

*Environmental Assessment*

for the

**Construction of Flood Control Structures  
In Base Housing**

**Eielson Air Force Base, Alaska**

**354th Fighter Wing  
November 2003**

# Report Documentation Page

*Form Approved*  
*OMB No. 0704-0188*

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1. REPORT DATE <b>NOV 2003</b>	2. REPORT TYPE	3. DATES COVERED <b>00-00-2003 to 00-00-2003</b>			
4. TITLE AND SUBTITLE <b>Environmental Assessment for the Construction of Flood Control Structures In Base Housing Eielson Air Force Base, Alaska</b>		5a. CONTRACT NUMBER			
		5b. GRANT NUMBER			
		5c. PROGRAM ELEMENT NUMBER			
6. AUTHOR(S)		5d. PROJECT NUMBER			
		5e. TASK NUMBER			
		5f. WORK UNIT NUMBER			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>354th Fighter Wing, 354 Broadway Street, Eielson AFB, AK, 99702</b>		8. PERFORMING ORGANIZATION REPORT NUMBER			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)			
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)			
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>	<b>Same as Report (SAR)</b>	<b>36</b>	



**FINDING OF NO SIGNIFICANT IMPACT (FONSI)  
and  
FINDING OF NO PRACTICABLE ALTERNATIVE (FONPA)  
for  
UPGRADE HOUSING FLOOD CONTROL LEVEE**

**Introduction**

Eielson Air Force Base (Eielson) is proposing to construct flood control structures that are designed to protect 62 housing units in the Moose Lake Estates subdivision area of base housing from flooding during summer months. Currently, houses in the Moose Lake Estates are protected by a 9-foot high levee that was built to prevent surface flooding of the area. Although surface flooding has not been a source of flooding to these houses, infiltration into basements during high groundwater periods in summer has caused significant damage and inconvenience to base housing residents. This project is intended to alleviate this problem.

**Description of the Proposed Action**

The proposed action will result in the construction of a 2,064-foot interceptor trench connected to a 50-foot by 75-foot basin from which groundwater would be pumped. The trench will contain a 30-inch diameter perforated pipe, which will be placed on a descending gradient, with the greatest depth at the basin end of the trench system. High volume pumps will be installed near the collection basin to pump water from the basin to a location down gradient from the housing area. The proposed project will result in the loss of 1.32 acres of wetlands.

**Alternatives to the Proposed Action**

One alternative to the proposed action was identified. This alternative would be accomplished by sealing each individual basement structure in the subdivision to prevent water intrusion. Effectively sealing the basements would require waterproofing the exterior walls of the structures, as well as sealing the floors. Excavating around the foundation could seal the walls, but the floors would require that a waterproof barrier be applied from the inside. This would be in the form of a sealant material and a new floor surface. This type of barrier does not work well when there is a high hydraulic pressure causing the intrusion.

**No Action Alternative**

This alternative would result in no action being taken to protect the Moose Lake Estates housing units from intrusion by groundwater. This could result in millions of dollars of damage to base housing and related facilities.

**Environmental Impacts of the Proposed Action**

**Wetlands and Floodplains**

The proposed project would result in impacts to 1.32 acres of black spruce and willow/alder wetlands. The wetlands are of relatively low-value and are isolated from adjacent similar habitat. Any wildlife that uses the wetlands would likely be displaced to adjacent wetlands similar to these that currently exist near the site.

The project does not lie within the 100-year floodplain.

### **Cultural Resources**

No cultural resources have been identified in the project area. However, should any be uncovered, all construction would cease until an archeologist evaluates the resource.

### **Biological Resources**

Impacts to biological resources from the Proposed Project would be minimal. Habitat impacted is a type that commonly occurs in large tracts nearby the project. It is likely that the few wildlife species that currently use the area would be displaced to this nearby habitat. Some small mammals such as squirrels and voles would be displaced. In addition, some passerine bird use of the larger wetland tract would likely be eliminated.

### **Threatened or Endangered Species**

There are no threatened or endangered species in the project area. The project area is not suitable habitat for any of the threatened or endangered species occurring in the Alaskan interior.

### **Historical or Cultural Resources**

Most archeological sites on Eielson lands have been identified and mapped. The Proposed Project is not associated with any known sites. In the event that historic or cultural sites are discovered during project construction, activities will be halted and a professional archeologist will evaluate the find.

### **Air Quality**

The proposed actions will have minor air quality impacts during construction due to fugitive dust and machinery exhaust. Such impacts will be highly localized and temporary in nature.

### **Mitigation**

No special conditions (mitigation) other than standard best management practices that are already incorporated into the project design, is required by any federal or state agency for impacts that may result from this project.

### **Public Comment**

No public comment was received from the public noticing of the EA/FONSI/FONPA or the Corps of Engineers Permit for this project.

### **Findings**

Pursuant to the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) implementing regulations for NEPA (40 CFR Part 1500-1508), and Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process* (32 CFR Part 989), the Air Force has conducted an EA for the construction of flood control structures in an area of Eielson housing. This FONSI/FONPA has been developed pursuant to information provided in the accompanying EA.

**Finding of No Practicable Alternative:** Eielson is an Air Force facility that operates, maintains, and trains combat forces in close air support of military operations worldwide. Eielson must have base housing facilities that are in good condition and not susceptible to flooding to meet its strategic mission. Taking all the environmental, economic, and other pertinent factors into account, pursuant to Executive Order 11990, the authority delegated by SAFO 780-1, and taking into consideration the submitted information, I find that there is no practicable alternative to this action and the proposed action includes all practical measures to minimize harm to the environment.

**Finding of No Significant Impact:** Based on this environmental assessment, which was conducted in accordance with the requirements of NEPA, CEQ, and Air Force Instructions, I conclude the construction of flood control structures in an area of Eielson housing will not result in significant impacts to the environment. I also find that the preparation of an environmental impact statement is not warranted.



VICTOR E. RENUART, JR.  
Lieutenant General, USAF  
Vice Commander, Pacific Air Forces

MAR 31 2004

\_\_\_\_\_  
Date

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## 1.0 Purpose and Need for Action

Section 1 provides a description of the purpose and need for the proposed action.

### 1.1 Background and Objectives for the Proposed Action

1.1.1 The host unit at Eielson, the 354th Fighter Wing (FW), operates F-16 Fighting Falcon aircraft and A/OA-10 Thunderbolts. The 168th Air Refueling Wing (ARW) is also based at Eielson and currently flies KC-135 aircraft.

1.1.2 Eielson was established in 1944. The base is part of the Pacific Air Forces (PACAF) Command and is host to the 354 FW, which operates, maintains, and trains combat forces in close air support and interdiction missions in support of the war plans in three operational theaters. The 354 FW's mission is to train and equip personnel for close air support of ground troops in an arctic environment. The 168 ARW is the primary tanker unit of the Pacific Rim, annually transferring over 17 million pounds of fuel in flight to predominantly active duty aircraft.

1.1.3 In 1991, as a result of an acute housing shortage for military personnel assigned to the base, Eielson proposed that new on-base housing be constructed. This housing project was completed in 1997 and provided 366 housing units. The only on-base location available for this housing was east and north of an area that contained the existing base housing. This area was bounded by black spruce wetlands and French Creek to the east and north and required the construction of a levee to protect the housing from the threat of floods that could occur during spring and summer.

1.1.4 As a flood prevention measure, during the summer of 2000 a portion of the existing levee that surrounds housing was enhanced by raising its elevation from 5 feet to 9 feet. In past years, during high water periods of the spring and summer, surface water had breached the top of the levee in areas where the levee was less than 9 feet in elevation and had caused minor flooding of some areas of housing.

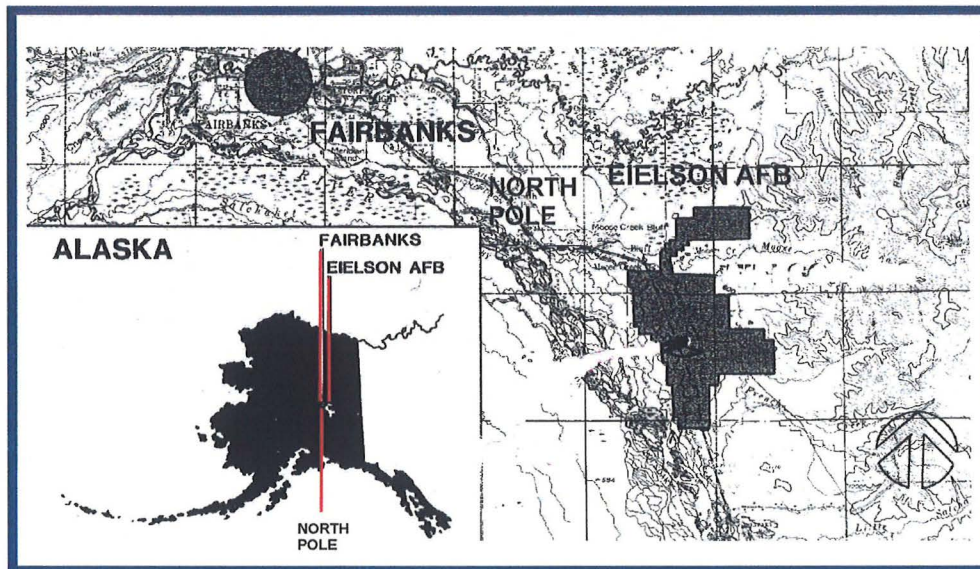
1.1.5 In late summer of 2002, after a series of heavy rain events, groundwater in the Moose Lake Estates area rose dramatically. This resulted in the flooding of basements of 43 housing units. Some of the basements had as much as 18 inches of water in them, causing significant damage to housing resident's property.

1.1.6 As a result of this flooding event, the 354 CES/CEC conducted an engineering study to analyze and define the problem and to look at possible solutions. The study indicated that, even though the flooding had only occurred once in the 7-year history of the housing area, it was likely to occur again and that measures were needed to prevent similar problems. The preferred solution identified was the construction of a groundwater interceptor trench that would allow groundwater to be pumped from the area and thus keep the ground water level below flood stage.

## 1.2 Location of the Proposed Action

1.2.1 Eielson is located within the Fairbanks North Star Borough, approximately 120 miles south of the Arctic Circle and 23 miles southeast of Fairbanks (**Figure 1-1**). Eielson is located in the Tanana River Valley on a low, relatively flat, floodplain terrace that is approximately 2 miles north of the active river channel. Other communities near Eielson include Moose Creek to the north, and the Salcha area to the south of the base.

### REGIONAL AND BASE LOCATION MAPS



**Figure 1-1 – Location Map**

1.2.2 Base lands include 19,790 contiguous acres bounded on the west by the Richardson Highway and on the north and east by Army lands (Yukon Training Area). To the south the community of Salcha borders Eielson. Of these base lands, over 51 percent are designated as wetlands.

**1.3 Proposed Action.** The proposed action would result in the construction of a 2,064-foot interceptor trench connected to a 50-foot by 75-foot basin from which groundwater would be pumped. The trench would contain a 30-inch diameter perforated pipe, which would be placed on at a descending gradient, with the greatest depth at the basin end of the trench system. High volume pumps would be installed near the collection basin to pump water from the basin to a location down gradient from the housing area. The proposed project would result in impacts to 1.32 acres of black spruce and scrub/shrub willow/alder wetlands.

**1.4 Alternatives to the Proposed Action.** In addition to the proposed action, one action alternative and a no action alternative are considered for analysis in this EA.

**1.4.1 Alternative 1 – Water Proof House Foundations:** This alternative would be accomplished by sealing each individual basement structure in the subdivision to prevent water intrusion. Effectively sealing the basements would require waterproofing the exterior walls of the structures, as well as sealing the floors. Excavating around the foundation could seal the walls, but the floors would require that a waterproof barrier be applied from the inside. This would be in the form of a sealant material. This type of barrier does not work well, however when there is high hydraulic groundwater pressure causing the intrusion.

**1.4.2 No Action Alternative:** This alternative would result in no action being taken to prevent ground water intrusion into Moose Lake Estates housing units. Approximately \$15 million worth of military family housing would be at risk to summer flooding.

## **1.5 Environmental Assessments that Influence the Scope of this Environmental Assessment**

In 1991, Eielson produced and public noticed an EA/FONSI/FONPA that addressed the impacts associated with the construction of 366 housing units under the Section 801 Build/Lease housing program at Eielson. This EA concluded that the impacts associated with the construction of the houses, as well as a flood control levee to protect them, was not significant. In 2001 another EA/FONSI/FONPA was completed that addressed the need to raise the height of a portion of the flood control levee that surrounds base housing in the vicinity of French Creek. Many of the same issues that were addressed in these two EAs are applicable to activities analyzed in this document.

## **1.6 Decision to be Made**

1.6.1 As required by 32 CFR Part 989, the *Environmental Impact Analysis Process* will be used to determine what are the environmental consequences of the proposed construction of flood control structures that will protect portions of base housing from summer flooding. This EA is intended to satisfy these requirements. The proposed action and all alternatives listed in Sections 1.3 will be addressed in detail in Chapter 2.0 of this document. A description of the resources associated with the areas affected by all alternatives will be provided in Chapter 3.0 and the impacts that could result from each one are discussed in Chapter 4.0.

1.6.2 Based on the evaluation of impacts in the EA, a Finding Of No Significant Impact (FONSI) will be published if there is a finding of no significant environmental impacts for the proposed action. If it is determined that the proposed action will have significant environmental impacts, other alternatives will be considered for which impacts may not reach the threshold of significance.

1.6.3 The EA, a draft FONSI (if applicable), and all other appropriate planning documents will be provided to the Pacific Air Forces (PACAF) Vice Commander, the decision maker, for review and consideration. If, based on a review by the decision maker of all pertinent information, a FONSI is proposed, a notice of intent (NOI) will be published in accordance with 40 CFR 1506.6. All interested parties will have 30 days to

comment on the decision to the Air Force. If, at the end of the 30-day public comment period, no substantive comments are received, the decision maker will sign the FONSI.

1.6.4 Two Executive Orders (EOs), 11988 and 11990, require the heads of federal agencies to find that there is no practicable alternative before the agency takes certain actions impacting wetlands or floodplains. The proposed action would potentially impact both types of resources. To address this requirement, the Secretary of the Air Force's designated agent, HQ PACAF/CV will sign a document that addresses the issues of wetlands and floodplains that may be associated with actions the Air Force proposes to take. This document, known as a FONPA, will state which alternative, the proposed action, one of the two action alternatives, or the no action alternative, will be selected as the appropriate course of action. The FONPA will be combined with the FONSI into one document. It will contain documentation that there are no practicable measures to minimize harm to wetlands and/or floodplains, and that all appropriate mitigation will be incorporated into the project design or otherwise authorized.

## 1.7 Project Scoping/Significant Issues

This section provides a summary of major issues raised during the scoping process that were considered significant enough to be addressed in the EA. The scoping process typically involves a meeting of potentially interested parties. These may include state and federal regulatory agencies that have oversight authority, as well as base groups that have involvement in the management of base housing or design and construction of the project. For this project scoping process all potentially interested parties were contacted. However, no parties other than Eielson groups chose to participate beyond providing comments to the Army Corps of Engineers on the 404 wetlands permit. The following issues were identified during the scoping process:

1) *Hydrology of the area has been altered.* The French Creek drainage, which flows on the east side of the housing project, has been altered by several construction projects that have occurred in the area. These projects, including the Trans Alaska pipeline (TAPS) and the Eielson-MAPCO multiproduct pipeline, have resulted in drainage patterns that do not follow the historic floodplain of the creek. As a result the housing area can, on occasion, be subject to seasonal flooding.

2) *There would be a significant disruption to housing residents if alternative 1 were implemented.* Extensive excavation of foundations on the outside and resurfacing floors on the inside would be a major disruption to housing residents.

3) *Wetland values are for wetland areas impacted are relatively low.* Although 1.32 acres of scrub/shrub wetlands will be impacted, they are in isolated pockets and are not connected by any surface hydrology to any other wetlands in the area, thus reducing their functional value.

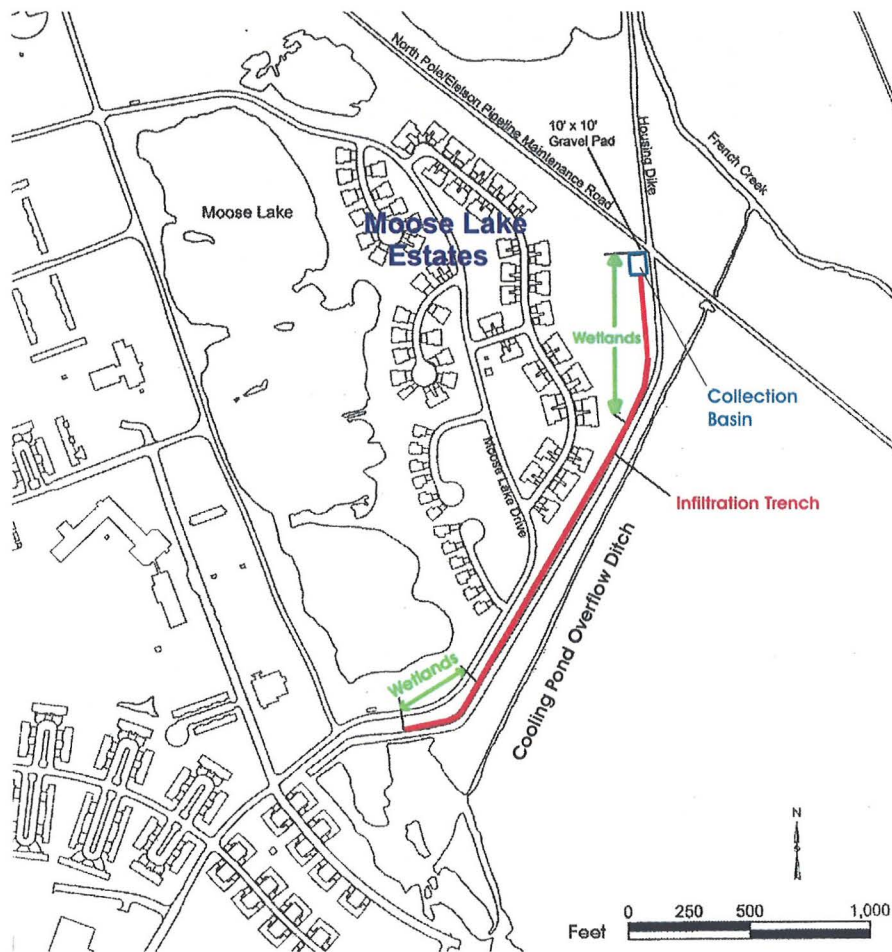
**1.8 Federal, State, and Local Permits Needed for Project Implementation.** Actions identified in this EA would require that certain permits be obtained. The Proposed Action would require an Army Corps of Engineers 404 wetlands permit.

## 2.0 Description of the Proposed Action and Alternatives

Chapter 2.0 provides a description of alternatives considered for the purpose and need described in Chapter 1.0. The proposed action, one action alternative, and a no action alternative are addressed.

### 2.1 Proposed Action – Construct Groundwater Interceptor Trench and Collection Basin

The proposed action would result in the following structures being installed in the Moose Lake Estates section of Eielson base housing (see **Figure 2-1**):



**Figure 2-1 – Location of Proposed Project**

- Dig a 2,064-foot trench, which would be used to bury a 30-inch diameter perforated pipe. The pipe would be set at a depth of 8 feet at its northern most point, with the depth gradually increasing until it reached 13 feet at the inlet of the collection basin. The pipe would be covered by a one-foot layer of ¾-inch rock and the trench backfilled.

- Excavate a 50-foot by 75-foot collection basin at the south (down gradient) end of the interceptor trench. The basin would be excavated to a depth of 25 feet. The slope of the basin walls would be 1 to 1. The basin walls would be stabilized by a 2-foot layer of rock riprap.
- A 10-foot by 10-foot pad would be constructed immediately adjacent to the collection basin. This pad would provide a site for pumps that would be used to pump water from the basin, discharging it on the French Creek side of the flood protection levee.
- When high water table levels would occur, pumps would be brought to the site and installed on the pump pad. Discharge hoses would be set up so that water would be pumped from the collection basin up and over the housing flood control levee and into wetlands down gradient of the housing area. The discharge would be released as sheet flow into wetlands outside of the housing protection levee.
- Any portion of the project area where soil is disturbed would be covered with topsoil and seeded to reestablish a vegetative cover.

## **2.2 Alternative 1 - Waterproof House Foundations**

This alternative would attempt to prevent flooding of house basements by sealing around the house foundations, blocking the infiltration of groundwater into basements. As part of this alternative, the following work would be undertaken:

- Excavate the below grade portion of the exterior walls of all affected house structures. Construct a waterproof barrier around the entire perimeter of each house.
- On the inside of each house basement, construct an impermeable barrier on the floor surface of the house. A new finished floor would have to be constructed over this impermeable surface. All resident's furnishings would have to be removed from the basement while construction occurs. In addition, for a short period of time during the application of some of the materials used to create the impermeable surface, residents would have to vacate the houses due to potentially irritating fumes that would be released.
- All soil areas disturbed during construction of this alternative would be covered with topsoil and seeded to reestablish vegetative cover.

## **2.3 No Action Alternative**

This alternative would result in no action being taken to prevent flooding during high groundwater periods in Eielson housing in the Moose Lake Estates subdivision.

### **3.0 Affected Environment**

This section describes relevant resource components of the existing environment that might be impacted by the proposed project and alternatives. Only environmental components relevant to the issues and objectives of this EA are described.

#### **3.1 Physical Environment**

Eielson encompasses approximately 19,790 acres and is isolated from major urban areas. The portion of Eielson that contains the area associated with the Proposed Action lies on the abandoned floodplain of the Tanana River, with elevations ranging from 525 to 550 feet above mean sea level (MSL). The surface of the floodplain is relatively smooth and slopes gently downward to the northwest at a gradient of about 6 feet per mile.

##### **3.1.1 Geology/Soils**

3.1.1.1 The area in the vicinity of Eielson was not glaciated during the last ice age. The majority of the subsurface geologic formations of the central plateau of Alaska are primarily from the Permian and Devonian periods of the Paleozoic era.

3.1.1.2 Soils in the Tanana River Valley consist of unconsolidated silty sands and gravels, organic and sandy silts, and clays. Floodplain soils nearest the active channels are sandy with a thin silt loam layer on the surface. On higher terraces, the soils become predominately silt from the Salchaket series. Along older river terraces, silt loam soils, which contain significant organic components, often dominate. These soils tend to be cold and wet and are generally underlain by permafrost. Approximately two-thirds of Eielson is covered with soils containing discontinuous permafrost. This preponderance of permafrost soils contributes to the large percentage of vegetated wetlands occurring on undeveloped base lands.

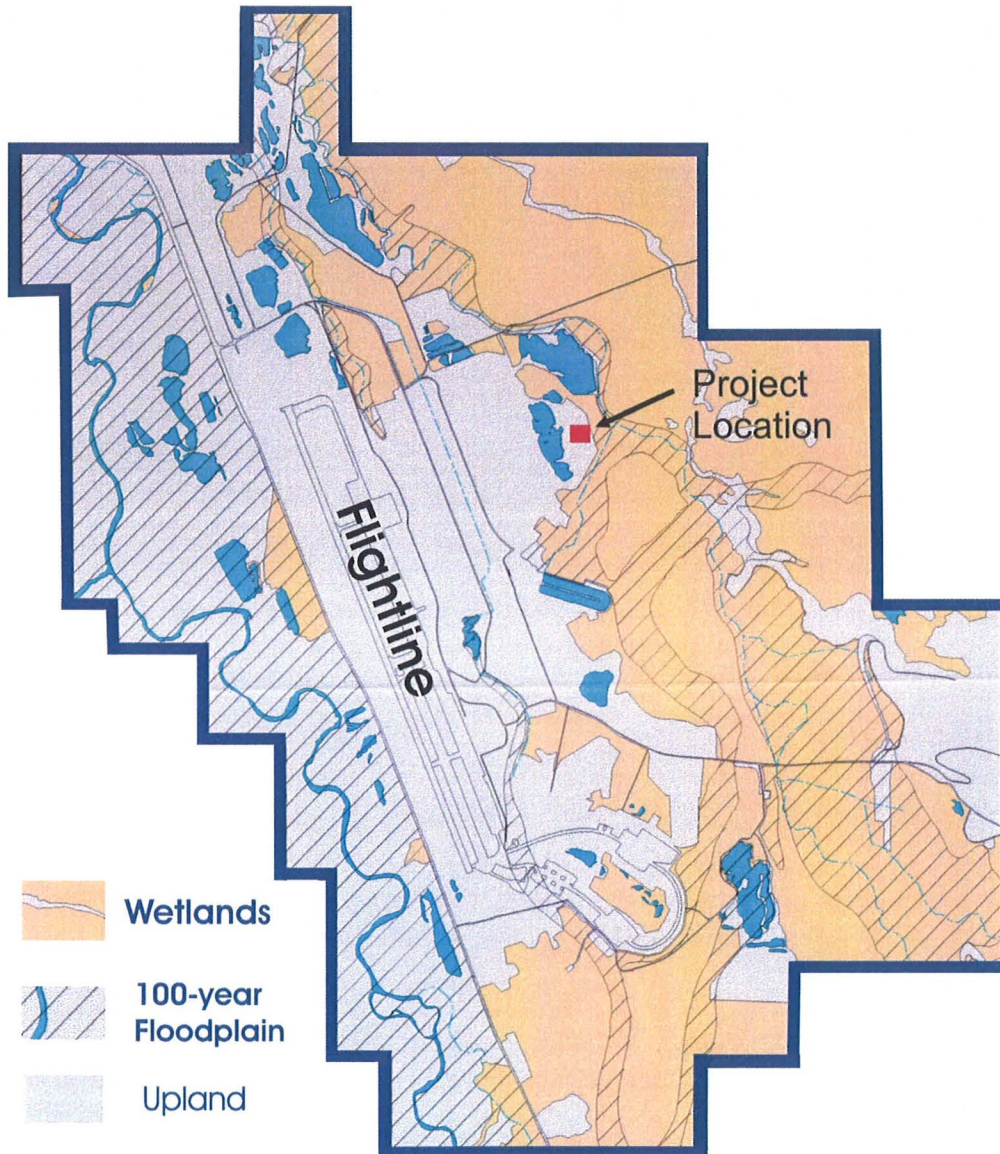
##### **3.1.2 Groundwater**

Eielson is located over a shallow unconfined aquifer. The aquifer is approximately 250 feet thick, extends to bedrock, and has a regional gradient of about 5 feet per mile flowing to the north-northwest. The water table varies from the surface in adjacent wetlands to 10 feet below ground level in developed areas. The base uses the local aquifer for its drinking water and monitors groundwater quality in a number of locations as part of its Installation Restoration Program (IRP). Localized contamination of the aquifer has been identified in the industrial area of the base, but the overall quality of groundwater at Eielson is excellent.

##### **3.1.3 Surface Water**

3.1.3.1 Aquatic bodies on Eielson include streams, wetlands, and lakes. There are approximately 28 miles of streams; 10,133 acres of wetlands; 12 lakes (Lilly Lake is

natural and the remaining 11 are man-made) and 80 ponds (10 naturally-occurring and 70 man-made) totaling 560 acres; and 6,770 acres of floodplains on the main base. The man-made lakes and ponds were created during the excavation of gravel deposits for use as fill material for construction projects on base. Surface drainage on Eielson is generally in a north-northwest direction and parallel to the Tanana River. Five streams flow through the base and discharge into the Tanana River via Piledriver Slough.



**Figure 3-1 – Surface Water Features**

3.1.3.2 Approximately 51 percent, or 10,133 acres, of Eielson is classified as wetlands, with 9,391 acres being vegetated wetlands and the remainder being lakes, ponds, and streams (see **Figure 3-1**). Wetlands and low gradient alluvial streams comprise most of the surface water resources on Eielson, with wetlands dominating the low-lying areas within and surrounding the installation. Most wetland areas were created as a result of

surface waters becoming trapped in the thawed layer over the permanently frozen subsurface (permafrost). Flood periods tend to occur during spring snowmelt and during the middle to late summer, when heavy rains or warm air quickly brings glacier fed mountain streams to flood capacity. Several lakes and extensive wetlands surround the airfield in the cantonment area. Among these are Bear, Polaris, Moose, Hidden, Pike, Rainbow, Scout, Grayling, and Tar Kettle lakes. Creeks that can be found in the vicinity of the airfield include French and Moose creeks.

3.1.3.3 Piledriver and Garrison sloughs are the two largest streams in the vicinity of the airfield. Piledriver Slough, which discharges into the Tanana River, is located along the western edge of Eielson and approximately 4,000 feet west of the airfield and parallel to the runways. Approximately 12 miles of Piledriver Slough occurs on Eielson. The slough receives no runoff from the urban developed area of the base and has good water quality.

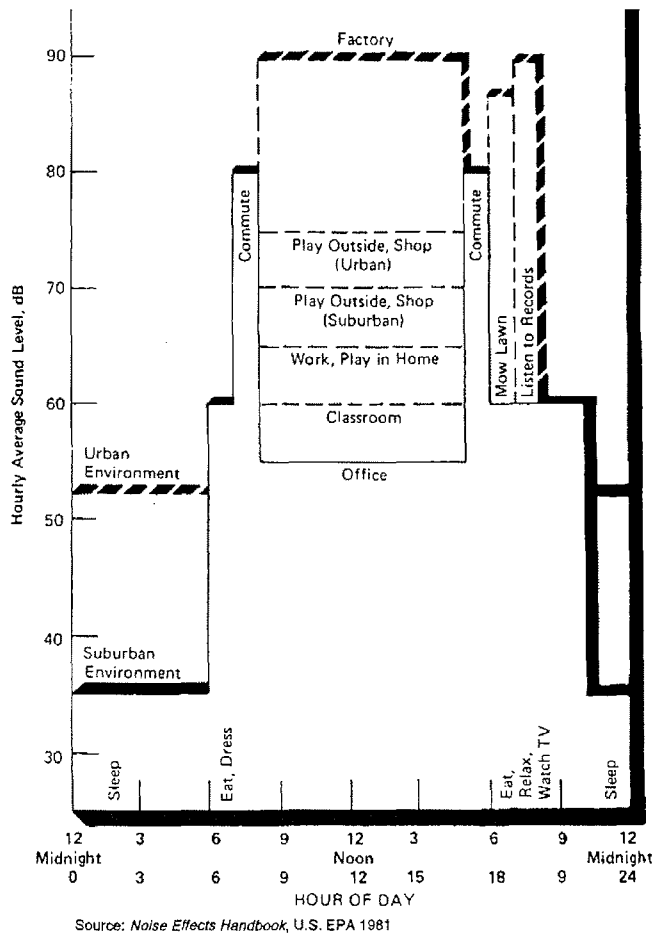


Figure 3-2 - Noise Levels

3.1.4 Noise

Aircraft generate by far the most noise on Eielson. Noise levels associated with aircraft during flying hours can exceed 80 decibels (dB) in the vicinity of the flight line, however,

the decibel level drops off to a maximum of 70-dB in the closest residential area, Moose Creek, just north of the base. Noise greater than 65-dB is not recommended for housing areas. Construction noise is potentially another source of noise, but it is not considered to be a concern due to its temporary nature and relatively low dB level.

**Figure 3-2** is a chart that provides a scale of noise levels associated with typical daily activities.

### 3.1.5 Air Quality

Air quality is generally good at Eielson. Although portions of the North Star Borough, of which Eielson is also a part, are in non-attainment for carbon monoxide (Fairbanks and North Pole), Eielson is far enough south to not be included or affected. The Clean Air Act designates areas as *attainment*, *non-attainment*, *maintenance*, or *unclassified* with respect to national ambient air quality standards (NAAQS). Non-attainment and maintenance areas are locales that have recently violated one or more of the NAAQS and must satisfy the requirements of State or Federal Implementation Plans (SIPs or FIPs) to bring them back into conformity with the applicable air quality standards. Eielson is located in an *unclassified* area, and therefore activities that generate emissions do not need to satisfy the requirements of the EPA ruling *Determining Conformity of General Federal Actions to the State or Federal Implementation Plans*.

### 3.1.6 Cultural Resources

In 1994, Eielson contracted for the preparation of a predictive model for the discovery of prehistoric cultural resources on base lands. The predictive model was then used to conduct an evaluation of cultural resources on Eielson as required by Section 110 of the National Historic Preservation Act. The areas associated with the Proposed Action and Alternative 1 has been determined to not contain cultural or archeological resources. In the event that during project excavation/construction any cultural resources were encountered, activities would cease until the resources were evaluated.

## 3.2 Biological Resources

### 3.2.1 Vegetation

The vegetation of the Tanana River Valley in the vicinity of Eielson is typical of boreal forest or taiga habitats. The boreal forests of Eielson are predominantly evergreen forests dominated by black spruce and white spruce (*Picea glauca*), but also include extensive stands of deciduous forests containing paper birch (*Betula papyrifera*), quaking aspen (*Populus tremuloides*), and balsam poplar (*P. balsamifera*). Extensive areas of shrub and herbaceous vegetation are found in wetlands, lowland areas, and the active floodplain, and are dominated by willows and other shrubs, sedges, and grasses. Bog areas are dominated by black spruce stands intermixed with peat moss (*Sphagnum* spp.) and cottongrass (*Eriophorum vaginatum*).

### 3.2.2 Aquatic/Fishery Resources

3.2.2.1 Lakes and streams on Eielson contain both native fish and fish stocked by the Alaska Department of Fish and Game. Native fish found in the Tanana River drainage include chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*O. keta*), silver salmon (*Oncorhynchus kisutch*), burbot (*Lota lota*), arctic grayling (*Thymallus arcticus*), northern pike (*Esox lucius*), chub (*Semotilus* spp.), several species of whitefish (*Coregonus* spp.), sheefish (*Stenodus leucichthys nelma*), rainbow trout (*Oncorhynchus mykiss*), and arctic char (*Salvelinus alpinus*).

3.2.2.2 The Alaska Department of Fish and Game stocks five lakes and one stream on Eielson: Grayling Lake, Hidden Lake, Polaris Lake, 28 Mile Pit, Moose Lake, and Piledriver Slough. Fish stocked by the Alaska Department of Fish and Game include rainbow trout, arctic grayling, arctic char, silver salmon, chinook salmon, chum salmon, and northern pike. There are no known federally listed threatened or endangered fish species, fish species proposed for listing, or critical fish habitats on Eielson.

### 3.2.3 Wildlife Resources

3.2.3.1 The surrounding Tanana Valley provides breeding habitat for a wide variety of migratory bird species. Bird species found on Eielson include spruce grouse (*Dendragapus canadensis*), ruffed grouse (*Bonasa umbellus*), northern goshawk (*Accipiter gentilis*), sharp-shinned hawk (*A. striatus*), great horned owl (*Bubo virginianus*), red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*). During winter, willow ptarmigan (*Lagopus lagopus*) and rock ptarmigan (*L. mutus*) are common on Eielson. Over 20 species of waterfowl, including geese, ducks, loons, grebes, and scoters use aquatic habitats on the installation.

3.2.3.2 There are 32 species of mammals found on Eielson. Common species include moose (*Alces alces*), black bear (*Ursus americanus*), grizzly bear (*U. arctos*), snowshoe hare (*Lepus americanus*), marten (*Martes americana*), red squirrel (*Tamiasciurus hudsonicus*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), mink (*Mustela vison*), meadow vole (*Microtus pennsylvanicus*), red-back vole (*Clethrionomys rutilus*), and meadow jumping mice (*Zapus hudsonius*).

### 3.2.4 Project Area Habitat Value

The Proposed Project will be sited in the footprint of a previously developed portion of the base. As described previously, in 1994 a housing project was constructed in this area to meet Eielson's current housing needs. The wetland habitats impacted are portions of two small pockets of black spruce and scrub/shrub wetlands that are 0.5 acres and 8.3 acres respectively. Although the wetlands habitat does provide some function, it has been diminished by the housing development that surrounds it.

### **3.2.5 Threatened and Endangered Species**

No threatened or endangered species, as designated by the US Fish and Wildlife Service, typically occur in any of the project areas included in the listed alternatives. This was the conclusion of an Eielson contract study entitled *Biological Survey, Final Report 1994*, that addressed the potential for the presence of endangered species on base lands.

## 4.0 Environmental Consequences

This section discusses the probable impacts for each alternative described in Section 2.0. This section is organized according to resources and a discussion of each alternative action is provided relative to resources identified as relevant in Section 3.

### 4.1 Physical Environment

#### 4.1.1 Soils

4.1.1.1 *Proposed Action:* The Proposed Action would result in the placement of approximately 5,724 cubic yards of fill material in association with the construction of flood control structures that would include a groundwater infiltration trench, collection basin, and a pump pad. The construction of the infiltration ditch will require excavation to a maximum depth of 15 feet and the collection basin will be excavated to a 25-foot depth. The natural soil profiles that exist in this area have been previously altered when housing construction occurred in the 1990's. However, most of the soil disturbance was to relatively shallow depths during these activities. This project will alter natural soil profiles to a greater depth, but will be relatively localized. The trench will be backfilled with soils that were initially excavated with the exception of some coarse gravels that will be placed over the perforated pipe. Soils excavated from the 25-foot deep basin will be hauled off to an approved disposal site.

4.1.1.2 *Alternative 1:* This alternative would require relative shallow excavation of soils around approximately 62 housing unit foundations. The soils currently in place are not native to the site, but were placed there during construction of the houses. Activities associated with this alternative would likely not result in additional impacts to soils in the area.

4.1.1.3 *No Action Alternative:* No impacts to soils would result from this alternative.

#### 4.1.2 Groundwater

4.1.2.1 *Proposed Action:* As described in Chapter 3, groundwater in the area is shallow and unconfined. The goal of the proposed action is to reduce the height of groundwater during high flow periods in the summer months to prevent infiltration around the foundation of houses in the Moose Lake Estates subdivision. The project will allow groundwater flow up gradient of the housing to be intercepted and pumped to a surface discharge point down gradient of the subdivision. This micro site manipulation of groundwater is not anticipated to have any impacts on groundwater resources in the area beyond reducing its height during high flows by a few feet.

4.1.2.2 *Alternative 1:* No impacts to groundwater are anticipated from this alternative.

4.1.2.3 *No Action Alternative:* This alternative would have no impacts on groundwater. If the proposed project or alternative 1 are not implemented, there is a high likelihood of

groundwater infiltration into houses in the Moose Lake Estates area resulting in significant damage to base housing and to residents property.

#### **4.1.3 Surface Water**

4.1.3.1 *Proposed Action:* The only surface water in the area is that associated with Moose Lake, Polaris Lake, and French Creek. None of the proposed construction activities would directly impact any of these surface water bodies. The only other surface water that is found in the area is seasonal and the result of snowmelt in the spring.

When high ground water requires the operation of the pumps, there would be a discharge of pumped water into an area to the east of the housing flood control levee. This type of high ground water event would likely also result in flooding of French Creek, which is about 250 feet east of the levee. Past weather events that have caused high ground water in the area has also resulted in sheet flow several inches deep between the flood control levee and French Creek. This is caused, to a large extent, by the altered hydrology of the area from construction of the Trans Alaska Pipeline and MAPCO pipeline access road pads that act as dams.

4.1.3.2 *Alternative 1:* No impacts to surface water resources would result from this alternative.

4.1.3.3 *No Action Alternative:* No impacts to surface water would result from the no action alternative.

#### **4.1.4 Noise**

4.1.4.1 *Proposed Action:* Noise impacts associated with implementation of this action would be short-term and relatively low decibel compared to ambient noise levels that occur with flight line aircraft operations. Noise would be associated with operation of construction machinery, and would last only for a 4 to 6 weeks during the construction of the flood control structures.

4.1.4.2 *Alternative 1:* Noise impacts associated with this alternative would be the result of the operation of machinery to excavate housing foundations. This noise could be significant considering the proximity of the work to residents and result in significant disturbance during daylight hours.

4.1.4.3 *No Action Alternative:* No noise impacts would result from this alternative.

#### **4.1.5 Air Quality**

4.1.5.1 *Proposed Action:* Some minor, short-term impacts from emissions associated with the operation of construction machinery would result from the Proposed Action.

4.1.5.2 *Alternative 1*: Impacts to air quality could result from the operation of construction machinery. This would be more of an impact than with the proposed action due to its close proximity to base housing.

4.1.5.3 *No Action Alternative*: No impacts to air quality would result from this alternative.

#### **4.1.6 Cultural Resources**

No impacts to cultural resources would result from any identified alternatives.

### **4.2 Biological Resources**

#### **4.2.1 Vegetation**

4.2.1.1 *Proposed Action*: Impacts to vegetation would occur as a result of construction of the proposed action. These impacts would likely be localized and consist of disturbance of mostly grassed areas adjacent to housing and in the two wetland areas (see **Figure 2-1**). Wetland vegetation would be removed during project construction. The entire project area would be revegetated with grasses at the completion of construction.

4.2.1.2 *Alternative 1*: This alternative would result in the disturbance of large areas of existing housing lawns. All areas would be revegetated at the completion of the project.

4.2.1.3 *No Action Alternative*: No losses to vegetation would result from this alternative.

#### **4.2.2 Aquatic/Fishery Resources**

4.2.2.1 *Proposed Action*: The proposed action would result in the pumping of large volumes of water into a wetland area just east of the housing protection levee. It is anticipated that the same circumstances that would cause ground water to infiltrate housing basements would also result in that same wetland area to the east of the flood control levee to have surface water sheet flow as a result of the flooding of French Creek. The discharge from the pumps would be dispersed into the existing floodwater sheet flow using flow deflectors and/or other structures that would minimize the chance of erosion from hydraulic forces. It is not known how much suspended sediment would be generated by the pumped groundwater, but it is not anticipated that it would add significantly to turbidity levels that would already exist during flood conditions. If significantly increased turbidity would result from the pumping of ground water, it would likely be of short-term duration as once the ground water levels dropped, the discharge would stopped. Overall, it is possible that some impacts to fishery and aquatic resources in French Creek could occur, but they would be of a short-term nature.

4.2.2.2 *Alternative 1*: No impacts to fishery resources would likely result from alternative 1.

4.2.2.3 *No Action Alternative*: No impacts to fishery resources would likely result from this alternative.

### 4.2.3 Wildlife Resources

4.2.3.1 *Proposed Action*: Minor impacts to small mammals and birds could occur from the construction of the flood control structures, particularly in the scrub/shrub wetland area of the proposed collection basin. Most wildlife would likely be displaced to adjoining habitat, particularly on the east side of the housing dike where large areas of intact wetlands would be in close proximity.

4.2.3.2 *Alternative 1*: There would be little, if any, impacts to wildlife as the result of alternative 1.

4.2.3.3 *No Action Alternative*: No impacts to wildlife would result from this alternative.

### 4.2.4 Threatened and Endangered Species

There are no threatened or endangered species on Eielson lands and no impacts to these species would result from any of the alternatives considered in this EA.

## 4.3 Cumulative Impacts

The National Environmental Policy Act (NEPA) process requires that the issue of cumulative impacts be addressed in an environmental assessment.

4.3.1 The Council on Environmental Quality (CEQ) has stated in their NEPA regulations (1508.7) that: "*Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to past, present, and reasonably foreseeable future actions. . .*" and "*. . . can result from individually minor, but collectively significant actions taking place over a period of time.*" Eielson has, over the years, been very cognizant of the issue of cumulative impacts to wetlands. This is due to the fact that the base was, to a large extent, built by filling wetlands, and that expansion of Eielson facilities beyond the original footprint of the base often requires the use of additional wetlands. Of the 19,789 acres that constitute Eielson lands, 51 percent are designated wetlands.

4.3.2 To address the potential for cumulative impacts to wetlands, Eielson has developed an active program of wetland habitat creation and enhancement. Classification of Eielson wetlands according to type and quality (as defined in Cowardin, et al, US Fish and Wildlife Service, 1979) has indicated that 93 percent of Eielson wetlands are of low quality. Most of these wetlands are classified as black spruce or willow/ alder, scrub/shrub wetlands and constitute large, homogenous blocks of land

that provide minimal wetland values to wildlife. When Eielson develops a gravel source by excavating alluvial gravel deposits, it is often in these black spruce wetlands. As part of the extraction process, wetlands of higher value are created (lake habitat with shallow littoral zones and emergent vegetation) from lower value black spruce and uplands. The type and quality of wetlands are particularly valuable for feeding, nesting, and brood-rearing by waterfowl, the bird species potentially most affected by the proposed project. The wetland creation/enhancement program on Eielson has been going on for several years and has the full and enthusiastic support of local, state, and federal resource agencies. In addition, resource agencies have viewed this voluntary wetlands enhancement program as more than adequate to compensate for losses that occur as part of Eielson construction projects.

4.3.3 The Eielson housing flood control project will result in the loss of 1.32 acres of relatively low value black spruce and scrub/shrub wetlands. These wetlands are isolated from other similar wetlands by previous activities associated with the construction of base housing. The loss of these wetlands would not incrementally result in significant cumulative impacts when compared to the over 10,000 acres of equal or higher value wetlands that are still intact on base lands.

#### **4.4 Unavoidable Adverse Impacts**

**4.4.1 Proposed Action:** The Proposed Action would result in the permanent loss of 1.32 acres of low value black spruce and willow/alder scrub/shrub wetlands.

**4.4.2 Alternative 1:** This alternative would not result in any unavoidable adverse impacts.

**4.4.3 No Action Alternative:** This alternative would not result in any unavoidable adverse impacts.

#### **4.5 Relationship of Short-Term Uses and Long-Term Productivity**

The Proposed Action would result in some minor long-term losses. The loss of 1.32 acres of wetlands would be permanent, and the productivity, although quite minimal, would be lost for the foreseeable future. The short-term uses would be the protection of base housing from damage due to flooding.

#### **4.6 Irreversible and Irrecoverable Commitments of Resources**

The Proposed Action is the only action considered in this EA that would result in additional irreversible and irretrievable commitments of resources. The resources lost would include 1.32 acres of black spruce and willow/alder wetlands.

#### **4.7 Environmental Justice**

4.7.1 President Clinton issued Executive Order (EO) 12898, *Environmental Justice in Minority Populations and Low-Income Populations*, on February 11, 1994. Objectives of the EO, as it pertains to the NEPA process, requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. To accomplish these requirements the Air Force must conduct an environmental justice analysis of all potential impacts that may result from the proposed actions.

4.7.2 The environmental justice analysis must first identify all adverse impacts associated with the project. The next phase is to delineate the potential area of impact for the resources affected. If, within this area of impact, population demographics are such that a disproportionate effect on minority or low-income populations may occur, it should be so identified. These impacts should be documented and mitigation should be developed that can be implemented by the Air Force.

4.7.3 The site for the proposed action is in base housing. Base housing does not exhibit any particular demographics except related to military rank. In the case of this project, the housing that is closest to the project area includes both enlisted personnel as well as officer's housing. This project would have equally beneficial effects on a full cross-section of the demographics of Eielson's base population. Based on the environmental impacts identified in this EA and on a corresponding environmental justice analysis, it is felt that no disproportionate impact to minority or low-income populations would occur from implementation of this project.

#### **4.8 Mitigation**

No mitigation is proposed or required as a result of federal and state permits obtained for this project.

## **5.0 List of Persons and Agencies Consulted**

Mr. Brent Koenen, USAF, 354 CES/CEVN, Eielson AFB, AK, ph: 377-5182.

Ms Sheila Newman, US Army Corps of Engineers, Regulatory Functions Branch, Fairbanks, AK, ph: 474-2166.

Jeff Putnam, USAF, 354 CES/CECC, Eielson AFB, AK, ph: 377-1162.

Mr. Larry Bright, US Fish and Wildlife Service, Fairbanks, AK, ph: 456-0322.

## 6.0 Glossary

Alluvial - Sediment deposited by flowing water.

Carbon Monoxide - A colorless, odorless gas resulting from the incomplete oxidation of carbon; found, for example, in automobile exhaust or mining operations; poisonous to animals.

Cantonment - The main operational area of a military base.

Culvert - A drain crossing under a road or an embankment.

Environmental Impact Analysis Process (EIAP) - is a set of guidelines (Air Force Instruction 32-7061) that the Air Force uses to comply with the NEPA process.

Decibel - A unit of measurement for describing sound intensity.

Executive Order 11990 - Mandate to federal agencies to follow the NEPA process to ensure the protection of wetlands.

Habitat - The area or environment in which an organism or ecological community normally occurs.

Hydro-axed - A large axing machine driven by hydraulics that cuts down and mulches shrubs and trees.

Installation Restoration Program (IRP) - An Air Force program mandated to identify, investigate, and clean up contamination associated with past Air Force activities.

Mean Sea Level (MSL) - The average surface level for all stages of the tide over a 19-year period, usually determined from hourly height readings from a fixed reference point.

National Environmental Policy Act (NEPA) - Legislation enacted in 1969 mandating that all federal agencies assess the environmental impacts of actions which may have an impact on man's environment.

National Historic Preservation Act - Federal mandate that requires the preservation of prehistoric and historic sites.

Non-Attainment Area - An area exceeding National Ambient Air Quality Standards for one or more criteria pollutants.

Permafrost - Permanently frozen subsoil occurring in perennially frigid areas.

Riparian - Living or located on a riverbank or a natural course of water.

SAFO 780-1 - Secretary of the Air Force Order and reference number.

Seasonally Persistent - Persistence is based on historical records and field evidence that indicates an area is seasonally inundated with water during non-frozen (spring/summer) portions of the year.

Turbidity - Cloudy or hazy appearance in a naturally clear liquid caused by a suspension of colloidal liquid droplets or fine solids.

Understory - A foliage layer occurring beneath and shaded by the main canopy of a forest.

Upland - An area of land of higher elevation, often used as the opposite of a wetland.

Wetlands - Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

404 Wetland - Wetland areas that have been determined "waters of the United States" and thus subject to Section 404 wetland permitting guidelines administered by the Army Corps of Engineers and the Environmental Protection Agency.

Wetland Functional Value - A methodology that identifies the type, quantity, and quality of an ecosystem, and uses or potential uses of wetlands in the vicinity of a proposed project.

100-Year Floodplain - Based on historical evidence, there is a high probability that the area within the 100-year floodplain will be flooded once every 100 years.

## **7.0 Project Wetlands Permit**



REPLY TO  
ATTENTION OF:

**DEPARTMENT OF THE ARMY**  
U.S. ARMY ENGINEER DISTRICT, ALASKA  
3437 AIRPORT WAY  
SUITE 206 WASHINGTON PLAZA  
FAIRBANKS, ALASKA 99709-4777

Regulatory Branch (1145b)  
North Section

PERMITTEE: United States Air Force, Eielson Air Force Base, Alaska

EFFECTIVE DATE: July 20, 2004

REFERENCE NUMBER: POA-1993-496-R, Clear Creek

DEPARTMENT OF THE ARMY  
PERMIT MODIFICATION

Department of the Army permit number P-19930496, Clear Creek, was issued to United States Air Force, Eielson Air Force Base on April 13, 2001, to:

"place approximately 589,699 cubic yards of fill material through the removal of vegetative debris and leveling of 548 acres of waters of the United States, including wetlands; temporarily store approximately 221,027 cubic yards of vegetative debris until disposal of all vegetative debris in an old borrow pit on site previously authorized under DA permit POA-1991-478-4, Willow Creek; and place approximately 8,219 cubic yards of clean soil fill into approximately 9.3 acres of waters of the United States, including wetlands, to construct two lead in lights maintenance roads (900' long x 35' wide x 4' high), each with a turnaround (66' circular base x 4' high). To facilitate construction of the roads, the creation of four temporary turnarounds was authorized (28' long x 28' wide x 4' high). Additionally, in the event of a fuel spill, up to 200 cubic yards of petroleum contaminated soil over the previously authorized clean soil fill on the existing airstrip (airstrip was authorized under POA-1993-496-4, Clear Creek, and is 3500' long x 120' wide x 4' high) may be spread, provided that both the U.S. Army and State of Alaska Department of Environmental Conservation give approval for this disposal method prior to the placement of any contaminated fill."

On November 14, 2002 the permit (Q-1993-0496) was modified to add:

" Place approximately 2,820 cubic yards of fill material into approximately 0.60 acres of wetlands to construct a new haul road (705' l x 35' w)."

The permit (POA-1993-496-R) is hereby modified as follows:

Place approximately 18,827 cubic yards of fill material into approximately 3.9 acres of wetlands for the construction of a 120' x 350' High Angle Strafe Target pad and a 100' x 30' access road to the target; a 200' x 500' Mobile Strafe Target, a maintenance road, ricochet pits, and a 100' x 30' access road to the target. Temporarily stockpile an unspecified quantity of excavated fill material into 11.9 acres of wetlands (12,794' X 40') excavated for the

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construction of a utility line, to be removed and used as backfill in the utility trench upon completion of the installation of utilities.

The time limit for completing the work authorized ends on November 30, 2008. If the activity authorized herein is not completed by the above date, this permit modification, if not previously revoked or specifically extended, shall automatically expire. If you find that you need more time to complete the authorized activity, please submit your request for a time extension to the Corps of Engineers for consideration at least one month before permit expiration. All other conditions under which the subject authorization was made remain in full force and effect.

This authorization and the enclosed modified plans should be attached to the original permit. Also enclosed is a Notice of Authorization that should be posted in a prominent location near the authorized work.

BY AUTHORITY OF THE SECRETARY OF THE ARMY:



Christy Everett  
Field Office Manager

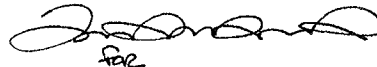
Enclosures

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Please take a moment to complete and return the enclosed questionnaire. Our interest is to see how we can continue to improve our service to you, our customer, and how best to achieve these improvements. Upon your request, you may also provide additional comments by telephone or a meeting. We appreciate your efforts and interest in evaluating the regulatory program.

Please contact me at (907) 474 2166, by FAX at (907) 474-2164, or by mail at the address above, if you have questions. For additional information about our Regulatory Program, visit our web site at [www.poa.usace.army.mil/reg](http://www.poa.usace.army.mil/reg).

Sincerely,



for  
Christy Everett  
Field Office Manager

Enclosures

## 8.0 Public Notice

### **USAF ANNOUNCES an ENVIRONMENTAL ASSESSMENT**

In accordance with the National Environmental Policy Act (NEPA), and Air Force Regulations, Eielson Air Force Base has completed an environmental assessment (EA) and Finding of No Significant Impact (FONSI) to evaluate the consequences of the following stated proposed action:

construct a 2,064-foot interceptor trench and a 50-foot by 75-foot collection basin from which groundwater would be pumped during flood conditions. The trench would contain a 30-inch diameter perforated pipe, placed on at a descending gradient, with the greatest depth at the basin end of the trench system. High volume pumps would be installed near the collection basin to pump water from the basin to a location down gradient of the housing area. The proposed project would result in impacts to 1.32 acres of black spruce and scrub/shrub willow/alder wetlands.

#### **PUBLIC COMMENT WELCOME**

To review the draft EA and FONSI, copies are available at the Noel Wien Library in Fairbanks. The public is invited to review these documents and make comments during the 30-day comment period from now until December 3, 2003. To get a copy of the EA, to comment, or for more information contact Maj. Valerie Trefts, 354 FW/Public Affairs, at (907) 377-2116, 3112 Broadway Ave., Unit 15A, Eielson AFB, AK 99702-1830.

