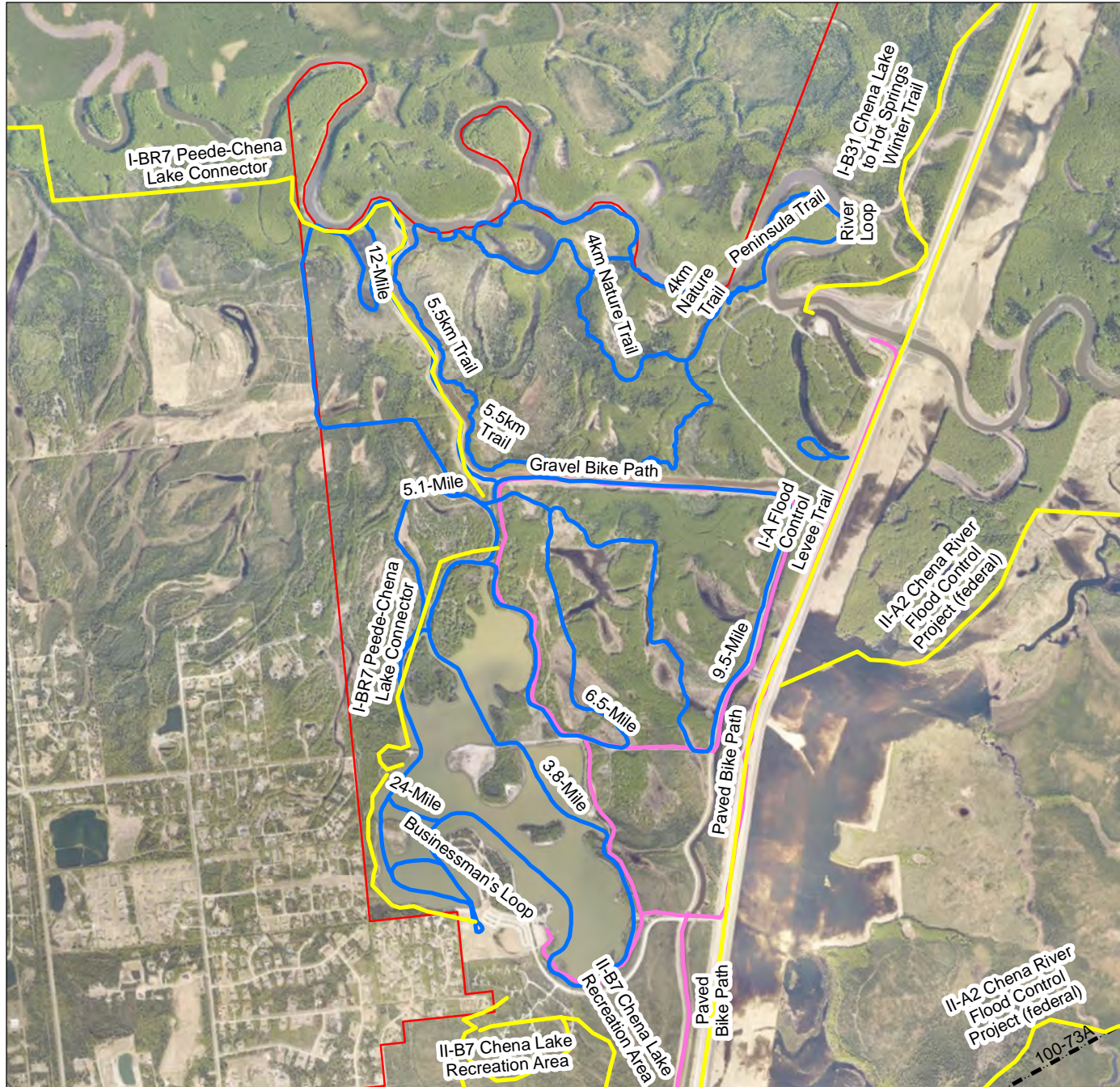
Project Location
 North Pole, Alaska

Client/Project
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 Master Plan Update

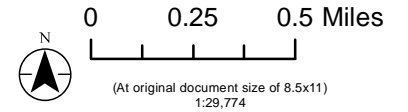
Figure No.
25

Title
Trails: Detail, Summer

\\us0308-ppriss02\shared_projects\1857\05967\03_data\gis_cad\gis\mxd\draft_mp\FIG26_Trails_detail_winter.mxd Revised: 2022-09-20 By: rycoper



- Chena Lake Bike Path
- Chena Lake - Winter Trails
- FNSB 2022 Draft Trails Plan
- - - RS2477 Trails
- Flood Control Boundary



Notes

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Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
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Figure No.
26

Title
Trails: Detail, Winter

2.19.4.4 Undeveloped Recreation

The remainder of the project has ample acreage for dispersed and other informal recreational activities. Many portions of the project are open to a wide variety of primitive, dispersed, or site-specific activities.

2.19.4.4.1 Upland Areas

Since most of the project lies within the flat, low floodplains of the Chena and Tanana Rivers, the sloping terrain created by Moose Creek Bluff and the Chena River Foothills provides opportunities for a number of recreational activities not otherwise available.

The vantage points afforded by the higher ridgelines and summits of these landforms provides exceptional views. In addition, the scenic variation provided by changing topography makes the hilly terrain more dynamic for trail activities than the flat lowlands. Numerous trails cross through the bluff and the foothills areas, and currently are used for hiking, cross-country skiing, snow machining, and dog mushing.

2.19.4.4.2 Water Bodies

Many still and flowing water bodies create opportunities for recreational activities. Existing project recreational development is focused on Chena Lake, Chena River, Bathing Beauty Pond, Moose Creek Landing, and Piledriver Slough. However, other project water bodies remain in a natural state, with limited recreational access (e.g. North Chena Pond and Z Pit Pond).

The Chena River, with many scenic points of interest along its reaches, provides excellent riverboating, floating, and canoeing. It is popular with hunters, trappers, fishermen and sightseers who motorboat or float the river. Area lakes are used for fishing, swimming, and other water activities.

While frozen, project rivers and streams act as a winter highway network for hunters, trappers, and recreationists. Dogsleds and snowmachines can provide access to large areas, and project rivers act as convenient road-accessible starting points for such travel. During winter, project lakes and streams can also be used for ice skating, ice fishing, and other activities.

In addition to being the medium for many recreational activities, water also provides an aesthetic complement to many other land-based activities. People tend to prefer landscapes featuring aesthetically pleasing water bodies for camping, picnicking, hiking, sightseeing, nature study and other uses.

2.19.4.4.3 Lowland Areas

The lowland areas are the floodplain, wetlands, and similar habitat which make up most of the project. Fewer recreational opportunities are available in the lowland areas that comprise the majority of the project area. Limited topography and a high-water table physically limit their suitability for recreation use. Surface water present over permafrost zones presents an access problem during spring and early



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summer. However, these inundated areas freeze solid during winter months, making much of the area available for snow machining, dog mushing, cross-country skiing, horse riding, and trapping.

The project floodway is included in the lowland areas. Intermittent flooding during controlled flood events constrains recreation in the floodway, and no long-term uses can occur. Nevertheless, the large, open character of the floodway is attractive for a number of activities. In addition to the winter activities described above, the floodway is used for hunting, nature study, wildlife viewing, dog field training and trials, and falconry.

2.19.4.4.4 Project Flood Control Features

The Moose Creek Dam, Chena River outlet control structure, seepage collection channels, and other associated structures are fundamental to project flood control operations. In most cases, public use of these structures is incompatible with their functional integrity to say nothing of the safe, efficient operation of the project. Recreational traffic over these project features is allowed, and controlled, at specific access points.

2.19.4.5 Calendar of Events

A typical year's seasonal activities occurring at the project are outlined below.

- Summer
 - April to May: Migratory bird viewing of waterfowl (geese, cranes, ducks and swans), loons, sandhill cranes, shorebirds and migrating passerine songbirds
 - June 1 to September 30: River View Park open from 8 a.m. to 10 p.m.; tours of dam for groups are available on request
 - Memorial Day to Labor Day: FNSB Chena Lake Recreation Area staffed and open; area is accessible all year, but fees are not charged in the winter when campgrounds and picnic areas are not maintained
 - June to August: Special use permits are issued for various activities throughout the project (i.e., registered dog hunt training and testing, marathons and triathlons, parachute jump training and proficiency tests, unmanned aircraft systems flight training, etc.).
 - August: Migratory bird flock aggregation in preparation for fall migration; upland bird and other small game hunting
 - September: Firearm hunting season for moose open; only bowhunting allowed within that portion of the project lying within the ADF&G Fairbanks Management Area
- Winter



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

- Nov. 1 to March 31: Subject to adequate snow cover, project lands open to snow machining, except for sides and top of Moose Creek Dam (access points across the dam are made available); Chena Lakes Recreation Area multipurpose and cross-country ski trail also groomed as soon as enough snow is available; ice fishing available on Chena Lake when ice is proper thickness
- February:
 - Yukon Quest 1,000-Mile Sled Dog Race passes through project enroute from Fairbanks to Whitehorse, Yukon Territory, Canada; dog drop site is at the Chena River Park Boat Ramp parking lot
 - Yukon Quest 250 Sled Dog Race from Fairbanks to Circle City passes through project
 - Junior Yukon Quest from Fairbanks to Chena Hot Springs; check point located at Chena River Park Boat Ramp parking lot
- March:
 - Sled dog races at the Chena Lakes Recreation Area

2.19.5 RECREATIONAL CARRYING CAPACITY

2.19.5.1 Campground

There are currently 80 sites available for camping. The peak camping period is between Memorial Day and Labor Day, which is 98 days in total, including 15 weekends. The most popular time to camp is Friday night and Saturday night, and park rangers report the campgrounds are full every weekend during the summer. On holiday weekends the campgrounds fill up on Wednesdays, with people staying through the long weekends. There are many unoccupied sites available on summer non-holiday weekdays.

The total number of summer camping site capacity is 7,840 (98 nights x 80 sites); of which 2,400 are weekend sites nights (15 weekends x 2 nights x 80 sites).

In 2021, 2,000 total single-night camping permits were bought, along with 107 annual passes.

2.19.5.2 Swim Areas

The USACE (2004) recommends swimming areas be sized so that approximately 60 percent of the total number of bathers will be at the beach at one time, with 30 percent in the water and 10 percent elsewhere. As a rule of thumb, a turnover factor (how often people leave) of three is used for design purposes. Ideally 50 square feet of sand/turf and 30 square feet of swimming area inside the buoyed safety area should be provided for each person.



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Historical aerial imagery indicates there is 2.7 acres of beach at Chena Lake Park. This area includes the entire beach, along both the day use parking area and the road extending along the day use peninsula. Using the USACE (2004) recommendations, 2.7 acres of beach has a sand/turf capacity of 2,352 people.

Historical aerial imagery indicates that the buoyed safety area at Chena Lake Park is split into two safety areas. These areas are 800 square feet and 400 square feet, respectively. Using the USACE (2004) recommendations, 1,200 square feet would accommodate a capacity of 40 swimmers. This contrasts with the beach capacity of 2,352 people. Discussion with park rangers indicate the buoyed safety areas are rarely full, as the cold water leads to shorter swim times in the lake. This indicates that the beach size may be the limiting factor since time in the water is often brief.

2.19.5.3 Parking

USACE (2004) recommends parking be provided as specified in Table 11. The estimated parking capacity is shown in Table 12.

Table 11. Parking Capacity Recommendations

Facility	No. and Type	Per
Swim and Beach Area	1 Standard	Every three swimmers
Launch ramp	30 Oversize 5 Standard	Each Launch Lane
Picnic Area	2 Standard	Each Table

Table 12. Capacity of Primary Parking Lots (Estimated)

Parking Lot	Width of Available Parking (feet)	Standard Spot (Equivalent)	Oversized Spot (Equivalent)
Chena Lake Park Beach	3,870	430	0
Chena Lake Park Boat Launch Ramp	226	9	40
Chena River Park Boat Launch Ramp	540	5	30
Piledriver Slough (2 lots)	81 & 108	9 & 12	0
Bathing Beauty Pond	230	0	23
Moose Creek Landing	770	0	77

* Aerial imagery was used to estimate the size of the parking lots in the summer of 2020, using standard assumptions of a 9-foot-wide parking spot and oversize parking spots being 10-foot-wide and 40-foot-long.

The swim and beach area should have one standard parking spot for every three swimmers. The buoyed swim area has the capacity for 40 swimmers. The current infrastructure meets the USACE (2004) standards.



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

The beach has capacity for 2,352 people, which would indicate the need for 784 parking spots. The current parking lots are gravel, with informal parking. The lots have the capacity of about 430 standard vehicles, not including the scattered day use parking to support the pavilions and additional facilities along the road loop on the peninsula. This indicates that the beach could support more people if additional parking is provided.

The Chena Lake Park boat launch is a one lane ramp. There is parking for nine standard vehicles, with an additional unmarked gravel parking area measuring 145 feet by 200 feet that can accommodate approximately 40 oversized truck/trailers (40 feet by 10 feet). The parking at this location meets the USACE (2004) standard.

The Chena River boat launch is also a one lane ramp. It has parking available around a gravel oval outside of the active loading zone of about 540 linear feet. This can accommodate five standard and more than 30 oversized vehicles. The parking at this location meets the USACE (2004) standard.

Piledriver Slough, Bathing Beauty Pond, and Moose Creek Landing have unimproved but dedicated shoreline locations for hand-launching boats. Piledriver Slough has two parking lots, with capacity for about nine standard and 12 standard vehicles, respectively (no oversized vehicles). Bathing Beauty has capacity for about 23 vehicles (oversized or standard). Moose Creek Landing Pond has capacity for about 77 vehicles (oversized or standard).

There are numerous picnic areas, pavilions, trailheads, and day use parking areas throughout the Laurance Road portion of the project. These appear to meet the current parking demand.

2.19.6 OVERALL PROJECT DEMAND

The Alaska Statewide Comprehensive Outdoor Recreation Plan no longer tracks recreation demand metrics, such as user days or participation rates.

The original 1984 Master Plan anticipated that the FNSB population of 71,545 would result in 244,013 total user days. Demand turned out to be less than was estimated, largely due to delayed buildout of recreation facilities and the economic downturn of the late 1980's. The 150,000 threshold was not passed until 1997.

In 2021, the estimated number of users was 309,013 at Laurance Road, with a FNSB population of about 95,000 people. This number of user days doesn't include use in other parts of the project (i.e., Piledriver Slough, Moose Creek Landing, Bathing Beauty Pond).

One of the best analyses of visitor volumes to Fairbanks is the Alaska Visitor Volume Report and Alaska Visitor Statistic Program series of reports (2017, 2020). They have found that the long-term 10-year average summer growth rate in visitors to Fairbanks increases 3.7 percent per year. This matches the average of 3 percent annual growth in use at the project between 1997 (150,000 users) and 2021 (309,013 users).



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Assuming a long-term average growth rate of 3 percent (and a more modest 1.5 percent), the growth of demand at the project could be 728,209 users in 2050 (or 475,874 users at 1.5 percent annualized growth) (Tables 13 and 14).

Table 13. Visitation Demand: Assuming 1.5 Percent Annual Growth Rate

Visitation Numbers	Main Entrance (Users)	Main Entrance (Vehicles)	Lake Park Road (Users)	River Park Trail (Users)
2021	309,013	103,004	194,037	7,657
2030	353,322	117,774	221,860	8,755
2040	410,045	136,681	257,478	10,160
2050	475,874	158,624	298,813	11,792

Table 14. Visitation Demand: Assuming 3 Percent Annual Growth Rate

Visitation Numbers	Main Entrance (Users)	Main Entrance (Vehicles)	Lake Park Road (Users)	River Park Trail (Users)
2021	309,013	103,004	194,037	7,657
2030	403,192	134,397	253,174	9,991
2040	541,856	180,618	340,245	13,427
2050	728,209	242,736	457,261	18,044

2.19.7 DEMAND AT CHENA LAKE PARK

The demand for day use parking at the Chena Lake Park beach is difficult to estimate. In 2021, 194,037 users (64,679 vehicles) entered the Chena Lake Park Road. This traffic included both campground use and day use traffic. Park rangers describe parking at Chena Lake Park as being sufficient on most days. Park rangers did note that parking is insufficient on busy summer holidays or weekends with good weather. On these days, the public may overflow existing parking, and park along the roadways.

As indicated in Section 2.20.5.3, the parking at the Chena Lake Park beach is below the USACE (2004) standard for the beach area. This can be viewed two ways: Either the beach could support more parking (and users), or the parking is helping to regulate the number of visitors and prevent beach overcrowding.

The designated swimming area is below the USACE (2004) standard. Park rangers describe that even on peak use days, there does not appear to be congestion in the designated swimming areas. This may be due to the colder water in Alaska, and subsequent reduction in swimming demand.

Campground demand on weekends and holidays is greater than the current capacity. Park rangers report that most summer weekends have full campgrounds.



There are numerous other campgrounds available to the public in the region. The State of Alaska has nine campgrounds in the Fairbanks area, with 236 camping spots. Informal surveys of a portion of these campgrounds on summer holiday weekends (Memorial Day, Fourth of July, Labor Day) in 2020 through 2022 reveal that they are under capacity, even on these busiest days of the year. This indicates that the project's campgrounds are in unusually high demand, likely due to the unique project attributes (e.g., beach, user-friendly facilities).

The FNSB took over management of Chena Lake Park and Chena River Park in the 1980s. Most of the current project infrastructure was constructed at that time and continues to age. The parks have also seen an increase in users from about 100,000 users in 1980 to over 300,000 in 2021. The FNSB Parks and Recreation Department has a revitalization plan for the facilities, but funding is limited for recreation and must be approved by the FNSB Assembly.

2.20 Related Recreational, Historical, and Cultural Areas

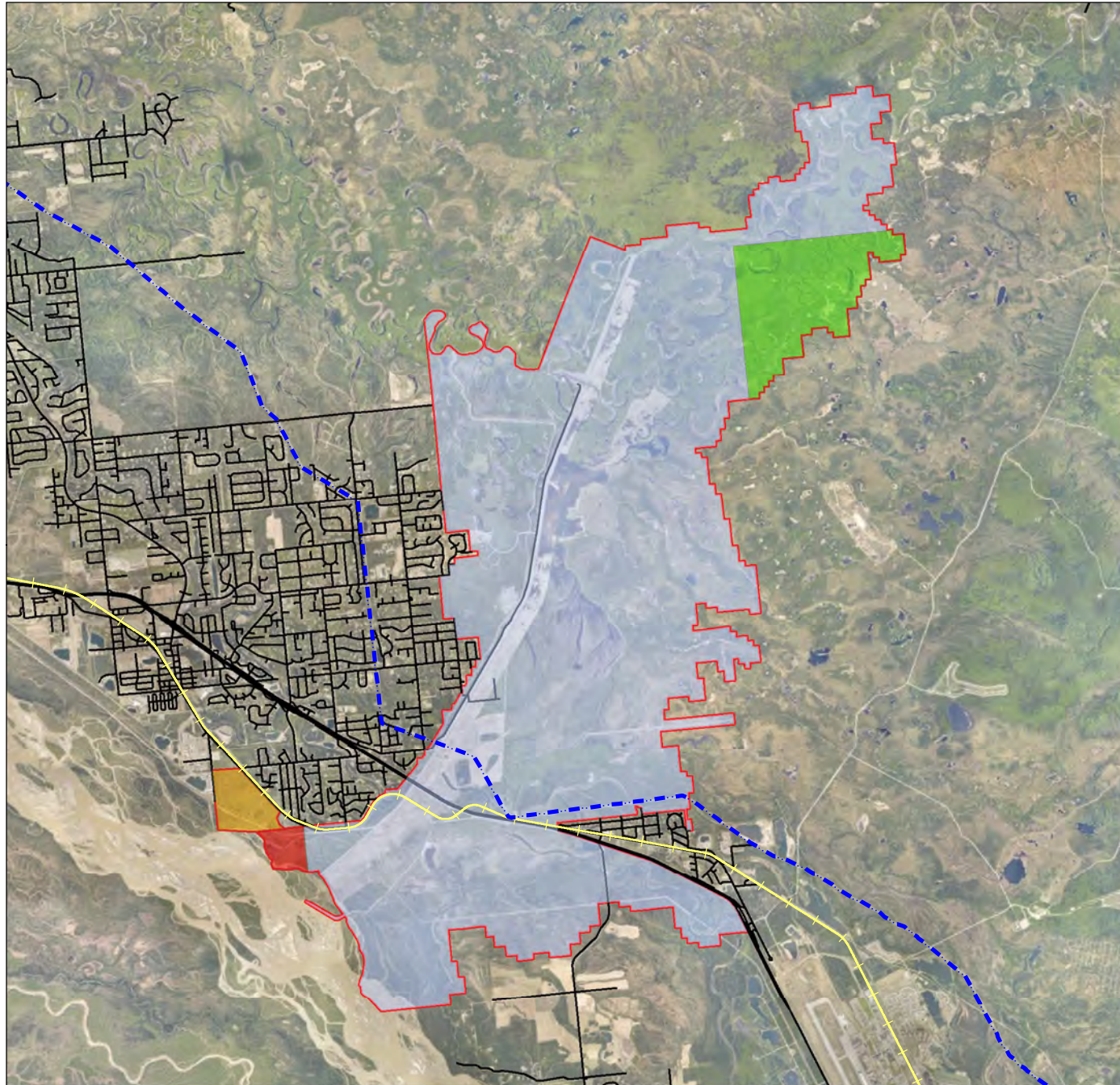
There are no significant recreational, historical, and/or cultural areas related to the project not discussed in other chapters.

2.21 Real Estate

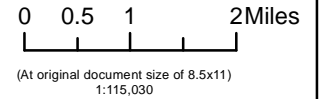
The majority of the project is owned by the USACE (Figure 27). There are smaller managed tracts primarily owned by other parties, but with flood easements. The southern half of the project area is traversed by utility right of ways, such as the Trans-Alaska Pipeline and Alaska Railroad. Real estate ownership is illustrated in Figure 27 and further described below.



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- Flood Control Boundary
 - Trans-Alaska Pipeline
 - Alaska Railroad
 - Roads
- Ownership**
- USACE Owned
 - Southwest Wildlife Mgt (USACE Primary)
 - Army Dyke Range (DoD Primary)
 - Ft Wainwright Maneuver Area (DoD Primary)



Notes

1. Coordinate System: NAD 1983 Alaska Albers
2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Figure No.
27

Title
Real Estate

2.21.1 COOPERATIVELY MANAGED TRACTS

2.21.1.1 Army Dyke Range

The extreme southwest corner of the project includes a land unit adjacent to the Tanana River owned by the Department of Defense (DoD), not the USACE. This is public domain land withdrawn for the Fort Wainwright Military Reservation. The project has a limited flood flow easement over the land, and no other management authority.

2.21.1.2 South Dyke Range

Adjacent to the Army Dyke Range is the South Dyke Range. The land is owned by the USACE for flood control purposes. The DoD has a secondary easement over the land for military activities.

2.21.1.3 Fort Wainwright Maneuver Area

A large section of land near the northeast corner of the project is assigned to the Fort Wainwright Maneuver Area for military exercises through Public Law 99-606 (1986). The land is owned by the DoD, and not the USACE. The land is remote and currently managed for wildlife habitat by the DoD, however it could be flooded during project operations. Continued USACE coordination with DoD should take place to ensure appropriate management.

2.21.2 LEASES, EASEMENTS AND OUTGRANTS

A number of leases, easements, and outgrants have been issued by USACE to other agencies or organizations for utilities, pipelines, access roads, and other purposes.

2.21.2.1 FNSB

The FNSB has a 50-year lease with the USACE (initiated in 1984) to provide public park and recreation services on project lands. The lease has been modified four times to update the lease terms to be consistent with best use of the facility.

The lease provides the FNSB with the responsibility for operating and maintaining the park and recreation facilities in the Laurance Road vicinity (e.g., Chena Lake Park, Chena River Park).



2.21.2.2 Alaska Department of Transportation and Public Facilities Roads

Alaska Department of Transportation and Public Facilities (DOT&PF) has roads that traverse the project, including the Richardson Highway, and the Eielson Farm Road. These roads and highways greatly improve access to project lands.

The Richardson Highway bridge across the floodway is not rated for overloaded vehicles. Overloaded vehicles must exit on vehicle offramps, cross the floodway on a paved heavy haul road.

2.21.2.3 Trans-Alaska Pipeline

The Trans-Alaska Pipeline has a right-of-way crossing the project. Near Moose Creek Bluff, it also possesses a right-of-way for an access road alongside the pipeline. Any grant of right-of-way to a third party over the pipeline requires prior written approval from the Secretary of the Interior. No resource uses or development can be permitted that would endanger the pipeline, which is buried, or impede maintenance access. The right-of-way grant requires that Alyeska Pipeline Service Company maintain the access road.

2.21.2.4 Alaska Railroad

The Alaska Railroad crosses the Moose Creek Dam and floodway, south of the Richardson Highway crossing.

2.21.2.5 Utilities

Several power transmissions, pipelines, telephone lines, and other utilities cross over the project. They offer no major constraints to project resource use.

2.21.3 ACQUISITION POLICY

There is no planned acquisition of lands foreseen for the project.

2.22 Management Plans

Multiple management plans exist neighboring the project and were examined for compatibility with this master plan.



2.22.1 FAIRBANKS NORTH STAR BOROUGH REGIONAL COMPREHENSIVE PLAN

The FNSB Regional Comprehensive Plan (FNSB 2005) covers the project. Project lands are designated as a mixture of: Public Multi-Use, Military Land, Open Space/Natural Area, Preferred Forest Land, and Reserve Area. These designations are all consistent with the current uses on the project.

2.22.2 NORTH POLE LAND USE PLAN

The FNSB North Pole Land Use Plan (FNSB 2010) provides land use categories for the lands around North Pole. The plan addresses areas adjacent to the project that do not overlap with project lands. Lands adjacent to the project within the North Pole plan are zoned for Open Space/Natural Area; which is consistent with the goals of abutting project lands.

2.22.3 FAIRBANKS TRAILS MASTER PLAN

The Fairbanks Trails Draft Master Plan (FNSB 2022) is updating the previous Comprehensive Recreational Trail Plan (FNSB 2006).

The 2006 plan recognized the Chena River Lakes Hiking Trail, and the Flood Control Levee Trail, both of which are in the project (Figure 24). The 2006 plan is consistent with the project.

The 2022 draft plan recognizes a series of trails in (or in the vicinity of) the project, including those listed in the following table (Figure 24, Table 15). The 2022 Fairbanks Trails Draft Master plan is consistent with the current uses on the Project.

Table 15. Fairbanks Trails Draft Master Plan

FNSB Trail Name	Existing?	FNSB Trail Code
Flood Control Levee Trail	Yes	I-A9
Chena Lowland Winter Trail Connections	Yes	I-B4
Chena Lake to Hot Springs Winter Trail	Yes	I-B31
Peede-Chena Lake Connector	No, Recommended	I-BR7
Chena River Flood Control Project (federal)	Yes	II-A2
Chena Lake Recreation Area	Yes	II-B7
Flood Control Levee Trail	Yes	I-A9

2.22.4 COMPREHENSIVE PARK AND RECREATION PLAN

The Comprehensive Park and Recreation Plan (FNSB 1990) recognizes the Chena Lakes Recreation Area as a regional park, which serves the local community and attracts visitors from outside the FNSB. The plan is consistent with the project.



2.22.5 HAZARD MITIGATION PLAN

The FNSB Hazard Mitigation Plan (FNSB 2014) recounts the history of floods in Fairbanks in 1905, 1911, 1930, 1937, 1948, 1967, and construction of the project. The plan emphasizes the importance of the project in controlling flood hazards for the local communities. The plan is consistent with the project.



3 Resource Objectives

Resource objectives are statements that set forth the management and development activities that support the goals and objectives of the Master Plan.

3.1 Objective #1 Operations

Operate and maintain the project to provide the levels of flood protection as authorized by Congress for the life of the project.

3.1.1 RATIONALE FOR OBJECTIVE #1

Operations is the congressionally authorized purpose for the project. All federally owned project lands were acquired for that purpose. The project is designed to control flows in the Chena River. No other uses will be allowed that might conflict with the operation for flood control.

3.2 Objective #2 Visitor Recreation

Designate land for intensive visitor use and, through local sponsorship, provide adequate recreation facilities to accommodate, up to a maximum of 300,000 annual recreation days for the project.

3.2.1 RATIONALE FOR OBJECTIVE #2

There is a regional demand for recreation at the project, and area residents value the project as a “hidden gem.” The project provides one of the few recreation areas focused on water-related beachside activities. The facilities at Chena Lake and Chena River parks help meet regional recreation needs by providing boat ramps, swimming beaches, camping sites, picnicking areas, hiking trails and other developments. Other facilities in the project provide additional high-intensity and dispersed recreation activities.

3.3 Objective #3 Trails

Designate, develop, and maintain trail corridors throughout project lands to help meet existing and future regional needs for formally protected and preserved recreational trails for a variety of winter and summer uses.



3.3.1 RATIONALE FOR OBJECTIVE #3

Trail-related activities include the predominant forms of recreation in the region. Current designated trails in the project include:

- Chena Lake River Park – Summer Trails: 7.5 miles
- Chena Lake Bike Path: 9 miles
- Chena Lake Winter Trails: 19.5 miles

In addition, the FNSB Draft Trails Plan (2022) lists 43 miles of existing or potential new trails in or near the project.

The project addresses a regional need for formally dedicated trails to enable recreation. The project also connects with existing trails on adjacent land. Therefore, project lands are an important link in the overall regional trails system.

3.4 Objective #4 Waterways

Maintain access points and support existing facilities at lakes, rivers, and streams within the project to help meet current and future regional demand for recreational boating, fishing, swimming, and other water-dependent activities.

3.4.1 RATIONALE FOR OBJECTIVE #4

This objective focuses on maintaining and ensuring public access to the project lakes, rivers, and streams. The project hosts some of the only beach recreation in the area. Special provisions for waterbodies are made to ensure that adequate facilities for water-dependent recreation are available, including access to rivers and streams for fishing and facilities for motorboating, canoeing and kayaking.

Boating and fishing are permitted on Chena Lake under a “quiet lake” concept. Since few large lakes exist in the region, these activities are popular. Similarly, the boat ramp at Chena River Park improves access to Chena River.

3.5 Objective #5 Dispersed Recreation

Maintain large areas of project land as open space and provide opportunities for public access to help meet existing and future regional needs for a diversity of informal, dispersed recreation activities.



3.5.1 RATIONALE FOR OBJECTIVE #5

At present, large areas of undeveloped lands are available for dispersed recreation throughout the FNSB. However, the majority of these areas are not easily accessible to residents. Since the project is a large area and is easily accessible by road from population centers, it can help satisfy that need.

3.6 Objective #6 Health and Safety

Develop minimal recreation facilities necessary to ensure public health and safety and to protect the environment at project locales which receive high or intensive levels of public use, but which do not meet the requirement of cost-sharing sponsorship by a local agency for recreational development.

3.6.1 RATIONALE FOR OBJECTIVE #6

There are a number of sites around the project, outside of the partnership with the FNSB, that receive high levels of visitor use. Examples include Bathing Beauty Pond , Piledriver Slough, and Moose Creek Landing. Facilities at these sites are attractive to visitors because they provide access to water or other recreational resources. Health and safety concerns require facilities to address trespass, vandalism, garbage, sanitation, and conflicting uses. USACE may develop minimal facilities to protect the environment and ensure public health and safety at these sites without the support of a local sponsoring agency. Minimal developments may include garbage receptacles, sanitary facilities, fire rings, traffic control measures and other similar features.

3.7 Objective #7 Cultural Resources

Protect known cultural resource sites from potentially damaging uses and investigate project lands having high probability of containing additional cultural resources.

3.7.1 RATIONALE FOR OBJECTIVE #7

There are a variety of known cultural resources sites on the project that have an important role in promoting an understanding of regional cultural history. Federal law requires protection of any of these sites that are listed, or determined eligible for listing, on the NRHP.

3.8 Objective #8 Moose, Resident

Manage project lands' habitats for early successional stage vegetation to provide high-quality moose browse that will aid in sustaining population levels at their habitats' potential carrying capacity.



3.8.1 RATIONALE FOR OBJECTIVE #8

Thousands of acres of project lands contain habitats used by summer and winter-resident moose as well as moose migrating through the project to and from the Tanana Flats and Yukon-Tanana Uplands. 2022 ADF&G estimates for moose density (in the region including the project area) are 1.0 to 1.5 moose per square mile. Extrapolations of these estimates to project lands yields an estimated population of 31 to 47 moose (resident and migratory).

Management for the target population requires continued monitoring and evaluation of population levels and habitat components. Various environmental factors will influence moose population levels over time (e.g., severe winter weather, predation, harvest, and habitat conditions).

The majority of the project area is contained in Alaska Game Management Unit (GMU) 20B. ADF&G objectives for moose in GMU 20B call for management for a post-hunting sex ratio of ≥ 30 bulls:100 cows unit wide and ≥ 20 bulls:100 cows in each count area (Hollis 2018). It also calls for a population objective of 12,000 to 15,000 moose, which is 1.3 to 1.6 moose per square mile (Hollis 2018).

3.9 Objective #9 Moose, Movement

Manage project lands' habitats to maintain and sustain seasonal moose movements and migrations in or through the project area.

3.9.1 RATIONALE FOR OBJECTIVE #9

Some regional moose subpopulations migrate through the project twice yearly on fall and spring migrations to and from the Tanana Flats and Yukon-Tanana Uplands. Additionally, localized movements by summer and winter-resident moose to and from project lands also occur. Maintenance of established moose movement corridors throughout project lands is of greater regional importance as development has taken place on lands adjacent to the project.

Vegetative cover is the significant factor facilitating moose passage. Moose cross over the Moose Creek dam along its entire length, with most activity occurring at its northern end where vegetation remains in close proximity to both sides of the earthen embankment. Maintenance of established vegetative corridors in this area appears essential. With the exception of Moose Creek Dam, the developed Chena Parks complex, and the cleared floodway, most portions of the project will remain naturally vegetated, primarily in forest, and should facilitate moose passage without additional management.

3.10 Objective #10 Waterfowl Nesting

Manage project lands to maintain and sustain nesting and brood areas for waterfowl (e.g., mallard, green-winged teal, bufflehead, American widgeon and northern pintail), geese, and other bird species.



3.10.1 RATIONALE FOR OBJECTIVE #10

The project lands' habitats currently support a wide variety waterfowl and other bird species during their breeding and rearing seasons, and the presence of nesting pairs and/or broods is common. Surveys should be conducted to estimate the number of waterfowl and other bird species that use the project. The project should maintain the existing estimated migratory bird use levels within each unit.

Maintenance of habitats for these breeding populations support ADF&G and USFWS objectives for regional bird production and diversity. Maintaining habitat will also meet demand for quality hunting and recreational viewing opportunities.

3.11 Objective #11 Waterfowl Staging

Manage project spring and fall staging habitats to maintain and sustain existing bird utilization.

3.11.1 RATIONALE FOR OBJECTIVE #11

The project habitats currently support large numbers of spring and fall migrating migratory birds. The observed numbers of birds per project management unit, and their expected times of arrival and departure to and from project lands, should form the basis for estimating management strategies and expected use levels.

Spring migrants comprise the majority of birds staging on project lands; fall migrants are considerably fewer in number. Since data are limited, this management objective should be considered to address annual project use by an average number of migratory birds across an identified number of years (e.g., 5 years). Surveys should be periodically conducted to estimate the annual number of migratory birds of each type or species that use the project.

3.12 Objective #12 Wildlife Abundance and Diversity

Maintain and sustain abundance and diversity of wildlife species in accordance with attainable resource capabilities of the project.

3.12.1 RATIONALE FOR OBJECTIVE #12

In addition to meeting objectives for management of the two primary project target species, moose and waterfowl, project habitat management programs should actively maintain habitat diversity in order to sustain other wildlife species as well. These species include upland gamebirds, migrating and summer resident birds, raptors and songbirds, and small mammals. The project provides viewing opportunities for a number of wildlife species in their native habitats, enriching visitor recreational experiences. The



importance of the project for maintaining regional wildlife species diversity will increase as the human population and land development throughout the FNSB continues.

3.13 Objective #13 Fish Habitat

Maintain stream, river, and lake habitats supporting resident and anadromous fish populations.

3.13.1 RATIONALE FOR OBJECTIVE #13

The Chena River supports one of the largest Arctic grayling fisheries in Interior Alaska, and the resource is highly prized. The Chena River (i.e., Arctic lamprey, Chinook salmon, chum salmon), Piledriver Slough (i.e., chum salmon), and Moose Creek (i.e., chum salmon) all provide habitat for anadromous fish.

The ADF&G regularly stocks North Chena Pond (i.e., rainbow trout, Chinook salmon, Arctic grayling), and Chena Lake (i.e., Arctic char, rainbow trout).

Chena River, Moose Creek and Piledriver Slough also contain populations of whitefish and burbot, both of which are popular game fish species.

Recruitment from these natural populations supports commercial, subsistence and recreational fisheries from western coastal to Interior Alaska, and every effort should be made to maintain their productivity and health in coordination with ADF&G, USFWS, and NMFS.

Pre-project sediment levels have been reduced in Moose Creek and Piledriver Slough as a result of USACE blocking their upstream connections to the Tanana River. Historically, the Tanana River had transported heavy glacial silt loads into these smaller streams during ice-free summer months. Protection of these streams will help maintain their contributions to quality fish spawning and rearing habitat availability in the region.

3.14 Objective #14 Lake Fishery

Coordinate with ADF&G to maintain and sustain regionally important game fish populations including rainbow trout, salmon, and Arctic grayling stocked in Chena Lake and other project waters.

3.14.1 RATIONALE FOR OBJECTIVE #14

Public desire for recreational fisheries make for heavy demands on regional lakes. To help satisfy this demand, ADF&G stocks a number of local, regional, and statewide lakes with hatchery-raised gamefish.



4 Land Allocation, Land Classification, Water Surface, and Project Easement Lands

4.1 Introduction

Land use classifications are a major element of this Master Plan and drive recreational use compatibility with resources. Combining the land use classifications with resource objectives provides a guide to the use, development, and management of project lands. As such, these elements are the heart of the plan.

4.2 Land Allocation

USACE guidance (EP1130-2-550) directs that land allocations can be divided into four categories:

- Operations
- Recreation
- Fish and Wildlife
- Mitigation

In the case of the project, the entire land area was originally acquired for flood control; therefore, all lands are allocated for operations.

Beyond these four categories, two additional categories (i.e., Multiple Resource Management and Easement) are used for lands which require additional management options.

4.3 Land Classification

Land classification designations are applied according to the primary use for which land parcels or types are managed. These are consistent with each project's general or congressionally authorized purposes. USACE land use allocations are based upon five categories of land classifications: (1) Project Operations, (2) High-Density Recreation, (3) Mitigation, (4) Environmentally Sensitive Areas, and (5) Multiple Resource Management Lands.

4.3.1 PROJECT OPERATIONS LANDS

Project Operations lands are designated for the safe, efficient operation of a project for flood control purposes. In all cases, this classification includes, but is not limited to, the lands on which project operational structures are located. Lands under this category are also used for operation and



maintenance of project facilities and supporting infrastructure, including roads, storage facilities and administrative facilities. Where compatible with operations, other activities are permitted.

4.3.2 HIGH-DENSITY RECREATION LANDS

High Density Recreation lands are designated for intensive recreational use or major recreational facility development. They allow for developed public recreation facilities, concessionaire development and high-density or high-impact recreational use. No agriculture is permitted on these lands except on an interim basis for maintenance of open space or scenic values. Private or long-term exclusive use of these public recreational lands is not permitted. Permits, licenses, and easements are not issued for incompatible, man-made intrusions such as pipelines, overhead transmission lines and non-project roads, except where warranted by the public interest. In general, no uses are allowed which would inhibit or foreclose opportunities to develop the lands for intensive recreation. Low-density recreation and low-level wildlife management activities compatible with high-density recreation are acceptable.

4.3.3 MITIGATION LANDS

Mitigation lands are those acquired specifically for the purposes of offsetting losses associated with the development of a project. There are no designated mitigation lands in the Chena River Lakes Flood Control Project.

4.3.4 ENVIRONMENTALLY SENSITIVE AREAS

Environmentally Sensitive Area lands include those project areas where scientific, ecological, cultural, or aesthetic features have been identified. These areas must be considered by management to ensure that there are no adverse impacts caused by a project. Typically, limited (or no) development of public use infrastructure or facilities is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as habitat restoration.

4.3.5 MULTIPLE RESOURCE MANAGEMENT LANDS

Multiple Resource Management lands allow for the designation of a predominant use, with the understanding that other compatible uses may also occur (e.g., a trail through an area designated for wildlife management). Predominant use classifications may include:

- Low Density Recreation
- Wildlife Management
- Vegetative Management
- Future or Inactive Recreation Area



- Water Surface
 - Restricted
 - Designated No-Wake
 - Fish and Wildlife Sanctuary
 - Open Recreation

4.3.6 PROJECT EASEMENT

Project easements include all lands for which the USACE holds an easement interest, but not fee title and may be managed for the following:

- Operations: USACE retains the rights to these lands necessary for project operations (access, etc.).
- Flowage: USACE retains the right to inundate these lands for project operations.
- Conservation: USACE retains the right to lands for aesthetic, recreation, and environmental benefits



5 Resource Plans

The project is divided into Management Units to help craft management policies for the different project regions and applicable infrastructure. Each Management Unit Resource Plan communicates the unit-specific plan for application of previously identified unit Resource Use Objectives.

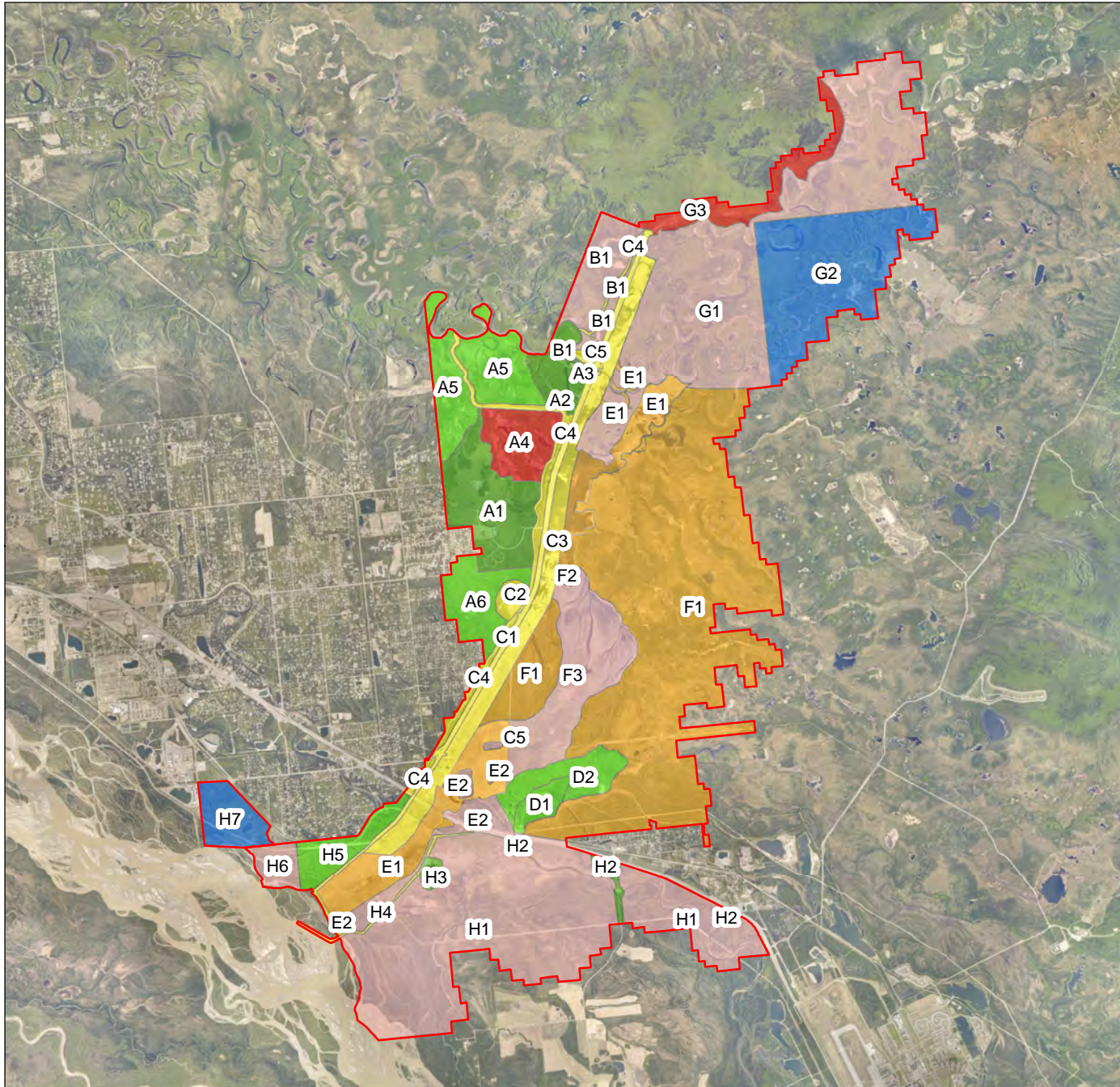
The project has been divided into individual planning units. Planning units are then further compartmentalized into management units. The project planning units are:

- Planning Unit A: Chena Parks
- Planning Unit B: North Chena Pond
- Planning Unit C: Moose Creek Dam
- Planning Unit D: Moose Creek Bluff
- Planning Unit E: Project Floodway
- Planning Unit F: East Project Area
- Planning Unit G: Upper Chena River Area
- Planning Unit H: Southern Project

A summary of management units within each Planning Unit is provided in the following table.

Figure 28 illustrates the breakdown of the project into management units, and the land use allocations for each management unit. Figures 29 - 53 depict each management unit.

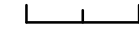




- Flood Control Boundary
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



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Notes

1. Coordinate System: NAD 1983 Alaska Albers
2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
Master Plan Update

Figure No.
28

Title
Management Units (Overview)

CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Table 16. Management Units

Unit	Name	O ps	High Den. Rec.	Envt. Sensitive Area	Multiple Resource	Easement	Acres
A1	Chena Lake Park		X				680.7
A2	Chena River Park		X				244.1
A3	River View Park		X				12.7
A4	Wildlife Habitat			X			354.5
A5	Lower Chena River Area				Low Den. Rec		672.2
A6	Western Laurance Road				Low Den. Rec		354.4
B1	North Chena Pond				Wildlife Mgt		431.5
C1	Moose Creek Dam	X					310.5
C2	O&M Compound	X					71.7
C3	Silt blankets	X					792.9
C4	Seepage Channels	X					288.9
C5	Laydown Yards	X					27.1
D1	Bluff Summit				Low Den. Rec		121.8
D2	Bluff Slopes				Low Den. Rec		293.0
E1	Cleared Floodway				Veg. Mgt		1001.8
E2	Wildlife Management Vegetation/Ponds				Wildlife Mgt		321.2
F1	East Project Area				Veg. Mgt		4798.7
F2	East Project ESA			X			13.8
F3	East Project Wildlife				Wildlife Mgt		861.3
G1	Chena River Corridor				Wildlife Mgt		2862.5
G2	Ft Wainwright Maneuver Area					X	1335.0
G3	North Chena Foothills			X			326.5
H1	Southern Project Lands				Wildlife Mgt		3198.4
H2	Piledriver Slough		X				62.9
H3	Moose Creek Landing		X				45.9
H4	Diversion Dike Access	X					38.3
H5	Dam Extension				Low Den. Rec		248.4
H6	South Dyke Range				Wildlife Mgt		140.8
H7	Army Dyke Range					X	271.3
Total							20182.8



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Table 17. Management Units and Project Objectives

Unit	1: Operations	2: Visitor Rec	3: Trails	4: Waterways	5: Dispersed Recreation	6: Health	7: Cultural	8: Moose, Resident	9: Moose, Move.	10: Waterfowl Nesting	11: Waterfowl Staging	12: Wildlife	13: Fish Habitat	14: Lake Fishery
A1		X	X	X	X	X						X		X
A2		X	X	X	X	X						X	X	
A3		X	X	X	X	X						X	X	
A4			X		X			X	X	X	X	X		
A5			X		X	X		X	X	X	X	X		
A6		X	X		X	X								
B1	X		X	X	X			X	X	X	X	X	X	X
C1	X	X	X											
C2	X				X	X	X					X		
C3	X				X						X	X		
C4	X		X		X									
C5	X													
D1			X		X		X					X		
D2			X		X		X	X				X		
E1	X		X		X			X			X	X	X	
E2					X			X	X	X	X	X		
F1			X		X			X		X	X	X		
F2			X		X			X	X	X	X	X		
F3			X		X			X	X	X	X	X		
G1			X	X	X			X	X	X	X	X	X	
G2	X				X			X		X	X	X		
G3							X	X		X	X	X		
H1				X	X			X		X		X		
H2		X		X	X	X				X		X	X	X
H3	X	X		X	X	X							X	X
H4	X				X					X	X	X		
H5	X				X					X		X		
H6				X	X			X		X		X		
H7	X							X		X	X	X		



5.1 Management Unit A1: Chena Lake Park

5.1.1 CLASSIFICATION AND JUSTIFICATION

Classification: High-Density Recreation

Chena Lake is one of the only large lakes close to the Fairbanks urban area. It provides the best boating, fishing, and swimming recreational activities when compared to the other two major lakes (i.e., Harding and Birch Lakes). The regional population highly values this recreation area, and demand for its use continues to expand.

Due to its size and irregular shape, Chena Lake is restricted to non-motorized watercraft (with the exception of electric motors). This corresponds to public and agency preference for a “quiet” lake.

ADF&G is currently stocking Chena Lake for a sport fishery.

Existing wetlands within the unit support a population of waterfowl, sandhill cranes, and nonmigratory birds. Maintenance of these habitats provide for wildlife viewing.

The 2022/2023 Moose Creek Dam Barrier Wall Modification Project is developing a material site along the eastern portion of Chena Lake, with a laydown yard and a new access road to Laurance Road. These site improvements are planned to be used as recreational facilities when the wall modification project is completed.

5.1.2 DESCRIPTION AND USE

The management unit includes all of Chena Lake, developed land within Chena Lake Park, and undeveloped lands forming a buffer zone around the lake and park. Developed facilities at Chena Lake Park include: two camping loops, picnic areas and group shelters, a swimming beach, a boat ramp with dock, a play area, changing and winter warm-up facilities; vault toilets; hand-operated water pumps; and parking areas. Project circulation roads provide access to the park.

5.1.3 RESOURCE OBJECTIVES

- A. Objective (Obj) 2: Provide opportunities for high-density recreation which, in combination with Chena River Park will satisfy regional needs for those activities
- B. Obj 2: Retain and develop lands adjacent to Chena Lake Park to meet future regional recreation needs
- C. Obj 3: Maintain the trail system. Expand the trail system as necessary to accommodate use



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

- D. Obj 4: Manage Chena Lake as a “quiet” lake for non-motorized boating (with the exception of electric trolling motors) and other low-impact activities to minimize conflicts with other uses and adjacent landowners
- E. Obj 5: Promote dispersed recreation, using less-developed areas of the unit
- F. Obj 6: Provide facilities to meet health and safety needs
- G. Obj 12: Maintain unit wetlands to promote waterfowl and other bird use, enriching visitor recreational experiences by providing opportunities for wildlife viewing and nature study
- H. Obj 14: Cooperate with ADF&G in managing Chena Lake to meet regional needs for recreational lake fishing opportunities

5.1.4 DEVELOPMENT NEEDS

Maintenance, repair, and sustainment of infrastructure is required, including:

- The construction of a separated recreation path paralleling Laurance Road, similar to that located along the rest of Laurance Road
- Resurface the roads, parking lots, and campgrounds
- Update and modernize campgrounds by providing electrical hook-ups, water, Wi-Fi, and/or boosted cellular services to campsite
- Update the Park Playground to make it Americans with Disabilities Act (ADA) compliant
- Update and improve showers in the Lake Park
- Replace information kiosks and update signs and trail markers
- Other Projects
 - Dump station replacement
 - Replacement of wells in campgrounds
 - ADA-compliant ice fishing shelters
 - Pavilion roof replacement
 - Group campground
 - Cabin campground
 - Extra-large pavilion for large groups

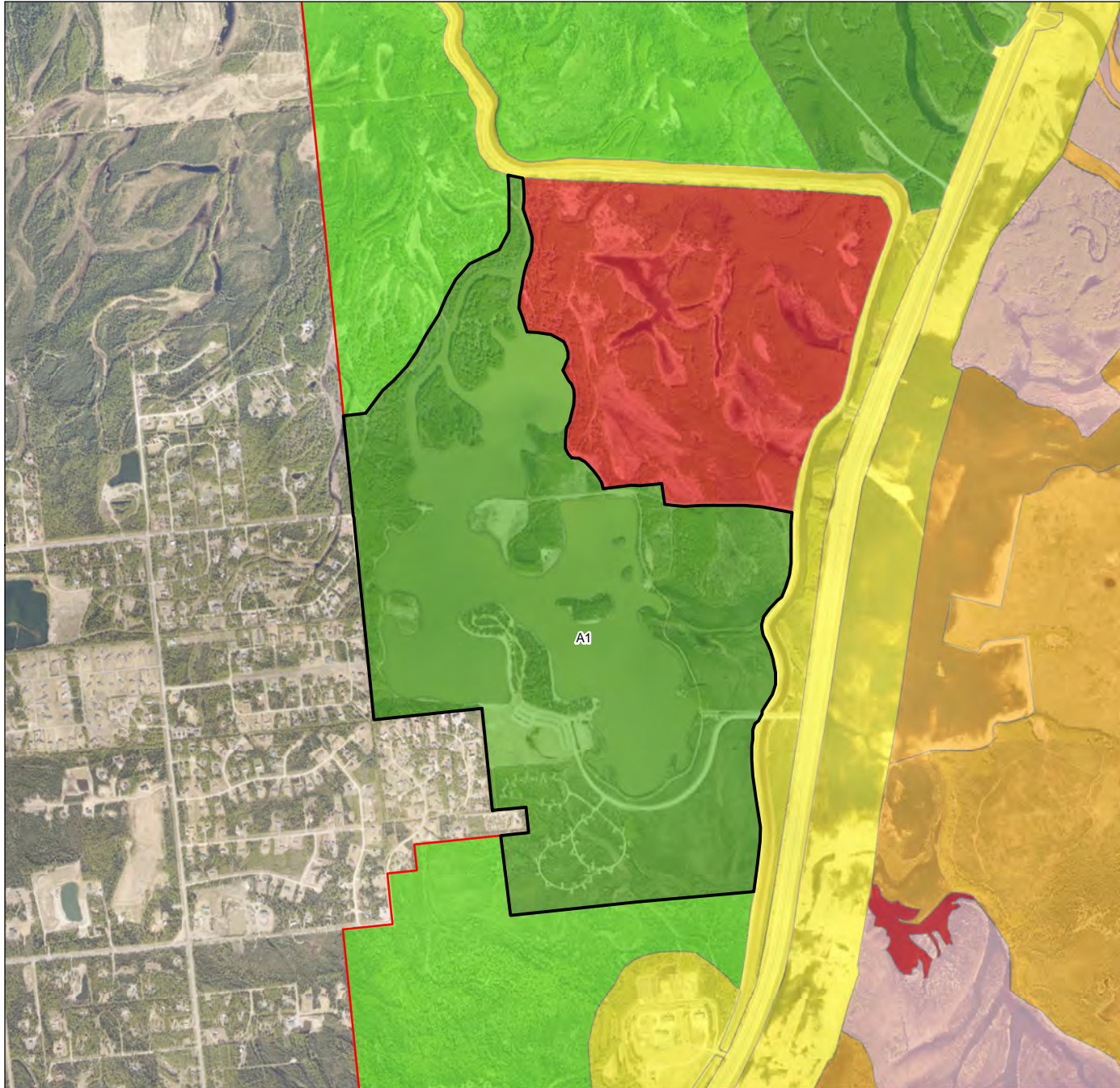











CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Other development ideas are included in long-term USACE internal planning conversations. These have not sufficiently matured to the stages that they be included in this plan's update for analyses under the National Environmental Policy Act (NEPA) (See Appendix A). However, these ideas have included:

- Create a new entrance to the park at the end of Plack Road and tie that entrance into a trail system that would circumnavigate Chena Lake and connect to existing trails within Chena Lake Park
- Build a FNSB Visitor Center – This building would provide interpretive education exhibits of the natural history, culture, and historical significance of the area; a rental space for the community to host weddings, birthdays, and conferences; park offices; restrooms; and support for interpretive and recreational programming done by FNSB staff (such as summer camps, winter camps, park ranger programs & tours)
- Use of construction yard
 - The construction yard that was built for the 2022/2023 Moose Creek Dam Barrier Wall Modification Project will become available to serve as supporting future recreation opportunities. Potential uses might include:
 - Parking
 - Campgrounds
 - Recreational facilities (i.e., campgrounds, visitor center, etc.)



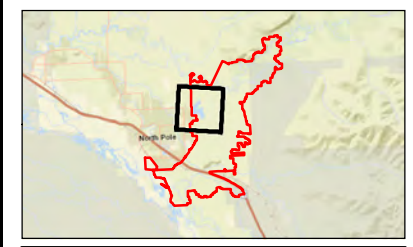


-  Flood Control Boundary
-  Easement: Flowage
-  Environmentally Sensitive Area
-  High Density Recreation
-  Multiple: Low Density Recreation
-  Multiple: Operations
-  Multiple: Vegetation Management
-  Multiple: Wildlife Management
-  Project Operations



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 1:24,000

Notes
 1. Coordinate System: NAD 1983 Alaska Albers
 2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
 North Pole, Alaska

Client/Project
 Chena River Lakes Flood Control Project
 Master Plan Update

Figure No.
29

Title
**Chena Lake Park (A1)
 Management Unit**

5.2 Management Unit A2: Chena River Park

5.2.1 CLASSIFICATION AND JUSTIFICATION

Classification: High-Density Recreation

Similarly to Chena Lake Park, the developed recreational facilities at River Park help meet regional needs and satisfy demand for public recreation. In addition, Chena River Park's location along the south side of the Chena River, just downstream of the Moose Creek Dam, makes it an important point for access to adjacent undeveloped lands and to the Chena River for low-density and dispersed recreational use. Project lands in the surrounding area are used for a variety of recreational activities, including dog mushing, snow machining, horse riding and hiking. Maintenance of existing wildlife habitats will help retain species diversity.

5.2.2 DESCRIPTION AND USE

This management unit includes the developed Chena River Park Site and undeveloped land forming a buffer zone around the park. Existing recreational facilities at River Park include two camping loops; a picnic area adjacent to the river with a group shelter; a single-lane boat ramp in the slough adjacent to the Chena River; a winter warm-up building; sanitary facilities, and hand-operated water pumps. Recreational trails wind through undeveloped lands in Unit A2 and in adjacent Unit A3. Circulation roads provide access to Chena River Park.

5.2.3 RESOURCE OBJECTIVES

- A. Obj 2: Provide opportunities for intensive-use recreation activities which, in combination with Chena Lake Park, will satisfy regional needs for those activities
- B. Obj 2: Separate intensive-use areas from other resource areas
- C. Obj 3: Maintain the trail system. Expand the trail system as necessary to accommodate use
- D. Obj 4, Obj 5: Promote access to project lands adjacent to Chena River Park for dispersed and low-density recreational activities, and to Chena River for fishing and other water-related activities
- E. Obj 6: Provide facilities to meet health and safety needs
- F. Obj 12, Obj 13: Support wildlife and fish species abundance and diversity and provide opportunities for wildlife and fish viewing

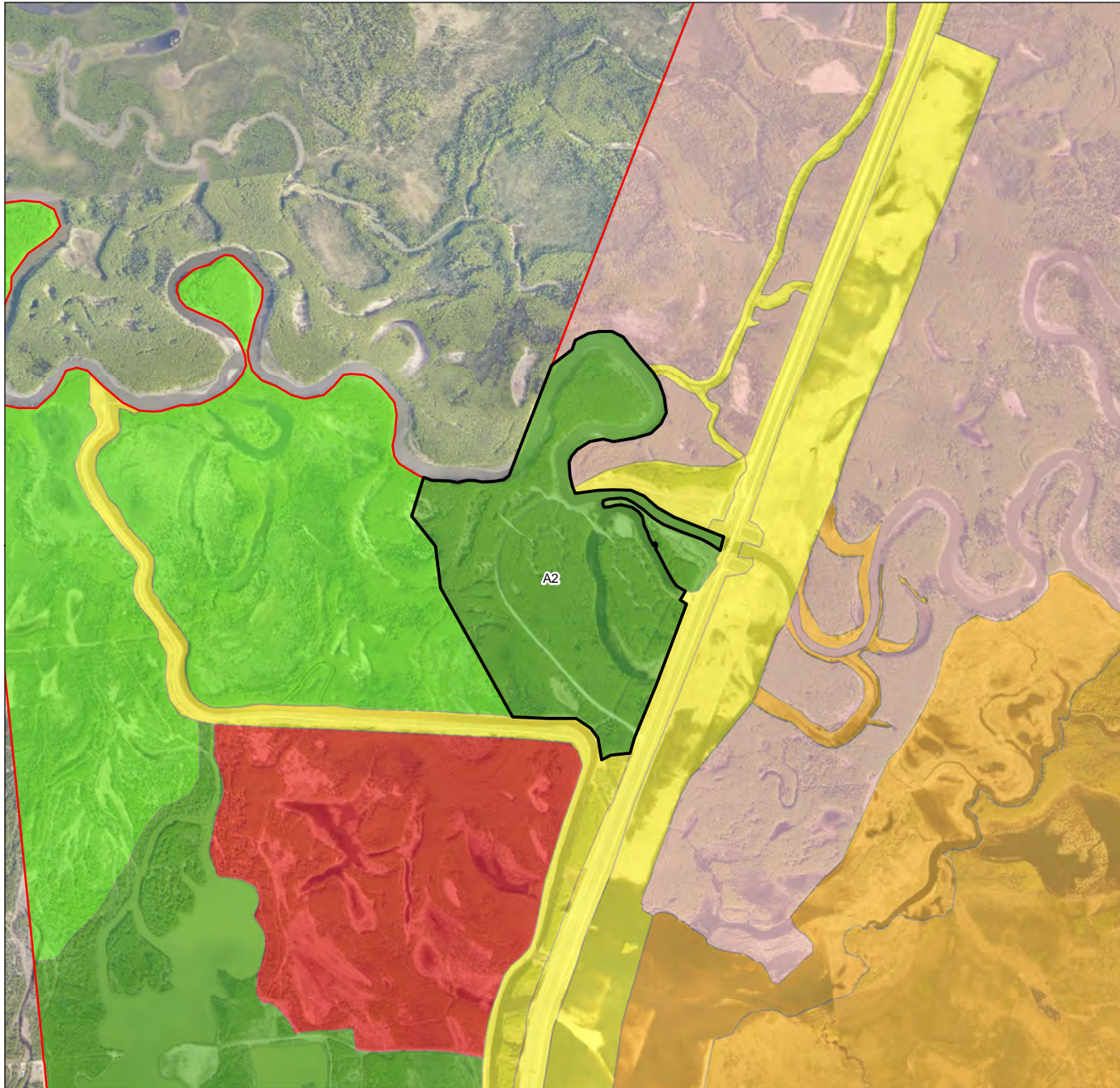


5.2.4 DEVELOPMENT NEEDS

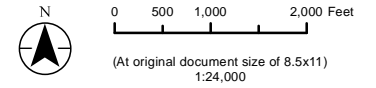
- The FNSB has identified the following development needs:
 - Reroute trails along the Chena River
 - Resurface the roads, parking lots, and campgrounds
 - Update and modernize campgrounds by providing electrical hook-ups, water, Wi-Fi, and/or boosted cellular services to campsite
 - Replace information kiosks and update signs and trail markers
 - Replacement of water wells in campgrounds



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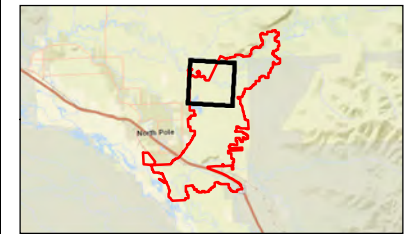


- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes

1. Coordinate System: NAD 1983 Alaska Albers
2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
Master Plan Update

Figure No.
30

Title
**River Park (A2)
Management Unit**

5.3 Management Unit A3: River View Park

5.3.1 CLASSIFICATION AND JUSTIFICATION

Classification: High Density Recreation

Similarly to Chena River Park, the developed recreational facilities at River View Park help meet regional needs and satisfy demand for public recreation. River View Park focuses on day use facilities, and has an extended view of the Chena River, along with the outlet control structure. This provides interpretation opportunities to emphasize the project operations and benefit to the region.

5.3.2 DESCRIPTION AND USE

This management unit includes the developed River View Park, which includes day use parks, picnic tables with shelters, a campground host, and maintained lawn. Interpretive displays discuss the operations of the project control works. Circulation roads provide access to Laurance Road.

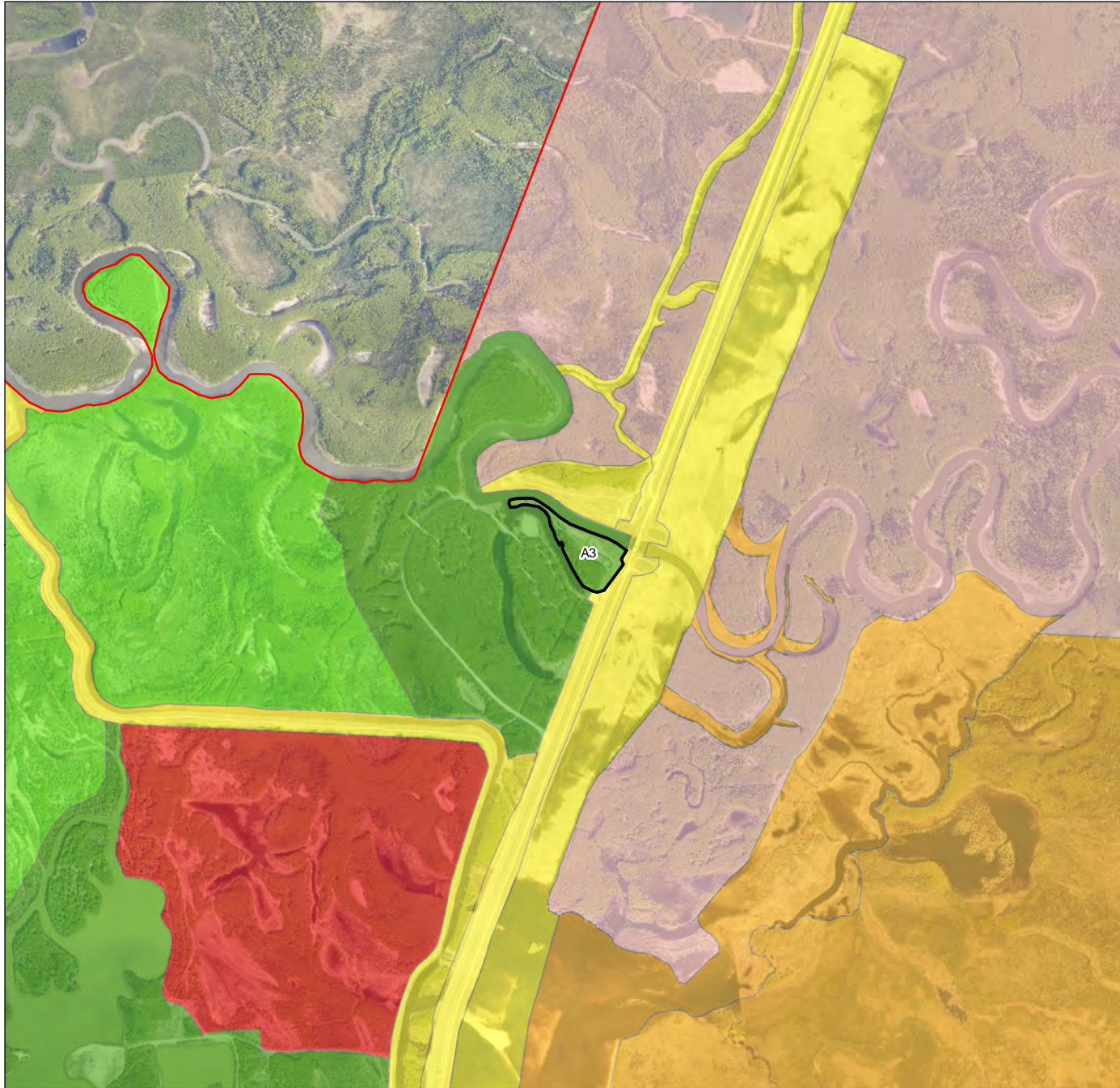
5.3.3 RESOURCE OBJECTIVES

- A. Obj 2: Provide opportunities for intensive-use recreation activities which, in combination with Chena Lake Park and River Park, will satisfy regional needs for those activities.
- B. Obj 2: Separate intensive use areas from other resource areas.
- C. Obj 3: Maintain the trail system. Expand the trail system as necessary to accommodate use.
- D. Obj 4, Obj 5: Promote access to project lands adjacent to Chena River Park and River View Park for dispersed and low-density recreational activities, and to the Chena River for fishing and other water-related activities.
- E. Obj 6: Provide facilities to meet health and safety needs.
- F. Obj 12, Obj 13: Support wildlife and fish species abundance and diversity and provide opportunities for wildlife and fish viewing.

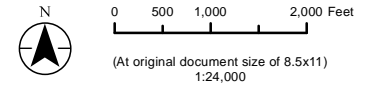
5.3.4 DEVELOPMENT NEEDS

No needs have been identified.



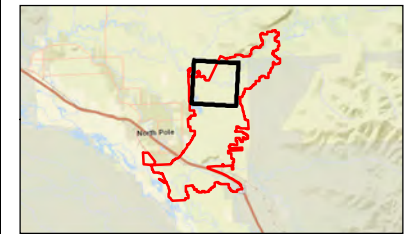


- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes

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Project Location
North Pole, Alaska

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Chena River Lakes Flood Control Project
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Figure No.
31

Title
**River View Park (A3)
Management Unit**

5.4 Management Unit A4: Wildlife Habitat

5.4.1 CLASSIFICATION AND JUSTIFICATION

Classification: Environmentally Sensitive Area

This management unit contains quality wildlife habitats close to intensive-use recreational developments on the project. Several wetlands within the area support waterfowl use during spring migration. Moose use this area as a movement corridor between other project features because it provides adequate levels of protective vegetative cover close to the dam. Designation as an Environmentally Sensitive Area conserves these habitats, providing opportunities for wildlife viewing and contributing towards a diverse mix of resources uses by various wildlife species.

5.4.2 DESCRIPTION AND USE

Management Unit A4 is located between River Park and Chena Lake Park. It is bounded on the north and east by the seepage collection channel. This unit features several small seasonal ponds and marsh areas that provide good waterfowl habitat and opportunities for wildlife viewing.

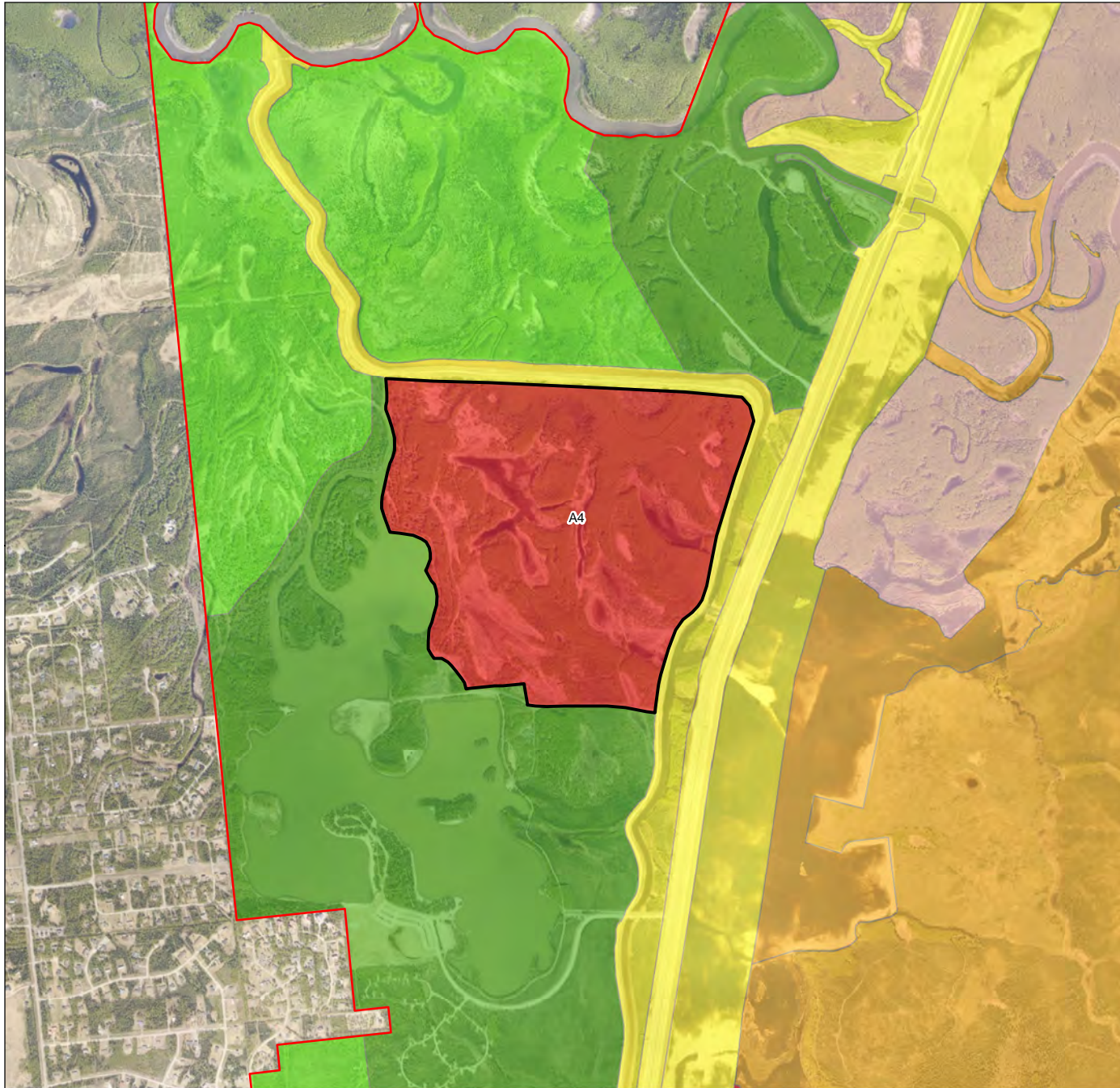
5.4.3 RESOURCE OBJECTIVES

- A. Obj 3, Obj 5: Maintain the Chena Lake Winter Trails that are present in the Management Unit. Expand the trail system as necessary to accommodate use.
- B. Obj 8, Obj 9: Maintain existing moose movement corridors and provide adequate forage to support resident and seasonally migrating moose.
- C. Obj 10, Obj 11: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.
- D. Obj 12: Establish an environmentally sensitive area for protection and study of vegetation and wildlife and promote visitor wildlife viewing.

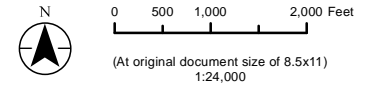
5.4.4 DEVELOPMENT NEEDS

No development needs have been identified.



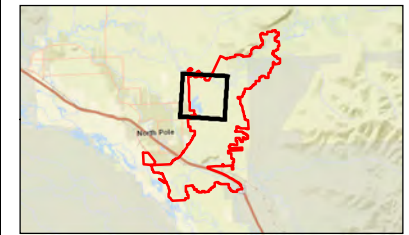


- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



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Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
Master Plan Update

Figure No.
32

Title
**Wildlife Habitat (A4)
Management Unit**

5.5 Management Unit A5: Lower Chena River Area

5.5.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple Resource Management Lands: Low Density Recreation

Maintenance of Unit A5 as a low-density recreation area promotes a diverse mix of visitor opportunities compatible with the intensive use recreational areas within Planning Unit A. It also provides a vegetated buffer between parts of Chena Lake and residential lands adjacent to the project's western boundary, thereby minimizing conflicts with private landowners. Use of this management unit for a variety of low-density recreational activities promotes the diversity and quality of the Chena Parks recreation.

This land also supports a summer resident moose population. Migrating moose also currently use these lands as a movement corridor along the Chena River to cross the project.

Wetlands within the unit provide nesting, brood rearing, and staging areas for waterfowl.

5.5.2 DESCRIPTION AND USE

Management Unit A5 is located on the northwest corner of the project along the south bank of the Chena River. Although mostly undeveloped, Unit A5 is bisected by the project seepage collection channel where it angles north to the Chena River. A combination of deciduous forests, low shrubs and wet meadows cover the unit. Managed trails traverse the unit.

5.5.3 RESOURCE OBJECTIVES

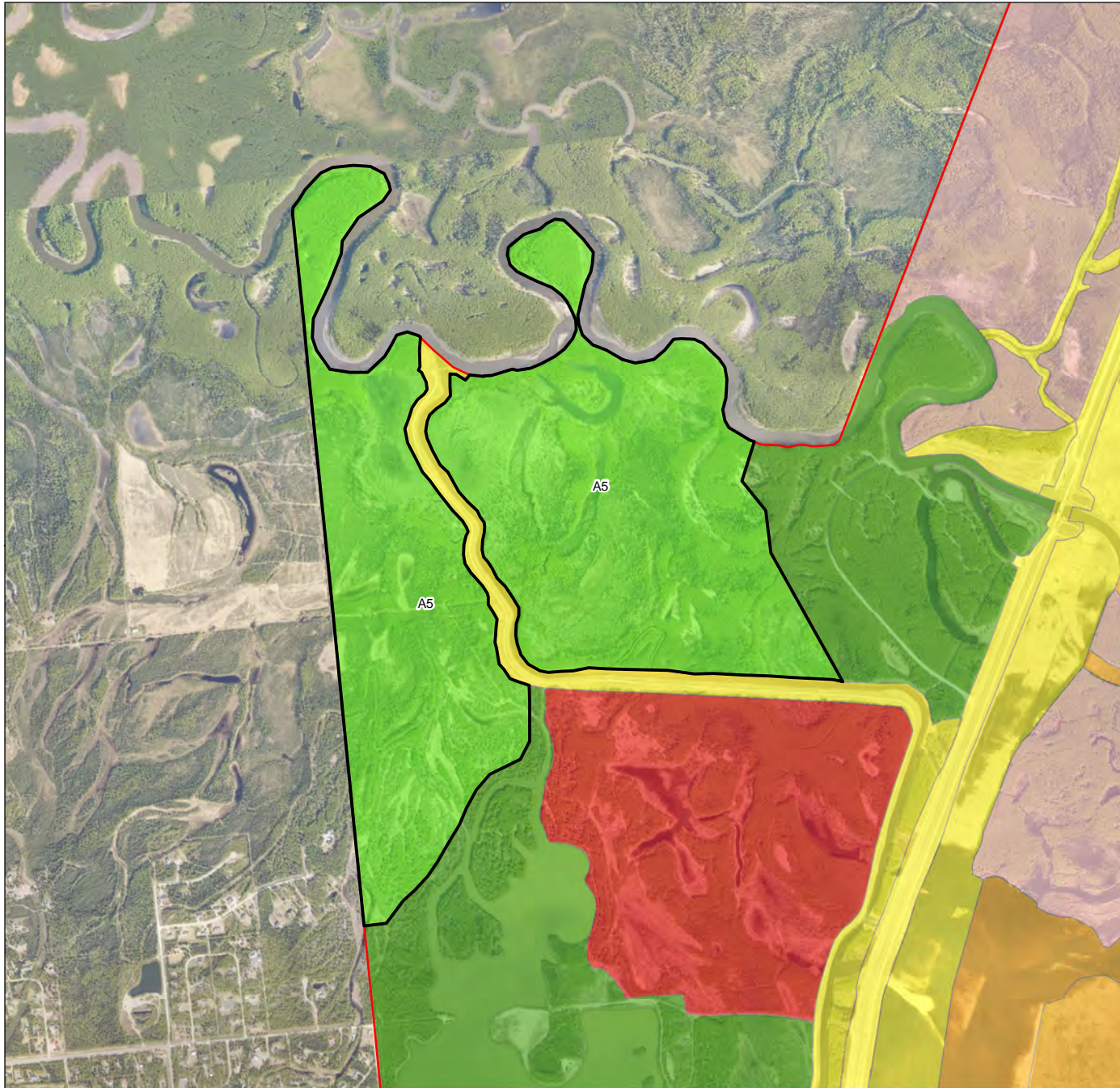
- A. Obj 3: Maintain the trail system. Expand the trail system as necessary to accommodate use. Designate trail corridors for hiking, cross-country skiing, dog-mushing, and other dispersed, non-motorized recreation activities.
- B. Obj 5: Reduce conflicts between high-density use areas in Planning Unit A and privately-owned lands along the west project boundary through the use of vegetative buffers and other management techniques.
- C. Obj 6: Provide facilities to meet health and safety needs.
- D. Obj 8, Obj 9, Obj 12: Protect moose movement corridors through the project and manage habitats for moose forage.
- E. Obj 10, Obj 11, Obj 12: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.



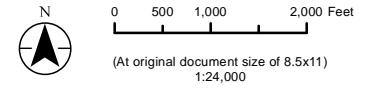
5.5.4 DEVELOPMENT NEEDS

Future development may include the construction of a separated recreation path paralleling Laurance Road, similar to that located along the rest of Laurance Road.



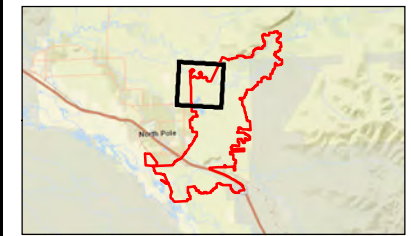


- Flood Control Boundary
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes

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Project Location
North Pole, Alaska

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Figure No.
33

Title
**Lower Chena River Area (A5)
Management Unit**

5.6 Management Unit A6: Western Laurance Road Area

5.6.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple Resource Management Lands: Low Density Recreation

Management Unit A6 includes the undeveloped lands west of the operations compound. This unit provides recreation facilities, trails, and a natural vegetative buffer to the residences adjacent to the western boundary of the project.

5.6.2 DESCRIPTION AND USE

Management Unit A6 is located on the western area of Laurance Road. Laurance Road is the primary avenue for traffic access into the project, and this unit receives high amounts of vehicular traffic and recreation use. A combination of deciduous forests, low shrubs and wet meadows cover the unit.

5.6.3 RESOURCE OBJECTIVES

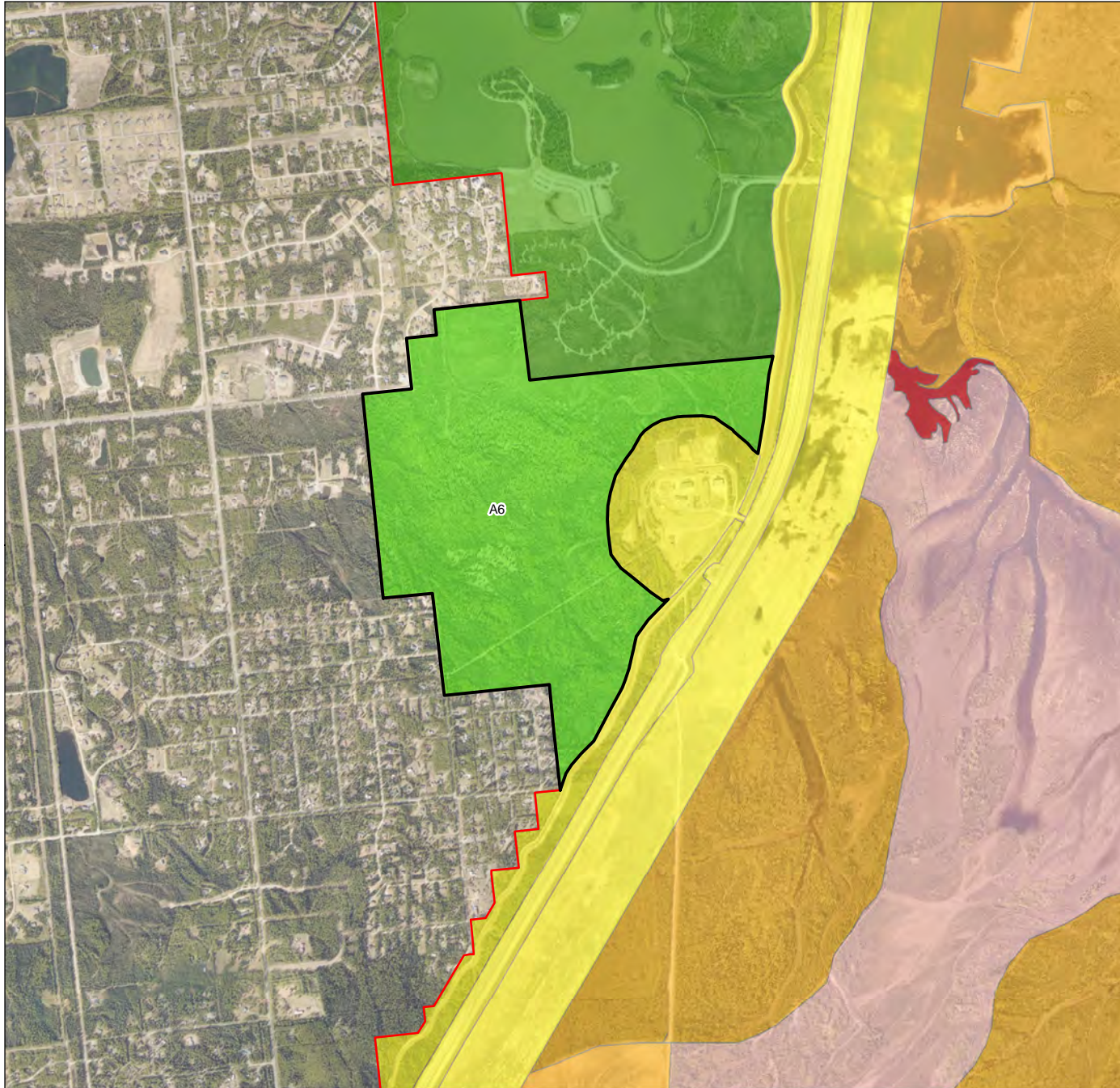
- A. Obj 2, Obj 3: Maintain the trail system. Expand the trail system as necessary to accommodate use. Designate trail corridors for hiking, cross-country skiing, dog-mushing, and other dispersed, non-motorized recreation activities.
- B. Obj 5: Reduce conflicts with privately-owned lands along the west project boundary through the use of vegetative buffers and other management techniques.
- C. Obj 6: Provide facilities to meet health and safety needs.

5.6.4 DEVELOPMENT NEEDS

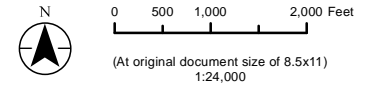
No development needs have been identified.



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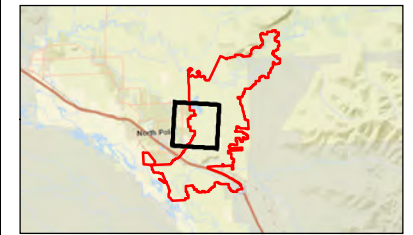


- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes

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Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
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Figure No.
34

Title
**Western Laurance Road (A6)
Management Unit**

5.7 Management Unit B1: North Chena Pond

5.7.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple Resource Management Lands: Wildlife Management

Project lands in the vicinity of North Chena Pond have been identified as a potential source of materials for future project needs. Past material activity created North Chena Pond and road access exists to the pond.

Unit B1 also has high value as wildlife habitat. North Chena Pond, other wetlands, and early successional areas support populations of waterfowl, moose, shorebirds, and other species. The entire unit serves as a corridor for movement of moose through the project. The north end of the project is the only place where vegetative cover has not been cleared on both sides of the Moose Creek Dam. Currently, lands directly to the north of the Chena River are used for a variety of recreational trail activities.

5.7.2 DESCRIPTION AND USE

The principal feature of Unit B1 is North Chena Pond, a former gravel material area partially rehabilitated to a semi-natural condition when Moose Creek Dam was constructed. The project seepage collection channel bisects Unit B1. Except for the North Chena Pond area, the remainder of the unit is undeveloped and vegetated by a combination of black spruce, deciduous forest, and mixed forest communities.

5.7.3 RESOURCE OBJECTIVES

- A. Obj 1: Maintain availability for future potential material site use.
- B. Obj 3, Obj 5: Develop trail corridors for low-density, dispersed recreational uses where compatible with wildlife management objectives.
- C. Obj 4: Maintain access to utilize waterways.
- D. Obj 8, Obj 12, Obj 13, Obj 14: Maximize habitat for moose, waterfowl and other wildlife species, and support habitat for fish populations.
- E. Obj 9: Maintain an unrestricted corridor for moose movement through the unit.
- F. Obj 10, Obj 11: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.



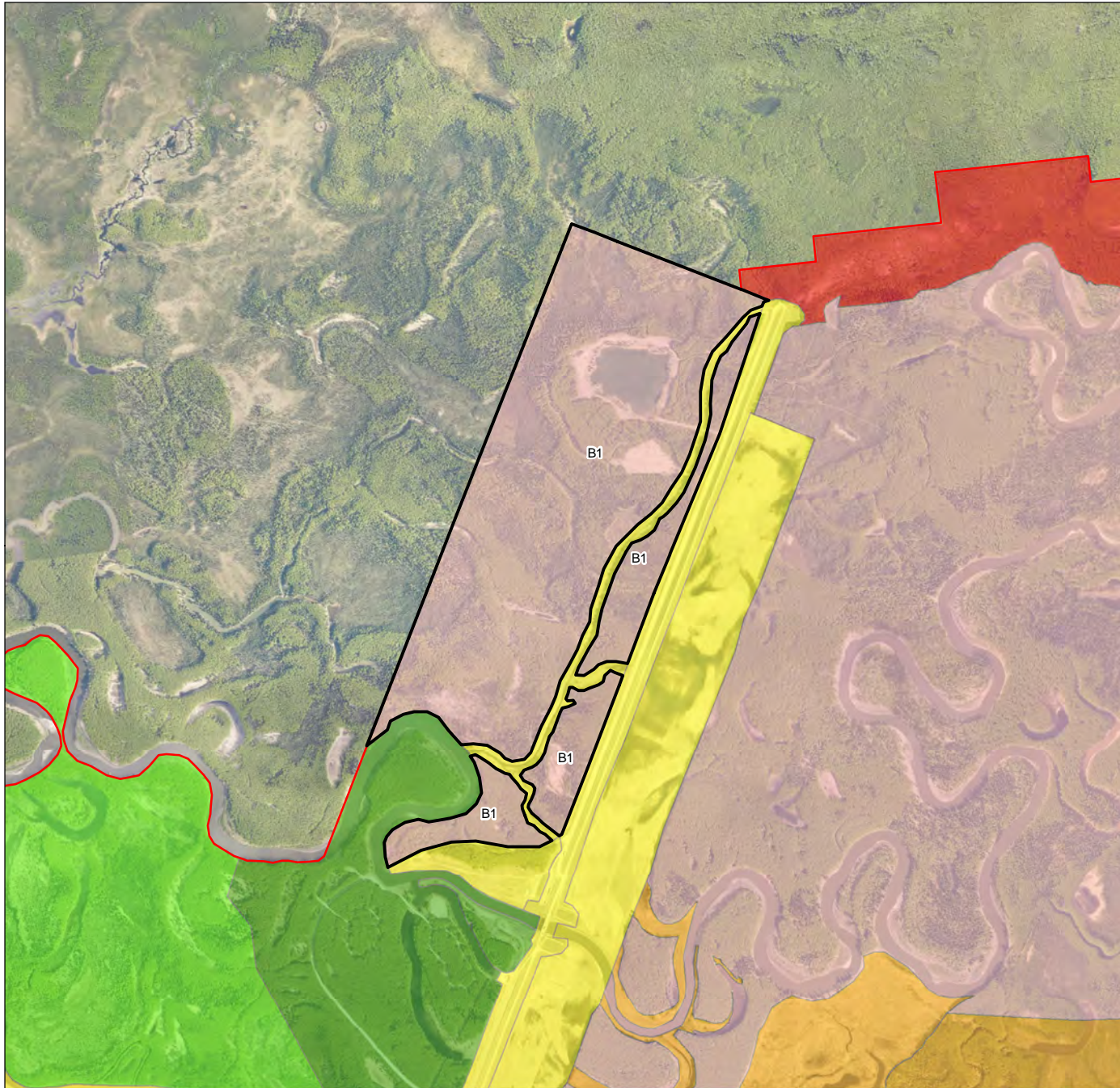
5.7.4 DEVELOPMENT NEEDS

Future material site use should include recontouring the pond to improve fish and vegetation habitat.

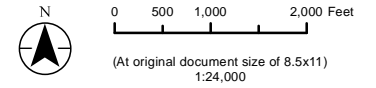
Development of trail corridors through Unit B1 could provide an important link to the overall Borough trail system.



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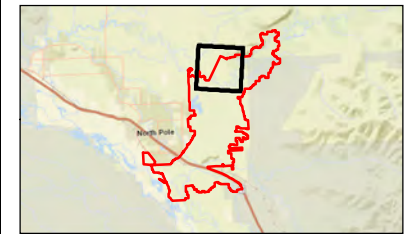


- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes

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Project Location
North Pole, Alaska

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Chena River Lakes Flood Control Project
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Figure No.
35

Title
**North Chena Pond (B1)
Management Unit**

5.8 Management Unit C1: Moose Creek Dam

5.8.1 CLASSIFICATION AND JUSTIFICATION

Classification: Project Operations

To ensure safe, efficient operation of the project, uses conflicting with the operation of flood control structures must be restricted. The unit contains visitor use facilities, including the project access road, park entrance station and sanitary dump station. These facilities permit safe public access to designated intensive-use visitor facilities of the project without compromising project operations. Providing controlled access points across Moose Creek Dam reduces public desire for extensive, uncontrolled access over the dam embankment.

5.8.2 DESCRIPTION AND USE

Management Unit C1 consists of the Moose Creek Dam and related flood control features, including the outlet control structure. Also included in the unit are small areas of land surrounding the outlet control structure.

Laurance Road, the primary public access road which follows the base of the dam, is an important feature of Management Unit C1. This road provides vehicular entry to the dam, outlet control structure, operations and maintenance compound, and Chena Parks. Several visitor facilities are located along the road, including the park entrance station and sanitary dump station.

5.8.3 RESOURCE OBJECTIVES

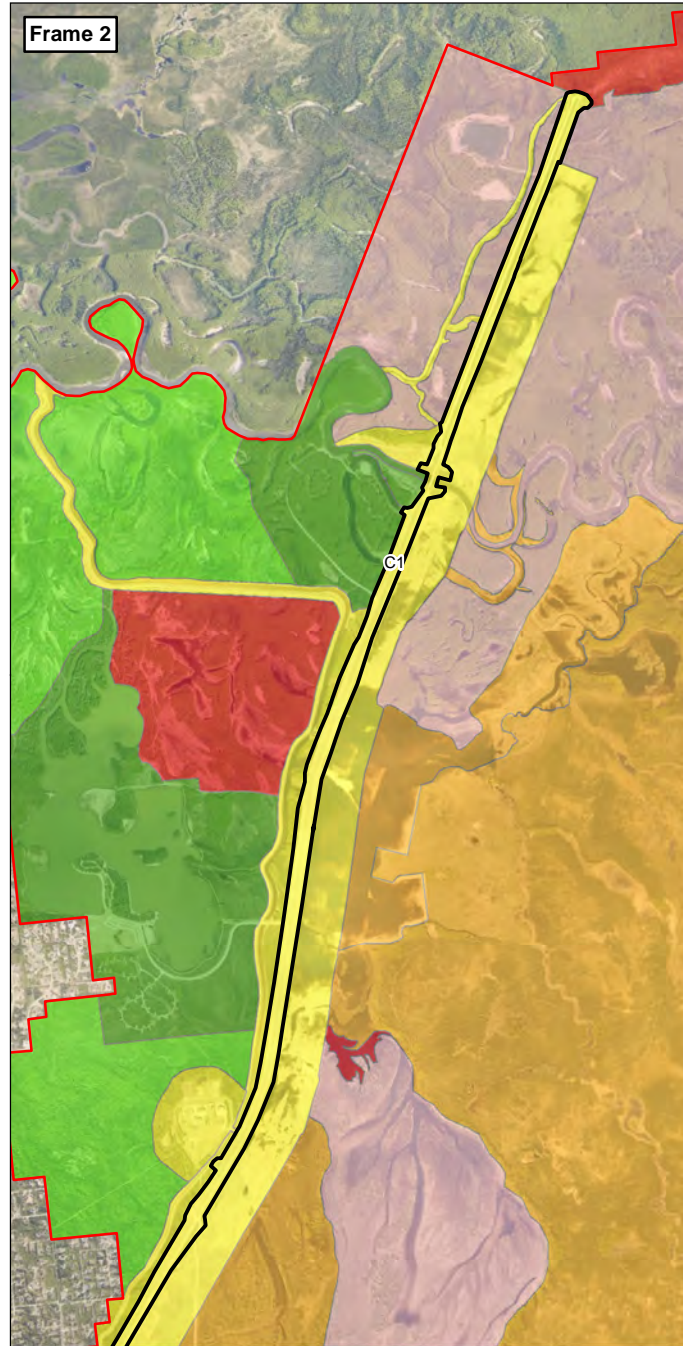
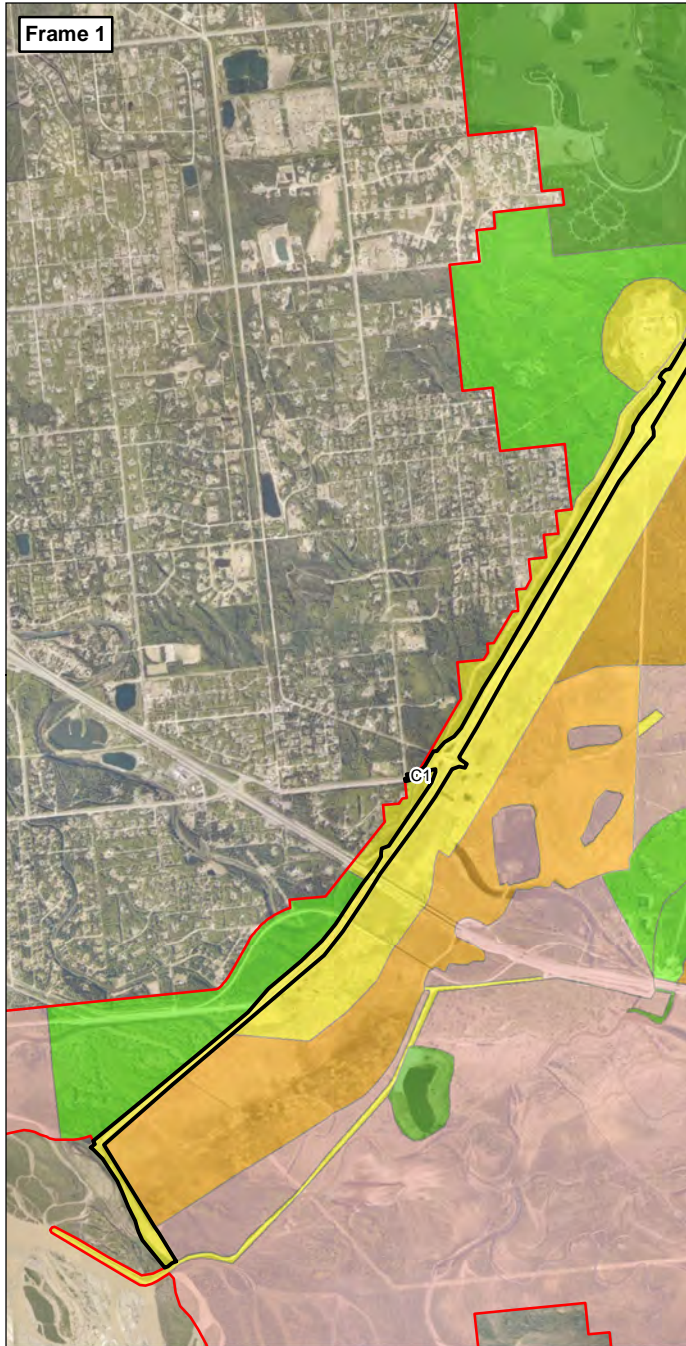
- A. Obj 1: Ensure continuous safe and efficient operation of Moose Creek Dam and its appurtenant features for flood control.
 - a. Provide for the clearing of debris in front of the Chena River control works gatehouse. Requirements include an operations area for a crane and/or similar equipment. There is also the requirement for a temporary storage area for cleared debris, which is accessible to the public for firewood collection (through a permit system).
 - b. Operate the Chena River control works gatehouse fishways and fish ladder, as necessary.
- B. Obj 2: Enhance visitor opportunities to view and understand the project.
- C. Obj 3: Permit public movement over the existing access ramps to provide controlled access routes to both sides of the dam when compatible with flood control operations.
 - a. Disallow ORV use on the dam, except when seasonally allowed at established, controlled access points.



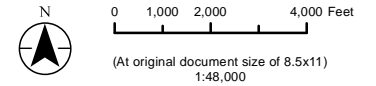
5.8.4 DEVELOPMENT NEEDS

No development needs have been identified.

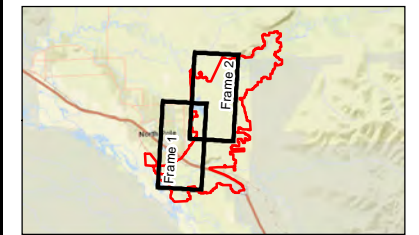




- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes
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Project Location
 North Pole, Alaska

Client/Project
 Chena River Lakes Flood Control Project
 Master Plan Update

Figure No.
36

Title
**Moose Creek Dam (C1)
 Management Unit**

5.9 Management Unit C2: Operations and Maintenance Compound

5.9.1 CLASSIFICATION AND JUSTIFICATION

Classification: Project Operations

The Project Operations and Maintenance Compound consists of a USACE Administration/Visitor Center Building, concrete bunker storage buildings, and material and equipment storage areas. The FNSB Chena Parks Administration and Maintenance building is also located here. The compound utilizes concrete bunkers which were formerly part of Nike Site Tare. As historic resources, Site Tare, along with Sites Summit and Bay, were documented by the USACE in consultation with the State Historic Preservation Officer (SHPO) as part of a thematic study of the history of the Nike System in Alaska.

5.9.2 DESCRIPTION AND USE

Management Unit C2 consists of the project operations and maintenance (O&M) compound located downstream of the Moose Creek Dam near its midpoint. The fenced compound is surrounded by undeveloped land. Within the compound are the project office, equipment storage areas, storage and maintenance buildings and gravel stockpiles. Two large concrete bunkers are currently used for storage. All of the O&M compound is managed by the USACE, with the exception of facilities leased to the FNSB for operation and maintenance of the Chena Parks.

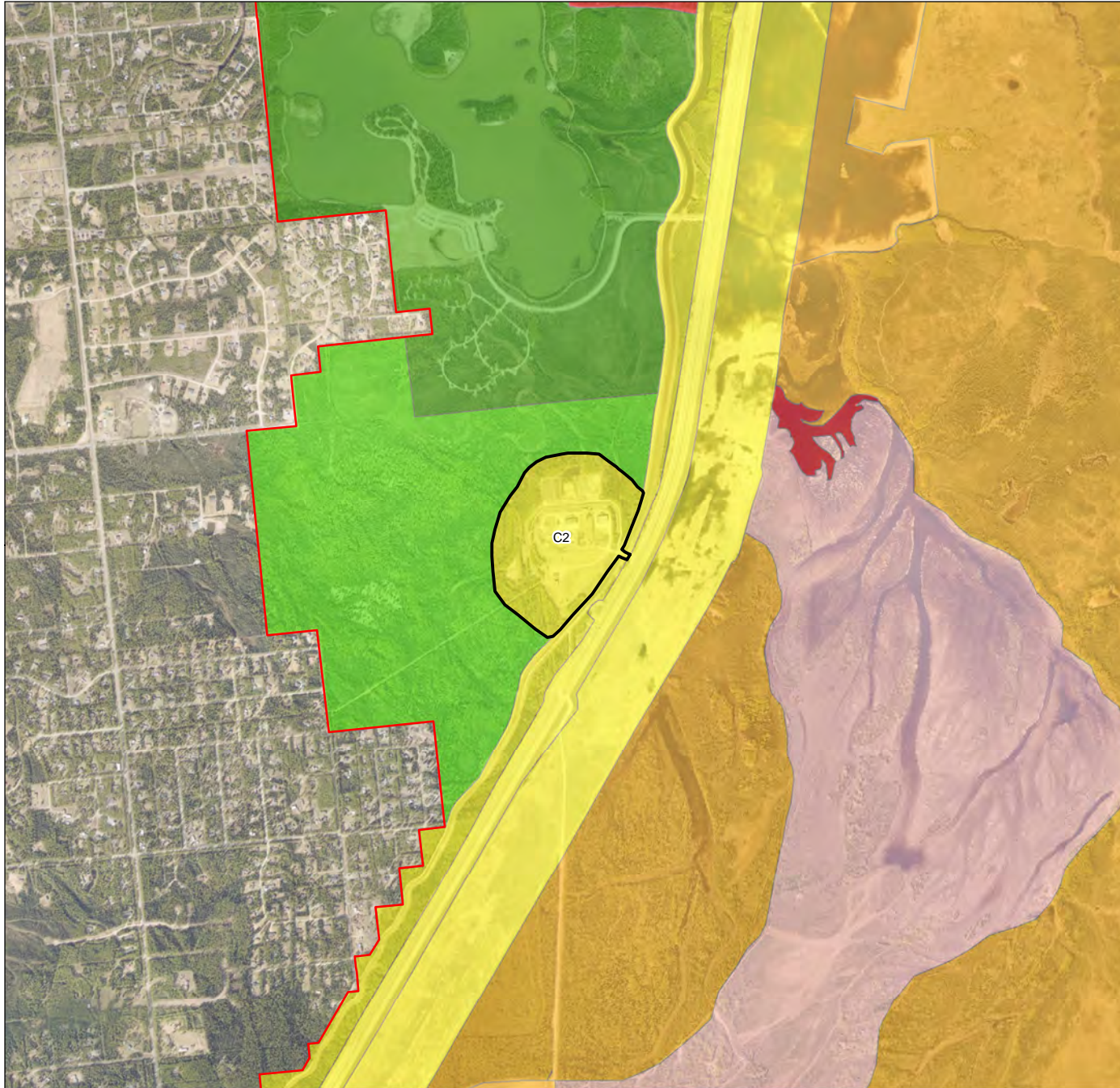
5.9.3 RESOURCE OBJECTIVES

- A. Obj 1: Allow for continuous, safe, efficient support service for operation, maintenance, and administration of the project.
- B. Obj 5: Retain undeveloped lands surrounding the project compound in a semi-natural state for low-density, dispersed recreational uses, improvement of visual quality, to provide separation from project visitor use areas, and for future project operational needs.
- C. Obj 6: Provide facilities to meet health and safety needs.
- D. Obj 7: Protect the cultural resource value.
- E. Obj 12: Sustain and promote wildlife species abundance and diversity.

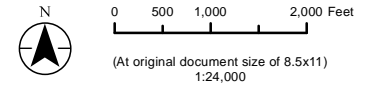
5.9.4 DEVELOPMENT NEEDS

No development needs have been identified.

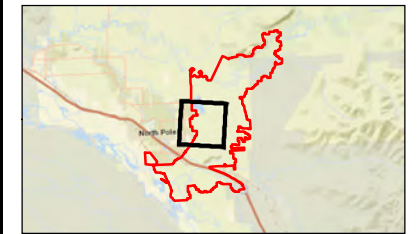




- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



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Project Location
 North Pole, Alaska

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 Chena River Lakes Flood Control Project
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Figure No.
37

Title
**Operations and Maintenance
 Compound (C2)
 Management Unit**

5.10 Management Unit C3: Silt Blankets

5.10.1 CLASSIFICATION AND JUSTIFICATION

Classification: Project Operations

The silt blanket areas play an important role in ensuring the proper functioning of Moose Creek Dam and their stability must be maintained. No uses or developments can be allowed which might damage or erode them. Currently, the only vegetation allowed on the silt blankets is grass-forb cover that is maintained by no/low disturbance methods such as mowing, burning, and/or agriculture.

Management unit vegetation is used by large numbers of waterfowl for forage during spring migration staging periods. Agricultural activities completed by the USACE, including haying, burning, and planting of selected grain crops, promote waterfowl use of the unit. Agricultural activities also reduce USACE maintenance requirements.

5.10.2 DESCRIPTION AND USE

Management Unit C3 consists of the silt blanket areas on the upstream (east) side of Moose Creek Dam. These silt blankets extend nearly the entire length of the dam. The silt blankets limit seepage under the dam during a flood control event. The entire management unit is maintained in grass-forb vegetation that is periodically mowed, burned, or managed by other methods to provide low vegetative cover.

5.10.3 RESOURCE OBJECTIVES

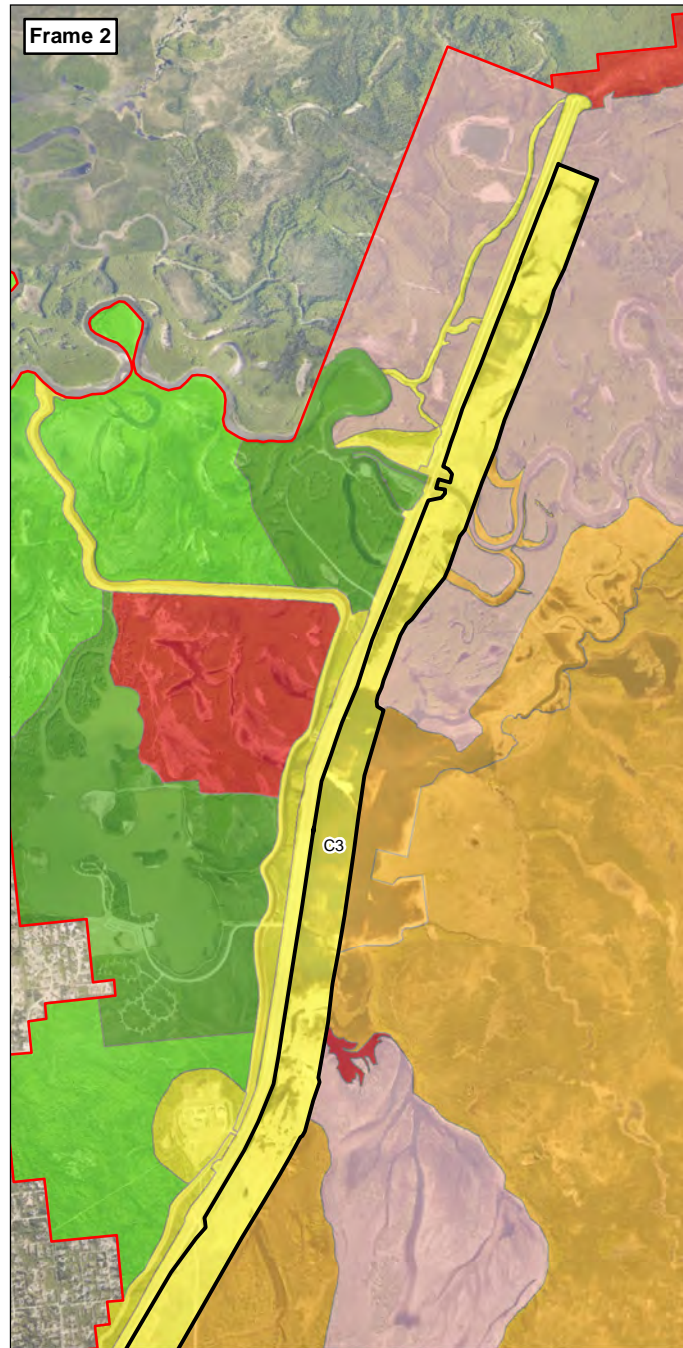
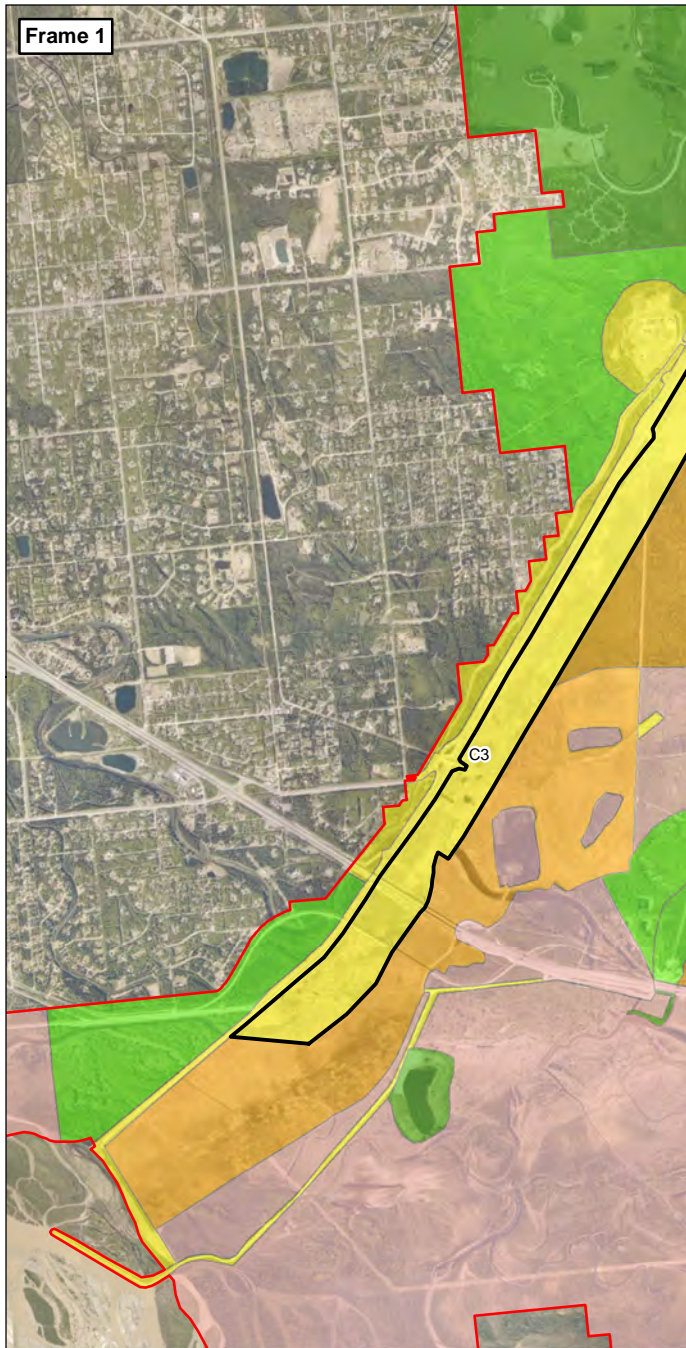
- A. Obj 1: Ensure continuous, safe, operation and maintenance of the project silt blankets for flood control.
- B. Obj 5: Permit dispersed public use of the silt blanket area for low-density recreational activities.
- C. Obj 11, Obj 12: Manage waterfowl, geese, and other bird habitat to support migratory staging areas.

5.10.4 DEVELOPMENT NEEDS

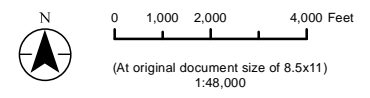
No development needs have been identified.



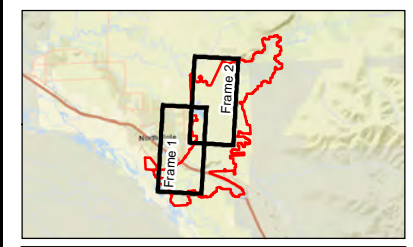
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- Flood Control Boundary
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



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Project Location
 North Pole, Alaska

Client/Project
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Figure No.
38

Title
**Silt Blankets (C3)
 Management Unit**

5.11 Management Unit C4: Seepage Channels

5.11.1 CLASSIFICATION AND JUSTIFICATION

Classification: Project Operations

Downstream of the Moose Creek Dam, a system of seepage collection channels directs surface flows emerging from below-dam seepage and other water discharge back into the Chena River. These channels generally run parallel to the dam's embankment at a distance of approximately 400 feet downstream of the western embankment toe of slope.

Seepage collection plays an important role in project operations. When the seepage channel gates are closed, they collect water and provide back pressure to groundwater in the embankment dam. This pressure decreases floodwater seepage through the dam, decreasing piping issues during flood operation.

5.11.2 DESCRIPTION AND USE

Management Unit C4 consists of the seepage channels downstream of the Moose Creek Dam. These extend the entire length of the dam north of the Richardson Highway. The seepage channels control seepage through the dam during a flood control event. The entire management unit is covered by grass-forb vegetation and is periodically mowed, burned, or maintained by other methods provide low vegetative cover. This allows ground boils of sediment to be identified and addressed.

5.11.3 RESOURCE OBJECTIVES

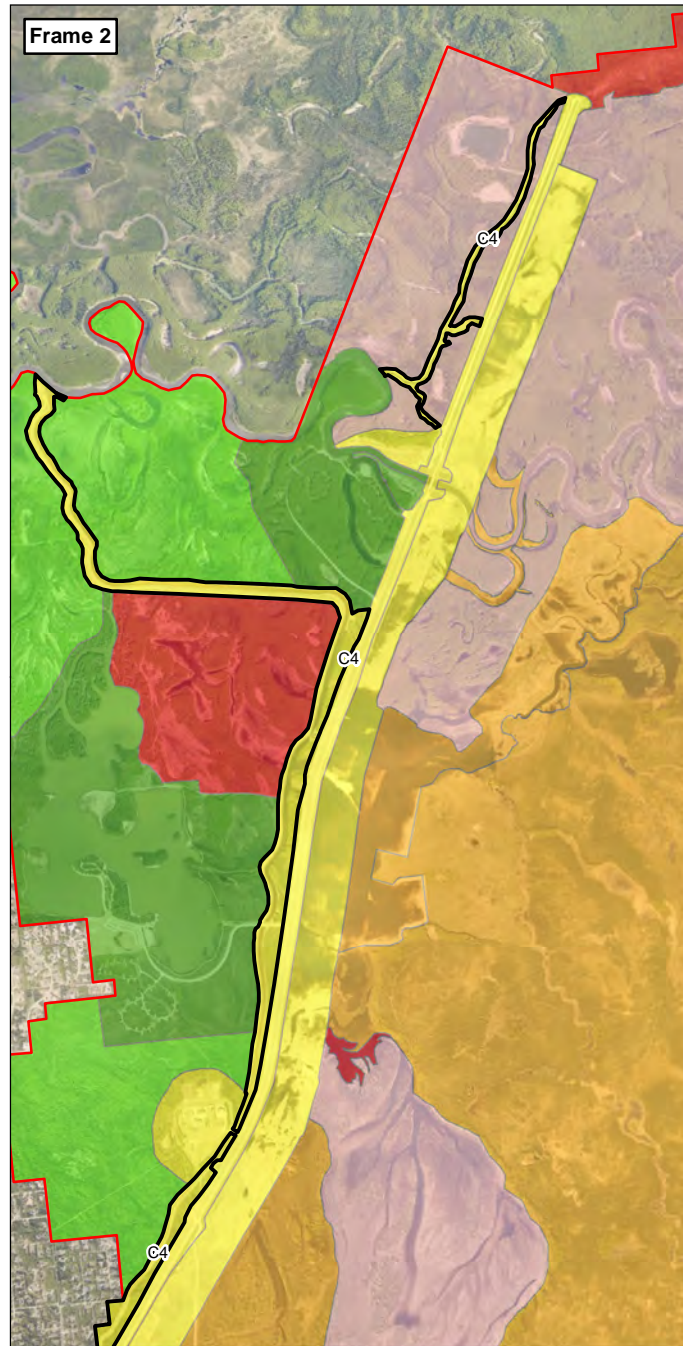
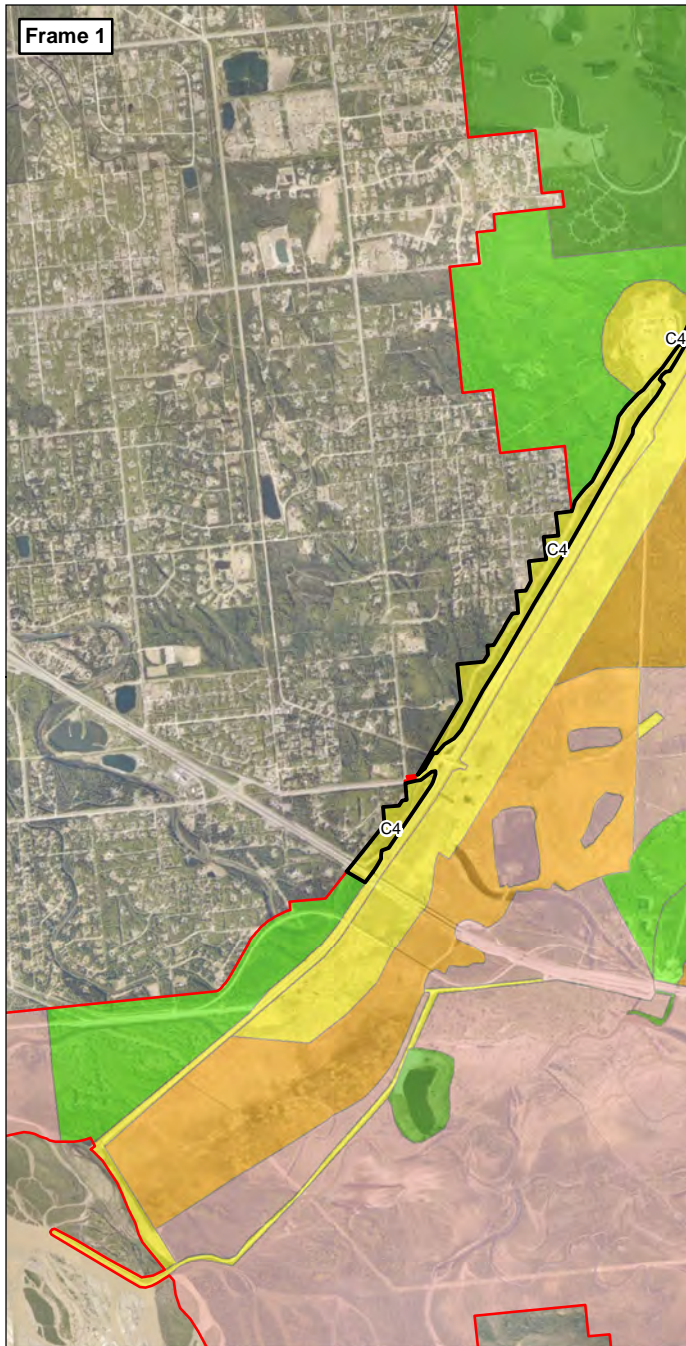
- A. Obj 1: Maintain and operate the seepage collection channels
- B. Obj 3, Obj 5: Allow dispersed public use of the area for low-density recreational activities, including trails.

5.11.4 DEVELOPMENT NEEDS

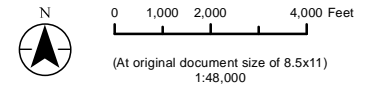
No development needs have been identified.



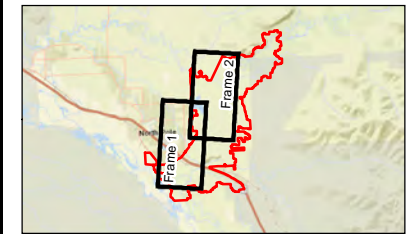
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- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes
 1. Coordinate System: NAD 1983 Alaska Albers
 2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
 North Pole, Alaska

Client/Project
 Chena River Lakes Flood Control Project
 Master Plan Update

Figure No.
39

Title
**Seepage Channel (C4)
 Management Unit**

5.12 Management Unit C5: Laydown Yards

5.12.1 CLASSIFICATION AND JUSTIFICATION

Classification: Project Operations

Two laydown yards are present on the project: one north of the Chena River near the outlet control structure works and another adjacent to the floodway.

5.12.2 DESCRIPTION AND USE

Management Unit C5 consists of the two laydown yards. The one near the outlet control structure is used to facilitate operations and temporarily store debris removed from in front of the dam. The one in the floodway is used to facilitate normal operations and maintenance.

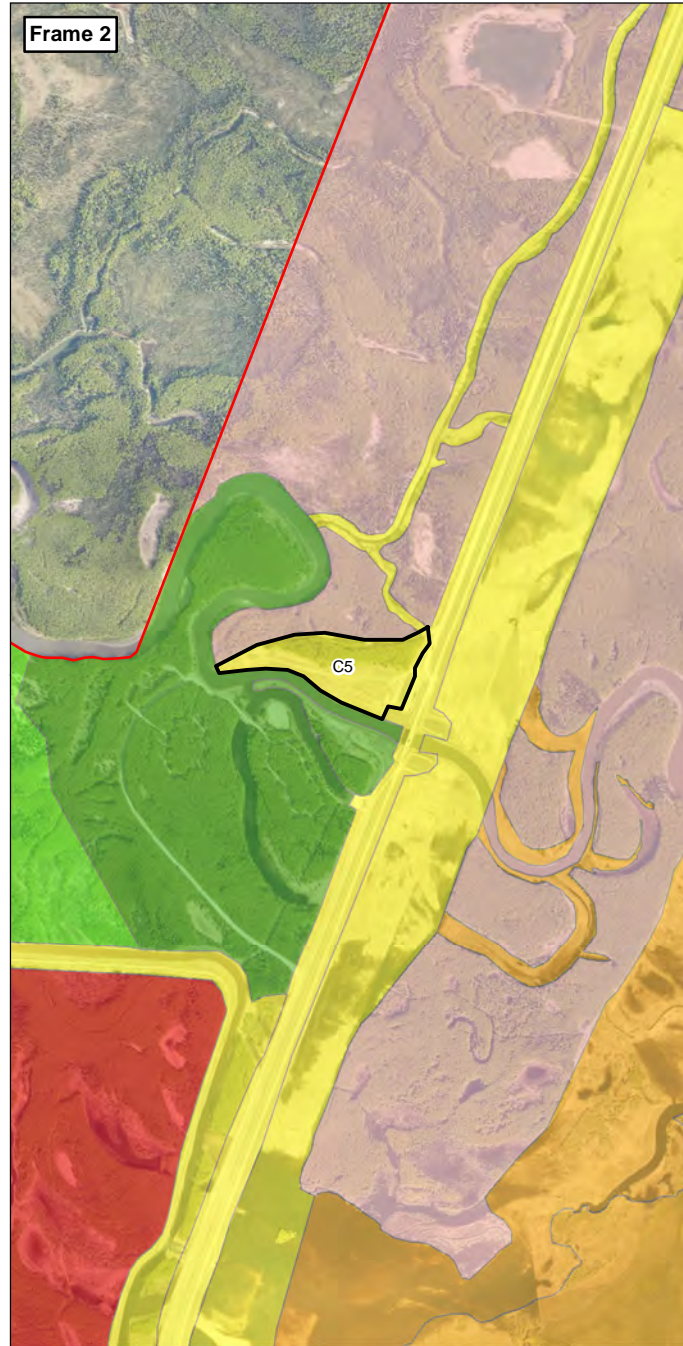
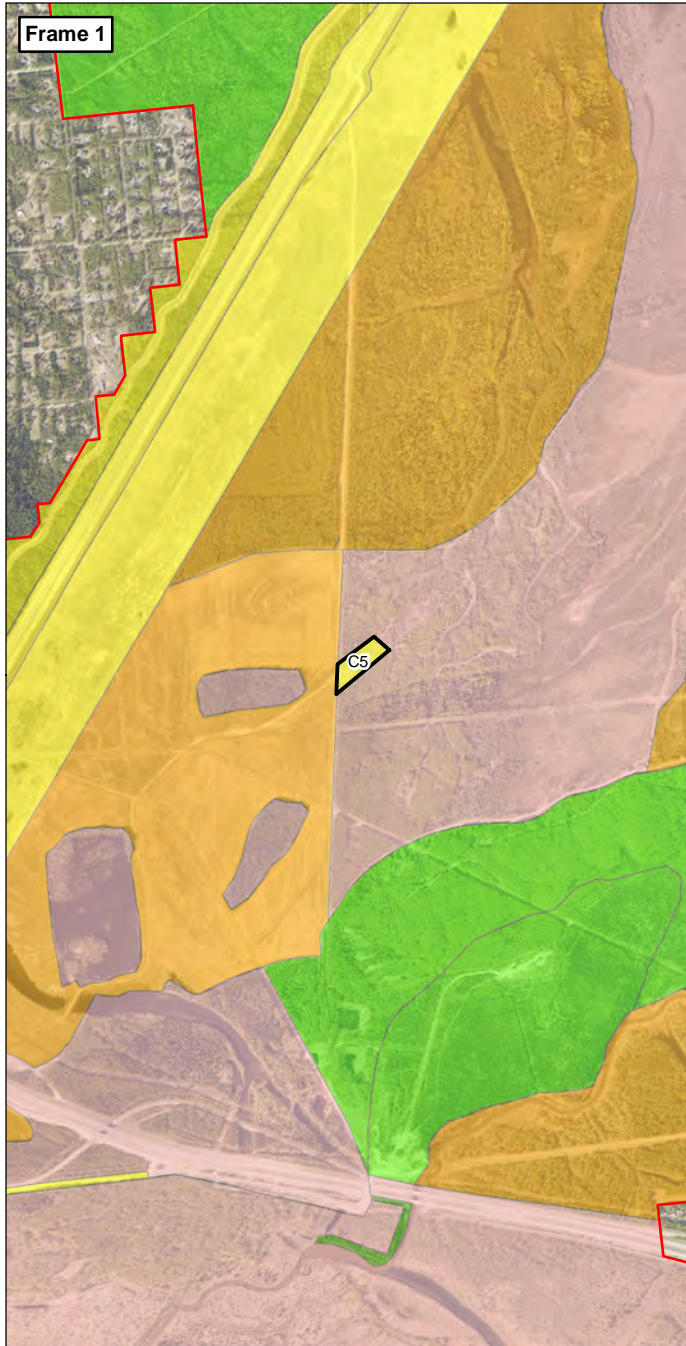
5.12.3 RESOURCE OBJECTIVES










- A. Obj 1: Allow for continuous, safe, efficient support service for operation, maintenance, and administration of the project.

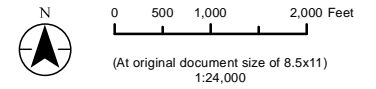
5.12.4 DEVELOPMENT NEEDS

No development needs have been identified.

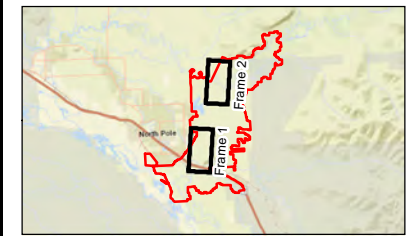




-  Flood Control Boundary
- Management Unit Class**
-  Easement: Flowage
-  Environmentally Sensitive Area
-  High Density Recreation
-  Multiple: Low Density Recreation
-  Multiple: Operations
-  Multiple: Vegetation Management
-  Multiple: Wildlife Management
-  Project Operations



Notes
 1. Coordinate System: NAD 1983 Alaska Albers
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Project Location
 North Pole, Alaska

Client/Project
 Chena River Lakes Flood Control Project
 Master Plan Update

Figure No.
 40

Title
 Laydown Yard (C5)
 Management Unit

5.13 Management Unit D1: Bluff Summit

5.13.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple Resource Management Lands: Low Density Recreation

The Chugwater prehistoric site on the Moose Creek Bluff was listed on the National Register of Historic Places in 1979 and, as such, receives Federal protection. The site is considered one of the largest and most important in Interior Alaska. However, extensive ORV trail use has resulted in soil compaction, erosion, and stripping of vegetative cover.

The cleared west summit of Moose Creek Bluff provides sweeping views of the Tanana River basin in all directions and is accessible by a gated gravel road from the Richardson Highway.

5.13.2 DESCRIPTION AND USE

Management Unit D1 is accessible by a gravel road from the Richardson Highway. A gated gravel road leads to the cleared summit of Moose Creek Bluff and telecommunications tower.

The southwest corner of the bluff, directly adjacent to Richardson Highway, formerly served as a rock quarry and is a highly visible, mined vertical rock face, heavily covered in graffiti.

Illegal ORV use has always been extremely popular on the bluff. The current management strategy is to improve signage and continue to block and/or remove access points during the summer months. These efforts help protect environmental resources, raptor brooding areas and cultural resources.

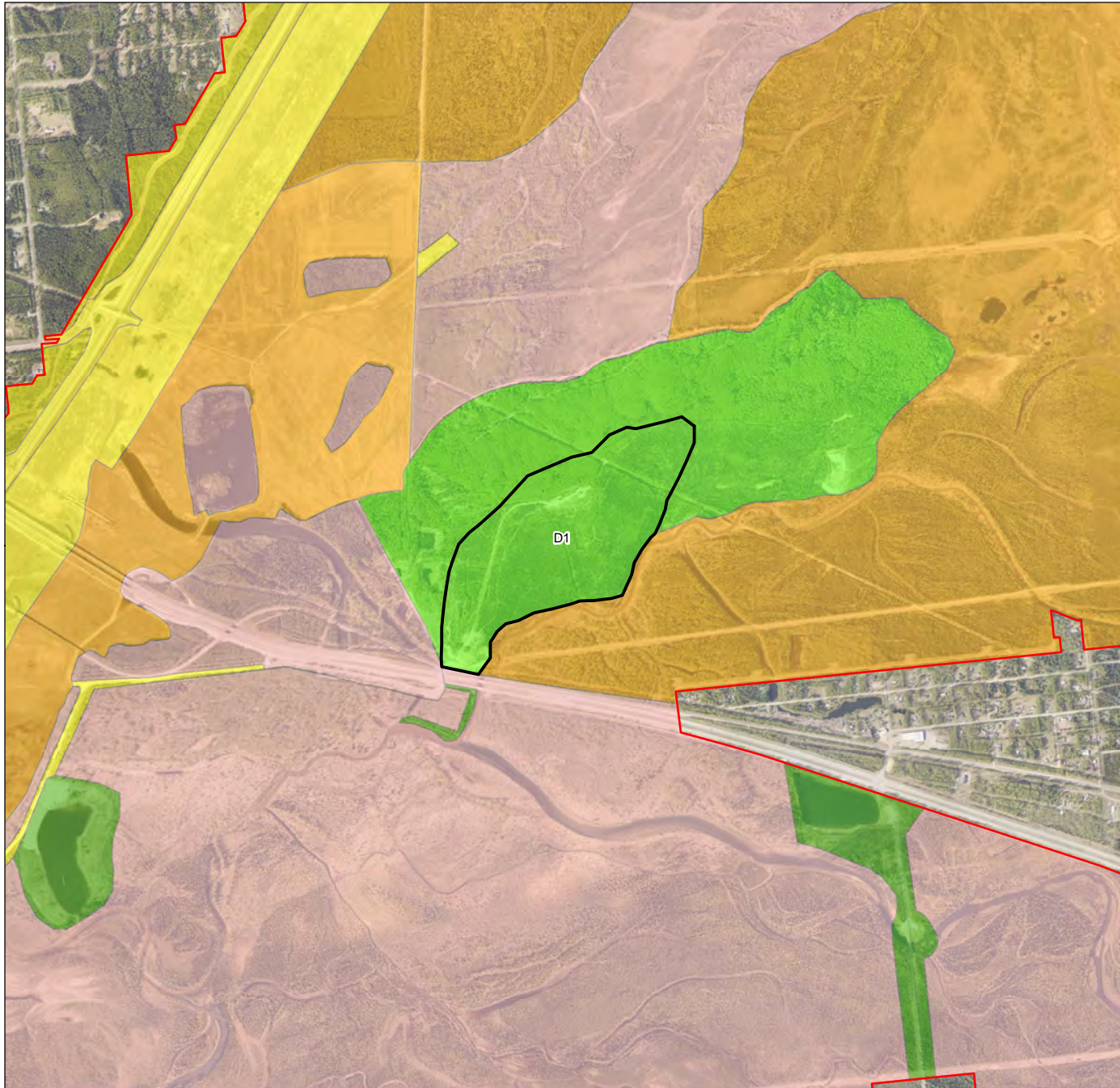
5.13.3 RESOURCE OBJECTIVES

- A. Obj 7: Preserve the integrity of cultural resources and protect cultural resources while practically managing use.
- B. Obj 3, Obj 5, Obj 12: Improve site visual quality, aid in controlling potentially conflicting uses, and promote visitor safety.

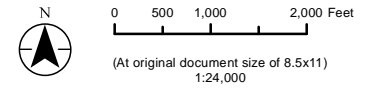
5.13.4 DEVELOPMENT NEEDS

No development projects have been identified. Some projects may be required to implement the resource objectives (i.e., traffic discouragement).

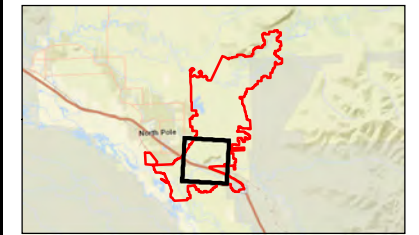




- Flood Control Boundary
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes
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 2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
 North Pole, Alaska

Client/Project
 Chena River Lakes Flood Control Project
 Master Plan Update

Figure No.
41

Title
**Bluff Summit (D1)
 Management Unit**

5.14 Management Unit D2: Bluff Slopes

5.14.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple Resource Management Lands: Low Density Recreation.

The Chugwater prehistoric site on the bluff was listed on the National Register of Historic Places in 1979 and, as such, receives Federal protection. The site is considered one of the largest and most important in Interior Alaska. However, extensive ORV trail use has resulted in soil compaction, erosion, and stripping of vegetative cover.

The bluff slopes also provide some valuable wildlife habitat, particularly for nesting raptors. Mature birch forest stands support nesting Northern goshawks. White spruce forests provide nesting habitat for sharp shinned and red-tailed hawks, and great-horned owls. Mature forest stands within the unit also provide escape and thermal cover for moose.

5.14.2 DESCRIPTION AND USE

Management Unit D2 is bordered by Moose Creek which forms the south boundary of the unit and by a tank road at the base which marks its north limit. Numerous unimproved roads, tracks and ORV trails crisscross the unit. Part of the northern bluff has been used in the past as a quarry site (separate from the highway adjacent quarry face). Buried pipelines cross the unit, resulting in cleared swaths through vegetation.

5.14.3 RESOURCE OBJECTIVES

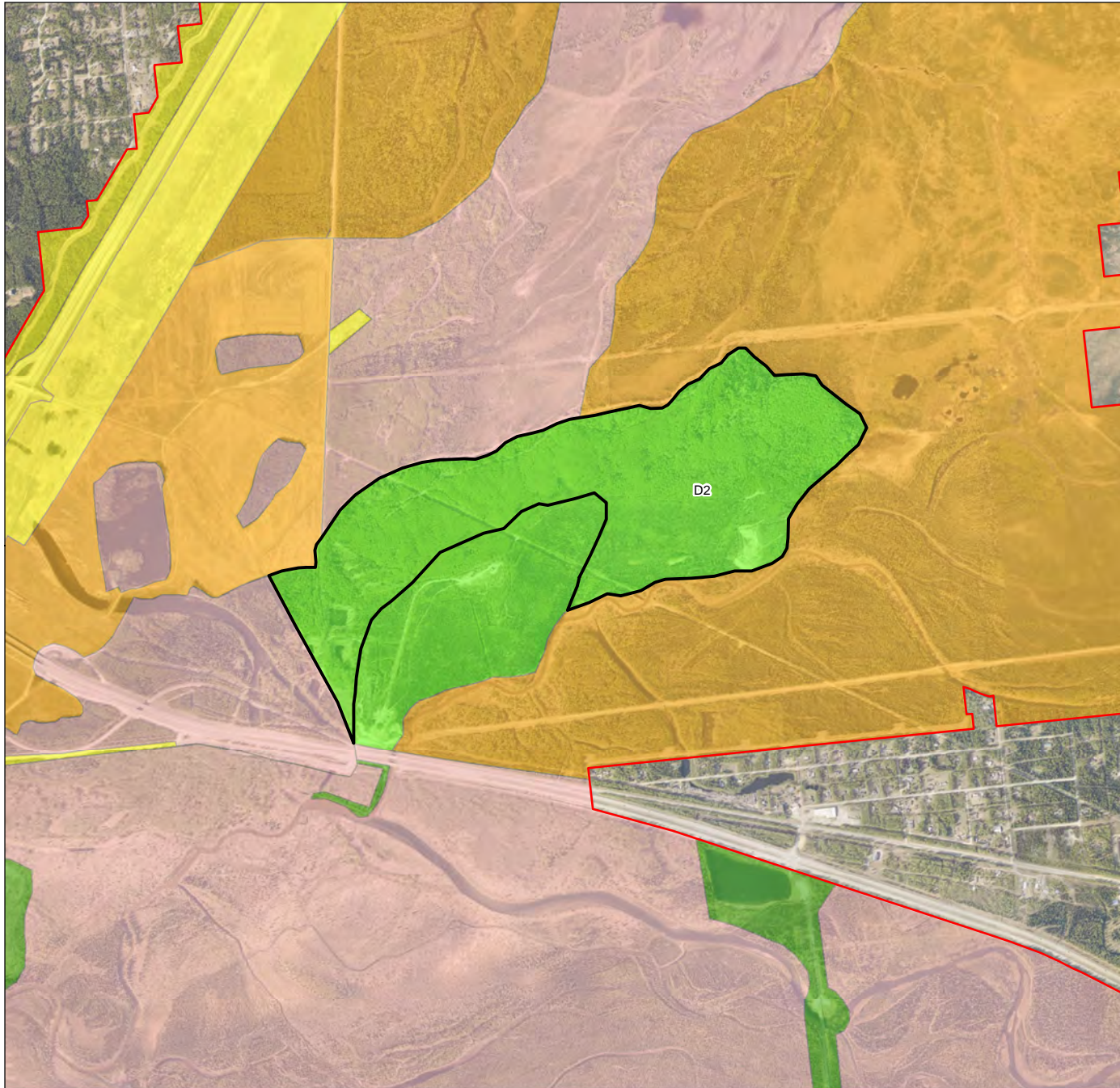
- A. Obj 7: Preserve the integrity of cultural resources and protect cultural resources while practically managing use.
- B. Obj 3, Obj 5: Provide opportunities for non-motorized trail-oriented activities and manage the unit for open space and low-density, dispersed recreation.
- C. Obj 8, Obj 12: Manage wildlife habitats, including raptor nesting sites and moose habitat, to promote species abundance and diversity and provide wildlife viewing opportunities.

5.14.4 DEVELOPMENT NEEDS

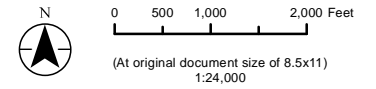
No development needs have been identified.



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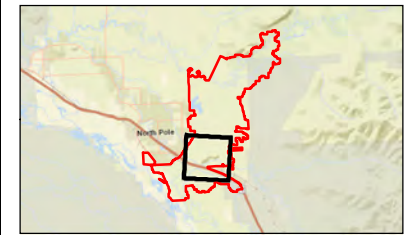


- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes

1. Coordinate System: NAD 1983 Alaska Albers
2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
Master Plan Update

Figure No.
42

Title
**Bluff Slopes (D2)
Management Unit**

5.15 Management Unit E1: Cleared Floodway

5.15.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple Resource Management Lands: Vegetation Management

Unit vegetation is managed to provide hydraulic capacity.

Active management has maintained early successional stage vegetation, creating additional forage habitat for moose. For winter foraging above typical snow depths, moose require 3- to 15-foot-tall woody browse, generally willows, aspen, and birch saplings. At present, vegetation within the floodway is allowed to attain 6-to-7-foot maximum height, or 1-inch maximum stem diameter. Permitting vegetation growth to the maximum allowable height in areas of the floodway will provide a continued source of early successional foraging habitat for moose. Maintenance of early successional stage vegetation on the floodway also provides habitat for both sharp-tailed and ruffed grouse, important gamebird species in the region.

The cleared, open character of the unit also makes it suitable for a number of low-density, dispersed recreational uses, including cross-country skiing, dog-mushing, hiking, dog-training, hunting, falconry, and others. For several of these activities, alternative open-space areas in the region are rare. Like the silt blanket unit, the cleared floodway is adaptable to agricultural use or burn activities for wildlife habitat and project operations objectives.

5.15.2 DESCRIPTION AND USE

Management Unit E1 consists of the cleared portion of the floodway. The cleared floodway follows a meandering path along the upstream side of the dam between the south bank of the Chena River and a point north of the Richardson Highway Bridges. Natural vegetation occurs within the cleared floodway but is continually managed to maintain hydraulic capacity.

5.15.3 RESOURCE OBJECTIVES

- A. Obj 1: Ensure project operational hydraulic requirements for passage of floodwaters.
- B. Obj 3, Obj 5: Permit public use of the cleared floodway for dispersed, low-density recreation activities to help meet regional open space needs during times when the project is not in flood control operation.
- C. Obj 8: Where compatible with project operations, maintain early successional growth where vegetation is capable of providing moose browse forage.
- D. Obj 8, Obj 11, Obj 12: Establish agricultural or burn areas where floodway lands can help to meet wildlife and project operations objectives.

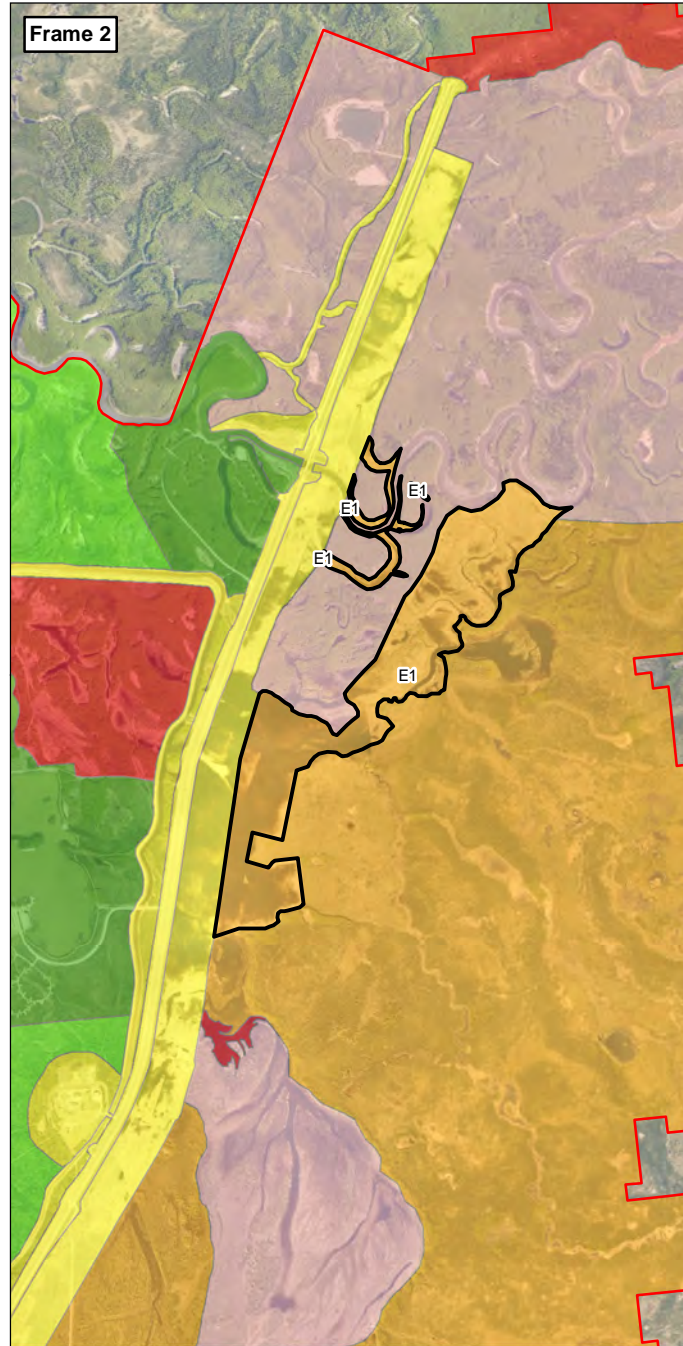
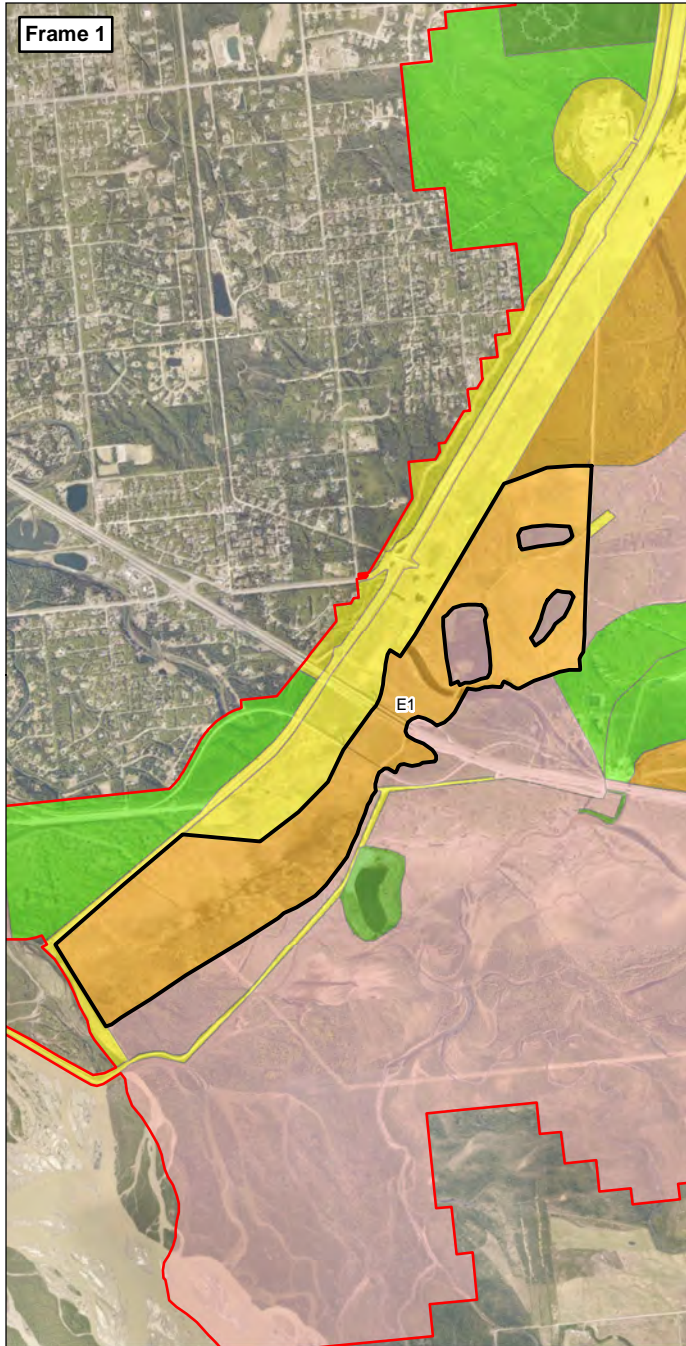


- E. Obj 13: Manage topography and vegetation to avoid the development of pools, depressions, and other low-lying areas that may entrap resident and anadromous fish following flood events.

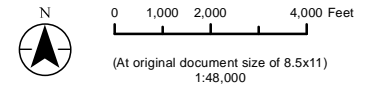
5.15.4 DEVELOPMENT NEEDS

No development needs have been identified.

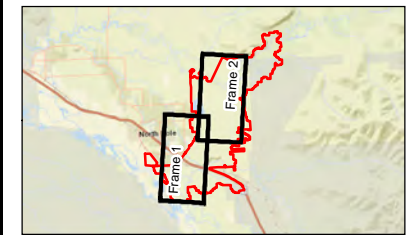




- Flood Control Boundary
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes
 1. Coordinate System: NAD 1983 Alaska Albers
 2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
 North Pole, Alaska

Client/Project
 Chena River Lakes Flood Control Project
 Master Plan Update

Figure No.
43

Title
**Cleared Floodway (E1)
 Management Unit**

5.16 Management Unit E2: Wildlife Management Vegetation and Ponds

5.16.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple Resource Management Lands: Wildlife Management.

Management Unit E2 contains habitats suitable for moose, including wetlands, riparian edge and vegetative edge associated with the silt blanket and cleared floodway. It also includes Z-Pit Pond, a historic material site and recreation site. They also currently support low density recreation. Management may be undertaken to maintain these habitat areas. Vegetation adjacent to the silt blankets should be retained for this purpose.

5.16.2 DESCRIPTION AND USE

Management Unit E2 consists of uncleared vegetation patches within and adjacent to the cleared floodway.

5.16.3 RESOURCE OBJECTIVES

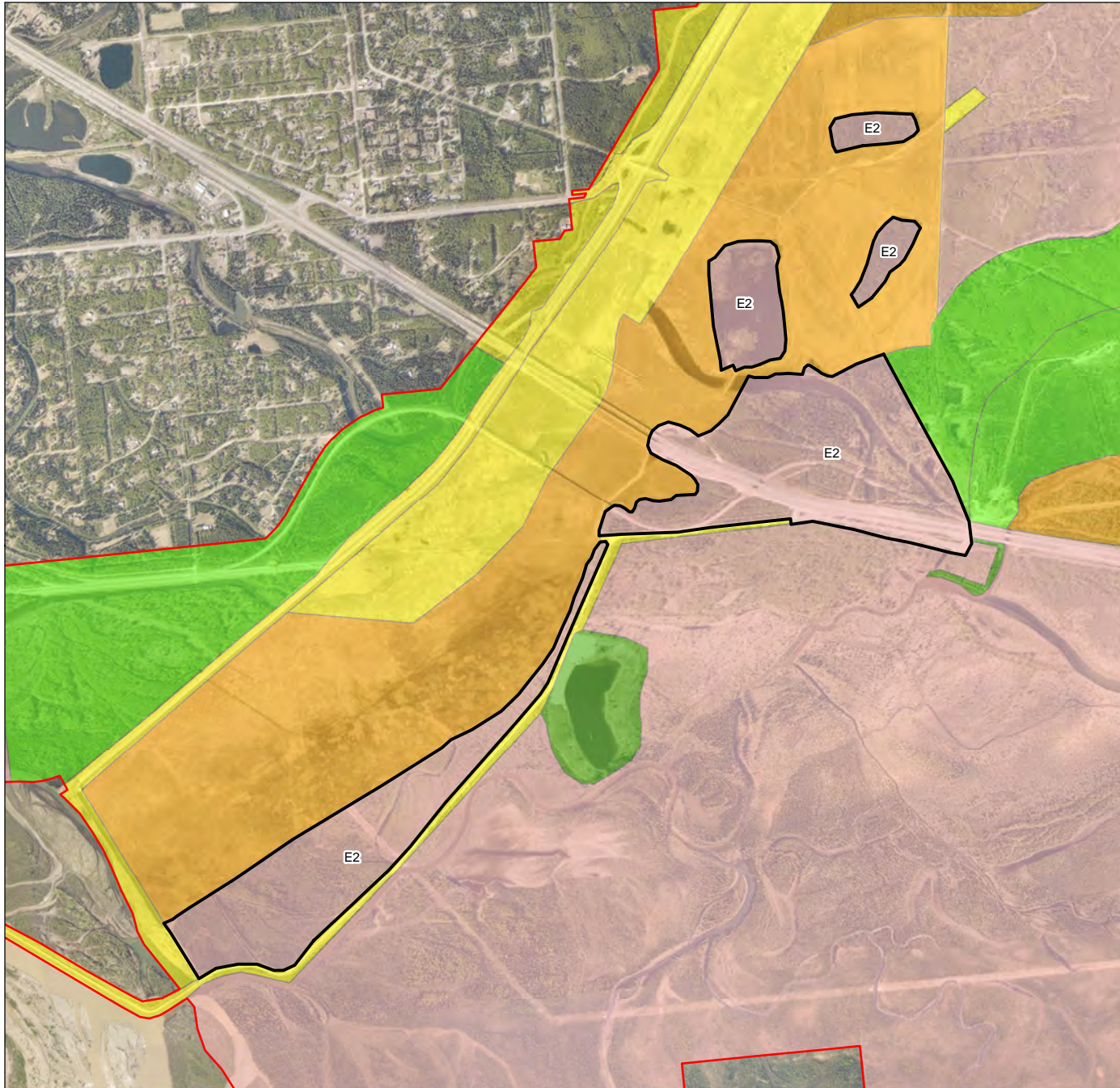
- A. Obj 5: Permit low-density, dispersed recreation.
- B. Obj 8, Obj 9, Obj 12: Manage wildlife habitats, including moose habitat, to promote species abundance and diversity and provide wildlife viewing opportunities.
- C. Obj 10, Obj 11: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.

5.16.4 DEVELOPMENT NEEDS

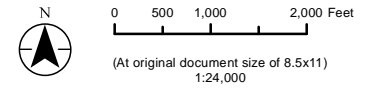
No development needs have been identified.



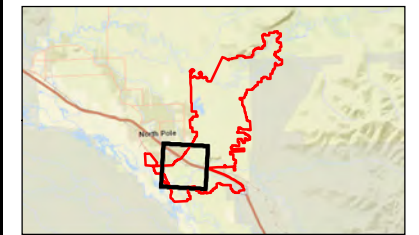
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- Flood Control Boundary
 - Project Operations
 - Multiple: Vegetation Management
 - Multiple: Wildlife Management
 - Multiple: Low Density Recreation
 - High Density Recreation
 - Environmentally Sensitive Area
 - Easement: Flowage
- Management Unit Class**



Notes
 1. Coordinate System: NAD 1983 Alaska Albers
 2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
 North Pole, Alaska

Client/Project
 Chena River Lakes Flood Control Project
 Master Plan Update

Figure No.
44

Title
Wildlife Management Vegetation and Ponds (E2) Management Unit

5.17 Management Unit F1: East Project Area

5.17.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple Resource Management Lands: Vegetative Management.

Physical constraints, including intermittent flooding, wet and boggy soils, difficult access and flat terrain, suit Unit F to only a narrow range of uses. These include vegetation and wildlife management and dispersed low-density recreation, especially in winter. The unit consists of unaltered habitats, mostly black spruce forest. Moose carrying capacity of this habitat is relatively low. However, the numerous shrub-bordered wetlands present good moose forage; and the unit contains good moose cover lying adjacent the cleared floodway. Moose may take advantage of this cover while foraging in early successional stage vegetation along the margins of the floodway. Vegetation management to support moose would also benefit sharp-tailed and ruffed grouse by providing early successional stage habitat. Grouse are important game species in the region.

Unit F also contains many separate wetlands areas capable of supporting a minimum of one waterfowl brood under normal conditions. Weather conditions (e.g., drought, rainfall, snowfall or flooding) will influence the annual presence and extent of wetlands. Retention of these wetlands will help meet regional needs for waterfowl brood rearing, hunting, and viewing.

The south end of the unit, which contains the tank road, is also traversed by a number of two-track roads and trails. These roads and trails currently support some recreation use. The wet, marshy nature of the unit generally confines this activity to dog-mushing and snow machining during the winter. However, on occasion other uses have included horse-riding and off-road vehicle use. Project personnel also use these access routes for project operations activities, such as fire control. Identification and maintenance of these trails helps meet present and future regional needs for protected recreational trails.

5.17.2 DESCRIPTION AND USE

Planning Unit F consists of project lands located to the east of the floodway. The unit is generally bounded on the south by Moose Creek and Moose Creek Bluff and characterized by black spruce muskeg interspersed with wet meadows. There is limited road access with the exception of the unimproved tank road bisecting the south end. A number of semi-cleared trails cross the unit as well. Although this unit forms a relatively large part of the project area it has not been subdivided.

5.17.3 RESOURCE OBJECTIVES

- A. Obj 3, Obj 5: Maintain the trail system. Expand the trail system as necessary to accommodate use. Designate trail corridors for hiking, cross-country skiing, dog-mushing, and other dispersed, non-motorized recreation activities.



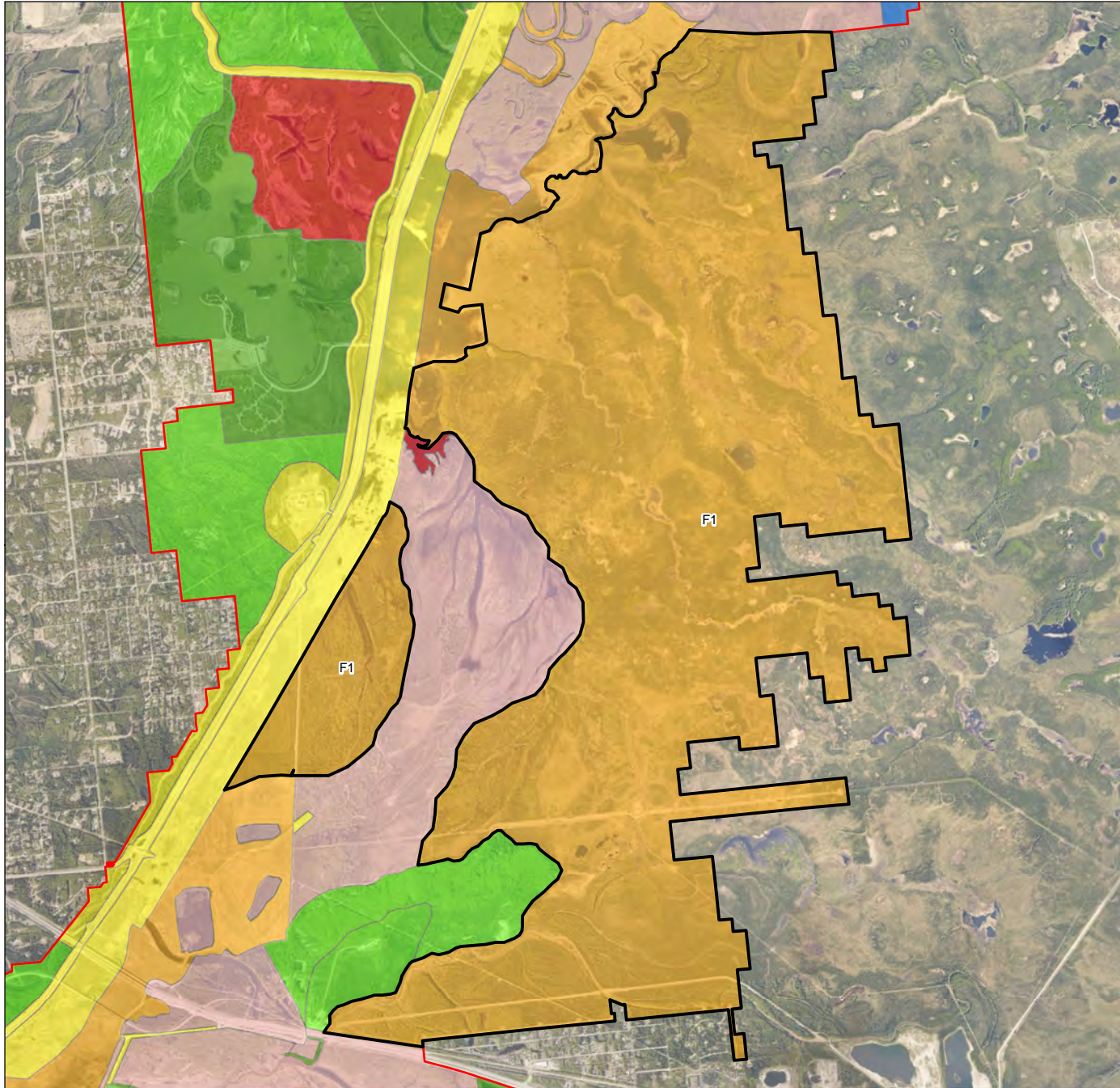
- B. Obj 8, Obj 12: Manage wildlife habitats, including moose habitat, to promote species abundance and diversity and provide wildlife viewing opportunities.
- C. Obj 10, Obj 11: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.

5.17.4 DEVELOPMENT NEEDS

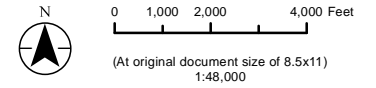
No development needs have been identified.



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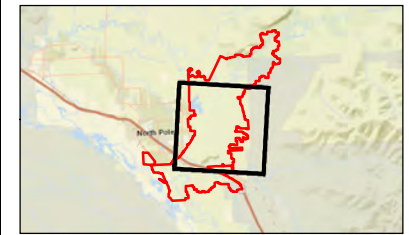


- Flood Control Boundary
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes

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2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
North Pole, Alaska

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Chena River Lakes Flood Control Project
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Figure No.
45

Title
**East Project Area (F1)
Management Unit**

5.18 Management Unit F2: East Project Environmentally Sensitive Area

5.18.1 CLASSIFICATION AND JUSTIFICATION

Classification: Environmentally Sensitive Area

This management unit contains quality wetlands within the area that support waterfowl use during spring migration and nesting. Wildlife such as moose also use this area for feeding. Designation as an Environmentally Sensitive Area conserves these habitats, providing opportunities for wildlife viewing and contributing towards a diverse mix of resources uses by various wildlife species.

5.18.2 DESCRIPTION AND USE

Management Unit F2 is located in the eastern portion of the project. It is lowland topography, holding water and acting as habitat for waterfowl. This unit features a number of small seasonal ponds and marsh areas that provide good waterfowl habitat and opportunities for wildlife viewing.

5.18.3 RESOURCE OBJECTIVES

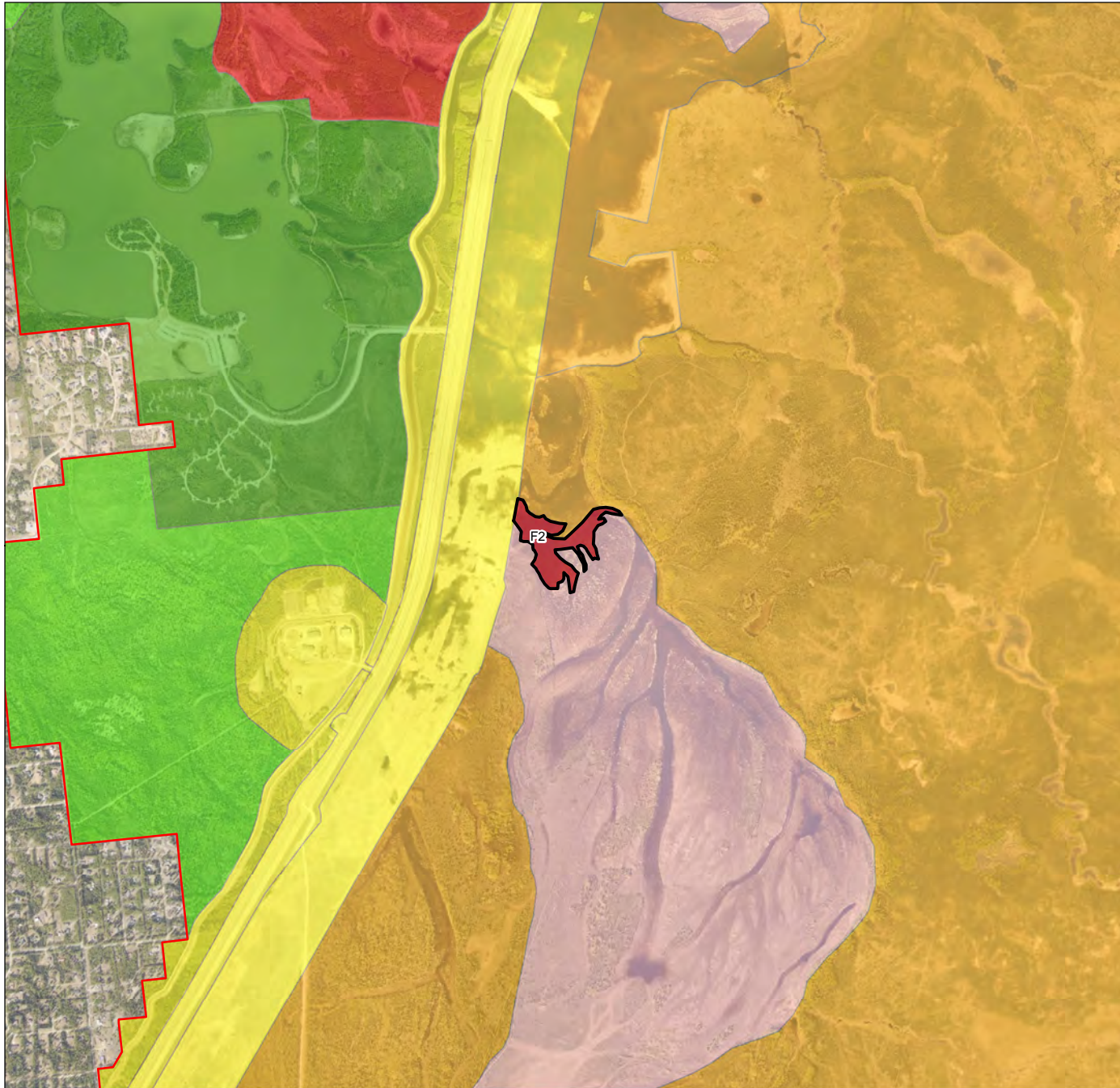
- A. Obj 3, Obj 5: Maintain area trails, particularly winter use, that are present in the Management Unit. Expand the trail system as necessary to accommodate use.
- B. Obj 8, Obj 9: Maintain existing moose movement corridors and provide adequate forage to support resident and seasonally migrating moose.
- C. Obj 10, Obj 11: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.
- D. Obj 12: Establish an environmentally sensitive area for protection and study of vegetation and wildlife, and to promote visitor wildlife viewing.

5.18.4 DEVELOPMENT NEEDS

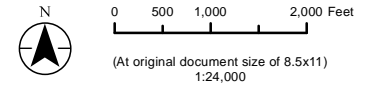
No development needs have been identified.



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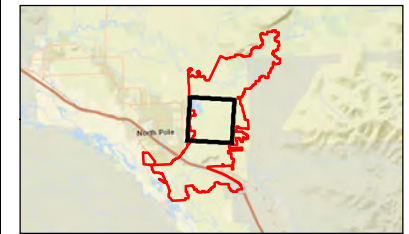


- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes

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Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
Master Plan Update

Figure No.
46

Title
**East Project ESA (F2)
Management Unit**

5.19 Management Unit F3: East Project Wildlife

5.19.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple Resource Management Lands: Wildlife Management.

Management Unit F3 represents the lower topographic wetlands, ponds, and shrub habitats along the eastern edge of the cleared floodway. This unit is surrounded by vegetation, and hosts numerous oxbow lakes, wet meadows and slight topographic raises for waterfowl migration, moose, and other wildlife species.

5.19.2 DESCRIPTION AND USE

Management Unit F3 consists of most the lowlands embedded in the larger eastern project lands. These see relatively fewer summer visitors, as the higher amount of surface water limits access and provides habitat for waterfowl. In the winter, the frozen surfaces can act as transportation corridors for a variety of recreation activities.

5.19.3 RESOURCE OBJECTIVES

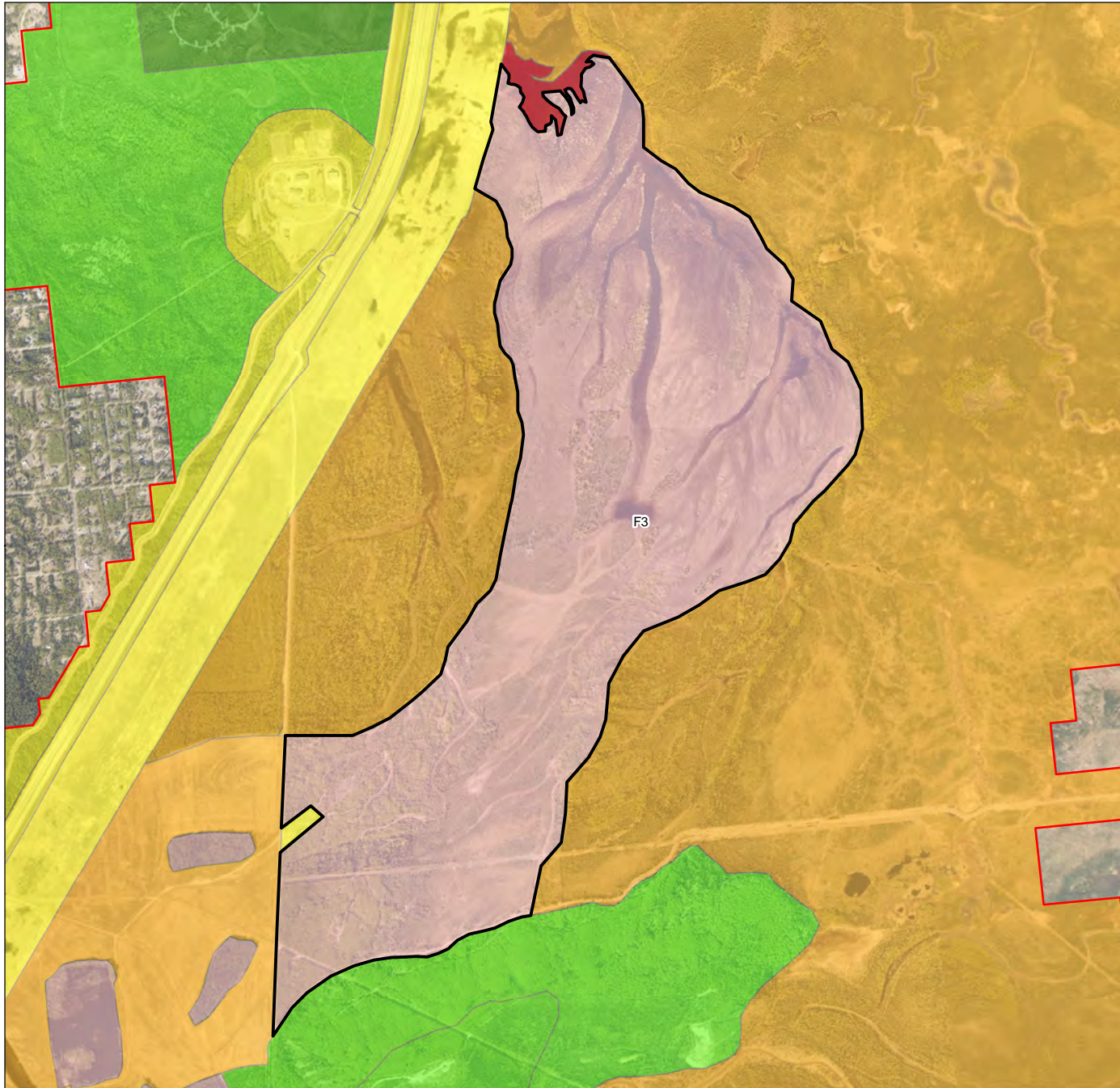
- A. Obj 3, Obj 5: Provide winter trail access with other project units to help meet current and future trail recreation needs.
- B. Obj 8, Obj 9: Provide a corridor for moose movement through the project. Where compatible with project operations, maintain early successional growth through prescribed burning, mechanical or other means where vegetation is capable of providing moose browse forage.
- C. Obj 10, Obj 11: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.
- D. Obj 12: Promote visual quality and project wildlife species abundance and diversity.

5.19.4 DEVELOPMENT NEEDS

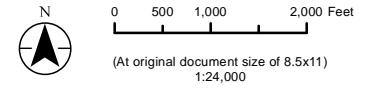
No development needs have been identified.



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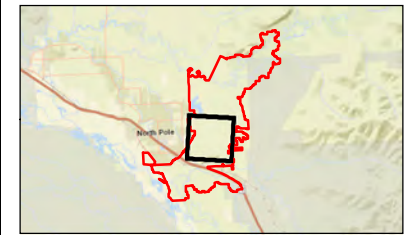


- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes

1. Coordinate System: NAD 1983 Alaska Albers
2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
Master Plan Update

Figure No.
47

Title
**East Project Wildlife (F3)
Management Unit**

5.20 Management Unit G1: Chena River Corridor

5.20.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple Resource Management Lands: Wildlife Management.

Management Unit G1 consists of most of the lowlands along the Chena River from the northern project boundary to the border of the planning unit. The base of the Yukon-Tanana Uplands foothills, which rise sharply up from the river, form most of the unit's northern edge.

The diversity of vegetation types present throughout Unit G1 provide a variety of wildlife habitats that support a diverse and rich array of wildlife species. Moose are found throughout the unit especially during summer. Near the north abutment of the Moose Creek Dam, vegetation remains directly adjacent the toe of its earthen embankment and plays an important role in providing cover for the movement of moose across the project. Willow and other shrub browse associated with the numerous oxbow lakes, wet meadows and gravel bars provide valuable moose forage. The Chena River and other project wetlands provide area of thermal relief for moose to cool off during summer and forage for aquatic plants. Mature white spruce, and mixed and deciduous forests, provide an abundance of cover. Some vegetation management may be necessary to retain suitable moose habitat conditions.

The Chena River, and oxbow lakes, marshes and small ponds occurring throughout the project, represent good brood rearing habitat for waterfowl.

Numerous stands of mature white spruce forest exist throughout the unit, primarily along meanders of the Chena River. Relatively rare throughout the project, these stands provide habitat for a number of resident and winter resident wildlife species, principally birds, small mammals and furbearers. Mature white spruce communities are the preferred habitat of spruce grouse, an important game species in the region. This habitat contributes significantly to the diversity of regional wildlife species.

According to ADFG, Chinook and chum salmon annually spawn in Unit G1 portions of the Chena River. These waters also support resident fish populations, including Arctic grayling, whitefish and burbot.

5.20.2 DESCRIPTION AND USE

The Chena River serves as an important recreational resource for the region. Boaters on hunting and fishing trips use the river extensively. The boat ramp at Chena River Park provides , kayaking, canoeing, and fishing access. The river reach between the project and the upstream Chena River Recreation Area is very popular for one- or two-day trips. Promoting access to the river provides for current, and will help meet future, regional needs for water-dependent recreation.

A related use of the unit involves recreational trails. A number of semi-cleared trails cross through the unit, primarily in areas north of the Chena River. Designation and continued maintenance of these trails would provide additional access to the Chena River for fishing and other water-related activities. By



linking these trails to other trails on and off the project, an overall trails system could continue to develop for the region.

5.20.3 RESOURCE OBJECTIVES

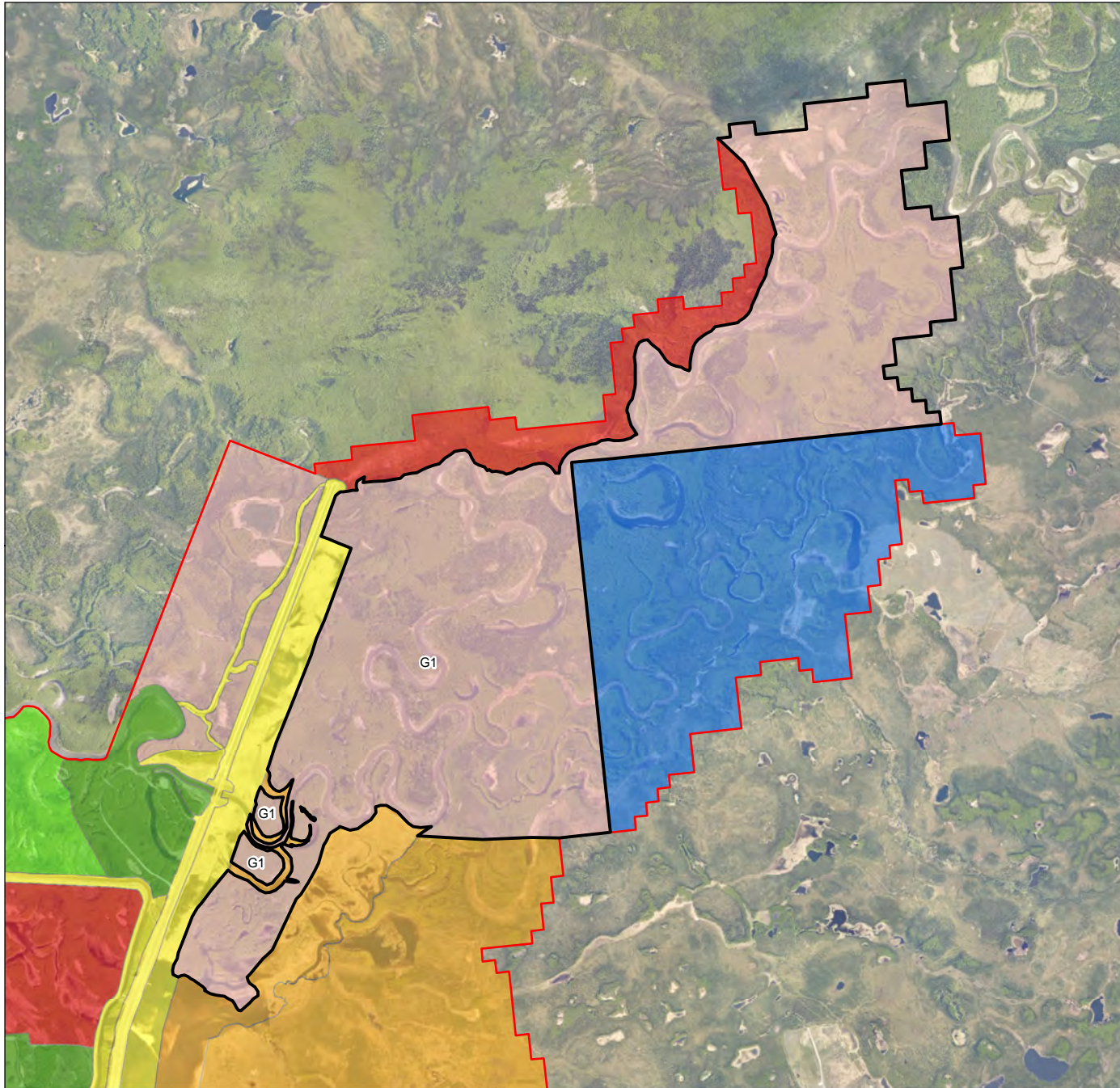
- A. Obj 3, Obj 5: Provide trail access to the Chena River and connections with other project trails to help meet current and future trail and water related recreation needs.
- B. Obj 4: Promote use of the Chena River to help meet regional needs for water-dependent recreation.
- C. Obj 8, Obj 9: Provide a corridor for moose movement through the project near the north abutment of the Moose Creek Dam.
- D. Obj 10, Obj 11: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.
- E. Obj 12: Promote species abundance and diversity by maintaining preferred habitat for spruce grouse and other permanent and winter resident wildlife, such as white spruce habitat.
- F. Obj 12: Promote visual quality and project wildlife species abundance and diversity.
- G. Obj 13: Support resident, anadromous, and sport populations of fish (i.e., Arctic grayling, whitefish and burbot, and Chinook and chum salmon).

5.20.4 DEVELOPMENT NEEDS

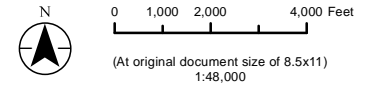
No development needs have been identified.



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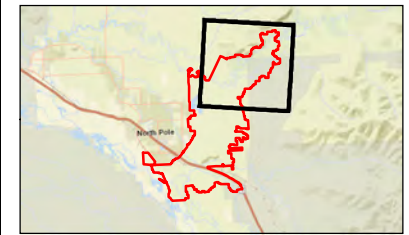


- Flood Control Boundary
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes

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Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
Master Plan Update

Figure No.
48

Title
**Chena River Corridor (G1)
Management Unit**

5.21 Management Unit G2: Ft Wainwright Maneuver Area

5.21.1 CLASSIFICATION AND JUSTIFICATION

Classification: Easement: Flowage

The Public Land Order covering the Ft Wainwright Maneuver Area gives control of the land to the Department of the Army. The USACE has a flowage easement.

Since access to the area is difficult, it receives only low levels of public or military use. The unit contains resources similar to Management Unit G1. If control of the unit is turned over to the USACE, it should be managed for similar objectives to G1.

5.21.2 DESCRIPTION AND USE

This unit consists of Public Domain Lands withdrawn by the Department of the Army for the Yukon Command Training Ground. This area is located adjacent Unit G1 near the northeast corner of the project. Physiographical, it is very similar to Management Unit G1.

5.21.3 RESOURCE OBJECTIVES

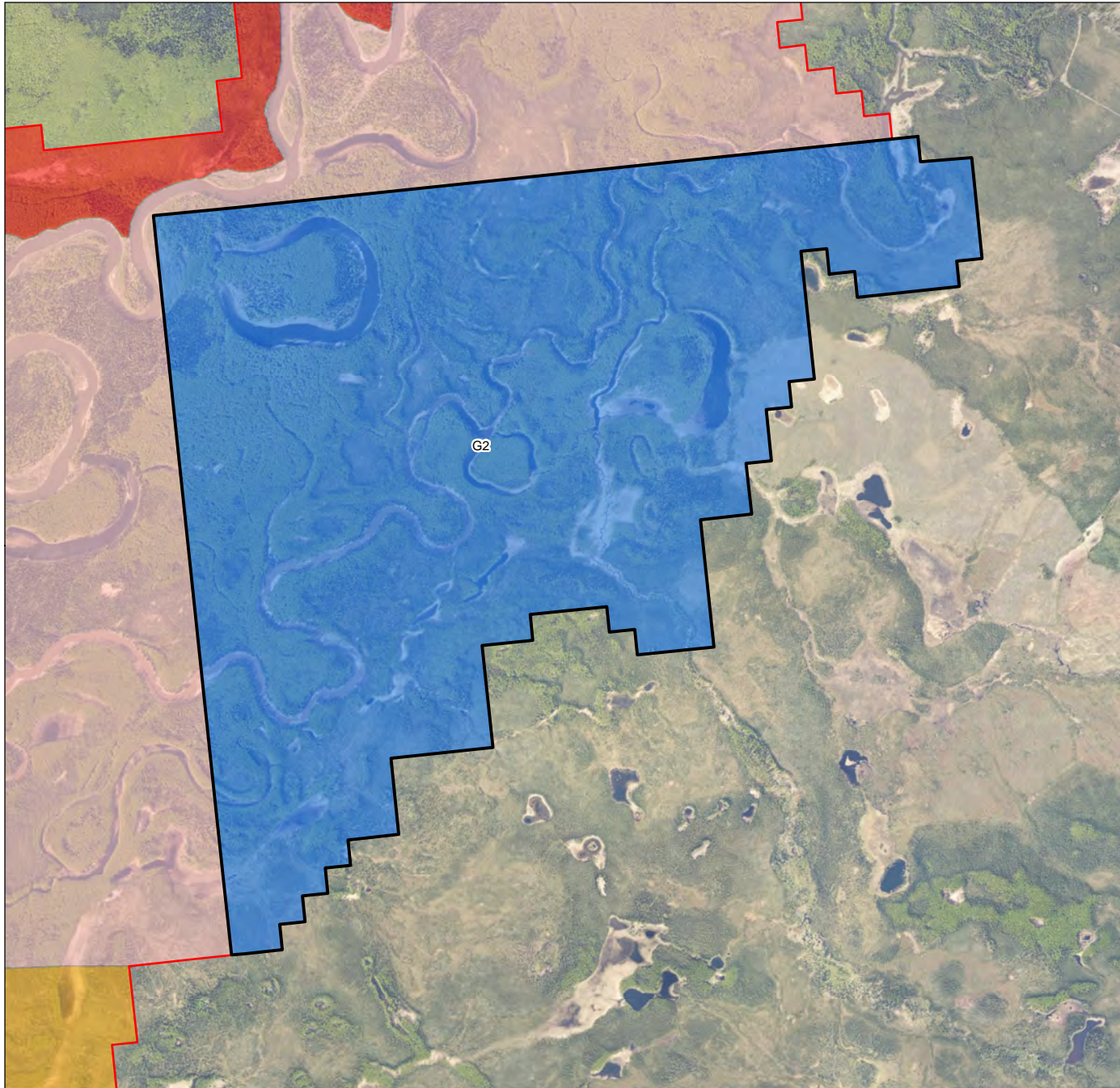
- A. Obj 1: Ensure continuous, safe, operation and maintenance of the project by ensuring the property is available for flooding.
- B. Obj 5: Promote dispersed, low-density recreation and designate and maintain existing cleared trails as recreational trail corridors.
- C. Obj 8, Obj 12: Promote the management of wildlife habitats, including moose habitat, to promote species abundance and diversity, and to provide wildlife viewing opportunities.
- D. Obj 10, Obj 11: Promote the management of waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.
- E. Obj 12: Promote species abundance and diversity by maintaining preferred habitat for spruce grouse (such as white spruce habitat) and other permanent and winter resident wildlife.
- F. Obj 12: Promote project wildlife species abundance and diversity.

5.21.4 DEVELOPMENT NEEDS

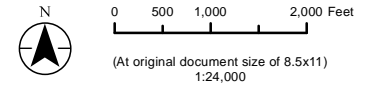
No development needs have been identified.



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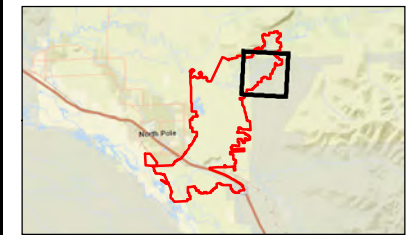


- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes

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Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
Master Plan Update

Figure No.
49

Title
**Ft Wainwright Maneuver Area (G2)
Management Unit**

5.22 Management Unit G3: North Chena Foothills

5.22.1 CLASSIFICATION AND JUSTIFICATION

Classification: Environmentally Sensitive Area.

The steep bluffs and slopes of the north Chena foothills of the Yukon-Tanana Uplands form a scenic northern edge to the project. These hills are highly visible from much of the area. Diverse and unique vegetation communities, primarily quaking aspen, upland meadows and rocky cliffs, enhance the visual quality of these foothills for visitors. At the same time, the habitats present on their south-facing slopes provide a setting unique to the project. Consequently, the unit supports wildlife species that are relatively rare in the remainder of the project. A historic American peregrine falcon nest (aerie) is located outside the project on adjacent state-owned lands near a steep bluff overlooking the Chena River. Other bird species utilize river bluffs for nesting, including rough-legged hawks, bank swallows and belted kingfishers. The bluff and remainder of the foothills have a high probability of cultural resource sites.

5.22.2 DESCRIPTION AND USE

Management Unit G3 consists of a narrow strip of land along the Chena foothills of the Yukon-Tanana Uplands at the northern boundary of the project. The unit is characterized by steep slopes, and rocky bluffs rising sharply from the flatlands along Chena River.

5.22.3 RESOURCE OBJECTIVES

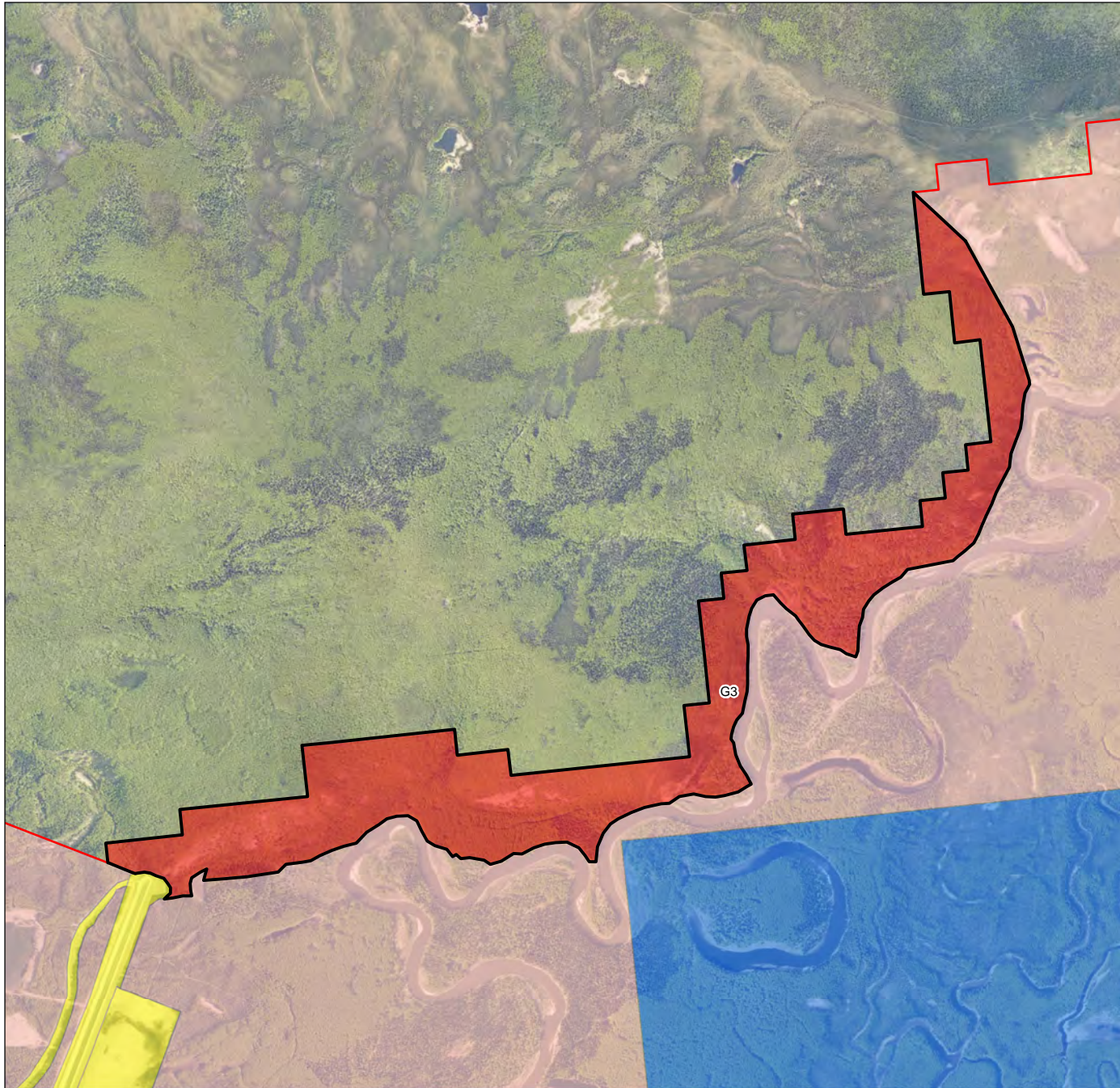
- A. Obj 7: Disallow incompatible land or recreational uses that would degrade or compromise the value of habitats in the vicinity of the vicinity of historic peregrine falcon aeries on and off the project.
- B. Obj 8, Obj 12: Manage wildlife habitats, including moose habitat, to promote species abundance and diversity and provide wildlife viewing opportunities.
- C. Obj 10, Obj 11: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.










5.22.4 DEVELOPMENT NEEDS

No development needs have been identified.



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-  Flood Control Boundary
- Management Unit Class**
-  Easement: Flowage
-  Environmentally Sensitive Area
-  High Density Recreation
-  Multiple: Low Density Recreation
-  Multiple: Operations
-  Multiple: Vegetation Management
-  Multiple: Wildlife Management
-  Project Operations

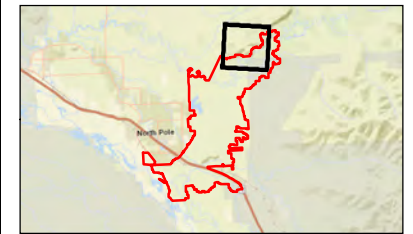


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Notes

1. Coordinate System: NAD 1983 Alaska Albers
2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
Master Plan Update

Figure No.
50

Title
**North Chena Foothills (G3)
Management Unit**

5.23 Management Unit H1: Southern Project Lands

5.23.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple Resource Management Lands: Wildlife Management.

Road and trail access to the interior of these lands is very limited. Summer access is primarily by boat via the Tanana River and Piledriver Slough. Winter access for a variety of recreational activities can be gained using frozen wetlands and waterways as transportation corridors.

Recreation is very popular along waterways, in particular Piledriver Slough, Moose Creek Landing, and Bathing Beauty Pond.

Moose presently occur throughout the unit. The unit is vegetated primarily by mid- to later-successional stage communities. While these more mature successional stages provide less forage for moose than earlier successional stages, they do provide higher quality cover. Unit H1's large size makes it amenable to larger scale habitat manipulation for increased production of moose forage. The various sloughs and streams extending throughout the unit provide waterfowl nesting and brood rearing habitat. The white spruce stands within the unit present preferred habitat for spruce grouse and winter cover for other permanent resident wildlife.

5.23.2 DESCRIPTION AND USE

Management Unit H1 contains all of the area south of the Richardson Highway away from the road system and whose recreational use is centered on waterways.

5.23.3 RESOURCE OBJECTIVES

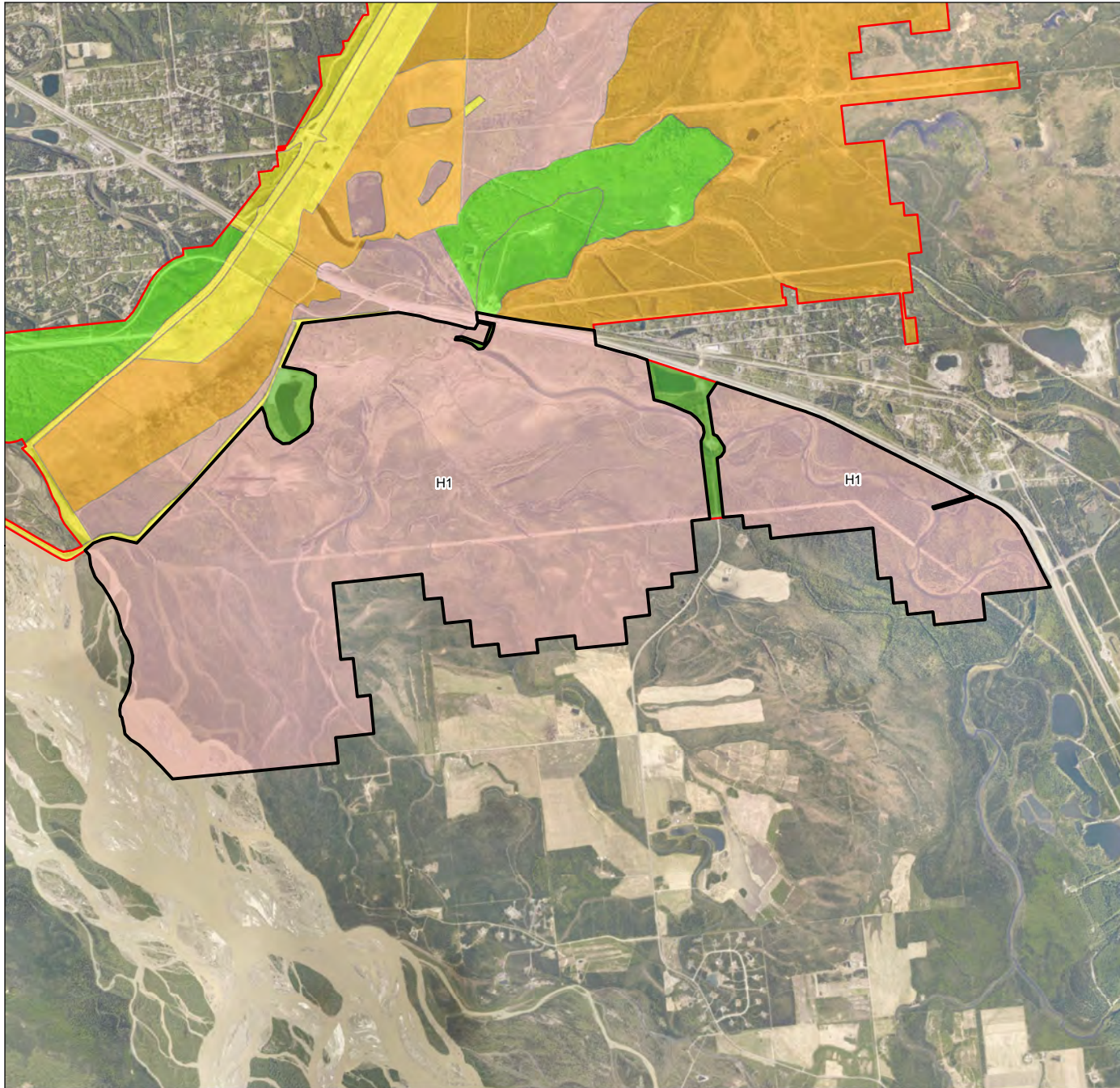
- A. Obj 4, Obj 5: Facilitate water-oriented recreational.
- B. Obj 4, Obj 5: Promote use of Piledriver Slough and other waterways as canoe trails to help meet regional needs for stream access for boating and fishing.
- C. Obj 8, Obj 12: Manage wildlife habitats, including moose habitat, to promote species abundance and diversity and provide wildlife viewing opportunities.
- D. Obj 10: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.

5.23.4 DEVELOPMENT NEEDS

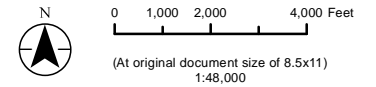
No development needs have been identified.



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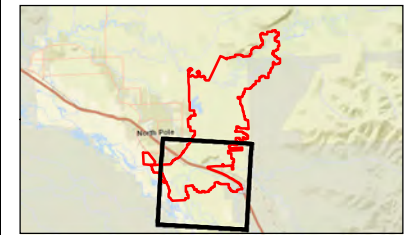


- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
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- Project Operations



Notes

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Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
Master Plan Update

Figure No.
51

Title
**Southern Project Lands (H1)
Management Unit**

5.24 Management Unit H2: Piledriver Slough

5.24.1 CLASSIFICATION AND JUSTIFICATION

Classification: High Density Recreation.

Recreation is very popular along Piledriver Slough, Bathing Beauty Pond, and Moose Creek, primarily for fishing and boating. These locations host access roads, parking lots, visitor use facilities, and boat access.

Road access is very important to maintain past Piledriver Slough to the agricultural area south of the project.

5.24.2 DESCRIPTION AND USE

Management Unit H2 contains all of the area providing access to Piledriver Slough, Moose Creek, and Bathing Beauty Pond, in addition to the road providing access to lands south of the project. Unit H2 land is bordered on either side by Management Unit H1 lands.

Bathing Beauty Pond was created by excavation of a material source pit that was subsequently closed and restored to provide a recreational waterbody.

5.24.3 RESOURCE OBJECTIVES

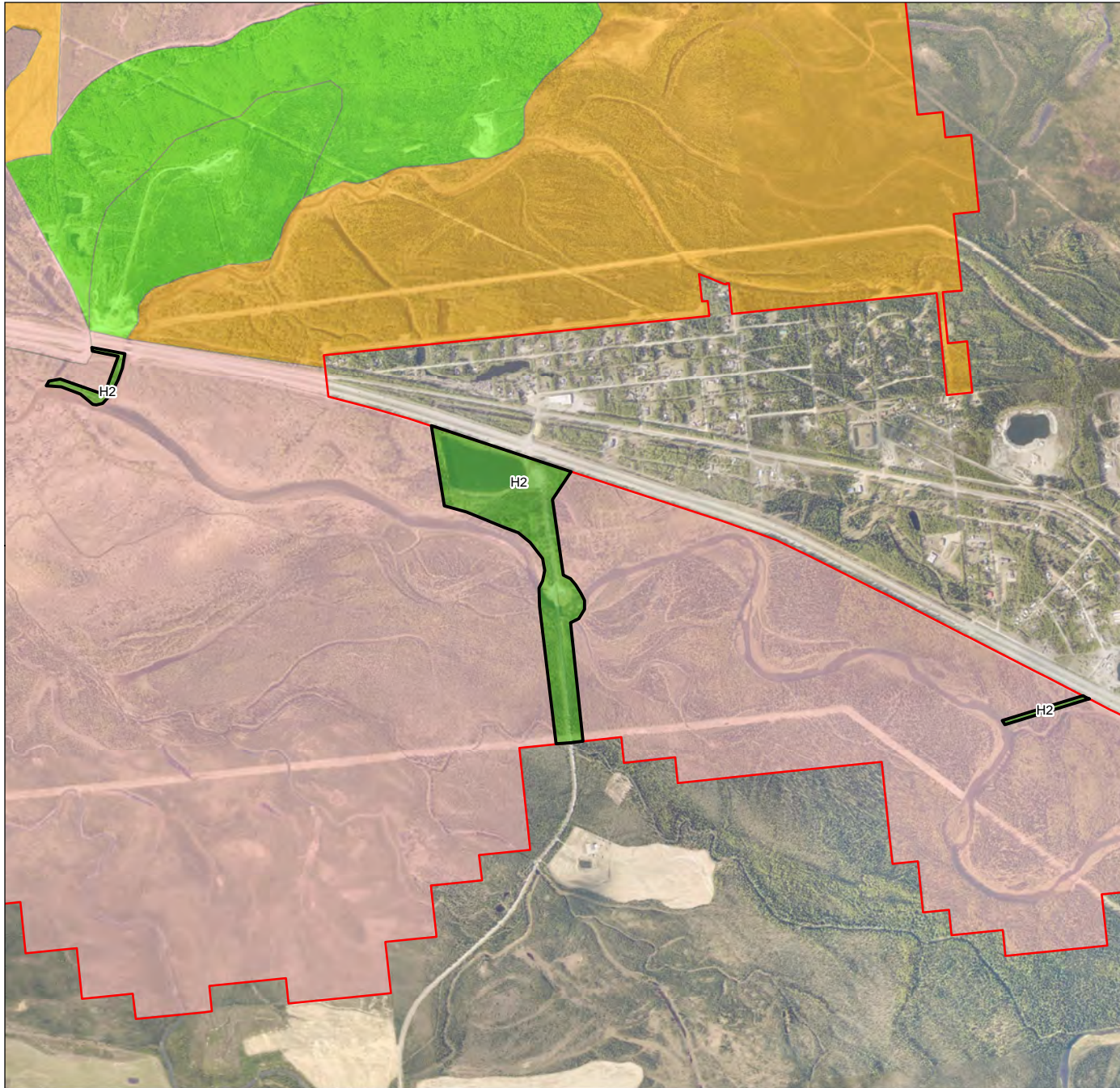
- A. Obj 2, Obj 4: Develop water-oriented recreational facilities.
- B. Obj 4, Obj 5: Promote use of Piledriver Slough and Moose Creek as a canoe trail to help meet regional needs for stream access for boating and fishing.
- C. Obj 6: Provide facilities to meet health and safety needs.
- D. Obj 10: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.
- E. Obj 12: Manage wildlife habitats, including moose habitat, to promote species abundance and diversity, and to provide wildlife viewing opportunities.
- F. Obj 13, Obj 14: Support resident, anadromous, and sport populations of fish.

5.24.4 DEVELOPMENT NEEDS

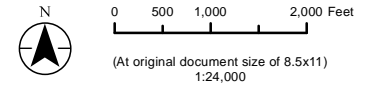
Visitor access and facility improvements are justified for both Piledrive Slough and Bathing Beauty Pond.



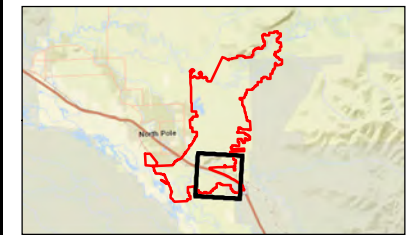
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- Flood Control Boundary
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- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes
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Project Location
 North Pole, Alaska

Client/Project
 Chena River Lakes Flood Control Project
 Master Plan Update

Figure No.
52

Title
**Piledriver Slough (H2)
 Management Unit**

5.25 Management Unit H3: Moose Creek Landing

5.25.1 CLASSIFICATION AND JUSTIFICATION

Classification: High Density Recreation.

Moose Creek Landing is a very popular visitor use facility. It provides a boat launch and access to Moose Creek. It also provides a beach/flatwater recreation area for users who prefer a more rustic setting than Chena Lake Park.

Moose Creek Landing was created as a material source. Future material source activities may be required to serve project operational needs.

5.25.2 DESCRIPTION AND USE

Management Unit H3 is focused on the Moose Creek Landing, and an outlet connecting to Moose Creek. It is directly adjacent, and depends on access from, the H4 Dike Access Road, which is primarily maintained for project operations.

5.25.3 RESOURCE OBJECTIVES

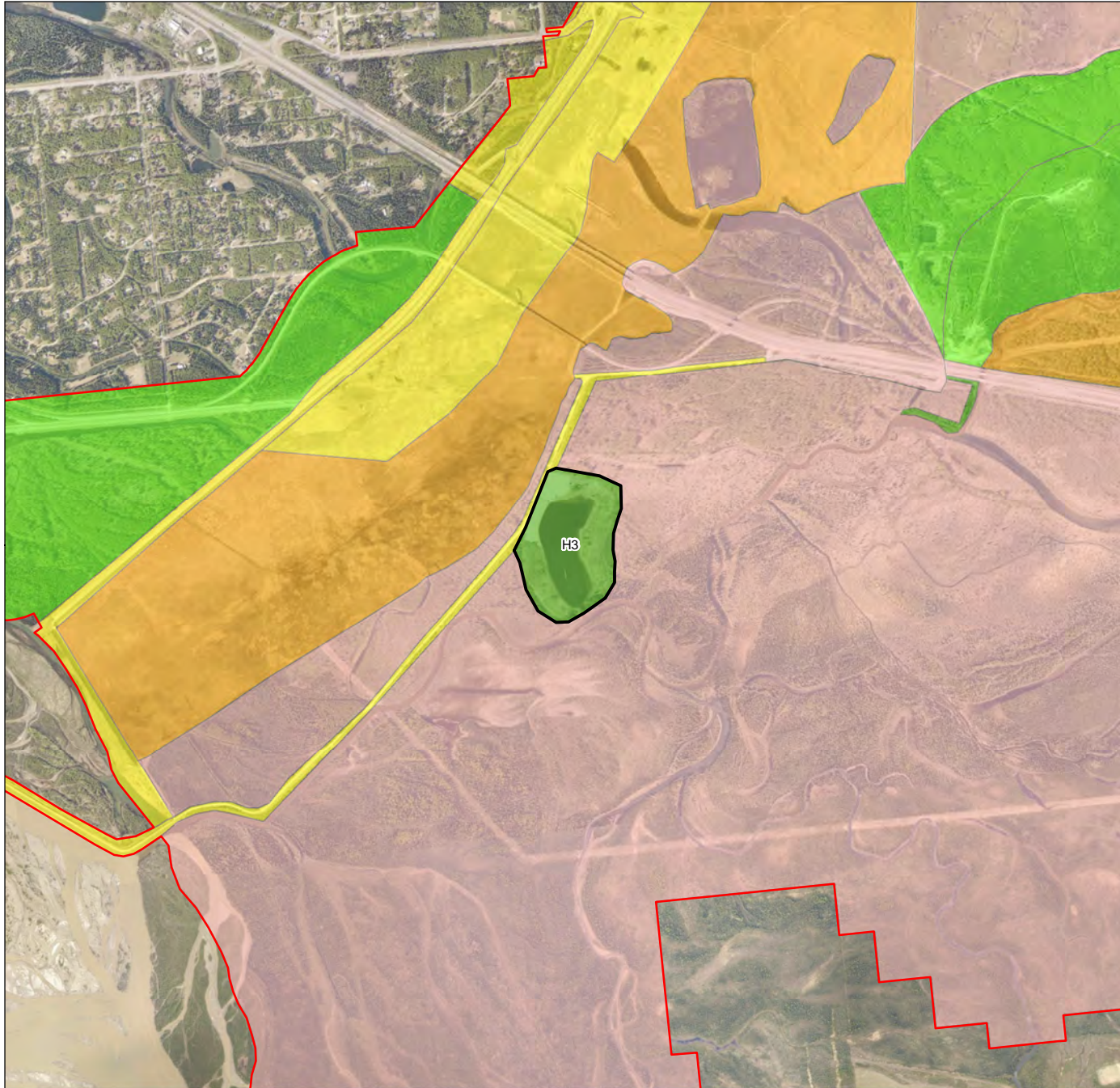
- A. Obj 1: Maintain the material source pit for future use.
- B. Obj 2, Obj 4: Develop water-oriented recreational facilities.
- C. Obj 4, Obj 5: Promote use of Piledriver Slough as a canoe trail to help meet regional needs for stream access for boating and fishing.
- D. Obj 6: Provide facilities to meet health and safety needs.
- E. Obj 13, Obj 14: Support habitat for resident and anadromous populations of sport fish.

5.25.4 DEVELOPMENT NEEDS

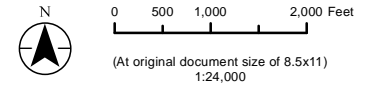
No development needs have been identified.



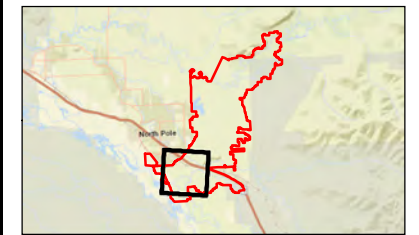
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- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



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Project Location
 North Pole, Alaska

Client/Project
 Chena River Lakes Flood Control Project
 Master Plan Update

Figure No.
53

Title
**Moose Creek Landing (H3)
 Management Unit**

5.26 Management Unit H4: Diversion Dike Access Road

5.26.1 CLASSIFICATION AND JUSTIFICATION

Classification: Project Operations.

Management Unit H4 consists primarily of the narrow strip of project lands between the excavated floodway channel and the channelized lower stretch of Piledriver Slough. The principal feature of this unit is the Diversion Dike Access Road. This road provides access to the diversion dike, the floodway sheet-pile sill and the mouth of Piledriver Slough at the Tanana River.

5.26.2 DESCRIPTION AND USE

The Diversion Dike Access Road is generally open for public use and promotes wildlife viewing and sightseeing. In addition, it provides access to Piledriver Slough and the Tanana River for fishing.

5.26.3 RESOURCE OBJECTIVES

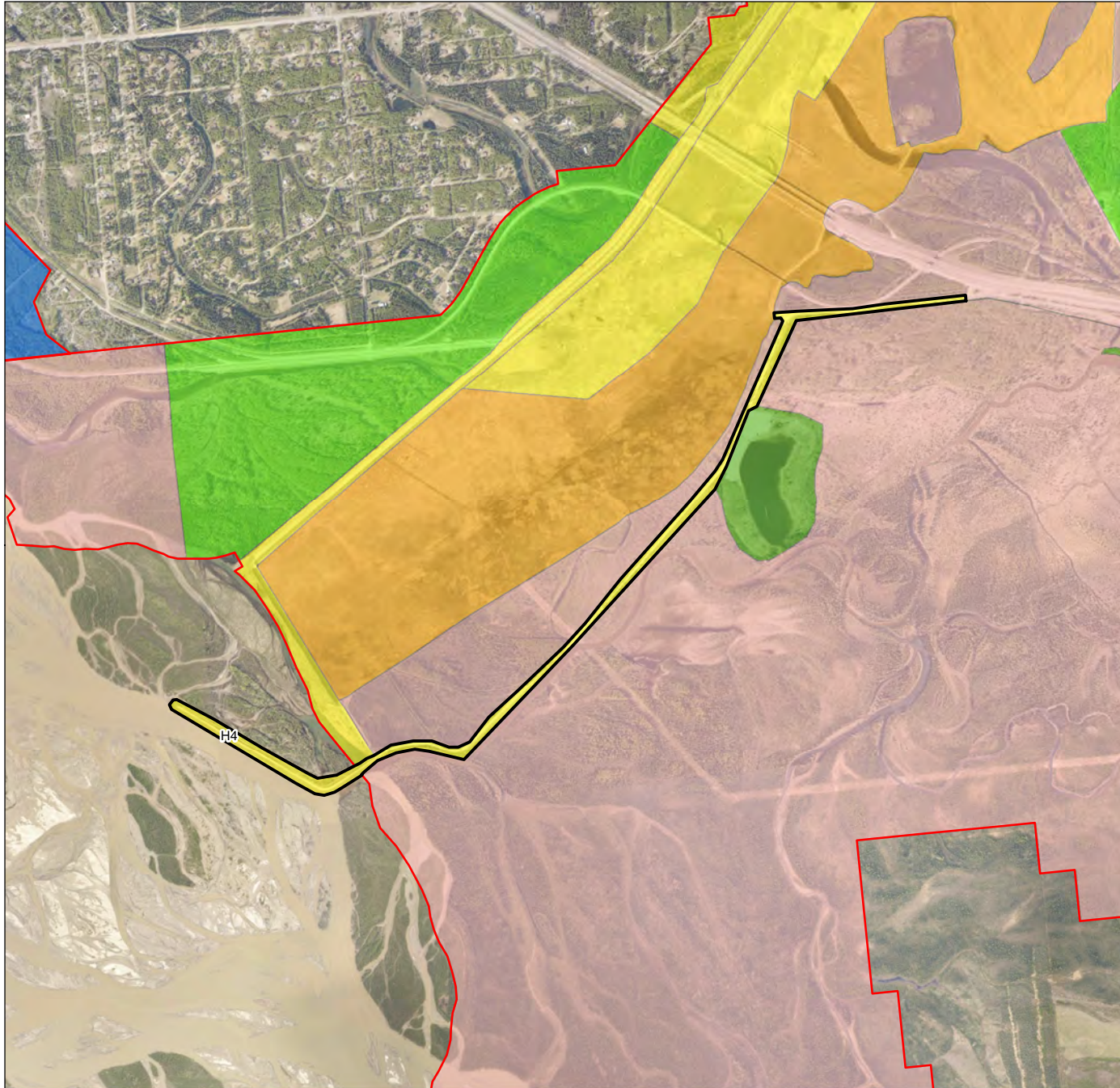
- A. Obj 1: Provide access to the diversion dike and the floodway sheet-pile sill for project operations.
- B. Obj 5: Provide access to Piledriver Slough and the Tanana River for low-density recreational activities including fishing, canoeing, wildlife viewing and sightseeing.
- C. Obj 10, Obj 11: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.
- D. Obj 12: Manage wildlife habitats, including moose habitat, to promote species abundance and diversity and provide wildlife viewing opportunities.

5.26.4 DEVELOPMENT NEEDS

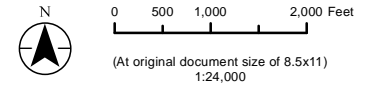
No development needs have been identified.



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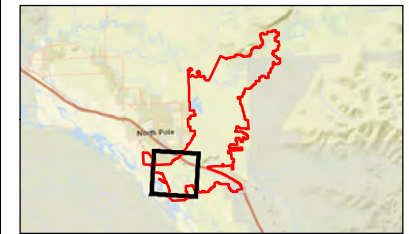


- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
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Project Location
North Pole, Alaska

Client/Project
Chena River Lakes Flood Control Project
Master Plan Update

Figure No.
54

Title
**Diversion Dike Access Road (H4)
Management Unit**

5.27 Management Unit H5: Dam Extension

5.27.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple: Low Density Recreation

Management Unit H5 consists primarily of the strip of project lands between the excavated floodway channel and the community of North Pole. The principal feature of this unit is Tanana Levee and the associated access to the Moose Creek Dam. These lands provide access to the portion of the floodway below the Richardson Highway.

5.27.2 DESCRIPTION AND USE

Dam Extension provides access to the western end of the floodway sheet-pile sill and the Moose Creek Dam. This access is required for maintenance and operations of the lower end of the project.

The Dam Extension is generally open for public use and promotes wildlife viewing and sightseeing. Old Richardson Highway Rd has a footpath that allows public pedestrian access to the lower Moose Creek Dam embankment and lower portion of the project.

5.27.3 RESOURCE OBJECTIVES

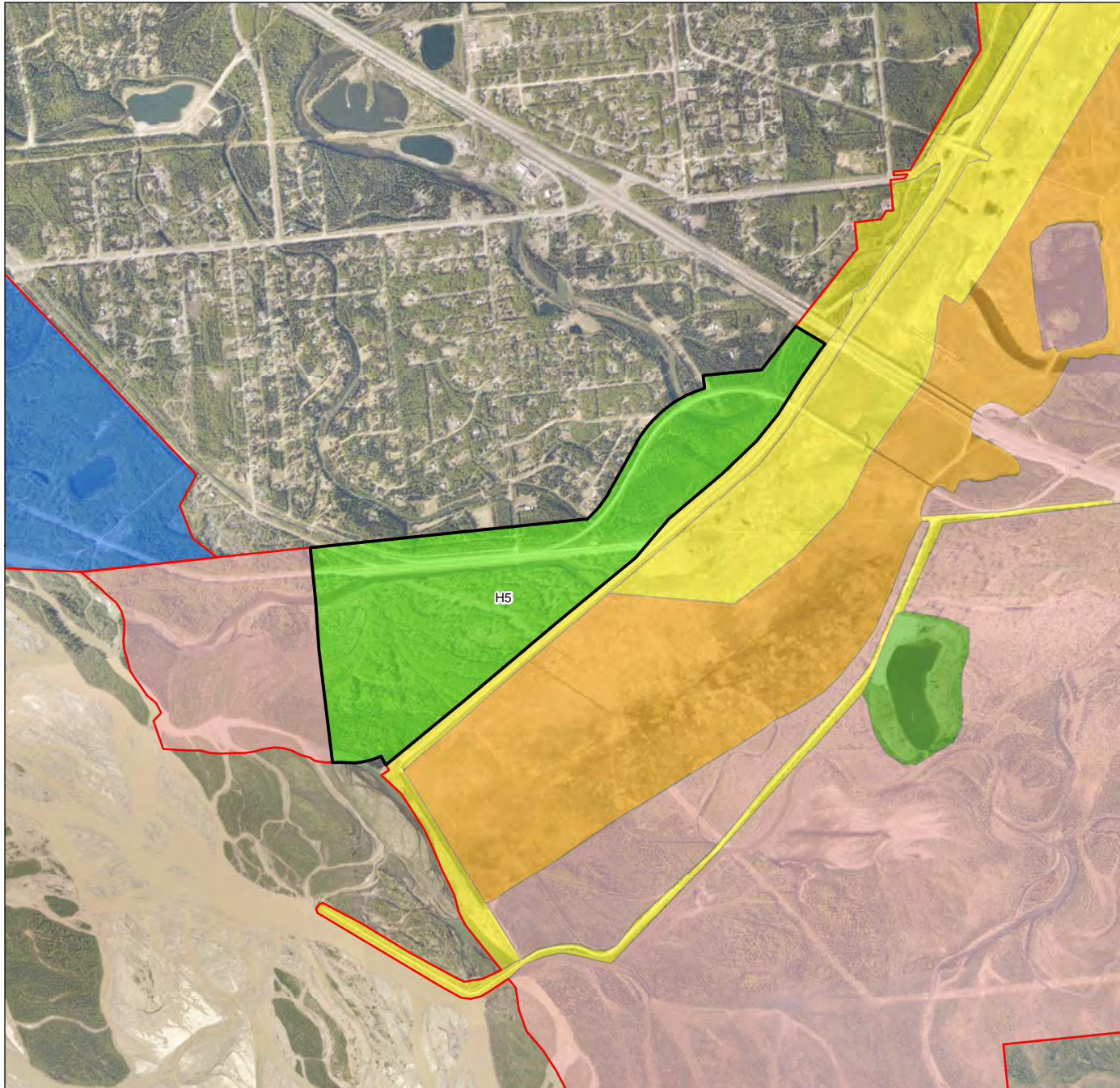
- A. Obj 1: Provide access to the Moose Creek Dam and enable project operations.
- B. Obj 5: Provide access for low-density recreational activities including walking, skiing, wildlife viewing and sightseeing.
- C. Obj 12: Manage wildlife habitats, including moose habitat, to promote species abundance and diversity and provide wildlife viewing opportunities.
- D. Obj 10: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.

5.27.4 DEVELOPMENT NEEDS

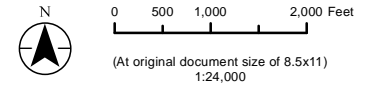
No development needs have been identified.



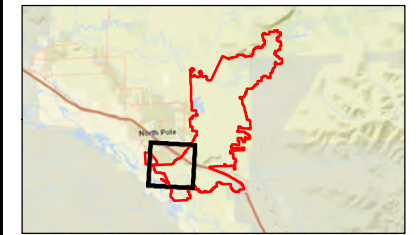
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- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes
 1. Coordinate System: NAD 1983 Alaska Albers
 2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
 North Pole, Alaska

Client/Project
 Chena River Lakes Flood Control Project
 Master Plan Update

Figure No.
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Title
**Dam Extension (H5)
 Management Unit**

5.28 Management Unit H6: South Dyke Range

5.28.1 CLASSIFICATION AND JUSTIFICATION

Classification: Multiple Resource Management Lands: Wildlife Management.

Road access to these lands is very limited. The land is not heavily used for recreation and is primarily managed for wildlife.

5.28.2 DESCRIPTION AND USE

The land is primarily owned by the USACE for flood control use. The DoD has a secondary easement for use for military purposes.

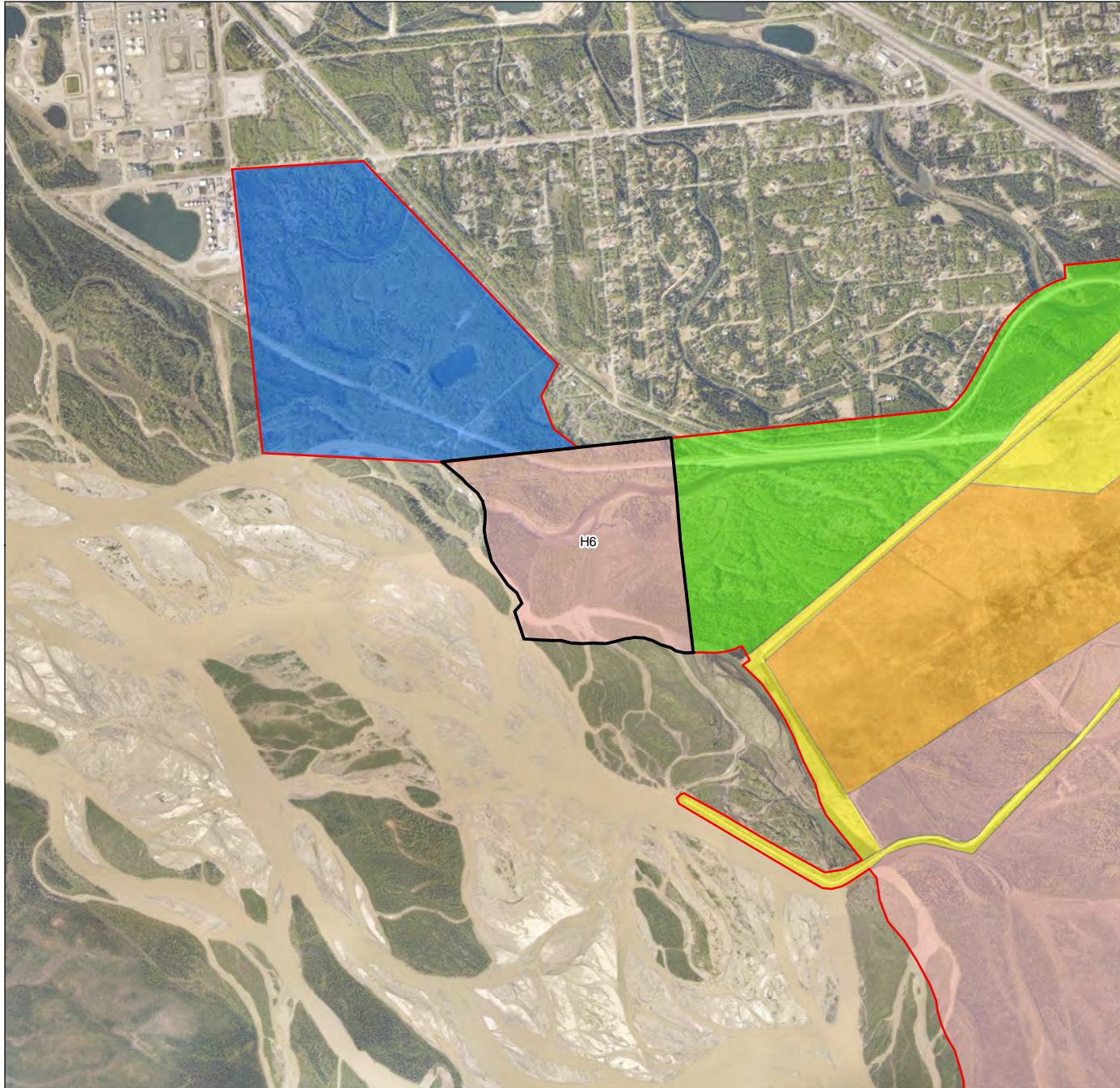
5.28.3 RESOURCE OBJECTIVES

- A. Obj 4, Obj 5: Facilitate water-oriented recreational.
- B. Obj 8, Obj 12: Manage wildlife habitats, including moose habitat, to promote species abundance and diversity and provide wildlife viewing opportunities.
- C. Obj 10: Manage waterfowl, geese, and other bird habitat to support nesting, brood rearing, and migratory staging areas.

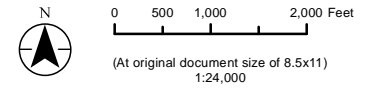
5.28.4 DEVELOPMENT NEEDS

No development needs have been identified.

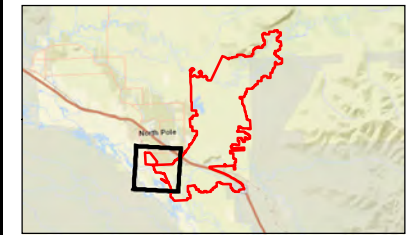




- Flood Control Boundary
- Management Unit Class**
- Easement: Flowage
- Environmentally Sensitive Area
- High Density Recreation
- Multiple: Low Density Recreation
- Multiple: Operations
- Multiple: Vegetation Management
- Multiple: Wildlife Management
- Project Operations



Notes
 1. Coordinate System: NAD 1983 Alaska Albers
 2. Background: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Project Location
 North Pole, Alaska

Client/Project
 Chena River Lakes Flood Control Project
 Master Plan Update

Figure No.
56

Title
**South Dyke Range (H6)
 Management Unit**

5.29 Management Unit H7: Army Dyke Range

5.29.1 CLASSIFICATION AND JUSTIFICATION

Classification: Easement: Flowage

This management unit borders the Tanana River and provides a vegetative buffer area along the riverine corridor between the river and the City of North Pole.

5.29.2 DESCRIPTION AND USE

Management Unit H7 consists of the extreme southwest corner of the project. It is adjacent to the Tanana River. This unit is public domain land withdrawn for the DoD. The project does not own the land, it only holds a flowage easement for project operations.

5.29.3 RESOURCE OBJECTIVES

- A. Obj 1: Ensure continuous and safe O&M of the project by ensuring the property is available for flooding.
- B. Obj 8, Obj 12: Promote the management of wildlife habitats, including moose habitat, to promote species abundance and diversity and provide wildlife viewing opportunities.
- C. Obj 10, Obj 11: Promote the management of waterfowl and other bird habitat to support nesting, brood rearing, and migratory staging areas.

5.29.4 DEVELOPMENT NEEDS

The project should collaborate with the landowner to address management issues as they develop.



Figure 57. Army Dyke Range (H7) Management Unit



6 Special Topics and Considerations

6.1 Cost-Sharing Requirements

Under the Federal Water Projects Recreation Act (PL 89-72, as amended through PL 113–287, Enacted December 19, 2014), financial participation by a local sponsoring agency or organization helps offset the costs of development of recreational facilities or enhancement of fish and wildlife at USACE water resources projects. To carry out project objectives, the USACE Alaska District has engaged with FNSB as a local sponsor. The FNSB leases land in the Laurance Road section of the project and administers the recreation facilities and services at the Chena Lake and Chena River parks.

6.2 Project Funding and Manpower

Implementation of many of the Master Plan objectives is dependent upon the financial support of local sponsoring agencies. Execution of the objectives also depends upon future USACE funding and staffing capabilities. Not all of the identified objectives can be achieved immediately. USACE project operations personnel and other District elements should organize the resource management programs, leading to an orderly implementation of objectives.

6.3 Adjacent Land Uses

Residential areas border the project to its west (along Nelson Road in North Pole), to its east (the community of Moose Creek), and to the southwest (e.g., Dyke Road). Unauthorized tree cutting and other uses have occurred adjacent to the southern project boundary's agricultural neighbors. Noise, trespass, and littering may cause conflicts between residents and recreationists using facilities in the project. In addition, potentials exist for encroachment onto USACE lands by adjacent landowners. For example, existing vegetation between Chena Lake and the project must be retained as a separation zone and only low-density recreation encouraged in that area. To limit conflicting opinions on ownership and uses, and to identify encroachments, boundaries along the project should be surveyed and marked, and a routine project boundary surveillance program enacted.

6.4 Potentially Conflicting Uses

6.4.1 TARGET SHOOTING

Informal target shooting presently occurs at a number of locations around the project. Informal discharge of firearms poses a serious safety hazard for project visitors and personnel and cannot be permitted in areas where intensive visitor use is anticipated. Since target shooting is an established use, controlling it may be a difficult management task requiring project personnel with Title 36 citation authority.



6.4.2 OFF-ROAD VEHICLES

ORVs are presently allowed for seasonal use of some parts of the project. There is the potential for ORV usage to result in damage to the environment and cultural resources. Management of this use will require active monitoring and management by project staff with Title 36 citation authority.

6.4.3 GARBAGE DUMPING

Uncontrolled garbage and trash dumping, including old car bodies and appliances, currently occurs at a number of locations within the project where there is easy vehicle access. In addition to being visually unpleasant, this activity creates a safety hazard and conflicts with other project uses. Existing trash and garbage should be cleaned up and removed. Regulations prohibiting garbage dumping under CFR Title 36 must be strictly enforced. Informal project roads should be closed to access unless they are specifically recommended for public access.

6.4.4 VANDALISM

Vandalism of both natural features (e.g., Moose Creek Bluff) and developed facilities, especially restrooms and picnic tables, currently occurs and is expected to continue. Project signs are a commonly damaged shooting target for vandals. This problem creates visual blight and visitor life, health and safety concerns, as well as results in increased maintenance costs. Facility design should be as vandal resistant as possible. Regulations should be strictly enforced by project personnel with Title 36 citation authority.

6.4.5 FLOAT PLANES

Title 36 only allows for aircraft to land at locations owned by the USACE and designated by the District Commander. The project USACE owned land has no areas that have been designated for such activities. The landing of aircraft on project lands, including Chena Lake, is prohibited.

In addition, Chena Lake is managed as a "quiet lake" with no motorized vehicles, including aircraft.

6.4.6 TRANSIENT VISITATION (SQUATTERS)

In the past, various locations around the project have been used by squatters as semi-permanent encampments. This form of trespass is prohibited by Title 36, CFR. Camping should be permitted only in designated areas and only for a 14-day maximum stay.



6.5 Periodic Flooding

The potential for periodic flooding is the primary management constraint on project lands upstream of the Moose Creek Dam. These lands are suitable only for low-density, dispersed public use. Recreational development in areas subject to flooding must be limited.

Periodic flooding may also affect wildlife management activities. Waterfowl utilize the floodway extensively during spring and fall migration periods and during summer for nesting and brood rearing. Waterfowl use of the floodway as a migration staging area is highly compatible with project operations however, summer nesting use corresponds with the potential flood season.

6.6 Water Quality

Both Chena Lake and Bathing Beauty Pond are fed by groundwater only, making them particularly susceptible to various forms of external pollution. While the lakes undergo interchange through seepage action from the high-water table, continued monitoring of water quality parameters is necessary to control debris and pollutants introduced by recreationists. Regulations against dumping of garbage, litter, and greywater in and around project lakes should be strictly enforced. Prohibition of gasoline motors on Chena Lake should also help to minimize the problem. The status of PFAS migration into area waters should also be monitored.

Potable water supplies are a related concern. Wells are used as a potable water source within project. Past testing has shown excellent quality in existing project wells. However, there is some potential for contamination in the future, especially from adjoining land use. Concern for public safety requires managing agencies, including USACE and local sponsors, to undertake a continuous monitoring program of potable water sources.

6.7 Swimmer's Itch

Several material pit lakes around Fairbanks have been plagued by swimmer's itch caused by *Schistosoma dermatitis*, a waterborne skin parasite that can cause severe irritation and discomfort to swimmers. Fresh water snails and waterfowl serve as intermediate hosts. Project personnel should monitor swimming areas for this condition. If it does arise, signs should be installed to notify swimmers about the problem. Swimmers should be encouraged to dry off thoroughly immediately upon leaving the water. The problem may also be controlled through application of approved chemicals in affected waters.

6.8 Mosquito Nuisance

During the prime outdoor recreation months, particularly June, the Alaskan Interior is plagued by mosquitoes. This problem is a nuisance to recreational enjoyment of the project and may become a health hazard. No solution can be expected to totally abate the problem. Campgrounds and picnic areas



should be developed in dry, open areas wherever possible since they generally contain less natural mosquito breeding habitat. Development of shoreline area facilities should preference areas with consistent breezes over those without as much air movement. Limited pesticide spraying may be used for mosquito control.

6.9 Wildlife Disturbance

Heavy public use of the project could disturb wildlife, possibly driving some species from their habitats. Most disturbance could occur in the vicinity of the Chena Lake Park and Chena River Park, where the greatest density of visitors occurs. Site-specific objectives have identified critical wildlife habitats and recommended measures for minimizing human interference with wildlife. These measures include passive maintenance of existing habitat areas and vegetative buffer strips.

Disruption of moose migration through the project is another concern. Chena Lake Park and Chena River Park are both located in areas previously used by migrating moose. Maintenance of moose passage corridors north of the Chena River, particularly adjacent to North Chena Pond, provides some mitigation to changes in the habitat caused by other project infrastructure and use management.



7 Agency and Public Coordination

This Master Plan Update conducted agency and public coordination to update stakeholders of the effort, and help identify resources, determine public needs, and incorporate topics into the Master Planning process.

7.1 Pre-Draft Master Plan Agency Coordination

Agency coordination was initiated by sending agencies a Pre-Draft Master Plan Scoping Letter. This allowed agencies to bring up topics to include in the planning process. Responses are included in Appendix B. Substantive comment summary, and USACE's response, is listed below.



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Table 18. Pre-Draft Master Plan Agency Comments and Response

Organization	Comment	USACE Response
US Army Garrison Directorate of Public Works Environmental	The U.S. Army Garrison Alaska Environmental Division of the Directorate Public Works identifies the Ft Wainwright Maneuver Area (a.k.a. Yukon Training Area) as having the largest concentration of little brown bats found on Fort Wainwright lands (Savory 2016)	Incorporated data into Master Plan.
FNSB Community Planning	Would like to participate in agency review and comment	Acknowledged
Department of Transportation and Public Facilities	Would like to participate in agency review and comment	Acknowledged
NOAA Essential Fish Habitat	Would like to participate in agency review and comment	Acknowledged
Alaska Railroad Corporation	Updated agency contacts	Acknowledged
National Park Service	No Comments	Acknowledged
State Historic Preservation Officer (SHPO)	SHPO recommends consideration of the Chena River Lakes Flood Control Project as a potential historic property as this infrastructure will likely achieve 50 years of age during the period of use for the Master Plan.	Acknowledged
State Historic Preservation Officer (SHPO)	SHPO recommends consultation with Alaska Native entities regarding properties of religious and cultural significance that may not have been identified previously.	Acknowledged The project has an active Alaska Native outreach program and values the collaborative relationship fostered over the decades of project operations. Consultation on cultural properties is an active process, occurring throughout the life of the project.
FNSB: Chena Recreation Area Department	Much of the infrastructure and facilities at Chena Lake Recreation Area are aging and, in some instances, are deteriorated or broken. Additionally, accessibility regulations have changed in the last 40 years.	Acknowledged, incorporated into the Master Plan



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Organization	Comment	USACE Response
<p>FNSB: Chena Recreation Area Department</p>	<p>Accomplishments:</p> <ul style="list-style-type: none"> • Accessibility: Paving Americans with Disabilities Act (ADA) parking spots, replacing vault toilets with ADA vault toilets, paving some paths, providing ramps, and partnering with agencies such as ADF&G to provide an ADA kayak launch. • Adding head bolt heaters to parking areas near popular ice fishing spots. • Rerouted trails that have been taken over by erosion along the Chena River and invested in erosion prevention in one area of the River Park to prevent a pavilion from falling into the Chena River. • Partnered with the Soil and Water Conservation District to remove the invasive aquatic plant elodea from Chena Lake and the surrounding area. 	<p>Acknowledged</p>



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Organization	Comment	USACE Response
<p>FNSB: Chena Recreation Area Department</p>	<p>Future projects:</p> <ul style="list-style-type: none"> • Reroute trails along the Chena River. • Resurface the roads, parking lots, and campgrounds. • Create a new entrance to the park at the end of Plack Road and tie that entrance into a trail system that would circumnavigate the lake and connect to existing trails within the Chena Lake Park. • Update and modernize campgrounds by providing electrical hook ups in campsites and water. Possibly even Wi-Fi or a boosted cellular signal so that there is reception throughout the campgrounds. • Update the Park Playground to make ADA compliant. • Update and improve showers in the Chena Lake Park. • Replace information kiosks and update signs and trail markers. 	<p>Acknowledged, incorporated into the Master Plan</p>



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Organization	Comment	USACE Response
<p>FNSB: Chena Recreation Area Department</p>	<p>Other Projects</p> <ul style="list-style-type: none"> • Dump Station Replacement – with nearly 300,000 visitors utilizing the park annually, the needs of the community has grown. The dump station needs to be pumped regularly due to elevated use and also due to age (it collects rainwater). • Replacement of Wells in Campgrounds – wells either no longer pump out water or are very difficult to pump, sometimes needing 50-100 pumps before producing water. Water they produce is red and cloudy from rust and aged infrastructure. • Visitor Center – This building would provide interpretive education exhibits of the natural history, culture, and historical significance of the area; a rental space for the community to host weddings, birthdays, and conferences; park offices; restrooms; and support for interpretive and recreational programming done by FNSB staff (such as summer camps, winter camps, Ranger Programs, tours) • ADA Ice Houses • Pavilion Roof Replacement • Group Campground • Cabin Campground • Extra Large Pavilion for Large Groups 	<p>Acknowledged, incorporated into the Master Plan</p>



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Organization	Comment	USACE Response
<p>FNSB: Chena Recreation Area Department</p>	<p>Funding for projects is an ongoing challenge which causes major delays in project approval and completion. The FNSB is trying to invest in updating and improving Chena Lake Recreation Area. Any kind of support regarding funding within the USACE grant system to help update, maintain, or replace infrastructure would be greatly appreciated and can maybe make some of these projects more attainable within a shorter time frame. Additionally, any kind of ongoing operational maintenance support such as snow removal and grading roads would also be immensely appreciated as our resources and equipment and not as superior as the USACE.</p>	<p>Acknowledged, incorporated into the Master Plan</p>
<p>USFWS</p>	<p>Eagles and Nests</p> <ul style="list-style-type: none"> Follow USFWS recommended guidelines and Best Management Practices (BMPs) to avoid take. 	<p>Acknowledged</p>
<p>USFWS</p>	<p>Migratory Birds</p> <ul style="list-style-type: none"> Unless there is an imminent risk to human health and safety that requires mowing, burning, or tilling the Chena Flood Control Project floodway during the migratory bird nesting season, the USFWS recommends these routine maintenance activities be conducted before or after the nesting season. 	<p>Acknowledged.</p> <p>The project works diligently to avoid impacts to the migratory bird nests. Planting, mowing, hydro-axing, and other vegetation disturbance is typically planned to be completed early, prior to bird nesting season. Activities which occur during the bird nesting season are limited to those required to support operational needs.</p>



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Organization	Comment	USACE Response
USFWS	<p>Migratory Birds</p> <ul style="list-style-type: none"> The USFWS recently received calls from members of the public regarding recreationalists harassing flightless, juvenile migratory birds at Chena Lakes. Given the level of use of the area by the public, the USFWS would appreciate educational kiosks about migratory birds, the Migratory Bird Treaty Act (MBTA), and what constitutes take. The USFWS would be available to assist the Project with the development of such materials. 	<p>Acknowledged.</p> <p>This is the first USACE has heard of this issue. In discussion with onsite park rangers, harassment of birds is likely an individual occurrence. Park rangers will monitor for problems, and address incidents as they develop.</p> <p>The USACE has instituted policies to limit the potential for harassment on Chena Lake by not allowing hunting or motorized boats in Chena Lake.</p> <p>With the existing cooperative agreement between the USFWS and USACE, interpretive information is already installed to educate the public.</p> <p>The USACE also has an active press release program, promoting migratory birds on the project – such as a July 2022 press article on the goldeneye nesting project with the USFWS.</p> <p>The USACE would welcome additional interpretive materials from the USFWS, which could take the form of electronic materials in the visitor center, handouts, or educational displays.</p>



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Organization	Comment	USACE Response
<p>USFWS</p>	<p>Fish and Wildlife Habitat</p> <ul style="list-style-type: none"> The USFWS recommends allowing for the passage of most fallen trees downriver to help create and maintain log jams crucial for juvenile salmon refugia, and to reconstruct a channel through the floodway to allow at least a portion of the Piledriver Slough to follow its original course to the Chena Slough. Both these topics have been discussed at various times in the past but have not been evaluated in a formal management plan. The USFWS recommends forming focus groups of stakeholders to discuss these actions because opinions vary widely. However, neither action is insurmountable. For example, there is already a headgate in the Moose Creek Dam near the southern end of the floodway where the Piledriver/Chena Slough used to flow. 	<p>Large Woody Debris All large woody debris (i.e., fallen trees) are allowed free passage through the control works. The USACE only removes the trees that jam and will not pass through the control works. This removal is necessary for safe operations of the project.</p> <p>Placing the trees that jam back in the Chena River below the dam is impractical due to access, operations, and safety concerns. A log pile can't be deposited just below the control works – the only location where access for the required heavy equipment exists. Important project equipment, such as gaging stations, are located in this area and are important to keep free of hazards to safely fulfilling the US Congressionally authorized mission of flood control.</p> <p>Chena Slough Reconstructing a channel through the dam to allow waters to connect to the Chena Slough would negatively impact the flood control mission of the project.</p> <p>We examined the project history on this topic. The original design and concept of construction was for a retention reservoir, which would maintain a water reservoir instead of a floodway. Subsequent geological and soil investigations found that this was not possible due to high soil permeability. Water in the floodway moves through the subsurface, eroding the dam material, potentially causing the dam to fail during a flood.</p> <p>As a result, the design was modified and the floodway concept (as opposed to a reservoir) was constructed. The dam temporarily diverts waters during floods, but the floodway remains dry during non-flood conditions.</p> <p>These same high permeability soil conditions that prevented a reservoir also prevents a waterway from being constructed across the floodway to provide flows to the Chena Slough. The permeability makes it difficult to ensure the continued safe operations of the dam if water is continuously present.</p> <p>The headgate referred to is a low point drain and would need to be rebuilt in the style of the Chena River Control Works for continuous flowing operations.</p> <p>Installing a new channel across the floodway would negatively impact project operations, dam safety, and the flood risk management mission. This would increase the risk to communities downstream that the project was built to protect.</p>



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Organization	Comment	USACE Response
USFWS	<p>Fish and Wildlife Habitat</p> <ul style="list-style-type: none"> The USFWS recommends following the multiagency guidelines for Non-Glacial High-Value Resident and Anadromous Fish Water Bodies, Public land with significant wildlife/bird habitat values (ADF&G 2002) by establishing and maintaining at least a 100-foot primary and a 100-foot secondary buffer of native vegetation along the banks of the Chena River. This would provide a forested interface for shade, aquatic large woody debris (for increased in-stream shelter and structure), and appropriate nutrient inputs to the riverine food web. Maintenance of naturally sloughing banks, and their fallen trees, should only occur if presenting a discharge hazard at the dam headgates. 	<p>Acknowledged.</p> <p>Vegetation buffers are allowed to grow naturally for almost all of the 16 river miles the Chena River is in the project. This provides shade, aquatic large woody debris, and nutrient inputs required for the riverine food web.</p> <p>Vegetation is only maintained in a mowed state for ~1.2 miles around the control gate. This is required to allow for monitoring and safety during project operations.</p>
USFWS	<p>Fish and Wildlife Habitat</p> <ul style="list-style-type: none"> The USFWS recommends increased signage regarding salmon and their lifecycles at the boat launch and along the River Trail would greatly benefit the community's understanding of the importance of natural riverine buffers to our iconic fisheries, and the uniqueness of the Chena River's role in the Chinook lifestyle. 	<p>Acknowledged.</p> <p>The USACE currently has salmon signage in the visitor center and throughout the project.</p> <p>As a note, USACE demonstrates its commitment to salmon through direct support of the Salmon Watch. Through this effort with the USFWS, salmon are counted each year for 20 min/hr for 24 hours a day, for 2 months.</p> <p>The primary constraint on additional signage are funds and USACE staff hours/expertise to create the educational materials.</p> <p>The USACE can post additional electronic or physical information provided by the USFWS in the visitor center. The USACE can also work with the USFWS to install additional salmon signage throughout the project.</p>



CHENA RIVER LAKES FLOOD CONTROL PROJECT MASTER PLAN UPDATE

Organization	Comment	USACE Response
USFWS	<p>Invasive Species</p> <ul style="list-style-type: none"> The USFWS recommends the MP include BMPs and an educational outreach program for staff and visitors to minimize the introduction and transport of all invasive species into and out of the planning area. This is especially important along rivers and streams which, like wind, can transport invasive species into more remote areas of the state. 	<p>Acknowledged.</p> <p>The USACE has an active invasive species program, spending more than \$40,000 a year to treat and educate the public on invasive species.</p> <p>The USACE has partnered with the Fairbanks Soil and Water Conservation District to treat local waters for Elodea. This collaborative effort executes over \$200,000 per year to treat Elodea in project waters.</p> <p>The project follows BMPs to minimize the introduction and transport of invasive species. Educational materials are available at the visitor center. The project has deployed multiple educational information stations throughout the project.</p>
USFWS	<p>Other Considerations</p> <ul style="list-style-type: none"> The USFWS recommends regular communication with the USFWS to stay apprised of any USFWS - related changes in policies, recommendations, BMPs, or other conservation measures. Additionally, the USFWS would appreciate receiving notification of any proposed activities under the plan so the USFWS can work with the project on mutually beneficial conservation measures aimed at minimizing impacts to USFWS trust resources. 	<p>Acknowledged.</p> <p>The USACE has a close working relationship with the USFWS, collaborating and communicating on multiple initiatives that occur on the project.</p> <p>The USACE looks forward to continuing work with the USFWS to implement conservation measures for trust resources.</p>



7.2 Draft Master Plan Congressional Coordination

Congressional notification will be documented in Final Master Plan.

7.3 Draft Master Plan Public Coordination

Public coordination will be documented in Final Master Plan.

7.4 Draft Master Plan Agency Coordination

Agency coordination will be documented in Final Master Plan.



8 Summary of Recommendations

The Chena River Lakes Flood Control Project provides flood protection to the cities of Fairbanks and North Pole, and the cantonment area of Fort Wainwright.

In addition to a primary mission of flood protection, the project provides and manages recreation and environmental stewardship programs. These facilities provide unique recreation opportunities for the region and help meet the demand from both local residents and tourists.

The project also contains valuable natural habitat, which supports wildlife, birds, fish, and vegetation. These species help meet regional desires for biodiversity, wildlife viewing, and sporting. The USACE has a responsibility to maintain, and, with the support of local resource agencies, enhance the project's biodiversity.

For all lands, routine actions are recommended. These include O&M, general administration, equipment purchases, custodial actions, erosion control, painting, repair, rehabilitation, plus replacement or minor expansion of existing structures and facilities such as buildings, roads, levees, groins and utilities, and installation of new building utilities or roadways in developed areas.

8.1 Land Use Classifications

The project should use the following land use classifications to implement actions while managing the project. No mitigation lands have been identified on the project, and so they are not included on the below list.

Individual recommendations for implementation are discussed throughout the Master Plan, the following is a generalized summary.

8.1.1 PROJECT OPERATIONS

These lands should be managed to enable the safe, efficient operation of the project for flood control. Where compatible with operations, other activities may be allowed.

8.1.2 HIGH-DENSITY RECREATION

These lands should be managed to enable intensive recreational use. They can involve the development of recreation facilities for high-impact use. Low-density recreation and low-level wildlife management activities compatible with high-density recreation are acceptable.

- Coordinate with FNSB to operate and maintain the recreational facilities
 - Replace and update facilities as they enter end-of-design-life conditions



- Manage lands adjacent to these areas to maintain buffer zones between intensive visitor use areas and conflicting uses on and adjacent to project lands
- Implement an interpretive program to identify the role of USACE and the project to the visiting public
- Coordinate with local sponsors to develop additional recreation facilities as the need arises

8.1.3 ENVIRONMENTALLY SENSITIVE AREAS

These lands should be managed to preserve specific environmentally sensitive resources (e.g., biological and cultural resources). These areas must be managed to ensure that there are no adverse impacts.

8.1.4 MULTIPLE RESOURCE MANAGEMENT LANDS

These lands have a designation of a predominate use, with other uses beyond the predominate use also allowed to maximize the benefit of the land. Predominate use classifications include Low Density Recreation, and Wildlife and Vegetative Management.

Low-Density Recreation

- Designate and maintain trails for a variety of recreational activities
- Rehabilitate disturbed areas, clean up garbage deposits, and address trespass issues

Vegetation and Wildlife Management

- Preserve and maintain important vegetation for moose movement cover
- Establish a rotational program to create moose forage habitat
- Develop moose forage through prescribed burning, mechanical or other means
- Preserve and maintain important waterfowl habitat, primarily wetlands
- Utilize agricultural practices to enhance waterfowl habitat
- Preserve raptor nesting and rearing habitats
- Monitor, survey, and evaluate wildlife populations to determine the success of current programs and develop future management objectives
- Coordinate with USFWS and ADF&G concerning fish and wildlife management



8.1.5 PROJECT EASEMENT

These lands are where the USACE holds an easement interest, but not fee title. USACE should continue to maintain flowage rights.

8.2 Local Sponsorship and Cooperative Planning

The FNSB provides the local sponsorship to operate and maintain the recreational development at Chena Lake and Chena River parks. FNSB is also the most logical local sponsor for future recreation developments and should be given that opportunity.

The FNSB's 50-year lease (1984 to 2034) will come to term. Preparatory work should take place to allow a new agreement to be put into place, with any required updated language.

The FNSB provides *Future Projects* and *Other Projects* in their comments, summarized in Section 7.1 of the Pre-Draft Master Plan Agency Coordination. These projects are consistent with the Master Plan and should be encouraged. The FNSB also directly addresses how funding is directly related to accomplishing these projects. Funding should be examined, including grants, user fees, and other USACE or FNSB initiatives.

Federal and state resource agencies, including ADF&G and USFWS should be encouraged to enter into agreements whereby project fish and wildlife resources can be managed for USACE objectives and agency regional goals.

8.3 Operational Management Plan

The preparation and approval of an Operational Management Plan, as outlined in EP_1130-2-550, is a critical element in achieving the Resource Use Objectives and associated management and development concepts.

Objectives and implementation plans shall be established for the project. The Operational Management Plan (OMP) must be a utilitarian plan and fully implemented. It is recommended that a multidisciplinary study team prepare the OMP with the District Project Operations taking the lead and coordinating with District Planning, Real Estate and Safety elements.

8.4 Monitoring and Evaluation Studies

It is recommended that studies monitor project resource management activities and evaluate project objectives to ensure their achievement.



8.4.1 VISITOR USE

Continue to collect visitor use data, either directly or through delegation to the local sponsor (i.e., FNSB). The collection of visitor use data is required to monitor project use and estimate future demand for facilities. The USACE should collect visitor use data outside of the FNSB lease areas (i.e., Moose Creek Landing), which will help justify development of these areas. These data assist in evaluating existing project use, determining the adequacy of existing facilities, identifying future facilities requirements, justifying funding, and estimating budgets.

8.4.2 FISH AND WILDLIFE MONITORING

The project's resource use objectives would benefit from baseline and periodic monitoring of target wildlife and fish species' populations in the project area. Monitoring would allow accurate population goals to be set for target species. These would include large mammals, birds (both migratory and nesting), and both anadromous and resident fishes. It is recommended that surveys periodically set project-wide and management unit objectives and verify that those objectives are reasonable and are being met. If these surveys show the existing objectives are inadequate, the goals should be modified accordingly. A list of recommended studies could include:

- Moose studies
 - Winter and/or spring aerial surveys as recommended by ADF&G
 - Browse utilization surveys
 - Habitat alteration and treatment evaluation and analysis
- Waterfowl studies
 - Spring migrant waterfowl/crane surveys; aerial and ground
 - Production surveys (pair and brood); aerial and ground
 - Habitat alteration and treatment evaluation and analysis
- Raptor nesting surveys
- Breeding bird census by habitat category
- Wintering bird surveys
- Effects of flood control operations on fish and wildlife populations and habitat
- Recreational hunting and fishing surveys



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APPENDICES



Appendix A National Environmental Policy Act



A.1 National Environmental Policy Act Requirements

Master plans must be compliant with the 1969 National Environmental Policy Act (NEPA). As such, they must be analyzed and approved under either an Environmental Impact Statement, Environmental Assessment, or Categorical Exclusion.

US Army Corps of Engineers guidance EP_1130-2-550 states that routine Operations and Maintenance activities are categorically excluded from NEPA documentation. Examples of actions that qualify for categorical exclusions include but are not limited to routine operation and maintenance actions, general administration, equipment purchases, custodial actions, erosion control, painting, repair, rehabilitation, replacement or minor expansion of existing structures and facilities such as buildings, roads, levees, groins and utilities, and installation of new building utilities, or roadways in developed areas.

For all other proposals not included in the above paragraph, but already addressed in an existing Master Plan, further NEPA documentation is not required as long as both of the following conditions are met:

1. The proposal is compliant with all current/future national performance measures
2. The proposal is already adequately addressed in an existing finalized NEPA document

For proposals that are not addressed in an existing Master Plan, a Master Plan supplement may be required:

- Master Plan Supplement
 - If supplementing a master plan solely to administratively update information (e.g., vegetation, cultural resources) with no change in management actions, new facilities, land classifications, etc., the activity is categorically excluded from additional NEPA compliance.
 - If a Master Plan supplement is needed to incorporate proposed recreation facilities not addressed in the Categorical Exclusions, change in land use classifications, or change in resource objectives, then the action is not categorically excluded, and an individual NEPA compliance document will be required.
- Master Plan Revisions
 - If a complete revision of the existing Master Plan is required, then the NEPA categorical exclusion does not apply. In most cases an Environmental Assessment is sufficient for NEPA compliance.



A.2 NEPA Review

A summary of past NEPA reviews for the Chena River Lakes Flood Control Project includes:

- The project was originally authorized in a 1971 Environmental Impact Statement (USACE 1971).
- The original Master Plan was published in September of 1984.
- A subsequent 1986 Environmental Assessment authorized vegetation control (USACE 1986).
- A supplement to the Master Plan was published in September of 1989. This provided updates from the original 1984 Master Plan.
- A 2007 Environmental Assessment authorized the Moose Creek Borrow Pit and Recreation Pond (USACE 2007).
- A 2018 Environmental Assessment authorized the Dam Modification (USACE 2018).

This 2022/2023 effort is a Master Plan Update to the 1984 and 1986 plans. As such, each element is analyzed below according to the EP_1130-2-550 framework.

A.3 Changes in the Master Plan

- Chapter 1 Introduction and Chapter 2 Project Setting
 - Revision of Information (e.g., vegetation, cultural resources, visitation).
- Chapter 3: Resource Use Objectives
 - Revision of Information (e.g., wildlife densities)
- Chapter 4: Land Allocation
 - Revision of Information (e.g., update to the only allowed modern land classifications)
- Chapter 5: Resource Use Objectives
 - Revision of Information (e.g., updates to management unit descriptions/rational)
 - Changes in Management Unit Geographic Areas (e.g., updates to incorporate modern GIS mapping abilities)
 - Administratively update information with best available data. Described in detail in the following table (Table A1).



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- Changes in Management Unit Areas (e.g., O&M Compound, Southern Project Lands, Piledriver/Bathing Beauty/Moose Creek Landing)
 - Administratively update information. Described in detail in the following table (Table A1).
- Chapter 6: Special Topics
 - Revision of information (e.g., water quality)
- Chapter 7: Agency and Public Coordination
 - Revision of information (e.g., meetings held)
- Chapter 8: Recommendations
 - Routine operation and maintenance actions, general administration, equipment purchases, custodial actions, erosion control, painting, repair, rehabilitation, replacement or minor expansion of existing structures and facilities such as buildings, roads, levees, groins and utilities, and installation of new building utilities, or roadways in developed areas
 - Revision on Information



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Table A1. Management Units

Unit	Name	Change
A1	Chena Lake Park	Administrative geographic changes due to modern GIS accuracy Individual development projects would need to be reviewed for NEPA compliance
A2	River Park	Administrative geographic changes due to modern GIS accuracy. Administrative changes to management unit to better address use.
A3	River View Park	Administrative geographic changes due to modern GIS accuracy. Administrative changes to management unit to better address use.
A4	Wildlife Habitat	Administrative geographic changes due to modern GIS accuracy
A5	Lower Chena River Area	Administrative geographic changes due to modern GIS accuracy
A6	Western Laurance Road	Administrative geographic changes due to modern GIS accuracy Administrative removal of organization camp language. Activity is still allowed as a potential use.
B1	North Chena Pond	Administrative geographic changes due to modern GIS accuracy
C1	Moose Creek Dam	Administrative geographic changes due to modern GIS accuracy
C2	O&M Compound	Administrative geographic changes due to modern GIS accuracy
C3	Silt blankets	Administrative geographic changes due to modern GIS accuracy and other NEPA authorizations
C4	Seepage Channels	Administrative geographic changes due to modern GIS accuracy
C5	Laydown Yards	Administrative geographic changes due to modern GIS accuracy and other NEPA authorizations. Administrative changes to management unit to better address use.
D1	Bluff Summit	Administrative geographic changes due to modern GIS accuracy
D2	Bluff Slopes	Administrative geographic changes due to modern GIS accuracy and other NEPA authorizations
E1	Cleared Floodway	Geographic changes due to modern GIS accuracy. Also administrative change to combine former E1 and former E2
E2	Wildlife Management Vegetation/Ponds	Administrative geographic changes due to modern GIS accuracy Administrative change to change title of former E3 to E2. Geographic change to reflect actual operations.
F1	East Project Area	Administrative geographic changes due to modern GIS accuracy
F2	East Project ESA	Administrative geographic changes due to modern GIS accuracy. Administrative changes to management unit to better address use.
F3	East Project Wildlife	Administrative geographic changes due to modern GIS accuracy. Administrative changes to management unit to better address use.
G1	Chena River Corridor	Administrative geographic changes due to modern GIS accuracy
G2	Ft Wainwright Maneuver Area	Administrative update to required easement classification. Lands still managed as wildlife.
G3	North Chena Foothills	Administrative geographic changes due to modern GIS accuracy
H1	Southern Project Lands	Administrative changes to compile former Units H and I. Geographic change to reflect actual alignments of Piledriver Slough, Bathing Beauty Pond, Piledriver Access Road, as specifically authorized in the previous Master Plans.



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Unit	Name	Change
H2	Piledriver Slough	Administrative changes to compile former Units H and I. Geographic change to reflect actual alignments of Piledriver Slough, Bathing Beauty Pond, Piledriver Access Road, as specifically authorized in the previous Master Plans.
H3	Moose Creek Landing	Authorized under the 2007 EA
H4	Diversion Dike Access	Authorized under the 2007 EA
H5	Dam Extension	Administrative geographic changes due to modern GIS accuracy. Administrative changes to compile former Units H and I.
H6	South Dyke Range	Administrative geographic changes due to modern GIS accuracy. Administrative changes to compile former Units H and I.
H7	Army Dyke Range	Administrative update to required easement classification. Lands still managed as recreation.

A.4 NEPA Summary

The USACE has determined that this document does not require further NEPA review. Most changes are administrative updates to information (New Management Units or Geographic Changes in Management Units), minor expansion of existing structures, or included in other NEPA documentation (2007 EA).

The USACE has determined the Master Plan qualifies as a categorical exclusion, and does not require an EA.



Appendix B Agency Responses

Summary of Comments

- B.1 Pre-Draft Master Plan Scoping Letter to Agencies
 - Alaska Railroad Response
 - US Army Response
 - Alaska Department of Transportation and Public Facilities Response
 - Fairbanks North Star Borough: Community Planning Response
 - Fairbanks North Star Borough: Chena Lake Recreation Area Response
 - National Oceanic and Atmospheric Essential Fish Habitat Response
 - National Park Service Response
 - State Historic Preservation Officer Response
 - US Fish and Wildlife Service Response



B.1 Pre-Draft Master Plan Scoping Letter to Agencies





DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 6898
JBER, AK 99506-0898

19 July 2022

**Reference: Chena River Lakes Flood Control Project Master Plan Update
Notification of Initiation and Request for Comments**

Dear Joe Kemp, AKDOT&PF – Northern Regional Director:

The U.S. Army Corps of Engineers, Alaska District (Corps) plans to update the Chena River Lakes Flood Control Project (Project) Master Plan (MP). The Chena River Lakes Flood Control Project is located directly east of the community of North Pole and approximately seventeen miles east of Fairbanks, Alaska (Figure 1).

The Project was constructed between 1973 and 1979 in response to the 1967 Chena River flood that devastated Fairbanks and the surrounding area. The flood control features became operational in 1979, with the final Project consisting of an embankment dam (Moose Creek Dam) with concrete control works on the Chena River. The Project provides Chena River flood protection to the cities of Fairbanks and North Pole, as well as Fort Wainwright.

The Project manages recreation and environmental stewardship programs, in addition to its primary mission of flood protection. A Corps-designed recreation area, including two public parks, a bikeway, and a recreational lake supporting a popular swimming beach and fishing access, is currently operated by the Fairbanks North Star Borough Division of Parks and Recreation. The Corps also actively manages the surrounding public land for outdoor recreational activities and wildlife habitat for mammals, and migratory and resident bird species. The Project actively promotes water safety, watchable wildlife, and public safety programs.

The MP is a strategic land use management document that is used to develop and guide comprehensive management actions for all Project recreational, natural, and cultural resource initiatives on the Project throughout the duration of the plan. The MP is periodically updated to guide and articulate Corps responsibilities pursuant to changes in Federal or other laws regarding the preservation, conservation, restoration, maintenance, management, and development of project lands, waters, and associated resources.

Purpose and Need

The purpose of this initiative is to update the current MP, which was released in 1984 and supplemented in September 1989. The primary goal of MP update is to allow for any necessary revisions to the overall land use management plan, resource objectives, and associated management concepts required to satisfy new laws, regulations or public uses of the Project.

The need to update the MP has been made evident by the numerous changes that have occurred in the area since 1989. Residential development has expanded along the eastern and western borders of the Project (e.g., Moose Creek and North Pole); the construction of Eielson Farm Road has led to agricultural development south of the Project; and, operationally, the Project has responded to needs that developed over time, such as the installation of a crane to more efficiently remove debris from the Chena River Concrete Control Works at the Moose Creek Dam.

The existing Project MP goals include the following:

- Provide the best management practices to respond to regional needs, resource capabilities and suitability, and expressed public interests consistent with authorized Project purposes.
- Protect and manage Project natural and cultural resources through sustainable environmental stewardship programs.
- Provide outdoor public recreation opportunities that support Project purposes and public demands created by the Project itself while sustaining its natural resources.
- Recognize the qualities, characteristics, and potentials of the Project.
- Provide consistency and compatibility with national objectives and other state and regional goals and programs.

Request for Comments

The Corps is seeking your comments on the Project MP update. As our planning process is just starting, we have begun actively collecting input on issues important to agencies and other stakeholders that the MP update should address. Your and others' responses will provide necessary data and information that will help us develop a strong MP.

For more information on the Project, feel free to visit our website at <https://www.poa.usace.army.mil/Locations/Chena-River-Lakes-Flood-Control-Project/Activities-and-Recreation/>

We are respectfully requesting your written comments be provided by no later than August 5, 2022. You may mail your comments to:

Attn: Master Plan. Jeremy Allen. Chena River Lakes Flood Control Project Office. 3800 Laurance Road, North Pole AK 99705; or,

you may e-mail comments to: Jeremy.M.Allen@usace.army.mil.

We are working toward completion of a Draft MP in the winter of 2022/2023 that would be made available for review and comment. We will also be hosting an interactive public informational event when the Draft MP is published in order to provide an opportunity for you to interact directly with Project staff on the MP update and bring other concerns or information to the process. At this meeting we will present the Draft MP and take comments, questions, and other input you may have about the Project or MP update details. We anticipate publishing a Final Project MP in the Spring of 2023.

Thank you for your attention to this request, if you have any comments or questions regarding the proposed MP update, you may contact the Operations Project Manager at (907) 753-2753 or Jeremy.M.Allen@usace.army.mil.

Sincerely,

Julie Anderson
Chief, Operations Branch
U.S. Army Corps of Engineers, Alaska District

B.1.1 ALASKA RAILROAD RESPONSE



From: [Kristen Gratrix](#) on behalf of [Real Estate Tech](#)
To: [Allen, Jeremy M CIV USARMY CEPOA \(USA\)](#)
Cc: [Kate Dueber](#); [Land Services](#)
Subject: [URL Verdict: Neutral][Non-DoD Source] RE: Chena Flood Control Project - Master Plan Update
Date: Wednesday, August 10, 2022 7:31:12 AM

Good morning Jeremy

please update the contact for ARRC to include the following contacts - Kate Dueber, dueberk@akrr.com and our land services department, landservices@akrr.com

Thank you

Kristen

Kristen Gratrix

Manager Real Estate Contracts

907-265-2465 office

mailing: PO Box 107500, Anchorage, AK 99510-7500

physical: 327 W Ship Creek Ave, Anchorage, AK 99501

web: www.AlaskaRailroad.com

From: Allen, Jeremy M CIV USARMY CEPOA (USA) <Jeremy.M.Allen@usace.army.mil>
Sent: Wednesday, July 27, 2022 7:32 AM
To: Real Estate Tech <RealEstTech@akrr.com>
Subject: Chena Flood Control Project - Master Plan Update

Hi,

Please find the attached letter concerning the Master Plan (MP) update for the Chena Flood Control Project. We invite you to provide comments on issues important to your mission as it relates to the MP update as agency and other stakeholder input is an important component and helps inform the development of the MP.

Thanks,

Jeremy Allen
Operations Project Manager
USACE Alaska District
907-753-2753
907-250-9708
907-764-0652

B.1.2 US ARMY RESPONSE



From: [Roed, Melanie S CIV USARMY IMCOM PACIFIC \(USA\)](#)
To: [Allen, Jeremy M CIV USARMY CEPOA \(USA\)](#)
Cc: [Sprau, Matthew H CIV USARMY IMCOM PACIFIC \(USA\)](#); [Rees, Daniel C \(Dan\) CIV USARMY IMCOM PACIFIC \(USA\)](#); [Siftar, Kathleen Doyle \(Kate\) CIV USARMY IMCOM PACIFIC \(USA\)](#)
Subject: RE: Chena Flood Control Master Plan Update
Date: Friday, August 5, 2022 2:49:55 PM

Mr. Allen,

Thank you for the information on the existing plan, we will look for the draft Master Plan to review. For now we have the following general preliminary comment:

Thank you for the opportunity to comment on the Chena River Lakes Flood Control Project Master Plan. US Army Garrison DPW Environmental will be reviewing the draft Master Plan for resource concerns and potential conflicts with the Fort Wainwright Integrated Natural Resources Management Plan (INRMP), other guidance documents, and mission support activities. The Master Plan is of interest to us for reasons including the Chena Flood Control Project flood easement on the Yukon Training Area has the largest concentration of little brown bats found on Fort Wainwright lands.

Thank you for the early coordination on the Master Plan updates.

Melanie Roed

Melanie Roed
NEPA Program Manager
DPW-ENV
USAG Alaska
Desk: (907) 361-6323 or 361-9507
Fax: (907) 361-9867
Email: melanie.s.roed.civ@army.mil

We are the Army's Home
Learn more at Blockedwww.wainwright.army.mil

-----Original Message-----

From: Allen, Jeremy M CIV USARMY CEPOA (USA) <Jeremy.M.Allen@usace.army.mil>

Sent: Thursday, August 4, 2022 2:35 PM
To: Roed, Melanie S CIV USARMY IMCOM PACIFIC (USA) <melanie.s.roed.civ@army.mil>
Cc: Sprau, Matthew H CIV USARMY IMCOM PACIFIC (USA) <matthew.h.sprau.civ@army.mil>
Subject: RE: Chena Flood Control Master Plan Update question

The file is too big to send via email - more than 400 pages. Also, it's 40 years old and was so broadly written at the time that much of it is obsolete - except for resource use and objectives.

If you still want a look at the old MP then I could see about using a DOD

file exchange. Or can make a hard copy available at the Chena Project Office.

Thanks,

-----Original Message-----

From: Roed, Melanie S CIV USARMY IMCOM PACIFIC (USA)
<melanie.s.roed.civ@army.mil>
Sent: Thursday, August 4, 2022 1:38 PM
To: Allen, Jeremy M CIV USARMY CEPOA (USA) <Jeremy.M.Allen@usace.army.mil>
Cc: Sprau, Matthew H CIV USARMY IMCOM PACIFIC (USA)
<matthew.h.sprau.civ@army.mil>
Subject: RE: Chena Flood Control Master Plan Update question

Hi there,

I am currently looking for the existing Master Plan, can you provide that?

Thank you!

Melanie

-----Original Message-----

From: Allen, Jeremy M CIV USARMY CEPOA (USA) <Jeremy.M.Allen@usace.army.mil>

Sent: Thursday, August 4, 2022 1:30 PM
To: Roed, Melanie S CIV USARMY IMCOM PACIFIC (USA)
<melanie.s.roed.civ@army.mil>
Cc: Sprau, Matthew H CIV USARMY IMCOM PACIFIC (USA)
<matthew.h.sprau.civ@army.mil>
Subject: RE: Chena Flood Control Master Plan Update question

Hi Melanie,

We'll send out another agency/stakeholder letter when the draft MP is ready for review.

Thanks,

-----Original Message-----

From: Roed, Melanie S CIV USARMY IMCOM PACIFIC (USA)
<melanie.s.roed.civ@army.mil>
Sent: Wednesday, August 3, 2022 2:43 PM
To: Allen, Jeremy M CIV USARMY CEPOA (USA) <Jeremy.M.Allen@usace.army.mil>
Cc: Sprau, Matthew H CIV USARMY IMCOM PACIFIC (USA)
<matthew.h.sprau.civ@army.mil>
Subject: Chena Flood Control Master Plan Update question

Hello Mr. Allen,

We received the notification that you are working on updating the Master Plan for the Chena Flood Control Project & are seeking preliminary comments.

Is the existing MP available for review? As of this time I am not aware of a need to comment but I haven't seen the document & could not find it.

Thank you so much,

Melanie

Melanie Roed

NEPA Program Manager
DPW-ENV
USAG Alaska
Desk: (907) 361-6323 or 361-9507
Fax: (907) 361-9867
Email: melanie.s.roed.civ@army.mil

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**B.1.3 ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
RESPONSE**



From: [Kemp, Joseph \(DOT\)](#)
To: [Allen, Jeremy M CIV USARMY CEPOA \(USA\)](#)
Subject: [URL Verdict: Neutral][Non-DoD Source] Re: Chena Flood Control Project - Master Plan Update
Date: Tuesday, August 2, 2022 3:48:37 PM
Attachments: [220719 J. Kemp AKDOT&PF - Northern Regional Director Chena MP.pdf](#)
[fig01 vicinity map.pdf](#)

No comments from my folks on this. They are interested in seeing the MP though.

Thanks
Joe

On Jul 27, 2022, at 7:32 AM, Allen, Jeremy M CIV USARMY CEPOA (USA)
<Jeremy.M.Allen@usace.army.mil> wrote:

You don't often get email from jeremy.m.allen@usace.army.mil. [Learn why this is important](#)

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Hi,

Please find the attached letter concerning the Master Plan (MP) update for the Chena Flood Control Project. We invite you to provide comments on issues important to your mission as it relates to the MP update as agency and other stakeholder input is an important component and helps inform the development of the MP.

Thanks,

Jeremy Allen
Operations Project Manager
USACE Alaska District
907-753-2753
907-250-9708
907-764-0652

B.1.4 FAIRBANKS NORTH STAR BOROUGH: COMMUNITY PLANNING RESPONSE



From: [Kellen Spillman](#)
To: [Allen, Jeremy M CIV USARMY CEPOA \(USA\)](#)
Cc: [Melissa Kellner](#); [Hanna Thompson](#); "[bob_henszey@fws.gov](#)"; [John Haas](#)
Subject: [Non-DoD Source] FW: Chena River Lakes Flood Control Project Master Plan Update - USFWS comments
Date: Wednesday, August 10, 2022 8:13:48 AM
Attachments: [image001.png](#)
[CFCP Master Plan - USFWS scoping comments signed.pdf](#)

Mr. Allen,

My name is Kellen Spillman and I am Director of the FNSB Community Planning Department. We were copied by the USFW Service on their comments on your current planning effort. Would it be possible for us to participate in the agency review and comment period? The FNSB recently completed a land use plan for the this area (Salcha-Badger Area Plan), which the Corps participated heavily in, and have a Chena Riverfront Plan/Commission for the areas directly adjacent to the Chena River.

Thanks and we appreciate your consideration.

Kellen D. Spillman
FNSB Community Planning



From: Laura Melotte <laura.melotte@fnsb.gov>
Sent: Tuesday, August 9, 2022 8:07 AM
To: Kellen Spillman <kellen.spillman@fnsb.gov>; Melissa Kellner <melissa.kellner@fnsb.gov>
Subject: FW: Chena River Lakes Flood Control Project Master Plan Update - USFWS comments

From: Buncic, Charleen M <charleen_buncic@fws.gov>
Sent: Monday, August 8, 2022 5:59 PM
To: Jeremy M CIV USARMY CEPOA (USA) <Jeremy.M.Allen@usace.army.mil>
Cc: audra.brase <audra.brase@alaska.gov>; Webmail Planning <planning@fnsb.gov>; Henszey, Bob <bob_henszey@fws.gov>; Dlugolecki, Lisa E <lisa_dlugolecki@fws.gov>; Tippery, Amy C <amy_tippery@fws.gov>
Subject: Chena River Lakes Flood Control Project Master Plan Update - USFWS comments

Hi Jeremy,

Attached is our comment letter on the above referenced project.

Please let me know if you have any questions, and thank you for the opportunity to comment.

Charleen

*Charleen Buncic
Fish & Wildlife Biologist
US Fish & Wildlife Service
Northern Alaska Fish and Wildlife Field Office
101 12th Ave., Rm 110
Fairbanks, AK 99701
(P-TW) 907.371.8422; (F) 907.456.0208*

Whether you think you can, or think you can't, you're right! - Henry Ford

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**B.1.5 FAIRBANKS NORTH STAR BOROUGH: CHENA LAKE RECREATION AREA
RESPONSE**



Cooper, Ryan

From: Kellen Spillman <kellen.spillman@fnsb.gov>
Sent: Wednesday, August 10, 2022 8:09 AM
To: Allen, Jeremy M CIV USARMY CEPOA (USA)
Cc: Melissa Kellner; Hanna Thompson; 'bob_henszey@fws.gov'; John Haas
Subject: [Non-DoD Source] FW: Chena River Lakes Flood Control Project Master Plan Update - USFWS comments
Attachments: CFCP Master Plan - USFWS scoping comments_signed.pdf

Mr. Allen,

My name is Kellen Spillman and I am Director of the FNSB Community Planning Department. We were copied by the USFW Service on their comments on your current planning effort. Would it be possible for us to participate in the agency review and comment period? The FNSB recently completed a land use plan for the this area (Salcha-Badger Area Plan), which the Corps participated heavily in, and have a Chena Riverfront Plan/Commission for the areas directly adjacent to the Chena River.

Thanks and we appreciate your consideration.

Kellen D. Spillman
FNSB Community Planning



From: Laura Melotte <laura.melotte@fnsb.gov>
Sent: Tuesday, August 9, 2022 8:07 AM
To: Kellen Spillman <kellen.spillman@fnsb.gov>; Melissa Kellner <melissa.kellner@fnsb.gov>
Subject: FW: Chena River Lakes Flood Control Project Master Plan Update - USFWS comments

From: Buncic, Charleen M <charleen_buncic@fws.gov>
Sent: Monday, August 8, 2022 5:59 PM
To: Jeremy M CIV USARMY CEPOA (USA) <Jeremy.M.Allen@usace.army.mil>
Cc: audra.brace <audra.brace@alaska.gov>; Webmail Planning <planning@fnsb.gov>; Henszey, Bob <bob_henszey@fws.gov>; Dlugolecki, Lisa E <lisa_dlugolecki@fws.gov>; Tippery, Amy C <amy_tippery@fws.gov>
Subject: Chena River Lakes Flood Control Project Master Plan Update - USFWS comments

Hi Jeremy,

Attached is our comment letter on the above referenced project.

Please let me know if you have any questions, and thank you for the opportunity to comment.

Charleen

Charleen Buncic

*Fish & Wildlife Biologist
US Fish & Wildlife Service
Northern Alaska Fish and Wildlife Field Office
101 12th Ave., Rm 110
Fairbanks, AK 99701
(P-TW) 907.371.8422; (F) 907.456.0208*

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**B.1.6 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION ESSENTIAL FISH
HABITAT RESPONSE**



From: [Charlene Felkley - NOAA Federal](#)
To: [Allen, Jeremy M CIV USARMY CEPOA \(USA\)](#)
Cc: [Sean McDermott - NOAA Federal](#); [Jodi Pirtle - NOAA Federal](#)
Subject: [URL Verdict: Neutral][Non-DoD Source] Re: Chena Flood Control Project - Master Plan Update
Date: Tuesday, July 26, 2022 11:06:43 AM

Good morning Jeremy,

Thank you for the opportunity to comment on this project: Chena River Lakes Flood Control Project (Project) Master Plan (MP). We will not be providing comments at this time. Please keep us informed of any changes to this project and/or if Essential Fish Habitat (EFH) consultation is required.

Under section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS is required to provide EFH Conservation Recommendations to Federal and state agencies for actions that would adversely affect EFH. EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity and may include migratory routes, open waters, wetlands, estuarine habitats, artificial reefs, shipwrecks, mangroves, mussel beds, and coral reefs. NMFS HCD's role is to identify actions required to conserve and enhance EFH.

****Point of note**:** Requests for comment and consultations should be sent to our NMFS Alaska Region EFH email address. You may cc on me emails, but please address primarily to nmfs.akr.habitat@noaa.gov. This will ensure a timely and best response.

Thank you again Jeremy. Have a wonderful week!

On Tue, Jul 26, 2022 at 5:08 AM Allen, Jeremy M CIV USARMY CEPOA (USA) <Jeremy.M.Allen@usace.army.mil> wrote:

Hi,

Please find the attached letter concerning the Master Plan (MP) update for the Chena Flood Control Project. We invite you to provide comments on issues important to your mission as it relates to the MP update as agency and other stakeholder input is an important component and helps inform the development of the MP.

Thanks,

Jeremy Allen

Operations Project Manager

USACE Alaska District

907-753-2753

907-250-9708

907-764-0652

--

[Charlene Felkley](#) (pronouns: [she/her](#))

Alaska Region Habitat Division

[NOAA Fisheries](#) | U.S. Department of Commerce

Office: (907) 271-5146

<https://www.fisheries.noaa.gov/>

Victim Advocate Liaison, [WVPR](#)

I respectfully acknowledge that [I live and work on](#) Dena'ina land.



B.1.7 NATIONAL PARK SERVICE RESPONSE



From: [Hood, Rhea E](#)
To: [Allen, Jeremy M CIV USARMY CEPOA \(USA\)](#)
Subject: [Non-DoD Source] Re: [EXTERNAL] Chena Flood Control Project - Master Plan Update
Date: Thursday, August 4, 2022 1:28:07 PM

Hello Jeremy,

Thank you for sharing the Master Plan Update for the Chena Flood Control Project. As there are no National Historic Landmarks within the project area the National Park Service National Historic Landmarks Program has no comments on this project. We appreciate your consideration.

Best regards,

Rhea

Archaeologist, National Historic Landmarks Program
Heritage Assistance Program
National Park Service
Interior Region 11 - Alaska

From: Allen, Jeremy M CIV USARMY CEPOA (USA) <Jeremy.M.Allen@usace.army.mil>
Sent: Tuesday, July 26, 2022 10:55 AM
To: Hood, Rhea E <Rhea_Hood@nps.gov>
Subject: [EXTERNAL] Chena Flood Control Project - Master Plan Update

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Hi,

Please find the attached letter concerning the Master Plan (MP) update for the Chena Flood Control Project. We invite you to provide comments on issues important to your mission as it relates to the MP update as agency and other stakeholder input is an important component and helps inform the development of the MP.

Thanks,

Jeremy Allen
Operations Project Manager
USACE Alaska District
907-753-2753
907-250-9708
907-764-0652

B.1.8 STATE HISTORIC PRESERVATION OFFICER RESPONSE



From: [Meitl, Sarah J \(DNR\)](#)
To: [Allen, Jeremy M CIV USARMY CEPOA \(USA\)](#)
Cc: [Meitl, Sarah J \(DNR\)](#)
Subject: [URL Verdict: Neutral][Non-DoD Source] Re: Chena Flood Control Project - Master Plan Update
Date: Monday, August 1, 2022 12:40:28 PM

3130-1R COE-E / 2022-00953

Good afternoon,

The Alaska State Historic Preservation Office (AK SHPO) received your correspondence (dated July 19, 2022) on July 27, 2022. Following our review of the documentation provided, we recommend consideration of the Chena River Lakes Flood Control Project as a potential historic property as this infrastructure will likely achieve 50 years of age during the period of use for the soon-to-be-revised Master Plan. We also recommend consultation with Alaska Native entities regarding properties of religious and cultural significance that may not have been identified previously.

Thank you for the opportunity to comment and we look forward to future consultation.

Best,
Sarah

Sarah Meitl

Review and Compliance Coordinator
Office of History and Archaeology
Alaska State Historic Preservation Office
907-269-8720

From: Meitl, Sarah J (DNR) <sarah.meitl@alaska.gov>
Sent: Wednesday, July 27, 2022 8:49 AM
To: Jeremy.M.Allen@usace.army.mil <Jeremy.M.Allen@usace.army.mil>
Subject: Re: Chena Flood Control Project - Master Plan Update

Hi Jeremy,

Documentation received and logged in with me under 2022-00953.

Best,
Sarah

Sarah Meitl

Review and Compliance Coordinator

Office of History and Archaeology
Alaska State Historic Preservation Office
907-269-8720

From: Bittner, Judith E (DNR) <judy.bittner@alaska.gov>
Sent: Tuesday, July 26, 2022 11:49 AM
To: Meitl, Sarah J (DNR) <sarah.meitl@alaska.gov>
Subject: FW: Chena Flood Control Project - Master Plan Update

From: Allen, Jeremy M CIV USARMY CEPOA (USA) <Jeremy.M.Allen@usace.army.mil>
Sent: Tuesday, July 26, 2022 11:03 AM
To: Bittner, Judith E (DNR) <judy.bittner@alaska.gov>
Subject: Chena Flood Control Project - Master Plan Update

You don't often get email from jeremy.m.allen@usace.army.mil. [Learn why this is important](#)

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the content is safe.

Hi,

Please find the attached letter concerning the Master Plan (MP) update for the Chena Flood Control Project. We invite you to provide comments on issues important to your mission as it relates to the MP update as agency and other stakeholder input is an important component and helps inform the development of the MP.

Thanks,

Jeremy Allen
Operations Project Manager
USACE Alaska District
907-753-2753
907-250-9708
907-764-0652

B.1.9 US FISH AND WILDLIFE SERVICE RESPONSE



From: [Buncic, Charleen M](#)
To: [Allen, Jeremy M CIV USARMY CEPOA \(USA\)](#)
Cc: [audra.brace](#); [Tippery, Amy C](#); [Henszey, Bob](#); [planning@co.fairbanks.ak.us](#); [Dlugolecki, Lisa E](#)
Subject: [Non-DoD Source] Fw: Chena River Lakes Flood Control Project Master Plan Update - USFWS comments
Date: Tuesday, August 9, 2022 3:17:01 PM
Attachments: [CFCP Master Plan - USFWS scoping comments_signed.pdf](#)

Hi Jeremy,

I just now realized there was a typo in our letter that should be corrected. In the section about interjurisdictional fish, at the top of page 3, there is reference to ADFG's AWC. It was incorrectly referred to as "All Waters Catalog" but should be "Anadromous Waters Catalog".

Apologies for that error.

Thank you,

Charleen

*Charleen Buncic
Fish & Wildlife Biologist
US Fish & Wildlife Service
Northern Alaska Fish and Wildlife Field Office
101 12th Ave., Rm 110
Fairbanks, AK 99701
(P-TW) 907.371.8422; (F) 907.456.0208*

Whether you think you can, or think you can't, you're right! - Henry Ford

From: Buncic, Charleen M
Sent: Monday, August 8, 2022 5:58 PM
To: Jeremy M CIV USARMY CEPOA (USA) <Jeremy.M.Allen@usace.army.mil>
Cc: audra.brace <audra.brace@alaska.gov>; [planning@co.fairbanks.ak.us](#) <[planning@co.fairbanks.ak.us](#)>; Henszey, Bob <[bob_henszey@fws.gov](#)>; Dlugolecki, Lisa E <[lisa_dlugolecki@fws.gov](#)>; Tippery, Amy C <[amy_tippery@fws.gov](#)>
Subject: Chena River Lakes Flood Control Project Master Plan Update - USFWS comments

Hi Jeremy,

Attached is our comment letter on the above referenced project.

Please let me know if you have any questions, and thank you for the opportunity to comment.

Charleen

*Charleen Buncic
Fish & Wildlife Biologist*

*US Fish & Wildlife Service
Northern Alaska Fish and Wildlife Field Office
101 12th Ave., Rm 110
Fairbanks, AK 99701
(P-TW) 907.371.8422; (F) 907.456.0208*

Whether you think you can, or think you can't, you're right! - Henry Ford



United States Department of the Interior



U.S. FISH AND WILDLIFE SERVICE
Northern Alaska Fish and Wildlife Field Office
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
August 8, 2022

VIA ELECTRONIC MAIL, NO HARD COPY TO FOLLOW

Chena River Lakes Flood Control Project Office
Attn: Master Plan
Jeremy Allen – Operations Project Manager
3800 Laurance Road
North Pole, AK 99705

Re: Chena River Lakes Flood Control Project
Master Plan Update

Dear Mr. Allen:

The U.S. Fish and Wildlife Service (Service) is responding to an initiation and request for comments on the Master Plan (MP) Update for the Chena River Lakes Flood Control Project (Project). Completion of a Draft MP is expected in the winter of 2022/2023, which will be made available for review and comment. The final Project MP is anticipated to be published in the Spring 2023. Although we do not have a copy of the current MP (dated 1984) for review, this letter provides scoping comments aimed at conserving Service trust resources for consideration and inclusion in the updated MP.

Potentially Affected Fish and Wildlife Trust Resources: The Service's trust resources are natural resources we are entrusted to protect for the benefit of the American people. Within the proposed project area these resources include migratory birds including bald and golden eagles, inter-jurisdictional fish, and wetland and upland habitats used by these species.

Threatened and Endangered Species: The purpose of the Endangered Species Act (ESA) is to conserve threatened and endangered species and the ecosystems upon which they depend. Projects that may affect ESA listed species and/or designated critical habitat must be evaluated under section 7(a)(2) of the ESA to ensure Federal agencies authorizing, funding, and/or conducting projects are not likely to jeopardize the continued existence of any listed species, or result in the destruction or adverse modification of designated critical habitat. In this case, no ESA-listed species or designated critical habitat occur within the project area. Therefore, the project would have no effect on listed species or critical habitat, and no further action regarding ESA-listed species is required. This information can be confirmed, and the potential for effects of other projects can be evaluated, at <https://ecos.fws.gov/ipac/>.

Eagles and Their Nests: The Bald and Golden Eagle Protection Act protects eagles from take,¹ including disturbance anytime during the year to their nests, roosts, and foraging sites. The

¹ <https://www.fws.gov/birds/policies-and-regulations/laws-legislations/bald-and-golden-eagle-protection-act.php>

density of eagles (juveniles and breeding adults), especially Golden eagles, within Alaska is highly variable statewide and varies by season (McIntyre et al. 2008). The Service maintains an eagle-nest database that provides an indication of past nest activity, which is useful for identifying the presence and suitability of nesting habitat in the project area, but the coverage is limited, and we cannot predict future use. This database, though incomplete North of the Alaska Range, includes one bald eagle nest within the proposed planning area footprint, and several bald eagle nests just outside of the project footprint along the Tanana River.¹ Eagles may nest within the project area from early March through the end of August.² Ultimately, the project sponsor is responsible for preventing disturbance to eagles.

Bald Eagles: Alaska supports a population of bald eagles greater than that in all other states combined. Bald eagles nest near lakes and rivers and are supported by anadromous and resident fish found in the Chena River and nearby lakes and ponds.³ Supplied by these resources, bald eagles are likely present in the area.

Golden Eagles: Golden eagles typically nest on cliff faces and occasionally on road cuts and material sites with excavated vertical sides. They are less likely to be found in the project area except possibly to hunt for small mammals and feed on carrion.

Other Migratory Birds: The Migratory Bird Treaty Act (MBTA) prohibits the take,⁴ including killing, capturing, selling, trading, and transport of protected migratory bird species without prior authorization by the U.S. Fish and Wildlife Service. About 209 bird species migrate through, nest, and/or overwinter within interior Alaska.⁵ The Service's Birds of Conservation Concern⁶ (i.e., birds representing our highest conservation priorities in addition to ESA-listed species) likely to nest or migrate through the project area include the American Golden-plover (*Pluvialis dominica*), Lesser Yellowlegs (*Tringa flavipes*), and Olive-sided flycatcher (*Contopus cooperi*).⁷ Depending upon the timing, extent, and type of construction, the activities conducted under the MP may affect Birds of Conservation Concern and other species of nesting birds within the planning area.

Interjurisdictional Fish: Inter-jurisdictional fish are those species occurring in waters under the jurisdiction of one or more states and the exclusive economic zone,⁸ such as anadromous species of salmon, whitefish, and lamprey. These fish rely on riverine habitats and floodplain processes for crucial stages in their lifecycles. Culturally and economically speaking, salmon are iconic to Alaska and are relied upon as a regional resource within the greater Fairbanks/North Pole communities and beyond.

¹ <https://eagle.abrinc.com/> Note: Our office maintains a more extensive inhouse database, which we also reference, but the coverage for that database is also incomplete.

² <https://www.fws.gov/alaska-bird-nesting-season>

³ <https://adfg.maps.arcgis.com/apps/MapSeries/index.html?appid=a05883caa7ef4f7ba17c99274f2c198f>

⁴ <https://www.ecfr.gov/current/title-50/chapter-I/subchapter-B/part-10/subpart-B>

⁵ <https://avibase.bsc-eoc.org/checklist.jsp?lang=EN&p2=1&list=clements&synlang=®ion=USakfa&version=text&lifelists=&highlight=0>

⁶ <https://www.fws.gov/media/birds-conservation-concern-2021.pdf>

⁷ <https://ipac.ecosphere.fws.gov/location/JGRNFXDOCV44BIVOACQXAED53E/resources#migratory-birds>

⁸ <https://www.law.cornell.edu/uscode/text/16/4102>

The Chena River is a documented salmonid stream (All Waters Catalog # 334-40-11000-2490-3301) (Alaska Department of Fish and Game 2022) hosting chum (*Oncorhynchus keta*) and Chinook (*O. tshawytscha*) salmon as well as spawning habitat for Arctic lamprey (*Lethenteron camtschaticum*). In addition, the Chena River has been identified as a major contributor of Chinook salmon to the entire Yukon River Drainage population, second only to the adjacent Salcha River (Brown et al. 2017). Thus, the Chena River represents a substantial role in the economic past and future of Alaska's subsistence and commercial fisheries. Though much of the spawning and rearing of Chinook and other anadromous fish in this system occurs in the upper watershed, the Chena's lower mainstem presents a gauntlet of urbanized river habitat through which anadromous fish must successfully migrate twice to perform their lifecycle.

In a developing and quickly urbanizing lower Chena River, migrating fish are subjected to higher temperatures from deforested riverbanks, sedimentation, trash, decomposing lawn clippings from riverside properties, toxic chemicals in urban runoff, and detrimental bank stabilization materials including asphalt piles, riprap, and buried vehicles. The Chena River, Chena Slough, and Noyes Sloughs, all influenced by the Project, were listed as impaired (polluted) from petroleum hydrocarbons, oil and grease, and for sediment in the early 1990s,¹ and extensive publicly sponsored efforts have only just begun to reverse these impairments in the last ten years. In addition, the Project prevents the passage of most fallen trees downriver that create log jams crucial for juvenile salmon refugia² and has drastically diminished the streamflow in the Chena Slough by diverting its headwaters via Piledriver Slough to the Tanana River.

Wetlands and Floodplains: The Chena River floodplain wetlands provide valuable habitat for our trust species that could be impacted by activities conducted under the MP. Floodplain areas are a conduit for the transfer and exchange of available carbon and nutrients in both directions laterally (from river to terrestrial habitats) and horizontally (from marine to headwater environments) (Wagener et al. 1998). Floodplains in general constitute prime habitat for many Service trust species. As such, the chemical and mechanical processes occurring in floodplains are essential to biological productivity (Bayley 1995) on local and regional scales and floodplains have been described as biodiversity hotspots (Schindler et al. 2016). Floodplain cycles such as sediment transport, seasonal flooding, scour, and channel formation are responsible for organism adaptations resulting in the biological diversity found using these systems (Bayley 1995). This is partly due to the spatial diversity of seral habitats that periodic disturbance creates along a floodplain pathway (Geilen et al. 2004; Ward et al. 1999). It is also due to relative habitat quality and the proximity and functional connectivity of various habitat patches (Romanowski et al. 2005). Thirdly, the ability of some species to couple their use with temporal processes such as predictable flooding, pulse, and freshen events makes floodplains a stage for efficient habitat partitioning. Larger rivers, such as Chena River, depend on annual flooding to maintain connections with the floodplain (the flood-pulse concept: Bayley 1995).

Riparian habitat is comprised of the streamside vegetation associated with watercourses and floodplains. They also provide an important link between upland and aquatic environments and are often classified as wetlands. Riparian areas provide essential breeding, rearing, and feeding habitat for numerous species of fish and wildlife, since they generally provide more habitat

¹ <https://dec.alaska.gov/water/nonpoint-source-control/waters-in-the-spotlight/chena-river-water-quality-monitoring/>

² Cathcart et al. (in prep) Multiscale processes drive formation of logjam habitats and use by juvenile Chinook salmon across a boreal stream network in Alaska

diversity than the adjacent uplands (Magoun and Dean 2000). Some of Alaska's richest bird habitats are in riparian areas where the combination of water, diverse woody plant growth, high primary productivity, and associated insects and other invertebrates provide an abundant source of food and cover. Other recognized functions of riparian vegetation include stabilizing streambanks and preventing erosion; filtering suspended solids, nutrients, and harmful or toxic substances; providing flood protection in developed areas; and supporting and protecting fish and wildlife species and providing migration corridors (Johnson and Ryba 1992). Riparian communities and their structurally complex mosaic of mixed age-classes of riparian vegetation are dependent upon the recurrent destruction and reformation of soils and vegetation as rivers move laterally within the floodplain (Naiman et al. 2010).

Invasive Species: The introduction of non-native invasive species into intact ecosystems is recognized by scientists and land managers as one of the primary causes of biodiversity loss, ranking second only to outright habitat loss (Pimm and Gilpin 1989, Myers 1997, Stein et al. 1997) and can adversely impact the habitat for our trust species. Invasive plant species are introduced species that out-compete native plants for light, water, and nutrients. They often grow rapidly, mature early, spread seeds that survive a long time, and have no natural controls. When invasive plants displace native plants, habitats may be altered and become no longer suitable for some fish and wildlife. Additionally, inadvertent introductions of aquatic invasive species into a popular and heavily used recreational area such as Chena Lakes could have significant, long-term impacts to recreation and to other habitats from humans transporting species outside of the planning area.

Chena Lakes has an active infestation of *Elodea* species, an aquatic invasive plant, which is of particular concern in the planning area. Both *Elodea nuttallii* and *Elodea canadensis*, and the hybrid *Elodea canadensis x nuttallii*, are found in Alaska, but not all locations have been sequenced to know the species. Chena Slough is known to be infested with the *Elodea* hybrid and it is assumed Chena Lakes probably contains this same species. *Elodea* easily spreads by fragmentation and a small fragment could lead to a new infestation within, or outside of, the planning area.

Comments and Recommendations: The Service appreciates the opportunity for early coordination in the update of the MP. We offer the following recommendations for incorporating into the MP to help avoid and minimize impacts on fish, wildlife, and their habitats.

Eagles and Their Nests: The most effective Best Management Practice (BMP) to avoid eagle take is to leave their nest in place and avoid nearby disturbances during their nesting season. If project-related disturbances, such as loud noise from blasting, jackhammering, pile-driving, or other machinery cannot be timed to occur outside the eagle nesting season (March 1–August 31),¹ the Service in Alaska recommends, prior to construction, supporting eagle nest surveys by a qualified biologist within one-half mile of a project's footprint, including cliffs of tributary streams, to determine if and where eagles may be nesting. If nests are located within one-half mile of the project footprint, the Service recommends following our *National Bald Eagle Management Guidelines*² for bald eagles, and contacting our office for Golden Eagles as well as

¹ <https://www.fws.gov/alaska-bird-nesting-season>

² <https://www.fws.gov/media/national-bald-eagle-management-guidelines-0>

for other questions about eagles and project activities, including the potential need for an eagle incidental take permit. We also encourage reviewing our Alaska webpage for Bald Eagle Nesting and Sensitivity to Human Activity, and our National Bald and Golden Eagle Management webpage.^{1,2}

Migratory Birds: The Service would appreciate the MP including measures to help avoid disturbing migratory bird habitat during the nesting season when nests and hatchlings are most vulnerable. The most effective BMP to minimize adult, hatchling, and fledgling mortality is to conduct land disturbing activities (e.g., tree and vegetation clearing, excavation, gravel fill, brush hogging, etc.) before or after the breeding season, which is generally May 1–July 15³ for the Project area. Please note, some bird species may nest at different times (e.g., eagles and other raptors nest two or more months earlier and stay later), or the habitat may affect nesting dates, so we recommend consulting our timing recommendations for your area. Additionally, we appreciate and support employing other conservation measures to minimize impacts to migratory birds; please refer to our Migratory Bird Program website for some examples.⁴

We understand the Project was at one time interested in an exemption from our recommended dates for avoiding disturbance to nesting birds for maintenance (regular mowing, burning, and tilling) of the 3,000-acre floodway. However, other flood control projects across the country include recommendations for avoiding floodway maintenance activities in a manner conducive to minimizing impacts to habitats during the nesting season.^{5,6} Timing of these necessary maintenance activities could take place before or after the nesting season, providing sufficient opportunity for necessary maintenance while conserving nesting migratory birds. Unless there is an imminent risk to human health and safety that requires mowing, burning, or tilling the Chena Flood Control Project floodway during the migratory bird nesting season, the Service recommends these routine maintenance activities be conducted before or after the nesting season.

The Service recently received calls from members of the public regarding recreationalists harassing flightless, juvenile migratory birds at Chena Lakes. Given the level of use of the area by the public, we would appreciate educational kiosks about migratory birds, MBTA, and what constitutes take. The Service would be available to assist the Project with the development of such materials.

Fish and Wildlife Habitat: The footprint of this project is not encumbered by residential development and is already fairly natural, therefore, it is a great opportunity to be a model for the needs of our trust resources. The banks of the Chena River through the Project represent an opportunity to preserve important natural characteristics that support fish passage through the lower Chena River watershed where urban and residential development have adversely impacted fish and wildlife habitat.

¹ <https://www.fws.gov/Alaska-eagle-nesting>

² <https://www.fws.gov/library/collections/bald-and-golden-eagle-management>

³ <https://www.fws.gov/alaska-bird-nesting-season>

⁴ <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>

⁵ <https://www.ibwc.gov/Files/ROD.pdf>

⁶ <https://www.usace.army.mil/Portals/17/docs/publicnotices/Whelan.pdf>

To help improve fish and wildlife habitat, the Service recommends allowing for the passage of most fallen trees downriver to help create and maintain log jams crucial for juvenile salmon refugia, and to reconstruct a channel through the floodway to allow at least a portion of the Piledriver Slough to follow its original course to the Chena Slough. Both these topics have been discussed at various times in the past but have not been evaluated in a formal management plan. The Service recommends forming focus groups of stakeholders to discuss these actions because opinions vary widely. However, neither action is insurmountable. For example, there is already a headgate in the Moose Creek Dam near the southern end of the floodway where the Piledriver/Chena Slough used to flow.

Additionally, we recommend following the multiagency guidelines for Non-Glacial High-Value Resident and Anadromous Fish Water Bodies, Public land with significant wildlife/bird habitat values (Alaska Department of Fish and Game et al. 2002) by establishing and maintaining at least a 100-foot primary and a 100-foot secondary buffer of native vegetation along the banks of the Chena River. This would provide a forested interface for shade, aquatic large woody debris (for increased in-stream shelter and structure), and appropriate nutrient inputs to the riverine food web. Maintenance of naturally sloughing banks, and their fallen trees, should only occur if presenting a discharge hazard at the dam headgates. Increased signage regarding salmon and their lifecycles at the boat launch and along the River Trail would greatly benefit the community's understanding of the importance of natural riverine buffers to our iconic fisheries, and the uniqueness of the Chena River's role in the Chinook lifestyle.

Invasive Species: Prevention is the most critical aspect of invasive species management, including during winter months. We recommend the MP include a discussion about aquatic and terrestrial invasive species and their potential impacts to the planning area and beyond. The MP should also include BMPs and an educational outreach program for staff and visitors to minimize the introduction and transport of all invasive species into and out of the planning area. This is especially important along rivers and streams which, like wind, can transport invasive species into more remote areas of the state.

Example BMPs for invasive species can include practices such as thoroughly washing equipment before entering the project area to remove dirt and debris that may harbor invasive plant seeds and reproductive vegetative parts, using weed-free fill and certified weed-free erosion control materials, appropriately disposing of spoil and vegetation contaminated with invasive species, revegetating the area with local native plant species, and providing educational kiosks and organized weed pulls for visitors and the community.

We also recommend on-the-ground personnel understand their role in preventing and controlling the introduction and spread of aquatic and terrestrial invasive species due to their potential impact on interjurisdictional fish, wetlands, and other important resources. For assistance with training of personnel and contractors, a free self-paced course on invasive species control is available at <http://weedcontrol.open.uaf.edu>

Additional BMPs can be found at the UAF Cooperative Extension Service by searching for "invasive" at <http://cespubs.uaf.edu/publications?>. Also, please see our new guidance document specific to minimizing the spread of aquatic invasives: *Guidelines for Preventing the Spread of*

Aquatic Invasive Species, which can be found at: <https://www.fws.gov/media/aquatic-invasive-species-prevention-guidelines-pdf>.

Other considerations: Since the MP is a long-term land use plan, we recommend regular communication with the Service to stay apprised of any Service-related changes in policies, recommendations, BMPs, or other conservation measures. Additionally, the Service would appreciate receiving notification of any proposed activities under this plan so we can work with the Project on mutually beneficial conservation measures aimed at minimizing impacts to our trust resources.

Conclusion: We appreciate this opportunity for early comment and look forward to reviewing the draft plan this winter. Please contact Charleen Buncic at charleen_buncic@fws.gov or at 907-456-0276 should you have any questions concerning these comments.

Sincerely,

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Appendix C Regulatory Compliance



As required by EP_1130-2-550, this Master Plan was developed to be in compliance with:

- a. 16 USC 460d, Flood Control Act of 1944; Title 10 USC 2667; and 16 USC 4601-13. Leases: non-excess property.
- b. 16 USC 470, PL 89-665, 80 Stat. 915, National Historic Preservation Act of 1966, as amended.
- c. 16 USC 469, PL 93-291, 88 Stat. 174, Archaeological and Historical Preservation Act of 1973.
- d. 16 USC. 470aa - 470mm, PL 100-588; 102 Stat. 2983, Archaeological Resources Protection Act (ARPA) of 1979, as amended.
- e. PL 46 (Chapter 105) S.1006 69 Stat 66. Authority to enter into reciprocal agreements; waiver of claims; reimbursement; ratification of prior agreements.
- f. PL 85-624, Fish and Wildlife Coordination Act, (72 Stat. 563, 16 U.S.C. 661).
- g. PL 86-532, Reservoir Salvage Act of 1960, as amended.
- h. PL 86-717, Forest Cover Act, (74 Stat. 817, 16 U.S.C. 580m et seq.), 6 September 1960.
- i. PL 89-72, as amended, Federal Water Project Recreation Act of 1965.
- j. PL 91-190, National Environmental Policy Act of 1969, as amended (42 USC 4231,et seq.), 1 January 1970.
- k. PL 92-516, Federal Insecticide, Fungicide, and Rodenticide Act of 1972, (86 Stat. 973), as amended.
- l. PL 93-205, Endangered Species Act of 1973, as amended (87 Stat 884, 16 USC 1531(b)).
- m. PL 95-313. Cooperative Forestry Assistance Act of 1978 (92 Stat. 365, 16 U.S.C. 2101), as amended by PL 101-624, the Food, Agriculture, Conservation and Trade Act of 1990.
- n. PL 95-341, American Indian Religious Freedom Act.
- o. PL 98-63. Supplemental Appropriations Act of 1983, ref. volunteers.
- p. PL 99-662, Water Resources Development Act (WRDA) of 1986, Section 1134, ref: Private Use Facilities; Section 1135, ref: Project Modification for Improvement of the Environment.
- q. PL 101-601, Native American Graves Protection and Repatriation Act (NAGPRA).
- r. PL 101-640, Water Resources Development Act (WRDA) of 1990, Section 307(a).
- s. PL 103-141, Religious Freedom Restoration Act of 1993.
- t. 33 CFR Part 328.3(b) U.S. Army Corps of Engineers 1987 Manual for Identifying and Delineating Jurisdictional Wetlands.



- u. 36 CFR Part 60. National Register of Historic Places.
- v. 36 CFR Part 79, Curation of Federally-Owned and Administered Archeological Collections.
- w. 36 CFR Part 327, Rules and Regulations Governing Public Use of Water Resources Development Projects Administered by the Chief of Engineers.
- x. 36 CFR Part 800, Advisory Council on Historic Preservation, Protection of Historic Properties.
- y. 40 CFR Parts 150-189, reference to Pesticides.
- z. 40 CFR Parts 1500-1508. Council on Environmental Quality Procedures for Implementing the National Environmental Policy Act (42 U.S.C. 4331 et seq.)
- aa. 41 CFR Part 101 - 47.103-12, Federal Property Management Regulations.
- ab. 42 CFR 76.1 - 76.9, Performance Standards and Techniques of Measurement;" issued by the Department of Health and Human Services, to supplement Executive Order 11282.
- ac. EO 11990, Protection of Wetlands, 24 May 1977.
- ad. EO 12512, Utilization Surveys.
- ae. DOD 4150.7-M, Plan for Certification of Pesticide Applicators of Restricted-Use Pesticides, Armed Forces Pest Management Board, Defense Pest Management Analysis Center, Forest Glen Section, WRAMC, Washington, D.C. 20307-5001.
- af. Technical Information Manuals (TIM)21, "Pesticide Disposal Guide for Pest Control Shops," Armed Forces Pest Management Board (AFPMB), Aberdeen Proving Ground, MD 21010-5422, Tel. (301) 671-3773. U.S. Army Environmental Hygiene Agency, Guide for Medical Surveillance of Pest Controllers.
- ag. ER 190-1-50, Law Enforcement Policy, U.S. Army Corps of Engineers.
- ah. ER 200-2-2, Procedures for Implementing the National Environmental Policy Act.
- ai. ER 200-2-3, Environmental Compliance Operations and Maintenance Policies.
- aj. ER 385-1-90. Respiratory Prevention Program.
- ak. ER 405-1-12, Real Estate Handbook.
- al. ER 1105-2-100, Policy and Planning, Guidance for Conducting Civil Works Planning Studies.
- am. ER 1130-2-500, Work Management Policies.
- an. ER 1130-2-550, Recreation Operations and Maintenance Policies.



- ao. ER 1165-2-131, Water Resources Policies and Authorities: Local Cooperation Agreements for New Start Construction Projects.
- ap. EP 1130-2-540, Environmental Stewardship Procedures.
- aq. EM 385-1-1, Safety and Health Requirements Manual.
- ar. Multi-agency Memorandum of Understanding on Implementing the Endangered Species Act, dated 29 September 1994.
- as. Forest Service Form FS-3400-2, "Forest Pest Management Project Proposal."
- at. Policy Statement Regarding Treatment of Human Remains and Grave Goods, Advisory Council on Historic Preservation, 27 September 1988.
- au. Memorandum of Agreement between the U.S. Department of Agriculture and the U.S. Department of Defense for the Conduct of Forest Insect and Disease Suppression on Lands Administered by the Department of Defense, 11 December 1990.
- av. North American Waterfowl Management Plan, developed by the U.S. Fish and Wildlife Service and Canada in 1986.
- aw. Multi-Agency Memorandum of Understanding on Watchable Wildlife Program, dated Dec. 1990 (extended through Dec. 1998).

