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Environmental Assessment – Anchorage Sport Fish Hatchery Project

Applicant: Alaska Department of Fish and Game

Case File Number: AK-010-08-EA-029

Lead Federal Agency:

U.S. Bureau of Land Management

Consulting Agencies:

U.S. Air Force, 3rd Wing at Elmendorf Air Force Base

U.S. Fish and Wildlife Service



The proposed action is to construct a sport fish hatchery in Anchorage to meet the current and future demands of the Southcentral Alaska sport fishing industry. The hatchery will replace existing aging hatchery infrastructure and use more efficient technologies.

Location: Section 9, Township 13 N, Range 3 W, Seward Meridian

Prepared By:

HDR Alaska, Inc, On behalf of Alaska Department of Fish and Game Division of Sport Fish and Alaska
Department of Transportation and Public Facilities

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ACRONYMS & ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADOT&PF	Alaska Department of Transportation and Public Facilities
AWWU	Anchorage Water and Wastewater Utility
BASH	Bird Aircraft Strike Hazard
BLM	Bureau of Land Management
cfs	cubic feet per second
CO	Carbon Monoxide
DNR	Department of Natural Resources
DoD	Department of Defense
DSF	Division of Sport Fish
EA	Environmental Assessment
EO	Executive Order
EAFB	Elmendorf Air Force Base
EFH	Essential Fish Habitat
EMP	Environmental Management Plan
ESA	Environmental Site Assessment
ESCP	Erosion and Sediment Control Plan
FLPMA	Federal Land Policy and Management Act
gps	gallons per minute
INRMP	Integrated Natural Resource Management Plan
MBTA	Migratory Bird Treaty Act
MFP	Management Framework Plan
MOA	Municipality of Anchorage
NEPA	National Environmental Policy Act
NOAA Fisheries	National Oceanic and Atmospheric Administration National Marine Fisheries Service
PCBs	polychlorinated biphenyls
SHPO	State Historic Preservation Office(r)
SWPPP	stormwater pollution prevention plans
TMDL	total maximum daily load
TSS	total suspended solids
UAF	University of Alaska at Fairbanks
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Services
USGS	U.S. Geological Survey
WEZ	Waterfowl Exclusion Zone

1.0 INTRODUCTION

Alaska Department of Fish and Game Mission

The mission of the Alaska Department of Fish and Game (ADF&G) is “to protect, maintain, and improve fish, game, and aquatic plant resources of the State and to manage their use and development in the best interests of the economy and well being of the people of the State consistent with the sustained-yield principle” (ADF&G 2008a). The ADF&G Division of Sport Fish (DSF), one of six divisions within ADF&G, was established in 1951. The DSF supports the ADF&G mission by:

1. Providing an opportunity to utilize fish and wildlife resources, and
2. Ensuring sustainability and harvestable surplus of fish and wildlife resources.

Each year, the DSF produces and releases more than 4 million Chinook and Coho salmon and rainbow trout, Arctic char, and Arctic grayling at hundreds of locations statewide to ensure that wild fish stocks remain healthy. The DSF Hatchery Program is responsible for oversight and management of the State’s sport and personal use fisheries, which is worth more than half a billion dollars annually (ADF&G 2008b). To keep up with the increasing interest in recreational fishing, the Fish Hatchery Program has become one of the DSF’s primary responsibilities. The fish hatchery and stocking programs are integral to meeting the increasing demand for sport fish as well as enhancing and sustaining these resources.

Overview

The ADF&G plans to construct a regional sport fish hatchery in Anchorage, Alaska, to support the current and future demands of sport fishing in rivers and lakes in Southcentral Alaska. The new hatchery would be located just southeast of the intersection of Post Road and Reeve Boulevard on the site of the now-decommissioned Elmendorf Air Force Base (EAFB) power plant’s cooling water intake pond. The site is located in the Ship Creek industrial area, adjacent to the existing (but aging) Elmendorf Fish Hatchery (Figure 1.1–Project Area).

The project is being developed through the Alaska Department of Transportation and Public Facilities (ADOT&PF) in cooperation with the United States (U.S.) Department of Interior Bureau of Land Management (BLM), the 3rd Wing at EAFB, and the U.S. Fish and Wildlife Service (USFWS). ADF&G and USFWS are providing part of the funding for the project. ADF&G operates the existing Elmendorf Fish Hatchery by leasing the Military Reserve land managed by the BLM under the Recreation and Public Purposes Act. In conjunction with this project, ADF&G will be expanding their existing lease boundary to incorporate the land for the new hatchery.

The purpose of this Environmental Assessment (EA) is to present and analyze the environmental consequences of the Proposed Action and the No Action Alternative in accordance with National Environmental Policy Act (NEPA).

Project Background

Two Anchorage-based fish hatcheries, one at Fort Richardson and one at EAFB, have traditionally been responsible for nearly all of the sport fish enhancement production for Southcentral and Interior Alaska. These two hatcheries have been the centers of sport fish production since the 1950s and over the years have absorbed fish production programs resulting from closure of other State of Alaska sport fish hatcheries. Fish production from these hatcheries has been used to supplement existing natural production and create new fisheries where none previously existed.



Figure 1-1: Project Area

In the late 1990s, the DSF – the government agency responsible for hatchery operations and management – learned that the water heating sources at the existing Elmendorf and Fort Richardson hatcheries were going to be eliminated. Faced with the potential substantial reduction in overall hatchery capacity, the DSF commissioned a feasibility study to determine where a new hatchery might be located and what opportunities might exist to use new, energy-efficient water re-circulating hatchery technologies. The goal was to determine the most cost-effective manner to continue supporting sport fish management and hatchery production for the next 20 years and beyond (ADF&G 2004).

The 2004 feasibility study assessed the conditions of the existing facilities in Southcentral Alaska and how they could meet future production goals for the hatchery program. The study recommended the construction of new facilities because existing facilities were aging, would not meet program goals, and would require significant increases in energy use to heat production water. It was determined that new hatcheries, which would reuse most of their heat energy and water, should be constructed in Fairbanks and Anchorage.

In 2006, ADF&G undertook a site selection evaluation for a new Anchorage sport fish hatchery site. ADF&G analyzed four candidate locations using thorough selection criteria (Section 2.2.2). The preferred location was found to be adjacent to the existing Elmendorf Fish Hatchery.

The Alaska State Legislature passed a bill on August 23, 2005 to provide funding for the design and construction of two new sport fish hatcheries (Senate Bill 147). The hatchery in Fairbanks is being designed to meet the stocking needs of the Fairbanks, Delta, and Glennallen areas. The second facility, located in Anchorage and the subject of this EA, will primarily serve Southcentral Alaska. An EA was completed in 2007 for the Fairbanks hatchery (NOAA 2007).

1.1 Land Status

The location of the proposed action is on land withdrawn from the public domain for military purposes under Executive Order 8102, dated April 29, 1939. Non-military use of the land is within the jurisdiction of the BLM and grants for use of the land are subject to the concurrence of the Department of the Air Force. The BLM is responsible for permitting third party uses under Public Land Order 2962. The Department of the Air Force is in the process of issuing a Statement of Non-Objection to the BLM which will grant ADF&G permission to develop the hatchery on the proposed site subject to special conditions which are to be incorporated into the BLM lease. See Appendix A.

1.2 Conformance with Land Use Plan

The land is within the planning area of the BLM's Ring of Fire Resource Management Plan and Environmental Impact Statement (BLM 2006). Although the nature of the land's status precludes disposal of the land, the plan provides for "... a balance between land use and resource protection that best serves the public at large ..." where such use would:

serve important public objectives, including, but not limited to, expansion of communities and economic development that cannot be achieved prudently or feasibly on other than public lands and that outweigh other public objectives and values, including, but not limited to, recreation and scenic values, which would be maintained in federal ownership; *[provided]*

[the] Lands are readily accessible to a qualified applicant. *[and]*

The applicant has a defined purpose for the land and secure funding to develop it.

[Such use however] would not be implemented on lands withdrawn for another agency without that agency's approval.

Under the circumstances of the land's current land status, where the project is constructed in compliance with an approved development and management plan, the BLM would lease these lands.

1.3 Purpose and Need of Proposed Action

1.3.1 Purpose

The purpose of the Anchorage Sport Fish Hatchery project is to improve fish hatchery facilities to enhance fish production so that the sport fish stocking program needs are met in Southcentral Alaska. The goal is to construct a regional sport fish hatchery that will ensure a stable disease-free water supply; increase fish production capacity; significantly improve operational efficiencies by replacing aging infrastructure with more efficient re-circulating technologies; and provide an opportunity to incorporate educational opportunities for groups and the general public in the future. The project would create a more reliable hatchery to accommodate current and future stocking program needs for Southcentral Alaska. By meeting the existing and future stocking needs, the new hatchery would ensure sustainability, increase fishing opportunities, and serve to safeguard wild stock populations from the pressures of recreational fishing.

1.3.2 Need

This project addresses a number of needs caused by existing inadequate infrastructure, as summarized in Table 1-1.

Table 1-1: Anchorage Fish Hatchery Project Needs

Need	Explanation
Ensure stable disease-free and heated water supply	<ul style="list-style-type: none"> ▪ A stable disease-free water supply is needed for fish production. ▪ Reliable infrastructure is needed to ensure heated water is available to promote fish growth to meet production needs.
Increase fish production capacity	<ul style="list-style-type: none"> ▪ Existing facilities are not capable of meeting the need to produce sufficient fish stock to protect wild populations from recreational fishing pressures. ▪ Increase fish production to meet existing and future stocking program needs.
Improve operational efficiencies by replacing aging infrastructure with more efficient technology	<ul style="list-style-type: none"> ▪ Existing infrastructure is aging, outdated, and needs to be replaced. ▪ More efficient hatchery re-circulating technology will be used to maximize fish production and significantly reduce water use and heating costs.
Continue and support economic stimulus of sport fishing industry	<ul style="list-style-type: none"> ▪ The sport fishing industry supports the Alaskan economy.
Provide opportunity to improve fisheries education	<ul style="list-style-type: none"> ▪ The facilities at the existing Elmendorf Fish Hatchery do not take full advantage of its unique location for public viewing, education, and outreach opportunities.

Ensure stable disease-free water supply: A stable, reliable, and disease-free warm water supply is needed for fish production, which promotes fish growth and helps to ripen the broodstock. Without a heated water supply, fish production is substantially lowered. Disease-free means fish can be grown without losses due to disease outbreaks. Warm water means ocean-ready smolt can be produced in one year instead of two years, and catchable-sized rainbow trout can be produced in one year instead of the two or more years it takes in the wild. Fish grow optimally in water at about 56 degrees Fahrenheit (°F). Without heating, water at the Elmendorf Fish Hatchery ranges from 32.5°F in the winter to almost 60°F in the summer.

Fish production at the ADF&G Elmendorf and Fort Richardson fish hatcheries is dependent on surface and ground water supplies. Use of Ship Creek surface water supplies has increased the risk of disease outbreaks in the hatcheries. Additionally, the two fish hatcheries relied on heated water from the military power plants. However, the military power plants closed down in 2004 and 2005, eliminating readily available sources of warm water. The loss of heated water has resulted in changes to the catchable rainbow trout and anadromous chinook salmon stocking programs. The transition from warm water to cold water rearing programs and insufficient rearing space has resulted in a reduced number of fingerlings available for stocking and a discontinuation of several stocking locations. Stocking rates in 2005 and 2006 were reduced in order to have fish available for stocking in both years (ADF&G Stocking Plan SouthCentral pg II-17).

Increase fish production capacity: Due to loss of warm water, aging facilities, and increasing maintenance costs, the state can no longer afford to maintain current fish production levels. Increasing stocking levels and locations is currently impossible. ADF&G has determined that the Southcentral hatchery program must increase production to meet current and future stocking program needs for the sport fishing industry.

Table 1-2: ADF&G Southcentral Production Goals, 2004 and Beyond

Species	Life Stage	2004-2008*	2008 and beyond**
Arctic Char	Catchable	40,000	40,000
	Fingerling	50,000	75,000
	Broodstock 1	1,000	1,000
	Broodstock 2	800	800
	Broodstock 3	600	600
	Broodstock 4	400	400
Chinook Salmon	Catchable	100,000	135,000
	Smolt	1,700,000	2,550,000
Coho Salmon	Fingerling	200,000	300,000
	Smolt	940,000	1,410,000
Grayling	Catchable	25,000	37,500
	Fingerling	50,000	75,000
Rainbow Trout	Broodstock 1	6,000	6,000
	Broodstock 2	5,000	5,000
	Broodstock 3	4,000	4,000
	Catchable	200,000	290,000
	Fingerling	1,000,000	1,500,000
Total		4,322,800	6,430,300

* 2004-2008: the production goal for the next 4 to 5 years for the Anchorage-area facilities

** 2008 and beyond: the production goal for the new Anchorage hatchery facility, assumed to be online in 2009

Source: ADF&G 2004.

When the Fort Richardson and Elmendorf fish hatcheries were first built they were intended to produce rainbow trout and salmon smolt only. Today they produce chinook salmon, coho salmon, rainbow trout, arctic char, and arctic grayling. These different stocks need different rearing systems to maximize their production which are not available at the existing hatcheries.

Improve operating efficiencies by replacing aging infrastructure with more efficient technology: The existing facilities at Elmendorf and Fort Richardson fish hatcheries are inadequate and insufficient. The aging infrastructure of both hatcheries is driving up maintenance and operating expenses. Current operating expenses for both facilities cost the state about \$2.5 million annually (ADF&G 2008b). One regional hatchery facility would enable using state-of-the-art technology, in particular a re-circulation technology that enables water to be reused and ensures a stable heated water supply.

Existing facilities are not designed for today's demands. The two hatcheries initially began as small military facilities that produced rainbow trout to create fishing opportunities for military personnel stationed on the bases. DSF took over operating the Elmendorf Fish Hatchery in the 1970s. In 1978, ADF&G constructed Elmendorf Fish Hatchery's main hatchery raceways, water intake building, and pipelines. The hatcheries are aging, the technology is outdated, and the availability of rearing space and heated water is limited. They are also out of compliance with a wide variety of state regulations due to poor facility design.

Currently at the Elmendorf Fish Hatchery, fish are being reared in outdoor raceways exposing them to a greater risk of mortality from disease and predation. The inefficient hatchery design requires increased manpower. The facilities need substantial repairs and renovations to continue safe and efficient operations.

The water re-circulation technology would ensure reliability and reduce maintenance costs. Reducing the demand for water and heat would be essential to the long-term affordability of new hatchery facilities. An effective strategy would be to incorporate intensive water reuse systems. These systems conserve up to 98% (by flow) of the water and heat resources. Although re-circulating hatchery technology has been available for many years, it was not universally adopted for large-scale fish production due to higher capital costs and questionable performance. Today, however, re-circulating hatchery technologies have matured to the point that they are a safe and effective strategy for fish production.

Continue and support economic stimulus of sport fishing industry: Sport fishing expenditures in Alaska were estimated to be \$640 million in 2003, and this generated 12,065 jobs and \$259 million in wages and salaries. This spending ultimately circulated through the economy and generated an estimated \$1.04 billion in total fishing-related spending in Alaska (ADF&G 2008b). The improved production capabilities of a new sport fish hatchery facility would ensure that current and future demand for sport fish resources is met and that the economic benefits of the increasingly popular recreational fisheries continues to bolster the state's economy.

Provide opportunity to improve fisheries education: The current Elmendorf Fish Hatchery was not originally designed to provide public visitation or educational opportunities. Current facilities are not capable of taking full advantage of the hatchery's unique location. The current kiosks are functional only at a basic level (ADF&G 2002). Public viewing facilities and educational outreach opportunities are not being fully realized. The new hatchery building will provide an opportunity for some public visitation and learning opportunities.

Although not proposed to be constructed at this time, the Municipality of Anchorage (MOA) is considering placing a 'salmon learning center' alongside the new hatchery building. The salmon learning center would be designed to educate the public about the hatchery program and the State's sport fisheries. To fulfill this opportunity, the ADF&G is working with the MOA to promote the development of a salmon learning center. As a component of the overall Anchorage Sport Fish Hatchery site plan ('campus concept'; see Figure 2-2), several acres of land are being left open on the southwest side of the property that could provide the area for the proposed learning center, visitor parking, and a trail. These facilities are not a part of the proposed Anchorage Sport Fish Hatchery Project, but could be incorporated at a later date should the MOA decide to build these amenities.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This section describes the Proposed Action; other site locations that were initially considered but were eliminated from further consideration (and therefore not selected for detailed analysis in the EA); and the No Action Alternative.

2.1 Proposed Action

ADOT&PF and ADF&G, in cooperation with EAFB, BLM and USFWS, plans to construct a new regional sport fish hatchery in Anchorage that would employ modern fish production techniques. The proposed site for the Anchorage Sport Fish Hatchery Project is immediately adjacent to the existing Elmendorf Fish Hatchery facility on EAFB property managed by the BLM (Figure 2-1–Proposed Action). As part of the Proposed Action, the lease boundary for the existing Elmendorf fish hatchery would be extended northward to accommodate the new hatchery. The existing lease boundary is about 8 acres and the proposed expanded lease property would be approximately 15 acres. The property is bordered by Post Road to the north, with the Alaska Railroad (ARRC) right-of-way and EAFB directly north of Post Road; Reeve Boulevard to the west; and Ship Creek to the south and east. The parcel is within Section 9, Township 13 North, Range 3 West, Seward Meridian, within the MOA.

The hatchery building would be situated on the site of the abandoned cooling pond once used by the EAFB power plant. The hatchery facility is being designed to maximize fish production and at the same time recycling production water to reduce overall water demand. The new hatchery facility would provide important improvements over the existing hatchery, and would be designed to use re-circulation technology that conserves most of the water that passes through each fish production tank. Water for the hatchery production would come from two existing wells (ADF&G wells #6 and #7). Well #8 may also be drilled, if necessary.

Fish Production Program: The first step in the hatchery development process was to establish the production program and general building requirements. The production objectives at the new sport fish hatchery include:

- The release of approximately 5.6 million fish annually (compared to the current release of 4 million).
- Approximately 37% of the fish released would be king salmon, 30% rainbow trout, and 24% silver salmon.
- The remaining production would be arctic grayling, arctic char, and lake trout.
- An on-site brood program would produce rainbow trout and arctic char eggs for this hatchery and for the new Ruth Burnett Sport Fish Hatchery in Fairbanks.
- The remaining eggs would be taken from adult salmon returning to the hatchery site and from wild stocks returning to remote sites.

Hatchery Building: The main hatchery building would be approximately 153,000 square feet (approximately 600 feet long and 250 feet wide), and would house three key areas – a production area, a broodstock area, and an administrative support area. The production area would support the following elements: incubation, production, quarantine, a feed room, laboratories, and a chemical room. The broodstock area would house the fish that are to be incubated, reared, and held as adults for egg production. The administrative support area would include offices, restrooms, a crew room, break room, garage, shop, electrical and mechanical rooms, a meeting room, a library/archives room, a loading dock, fish handling area, and a visitor lobby. The final hatchery floor plan layout is still underway and the size of the building could be slightly smaller.

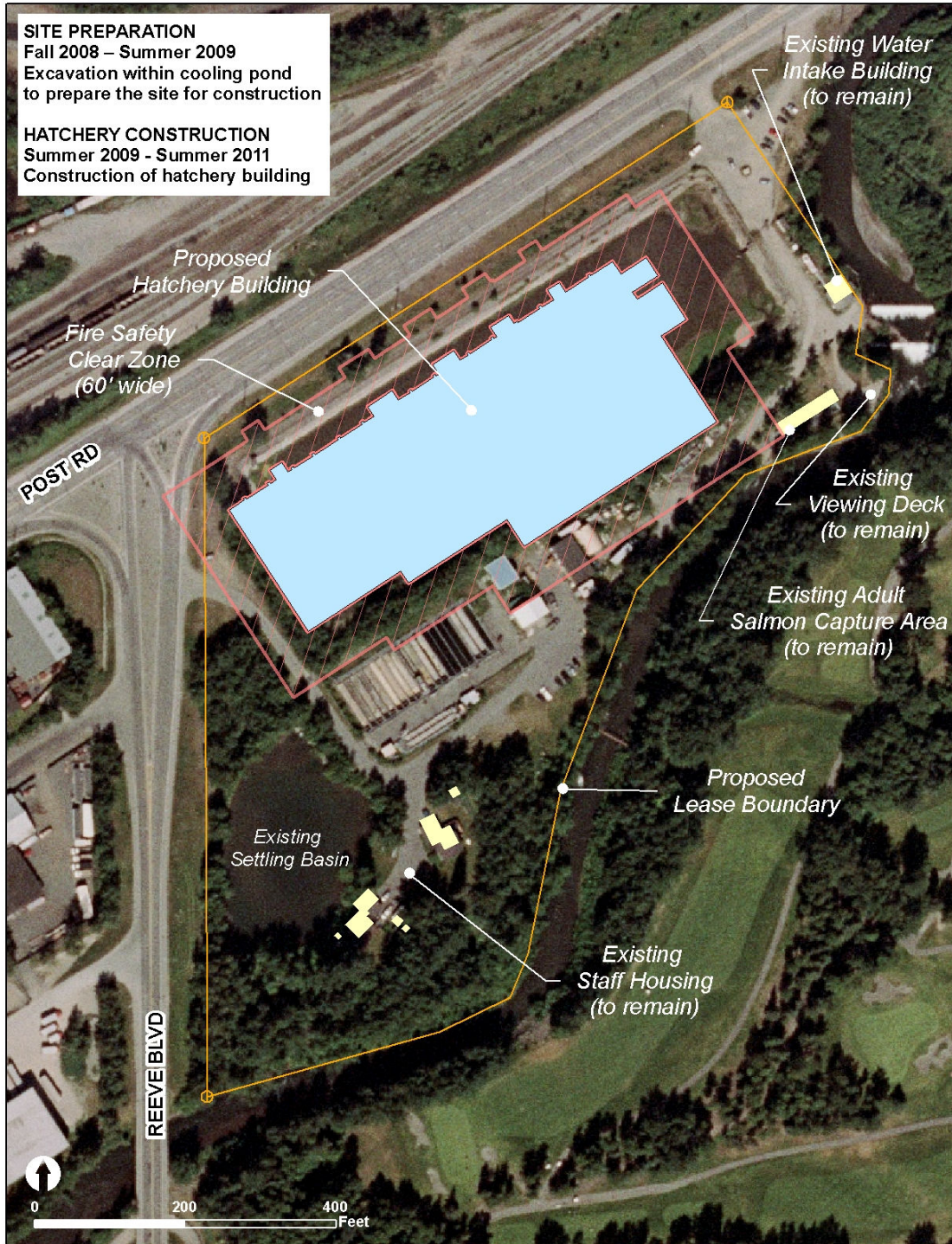


Figure 2-1: Proposed Action

Other associated facilities: The facility would also include associated out-buildings, some of which are existing buildings that would be refurbished and incorporated into the new project design. (Figure 2.1–Proposed Action) These components include two structures for staff housing, an adult capture raceway, a water intake building, and fenced storage. While some of the existing Elmendorf Fish Hatchery buildings would be retained, some of the other existing buildings would need to be demolished due to the footprint of the new hatchery building or for a required 60-foot wide fire safety clear zone around the building. The existing buildings that would be demolished include the cooling pond ‘vault’ building, a valve box structure associated with the cooling pond intake piping, the intake ‘vault’ building, the hatchery de-gasing building, the hatchery office and hatchery shop. Additionally, four more valve structures used to control water in and out of the cooling pond would be removed in summer of 2009. The clear zone would allow for a one-lane vehicle access road around the entire perimeter of the building.

Future Phase: ‘Campus Concept’ for possible Salmon Learning Center: Another component of the overall project is to reserve space for future facilities in accord with an overall hatchery site plan (“campus concept”). As part of this project, ADF&G intends to leave several acres of land open on the southwest side of the property that could provide the space for the MOA to construct a Salmon Learning Center, visitor parking, and a trail that could eventually connect to the Ship Creek Trail (Figure 2-2-Campus Concept) at a future date. These facilities are not a part of the proposed Anchorage Sport Fish Hatchery project and are not included in the cost estimate, but could be incorporated at a later date if other funding becomes available. ADF&G has been actively working with the MOA in the development of the salmon learning campus concept.

Should it be constructed, the primary feature of the Salmon Learning Center would be the central learning center building. The intended use of the building would be to educate visitors to Anchorage and local residents about the salmon life cycle, habitat, and other aquatic resource topics. The Salmon Learning Center could operate year round, with upwards of 120,000 visitors. Current preliminary design indicates parking would be needed for 8 buses and 150 automobiles. All access to the learning center would be off Reeve Boulevard to minimize impacts to Post Road traffic serving the EAFB. To serve the visitors that come to the site, a gift shop, café or coffee shop, and bookstore may be included. The classrooms and meeting rooms would be available for public use or rental. The addition of this revenue generating feature could be incorporated to offset expenses incurred in operating the learning center. The Salmon Learning Center would be subject to future design and funding sources. However, ADF&G has incorporated the concept into the hatchery site plan by leaving space open should funding become available in the future.

Construction and Project Schedule: The construction phasing of the project is key in the operation of the new hatchery. The new hatchery must be operational and producing fish before the old Elmendorf Fish Hatchery can be decommissioned and demolished. Construction would occur in a three-fold approach. The three-fold approach is site preparation, construction of the building, and then the decommissioning of the old hatchery.

Site preparation is expected to begin in the fall of 2008. Site preparation includes the following:

- Tree and brush removal;
- Abandoned power pole removal;
- Silt removal in the abandoned cooling pond;
- Asbestos removal;
- PCB containment.

Other related site preparation work includes temporary construction fencing; placing jersey barriers to protect the existing wells; silt fencing, as required; and erosion and pollution control, as required.

Final design began in the spring of 2008 and will finish in early 2009. Construction of the hatchery building would occur in the summer of 2009 through the summer of 2011. The fish hatchery would be commissioned to go 'on-line' from November 2010 through November 2011. The fish hatchery is expected to begin sending fish out for stocking in the spring of 2012. Decommissioning of the existing hatchery would occur in late 2011, after the last of the fish from the existing hatchery have been reared in it and are stocked.

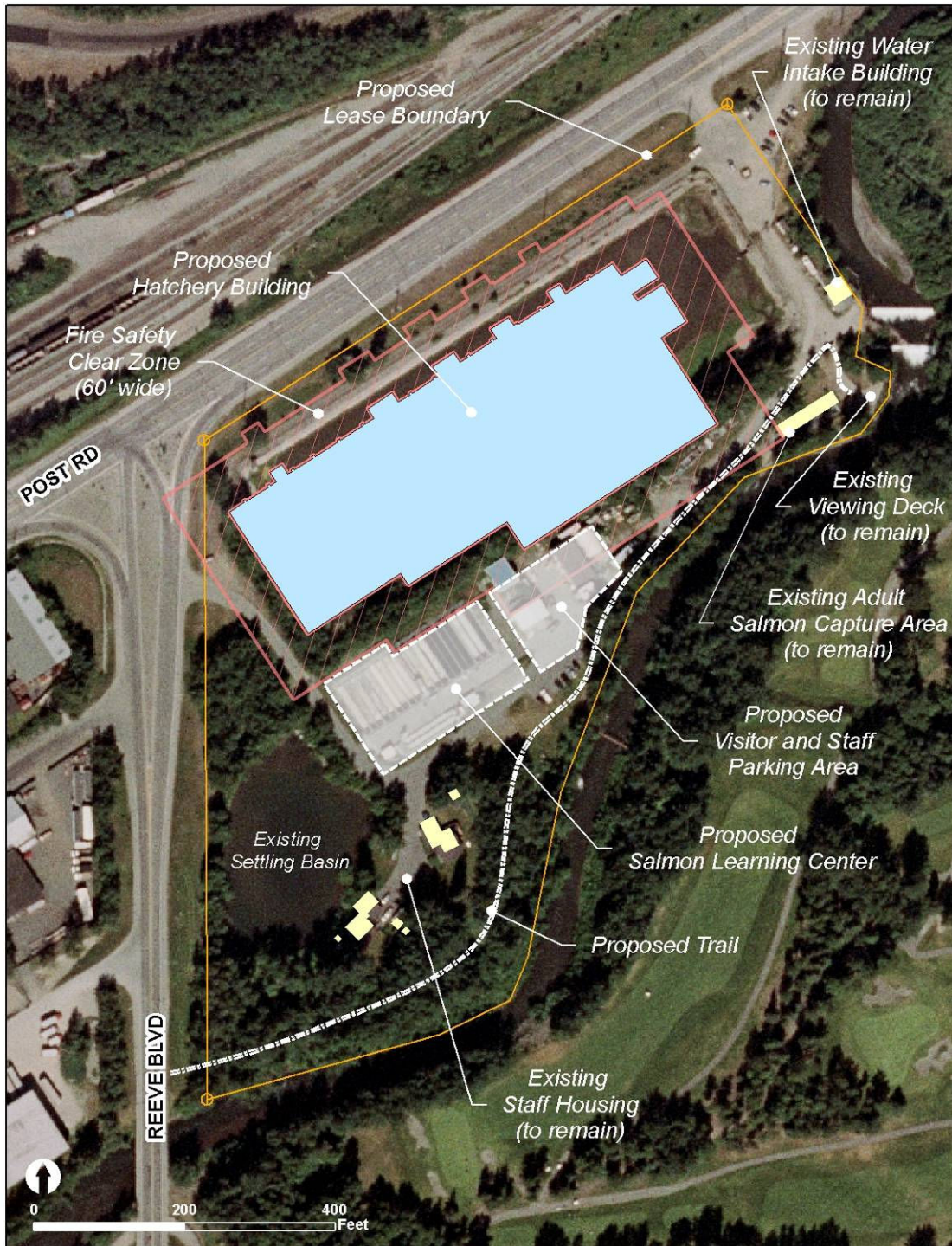


Figure 2-2: Campus Concept

2.2 Site Selection

2.2.1 Selection of Existing Elmendorf Fish Hatchery site as the preferred location

ADF&G, with assistance from ADOT&PF, undertook a site evaluation study in 2006 to determine a preferred location for a new regional area sport fish hatchery. ADF&G developed a list of criteria that they used to analyze locations. Each criterion was assigned a weight factor based on its relative importance in meeting overall goals established for the facility. The EAFB cooling pond site (the Proposed Action location) was eventually ranked as the preferred site because it most closely met the preferred site selection criteria.

Water availability was a crucial component in the siting of the new hatchery facility location. The initial estimate of the water supply required for hatchery operation was approximately 3,000 gallons per minute (gpm). Aside from requiring sufficient quantities of water from the site, it was also preferable that the quality of the water be such that extensive treatment would not be required prior to use. Results of test wells on the Proposed Action site demonstrated availability of the targeted flow rate of 3,000 gpm. The location also has two existing, permitted hatchery effluent outfalls to Ship Creek that could be used by the new hatchery. Water rights within the Anchorage Bowl remain subject to a Federal Reserved Water Right which grants the Department of Defense (DoD) a right of prior appropriation for water necessary to operate the EAFB and Fort Richardson military installations.

2.2.2 Site Selection Criteria

ADF&G considered approximately two dozen criteria during the site selection process. Three imperative criteria for the hatchery site evaluation were having:

- A high quality (groundwater based) water supply in sufficient quantity to meet hatchery needs.
- A practical effluent discharge location.
- Access to and from the site for the efficient movement of materials, fish, staff, vendors and the public.

At the time of the site selection analysis, if a site did not have sufficient quality and quantity of water, if effluent discharge was highly problematic, or if access was overly restricted, these were considered fatal flaws and the site would be eliminated from further consideration.

Other criteria considered for the hatchery site location included the following:

- Central to stocking
- Proximity to public and vendors
- Potential for natural disaster
- Cost differential to operate facility
- Site has sufficient room to allow for future expansions
- Partnering with local community
- Public support
- Domestic water and wastewater
- Natural gas, electricity, phone/internet
- Stability of site use agreement
- Restrictions on use of site
- Demolition required
- Site preparation
- Existing facilities on site which can be utilized
- Risk to current fish production
- Risk of constructing on existing sites
- Water rights
- Temperature profile of water
- Construction and operational cost
- Site has existing housing

2.2.3 Alternative Site Locations Considered but Eliminated from Further Consideration

Besides the Elmendorf power plant cooling pond location (Proposed Action), three other potential sites were evaluated for the location of a new fish hatchery, as described below.

1. **University of Alaska Fairbanks (UAF) Experimental Farm:** This site is located at the UAF Experimental Farm located between Palmer and Wasilla off the Glenn Highway. Access to the site is off Trunk Road just north of the Glenn Highway and Trunk Road interchange. The site evaluated is next to the farm headquarters. This location was removed from further consideration because of the potential of insufficient water availability and effluent discharge issues. This option would not have met the need for ensuring a stable water supply.
2. **Fort Richardson Hatchery:** This site is located on Fort Richardson off of Arctic Valley Road adjacent to Ship Creek. Access to the site is through the main Fort Richardson gate on the Glenn Highway. The site consists of the existing Fort Richardson fish hatchery facilities and property located adjacent to the hatchery. This site is within the secured perimeter of the Fort Richardson Army Base. Even though water and utility infrastructure were thought to be sufficient, limited access led to this option scoring poorly with regard to project needs to improve operational efficiencies and provide expanded fisheries education opportunities.
3. **Plant Materials Center:** The site is located in Butte, near Palmer, at the Alaska Department of Natural Resources (DNR) Plant Materials Center. Access to the site is off of the Old Glenn Highway and Bodenbug Butte Loop Road in Butte. The site evaluated is located near the rear of the property. This site did not meet the identified needs due to flooding concerns and a lack of information regarding groundwater resources.

Using the criteria listed in Section 2.2.2, the site evaluation process narrowed the potential sites to two locations – the Proposed Action location and the UAF Experimental Farm location near Palmer. Additional information was collected on the two sites, before selecting the preferred location (Table 2-1–Refined Site Selection Factors). For additional information regarding site selection, see the Site Development Report (ADF&G 2008c).

Table 2-1: Refined Site Selection Factors

	Proposed Action Location (EAFB Cooling Pond Site)	UAF Experimental Farm Location
Water Resources	At this site, ADF&G has two existing permitted hatchery effluent outfalls to Ship Creek that could be used by the new hatchery. Water resources in the Anchorage Bowl aquifer are subject to Federal Reserve water rights.	Water quality is unknown at this location. Sufficient ground water was unable to be located; this is a fatal flaw. The location is not located near an outfall for effluent from the hatchery. Obtaining a permit to discharge hatchery effluent into Spring Creek was uncertain.
Access	Access, via Post Road and Reeve Boulevard, is good.	A new access road approximately 1,600 feet would need to be constructed.
Utilities	Utilities are relatively close.	Utilities are further away compared to the EAFB site.
Historic Properties	A preliminary research found one AHRS resource in the vicinity.	A preliminary research found three AHRS resources in the vicinity.
Property Ownership	The site is owned by the EAFB and managed by the BLM. ADF&G is leasing the land adjacent to the site, which would require an extension of the current lease boundary.	The site is owned by the University of Alaska.
Contaminated Sites	At the time of the site selection analysis, a preliminary review of records found no contaminated site records for the location.	A preliminary data search found several contaminated site and leaking underground storage tank records associated with the UAF farm facility.

Source: ADF&G 2008c (*Site Development Report*).

Based on the site selection analysis, all locations, except for the EAFB Cooling Pond location, one did not meet the site selection criteria and therefore were not carried forward for further consideration in the EA.

2.3 No Action Alternative

Under the No Action Alternative, a new sport fish hatchery would not be built and the existing hatchery facilities on Elmendorf and Fort Richardson would continue to be the sole source of sport fish production for Southcentral Alaska. (See Figure 2-3–No Action Alternative). However, to address the identified deficiencies in fish production and facility technology, massive upgrades would be required to the existing facilities. Water quality and quantity at the existing Elmendorf Hatchery would remain inadequate. Because of the water supply, fish stocks would be prone to more disease and pathogens. Existing facilities would continue to produce insufficient enough stocking fish and consequently, pressure would continue on the wild stocks. Public viewing and outreach opportunities would not have the ability to be enhanced.

Under the No Action Alternative, the existing structures at the Elmendorf fish hatchery would remain: a shop, a water intake building, an operations building that includes offices and a small visitor area, two hatchery houses, an oxygen generation building, a head box/aeration building, a generator building, outdoor raceways, and all associated pipelines.

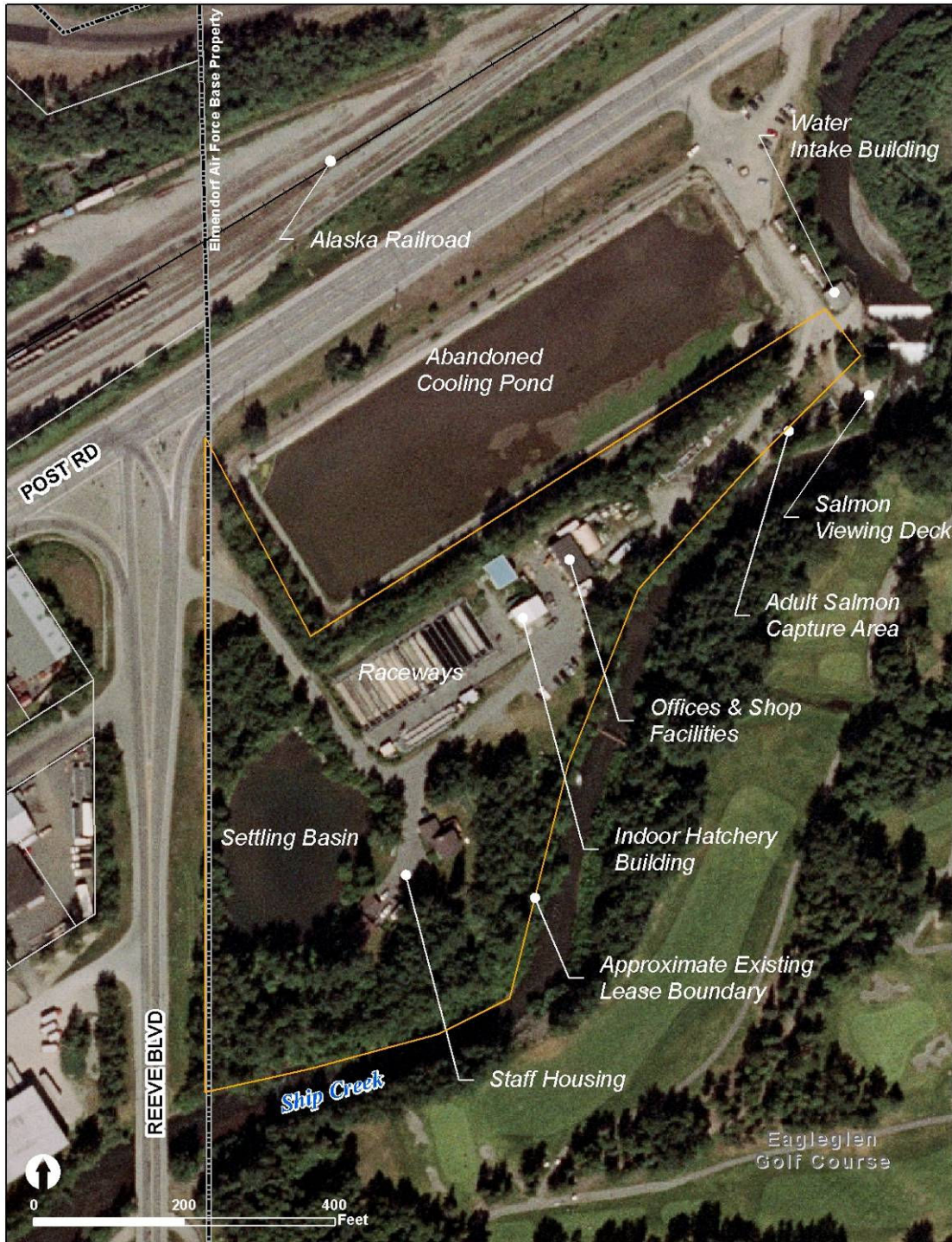


Figure 2-3: No Action Alternative (Existing Conditions)

3.0 AFFECTED ENVIRONMENT

This chapter describes the environment to be affected by the Proposed Action and the No Action Alternative.

3.1 BLM'S 15 Critical Elements of the Human Environment

BLM requires 15 Critical Elements to be analyzed in EAs. Critical elements are subject to requirements specified in statute, regulations, or executive orders. Those elements or resources marked as "not applicable or present" in Table 3-1 are either not present within the project area or are resources that have been analyzed but are not applicable for further analysis. Elements or resources marked "applicable or present" are addressed in further detail in this EA.

Table 3-1: BLM's 15 Critical Elements and Other Elements of the Human Environment

Resource	Not Applicable or Present	Applicable or Present	Addressed in EA
BLM's 15 Critical Elements of the Human Environment			
Air Quality		✓	✓
Areas of Critical Environmental Concern	✓		
Cultural Resources		✓	✓
Environmental Justice	✓		
Floodplains	✓		
Hazardous or Solid Wastes		✓	✓
Invasive, Non-native species		✓	✓
Native American Religious Concerns	✓		
Prime or Unique Farmlands	✓		
Threatened or Endangered Species	✓		
Water Quality (Surface and Ground)		✓	✓
Wetlands/ Riparian Zones		✓	✓
Wild and Scenic Rivers	✓		
Wilderness	✓		
ANILCA §810 Subsistence *	✓		
Other Elements of the Affected Environment			
Wildlife		✓	✓
Fish and Essential Fish Habitat		✓	✓
Coastal Zone Resources		✓	✓
Transportation		✓	✓
Utilities		✓	✓
Visual		✓	✓
Air Installation Compatible Use Zone/ Land Use **	✓		

* ANILCA is abbreviation for the Alaska National Interest Lands Conservation Act.

** This is an affected environment element considered by the Department of the Air Force, which is an analysis of noise, accident potential, and encroachment.

3.1.1 Elements or Resources Not Applicable or Present

Areas of Critical Concern: BLM sets aside 'areas of critical environmental concern for environmental reasons; there are none in the Anchorage Bowl (James Moore, pers. comm. 2008).

Environmental Justice: The project area and adjacent land is primarily industrial and commercial, with the nearest residential areas approximately one-third of a mile away from the proposed hatchery. Due to the proposed project being on military land and distanced from residential areas, the potential environmental justice populations, minority or low-income, were determined to reside outside the project area.

Floodplains: The project area is located east of Municipal-mapped floodplains. The MOA flood hazard administrator said an MOA flood hazard permit is not required (Jeff Urbanus, pers. comm. 2008). As part of this project, a hydraulic model of Ship Creek upstream of Reeve Boulevard was prepared to gain a better understanding of flood hazards in the project area. The model has been tied to the existing flood zones at Reeve Boulevard and evaluates the same flood events using the same flood flows. This modeling is the same model as is used and recommended by the Federal Emergency Management Agency (FEMA) to delineate flood hazard zones.

Native American Religious Concerns: BLM conducts government to government consultation with federally-recognized tribes in the case where a tribe has a direct interest in the land (James Moore, pers. comm. 2008). According to James Moore (BLM), there is no federally-recognized tribe that has a direct interest in the land.

Prime or Unique Farmlands: The Anchorage Bowl does not currently support any agricultural land uses under the classification of prime or unique farmlands.

Threatened or Endangered Species: There are no federally listed threatened or endangered species that occur in the project area (Greg Balogh, pers. comm. 2008). The Cook Inlet beluga whale is a candidate species which may periodically rely on fish populations originating from Ship Creek.

Wild and Scenic Rivers: There are no wild and scenic rivers in the project area.

Wilderness: There is no designated wilderness in the project area.

ANILCA §810 Subsistence: The lands are Federal Public Lands within the meaning of ANILCA 102(3), fall under the jurisdiction of the Federal Subsistence Board, and are subject to the Subsistence Management Regulations for the Harvest of and Wildlife, Fish and Shellfish on Federal Public Lands in Alaska. Per those regulations: "The Fort Richardson and EAFB Management Areas consisting of the Fort Richardson and Elmendorf military reservations, are closed to subsistence taking of wildlife." The Proposed Action would not significantly restrict Federal subsistence uses, decrease the abundance of Federal subsistence resources, alter the distribution of Federal subsistence resources, or limit qualified Federal subsistence user access from currently existing conditions. No further analysis is necessary at this time (James Moore, pers. comm. 2008).

3.2 Elements or Resources Present or Applicable

3.2.1 Air Quality

The project area is located adjacent to, but outside of the northern boundary of Anchorage's carbon monoxide maintenance area. Typically a general conformity review for air quality impacts would be conducted for any federal action not addressed by the transportation conformity rule occurring within a carbon monoxide maintenance area (40 CFR Part 93, Subpart A, and 18 AAC 50.725). However, since the project area is outside of the air quality maintenance area boundary, general conformity does not apply and a subsequent review for conformity is not needed.

Nonetheless, the EAFB requested that some estimate of emissions from the project be calculated. See Section 4.1.1.

3.2.2 Cultural Resources

As a federally funded undertaking, the Proposed Action is subject to the review process of Section 106 of the National Historic Preservation Act (36 CFR 800) and the Alaska Historic Preservation Act. A cultural resources survey of the project area was conducted between May 26 and June 15, 2008 (Belvin 2008), when the land was snow-free. The Elmendorf hatchery was originally constructed in 1965 to accommodate increasing demands of military personnel for sport fishing in Southcentral and the Interior lakes of Alaska. Working in cooperation with the Fort Richardson Hatchery, three “wooden ponds” at Elmendorf provided for rearing of Swanson River trout fingerlings transferred as captive broodstock from the Fort Richardson hatchery. The present facility was constructed in 1976 and consists of 21, 10-foot by 60-foot concrete and/or aluminum raceways (rearing ponds); two of which are immediately adjacent to Ship Creek for holding of adult Chinook salmon of Ship Creek and coho salmon from the Susitna River. Beginning in 2005, the Elmendorf hatchery began providing catchable Arctic Char and King Salmon for winter ice fishing (ADF&G 2008d).

There are six documented cultural resources sites located one-half mile from the project area, five of which are Alaska Heritage Resources (AHRS) listed historic properties: ANC-00929, ANC-00931, ANC-00934, ANC-00937, and ANC-01049 (Belvin 2008). A single Dena’ina site D-15.78 has been identified northeast of the project area on the north side of Ship Creek (Braund 2005). The five historic properties are documented as having been built between 1943 and 1945 and are associated with WWII and the development of EAFB. Three of the five AHRS sites (ANC-00929, ANC-00931, and ANC-00937) are eligible for listing on the National Register of Historic Places (Braund 2005). The National Register-eligible sites consist of a supply warehouse for the Alaska Air Depot (AAD) (ANC-00929); an AAD warehouse and diesel repair shop (ANC-00931); and an aircraft hanger (ANC-00937) that once served as a venue for President Nixon’s State of the Union and Emperor Hirohito’s speech in 1971. Site D-15.78 is recognized by the Dena’ina people as a hereditary fish camp site (Dgheyaytnu) at Ship Creek (Fall, Davis, and the Dena’ina Team 2003).

Field observations indicate that much of the proposed area of potential effect within the project area has been previously disturbed. Old clearing and grubbing push piles, as well as previous ground leveling activities were observed during the field reconnaissance. Other field observations include active mechanical clearing of the southwest corner, post excavation and new fence post installation along the south edge of the existing residences, and vegetation removal of felled trees and dam scrub from beaver activities along Ship Creek (Belvin 2008).

3.2.3 Hazardous or Solid Wastes

A Phase I Environmental Site Assessment (ESA) of the proposed Anchorage Hatchery site was conducted (Shannon & Wilson, 2007) to identify known or potential contamination at and near the project area. The site assessment included review of land ownership records, historic aerial photographs, public utility records, and regulatory agency databases to identify current and historic activities in the property vicinity.

Potential environmental concerns documented in the Phase I ESA included:

- A JP-4 jet fuel release that occurred north of the cooling pond in 1964;
- Former buildings at the site that predated the availability of natural gas or public sanitary sewer system service;

- Potential presence of polychlorinated biphenyls (PCBs) associated with the former power plant; and
- Impacted groundwater on EAFB.

Soil samples from geotechnical borings, sediment samples from the cooling and settlement ponds, and water samples from an on-site seep and from temporary groundwater monitoring wells were collected and analyzed for petroleum hydrocarbons and PCBs. Concentrations of diesel-range organics greater than Alaska Department of Environmental Conservation (ADEC)-established cleanup levels were identified in soil samples from Boring B25, surface soil samples adjacent to Boring B26, and groundwater from temporary well B25MW, which was installed in Boring B25. Boring B25 (and associated temporary well B25MW) was located off the north corner of the cooling pond. Boring B26 was located between Reeve Boulevard and the northwest side of the cooling pond.

In addition, PCBs were detected in one sediment sample collected near the northeast corner of the cooling pond. The PCB concentration (930 ug/Kg of Aroclor-1254), although detected, is below the ADEC cleanup limit. Because of the identification of PCBs at the site, ADOT&PF requested further characterization of the site. A sediment characterization program was begun in September 2007 to further analyze cooling pond and effluent pond sediments, and the results of this work are pending. Results of the characterization program will be used in development of the project's schematic design work.

Non-friable asbestos mastic was detected in the abandoned cooling pond liner during site inspection in July 2008.

3.2.4 Invasive/Non-native Species

Invasive Species Executive Order (EO) 13112 (February 3, 1999) defines invasive species as "an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health."

EO 13112 requires all federal agencies to prevent the introduction of invasive species, provide for their control, and minimize their impacts. The Air Force has issued guidance addressing invasive species management within their *Integrated Natural Resource Management Plan (INRMP)* (2004). This report requires that each installation's Integrated Natural Resource Plan (EAFB 2007) include a current assessment of the presence and extent of invasive species on the installation. EAFB recently conducted a survey of terrestrial invasive plant species as identified in the 2006 INRMP revision and documented in the EAFB Invasive Terrestrial Plan Species Survey Technical Report and Management Work Plan (HDR Alaska 2007). The survey, which consisted of more than 1,400 acres at 94 sites and 31.2 miles of roads and trails, recorded the presence of 67 invasive plant species. Of the 67 species recorded, only 29 had been previously recorded by EAFB, eleven species were previously unrecorded for the Anchorage area, and three species were previously unrecorded for Southcentral Alaska. Based on survey results, invasive species management recommendations were prioritized by comparing the species' invasiveness rank to the frequency of occurrence.

The proposed project site currently houses an existing hatchery and a former power plant cooling pond. The site has been previously disturbed. An inventory of invasive plant species has not been done for the immediate project area. The *Invasive Terrestrial Plant Species Survey* did however sample several sites within proximity to the fish hatchery project area across Ship Creek on Eagle Glen Golf Course. Twenty two different species of invasive weeds were recorded on or near the golf course. Many of these were recorded as single instances with a small area of infestation.

The common names for the most frequently occurring species recorded are as follow: larger mouse-eared chickweed, common plantain, Kentucky bluegrass, common chickweed, common dandelion, white clover, and bird vetch (a.k.a. dog pea).

3.2.5 Water Quality

Ship Creek Watershed: The project is located in the lower section of the Ship Creek watershed within the MOA. The Ship Creek watershed is approximately 117 square miles and contains areas of Chugach State Park, Elmendorf Air Force Base, and Fort Richardson Army Base. The headwaters of Ship Creek originate above treeline in the Chugach Mountains at Ship Lake (elev. 2,700 feet) and the main channel flows 24 miles generally northwest and west until discharging into Knik Arm of the upper Cook Inlet near the Port of Anchorage.

The headwater channels flow near bedrock on glacially-scoured valleys upstream of the Glenn Highway. Near the highway, Ship Creek flows over an alluvial apron at the base of the Chugach Mountains, and flows entirely through glacial and fluvial alluvium from the Glenn Highway to Knik Arm. The creek exchanges water with the surrounding shallow alluvial aquifer throughout the lower 10 miles. A deeper aquifer is separated from the shallow aquifer in the project area by the Bootlegger Cover Formation – a wedge-shaped clay layer that is thickest near Knik Arm and thins to nothing at the base of the Chugach Mountains. This deeper aquifer is recharged in the upper reaches of Ship Creek and surrounding watersheds, and to a lesser degree throughout Anchorage by infiltration of precipitation through the surficial deposits. In the lowland areas of the coastal plain, ground water discharges into streams, springs, seeps, and wetlands, where it runs off, evaporates, or is transpired by plants. Much of the deep aquifer discharges directly into Cook Inlet (Moran and Galloway 2006).

For the most part, the upper 15 miles of Ship Creek (upstream of Glenn Highway) are pristine and undeveloped. The lower Ship Creek, however, has been greatly influenced by the adjacent large military bases and city of Anchorage along its banks. Water quality, quantity, and aquatic habitat have all been negatively impacted by the surrounding land uses. Encroachment from railroad construction beginning in the 1920s and subsequent industrial development since the 1950s has greatly reduced the amount of riparian habitat and altered the creek's morphology. Portions of Lower Ship Creek have been channelized and vegetative riparian buffers have been removed. Three dams exist on the lower 10 miles of the creek.

By 1969, pumping from high-capacity wells lowered water levels more than 50 feet in the lower part of Ship Creek basin, resulting in reduced Ship Creek streamflow, and by 10 feet or more over an area of 40 square miles (Miller and Whitehead 1999). Because of this, the MOA developed surface water sources for human use, allowing groundwater levels to partially recover.

Water Quality: In 1990, the segment of Ship Creek from the Glenn Highway downstream to the mouth was listed by ADEC as a Category 5/Section 303(d) impaired waterbody and listed for non-attainment of the Fecal Coliform Bacteria and Petroleum Hydrocarbons, Oil & Grease standards (ADEC 2006). Fecal coliform monitoring data provided by the MOA to ADEC from 1989-1994 recorded several exceedances of state water quality criteria for drinking water and contact recreation. Fecal coliform data indicate that Ship Creek does not meet the applicable state water quality standards (ADEC 2004). Higher fecal coliform concentrations and more frequent exceedances of water quality criteria occur during summer months and are attributed to increased stormwater runoff and source activity (e.g., pets and wildlife). Levels of fecal coliform are lowest during winter months and increase during spring months in relation to increased urban runoff during spring thaw. Fecal coliform bacteria are found in plants and industrial waste that are not contaminated with animal feces, however, they are most abundant in the intestines of warm-

blooded animals, and are thus used as a marker for potential fecal contamination and associated harmful organisms such as *E. coli*.

Pursuant to Section 303(d)(1)(C) of the Clean Water Act and the U.S. Environmental Protection Agency's (EPA) implementing regulations (40 CFR Part 130), once a waterbody has been placed on the Section 303(d) list, a Total Maximum Daily Load (TMDL) recovery plan is required for the achievement of water quality standards unless subsequent data shows the waterbody is no longer impaired or other measures are taken to restore the waterbody (ADEC 2006). A TMDL for fecal coliform bacteria impairment on Ship Creek was developed and approved by EPA in March 2004, placing the waterbody in Category 4a for fecal coliform bacteria. Ship Creek remains listed as Category 5/Section 303(d) for petroleum product impairment. According to ADEC, the EPA has a consent decree with the ARRC Terminal Reserve which involves water quality monitoring for petroleum. Results from ARRC's monitoring will help ADEC to determine recovery actions for Ship Creek, including the implementation of a TMDL or similar recovery plan.

The current Elmendorf fish hatchery discharges up to 17 cubic feet per second (cfs) of effluent into Ship Creek, 2.5 miles upstream from Knik Arm. Waste discharged from the hatchery first goes into a settling basin to remove solids. The outfall of the effluent basin is monitored for water quality monthly, and meets permitted effluent standards for settleable solids (0.1 ml/L monthly average, 0.2 ml/L daily maximum); pH (6.5-8.5); temperature (less than 13 C); and total suspended solids (5 mg/L monthly average, 15 mg/L daily maximum).

Fish hatchery effluent does not contain petroleum hydrocarbons, grease, or oil. Hatchery effluent is not listed as a potential source of fecal coliform in the Section 303 (d) document or in the TMDL, as the bacteria are associated with warm-blooded animals rather than fish. Grab samples taken at or near the outlet of the existing hatchery from 3/16/2000 to 6/1/2000 and on 9/4/1998 did not exceed State drinking water standards for fecal coliform (monthly average of 10 Fecal Coliform/100 ml, no more than 10% over 40 Fecal Coliform/100ml), while samples taken between 8/20/2002 and 12/19/2002 near the hatchery outlet did exceed the standard by 17% (ADEC 2004). However, samples taken during the same time period further downstream of the hatchery exceeded drinking water standards by 83%, indicating that the hatchery is not a primary source of fecal coliform. If the hatchery were a consistent source of fecal coliform, year-round grab samples would show elevated levels.

Surface Water and Water Volume: The amount of water available at any given time in Ship Creek varies significantly due to seasonal flow fluctuations, consumptive uses, and by the influence of groundwater systems and disturbances within the streambed (ADEC 2004). The U.S. Geological Survey (USGS) has recorded stream flow data for Ship Creek at five different locations for various periods of time. A long-term gage (USGS 15276000) has operated at river mile 10 (0.2 miles below the military/MOA water supply dam) since 1949. A short-term gage (USGS 15276320) operated at the fish hatchery site from 10/2002 through 9/2005. The two sites were roughly comparable in monthly average flow from 2002-2005.

The long-term gage indicates that the highest monthly average flows have historically been in June and July (451 and 299 cfs long-term average, respectively), while the lowest have been in February and March (24 and 18 cfs long-term average, respectively). The lowest monthly average flow recorded at the fish hatchery was 28 cfs in February of 2005.

Both gaging stations are below the main point of withdrawal for municipal water. Ship Creek is operated as a summer back-up water supply, and up to 37 cfs may be withdrawn during periods of high demand.

The current hatchery withdraws up to 17 cfs of surface water from Ship Creek at the Elmendorf Power Plant dam, and discharges it approximately 1,600 feet downstream at the outlet of the settling basin. This withdrawal is restricted to about 4 summer months when total stream flow is more than 100 cfs. During the other 8 months, the hatchery uses about 3000 gpm of deep groundwater from two new wells, and 250 gpm of groundwater from shallow wells. Most of the deep groundwater comes from the Ship Creek watershed near the base of the Chugach Mountains. Therefore, current hatchery operations remove about 5.3 cfs from the segment of Ship Creek between the Chugach Mountains and the fish hatchery during the winter months, and 17 cfs from the segment between the power plant dam and hatchery during the summer.

Water Temperature: The water temperature of Ship Creek fluctuates widely with seasonal changes. Recent USGS temperature data from 2004 to 2006 shows peak temperatures occur during summer months and are coldest in January or February. Monthly average temperatures ranged from 12.3° Celcius (C) in June 2004 to -0.1° C in February 2006.

ADEC has temperature limits imposed on effluents discharged to fresh waterbodies, with the most stringent temperature limits of 13° C on waters containing spawning and egg and fry incubation areas, and a limit of 15° C on migration routes and rearing areas (18 AAC 70). At any time, effluent discharges cannot exceed 20° C. These specifications apply to hatchery effluent outfall to Ship Creek. The current hatchery discharges up to 11 cfs of 4° C ground water. This likely warms creek water during the coldest, lowest flow periods, but does not exceed ADEC limits.

Ground Water: The existing hatchery operations use about 250 gpm annually from three wells that draw groundwater from a shallow aquifer. Because these wells are removing water from Ship Creek alluvium, an equivalent amount of water to the pumping rate is removed from the local stream (250 gpm equals about 0.6 cfs). The current wells have been determined as inadequate to supply the amount of water needed for the proposed hatchery under the Proposed Action. Therefore, two new high-production wells were drilled and developed in 2006 and 2007 (wells No. 6 and No. 7). These wells access the deeper aquifer below the Bootlegger Cove Formation confining layer. Currently, the hatchery is pumping a combined 3,000 gpm of groundwater from these deep wells. Groundwater modeling results indicate that about 80% of the water supplied to the fish hatchery wells originates from Ship Creek near the base of the Chugach Mountains (Shannon and Wilson 2007). The remaining water comes from other sources; other rivers, bedrock seepage, and a reduction of groundwater discharging into Cook Inlet. The model results indicate approximately 2,400 gpm (5 cfs) of the water flowing to hatchery wells No. 6 and No. 7 (during peak consumption) comes from Ship Creek and other nearby rivers. All of this water is returned to the creek at the outfall of the settling basin.

3.2.6 Wetlands/ Riparian Zones

According to the MOA Wetlands Atlas (2004) there are no wetlands within the project area. However, communication with the US Army Corps of Engineers (USACE) Regulatory Division regarding the project led the USACE to claim jurisdiction over the effluent settling basin and outlet channel to Ship Creek (Ryan Winn, pers. comm. 2007). The Corps claimed no jurisdiction over the cooling water intake pond (Melissa Heuer, pers. comm. 2007).

3.2.7 Wildlife

There are no federally listed species under the Endangered Species Act in the project area. However, the rusty blackbird is identified by the Alaska Boreal Partners in Flight and the 2007

Audubon Watchlist as a priority species in the central and west/southwestern regions of the state due to their decreasing population (Hannah 2004; National Audubon Society 2008). The Rusty blackbird has been documented in the project area near the Chugach Electric Association dam in shrubby habitat adjacent to Ship Creek (Scher 1989).

The Bald Eagle is a year-round resident of the Anchorage bowl. Bald eagles are not listed in Alaska nor is it a candidate for listing as threatened or endangered, but it is federally protected in Alaska under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. No Bald Eagle nests have been identified within the immediate vicinity of the proposed project (Frances Mann, pers. comm. 2008).

Birds: The Ship Creek riparian corridor provides habitat for a variety of bird species including gulls, shorebirds, waterfowl, raptors and passerines. During most winters, there is open water in the project area that attracts waterbirds and bald eagles. The riparian corridor of Ship Creek and willow shrub thickets in the project area provide nesting habitat for a variety of songbirds. In the summer and fall, gulls, bald eagles and mergansers gather at Ship Creek to feed on spawning salmon. Mew gulls, herring, and Bonaparte's gulls are common around the hatchery facilities during summer and fall.

Mallards, American wigeon, Northern pintail, Barrow's goldeneye, and green winged teal are the most common waterfowl that occur in the Ship Creek drainage and the Elmendorf hatchery settling basin and cooling pond. Common merganser and Barrow's goldeneye are occasional winter visitors in the open water of the settling basin. Mallards overwinter in Ship Creek and other open bodies of water in the project area.

Passerines are common in the upland wooded areas and riparian corridor of Ship Creek. The most common passerines nesting in the area include American robin, yellow-rumped warbler, dark-eyed junco, white-crowned sparrow, savannah sparrow, violet-green swallow, northern waterthrush, alder flycatcher and yellow warbler. Common year-round residents in the project area include common ravens, boreal and black-capped chickadee, black-billed magpie, and common redpoll. American dippers are a year-round resident in the project area and have nested on several bridges within the Eagle Glenn golf course and on the Chugach Electric Association dam in previous years. Belted kingfishers are a summer resident in the project area which preys on fish in the settling basin and Ship Creek. (Herman Griese, pers. comm. 2008).

Shorebirds are attracted to the existing cooling pond to feed during spring and fall migration. The most abundant species include greater and lesser yellowlegs, Wilson's snipe, Spotted sandpipers, semi-palmated plovers, and western sandpiper. Killdeer and solitary sandpiper have been observed feeding in the cooling pond.

Mammals: The site of the Proposed Action is in an area already disturbed. The surrounding area supports a variety of animal species. Mammal habitat in the project area is limited to the riparian corridor of Ship Creek and adjacent uplands. Coyotes, red fox, and moose occasionally travel along the riparian and wooded upland areas of Ship Creek but are mainly confined to the areas upstream of the Chugach Electric Association dam. Black and brown bears travel the riparian corridor and in a recent study by ADF&G (Sean Farley, pers. comm. 2008), brown bears were observed along Ship Creek when salmon were abundant, presumably feeding on them. Small mammals that may occur in the project area include snowshoe hare, beaver, red squirrel, northern redback vole, common shrew, muskrat, mink and short-tailed weasel. Beavers can be found in Ship Creek and the cooling pond and settling basin associated with the hatchery. Muskrats and river otter are uncommon, but are occasionally observed in Ship Creek and the hatchery ponds.

3.2.8 **Fish and Essential Fish Habitat**

Essential fish habitat: Essential fish habitat (EFH) is defined under the Magnuson-Stevens Fishery and Conservation Management Act (PL 94 265), as amended by the Sustainable Fisheries Act of 1996 (PL 104 267), as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” EFH designations emphasize the importance of habitat protection to healthy fisheries and serve to protect and conserve the habitat of federally managed marine, estuarine, and anadromous finfish as well as certain mollusks and crustaceans. Under the definition of EFH, necessary habitat is that which is required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem.

National Marine Fisheries Service (NOAA Fisheries) is responsible for designating EFH. In the case of anadromous fish streams (principally salmon), NOAA Fisheries has designated the anadromous fish maps prepared by ADF&G as the definition of EFH. Ship Creek (ADF&G No. 247 50 10060) is listed by the ADF&G as an anadromous stream. According to ADF&G (2008d), Ship Creek is EFH for four species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), chum (*O. keta*), and pink (*O. gorbuscha*) salmon. However, only chinook and coho salmon are documented to use the creek for juvenile rearing (Johnson and Weiss 2007).

The Elmendorf Hatchery produces Chinook and coho salmon for release around south central Alaska. A biological escapement goal of 6,000 to 9,000 adult Chinook salmon has been set to ensure a viable sport fishery in Ship Creek. Approximately 315,000 thermally marked Chinook salmon smolt and 240,000 coho salmon smolt are released into Ship Creek annually (ADF&G 2007a). Escapement counts are determined annually from a stream survey conducted between the Elmendorf dam and the Chugach Power Plant dam. The average escapement (including broodstock collected by the hatchery) for 2001 – 2005 was 1,838 for Chinook salmon and 1,947 for coho salmon (Dan Bosch, pers. comm. 2008). In 2006, statewide harvest survey information estimated that sport fishers on Ship Creek harvested 3,060 Chinook salmon and 8,079 coho salmon (ADF&G 2008e). From 1995-2005, the annual estimate of harvest for Chinook salmon was 3,716 and 10,754 for Coho salmon (Dan Bosch, pers. comm. 2008).

Each year, eggs from both Chinook and coho adults are harvested by ADF&G and used for hatchery production of smolts, which are subsequently released into Ship Creek. As a result, both stocks are enhanced in large part, if not completely, by the ADF&G hatchery stocking program. Coho and chinook smolt typically out-migrate in the spring. Chinook adults are present in Ship Creek from late May through mid-July, while coho adults are present from mid-July through September.

Both coho and Chinook salmon likely spawn in Ship Creek. On average, more Chinook and coho return to the hatchery than are used for broodstock. Many of these excess hatchery fish spawn in Ship Creek. The Chinook and coho that spawn in Ship Creek are hatchery progeny, or the result of hatchery fish spawning naturally in the creek (Dan Bosch, pers. comm. 2008). Hatchery-released coho salmon from the Elmendorf Hatchery likely constitute the majority of coho in Ship Creek. Chum salmon are known to use Ship Creek. While spawning is not documented, it is suspected. Pink salmon have been documented in Ship Creek, and spawning is suspected, although in low numbers.

Resident Fish: In addition to the four anadromous salmonids mentioned above, Ship Creek also supports a population of resident Dolly varden (*Salvelinus malma*) and rainbow trout (*Oncorhynchus mykiss*). Arctic char (*Salvelinus alpinus*) may occur in the upper reaches of Ship Creek but not near the hatchery. The rainbow trout fishery is catch and release only. Dolly

Varden can be harvested, but few people keep them and there are no harvest data. Rainbow trout and Dolly Varden may spawn near the Elmendorf Hatchery, and upstream of the Elmendorf Dam at the hatchery site. However the dam is a barrier to almost all fish passage. Fish can be swept over the dam, but they would be unable swim back upstream of this structure (Dan Bosch, pers. comm. 2008).

3.2.9 Coastal Zone Resources

The Federal Coastal Zone Management Act authorizes the state to review federal activities and federally permitted activities within or affecting the coastal zone. A portion of the proposed project area is located in the Anchorage Coastal District, and is therefore subject to a consistency review to ensure compliance with the Alaska Coastal Management Plan as well as the Anchorage Coastal Management Plan (MOA 2007, as amended).

3.2.10 Transportation

The proposed project is located just southeast of the intersection of Reeve Boulevard and Post Road. Current access to the existing Elmendorf hatchery is primarily through a single driveway located on Reeve Boulevard. The driveway is about 100 feet south of the Reeve Boulevard and Post Road intersection. Currently a median separates the north and south bound lanes on Reeve Boulevard resulting in traffic entering and exiting the Elmendorf Hatchery onto the one way north bound lane of Reeve Boulevard. The Reeve Boulevard and Post Road intersection is presently not controlled by traffic signals. The lack of a signal indicates that traffic flow is light and the roads have excess capacity. Limited parking, business and pedestrian access to the Elmendorf hatchery site are available from Post Road.

Elmendorf hatchery traffic currently using the Reeve Boulevard entrance consists of staff vehicles, delivery trucks, hatchery vehicles, and occasional visitors. Normal traffic to and from the hatchery is light and infrequent. Seasonal visitor traffic to the site does use the Post Road access point. From late June through September there have been as many as 60,000 visitors accessing the upper hatchery site to view adult salmon returning to Ship Creek. To date there have been no conflicts identified with this level of traffic to and from the site. The primary access route for trucks entering the EAFB from the Port of Anchorage is the Post Road gate.

3.2.11 Utilities

The project area contains sewer, water, gas, communication, and electrical power lines that provide utilities to the hatchery facility, employee housing, and other buildings. An overhead electric line runs along the north edge of the property between the cooling pond area and Post Road going underground into a live high voltage electrical feed to a transformer near the intake building. Electrical service lines then go from the transformer to the intake building and also to the lower hatchery complex as a backup power. De-energized overhead lines run along the northern and southern edge of the cooling pond. A natural gas line runs south from the right-of-way on Post Road, along the western side of the settling basin to the employee housing. Water and sanitary sewer connect to both the hatchery facilities and the employee housing.

Aside from municipal utility connections, the site has many buried water pipes that are used to transfer water around the property from the wells to the intake structure along Ship Creek and to the process/distribution building. In addition there are abandoned utilities around the site from its use as a cooling pond for the Elmendorf power plant.

3.2.12 Visual

The existing project area is located in a primarily industrial area, abutted by two roads – Reeve Boulevard and Post Road. Post Road runs east-west along the property’s northern boundary and Reeve Boulevard runs north-south along the Property’s western boundary. Wholesale Distributors of Alaska is located on the parcel to the west of the property beyond Reeve Boulevard. Hickel Construction is located on the parcel to the southwest of the property. Railroad tracks are located north of Post Road to the north of the property. Ship Creek borders the property to the east and south. Eagleleglen Golf Course is located southeast of the property. The visual qualities of the project area are characterized by the adjacent industrial development; Ship Creek; the ARRC tracks; and the existing hatchery facilities. From the two roads, the existing hatchery is barely noticeable as it is situated in the middle of the property. The abandoned cooling water intake pond and settling basin buffer the existing facility from view.

The hatchery site itself consists of several buildings grouped together serving as the indoor tank areas, shop, and offices; a large fenced area containing the concrete outdoor raceways; several other smaller buildings located along the creek; and a fenced area directly beside the creek containing a few raceways which hold returning salmon in the summer. Directly upstream of the hatchery is the sheet pile dam. To the north of the existing hatchery is the large cooling water intake pond, which is snow-covered and frozen during winter months and has standing water and some vegetation visible during summer months.

4.0 ENVIRONMENTAL CONSEQUENCES

This chapter describes the anticipated environmental effects, including direct and indirect effects, of the Proposed Action and the No Action Alternative.

The Proposed Action would be constructed on a previously disturbed site near the industrial area along Ship Creek. No adverse direct or indirect effects of the Proposed Action on physical, biological, or human resources are anticipated. Under the No Action Alternative, the existing hatchery infrastructure would not be able to meet current and future stocking program needs for the State's sport fishing industry. Short-term, construction-related impacts at the site would be mitigated through ADOT&PF best management practices (BMPs) and construction standards to minimize stormwater runoff, noise, and fugitive dust.

4.1 Air Quality

4.1.1 Proposed Action

While neither general conformity nor transportation conformity requirements apply to the proposed project (because it is outside of any areas designated nonattainment or maintenance with respect to National Ambient Air Quality Standards), there may be concerns that the project could affect traffic-related emissions within the Anchorage carbon monoxide maintenance area, given its proximity to the maintenance area. However, the proposed facility is expected to have only 12 employees, and on a busy day, may see up to 50 visitors per day. The traffic levels associated with these employees and visitors are too low to significantly affect carbon monoxide levels in Anchorage.

In addition to the minimal traffic associated with the facility, the facility would have four small natural gas-fired boilers, as well as two emergency backup generators. The calculated maximum emissions from these units combined, as shown in Table 4-1.

Table 4-1: Hatchery Facility Maximum Potential Emissions versus Permit Thresholds

Criteria Air Pollutants	Boilers	Generators	Total	Permit Thresholds	
				Major Source ^a	Minor Source ^b
	<i>All values in tons/year</i>				
Nitrogen Oxides (NO _x)	10.8	8.3	19	250	40
Carbon Monoxide (CO) ^c	9.1	1.8	10.8	250	100
Particulate Matter (PM)	0.82	0.6	1.4	250	NA
Particulate Matter < 10 Microns (PM ₁₀)	0.82	0.6	1.4	250	15
Volatile Organic Compounds (VOC)	0.59	0.7	1.3	250	NA
Sulfur Dioxide (SO ₂)	0.065	0.5	0.61	250	40

^a18 AAC 50.990(53) and 40 CFR 51.166(b)(2)

^b18 AAC 50.502(c)(1)

^cPermit threshold applies to facilities within 10km of a nonattainment area

Given the minimal levels of facility potential emissions and the low volumes of generated traffic, the proposed project impacts on air quality are expected to be negligible.

4.1.2 No Action Alternative

Under the no Action Alternative, air quality would remain as it is under the existing conditions.

4.2 Cultural Resources

4.2.1 Proposed Action

Section 106 consultation between ADF&G, EAFB, BLM, and the Office of History and Archaeology State Historic Preservation Office (SHPO) occurred in March and April 2008 (March 26, 2008 and April 10, 2008). The Proposed Action would have no effect on any known historic property. The three National Register-eligible properties in the vicinity and one native fish camp, as described in Section 3.2.2., would not be adversely affected by the Proposed Action. A Cultural Resources Investigation Compliance Report for the Anchorage Sport Fish Hatchery project was submitted to SHPO in September 2008.

4.2.2 No Action Alternative

Under the No Action Alternative, the site would not change and no cultural resources would be affected.

4.3 Hazardous or Solid Wastes

4.3.1 Proposed Action

Petroleum hydrocarbon-impacted soil and groundwater have been identified at the proposed project site at concentrations greater than applicable ADEC cleanup limits. In addition, PCBs have been detected in sediment samples from the property, although at concentrations lower than the ADEC cleanup limit. Demolition of existing structures or the construction of the proposed action may disturb contaminated soil, groundwater, or both.

At the request of the BLM, an Environmental Management Plan (EMP) was prepared for the proposed action; it was developed in concert with the EAFB and the ADEC. See Appendix B. Pursuant to stipulations in the EAFB Statement of Non-Objection to BLM (Appendix A), ADF&G would be responsible for any environmental remediation required by the Proposed Action. As stipulated in the agreement between ADF&G and EAFB, if ADF&G determines that the anticipated environmental remediation would require funds beyond those available to the project, ADF&G would have the option to stabilize the contamination per ADEC requirements and be released from further obligations with respect to the site. The EMP will serve as ADEC-approved guidance for site contractors regarding how to respond to impacted soil and groundwater if it is encountered during demolition or construction of the proposed action.

Operation of the proposed action would not impact hazardous or solid wastes. Any discharge of water off the site would be performed under appropriate permitting parameters as established by state and federal agencies. BMPs will be conducted during operation of the facility to ensure that hazardous or solid wastes do not impact the property.

The EMP details construction practices that will be developed in later project design, including installation of a sheet pile cutoff wall around the north and east sides of the proposed hatchery building, and excavation of soils surrounding the area where PCBs were detected (off the northeast corner of the cooling pond). The soil excavation is a prudent step to reduce potential exposure to PCB-impacted soils. The excavated soil would be stored on-site in a stable condition (likely in supersacks) where they would not be exposed to site construction.

Impacted soil that may be encountered during demolition and construction activities would be tested for petroleum hydrocarbons and PCBs. PCBs would be contained and remain on site.

Petroleum hydrocarbons would be removed and would be transported to a local soil remediation facility for treatment and disposal. ADF&G would be responsible for this.

Non-friable asbestos mastic (non-airborne asbestos fibers contained in the roofing sealant) was used to seal leaks in the dike in the past. This material would be scraped from the abandoned cooling pond liner.

As for the building facility, the main chemicals that would be stored in the chemical room would be either Hydrogen Peroxide or Formalin. Both are used to control parasites and fungus in developing eggs or fish. As with current operations, the hatchery manager would individually evaluate chemical wastes and determine if they are hazardous. Hazardous wastes are subject to state regulations that affect disposal options. ADF&G fully utilize all chemicals for their intended purpose or dispose of them as proscribed by law. As for the Hydrogen Peroxide, whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to an approved Resource Conservation and Recovery Act waste facility. Dispose of container and unused contents would be done in accordance with federal, state and local requirements.

4.3.2 No Action Alternative

The No Action Alternative will not alter the condition of the site regarding hazardous or solid waste. Petroleum hydrocarbon-impacted soil and groundwater will continue to be present on site.

4.4 Invasive/Non-native Species

4.4.1 Proposed Action

The site has been previously disturbed. The proposed project site currently houses an existing hatchery and a former power plant cooling pond. The Proposed Action would result in soil-disturbing activities during both site preparation and facility construction phases. There is potential that construction equipment used during site preparation and facility construction could harbor debris or seeds from invasive, non-native plants or noxious weeds and deposit them onto the project site. To mitigate this, at BLM's request based on standard requirements, all construction equipment brought on site would be cleaned prior to entry. Additionally, BMPs recommended for EAFB (HDR Alaska 2007) would be used to prevent or reduce the establishment of invasive plants during site preparation and facility construction. (See Section 4.13 construction).

4.4.2 No Action Alternative

The No Action Alternative will not increase the risk of an unnatural occurrence or increase the incidence of invasive, non-native plants or noxious weeds in the project area.

4.5 Water Quality

4.5.1 Proposed Action

Water Volume: The proposed hatchery would use groundwater from two wells (No. 6 and No. 7) developed in 2006 and 2007 for all water needs. Combined peak production from these wells is 3,000 gpm. Groundwater modeling results indicate that about 80% of the water flowing to hatchery wells No. 6 and No. 7 during peak production is water that would otherwise enter Ship Creek near the base of the Chugach Mountains, where the Bootlegger Cover formation ends (Shannon and Wilson 2007). The remaining water comes from other watersheds, bedrock seepage, and a reduction of groundwater discharging into Cook Inlet.

The proposed hatchery is expected to have a seasonally variable pumping schedule, with peak pumping during the spring and early summer (peak weekly average estimated at 2,044 gpm), and an annual average rate of 1,614 gpm. In addition, up to 400 gpm would be pumped for a few hours at a time throughout the year to supply cleaning water and other incidental needs. This water would not measurably increase the annual average pumping rates.

The groundwater model developed by Shannon and Wilson (2007) predicts that 80% of pumped groundwater at wells No. 6 and No. 7 would otherwise contribute to Ship Creek. The aquifer supplying the hatchery is separated from Ship Creek by a shallow aquifer and the Bootlegger Cove formation confining layer. Therefore, drawdown in this aquifer will not directly affect surface water near the hatchery. However, after pumping drawdown reaches a steady state, the cone of depression in the water table is predicted to extend to the recharge area near the base of the Chugach Mountains, where the confining layer is absent (Figure 2 in Shannon and Wilson, 2007). Here, surface water that would otherwise contribute to Ship Creek may be lost to groundwater due to the slight lowering of the water table.

Because groundwater moves much more slowly than surface water, the effects of seasonal pumping fluctuation would not be apparent at the groundwater recharge area. The flow in Ship Creek along this reach would likely be reduced by 2.9 cfs year-round (80% of the hatchery's 1,614 gpm pumping rate). This is equivalent to 16% of the long-term average flow during March, the lowest flow month (18 cfs), and 0.6% of the flow during June, the highest flow month (451 cfs), and about 2% of the long-term annual average flow of 144 cfs (from USGS gage 15276000, 1946-2006). This is less of an impact on Ship Creek flow than the current hatchery operations, which use 3000 gpm of groundwater. Therefore, upgrading the hatchery operations would have a beneficial effect to Ship Creek streamflow compared to continuing current hatchery operations.

All water pumped from the ground is returned to Ship Creek at the hatchery site at approximately the same rate as pumping. Because the proposed hatchery would use less water than the current hatchery, the volume of effluent discharge would be reduced. The anticipated weekly pumping schedule (the volume of water used by the hatchery and discharge back into Ship Creek) compared to long-term weekly flow in Ship Creek is shown on Figure 4-1. Because the model indicates that 20% of the groundwater pumped originates outside of the Ship Creek basin, flow would be increased by hatchery operations from the hatchery downstream to the mouth by about 0.6 cfs.

An intake pipe from Ship Creek supplies water to the brood collection raceways. This seasonal intake of 3000 gpm (6.7 cfs) is discharged into the stream a few hundred feet downstream. This would not change under the proposed action.

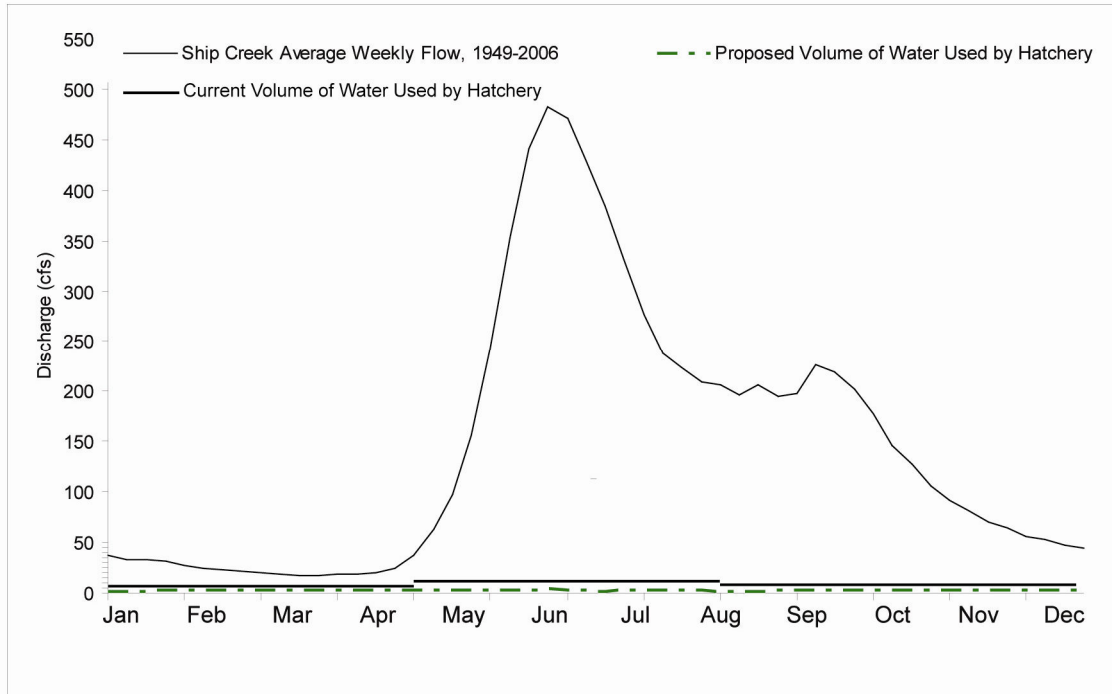


Figure 4-1: Ship Creek Average Weekly Flow from USGS Gage 15276000, compared to proposed effluent discharge into Ship Creek from the fish hatchery.

Groundwater Effects: Pumping at the hatchery will have localized drawdown effects on groundwater levels and relatively small basin-wide drawdown effects. The model indicates that the steady-state groundwater levels occur about three years after the start of pumping. Modeling results show that after 50 years of pumping from wells No. 6 and No. 7, less than 10 feet of additional drawdown would be observed at distances of about 5,000 and 10,000 feet from the hatchery at constant rates of 1,500 and 3,000 gpm, respectively (Shannon and Wilson 2007).

As a result of additional pumping from hatchery wells No. 6 and No. 7, other nearby wells will likely see an increase in drawdown. Additional pumping, resulting in greater drawdown in the vicinity of the well field and beyond, would increase the potential for contaminant migration toward the well field and salt water intrusion from Cook Inlet. These impacts are based on the simulated rates of 1,500 and 3,000 gpm on a continuous basis. Currently, the proposed water usage for the hatchery is at the low end of the range used for the simulated rates; therefore, the actual potential for impacts to other wells, contaminant migration, and salt water intrusion is less than that predicted by the model for the 3,000 gpm scenario (Shannon and Wilson 2007).

The proposed pumping rates appear to be sustainable for the long term (up to 50 years) if the assumed current groundwater conditions remain unchanged. Changes that could negatively impact well production rates at the hatchery and/or cause groundwater mining include increased pumping at the hatchery or other water supply wells and changes in recharge (precipitation) trends (Shannon and Wilson 2007).

Impacts to Military Reservations: Because the military reservations established in 1939 have prior appropriation rights for surface and subsurface waters, any drawdown of wells on the military reservations must not impact military operations. To the extent that hatchery operations adversely impact water requirements of the military reservations and if the federal water rights

are adjudicated and EAFB is given rights to the water used by the hatchery, ADF&G may have to look for another source. If the hatchery withdrawal impacts EAFB wells, the Hatchery may also choose to deepen the military wells.

Water Quality: Concerns about effluent discharge to Ship Creek focus on water quality and temperature. Treated effluent discharge from the proposed fish hatchery would be discharged to Ship Creek from a direct pipe and from the current settling basin. All Alaskan fish hatcheries operate under a Wastewater General Permit for Fish Hatcheries issued by ADEC (currently Permit No. 9640DB005-201). The general permit places limits on hatchery effluent constituents that ensure that the effluent stream will meet Alaska Water Quality Standards for Freshwater Aquatic Life (18 AAC 70). The parameters monitored for under the permit are total suspended solids (TSS), settleable solids, pH, and temperature. Although the permit requirements for the new hatchery are currently being developed, the hatchery itself is designed to treat water to the same standards as the current hatchery, thus there will be no increase in solids or change in pH.

Groundwater has a different chemical composition than surface water, and is treated to remove carbon dioxide and metals and increase oxygen content before fish can be raised in it. Groundwater has less turbidity than surface water, so effluent from the proposed hatchery will be clearer than Ship Creek surface water during runoff events.

Rearing system effluent would undergo primary filtration prior to being discharged. Re-circulating flows in the rearing systems would also employ filtration and swirl separation to remove solids. Treatment system waste flows discharged from the primary filtration and separation systems during backwash events would either be discharged directly to the Anchorage Water & Wastewater Utility (AWWU) sewer line or would be directed to a secondary treatment system prior to being discharged to Ship Creek. Depending on the specific secondary treatment system that is selected, settleable solids and other waste contaminants collected from the secondary treatment system would be discharged continuously in liquid form to the AWWU sewer line, accumulated and transported in liquid form to an AWWU dump station, or accumulated and transported in solid form to Anchorage Regional Landfill and disposed of as a solid waste.

Section 303 (d) pollutants (fecal coliform and petroleum hydrocarbons, grease, and oil): Ship Creek is listed as an impaired water body for exceedance of water quality standards for petroleum hydrocarbons and fecal coliform bacteria. Fish waste is not a source of petroleum hydrocarbons and would not add to the current elevated levels of this pollutant. Although fecal coliform bacteria may be found in fish, fish waste is not considered a primary source of fecal contamination. Fecal coliform is used as a marker for contamination by fecal material from warm-blooded animals, which carry intestinal diseases such as E. coli that are dangerous to humans. Samples collected at the effluent of the fish hatchery during periods in 1998, 2000, and 2002 did not show elevated fecal coliform levels beyond the background concentration in the stream, indicating that the fish hatchery was not contributing significant fecal coliform. Because there will not be an increase in waste discharged into the creek during proposed hatchery operations, the proposed action will not affect the current level of fecal coliform in Ship Creek.

Water Temperature: The groundwater supplying the hatchery is about 3.9 °C. Some of this water would be heated to 18 °C for proposed hatchery operations. The average temperature of hatchery water would range from 8-10 °C. Although the effluent basin may cool water somewhat, it is likely that the effluent water will be about the same temperature as the hatchery water.

The volume of water discharged would vary from about 1000 gpm (2.2 cfs) to about 2010 gpm (4.5 cfs). The hatchery effluent would have a noticeable, but not adverse, effect on Ship Creek water temperature during the winter, when stream flow is lowest and near 0 °C. Discharging 4.5 cfs of 9 °C water into 18 cfs of 0 °C water would warm the stream to about 1.8 °C for a short distance. During the summer months, streamflow averages 200-300 cfs, and is closer to the temperature of the effluent discharge. Because the effluent would never be warmer than 10 °C, it would not contribute to an exceedance of permit standards for temperature (13 °C).

4.5.2 No Action Alternative

Under the No Action Alternative, the existing hatchery would continue to use about 3000 gpm of groundwater during the 8 colder months of the year, resulting in an annual loss of about 3.6 cfs of flow from Ship Creek between the base of the Chugach Mountains and the hatchery effluent outfall. The hatchery would continue to remove up to 17 cfs of surface water from about 1600 feet of stream adjacent to the hatchery during the summer months. Impacts of the No Action Alternative on water temperature and water quality would not be measurably different than impacts of the Proposed Action.

4.6 Wetlands/ Riparian Zones

4.6.1 Proposed Action

The USACE has asserted jurisdiction over the effluent settling basin and outlet to Ship Creek, meaning work in these areas is subject to Section 404 of the Clean Water Act and require USACE for placement of dredged and/or fill material. However, the Proposed Action does not entail placing dredged and/or fill material in the effluent settling basin or the outlet channel to Ship Creek; therefore, no USACE authorization is required.

Approximately 6,000 cubic yards of material from the bottom of the existing settling basin would be dredged during construction. While the settling basin is under USACE jurisdiction, dredging or excavation of material is not a regulated activity provided there is no discharge or fill. Therefore, a USACE permit for the dredging activity is not required. However, the USACE asked to be consulted with to determine the least damaging methods of dredging. The USACE said they may want the construction contractor to use pads under construction equipment or on the bottom of the settling basin. The USACE stated they would be able to work out any issues with construction equipment on an informal basis without a USACE permit.

4.6.2 No Action Alternative

The No Action Alternative would have no impact on wetlands or riparian zones.

4.7 Wildlife

4.7.1 Proposed Action

Wildlife species listed as threatened or endangered under the Endangered Species Act of 1973 (7 USC 136; 16 USC 460 et seq.) are not known to occur in or near the project area (Greg Balogh, pers. comm. 2008). As previously stated, the Cook Inlet beluga whale, a candidate species, may periodically rely on fish populations originating from Ship Creek. The rusty blackbird is the only sensitive species likely to be affected by the action. The mostly drained cooling pond may provide an attractive feeding site for solitary sandpipers and other shorebirds during migration. Nesting habitat seems to be unavailable in immediate area.

Construction of the hatchery building would result in the permanent removal of 0.8 acre of upland mixed forest habitat. The habitat that would be removed provides marginal quality habitat to terrestrial birds and mammals because of its small size and location near highly developed areas. Noise and increased activity in the project area during construction activities may temporarily displace wildlife.

During construction and operation of the fish hatchery bears and fox could potentially take advantage of food items made available by human activity. Human food, fish food and garbage should be maintained in bear proof locations. Workers should be advised of impacts and illegal actions to avoid attracting bears, fox and birds, as they can cause Bird Aircraft Strike Hazard (BASH) concerns for the EAFB. By enclosing the hatchery, depredation take on piscivorous species by migratory birds and mammals will be mostly eliminated.

The Migratory Bird Treaty Act (MBTA) protects migratory birds in the Project Area from adverse impacts resulting from human-related activity. USFWS, which administers the MBTA, recommends that clearing of vegetation on lands for project-related development should occur before or after the nesting season (from May 1 to July 15 in Southcentral Alaska) to minimize the risk of violating the MBTA.

Roof design may have an affect on the gull populations. Herring gulls especially are attracted to large warehouse type roof structures for nesting. If the design includes a flat roof with gravel surfacing, gulls and some shorebirds may be attracted for nesting. The hatchery location is at the edge of the Elmendorf AFB Airfield's Waterfowl Exclusion Zone (WEZ) identified in the INRMP (EAFB 2007). Gulls pose a significant threat to aircraft and their nesting activities are actively discouraged within the WEZ. Creating an attractive nesting area on the roof may create a serious BASH risk.

4.7.2 No Action Alternative

The No Action Alternative would have no impact on wildlife species. The present depredation take on salmon by migratory birds and mammals will continue.

4.8 Fish and Essential Fish Habitat

4.8.1 Proposed Action

Adverse effects to EFH are not anticipated as a result of the sport fish hatchery project. Coordination with NOAA Fisheries occurred on March 17, 2008 and NOAA Fisheries agreed that no EFH assessment was required since the project would not result in adverse effects to EFH (Matt Eagleton, pers. comm. 2008).

The new hatchery would be a central incubation and production facility utilizing only disease-free well water and resident fish stocks to provide eggs for production. All donor stocks are regularly screened for both bacterial and viral diseases. Unless a "new vertically transmittable disease" is introduced into Cook Inlet from some outside source and subsequently transferred into the hatchery, it is unlikely that the hatchery would be the source for a disease introduction into Ship Creek. It is all but impossible for a previously non-existing disease to develop in the hatchery due to the short residency time for host fish and the use of both Ozone and UV in most of the rearing systems.

Effluent from the proposed hatchery would be of optimal quality to maximize the growth and health of fish and other aquatic life. The water would be treated prior to release to remove

settleable solids, and it would have a balance of pH, oxygen, temperature and other water chemistry characteristics that would not adversely affect fish and other aquatic life. The effluent stream from the proposed hatchery would be treated to meet State and Federal requirements.

4.8.2 No Action Alternative

The No Action Alternative could lead to depleted fish stocks if ADF&G is not able to meet the demand on wild and hatchery-grown fish stocks.

4.9 Coastal Zone Resources

4.9.1 Proposed Action

The Proposed Action is subject to the policies of the Alaska and Anchorage Coastal Management Plans. The proposed project appears to be consistent with applicable statewide standards of the Alaska Coastal Management Program. Consultation with the MOA indicated that while this project is located within the Anchorage Coastal zone boundary, it is not located in the MOA designated recreation use area. Therefore, the MOA defers to the State's enforceable policies (Karen Keesecker, pers. comm. 2008).

A draft Coastal Project Questionnaire (CPQ) and coastal consistency review was submitted to the ADNDR Division of Coastal and Ocean Management (DCOM) on April 9, 2008. The final CPQ and coastal consistency review will be submitted to DCOM once all draft permit applications have been prepared and are ready to be submitted to the respective agencies. At that time, DCOM will perform a formal review of the project and makes its finding of consistency.

4.9.2 No Action Alternative

Under the No Action Alternative, no impacts to the Coastal Zone would occur. A Coastal Consistency Review would not be required.

4.10 Transportation

4.10.1 Proposed Action

The Proposed Action would not have an adverse impact on the surrounding transportation patterns. Access to the new hatchery facility would remain similar to the existing hatchery with entry to the facility provided from the northbound lane off of Reeve Boulevard. The Proposed Action would involve a larger facility with more employees resulting in an increase in daily vehicular traffic. The new facility would also have periodic traffic from delivery trucks and fish transporting tankers. The frequency of truck traffic would be slightly elevated from the existing conditions due to the increased operational capacity of the hatchery, but these impacts would be negligible on transportation patterns. With the new facility, there would also likely be an increase in visitation by the public. The design of the new facility would accommodate parking for visitors and these impacts would be negligible on transportation patterns.

4.10.2 No Action Alternative

No change to project area transportation patterns would occur under the No Action Alternative.

4.11 Utilities

4.11.1 Proposed Action

The Proposed Action would not adversely impact service or distribution of any public utility. During construction, the Proposed Action may result in moving the locations of existing utilities within the boundaries of the leased area and that would be coordinated between the contractor and the appropriate utility company. ADF&G, not the EAFB, will be responsible for the removal of these utilities. The new hatchery facility would use public water for its public services and ground water for the hatchery. The new hatchery facility would use municipal sewer service for only its public services and fish effluent would be treated on-site and discharged into Ship Creek (see Section 4.5 water quality). The new facility would also continue to be serviced by Municipal Light & Power for its electricity requirements. The new hatchery will also have a small diesel tank for the standby generators and another for equipment.

4.11.2 No Action Alternative

The No Action Alternative would have no impact to public utilities. AWWU currently serves domestic water to the hatchery building. The existing hatchery uses groundwater to supply the rearing tanks and this would continue to be the water source under the No Action Alternative.

4.12 Visual

4.12.1 Proposed Action

The Proposed Action would result in a change in the visual environment of the project area due to the construction of the hatchery building at the site of the abandoned cooling pond. The new structure would be visible from both Post Road and Reeve Boulevard. The Proposed Action would not contrast with any of the surrounding industrial structures located in the project area vicinity.

EAFB asked to review the facility design to ensure that the new structure is congruent with the color schemes of the buildings on EAFB. The MOA has also asked to offer suggestions on the design of the facility in order to ensure aesthetic congruence with the proposed Municipal Salmon Learning Center that may be located on site. The exterior of the hatchery facility will be designed to take into account the desires of both EAFB and the MOA, as practicable within the budget of this project.

4.12.2 No Action Alternative

No changes to the visual environment would occur under the No Action Alternative. The existing fish hatchery would remain in its current location, which is not very visible from the street.

4.13 Construction

4.13.1 Proposed Action

Construction impacts related to the Proposed Action are a subset of direct impacts resulting from project construction activities and are temporary. Impacts that may occur include temporary disturbance of land and wildlife habitat, noise and air pollutants from operation of construction machinery and vehicles, degradation of the visual environment by construction equipment, temporary disruption of visitation of the existing hatchery and salmon viewing area, and the economic benefits of additional jobs in the construction sector. Less likely would be any adverse impact from congestion resulting from construction equipment accessing the project site.

Construction-related activities for the proposed hatchery would be completed in a sequenced approach, with the bulk of construction work beginning in the summer of 2009. Some miscellaneous construction activities, such as tree clearing and silt removal, will occur in late fall 2008. This will include removing silts that have accumulated in the bottom of the abandoned cooling pond to be used either on site for future landscaping or disposed of off site. Additional material will be sub-excavated and replaced with structural fill to provide a foundation for the building, fish tanks, and machinery inside of the building. See Section 2.1 for further explanation of site preparation activities. Construction of the hatchery building would occur in the summer of 2009 through the summer of 2011. Structural fill is available from numerous commercial sources. A sheet pile cutoff will be installed along the northern and eastern edges of the abandoned cooling pond to control groundwater infiltration off the site.

Final design of the hatchery began in the spring of 2008 and will finish in early 2009. Construction of the hatchery building would occur in the summer of 2009 through the summer of 2011. The fish hatchery would be commissioned to go 'on-line' from November 2010 through November 2011. The fish hatchery is expected to begin sending fish out for stocking in the spring of 2012. Decommissioning of the existing hatchery would occur in late 2011, after the last of the fish from the existing hatchery have been reared in it and are stocked. The new hatchery facility will need to be in operation for two years prior to the demolition of the existing facilities and, as a result, the final construction activities won't be complete until 2012.

Soils and Erosion Control Mitigation: Soils will be disturbed due to site excavation and preparation for the proposed hatchery building. An Erosion and Sediment Control Plan (ESCP) for Phase I construction activities has been developed and will be used by the contractor in developing their Storm Water Pollution Prevention Plan (SWPPP). Newly constructed embankments, stock piles, and disturbed portions of the project site where construction activity temporarily ceases will be stabilized with a temporary fast growing seed such as annual rye grass and mulch no later than 14 days from the last construction activity in that area. Silt fencing would be installed where construction activity occurs to limit soil transportation, especially within 25 feet of a waterbody (i.e., Ship Creek).

Invasive/Non-native Species: During construction of the new hatchery facilities, BMPs would be employed to prevent or reduce the establishment of invasive plants during site preparation and facility construction. At BLM's request based on standard requirements, all construction equipment brought on site would be cleaned prior to entry. Additionally, the EAFB asked that the BMPs from their 2007 Invasive Terrestrial Plant Species Survey Technical Report and Management Work Plan be incorporated to reduce the potential of introducing new invasive plants during construction and operation phases:

- To the extent possible, the topsoil should be weed-free and from local sources to avoid importation of non-native plants or noxious weeds onto the property.
- Clean off-road equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts before moving.
- To the extent possible, use only certified weed-free straw and mulch for erosion control projects.

Air Quality Impacts: Air quality within the immediate project area would temporarily be affected as a result of dust and exhaust from construction equipment and activities. The pollutant of primary concern in the Anchorage area is carbon monoxide (CO). Carbon monoxide emissions from construction equipment would result in localized increased concentrations during construction, but would not exceed the National Ambient Air Quality Standards. The project area

is located outside of the Anchorage maintenance area for CO. BMPs would be used to contain fugitive dust during construction.

Hazardous or Solid Wastes: As described previously in Section 4.3.1, BLM requested an Environmental Management Plan (EMP) be prepared for the Proposed Action, and that it be developed in concert with the EAFB, BLM, and the ADEC. See Appendix B. The EMP will serve as ADEC-approved guidance for site contractors regarding how to respond to impacted soil and groundwater if it is encountered during demolition or construction of the proposed action.

The EMP details construction practices that would be developed in later project design, including installation of a sheet pile cutoff wall around the north and east sides of the proposed hatchery building, and excavation of soils surrounding the area where PCBs were detected (off the northeast corner of the cooling pond).

Water Quality: Water quality protective measures to limit soil runoff and sedimentation effects into Ship Creek will be implemented, which include BMPs and a SWPPP. Fish and aquatic habitat will be unaffected by construction as no work will be done below ordinary high water. The existing settling basin would be used to control sediments leaving the construction site. If necessary, additional sediment control would be added to the outlet structure of the existing settling basin.

Noise Impacts: Construction-related activities will result in elevated noise levels within the project area vicinity. BMPs will be used to mitigate noise levels from construction equipment.

4.13.2 No Action Alternative

Under the No Action Alternative, no immediate construction impacts would occur. However, upgrades would need to be made to the existing Elmendorf fish hatchery, which would eventually necessitate construction efforts of some kind.

4.14 Cumulative Effects

NEPA requires analysis of the cumulative impacts from the Proposed Action when added to past, present, future, and reasonably foreseeable future impacts. This section examines the possible cumulative impacts that could result from the Proposed Action, the construction and operation of the Anchorage Sport Fish Hatchery, and the No Action Alternative. Under the No Action Alternative, a new sport fish hatchery would not be built and the existing hatchery facilities on Elmendorf (and Fort Richardson) would continue to be the sole production source of sport fish for Southcentral Alaska.

A cumulative impact, also commonly referred to as a cumulative effect, is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7).

4.14.1 Cumulative Effects Boundaries of the Analysis

The geographic reference area considered for potential cumulative impacts varies by resource. For examining cumulative impacts to physical resource components, the assessment boundary is generally defined as the lower Ship Creek area downstream to the Knik Arm. The geographic reference area for the biological and socioeconomic resource components encompasses a much larger, but more loosely defined region. The effects of the existing sport fish stocking program

already in place are evident throughout the entire Southcentral Alaska region. For the purposes of this document, Southcentral Alaska should serve as the general geographic boundary for biological and socioeconomic resource impacts.

The temporal boundaries considered for this cumulative impacts assessment extend from the environmental reference point of 1900 to the year 2033. The year 1900 represents a time when settlement of Anchorage and the Ship Creek valley was just beginning and the area was in a relatively pristine condition. The year 2033 represents 25 years beyond the baseline year of 2008.

4.14.2 Past, Present, and Reasonable Foreseeable Future Actions

Past Actions: Prior to human development, the Ship Creek valley consisted entirely of riparian wetlands and woodlands. Starting around the 1920s, railroad and other industrial development along Ship Creek have resulted in a large decline of riparian habitat and significant changes to the creek's morphology through encroachment and channelization (ARRC 2004). Construction of Anchorage's military bases began in 1940 and a significant influx of military personnel followed shortly after.

The hydrology of Ship Creek has also been drastically changed by 4 dams located on the creek. The Elmendorf dam is located on EAFB approximately 1,600 feet upstream from Reeve Boulevard, adjacent to the proposed hatchery site. It consists of 2 sheet pile dams about 130 feet wide, with a combined height of approximately 12 feet. The Elmendorf dam is a complete barrier to upstream fish passage (ADF&G 2007b). The Fort Richardson dam is located at the ADF&G fish hatchery on Fort Richardson Army Base approximately 3,000 feet downstream from the Glenn Highway. This dam consists of a single concrete structure about 5 feet high by 80 feet wide. Both dams were constructed by the Military to divert water from Ship Creek for cooling of their respective power plants. A third dam was constructed in 1953 and is located one-half mile from the mouth of Ship Creek. The dam provided a cooling water source for Knik Arm Power Plant (KAPP), which is no longer in operation. The dam divides Ship Creek into a lower reach, which is influenced by tides, and the upper reaches are freshwater (ARRC 2004). A fish ladder exists along the KAPP dam that allows salmon passage. The fourth dam on Ship Creek was built in 1941 and rebuilt in 1953 approximately 12 miles from the mouth of Ship Creek. This 40 foot-tall dam was built in order to supply drinking water to Anchorage and to both military bases (ADF&G 2002).

The MOA, USACE, National Marine Fisheries, Anchorage Waterways Council, and other groups have been in the process of making improvements along Ship Creek, in the vicinity downstream of the EAFB hatchery to the mouth at Knik Arm. For instance, efforts began in 2005 with the removal of three corroded culverts and the subsequent installation of a new bridge that provides access to Ship Creek Point.

Present Actions: Many present actions will continue to influence the social and economic conditions in Anchorage and the surrounding region. Major examples of such influential actions include:

- The continued presence of University of Alaska's Anchorage campus
- Military activities on both Elmendorf and Fort Richardson bases
- The ARRC's daily operation and maintenance activities.

Specific projects in the area include:

- Ship Creek Restoration Projects – A number of entities are working to restore the Ship Creek streambank and watershed. Various improvements such as salmon viewing improvements and other water quality improvements have been underway.
- Ship Creek Intermodal Transportation Center – The ARRC has begun making improvements to its existing depot facilities, which includes improved pedestrian amenities, transit infrastructure, parking and track modifications.

Reasonable Foreseeable Future Actions: Reasonably Foreseeable Future Actions, or RFFAs, were incorporated into the cumulative impacts assessment. The RFFAs consist of major projects and military actions that could contribute to cumulative impacts. Major RFFAs planned within the Anchorage area are:

- Port of Anchorage Expansion – The Port of Anchorage is located at the mouth of Ship Creek. Stages of the planned expansion are expected to range from 2006 to 2011.
- Knik Arm Crossing – The Knik Arm Crossing Project is a proposed bridge spanning the Knik Arm that, if constructed, would connect the MOA and the Matanuska-Susitna Borough (MSB).
- Knik Arm Ferry – The MSB is working towards establishing a ferry connection between Anchorage and the MSB. As part of the project, terminal buildings, parking, and ferry landings would be constructed on both sides of Knik Arm – one at Port MacKenzie and the other likely in the Ship Creek vicinity.
- Ship Creek Trail – The Ship Creek Trail is a priority project in the MOA's Areawide Trails Plan. The MOA would like to see the trail eventually connect the Ship Creek area to the Glenn Highway.

Several military projects that could contribute to cumulative impacts are:

- Relocation of the Air National Guard to EAFB – This project relocates the 176th WG from Kulis Air National Guard Base to EAFB. The relocation places 12 C-130 H, three HC-130N, and five HH-60G aircraft on Elmendorf. New facility construction, renovation of existing facilities, and movement of personnel to EAFB would occur.
- Transformation of U.S. Army Alaska – This action includes accommodation for 4,000 more soldiers relocating from installations worldwide, as well as activation of a new airborne brigade.

4.14.3 Cumulative Impacts

Both the Proposed Action and the No Action Alternative would contribute essentially to three types of releases to the environment: airborne emissions, waterborne effluents, and fish. It is important to note that because the proposed hatchery is being built on the site of the existing hatchery, no unique impacts, direct or cumulative, would be introduced as a result of the Proposed Action. If the Proposed Action is chosen, in the future, the MOA may construct a Salmon Learning Center adjacent to the proposed hatchery building. Other resource components likely to be affected by cumulative impacts from either the Proposed Action or the No Action Alternative are:

- Water Quality of Lower Ship Creek
- Fish and Aquatic Habitat
- Sport Fish Availability
- Local and Regional Outdoor Recreation and Tourism Industry

Water Quality of Lower Ship Creek: Current water quality of lower Ship Creek is greatly influenced by the adjacent urban development and runoff. Lower Ship Creek has been listed as an impaired waterbody under Section 303(d) under the Clean Water Act and will likely continue to be adversely impacted by present and future activities. Water effluents currently discharged into Ship Creek from the existing hatchery meet State of Alaska Water Quality Standards for Freshwater Aquatic Life (18 AAC 70). The Proposed Action would actually result in an improvement in the water quality discharged into Ship Creek due to better treatment processes when compared to the existing hatchery. The incremental contribution made by the Proposed Action would not alter the existing water quality of lower Ship Creek.

Fish and Aquatic Habitat: The lower Ship Creek supports one of the most popular salmon fisheries in Southcentral Alaska. Regulation of hatchery effluents by either state or federal permitting authorities ensure that State of Alaska Water Quality Standards for Freshwater Aquatic Life (18 AAC 70) are met. The Proposed Action would result in an improvement in water quality effluent over the existing hatchery effluent discharge and would not contribute to an adverse cumulative impact when combined with present and future actions.

During scoping, National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) communicated they were concerned about the project increasing numbers of hatchery fish in Ship Creek and what the impact might have on the wild salmon gene pool. NOAA Fisheries said they were also concerned about the potential impacts that occur from straying fish. Under the Proposed Action, 100% of the smolt produced in the hatchery are currently and will continue to be Otolith banded so that if there are ever any concerns with straying into a particular system hatchery fish can be positively identified. Chester, Campbell and Six Mile creeks are the closest anadromous streams to the Ship Creek release site. To date no significant numbers of Chinook have ever been seen ascending the Chester or Six Mile creek system and returning numbers of coho to these systems have never been noted as unusually high. At this point, there is no indication that Ship Creek smolt releases are having a measurable impact on nearby populations. Campbell Creek coho returns are currently enhanced and Little Susitna has been enhanced in the past. Willow Creek is also enhanced with F1 general smolt only. ADF&G has conducted straying assessments in the Homer area and in Prince William Sound focusing on sport releases in those areas and to date there has been no measurable straying identified.

Sport Fish Availability: Sport fish produced by the Proposed Action would increase existing wild and hatchery-grown stocks to a level unattainable under the No Action Alternative. The Proposed Action would result in a long-term beneficial cumulative impact by increasing sport fish populations and decreasing pressure on wild fish stocks. Also, ADF&G would be able to expand their stocking programs to additional permitted locations. The increase in stocking would not result in over stocking. If this does occur, the specific stocking project would be modified or eliminated. Location, size and time of release and return of these fish are all planned to provide angling opportunity while minimizing conflicts with other fisheries and wild stock productivity.

Under the No Action Alternative, existing wild and hatchery-grown sport fish availability would gradually decrease as the demand for sport fish exceeds the current hatcheries' stocking capacity. The No Action Alternative would result in an adverse cumulative impact to wild and hatchery-grown fish stocks as Southcentral Alaska populations dwindle.

Outdoor Recreation and Tourism Industry: The sport fishing industry is a major component of Alaska's economy; generating thousands of jobs as well as bringing hundreds of millions of

dollars annually into the economy (see Section 1.3 Purpose and Need). ADF&G needs to provide Southcentral Alaska, and the state as a whole, adequate numbers of hatchery-grown fish to enhance sport fisheries in order to support and grow the recreation and tourism industry. The Proposed Action would result in a long-term beneficial cumulative impact by increasing sport fish availability and supporting a growing number of sport fish anglers.

Under the No Action Alternative, a failure to meet current and future demands of sport fish availability would result in a long-term adverse impact to Alaska's local and regional economies.

4.15 Mitigation Measures

An EA is intended to focus on relevant issues and impacts; therefore, only topics with potential associated issues are discussed in this section. This section addresses potential mitigation measures that could lessen the impact from construction and operation of the Proposed Action. Potential mitigation measures related to construction of the Proposed Action are discussed in Section 4.13, Construction Impacts. Mitigation measures related to the construction and operation of the Proposed Action can be found in greater detail in their respective resources sections, Sections 4.1 through 4.12.

Cultural Resources: Should construction activities unearth any archaeological or cultural resources, construction would be halted in the immediate area, and SHPO would be contacted. In the event that human remains are discovered during construction activities, construction and/or excavation shall continue only to the extent necessary to verify that the remains are human. In the event archaeological and/or historic-built environments are discovered all construction activities associated with the proposed project shall cease and the area secured, and the ADFG&F, EAFB, and the BLM shall be notified. ADF&G shall notify other parties including local Native organizations, SHPO, and the medical examiner as appropriate.

Hazardous or Solid Wastes: An EMP has been developed and coordinated with ADEC regarding how to deal with contaminated soil and groundwater if it is encountered during construction. The EMP addresses disposal of impacted soil. PCBs would be contained and remain on site. Petroleum hydrocarbons would be removed and would be transported to a local soil remediation facility for treatment and disposal. Confirmation sampling for PCBs will be collected and analyzed. The EMP also addresses buried debris. Since some demolition (of spillways and concrete structures) is needed for installation of the sheet pile, an additional opportunity for exposure to impacted soils is presented. Disposal of buried debris will be determined by the contractor and will likely go to the landfill.

Invasive/Non-native Species: During construction of the new hatchery facilities, BMPs would be employed to prevent or reduce the establishment of invasive plants during site preparation and facility construction. (See Construction, Section 4.13). At BLM's request based on standard requirements, all construction equipment brought on site would be cleaned prior to entry.

Water Quality: No mitigation is necessary for effluent discharge; the Proposed Action would not increase the amount of waste discharged into the creek during proposed hatchery operations above existing conditions. Under the Proposed Action, rearing system effluent would undergo primary and secondary filtration prior to being discharged into Ship Creek resulting in cleaner effluent than is currently discharged. Because the effluent would never be warmer than 10 °C, it would not contribute to an exceedance of permit standards for temperature (13 °C) (18 AAC 70).

Wildlife: Operation of the proposed fish hatchery is not expected to affect wildlife. USFWS, which administers the MBTA, recommends that clearing of vegetation on lands for project-related development should occur before or after the nesting season (from May 1 to July 15 in Southcentral Alaska) to minimize the risk of violating the MBTA.

5.0 CONSULTATION AND COORDINATION

5.1 Persons and Agencies Consulted

The Anchorage Sport Fish Hatchery project is being developed in coordination with many interested parties – the Alaska Department of Fish and Game (ADF&G), Alaska Department of Transportation and Public Facilities (ADOT&PF), Bureau of Land Management (BLM), Elmendorf Air Force Base (EAFB), and U.S. Fish and Wildlife Service (USFWS).

A meeting was held on May 23, 2007 to discuss the project and to establish coordination among the agencies. At that time, BLM said that prior to the lease being granted, BLM would need to classify the land as appropriate for the intended use and write a NEPA document. BLM noted that a third party contractor could prepare the document. BLM would need to review, adopt, and sign the document. At the meeting, the agencies stated the intention would be to coordinate BLM, USFWS, and Department of the Air Force requirements. In order for the project to proceed, ADF&G would need to expand their existing lease boundary to incorporate the land for the new hatchery. Concurrent with the development of the EA, ADF&G worked with EAFB to obtain a letter of non-objection subject to special conditions to expanding the existing EAFB fish hatchery lease boundary to include the abandoned EAFB power plant cooling intake pond, the site of the proposed hatchery building. At the May 2007 meeting, attendees agreed that the processing of the lease request and preparation of the NEPA document could occur in parallel.

During the development of this project, federal, state, and local agencies, and governments were consulted with to obtain pertinent information, identify issues and mitigation measures, and assist in the development of reasonable alternatives. For the development of this EA, a number of people were consulted and coordinated with, as listed in Table 5-1.

On January 19, 2008, the MOA hosted a six-hour public workshop to discuss ideas, such as design features and education opportunities, for the MOA's proposed learning center concept. ADF&G hatchery staff was present at the public workshop and had a hatchery project description handout available for the public.

On February 12, 2008, hatchery project staff met with several MOA departments to familiarize MOA staff with the hatchery project and seek Municipal input regarding topics such as traffic, trails, public water and sewer, the floodway, and needed Municipal permits. Past discussions had occurred with MOA staff; however, this was a meeting to coordinate with all MOA departments.

An agency scoping letter was mailed out on February 29, 2008 to solicit input from agencies on the proposed project and to introduce them to the project.

A public open house specific to the hatchery project was initially planned for some time at the end of March 2008. However, due to other venues where project staff could present and solicit public input on the project, such as the Mayor's open house and The Great Alaska Sportman Show (see below), it was decided that having a presence at these other venues would reach more people than a project-specific open house.

The Great Alaska Sportsman Show was held on April 3-6, 2008. ADF&G hatchery staff was present at the show, which draws crowds of people who are interested in outdoor activities, such as fishing, hunting and camping. ADF&G staff hosted a booth, contained information on the hatchery program, including the proposed Anchorage Sport Fish hatchery. A project information sheet was made available to the public. This sheet contained project background information,

such as purpose for the project, what kind of fish would be produced at the facility, where the fish will be stocked, the benefits of the new hatchery, and project schedule. Additionally, there was a sign-in sheet available for people to write down their contact information so that they could receive information on any upcoming related public outreach related to the project. Nineteen people signed in.

Project staff was also present at the Mayor's Projects and Plans Fair that was held in Anchorage at Wendler Middle School on April 28, 2008. This was a 2 ½ hour open house. Similar hatchery project materials that were at the Sportmans Show were available to the public at this open house.

Table 5-1: List of Persons and Agencies Consulted

Agency	Person	Resource Discussed
FEDERAL		
BLM	James Moore Rodney Huffman Harrison Griffin Donna Redding	EA document Lease agreement Cultural Resources
EAFB	Gary Fink Ellen Godden Larry Opperman	Contaminated Sites/ Environmental Management Plan development Project Development/ Environmental Review
Federal Aviation Administration	Katrina Moss	Checklist requirement for CPQ
NOAA Fisheries	Matt Eagleton Brian Lance	EFH
USACE	Melissa Heuer Hank Baij Ryan Winn	Wetlands
USEPA	Lindsay Guzzo Sharon Wilson	Hatchery effluent discharge
USFWS	Frances Mann	Bald Eagles
USFWS	Greg Balogh	Threatened and Endangered species
USFWS	Al Havens Helen Clough	Project development/ EA document
STATE		
ADEC	Louis Howard	Contaminated Sites/ Environmental Management Plan development
ADEC, Division of Water, Wastewater Discharge Program	Fran Roche Susan McNeil Shawn Stokes	Hatchery effluent discharge
ADEC, Division of Spill Prevention & Response	Larry Dietrick	Agency scoping
ADF&G	Dan Bosch	Fish habitat
ADF&G	Bridget Easley	Subsistence
DNR-DCOM	Christine Ballard	Coastal Zone
DNR-Division of Mining, Land & Water (MLW), Materials Section	Christina Nahorney	Checklist Requirement for CPQ
DNR, Division of MLW	Patricia Bettis	Agency scoping
DNR-Office of Habitat Management & Permitting (OHMP)	Jeff Estensen Will Frost	Fish habitat permit
DNR-OHMP	Scott MacClean Don Perrin	Agency scoping
DNR-SHPO	Stephanie Ludwig Doug Gasek	Cultural Resources/ Section 106
LOCAL		
MOA	Karen Keesecker	Coastal Zone
MOA	Dave Wigglesworth	Salmon Learning Center
MOA	Jeff Urbanus	Flood hazard

5.2 List of Preparers

This EA was prepared by staff at HDR Alaska, Inc. (unless otherwise noted), in coordination and consultation with BLM, EAFB, ADOT&PF, ADF&G, USFWS, and other federal, state, and local agency personnel.

Table 5-2: List of Preparers

Task	Person
ADOT&PF and ADF&G Project Management and Review	Dave Kemp, P.E. Jeff Milton
Consultant Project Management	Dan Billman, P.E.
QA/QC	Mark Dalton John McPherson
EA Documentation	Leslie Robbins Jon Schick
Air Quality	Ed Liebsch
Cultural Resources	Karen Belvin Kirsten Anderson
Hazardous or Solid Wastes	Anna Kohl Bill Burgess (Shannon & Wilson)
Wildlife, Birds, EFH, wetlands	Sirena Brownlee
EFH, Effluent discharge / water quality	Paul McLarnon
Water Quality	Robin Beebee
Construction	Carl Siebe, P.E.

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APPENDIX A

Non-Objection Letter from Department of the Air Force, Elmendorf Air Force Base

As of September 10, 2008, the non-objection letter contained in this appendix has been signed by the EAFB, but is still awaiting a signature from higher ranks within the Department of the Air Force.




DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

MEMORANDUM FOR PACAF/A7A

FROM: 3 WG/CC
11550 Heritage Circle, Suite 200
Elmendorf AFB AK 99506-2850

SUBJECT: Air Force Statement of Nonobjection to Alaska Department of Fish & Game (ADF&G)

1. I do not object to the State of Alaska's development of the fish hatchery and Salmon Learning Center outside our Post Road Gate, predicated upon the various caveats and limitations within the attached letter of nonobjection being incorporated into the lease document. I believe that we will receive fair "in-kind" consideration as ADF&G will stock all Alaskan military's lakes and streams with fish smolt but with the addition of the Salmon Education Center they will also educate our military on the importance of keeping our environment pristine.
2. I am forwarding the Air Force Statement of Nonobjection to Alaska Department of Fish & Game (ADF&G) for the Bureau of Land Management (BLM) to issue a lease on withdrawn public domain lands for twenty-five (25) years with an option on an additional twenty-five years for your approval. The lease is for $14.76 \pm$ acres of land for fish hatchery and education center.
3. We have coordinated and developed this package with AFLOA/JACE, HQ PACAF/JA, and AFRPA.
4. My point of contact is Mr. Ken Walters, 3 MSG/CD-I, 552-1150.


THOMAS L. TINSLEY
Brigadier General, USAF
Commander

Attachments:

1. Statement of Nonobjection
2. BLM Lease

**DEPARTMENT OF THE AIR FORCE
STATEMENT OF NONOBJECTION
ELMENDORF AIR FORCE BASE, ALASKA**

The Department of the Air Force (Government and/or Air Force) hereby issues its statement of nonobjection, for the Bureau of Land Management (BLM) to issue a lease on withdrawn public domain lands, to the State of Alaska (State), specifically the Alaska Department of Fish & Game (ADF&G), for 14.76± acres of land (the Property) located on Elmendorf Air Force Base, Alaska, as identified in Exhibits A and B.

THIS STATEMENT OF NONOBJECTION is issued subject to the following special conditions precedent, which must be made express and binding terms in any lease agreement to protect the efficient operation of present and future military operations at Elmendorf AFB, Fort Richardson, and the future joint base.

1. The lease term is hereby granted to the State for twenty-five (25) years, beginning _____, 2008, and ending _____. The Secretary of the Air Force may terminate the lease if the President or Congress declares a national emergency that is within the public interest and affects the leased area. Upon request of the State of Alaska and approval by the Department of the Air Force, the term may be extended another 25 years for a maximum term of 50 years.

2. That the use and occupation of the land incident to the exercise of the privileges granted shall be subject to such rules and regulations regarding ingress, egress, safety sanitation and security as the Air Force, may from time to time prescribe..

3. The State agrees that it has inspected and accepts the condition and state of repair of the Property. It is understood and agreed that the Property is leased in an "as is, where is" condition without any representation or warranty by the Government concerning its condition, and without obligation on the part of the Government to make any alterations, repairs, or additions. The Government shall not be liable to the State for any latent or patent defects in the Property. The State acknowledges that the Government has made no representation or warranty concerning the condition and state of repair of the Property nor any agreement or promise to alter, improve, adapt, or repair them.

4. Subject to a specific appropriation by the legislature for this purpose, the State agrees to indemnify, defend and hold harmless the Air Force from any damages, costs, expenses, liabilities, fines, or penalties resulting from releases, discharges, emissions, spills, storage, treatment, disposal, or any other acts or omissions by the State, its officers, agents, employees, or contractors, or licensees, or the invitees of any of them, giving rise to government liability, civil or criminal, or responsibility under federal, state, or local environmental laws. All parties to this agreement recognize and agree that the agency has no appropriation currently available to it to indemnify the Air Force under this provision

and that enactment of an appropriation in the future to fund a payment under this provision remains in the sole discretion of the legislature and the legislature's failure to make such an appropriation creates no further liability or obligation of the State. This condition shall survive the expiration or termination of the lease, and the State's obligations hereunder shall apply whenever the Government incurs costs or liabilities for the State's actions of the types described in this condition.

5. The State may elect to remove any toxic or hazardous wastes, substances or materials found on any portion of the Property, including the old cooling pond, at its sole expense in order to complete the hatchery project. Alternatively, the State may elect to cancel the hatchery project, and terminate the lease after restoring the property to its condition after the date of the signing of the lease, provided it has first stabilized any disturbed contamination in accordance with applicable state and federal laws if the contamination was not caused by the State. The State will be responsible for remediation of any contamination resulting from its operations on the Property. Except as provided in this paragraph, the State is not responsible for any preexisting condition on the Property that it has not caused or exacerbated.

6. The existing dam will remain in place and in good working order as a barrier to fish passage. ADF&G will take no action to seek removal of the dam or to facilitate fish passage through the dam. ADF&G recognizes Air Force's belief that removal of the dam and fish passage would adversely impact flying operations at Elmendorf AFB. Any actions by ADF&G to seek removal of the dam or facilitate fish passage may result in the lease being terminated.

7. The State recognizes that the Department of Defense has multiple water sources on Elmendorf AFB and Fort Richardson which the Air Force asserts are being used to serve the primary purposes for which these military installations were reserved from the public domain. The State further recognizes that the Air Force asserts these water sources are entitled to Federal Reserved Water Rights status, applicable to all surface, subsurface, and groundwater sources, with a priority date of 1939. The State will in good faith work with the Air Force through the appropriate State agency when issuing temporary water use authorizations, permits to appropriate water, certificates of appropriation, or any other water rights instruments (water rights) potentially affecting the asserted federal reserved rights status of all eligible water sources on the installations to allow the Air Force to assert its water rights, without waiving any other claims to water rights as may exist. The State has used a hydrologic model to support its opinion that the State's pumping of groundwater on the leased land will not negatively impact the Air Force's existing water sources at this time. The Air Force has relied upon the State's representations. The State may pump water from the underground aquifer on the lease

lands for the purpose of operating the fish hatchery. The State agrees to work with the Air Force in good faith to ensure its water pumping activities related to the fish hatchery will not interfere with nor negatively impact in the future, the Air Force's water usage or supply, or water sources on Elmendorf AFB and Fort Richardson, that are necessary for future military requirements or operations. The parties acknowledge that neither this document nor the accompanying lease will alter or supersede the law regarding water rights applicable under state or federal law, or any adjudication of such rights under that law.

8. That the Government reserves to itself the right to construct, use and maintain across, over and/or under the described land, electric transmission, telephone, water, gas, gasoline, oil and sewer lines and other facilities, in such manner as not to create any unreasonable interference with hatchery operations or other described use of the described land.

9. That the Government shall not be responsible for damages to Property or injuries to persons which may arise from or be incident to the use and occupation of the premises, and/or any related construction activities associated therewith, or for damages to the Property of the grantee, or for damages to the Property or injuries to the person of the grantee's officers, agents, servants or employees or others who may be on said premises at their invitation or the invitation of any one of them, arising from or incident to State activities. Subject to a specific appropriation by the legislature for this purpose, the State agrees to indemnify, defend and hold harmless the Air Force from any and all such claims not including damages due to the fault or negligence of the Air Force or its contractors. All parties to this agreement recognize and agree that the agency has no appropriation currently available to it to indemnify the Air Force under this provision and that enactment of an appropriation in the future to fund a payment under this provision remains in the sole discretion of the legislature and the legislature's failure to make such an appropriation creates no further liability or obligation of the State.

10. The rights granted shall be without cost or expense to the Government.

11. That no other authority is conveyed by this nonobjection, implied or otherwise.

12. No new construction, additions to, or alterations of the premises which expand the original footprint of the facility described in the State's Environmental Assessment dated March 25, 2008, will be made without obtaining prior approval from Elmendorf Air Force Base.

13. The State agrees to comply with all applicable federal, state, and local environmental laws and regulations, including the Archeological Resources Protection Act, 16 U.S.C. 470aa-470mm.

14. Upon termination or expiration of the lease, the State agrees to restore the real Property to its condition at the time of the signing of the lease by removing all improvements and or buildings from the leased land. If the State fails to restore the Property within a reasonable time, the State agrees to give title to the Air Force for the improvements upon the Property without remuneration or the Air Force may remove the improvements and charge the State for restoration costs. The Government may provide written notice to the State of its election to require that all or any portion of any improvements on the Property revert or be transferred to the Government, at no cost, on the lease termination date. If the Government elects to have improvements revert to the Air Force, responsibilities of the State with respect to such improvements shall cease.

15. The use and occupation of the Property shall be subject to the general supervision and approval of the Commander of Elmendorf AFB and to reasonable rules and regulations that the Commander may prescribe from time to time.

16. The State acknowledges that it understands that the Base is an operating military installation and that State's operations may from time to time be hampered by temporary restrictions on access, such as identity checks and auto searches. The Lessee acknowledges that it understands that Elmendorf AFB is an operating military installation that could remain closed to the public and accepts that the State's operations may (i) from time to time be restricted temporarily or (ii) be permanently terminated in the event of a congressional or presidential declaration of national emergency that is within the national public interest and affects the leased area. Access on the installation may also be restricted due to inclement weather and natural disasters. The State further acknowledges that the Government strictly enforces Federal laws and Air Force regulations concerning controlled substances (drugs) and agrees that the Government will not be responsible for lost time or costs incurred due to delays in entry, temporary loss of access, barring of individual employees from the base under Federal laws authorizing actions, limitation, or withdrawal of an employee's on-base driving privileges, or any other security action that may cause employees to be late to or unavailable at their work stations, or delay arrival of parts and supplies.

17. This statement is furnished in lieu of a formal outgrant instrument in that the land is leased to the State of Alaska, Department of Fish & Game by Serial Number AA-

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Department of the Air Force
Nonobjection No. FXSB2001-9-08-001
Elmendorf Air Force Base, Alaska

9596, by the Bureau of Land Management, Alaska. BLM will issue the formal instrument for the land usage incorporating therein the special conditions listed above.

IN WITNESS WHEREOF, I have hereunto set my hand by authority of the Secretary of the Air Force this _____ day of _____, 2008.

FOR THE AIR FORCE:

NONOBJECTION FXSB2001-9-08-01

LEGAL DESCRIPTION

A parcel of land located within Section 9, Township 13 North, Range 3 West, Seward Meridian, Anchorage Recording District, Municipality of Anchorage, Third Judicial District, State and more particularly described as follows;

Commencing at the Southwest 1/16 corner of Section 9, marked with a brass plug monument; thence N 00°15'13" W along the West boundary of Elmendorf Air Force base, common with the East Right of Way line of Reeve Boulevard a distance of 260.50 feet to the TRUE POINT OF BEGINNING;

Thence continuing N 00°15'13" W along said boundary a distance of 877.59 feet to a point that is 60 feet perpendicular to the centerline of Post Road; Thence N 57°18'54" E along a line parallel with and 60 feet offset from the centerline of post road extended a distance of 827.84 feet; Thence S 33°30'14" E a distance of 324.80 feet to the Ordinary High Water (OHW) line of ship creek;

Thence S 07°39'58" W along the OHW line a distance of 64.60 feet;

Thence S 66°11'25" E along the OHW line a distance of 50.60 feet;

Thence S 05°27'04" W along the OHW line a distance of 34.17 feet;

Thence S 36°49'04" W along the OHW line a distance of 60.00 feet;

Thence S 69°14'37" W along the OHW line a distance of 166.18 feet;

Thence S 43°08'56" W along the OHW line a distance of 209.29 feet;

Thence S 20°51'56" W along the OHW line a distance of 284.93 feet;

Thence S 11°18'55" W along the OHW line a distance of 222.82 feet;

Thence S 22°02'25" W along the OHW line a distance of 63.34 feet;

Thence S 63°58'58" W along the OHW line a distance of 104.51 feet;

Thence S 74°23'01" W along the OHW line a distance of 321.07 feet

to the TRUE POINT OF BEGINNING.

Containing 14.76 acres, more or less

EXHIBIT A

APPENDIX B
Environmental Management Plan
