DRAFT ENVIRONMENTAL ASSESSMENT
Homer Airport Improvements
Project No. CFAPT00491

Prepared for:
U.S. Department of Transportation
Federal Aviation Administration
Alaska Region, Airports Division
222 W. 7th Ave., #14
Anchorage, Alaska 99513

On behalf of the Sponsor:
Alaska Department of Transportation and Public Facilities
Central Region
PO Box 196900
Anchorage, Alaska 99519

Prepared for:
HDL Engineering Consultants, LLC
3335 Arctic Blvd.
Anchorage, Alaska 99503

This Environmental Assessment becomes a federal document when evaluated, signed, and dated by the Responsible FAA Official.

_____ _____

Responsible FAA Official Date

The following individuals may be contacted for additional information:

Jack Gilbertsen
Federal Aviation Administration
Alaska Region, Airports Division
222 W. 7th Ave., #14
Anchorage, Alaska 99513
(907) 271-5453

Brian Elliott
Regional Environmental Manager
Alaska Department of Transportation and Public Facilities
Central Region
4111 Aviation Avenue
Anchorage, Alaska 99502
(907) 269-0539

CONTENTS

FIGURES

TABLES

APPENDICES

ABBREVIATIONS

AAC ..... Alaska Administrative Code
ADEC..... Alaska Department of Environmental Conservation
ADF&G ..... Alaska Department of Fish and Game
ADNR ..... Alaska Department of Natural Resources
AKEPIC..... Alaska Exotic Plants Information Clearinghouse
ALP..... Airport Layout Plan
APDES ..... Alaska Pollutant Discharge Elimination System
APE ..... Area of Potential Effect
ARFF ..... Aircraft Rescue and Firefighting
ATV.....all-terrain vehicle
BGEPA ..... Bald and Golden Eagle Protection Act
BMPs ..... Best Management Practices
CFR .....Code of Federal Regulations
CHA ..... Critical Habitat Area
CSP ..... Contaminated Sites Program
CWA .....Clean Water Act
DOT&PF ..... Alaska Department of Transportation & Public Facilities
EA.....Environmental Assessment
ESA .....Endangered Species Act
FAA.....Federal Aviation Administration
GA ..... General Aviation
HDL .....HDL Engineering Consultants, LLC
M&O ..... [DOT&PF] Maintenance & Operations
MBTA..... Migratory Bird Treaty Act
NEPA.....National Environmental Policy Act
NHPA..... National Historic Preservation Act
NLURA ..... Northern Land Use Research, Alaska
NMFS .....National Marine Fisheries Service
NWPR..... National Water Protection Rule
OFA .....Object Free Area
PFAS .....Per- and Polyfluoroalkyl Substances
RSA ..... Runway Safety Area
SHPO ..... State Historic Preservation Officer
U.S..... United States
USACE ..... U.S. Army Corps of Engineers
USFWS..... U.S. Fish and Wildlife Service

1 PROPOSED ACTION

The Alaska Department of Transportation and Public Facilities (DOT&PF), in cooperation with the Federal Aviation Administration (FAA), is proposing a project to rehabilitate and improve the Homer Airport and associated airport facilities. The project will make improvements to the runway, taxiways, the General Aviation (GA) Apron, lighting, and drainage structures; construct new taxiways and service roads; remove obstructions to the Object Free Area (OFA); and perform ancillary work associated with the proposed improvements.

The proposed project is located within Sections 21 and 22, Township 6 South, Range 13 West, Seward Meridian; on U.S. Geological Survey Quadrangle *Seldovia C-4*; and at Latitude 59.64126° North, Longitude 151.48856° West, in Homer, Alaska (**Figure 1**).

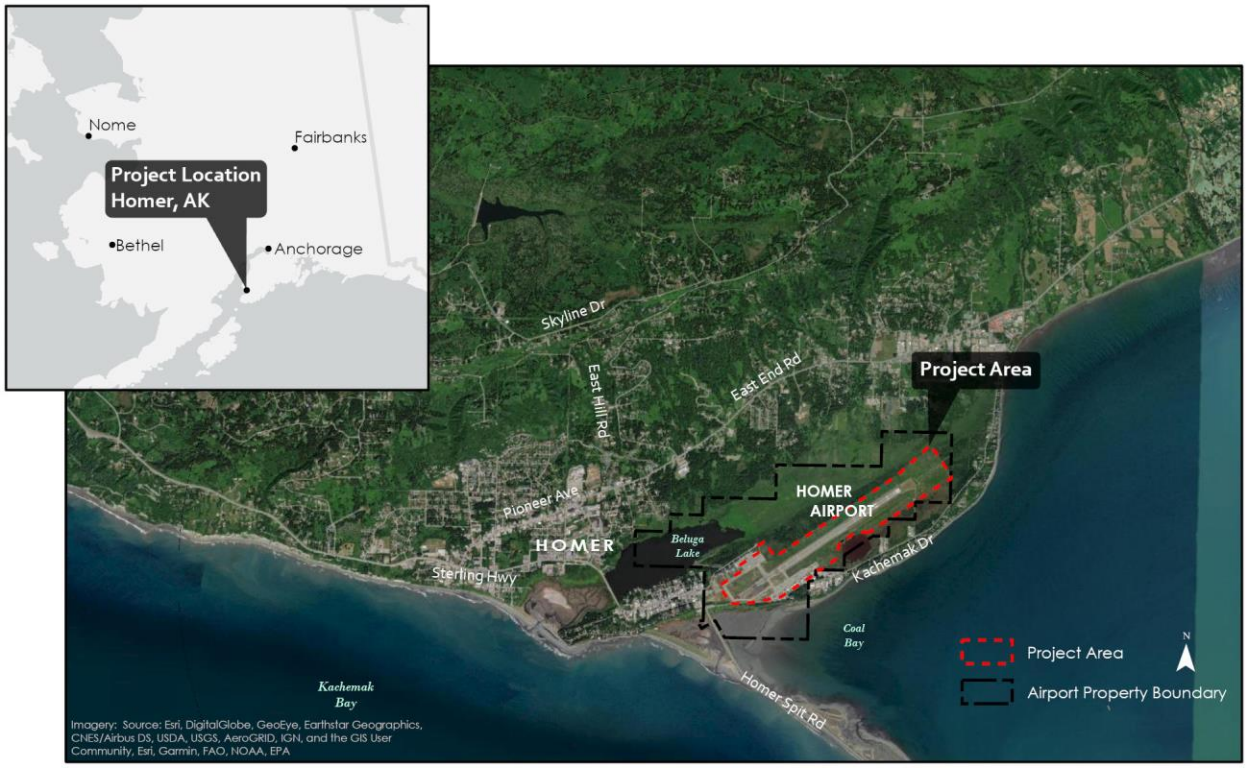

Figure 1: Project Location and Vicinity

This Environmental Assessment (EA) describes two alternatives, the Proposed Action and a No Action alternative, and presents an environmental impact analysis in accordance with the National Environmental Policy Act (NEPA).

Existing Conditions

The Homer Airport is a state-owned, public-use, primary commercial service airport serving as a hub for the southern Kenai Peninsula and eastern Cook Inlet communities that are not connected to the road system. The airport property is 1,042 acres in land area with 365 of these acres designated state Critical Habitat Areas (CHA) (the Homer Airport and Kachemak Bay CHAs) (**Figure 2**).

The airport receives scheduled passenger and cargo service, with approximately 53,000 annual aircraft operations[1] for all operation types including commercial, air taxi, general aviation, and military (AirNav 2021). Airport facilities include a 6,701-foot-long by 150-foot-wide asphalt runway, passenger terminal and Commercial (Terminal) Apron on the north side of the airport, GA Apron on the south side of the airport, lighted helipad, flight service station, and floatplane facilities at nearby Beluga Lake Seaplane Base.

The Commercial Apron contains a joint-use passenger-cargo terminal operated by the City of Homer and is used for passenger and cargo aircraft and occasionally for oversized and overflow transient aircraft parking. The GA Apron includes paved and unpaved areas for GA aircraft parking and lease lot access for air carriers, taxi operators, and private aviation-related development.

The GA Apron includes 70 small aircraft tie-downs and two large aircraft tie-downs. Additional tie-down parking for approximately 20 small aircraft is available on the gravel pad east of the GA Apron, directly north of the Aircraft Rescue and Fire Fighting (ARFF)/Maintenance and Operations (M&O) building. Additional GA parking for small aircraft is also available at "Beacon Parking"—a gravel parking area west of the Commercial Apron (**Figure 2**).

Airport Development History

Following initial construction in the 1930s, the Homer Airport has experienced periodic expansion, upgrade, and maintenance. The following is a brief history of development and improvements at the facility.

- 1930s - 1940s: The federal government first constructed the Homer Airport as a military re-fueling stop.
- 1940s: The airport expanded significantly later in the 1940s with runway widening and lengthening to the southeast and development of landside facilities on the northwest end of the airport.
- 1958: The State of Alaska assumed ownership of the airport from the Federal government.
- 1960s - 1970s: The airport expanded again to the southeast to feature a large GA Apron, aircraft parking area, taxiways, lease lots, and airside development, and further runway lengthening and widening to its current dimensions. Kachemak Drive was also re-aligned around the airport.
- 1980s: Taxiways, the Commercial Apron, lease lots, and terminal areas were developed on the north side of the airport to support air carriers.
- 1990s: The airport added the terminal building, resurfaced the runway, and expanded the Runway Safety Area (RSA).
- 2000-present: The airport added the sand storage and ARFF/M&O buildings, expanded and rehabilitated taxiways and aprons on south side of the airport, and added a floatplane ramp, dock, and access road at the Beluga Lake Seaplane Base.

[1] For 12-month period ending December 31, 2020 (AirNav 2021).

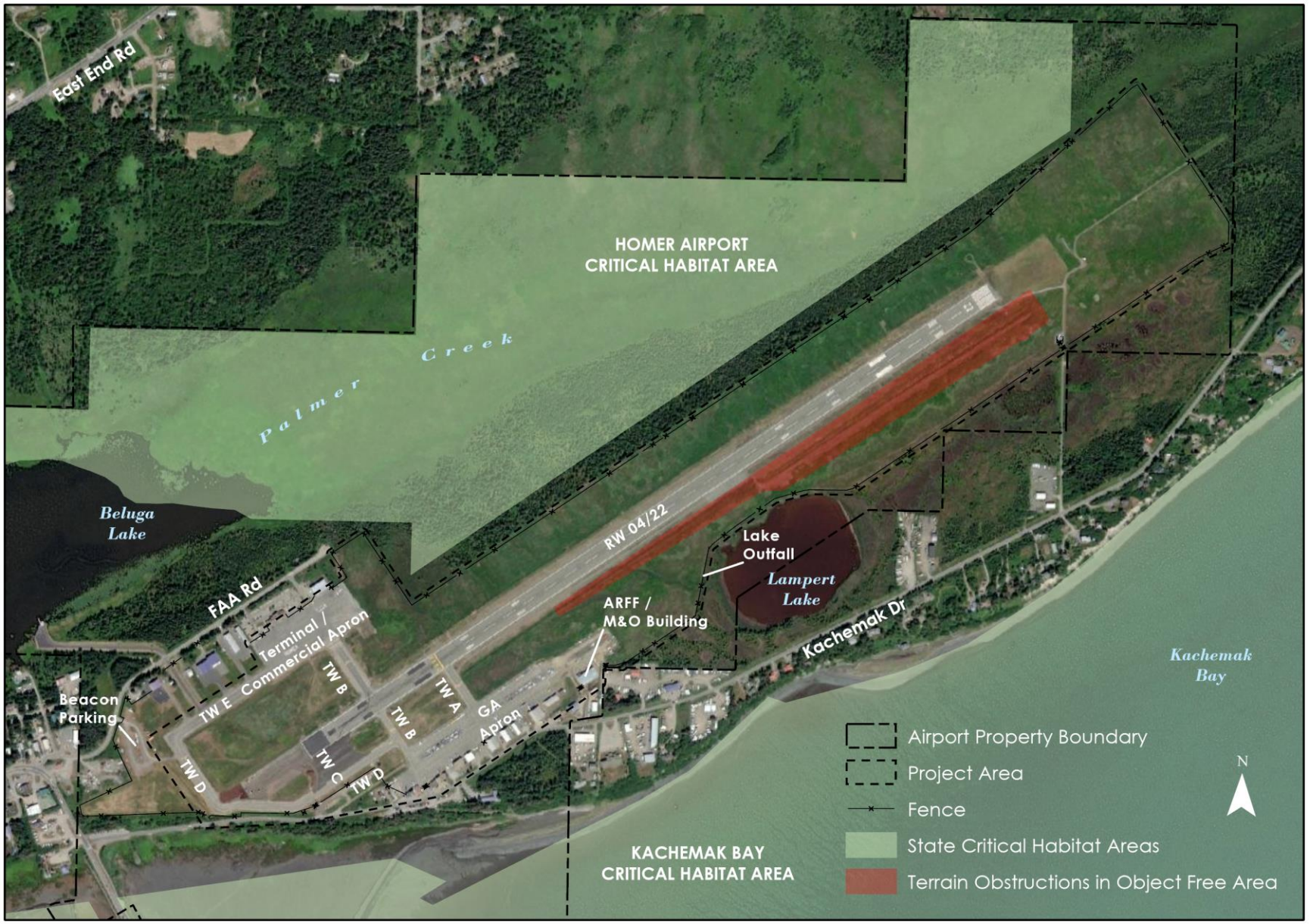

Figure 2: Existing Conditions

1.1 PURPOSE AND NEED

1.1.1 PURPOSE OF THE PROPOSED ACTION

The purpose of the project is to improve safety for runway operations, taxiing, and aircraft parking; extend the service life of airport facilities; and increase availability of leased tie-down facilities for GA users.

1.1.2 NEED FOR THE PROPOSED ACTION

Need 1: Safety

- Aircraft taxiing along the runway present a safety hazard for runway operations. Conflicts are caused by a vertical curve that limits visibility between taxiing and departing aircraft, the lack of a turnaround at the east end of the runway, and the lack of a parallel taxiway or other taxiway connecting the runway to the GA or Commercial Aprons.
- Several terrain obstructions, including a ridge along the south side of the runway, are above the Runway 4/22 centerline elevation and penetrate the runway OFA. These obstructions do not meet current FAA standards for safe runway operation.
- Portions of the existing RSA surface adjacent to the runway consist of sand with silt and gravel with high moisture content. During spring runoff and heavy rains, the RSA becomes saturated and non-traversable by aircraft or vehicles. The primary purpose of the RSA is to provide a traversable surface for aircraft that overshoot, undershoot, or veer off the runway. A secondary purpose for the RSA is to provide access for rescue vehicles during an emergency. The existing RSA is not usable for these purposes when saturated.

Need 2: Maintenance

- The runway, Taxiway B (south), and Taxiway A were last resurfaced over 20 years ago. The most recent Pavement Condition Index report for the airport indicates the pavement on these facilities is deteriorating and has significant cracking, spalling, joint separations, and an uneven surface. There is a dip in the runway caused by settlement of the runway subgrade. Several of the existing GA Apron tie-down anchors have failed. The gravel tie-down area at the east end of the GA Apron requires frequent maintenance to provide a drivable surface.
- Culverts under Taxiway B (south), Taxiway A, Taxiway D, and the runway are corroded, experience icing, or do not drain properly. Ponding in depressions and ditches attracts birds, which are a safety hazard to aircraft. The outlet control structure at Lampert Lake is in poor condition; washout of the control structure in the past has led to lower lake levels.

Need 3: GA Aircraft Parking

- The GA Apron does not have adequate capacity for current GA aircraft parking demand. Permitted tie-down facilities for GA aircraft are located on the GA Apron and at GA Bravo Parking (“Beacon Parking”) at the west end of the airport. In response, DOT&PF has made the Beacon Parking area available for tie-down permits. Beacon Parking features a gravel surface with a gravel access road used to taxi between the parking area and Taxiway D. Beacon Parking is located within the ALP-designated Air Operations Area. This area is not intended to support aircraft parking as a long-term solution to meet existing or future

demand. In addition, the GA Apron and Taxiways A and B South are congested from additional aircraft entering the GA Apron during peak use times, requiring long wait times for aircraft taxiing between the GA Apron and the runway.

1.2 IDENTIFICATION OF FEDERAL ACTION

The Federal action requested by DOT&PF is FAA approval of and participation in funding the Homer Airport Improvements project through the FAA's Airport Improvement Program.

2 ALTERNATIVES

Alternatives developed and evaluated under this project include the No-Action alternative and the Proposed Action. The No-Action alternative serves as a benchmark to compare against the Proposed Action's environmental effects.

2.1 NO ACTION

Under the No-Action alternative, there would be no improvements performed to the Homer Airport and its facilities would remain in their existing state and configuration. The No-Action alternative would not meet the project's purpose and need.

Regular maintenance would continue; however, deterioration of airport facilities would worsen and accelerate without near-term rehabilitation. Further deterioration of pavement surfaces would require future total reconstruction of the runway, Taxiways A and B (south), and the GA Apron, closure of the facilities, or extra maintenance expenditures.

Obstructions penetrating the OFA would remain in their current state. The obstructions do not meet FAA criteria for safe operation, would continue to pose a safety risk for aircraft, and would require further waivers from FAA for future Airport Layout Plan (ALP) approvals.

2.2 PROPOSED ACTION

The proposed project would include the following components (**Figure 3**):

- Rehabilitate Runway 04/22 and reduce width from 150 feet to 100 feet with paved shoulders
- Rehabilitate RSA
- Rehabilitate portions of Taxiways A, B, and D, and the GA Apron
- Remove a portion of Taxiway D and reconstruct as a service road
- Construct new taxiway turnaround at the east end of the runway
- Construct new taxiway connecting the runway near mid-field to an expanded GA Apron
- Expand and pave the gravel tie-down area at the east end of the GA Apron
- Expand the gravel portion of the GA Apron east toward Lampert Lake
- Remove terrain obstructions penetrating the runway OFA
- Replace runway and taxiway edge lighting
- Replace existing Visual Approach Slope Indicators with Precision Approach Path Indicators for both runway ends
- Improve drainage, including replacing culverts, ditch grading, and reconstructing the Lampert Lake outfall
- Apply dust palliative to unpaved surfaces as necessary
- Clear and grub vegetation
- Adjust utilities, if required

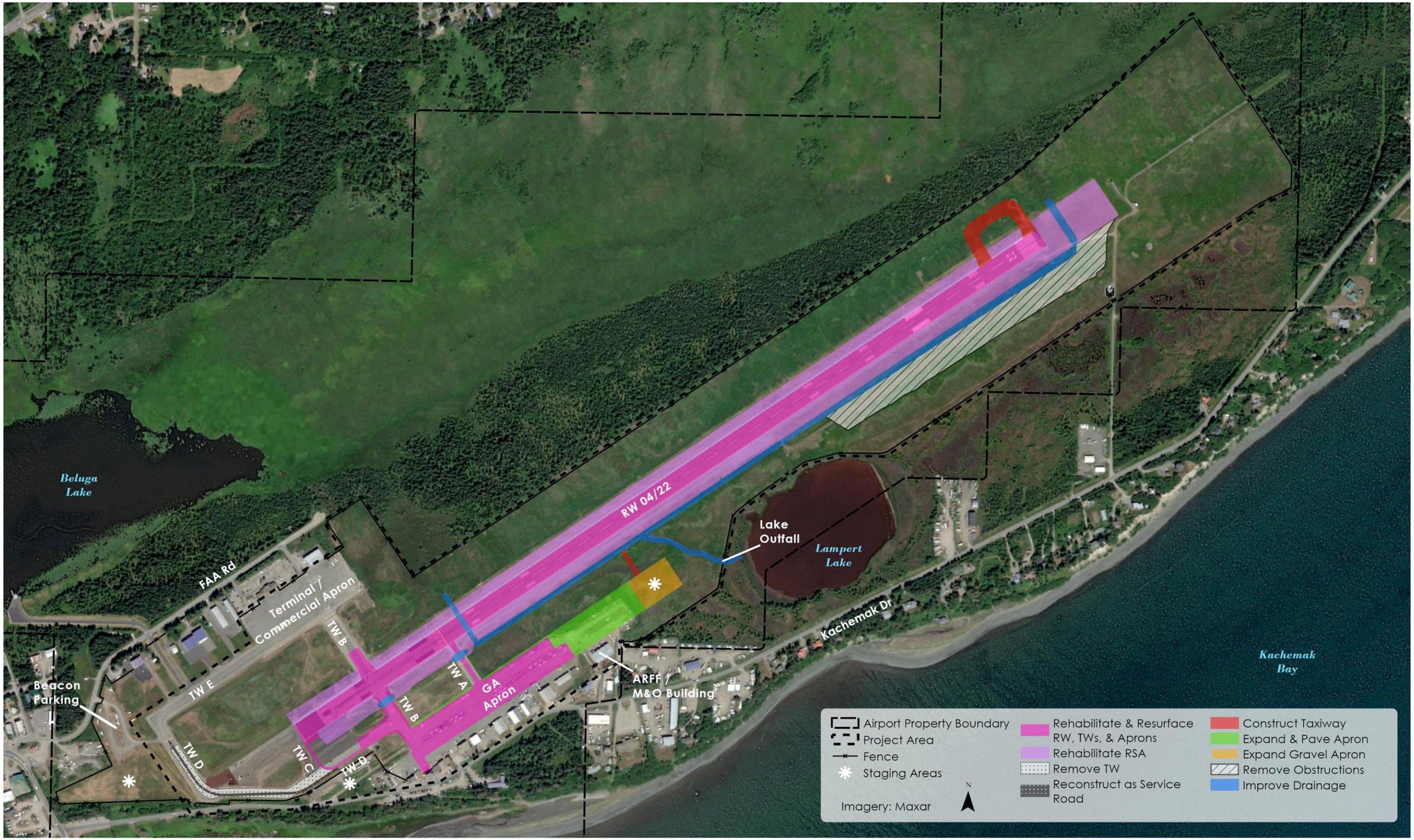

Figure 3: Proposed Action

2.3 SUPPORT ACITIVITIES

Support Activities

The DOT&PF is providing designated on-site locations for equipment staging, material stockpiling, and material disposal (**Figure 3**). Additional off-site staging and disposal areas will be the construction contractor's responsibility, who will be required to acquire and ensure all necessary permits and clearances are secured for their chosen site(s). Material from a borrow site that has not received the appropriate permits and clearances will not be accepted for project construction. Unsuitable material will be disposed of off airport property at an Alaska Department of Environmental Conservation (ADEC)-approved facility in accordance with state and federal laws and regulations.

Materials to support project construction may be sourced from the removal of terrain obstructions as part of the Proposed Action, from existing permitted material sites, or new sites developed and permitted by the contractor.

2.4 ALTERNATIVES DEVELOPMENT AND COMPARISON

Alternatives developed and evaluated under this project include the No-Action alternative and the Proposed Action. The No-Action alternative serves as a benchmark to compare against the Proposed Action's environmental effects. The DOT&PF developed the Proposed Action as the sole build alternative to meet the project's stated purpose and need. No other alternatives are carried forward for evaluation because none have been identified that satisfactorily meet the project purpose and need. The alternatives evaluation is limited to a single build alternative because of the constrained geographic nature of the airport and the requirement for new facilities to be located in close proximity to the identified areas of need. Design measures to avoid or minimize impacts to protected resources are considered as variations of the Proposed Action, but do not result in additional alternatives for the purpose of this EA. **Table 1** summarizes the environmental impacts for both alternatives.

Project components identified during the scoping phase of the project that have been dropped from detailed evaluation in this EA include a perimeter service road and a future parallel taxiway.

The purpose of the perimeter service road was to provide airfield perimeter access for airport security, maintenance, wildlife hazard management, and airfield rescue operations. The DOT&PF presented the perimeter road during agency and public scoping and outreach. Following input received from the public, the perimeter road was removed from further consideration as part of the Proposed Action in order to minimize impacts to wetlands.

Taxiway H, located on the north side of the runway, was removed from further consideration based on input received from GA aircraft users, a taxiway on the north side of the runway would serve primarily aircraft operating out of the Commercial apron—a small proportion of the aircraft operating at the Homer Airport. Based on this input, the Proposed Action was revised to include a new taxiway (Taxiway J) connecting the runway near mid-field to the GA Apron. The revised Proposed Action would allow the majority of aircraft operating at the Homer Airport to exit the runway in order to taxi between the runway and the GA Apron. Taxiway J meets the project's stated purpose by improving safety for taxiing, departing, and approaching aircraft, and reducing congestion at Taxiways A and B during peak use periods.

Table 1: Comparison of Environmental Impacts by alternative.

	No Action	Proposed Action
Purpose and Need	Existing safety and maintenance challenges would remain or increase over time; would not meet the project purpose and need.	Improves safety and maintenance conditions and extends service life of facility; meets the project purpose and need.
Eagles and Migratory Birds	No effect.	**t** Minor disruption to foraging and breeding, displacement, injury, or mortality to birds.
Threatened and Endangered Species	No effect.	**d/i** Not likely to adversely affect the Steller's Eider.
Vegetation and Invasive Species	No effect.	**d/i** Approximately 10 acres of vegetation permanently removed. **t** Potential for introduction and spread of invasive species. **t** Approximately 10 acres temporarily removed (obstruction removal) **c** Incremental, but not significant, contribution to cumulative effects to vegetation.
Hazardous Materials, Solid Waste, and Pollution Prevention	No effect.	**t** Proposed work is not anticipated to encounter contaminated soil or groundwater from listed sites. **t** Permitted, local solid waste acceptance facilities are anticipated to meet demand for solid waste generated by construction activity. **t** Measures to address per- and polyfluoroalkyl substances (PFAS) will be implemented as appropriate.
Historical, Architectural, Archaeological, and Cultural Resources	No effect.	**d/i** No historic properties affected. **t** May, but not anticipated, to encounter previously unknown resources during construction.
Land Use	No effect.	**d/i** Consistent with local land use and transportation plans.
Visual Effects	No effect.	**d/i** New facilities may be visible from residential areas near East Hill Road and Skyline Drive. **t** Disruption of visual landscape from vegetation clearing, excavation, grading, presence of work crews, or signage.
Wetlands and Waters of the U.S	No effect.	**d/i** Approximately 4 acres of permanent wetland loss. **c** Incremental, but not significant, contribution to cumulative effects to wetlands within the watershed.
Water Quality	No effect.	**d/i** Approximately 10 acres of semi-impervious surface, increasing storm water runoff to vegetated areas and waters of the U.S. **t** Degradation of water quality caused by sedimentation during ground disturbing activities.

Key to impacts: **d/i**=direct and indirect, **t**=temporary, **c**=cumulative.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The purpose of the environmental impact analysis in this chapter is to determine whether potential impacts of the Proposed Action will significantly affect the human environment, as defined by FAA's NEPA implementing guidance in FAA Orders 5050.4B and 1050.1F (FAA 2006, 2015). The analysis includes descriptions of environmental resources present in the project area[2] or vicinity (i.e., the affected environment, **Figure 4**) and the anticipated impacts to those resources resulting from the project's alternatives (i.e., environmental consequences). Further, the analysis is issues-based; the analysis discusses resources relevant to the project or project area in greater detail than those that are not identifiable or not measurable.

This chapter discusses ten main environmental impact categories (i.e., resources) determined relevant to the project based on environmental field studies, research, and input received during the public and agency scoping process conducted for this EA. Section 3.1 lists 16 additional categories determined to be non-issues. Together these categories span the range of issues recommended for impact analysis under FAA Order 1050.1F.

For each category, the analysis evaluates anticipated impacts against significance thresholds defined in FAA Order 1050.1F. Significance thresholds may be quantitative criteria or qualitative factors. The FAA considers impacts determined to reach or exceed quantitative thresholds—for categories where a threshold exists—significant. For resources where there is no defined quantitative threshold, the analysis considers qualitative significance factors to determine if the project's impact is significant.

[2] The project area is approximately 300 acres in size and generally coincides with the limits of the project's proposed improvements and/or airfield perimeter fence (Figure 1).

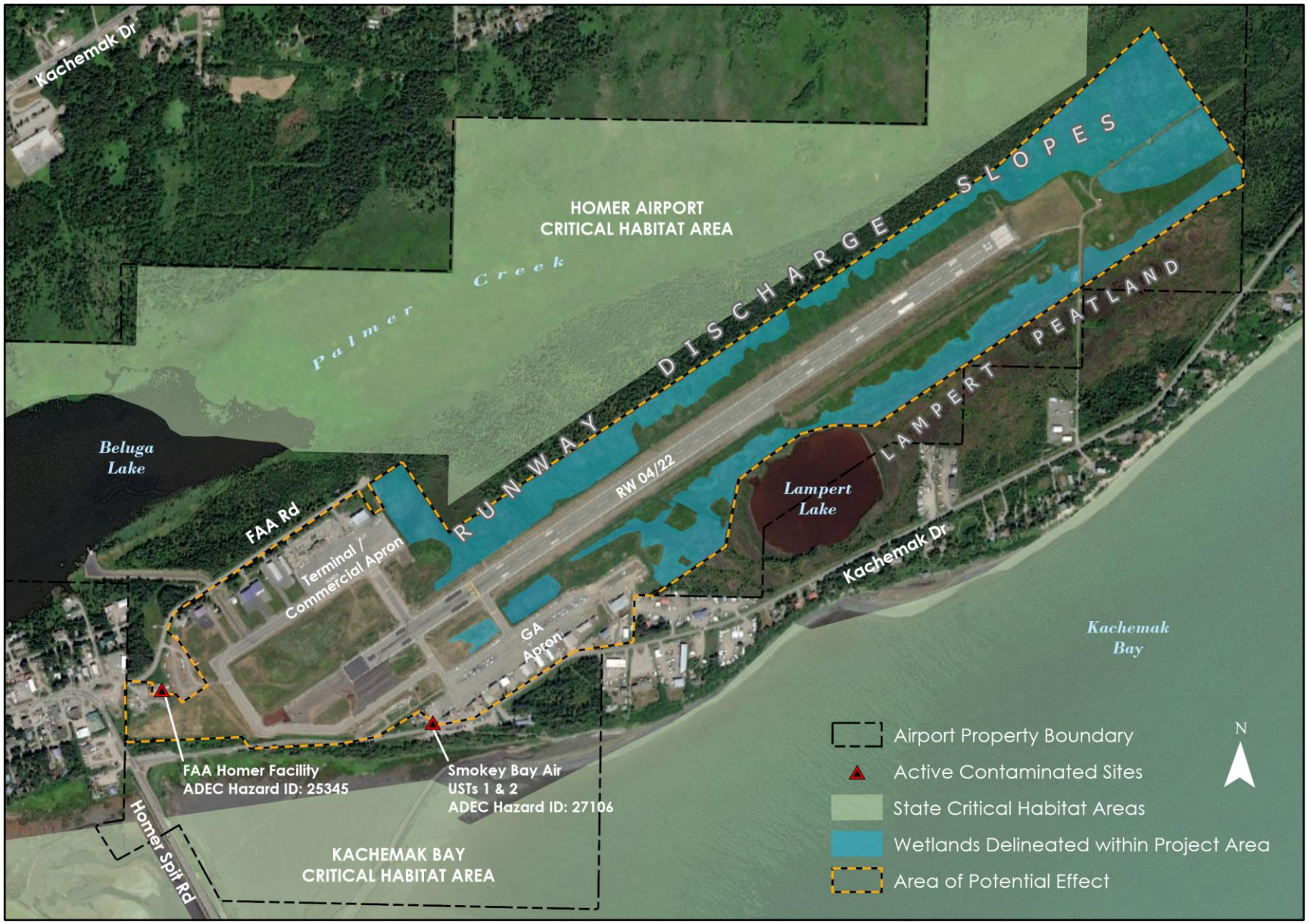

Figure 4: Affected Environment

3.1 ENVIRONMENTAL IMPACT CATEGORIES NOT AFFECTED

Environmental impact categories are not relevant to the project if the resource is not present in the project area or if there is no potential for the Proposed Action to result in a measurable impact. The following categories are not relevant to the project. Appendix A contains brief resource descriptions for these categories.

- Air Quality
- Biological Resources (fish, terrestrial wildlife, marine mammals)
- Climate
- Coastal Resources
- Department of Transportation Act, Section 4(f); Land and Water Conservation Fund Act, Section 6(f)
- Farmlands
- Natural Resources and Energy Supply
- Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks
- Water Resources (floodplains, groundwater, navigable waters, Wild and Scenic Rivers)

3.2 EAGLES AND MIGRATORY BIRDS

Federal protections for eagles and migratory birds include the Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA). The MBTA protects migratory birds by prohibiting intentional take, sale, or other activity that would harm migratory birds, their eggs, or nests, unless authorized by permit. The BGEPA provides additional and similar protections to bald and golden eagles.

3.2.1 AFFECTED ENVIRONMENT

Many migratory and non-migratory bird species inhabit or migrate through the project area and its immediate vicinity. Bald eagles, which usually nest in old-growth trees along saltwater shorelines and rivers, are common in the Homer area. No eagles were observed during site visits conducted in fall 2020. A single eagle was observed perched in spruce forest along the northern edge of the perimeter and the southern boundary of the Homer Airport CHA.

Migratory birds listed by the U.S. Fish and Wildlife Service (USFWS) as Birds of Conservation Concern that are likely to occur in the project area include the following (USFWS 2021):

- American Golden-plover (*Pluvialis dominica*)
- Bristle-thighed Curlew (*Numenius tahitiensis*)
- Hudsonian Godwit (*Limosa haemastica*)
- Kittlitz's Murrelet (*Brachyramphus brevirostris*)
- Lesser Yellowlegs (*Tringa flavipes*)
- Olive-sided Flycatcher (*Contopus cooperi*)
- Red-throated Loon (*Gavia stellate*)
- Rusty Blackbird (*Euphagus carolinus*)
- Semipalmated Sandpiper (*Calidris pusilla*)

- Short-billed Dowitcher (*Limnodromus griseus*)
- Whimbrel (*Numenius phaeopus*)
- Yellow-billed Loon (*Gavia adamsii*)

3.2.2 ENVIRONMENTAL CONSEQUENCES

Significance Thresholds

The FAA does not define quantitative significance thresholds for eagles or migratory birds. Significance factors include the following:

- Long-term or permanent loss of species from a large project area.
- Adverse impacts to special status species (e.g., state species of concern, species proposed for listing, migratory birds, bald and golden eagles) or their habitats.
- Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations.
- Adverse impacts to species' population dynamics.

No Action

The No-Action alternative would have no effect on eagles or migratory birds because there would be no construction activity and no change to existing habitats.

Proposed Action

Suitable eagle nesting habitat exists in the general project vicinity; however, no known nests are within 660 feet of the Homer Airport. Should eagles roost or nest in the vicinity of the airport, they would be accustomed to aircraft noise and are likely to become accustomed to any potential noise generated by the project.

Although disturbed, existing habitat for some birds would become bisected as a result of taxiway and apron construction, and some habitat would be lost. However, adjacent, largely undeveloped and undisturbed areas would continue to provide high quality habitat for common wildlife species. Therefore, permanent adverse impacts to eagle and migratory bird populations caused by the Proposed Action are anticipated to be negligible.

Vegetation clearing will be scheduled to avoid the nesting season (May 1-July 15) for migratory birds in accordance with USFWS land clearing timing guidance for Southcentral Alaska (USFWS 2017), except as permitted by Federal, State, and local laws and as approved by the Project Engineer. A survey for bald eagles may be conducted prior to conducting loud noise-generating construction activity. If active bald eagle nests are found within 660 feet of the project area (primary and secondary projection zones), construction activities would be coordinated with USFWS. Should monitoring be required during nesting periods, it would be conducted according to USFWS protocol.

3.3 THREATENED AND ENDANGERED SPECIES

Section 7 of the Endangered Species Act (ESA) (as amended) requires federal agencies to consult with the National Marine Fisheries Service (NMFS) and/or USFWS if they determine that

any actions they authorize, fund, and/or conduct may affect any federally proposed or listed species, or result in destruction or adverse modification of their critical habitat.

3.3.1 AFFECTED ENVIRONMENT

The USFWS lists the Alaska-breeding population of Steller's Eider (*Polysticta stelleri*) as threatened under the ESA. The Steller's Eider occurs along the Homer Spit and Kachemak Bay from October through April, favoring ocean and nearshore habitat. There is no designated critical habitat in the project area (Boldenow 2020, USFWS 2021).

3.3.2 ENVIRONMENTAL CONSEQUENCES

Significance Thresholds

The FAA considers the action significant if the USFWS or NMFS determines the action would likely result in one of the following:

- Jeopardize the continued existence of a federally listed threatened or endangered species.
- Result in the destruction or adverse modification of federally designated critical habitat.

No Action

The No-Action alternative would have no effect on ESA-listed species or habitats because there would be no construction activity and no change to existing habitats.

Proposed Action

Under the Proposed Action, no work will occur in the vicinity of Beluga Lake or Kachemak Bay, although some work will occur within 100 feet of Lampert Lake. The Proposed Action is unlikely to cause direct or indirect impacts to listed Steller's Eiders because no work will occur in open water habitat, construction will generally occur outside the season when Eiders are most likely to be present (October through April), and erosion and sediment control measures will minimize potential water quality impacts to Eider habitat resulting from construction storm water discharges. Further, the Alaska-breeding population of Steller's Eiders comprise approximately one percent of the total Eider population wintering in Alaska, making the probability of affecting the listed population discountable.

As conservation measures to minimize water-quality related impacts to potential Eider habitat, the DOT&PF will develop an Erosion and Sediment Control Plan and the contractor will implement a Storm Water Pollution Prevention Plan, minimizing the potential for construction storm water to reach water bodies.

Given the small amount of habitat potentially impacted and the storm water minimization measures incorporated into project design and construction, FAA determined under Section 7 of the ESA, that the project will have no effect on ESA-listed species or habitat.

3.4 VEGETATION AND INVASIVE SPECIES

Executive Order 13112, *Invasive Species*, requires federal agencies, whose actions may affect the status of invasive species, to prevent their introduction and restore native species and habitat conditions in invaded ecosystems. Alaska Department of Natural Resources (ADNR) regulations at Title 11, Chapter 34 of the Alaska Administrative Code (AAC) identify prohibited and restricted noxious weeds (14 species) and restricted noxious weeds (nine species) regulated by the State of Alaska as invasive species.

3.4.1 AFFECTED ENVIRONMENT

Vegetation types and communities in the project area include dwarf shrub bog, low shrub, and herbaceous (grass-dominated). Low shrub and herbaceous communities are present throughout the majority of the airfield where native forest has been cleared and there is now regular mowing as part of airfield maintenance.

A review of the University of Alaska Anchorage Exotic Plants Information Clearinghouse (AKEPIC) indicated there are several non-native species infestations in or near the project area at the east end of FAA Road, including Reed canary grass (*Phalaris arundinacea* L. (cultivar)) and orange hawkweed (*Hieracium aurantiacum* L.) (AKEPIC 2021).

3.4.2 ENVIRONMENTAL CONSEQUENCES

Significance Threshold

The FAA does not define quantitative significance thresholds for vegetation or invasive species. Factors considered for this analysis include the following:

- Likely loss of a plant species or plant community from a large area (e.g., entire airport property).
- Likely widespread introduction or proliferation of invasive species in the project area.

No Action

The No-Action alternative would have no effect on vegetation or invasive species because there would be no ground disturbance and no change to existing vegetation communities.

Proposed Action

Natural vegetation cover and general impacts due to its removal are not subject to direct protection by statute or any permitting authority. Vegetation impacts are primarily a consideration for other resources affected by its removal and conversion to other surfaces such as pavement, gravel, or mowed landscape. Permanent vegetation loss or conversion may directly affect fish, wildlife, wetlands, waterbodies, water quality, recreation, or the visual environment. The Proposed Action would require removal and permanent loss or conversion of natural and previously modified vegetation within new taxiway and apron footprints. **Table 2** summarizes the area of vegetation permanently lost or converted.

Table 2: Types and Areas of Vegetation Removed

Vegetation Community	Permanent Vegetation Removal within Project Footprint (acres)
Dwarf scrub	4.5
Low scrub	4.5
Graminoid herbaceous	0.5
Total:	**9.5**

The Proposed Action may result in the introduction and spread of invasive species along the vegetated areas adjacent to work areas, especially on finished embankments and back slopes where ongoing maintenance activities would occur. Adjacent natural vegetation communities may be altered, but the extent of alteration would likely be limited to the areas immediately adjacent to the proposed work areas. As a result, the Proposed Action is expected to have a minor effect on vegetation resources.

Long-term conservation measures for vegetation and invasive species management will continue to be performed based on the airport's Wildlife Hazard Management Plan and the DOT&PF *Integrated Vegetation Management Plan* (DOT&PF 2018). Mechanical control methods such as mowing are the primary method of vegetation management for DOT&PF.

During construction, DOT&PF will comply with Executive Order 13112 and all other federal, state, and local laws and regulations by minimizing ground disturbing activities and revegetating disturbed areas with native soil and seed to minimize potential importation of new weed propagules from outside Alaska.

3.5 HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

Executive Order 12088, *Federal Compliance with Pollution Control Standards*, requires that federal agencies comply with applicable pollution control standards—chiefly those stemming from the Comprehensive Environmental Response, Compensation, and Liability Act and the Resource Conservation and Recovery Act. The ADEC's Contaminated Sites Program (CSP) manages cleanup and regulation of sites with contaminated soil or groundwater in Alaska.

3.5.1 AFFECTED ENVIRONMENT

Regulated/Listed Contaminated Sites

The CSP lists two active sites in the immediate vicinity (within 0.10-mile) of proposed activities (**Figure 4**).

- FAA Homer Facility (ADEC hazard ID 25345) is listed for soil and groundwater contamination resulting from a heating oil spill. Remediation at the site occurred in 2019; however, ADEC requested additional characterization and FAA has funding and plans for the additional characterization and remediation in 2021.
- Smokey Bay Air USTs [underground storage tanks] 1 & 2 (ADEC hazard ID 27106) is listed for aviation gasoline and diesel soil contamination resulting from two 10,000-gallon leaking underground storage tanks.

Per- and Polyfluoroalkyl Substances (PFAS)

The DOT&PF is currently performing PFAS site characterization activities at the Homer Airport in coordination with ADEC as part of a statewide effort to identify PFAS issues at state-owned airports. Initial site characterization activities were performed in June 2021, consisting of soil, groundwater, surface water, and water well testing. Further site characterization activities are planned for 2022.

3.5.2 ENVIRONMENTAL CONSEQUENCES

Significance Threshold

The FAA does not define quantitative significance thresholds for hazardous materials, solid waste, or pollution. Factors considered for this analysis include the following:

- Violate applicable Federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management.
- Involve a contaminated site with unmitigated adverse effects.
- Produce an appreciably different quantity or type of hazardous waste.
- Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity.
- Adversely affect human health and the environment.

No Action

The No-Action alternative would have no effect on hazardous materials, solid waste, or pollution because there would be no work performed that would involve a contaminated site or generate waste or other pollutants.

Proposed Action

Ground disturbing activities, including vegetation clearing, excavation, or other earthwork in the vicinity (within 500 feet) of listed contaminated sites is primarily limited to resurfacing existing apron pavement or demolition of existing taxiway embankment. The probability of DOT&PF encountering hazardous material from listed sites is low.

Recommendations from PFAS site characterization are anticipated to be incorporated into the project plans and specifications as appropriate.

The DOT&PF will coordinate with ADEC during the design process to inform them of the proposed scope of work and offer them the opportunity to comment and raise any special concerns that they may have regarding the listed sites and unlisted areas of PFAS contamination. The construction contractor will be required to prepare and implement a Hazardous Materials Control Plan in accordance with ADEC requirements and DOT&PF contract specifications.

If contaminated materials are encountered during construction, all work in the vicinity of the contamination will stop and DOT&PF will consult with ADEC the appropriate corrective action.

Construction waste will be disposed of in accordance with state and federal laws and regulations.

3.6 HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of their actions on significant cultural resources. The DOT&PF conducted cultural resource identification, evaluation, and Section 106 review in accordance with the requirements of Section 106 of the NHPA and 36 Code of Federal Regulations (CFR) 800. The Area of Potential Effect (APE) and study area for cultural resource analysis generally consists of the area within the airport's fenced perimeter (**Figure 4**).

3.6.1 AFFECTED ENVIRONMENT

A cultural resources investigation conducted in June 2021 by Northern Land Use Research, Alaska (NLURA) did not identify any National Register of Historic Places-listed or eligible properties or other known or previously unknown cultural resources within the APE. The Alaska Heritage Resources Survey database contains listing of 28 sites (25 buildings and 3 archaeological sites) in the project vicinity (within one mile), but none are within the project APE.

3.6.2 ENVIRONMENTAL CONSEQUENCES

Significance Threshold

The FAA does not define a quantitative significance threshold for historical, architectural, archeological, and cultural resources. The primary significance factor considered for this analysis is the finding of effect under Section 106 of the NHPA. A finding of adverse effect through the Section 106 process may be considered significant.

No Action

The No-Action alternative would not undertake any improvements and would not directly or indirectly affect any significant cultural resources.

Proposed Action

The APE for the project's direct effects consists of those areas within the proposed construction disturbance footprint, including approximately 20 feet on either side of the footprint of permanent improvements for permanent and temporary direct effects. The APE for indirect effects extends to the airport's fenced perimeter.

The cultural resources survey indicated there is a very low probability of encountering unknown, intact resources during construction of the Proposed Action since there are no known sites within the APE. There are no anticipated effects on built environment because no historic-age buildings are present in the APE.

The DOT&PF consulted with the Alaska State Historic Preservation Officer (SHPO) and other consulting parties under Section 106 of the NHPA regarding the project's effect on cultural resources. The Alaska SHPO concurred with DOT&PF's finding of no historic properties affected on September 7, 2021.

If cultural, archaeological, or historic resources are discovered during project construction, all work that may impact these resources will stop until DOT&PF consults SHPO to determine the appropriate corrective action

3.7 LAND USE

The FAA considers potential impacts of a proposed action on its compatibility with land use adjacent to or in the vicinity of the airport primarily as a result of Council on Environmental Quality regulations (40 CFR 1502.16(c)), the Airport and Airway Improvement Act, and the Airport Development Grant Program. Section 3.8, Noise and Noise-Compatible Land Use, describes impacts on land use relating to noise. This section focuses on impacts relating to conflicts or consistence with adopted federal, state, or local land use planning.

3.7.1 AFFECTED ENVIRONMENT

Land Use Plans

The 1,042-acre airport property includes the approximately 295-acre Homer Airport CHA, an approximately 70-acre portion of tidelands inside the Kachemak Bay CHA, and approximately 320 acres used for aviation purposes (i.e., runway, taxiways, aprons, lease lots, floatplane facilities, and fenced perimeter) (**Figure 4)**. The remaining area is vacant airport property.

There is no management plan in effect for the Homer Airport CHA; however, management is codified at 16 AAC 20.630(b-g) and includes restrictions on development for maintenance of avigation easements. Kachemak Bay CHA is under cooperative management by the Alaska Department of Fish and Game (ADF&G) and ADNR through the *Kachemak Bay and Fox River Flats Critical Habitat Areas Management Plan* (ADF&G 1993) and the *Kenai Area Plan* (ADNR 2000), respectively.

The City of Homer's zoning designation for the majority of airport property, including the entire project area, is General Commercial 2, providing for heavy commercial and industrial uses. Adjacent land uses include land zoned Open Space – Recreation to the northwest overlapping Beluga Lake, Rural Residential to the north and southeast, and Conservation to the northeast.

Area Plans

The following are relevant adopted land use and transportation plans in effect in the project vicinity:

***Homer Comprehensive Plan* (2018).** Goals and objectives of the plan relevant to the Homer Airport include supporting long-term goals for improvements listed in the Homer Airport Master Plan and supporting future community economic and population growth through maintenance and improvement of the transportation system, including streets, trails, docks, and airports (Planning Department 2018).

***Homer Area Transportation Plan* (2005).** The plan addresses a broad array of transportation elements in the City of the Homer, including the airport. The plan lists airport expansion as an issue affecting community transportation and land use interest, with a goal that the airport should support future community economic and population growth (Taurianen et al. 2005).

***Kenai Area Plan* (2000).** Land use recommendations for unit 218B, encompassing the portions of airport used for aviation purposes (i.e., airport property not within the Homer Airport and Kachemak Bay CHAs), include "…management consistent with the Homer Airport [Master] Plan…" (ADNR 2000).

***Kachemak Bay and Fox River Flats Critical Habitat Areas Management Plan* (1993).** The plan provides management goals to determine whether proposed uses of land within the CHA are compatible with fish and wildlife, habitat, and public use protection. The plan acknowledges DOT&PF leases and avigation easements within the Homer Airport CHA (ADF&G 1993).

Other area land use and transportation plans not formally adopted or not relevant to the project include the following:

- ***Homer Non-Motorized Transportation and Trails Plan* (2004).** The plan provides guidance for development of non-motorized transportation facilities. Some components of the Homer area's non-motorized transportation network exist within the airport boundary, including FAA Road, which the plan identifies as a shared bicycle route (DOWL 2004).
- ***Homer Wetland Complexes and Management Strategies* (2011).** While not adopted by any planning authority, the document recommends strategies for development in the various wetland systems and watersheds in the Homer area. Federal, state, and local resources and regulatory agencies may use these strategies to inform comments on Clean Water Act Section 404 permit (Kenai Watershed Forum 2011). Development strategies applicable to the project area include the following (**Figure 4**):
    - Lampert Peatland. Maintain a 100-foot buffer around Lampert Lake. Limit fill to within 400 feet of Kachemak Drive.
    - Runway Discharge (discharge slopes on north side of runway). Maintain wetland hydrology within the airport boundary.

3.7.2 ENVIRONMENTAL CONSEQUENCES

Significance Threshold

The FAA does not define a quantitative significance threshold for land use. The primary significance factor considered for this analysis is consistency with the goals and objectives of adopted federal, state, and local land use planning.

No Action

The No-Action alternative would result in no change to the compatibility between the airport and existing land use.

Proposed Action

The Proposed Action will not require any property acquisition or involve improvements outside the airport property boundary. The permanent improvements under the Proposed Action are within the actively managed airfield, aprons, and fenced perimeter on existing airport property managed by DOT&PF.

Local planning, including the *Homer Comprehensive Plan* and the *Homer Area Transportation Plan*, support airport improvements such as those proposed by the project. Runway, taxiway, and

apron pavement rehabilitation will support continued and growing use of the airport by commercial and general aviation. Development of new facilities such as Taxiway J will aid in reducing visibility minimums during approach, as stated in the purpose and need for the project, and further efforts to improve safety and capacity of the airport.

The Proposed Action is not anticipated to cause any compatibility-based conflicts with the guidelines stated in the *Kenai Area Plan* or the Ka*chemak Bay and Fox River Flats Critical Habitat Areas Management Plan*. Both plans define airport development guided by the *Homer Airport Master Plan* as a managed use.

Other land use planning considerations include guidelines for development in wetlands presented by *Homer Wetland Complexes and Management Strategies*.

3.8 NOISE AND NOISE-COMPATIBLE LAND USE

The Aviation Safety and Noise Abatement Act of 1979 requires that FAA consider impacts resulting from aircraft noise to the ambient sound environment in certain noise-sensitive land uses non-compatible with airport operations. The FAA may require a noise analysis for airport actions involving a new airport location, new runway, major runway extension, runway strengthening, or greater than 90,000 annual propeller operations or 700 jet operations in Approach Categories A through D (landing speed less than 166 knots).

3.8.1 AFFECTED ENVIRONMENT

The Homer Airport, located east of the community's primary city centers, features a 6,701-foot-long, paved main runway (Runway 04/22). Runway 04/22 is generally within 0.25-0.5 mile of recreational, residential, and commercial land uses. In 2017, the Homer Airport experienced approximately 53,000 annual aircraft operations for all operation types including commercial (61 percent), air taxi (20 percent), general aviation (18 percent), and military (<1 percent) (AirNav 2021).

Runway 04/22 is designed for Airplane Design Group III aircraft—aircraft with wingspans between 79 feet and 118 feet and tail heights of 30 feet to 45 feet. This group includes the DeHavilland/Bombardier Dash 8, which is anticipated to be in use at the airport in the future. Aircraft using this runway are also in Aircraft Approach Category B, which have approach speeds of 91 knots or more but less than 121 knots (104-139 miles per hour).

3.8.2 ENVIRONMENTAL CONSEQUENCES

Significance Threshold

The FAA considers noise impacts significant should the project increase noise by a Yearly Day-Night Average Sound Level (DNL) 1.5 dB or more for a noise-sensitive area under either of the following circumstances:

- Existing noise exposure is at or above the DNL 65 dB noise exposure level.
- Future noise exposure will be at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative.

Noise-sensitive areas within Section 4(f) properties should receive special consideration if the value or purpose of the area can be attributed to a low noise environment. For these areas, land use compatibility may need to meet more stringent thresholds than the DNL 65 dB level and the guidelines in FAA noise regulations (14 CFR 150)

No Action

The No-Action alternative would not result in changes to noise emissions at the airport because there would be no changes to existing air traffic. The No-Action alternative would not result in noise impacts.

Proposed Action

The permanent improvements under the Proposed Action are within the actively managed airfield, aprons, and fenced perimeter on existing airport property managed by DOT&PF. There is no work proposed in the Homer Airport CHA or Kachemak Bay CHA portions of airport property. The Proposed Action will not alter the existing fleet mix, number or type of aircraft operations, air traffic, approaches, runway utilization, or flight tracks. No permanent aviation-related noise impacts or impacts to land uses would occur.

Construction activity, mobilization, and material hauling will result in temporary noise increases. Minor alterations to flight patterns may occur during runway rehabilitation, causing temporary changes to noise exposure for adjacent properties. Noise levels are anticipated to return to normal upon completion of construction.

3.9 VISUAL EFFECTS

This section discusses visual effects related to light emissions, unique or important visual resources, and visual character of the existing environment that are not protected under any special purpose laws or regulations (i.e., this section excludes Section 106 or Section 4(f) resources).

3.9.1 AFFECTED ENVIRONMENT

The Homer Airport, situated in lowlands between the Homer bluffs and Kachemak Bay, features a paved runway, taxiways, and aprons, with developed lease lots surrounding the western half of the airport. Surrounding the runway on the eastern half of the airport is cleared forest that experiences regular mowing. Sizeable undeveloped areas of airport property are within tidelands within Kachemak Bay CHA, peat bog wetlands surrounding Lampert Lake, areas within the Homer Airport CHA, and Beluga Lake. Tidelands within Kachemak Bay CHA, Homer Airport CHA, and Beluga Lake are within the airport property but outside the project area.

The runway, taxiways, aprons, and airport lease lots are existing sources of light emissions on airport property. Aviation lighting consists of a rotating beacon, visual approach slope indicators, approach lights, runway end lights, and runway and taxiway edge lighting. The south edge of the Commercial (Terminal) Apron and the helipad at Maritime Helicopters have edge lighting. Facility lighting is present at most buildings on lease lots. Nearby light emissions also originate from commercial and residential properties along Kachemak Drive and along Ocean Drive to the west of the airport.

The project area is visible from residential areas at higher elevations along the Homer bluffs to the north of the airport. A forested buffer between the project area and Kachemak Drive shields adjacent residential areas to the south side of the airport (**Figure 4**). Some areas of the airport are visible by recreationists on Lampert Lake.

The visual character of the airport and its immediate surroundings is 'semi-rural', with a low to moderate level of development. The larger viewshed encompassing the airport includes the Homer lowlands, Kachemak Bay, the Homer Spit, and the Kenai Mountains. Homer residents value the broader viewshed and natural landscape, which encompass these elements. **Figure 5** shows a view of the Homer Airport from the Homer bluffs.

Figure 5: View of Homer Airport from Homer bluffs.

Source: Google Earth.

3.9.2 ENVIRONMENTAL CONSEQUENCES

Significance Threshold

The FAA does not define a quantitative significance threshold for visual effects. The extent to which the project would have the potential to affect the following are the primary significance factors considered for this analysis:

- The nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources.
- Contrast with the visual resources or visual character in the project area.
- Block or obstruct views of visual resources, including whether these resources would still be viewable from other locations.

No Action

Under the No-Action alternative, there would be no change to the existing landscape or visual environment. Therefore, no effects to visual resources would result from the No Action alternative.

Proposed Action

The Proposed Action will increase light emissions at the airport as a result of new taxiways lit with edge lighting. New lighting will consist of medium intensity lights at the proposed taxiway edges. The lighting indicates the edges of the taxiway surface for aircraft using the taxiway and is not expected to result in a more than negligible increase in light emissions over existing ambient light levels.

Residents above East End Road—along Skyline Drive and East Hill Road (**Figure 1**)—are the primary viewers of the Homer Airport and the surrounding landscape. Changes to the visual landscape for these areas resulting from the Proposed Action will include additional aprons and taxiways within the project area. Residents of Skyline Drive and East Hill Road may notice earthwork and grading that will permanently add to the built environment. The change from existing conditions, however, is limited because the project area is largely cleared of natural vegetation and experiences regular mowing. The degree to which the project area, which is continually maintained, contrasts with adjacent natural areas of the landscape will not change significantly. The project will not block or obstruct any existing views or valued landscape features, and the overall landscape is expected to maintain its existing 'semi-rural' character. The Proposed Action will have a negligible effect on visual resources.

Measures to ensure the Proposed Action is designed and constructed to minimize impacts to the visual landscape will include limiting the width and grade of the roadway and vegetation clearing to the extent practicable to minimize the overall footprint.

3.10 WETLANDS AND SURFACE WATERS

Section 404 of the Clean Water Act (CWA) regulates discharges of dredged or fill material into wetlands and waterbodies meeting the definition of waters of the U.S. Further, Executive Order 11990, *Protection of Wetlands*, directs federal agencies to avoid, to the extent possible, adverse impacts associated with the destruction or modification of wetlands, and to avoid supporting new construction in wetlands whenever there is a practicable alternative.

3.10.1 AFFECTED ENVIRONMENT

A wetland delineation and functional assessment completed for the project by HDL Engineering Consultants, LLC (HDL) in fall 2020 indicates that approximately 32 percent (93.6 acres) of the 289-acre project area consists of wetlands or other waters of the U.S. (HDL 2020). The remaining 68 percent (195.5 acres) are non-jurisdictional uplands, including paved and unpaved roadways, building pads, and other constructed surfaces. **Table 3** summarizes the wetland types present in the project area.

Table 3: Mapped Wetlands

Type	Habitat Classification	Mapped Area (acres)	Mapped Length (linear feet)	Percent of Project Area (%)
Emergent Wetlands	PEM1B, PEM1C, PEM1/SS1B	64.33	-	22
Scrub-Shrub Wetlands	PSS1/EM1B	29.21	-	10
Intermittent Streams	R4SBC	0.06	624	<1
	Total Wetlands and Streams	**93.60**	**624**	**32**
Uplands	U	195.49	-	68
	Total Project Area Mapped:	**289.09**		**100**

Habitat Classification Key:
PEM1B Palustrine; emergent/persistent; seasonally saturated
PEM1C Palustrine; emergent/persistent; seasonally flooded
PSS1/EM1B Palustrine; scrub-shrub/broad-leaved deciduous & emergent/persistent co-dominant; seasonally saturated
PSS1/EM1B Palustrine; emergent/persistent & scrub-shrub/broad-leaved deciduous co-dominant; seasonally saturated
R4SBC Riverine; intermittent; streambed; seasonally flooded

Palustrine emergent wetlands found in the project area are generally in low-lying, flat areas, dominated by grasses and sedges, and saturated at the ground surface. Emergent and woody species are co-dominant vegetation in palustrine emergent/scrub-shrub wetlands. These two habitat types occupy the discharge slopes along the previously forested northern and eastern portions of the project area. Palustrine scrub-shrub/emergent wetlands are those dominated primarily by dwarf woody species and secondarily by emergents, occupying the flat terrace of the Lampert Lake peatland wetland complex. Intermittent riverine habitat is present between Lampert Lake and the runway. The stream channel conveys flowing water during the snowmelt season.

All wetlands and waters in the area connect to Beluga Lake and ultimately Kachemak Bay through contiguous wetlands or culverts beneath the runway and are, therefore, considered waters of the U.S.

The function provided by the wetlands in the project area is primarily flood control on the landscape level. Wildlife use of the wetlands is not significant due to the presence of the perimeter fence. There are no significant, adjacent potential pollutant sources indicating the wetlands perform pollutant control functions. There is no fish habitat associated with the intermittent stream or other wetlands in the project area.

3.10.2 ENVIRONMENTAL CONSEQUENCES

Significance Threshold

The FAA has established several significance thresholds for impacts waters of the U.S., including wetlands. Adverse effects to any the following may constitute a significant impact:

- Wetlands' function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers.
- Hydrology patterns needed to sustain values and functions of directly or indirectly affected wetlands.

- Wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety, or welfare.
- Maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands.
- Promote development of secondary activities or services that would cause the circumstances listed above to occur.
- Be inconsistent with applicable state wetland strategies.

No Action

The No Action alternative would have no effect on wetlands or other waters because there would be no new construction affecting existing wetlands or waterbodies. Wetlands in the project area would remain in their existing condition and would continue to provide the same level of hydrologic functioning.

Proposed Action

The Proposed Action will directly affect approximately 4 acres of wetlands resulting from embankment fill for the proposed new taxiways and apron expansion (**Figure 6**). **Table 4** summarizes direct wetland impacts by habitat type. The wetland impacts would constitute a permanent loss of the affected wetland areas and their associated functions. Remaining intact portions of the wetland complex may perform hydrologic functions of some lost wetlands where storm water runoff from impervious surfaces can be retained within the remaining wetland's storage capacity. Overall, hydrologic functions in the watershed would remain intact. Adverse effects to wetland function in the watershed resulting from the project are expected to be minor as there would be minimal down-watershed effects or changes to flood regulation capabilities.

Table 4: Wetlands Impacts

Type	Impacted Area (acres)
Emergent Wetlands	1.88
Scrub-Shrub Wetlands	2.13
Intermittent Streams	<0.01
Total Wetland Impact	**4.02**

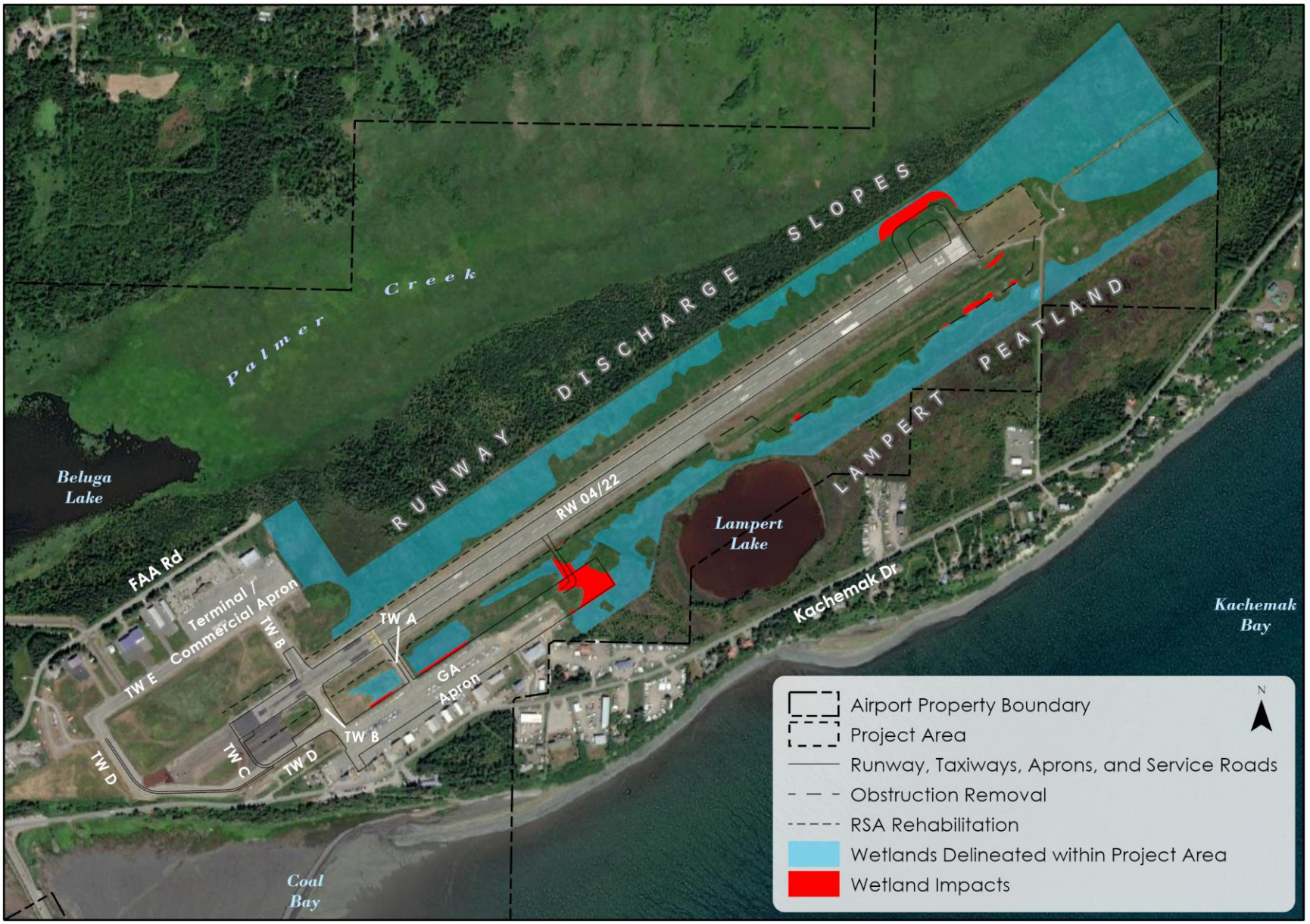

Figure 6: Wetland Impacts

Avoidance, Minimization, and Mitigation.

Executive Order 11990, Protection of Wetlands, requires avoidance of wetland impacts unless there is "no practicable alternative" and minimization of wetland impacts using all practicable measures.

Complete avoidance of wetlands is not practicable due to the prevalence of existing wetland habitats in the project area. To minimize the total area of wetland impacts, overall embankment widths will be reduced to the extent practicable during final design.

The DOT&PF will provide compensatory mitigation as a condition of the project's Section 404 permit to address any remaining unavoidable impacts. This may include restoration or preservation of wetlands on airport property or in the Homer area. Currently, there are no approved mitigation banks or in-lieu fee sponsors serving project area. During the Section 404 permit process, DOT&PF will determine compensatory mitigation following consultation with USACE and other resource agencies to determine if suitable mitigation sites are available.

3.11 WATER QUALITY

This section address potential impacts to the qualities of surface waters. Sections 401 and 402 of the CWA provide protections for surface water quality by regulating pollutant discharge into waters of the U.S. Section 401 provides for state review of federal CWA permits, including wetland permits issued under Section 404. Section 402 regulates pollutant discharges into waters of the U.S. from point sources through issuance of permits through the ADEC-administered Alaska Pollutant Discharge Elimination System (APDES).

Section 303(d) of the CWA requires states to identify waterbodies, known as impaired waters, which do not meet water quality standards. Impacts to water quality standards and total maximum daily loads of pollutants for impaired waters determine a project's potential impact to water quality.

3.11.1 AFFECTED ENVIRONMENT

Receiving waters for the project area include Lampert Lake, an unnamed stream at the lake outlet, adjacent wetlands, and ultimately Palmer Creek, Beluga Lake, and Kachemak Bay. The ADEC list of impaired waters and the 2018 Integrated Water Quality Monitoring and Assessment Report indicate none of the project area's receiving waters are listed as impaired under Section 303(d) of the CWA.

3.11.2 ENVIRONMENTAL CONSEQUENCES

The FAA has established several quantitative significance thresholds for impacts to surface water quality. Adverse effects to any the following may constitute a significant impact:

- Exceed water quality standards established by Federal, state, local, and tribal regulatory agencies.
- Contaminate public drinking water supply such that public health may be adversely affected.

No Action

The No-Action alternative would have no effect on water quality because there would be no new ground disturbance or development affecting existing wetlands or waterbodies. Existing wetlands would remain in their existing condition and would continue to provide the same water quality functions as they do currently. There would be no new sources of pollution discharges into waters of the U.S. resulting from the No-Action alternative.

Proposed Action

The Proposed Action involves approximately 10 acres of new apron and taxiway semi-impervious and impermeable surface and embankment. The impacted area will change from modified or native vegetation and soils to compacted structural fill with seeded embankment slopes driving surfaces, resulting in concentration of storm water runoff where discharges occur. However, because the surrounding landscape remains largely undisturbed, especially down gradient of the project area within the Homer Airport CHA, runoff is likely to infiltrate remaining undisturbed areas where retention will remain similar to existing conditions. The increase is not expected to have a measurable impact on receiving waters; therefore, permanent adverse effects will be negligible.

3.12 CUMULATIVE IMPACTS

Cumulative environmental impacts are those which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative effects analysis considers only those resources experiencing a permanent adverse direct or indirect impact resulting from the Proposed Action. The Proposed Action has permanent adverse impacts to two environmental resource categories: Wetlands & Waters of the U.S. and Vegetation.

The Proposed Action is the only alternative addressed for cumulative effects. Because the No Action alternative would not add any new impacts to any of the resources identified in the project area, there would be no incremental contribution to cumulative impacts to resources in the region.

3.12.1 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

The first runway at the Homer Airport was constructed prior to 1940. Since then, there have been several facility expansion and development projects undertaken within the Airport's controlled area (**Table 5**).

Table 5: Past Projects

Year	Description
1930s-1940s	Original runway construction.
1940s	Runway lengthened to 4,900 ft and widened to 100 ft.
1940s	Landside development on northwest end of the airport.
1958	State of Alaska assumed ownership from Federal government.
1960s-1970s	Runway lengthened and widened; taxiways, aprons, lease lots, and airside development on south side of airport expanded; Kachemak Dr. re-aligned around the airport.
Mid-1980s	Taxiways, Commercial (Terminal) Apron, lease lots, and terminal areas developed on the north side of the airport to support air carriers.
Late-1980s	Fencing constructed around perimeter of controlled area.
Mid-1990s	Terminal building constructed.
1996	Runway resurfaced; Runway Safety Area expanded.
2000	Sand Storage Building constructed; taxiways and aprons rehabilitated and expanded on south side of the airport.
2017	Floatplane ramp, dock and access road constructed.
2019	Perimeter fence replaced; Runway Safety Areas reconstructed; wind cones and segmented circle relocated; new airport rescue and firefighting (ARFF) and snow removal equipment facility constructed.

The 2016 ALP identifies capital improvements for the airport over a 20-year period. **Table 6** presents those future projects located inside the airport's controlled area.

Table 6: Future Projects

Description
Expand GA Apron (900 ft x 300 ft) toward Lampert Lake.
Construct 30-space (0.4 ac) paved vehicle parking area on the south side of the airport, outside of the perimeter fence, and north of Kachemak Dr.
Construct partial parallel taxiway (800 ft x 35 ft with 10 ft shoulders) connecting the GA Apron to the south side of the runway
Relocate the rotating beacon from the northwest end of the runway to the top of the ARFF/SRE facility.
Construct full-length parallel taxiway (50 ft wide with 20 ft shoulders) on the north side of the runway.
Extend Taxiway C (50 ft wide with 20 ft shoulders) north of the runway to the Terminal Apron.
Install instrument landing system for Runway 22; remove tree and terrain within the Runway 22 primary surface.
Expand the existing terminal building to provide a 20,000 sf passenger and cargo facility.
Expand Terminal Apron west (340 ft x 250 wide) for transient aircraft parking, staging firefighting aircraft, and terminal parking.
Expand Terminal Apron east (350 ft x 350 ft) for additional lease lots.
Extend FAA Road east to serve expanded Terminal Apron.

Note: Projects already constructed or proposed under the current project excluded.
GA=General Aviation, ARFF/SRE=airport rescue and firefighting/snow removal equipment, ac=acre, ft=foot, sf=square foot.

3.12.2 CUMULATIVE EFFECTS OF THE PROPOSED ACTION

Many of the wetlands and vegetation communities present in the project area—particularly those on the north side of the runway which have experienced periodic mowing since the 1970s and those originally along the existing runway footprint which were filled for runway construction and expansion—have been impacted by prior development. Moist herbaceous and scrub-shrub dominated wetlands replaced open-canopy conifer forest habitats north of the runway. Up to 45 acres of scrub-shrub and forested habitat may have been lost cumulatively as a result of runway and RSA construction between the 1930s and 1990s[3]. Additionally, all of the wetlands in the project area, including the relatively intact dwarf scrub-shrub bog on the south side of the runway surrounding Lampert Lake, have been fenced off from surrounding wetland and wildlife habitat since the 1980s.

The remaining wetland habitat following prior development likely retains an appreciable contribution to the overall hydrologic regime in the Beluga Lake watershed and, more specifically, storm water retention down-gradient of Lampert Lake. However, functions associated with wildlife habitat and public access, recreation, and education are likely no longer present after installation of perimeter fencing.

[3] Based on a comparison between *Cook Inlet Wetlands* and historical aerial imagery to estimate the extent of wetlands in existing developed areas of the airport.

The Proposed Action will result in a loss of approximately 4 acres of wetlands out of an estimated total of 2,000 acres of wetland remaining in the Beluga Lake watershed[4]. The Proposed Action's wetland impact is an incremental reduction of hydrology/flood control functions within the larger watershed. The incremental impact is larger on the scale of the local 261-acre watershed down-gradient of Lampert Lake. In addition, future development could have greater localized wetland impacts; however, the overall reduction in function of the larger Beluga Lake watershed is likely to be minimal because of the small size of the local watershed relative to the Beluga Lake watershed and the low development potential of the large, intact wetland complex present within the Homer Airport CHA. The Homer Airport CHA is down-gradient of the project area and serves as a buffer between the project area and Beluga Lake for attenuating near-surface groundwater.

The Proposed Action would add an incremental change to vegetation communities and natural hydrology patterns when combined with past, present, and reasonably foreseeable future actions. However, the adverse impact of the combined incremental changes do not rise to the level of significance under FAA criteria defined in Orders 5050.4B and 1050.1F and as described in Sections 3.4.2 and 3.10.2.

3.13 PERMITS AND APPROVALS

The following permits and approvals would likely be required prior to construction of the Proposed Action:

- ADEC APDES Construction General Permit for Storm Water Discharges for Large and Small Construction Activities (CWA Section 402).
- ADEC Water Quality Certification for discharge into waters of the U.S., including wetlands (CWA Section 401).
- ADNR Temporary Water Use Permit (11 AAC 93).
- City of Homer Development Activity Plan, Site Plan, and/or Storm Water Plan, if required (City of Homer Code Chapter 21).
- NEPA approval (anticipated Finding of No Significant Impact).
- SHPO concurrence with *no historic properties affected* finding (NHPA Section 106).
- USACE Wetlands Permit for placement of fill or dredged material into waters of the U.S., including wetlands (CWA Section 404).
- USFWS concurrence with *not likely to adversely affect* finding (ESA Section 7).

[4] Estimated using *Cook Inlet Wetlands* within the Beluga Lake/Bear Creek watershed, which extends roughly from the outlet of Beluga Slough east to Millers Landing and from Kachemak Bay/Kachemak Drive north to the crest of the Homer bluffs.

4 ENVIRONMENTAL COMMITMENTS

The project's design and construction specifications will include measures and commitments to avoid, minimize, or mitigate potential or likely adverse environmental effects. **Table 7** lists standard design guidelines, operating procedures, best management practices (BMPs), and regulatory and permit requirements (e.g., design standards, erosion control measures, timing vegetation clearing) for all resources categories, including those listed in Section 3.1.

Table 7: Environmental commitments incorporated into the project.

Air Quality	Implement BMPs such as watering, stabilizing construction entrances/exits, application of dust palliative, and stabilizing disturbed ground as soon as practicable to maintain air quality.
Eagles and Migratory Birds	Clearing and grubbing will not be permitted from May 1 to July 15, except as allowed by federal, state, and local laws and approved by the Project Engineer.
Invasive Species	The DOT&PF will comply with all federal, state, and local laws regarding invasive species during construction of the proposed project.
Hazardous Materials and Solid Waste	• The construction contractor will be required to prepare and implement a Hazardous Materials Control Plan in accordance with ADEC requirements and DOT&PF contract specifications. • If encountered, all work in the vicinity of contaminated soil will stop and ADEC will be consulted to determine the appropriate corrective action. Contaminated soil will be removed, segregated, field screened, tested, and treated/disposed of in accordance with ADEC regulations and an ADEC-approved work plan. • Dispose of construction waste in accordance with local, state, and federal laws/regulations.
Historical, Architectural, Archaeological, and Cultural Resources	If cultural, archaeological, or historic resources are discovered during project construction, all work that may impact these resources will stop until DOT&PF consults SHPO to determine the appropriate corrective action.
Section 4(f)/6(f) Properties	Access to all Section 4(f) resources will be maintained during construction. No Section 4(f) resources will be used for staging or any other construction activities.
Water Quality	• The DOT&PF will prepare an Erosion and Sediment Control Plan. • Implement a DOT&PF-approved Storm Water Pollution Prevention Plan (SWPPP), Hazardous Materials Control Plan, and Spill Prevention, Control, and Countermeasure Plan (if applicable) during construction. • All vehicles, trucks, and heavy equipment will be kept within construction limits and operated in a manner that limits unnecessary ground disturbance.
Wetlands and Waters of the U.S.	• Project boundaries will be staked, flagged, or otherwise clearly delineated prior to the commencement of ground disturbing activities. Embankment fill material will be stockpiled within the project-fill footprint or upland areas to avoid impacts to wetlands. • Site preparation, excavation, and fill placement will be conducted in a manner that prevents or reduces adverse hydrologic effects. Natural drainage patterns will be maintained using appropriate ditching, culverts, or other measures to prevent ponding or drying. • Ground disturbance will be minimized to the maximum extent practicable. • Place heavy equipment on mats in wetlands to minimize unnecessary disturbance. • Stage materials and machinery primarily in developed areas of airport property to avoid new ground disturbance. No stockpiles or staging will occur in wetlands.

5 COMMENTS AND COORDINATION

The process of soliciting comments and information from the public and agencies on the purpose and need for a project, potential alternatives, and possible issues and concerns that need to be addressed during the environmental review and design stages of a project, is called "scoping." Scoping is an integral part of the environmental documentation process required by NEPA. Refer to the Scoping Summary Report in Appendix E for documentation of all public and agency involvement, including meetings, materials, comments received from stakeholders, and DOT&PF responses to comments.

5.1 PUBLIC INVOLVEMENT

The DOT&PF began outreach for the project in 2021 to solicit comments and information from the public and other interested parties on the purpose and need for the project, potential alternatives, and possible issues to address during the environmental review and design stages of the project. Outreach included the following activities and materials:

- Notice of Intent to begin Engineering and Environmental Studies posted in the Anchorage Daily News, October 11, 2020.
- Public scoping meetings: Virtual meetings conducted via Zoom.
    - May 26, 2021 (12 attendees) and online open house from May 26 – June 28, 2021.
    - October 21, 2021 (27 attendees) and online open house from October 21 – November 21, 2021.
- Newspaper advertisements in the Homer News announcing public meetings.
- Postcards mailed to stakeholders announcing public meetings.
- Emails sent to non-government organizations, airport leaseholders and tenants, elected officials, and members of the public who signed up for email updates via the project website announcing public meetings and providing general updates.
- Project website: (https://dot.alaska.gov/creg/homerairport/).
- Kenai Peninsula Transportation Fair: Live virtual transportation fair on February 25, 2021, with pre-recorded videos highlighting 36 DOT&PF projects on the Kenai Peninsula, including preliminary information about improvements at the Homer Airport.

Public Comments

During the comment periods following each public scoping meeting, DOT&PF received formal written comments submitted via email or through the online comment form on the project website. In addition, the project team recorded several comments during the meetings.

Issues related to the proposed service road and pedestrian access between the GA and Terminal Aprons were the most common topics discussed during public outreach. The following is a summary of public comments:

- Concern about wetland impacts of perimeter service road. [5]
- Add taxiway(s) on south side of runway connecting to GA Apron.

[5] A perimeter service road was presented as a component of the project during public and agency scoping. However, it was dismissed from further evaluation after consideration of public comments and wetland impacts.

- Future Taxiway H on north side of runway would not greatly benefit most GA users.[6]
- Add pedestrian facility along Kachemak Drive or around west perimeter of airport to connect GA Apron to Commercial (Terminal) Apron.
- Add an air traffic control tower to the airport.
- Provide additional land for hangar rentals.
- Maintain or improve gravel along south edge of runway, or consider adding a dedicated gravel runway.
- Provide public restrooms.
- Ensure leaseholders have access through airport gates.
- Add a taxiway from the ramp area at Taxiway A to a location approximately mid-point down Runway 22.
- Add a holding area adjacent to Taxiway A.
- Add electric head bolt heater outlets at some tie-downs.
- Add/plan public viewing/pedestrian use area similar to Lake Hood in Anchorage.

[6] Future Taxiway H was presented as a component of the project during public and agency scoping. However, it was dismissed from further evaluation after consideration of public comments.

5.2 AGENCY SCOPING

The DOT&PF mailed scoping letters to regulatory agencies, local governments, tribal organizations, and other stakeholder organizations on October 9 and November 4, 2020. The letters provided information on the project, a preliminary environmental overview, and an invitation to comment. The following agencies and organizations received scoping letters (**Table 8**):

Table 8: Agency Scoping Contact List

Federal Agencies	EPA FAA NMFS USACE USCG USFWS
State Agencies	Alaska Department of Commerce, Community, and Economic Development ADEC, Division of Spill Prevention and Response, Contaminated Sites Program ADEC, Division of Water, Storm Water Program ADF&G, Division of Habitat ADF&G, Division of Habitat, Invasive Species Program ADF&G, Division of Wildlife Conservation ADNR, Division of Mining, Land, and Water ADNR, Division of Parks and Outdoor Recreation ADNR, Division of Parks and Outdoor Recreation, Land and Water Conservation Fund ADNR, Office of History and Archaeology, SHPO
Local Governments	City of Homer, Planning/Floodplain Administrator Kenai Peninsula Borough, Planning
Tribal Organizations	Ninilchick Traditional Council Seldovia Village Tribe
Other	Homer Soil and Water Conservation District Cook Inlet Region, Inc. Ninilchick Native Association, Inc.

Table 9 contains a summary of the comments received in response to agency scoping.

Table 9: Summary of Agency Scoping Comments

Agency	Comment
USACE	Project has been assigned number POA-1981-00312, Beluga Lake. Based on information provided, and available to our office, portions of the proposed work may occur in waters of the U.S. and would, therefore, be within USACE jurisdiction. General concerns include a delineation of all aquatic resources potentially affected by the proposed project, a complete project description as described at 33 CFR 325.1(d)(1-10), and an analysis of alternatives.

Table 9: Summary of Agency Scoping Comments

Agency	Comment
USFWS	Provided guidance and comments on the following topics: • Wetlands: Reduce the project footprint to the maximum extent practicable, and locate associated activities in already disturbed areas to the maximum extent practicable. Avoid higher-functioning wetlands whenever possible. Isolate wetlands from construction-generated sediment and pollutants with properly installed silt fencing to avoid and minimize water quality degradation. • Invasive species: o Identify known invasive plant infestations within and adjacent to the project area. o Conduct project activities in un-infested areas first to ensure invasive species do not contaminate equipment and move to new areas. o Limit movements in and out of infested areas. o Ensure equipment arrives and leaves the project site clean and without visible soil clumps, plant, or animal material. o Use certified weed-free gravel and certified weed-free erosion control supplies. o Re-vegetate bare soils with native and local plant species as soon as feasible. In addition to approved seed mixes, consider using salvaged topsoil for re-vegetation. o Wherever ground disturbance cannot be avoided, salvage topsoil, if not infested with invasive plant species, to topdress bare soil and other disturbed areas for more rapid re-vegetation. o Salvage the maximum amount of organic material and topsoil practicable, even during winter construction, and store separately (e.g. away from overburden) for use during reclamation. o Plan to sequence construction activities such that existing surface vegetation can initially be removed, followed by grubbing roots of trees and blading remaining organic and topsoil layers for stockpiling for reclamation. • Migratory birds and eagles: o Waterfowl and raptors, including bald eagles, may nest two or more months earlier than other birds. Nests of migratory birds are protected under the Migratory Bird Treaty Act and cannot be removed without a valid permit. o Eagles and their nests are afforded additional protections under the Bald and Golden Eagle Protection Act. Should DOT&PF or its contractors become aware of eagles nesting within 660 feet of construction and associated activities, please contact the Service to determine whether an Eagle Take Permit is needed. This recommendation applies to both active eagle nests and nests that are thought to be inactive at the time of discovery.
Kenai Peninsula Borough	This project is located within the City of Homer and therefore out of the jurisdiction of the Kenai Peninsula Borough 21.18.
SHPO	• Recommend an archaeological investigation conducted by a professionally qualified individual (PQI) of the areas that will have ground disturbance or will have the potential for ground disturbance prior to construction activities. • Our office reviews federal undertakings as stipulated in 36 CFR 800. We recommend following the request form and checklist which can be found here: http://dnr.alaska.gov/parks/oha/pdf/106application.pdf • Our office has no concerns or comments on the proposed APE or level of effort for identification of cultural or historic properties at this early stage of project design and development. Our office recommends revisiting the APE and the need for additional historic properties identification as the project moves towards finalization, and we recommend consultation with interested tribes and parties early in the process.

Table 9: Summary of Agency Scoping Comments

Agency	Comment
ADF&G Division of Habitat	Homer Airport CHA is located 750 feet north of the monumented centerline of the airport runway and parallels the runway through Sections 15 and 22. ADF&G requests that the proposed fence line road maintain wetland and surface water connectivity between lands inside the fence and the Homer Airport CHA. We recommend installing culverts in wetlands or seasonal wet areas to maintain water connectivity. We also recommend the proposed perimeter road be located off the shores of Lampert Lake and located an adequate distance from the lake so as not to disturb birds on the lake. If possible, sloping the road away from Lampert Lake will help prevent stormwater runoff from entering the lake or its shoreline wetlands.
Homer Soil and Water Conservation District	Can you tell me the expected size and load of the road around the perimeter of the fence? Is this to be built to carry large and heavy vehicles (like water trucks or plows), ordinary vehicles (like a car or truck) or small vehicles (like four wheelers)?

6 LIST OF PREPARERS

Staff at DOT&PF, HDL, and NLURA conducted engineering and baseline environmental studies for the project. HDL prepared this EA with supervision and review by DOT&PF and FAA. **Table 10** contains the list of contributors, their affiliation and role during EA development.

Table 10: List of Preparers.

Name	Position & Affiliation	Role
Jack Gilbertsen	Environmental Protection Specialist, FAA	EA Review and Compliance
Matthew Hansen. P.E.	Project Manager, DOT&PF	Project Management, EA Review
Tadd Isaacson, P.E.	Consultant Coordinator, DOT&PF	Design Support, EA Review
Brian Elliott	Regional Environmental Manager, DOT&PF	EA Review
Heidi Zimmer	Environmental Impact Analyst, DOT&PF	Environmental Analysis, EA Review
Erik Hilsinger	Cultural Resources Specialist, PQI, DOT&PF	Cultural Resources
Morgan Merritt, P.E.	Consultant Project Manager, HDL	Project Management, Design, EA Review
Heather Campfield, AIP3	Environmental Services Manager, HDL	EA Review, Public Involvement
Owen Means, PWS	Environmental Specialist, HDL	EA Preparation, Wetlands
Brooke Therrien	Environmental Specialist, HDL	Public Involvement
Mary Ann Sweeney, RPA	Archaeologist, NLURA	Cultural Resource Survey

7 REFERENCES

ADF&G. 1993. *Kachemak Bay and Fox River Flats Critical Habitat Areas Management Plan*. State of Alaska, Department of Fish and Game, Division of Habitat and Division of Wildlife Conservation. December 1993.

ADNR. 2000. *Kenai Area Plan*. State of Alaska, Department of Natural Resources, Division of Mining, Land, and Water, Resource Assessment and Development Section. January 2000.

AirNav. 2020. PAHO, Homer Airport information web page. AirNav.com. Accessed July 23, 2021. https://www.airnav.com/airport/paho.

AKEPIC 2021. *Alaska Exotic Plant Information Clearinghouse* database. Alaska Center for Conservation Science, University of Alaska, Anchorage. Accessed July 27, 2021. http://aknhp.uaa.alaska.edu/apps/akepic/.

Boldenow, Megan. 2020. Comment from U.S. Fish and Wildlife Service, Anchorage Fish and Wildlife Conservation Office, in Response to Agency Scoping. Heidi Zimmer, Alaska DOT&PF. November 5, 2020.

DOT&PF. 2018. *Integrated Vegetation Management Plan*. State of Alaska, Department of Transportation and Public Facilities. April 2018. https://dot.alaska.gov/stwdmno/ivmp/.

DOWL. 2004. *Homer Non-Motorized Transportation and Trail Plan*. Prepared for City of Homer, Planning Department by DOWL Engineers. June 2004.

FAA. 2006. *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. U.S. Department of Transportation, Federal Aviation Administration. April 2006.

FAA. 2015. *1050.1F Desk Reference*. U.S. Department of Transportation, Federal Aviation Administration, Office of Environment and Energy. July 2015.

HDL. 2020. *Wetland Delineation and Functional Assessment*. Prepared for the State of Alaska, Department of Transportation and Public Facilities, Homer Airport Improvements project. October 2020.

HDL. 2021. *Hydrologic and Hydraulic Summary Report*. Prepared for the State of Alaska, Department of Transportation and Public Facilities, Homer Airport Improvements project. June 2021.

Kenai Watershed Forum. 2011. *Homer Wetland Complexes and Management Strategies*. Kenai Watershed Forum. February 2011.

Planning Department. 2018. *Homer Comprehensive Plan*. City of Homer, Planning Department. November 2018.

Tauriainen, Mike, Land Design North, Kinney Engineering, Bechtol Planning and Development, and Brooks & Associates. 2005. *2005 Homer Area Transportation Plan*. City of the Homer.

USFWS. 2017. *Timing Recommendations for Land Disturbance and Vegetation Clearing*. U.S. Department of the Interior, Fish and Wildlife Service. May 2017.

USFWS. 2021. *Information for Planning and Consultation* website. U.S. Department of the Interior, Fish and Wildlife Service. Accessed July 27, 2021. https://ecos.fws.gov/ipac/.

USKH. 2011. *Homer Spit Comprehensive Plan*. Prepared for the City of Homer, Planning Department. November 2011.