Final Environmental Assessment for the Ruth Burnett Sport Fish Hatchery in Fairbanks, Alaska

Date: May 11, 2007

Lead Agency: National Marine Fisheries Service
222 West 7th Ave., #517
Anchorage, AK 99513

Cooperating Agencies: State of Alaska Department of Fish and Game
Alaska Department of Transportation & Public Facilities

Responsible Program Official: Robert D. Mecum, Alaska Regional Administrator (Acting)

Abstract: The State of Alaska Department of Fish and Game is proposing the construction of the Ruth Burnett Sport Fish Hatchery in Fairbanks, Alaska. The proposed hatchery would contribute mainly three types of releases to the environment: airborne emissions, waterborne effluents, and catchable sport fish for stocking lakes in Interior Alaska. The analysis concludes that airborne emissions and waterborne effluents produced by the proposed hatchery would not measurably change the cumulative level of environmental contaminants in air and water and would not alter fish habitat in the Chena River. Sport fish production from the proposed hatchery would have a beneficial effect on outdoor recreation and tourism, with consequent benefits to the local and regional economy.

The cumulative impact assessment concludes that the Proposed Action is not anticipated to contribute to any adverse cumulative impact. It would, however, make an important contribution to beneficial cumulative impacts on sport fish availability, outdoor recreation and tourism, and the local and regional economy of Fairbanks and Interior Alaska.

Comment Period: A 30-day public comment period was provided on this document. All comments were due in writing by April 30, 2007, to the following address: Steven K. Davis, NOAA Fisheries, 222 West 7th Ave., #517, Anchorage, AK. 99513; or by email to Steven.K.Davis@noaa.gov

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Final

Ruth Burnett Sport Fish Hatchery
Fairbanks, Alaska

Environmental Assessment

Prepared by

National Oceanographic and Atmospheric Administration

National Marine Fisheries Service

In cooperation with

State of Alaska
Department of Transportation & Public Facilities
and Department of Fish and Game

May 11, 2007

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Executive Summary

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, 2005a). ADF&G is proposing the construction of the Ruth Burnett Sport Fish Hatchery in Fairbanks, Alaska (Proposed Action) (Figure ES-1). This project is being developed in cooperation with the Alaska Department of Transportation & Public Facilities and the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration.

Purpose and Need

A sport fish hatchery located in Fairbanks would contribute substantially to local and regional fisheries, facilitate fisheries education, and provide area-wide economic benefits to Interior Alaska, the Fairbanks North Star Borough (FNSB), and the City of Fairbanks. The proposed hatchery, which would ensure an adequate and reliable source of sport fish for Interior Alaska, is needed to meet current and future demands on Alaska's sport fish resources. Specifically, the proposed hatchery would:

- Provide a sustainable way to meet angler demand by modernizing an aging and resource-limited hatchery infrastructure
- Create a new source of community and economic benefit for Fairbanks and the surrounding region
- Provide space for an information and educational center for residents, students, and visitors to Fairbanks focused on Alaska sport fisheries and aquatic resources
- Establish a state-of-the art fisheries research facility in Alaska
- Ensure that future generations enjoy healthy fish populations through fisheries enhancement and new harvest opportunities
- Increase the sustainability of Alaska's recreational fisheries and aquatic resources

Project Description

The design solution consists of a stand-alone fish hatchery located on a 5.2-acre site south of 2nd Avenue, west of Wilbur Street, and north of Hilton Avenue in Fairbanks, Alaska. A sewage treatment facility, now demolished, previously occupied the site, along with a practice baseball field. The adjacent land is devoted to athletic fields. The front and main entrance of the building would face east, onto Wilbur Street. Hatchery facilities would include areas for water processing; fish rearing; offices and administration; research, shop and maintenance activities; loading docks; feed storage; and an interpretive visitor center (FNSB, 2006a).

Major Conclusions

The Proposed Action, construction and operation of the Ruth Burnett Sport Fish Hatchery in Fairbanks, Alaska, would contribute mainly three types of releases to the environment: airborne emissions, waterborne effluents, and fish. The analysis concludes that airborne emissions and waterborne effluents produced by the proposed hatchery would not appreciably increase the cumulative level of environmental contaminants to air and water and would not alter fish habitat in the Chena River. Sport fish production from the proposed hatchery would contribute to a beneficial cumulative impact on outdoor recreation and tourism, with consequent benefits to the local and regional economy.

Summary of Potential Issues and Impacts

Table ES-1 summarizes the potential issues and impacts for the Proposed Action and the No Action Alternative.

TABLE ES-1
Summary of Potential Impacts

Resource	Proposed Action	No Action
Geology	The project site is seismically active. However, the potential for landslides, debris flows, swelling or collapsible soils, or other damaging geologic hazards is low. The Proposed Action would not affect geological features of the project area.	None
Soils and Permafrost	In general, a few meters of water-deposited silt and organic silt overlie alluvial sand and gravel in the project area. The Fairbanks area is known to have discontinuous perennially frozen ground (permafrost). No permafrost was encountered during drilling within the potential building foundation area. The facilities would be designed for the conditions known to exist at the site. The Proposed Action would not detrimentally affect soils and permafrost in the project area.	None
Air Quality	In 2004, the U.S. Environmental Protection Agency (EPA) redesignated the Fairbanks carbon monoxide (CO) nonattainment area to attainment after approving the *Fairbanks CO Maintenance Plan* (69 Federal Register [FR] 44601). Operation of the proposed fish hatchery and new traffic associated with the facility would not increase the frequency or severity of exceedances of National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO) or violate the *Fairbanks CO Maintenance Plan*. The study area is in attainment for all other air pollutants. Because the Proposed Action would be well within the limits of air quality standards for stationary and mobile sources, it would not affect ambient air quality sufficiently to exceed any NAAQS threshold for any pollutant. During construction, measures would be implemented to reduce dust emissions.	None
Water Volume, Quality, and Temperature	The volume of discharge from the proposed hatchery to the lower Chena River would contribute less than 1 percent to the average monthly flow of the river during March, the lowest flow month of the year, and would be equivalent to 2 percent of the lowest monthly flow recorded during the 58-year reporting history. These percentages are smaller than natural daily or seasonal variations in the river's flow. Effluent discharge from the proposed hatchery would not measurably change the water quality or temperature of the Chena River relative to background conditions.	None

TABLE ES-1
Summary of Potential Impacts

Resource	Proposed Action	No Action
Wetlands	The Proposed Action would not affect wetlands. There are no wetlands on the project site, and there are no means by which the Proposed Action would affect wetlands.	None
Floodplain	The Proposed Action is within the 500-year floodplain (Federal Emergency Management Agency [FEMA], 1992), but the facility would be protected from the 100-year flood by levees on the Chena River. The Proposed Action would not affect the Chena River floodplain.	None
Vegetation	The proposed project site, formerly occupied by a sewage treatment facility, has been previously disturbed and is sparsely vegetated. The Proposed Action would not adversely affect or diminish any plant community.	None
Fish and Aquatic Habitat	The Proposed Action would not measurably change the volume of water in the Chena River, and the use of water wells would eliminate any potential for fish habitat impacts from changes in stream flow. Although essential fish habitat (EFH) for adult Chinook and chum salmon is present in the lower Chena River, salmon do not spawn there but do pass through it as they migrate to spawning areas upstream. Arctic grayling spawning grounds occur in the reach of the lower Chena River that would receive effluent discharge from the proposed hatchery, and this is the key habitat consideration relating to the Proposed Action. Hatchery effluent entering the Chena would have a temperature conducive to spawning and migration and would not introduce contaminants or pathogens harmful to aquatic life. Increased use of stocked lakes would distribute sport fishing effort more widely than at present, reducing fishing pressure on wild fish populations.	The number of fish available for stocking Interior and South-central lakes would remain limited.
Birds	The Proposed Action would not affect birds in the project area.	None
Wildlife	The proposed hatchery would be built in a previously disturbed urban environment, which is not heavily used by wildlife. The fish stocking program would not harm wildlife or their habitats. Therefore, the Proposed Action would not adversely affect wildlife.	None
Threatened and Endangered Species	Because no animal or plant species listed as threatened or endangered under the Endangered Species Act of 1973 is known to occur in or near the project area, the Proposed Action would have no known effect on threatened or endangered plants or animals, or on their habitats.	None

TABLE ES-1
Summary of Potential Impacts

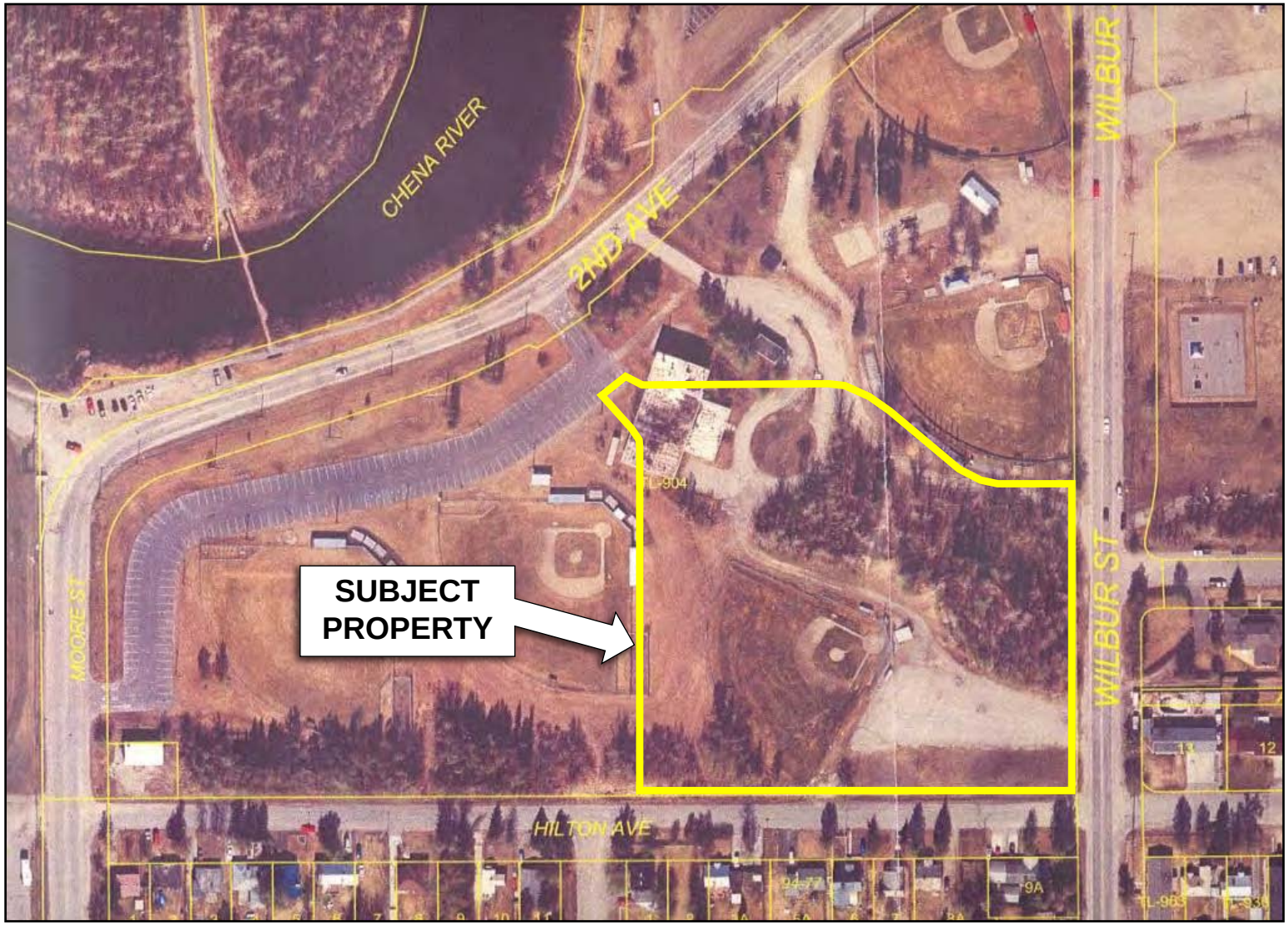
Resource	Proposed Action	No Action
Socio-cultural	No negative effects on any socio-cultural components of the population surrounding the Proposed Action are expected. Beneficial socio-cultural effects of the proposed hatchery are discussed in *Chapter 1, Purpose and Need*. The Proposed Action would not adversely affect the socio-cultural environment in the project area. Sport fish produced by the proposed hatchery would substantially augment existing wild and hatchery-grown stocks, which by themselves cannot support the growing sport fishing demand in Interior Alaska on a sustainable basis. Because it would add substantially to the annual production of the two existing Anchorage-based hatcheries, which are currently used to stock 130 lakes within Interior Alaska in addition to Southcentral Alaskan waters, the proposed Fairbanks hatchery would greatly increase the availability of sport fish in both regions. Because it would add to the reasonably foreseeable future production of the existing hatcheries and substantially increase the aggregate quantity of sport fish stock, the Proposed Action would contribute to a beneficial cumulative impact.	None
Economic	Beneficial economic effects of the proposed hatchery are discussed in *Chapter 1, Purpose and Need*. Hatchery operating expenses are estimated at $1.6 million per year (Dodge, 2004). A large portion of this would flow into the local economy through wages and purchases. The Proposed Action is a planned component of the Chena Riverbend Project and would be constructed in coordination with the Wilbur Street and Second Avenue Project and the Chena River Pedestrian Path. Together with these reasonably foreseeable future action (RFFAs), the proposed hatchery would help to revitalize Downtown Fairbanks and have concomitant beneficial effects on land use, recreation, and the management of the lower Chena River and its aquatic resources, producing a beneficial long-term cumulative impact on the local and regional economy.	None
Environmental Justice	Because the Proposed Action would have no appreciable adverse impacts on the environment, minority and low-income populations would not bear a disproportionate share of negative environmental consequences resulting from the Proposed Action.	None
Land Use and Land Ownership	The site of the Proposed Action has been rezoned from Outdoor Recreation (OR) to Light Industrial with Special Limitations (LISL). By expanding the ADF&G stocked waters program in Interior Alaska, the Proposed Action would substantially increase the region's capacity to support growing outdoor recreation and tourism demands. FNSB estimates that a $21 million to $33 million cumulative gain to the Fairbanks economy would result from construction and operation of the proposed fish hatchery (Dodge, 2004). Acting in combination with other RFFAs by the State of Alaska, FNSB, and the City of Fairbanks to expand outdoor recreation and commercial tourism in Interior Alaska, the Proposed Action would produce a long-term beneficial cumulative impact.	None

TABLE ES-1
Summary of Potential Impacts

Resource	Proposed Action	No Action
Cultural Resources	None of the 32 cultural resource sites, all historic, that have been previously documented within 1 mile of the area of potential effect (APE) is located within the APE. No historic or prehistoric deposit is known to be located in the APE, and no historic property eligible for the National Register of Historic Places (NRHP) was identified in the APE during the literature reviews, field survey, and consultation. It is concluded that the Proposed Action would have no effect on known cultural resources or historic properties.	None
Energy Consumption and Conservation	Energy consumption by the Proposed Action would be equivalent to that of a small commercial facility and would be within the background level of annual variation of total energy consumption for the Fairbanks area. Minor fuel conservation would result from the cessation of long-distance sport fish transport from Anchorage hatcheries to stock Interior lakes.	None
Transportation	Traffic by hatchery employees and visitors would slightly increase the traffic load on Wilbur Street between Airport Way and the hatchery, but the local increase is not expected to disperse into the surrounding neighborhood. Daytime traffic associated with the proposed hatchery would not add to evening and weekend traffic on Wilbur Street generated by events at the Carlson Center. Trucks transporting fish from the proposed hatchery to Interior lakes would make at most three trips per week in early summer, and not more than one round trip per day, on the single city block of Wilbur Street between Airport Way and the hatchery. Traffic in the Chena Riverbend locale is expected to become heavier as the area is developed in coming years. Traffic from ADF&G staff and the visiting public associated with the Proposed Action would incrementally contribute a small increment to this cumulative effect, but hatchery-related traffic would not be of sufficient volume to change the character of the immediate neighborhood, a combination of residential homes and outdoor recreation facilities adjacent to the proposed hatchery site. Sports fields adjoining the proposed hatchery site already generate traffic by users during summer days and evenings. Traffic by fish transport trucks would occur transiently each year during the active stocking period. The Proposed Action would reduce the total miles traveled annually by trucks transporting fish stock to Interior lakes and use smaller, lighter trucks, producing a net decrease in the aggregate vehicle operating cost associated with the statewide hatchery program.	No Action would perpetuate long-distance hauls by fish transport trucks between Anchorage hatcheries and Interior lakes. Local traffic would gradually increase as the Chena Riverbend area is developed in coming years.
Public Health and Safety	The Proposed Action would comply with Occupational Safety and Health Administration (OSHA), State of Alaska, Fairbanks North Star Borough, and City of Fairbanks requirements for hazardous materials, waste storage, and ozone emissions. The Proposed Action would not affect public health or safety or pose a risk to the health or safety of children.	None
Hazardous Materials and Waste	The Proposed Action would not release hazardous materials or generate hazardous wastes.	None
Noise	The Proposed Action would not produce noise at a level or time that would create a disturbance.	None

TABLE ES-1
Summary of Potential Impacts

Resource	Proposed Action	No Action
Visual/ Aesthetics	The Proposed Action would be visually and aesthetically compatible with its surroundings.	None
Construction-Related	During construction, there would be negligible to minor temporary impacts on air quality, soils and permafrost, water quality, birds and wildlife, and hazardous materials. Measures would be implemented to limit soil movements, dust, erosion, transport of construction materials, and runoff into the Chena River, including best management practices and a Storm Water Pollution Prevention Plan. The Alaska Department of Natural Resources, Office of Habitat Management and Permitting (ADNR/OHMP) Title 41 Fish Habitat Permit required for installation of the proposed outfall pipe would prohibit construction activity in the Chena River during May, during the sensitive grayling spawning period. Measures would be taken to minimize the potential of migratory birds nesting in the construction area. If nesting migratory birds were encountered, the U.S. Department of the Interior, Fish and Wildlife Service (USFWS) would be contacted. Measures would be implemented to reduce potential noise and dust disturbances. Disturbed sites would be revegetated to Alaska Department of Transportation & Public Facilities (ADOT&PF) Best Management Practices standards. Jobs in the construction industry and secondary jobs in a variety of support industries would be created. There would be construction-related traffic, increased travel time, and short-term delays in the project area during the construction period. In addition, if archaeological or historical materials are discovered during construction of the Proposed Action, associated facilities, or utilities, activities in the vicinity of the find would be immediately halted and the State Historic Preservation Office (SHPO) would be notified of the find to avoid damaging potentially important historic properties.	None
Cumulative Impacts	The contribution of regulated airborne and waterborne contaminants generated by construction and operation of the proposed hatchery would not be sufficient to produce an adverse cumulative effect on air or water quality. Enhanced production from the proposed hatchery would increase the supply of sport fish for stocking waterbodies throughout Interior Alaska, including important destinations for outdoor recreation and tourism, adding substantially to the output, now at full capacity, of the two existing Anchorage-based hatcheries. Consequently, the Proposed Action would increase the supply of sport fish to Interior and Southcentral Alaskan lakes and contribute to a long-term and beneficial cumulative effect on outdoor recreation and commercial tourism in both regions of Alaska.	None



North

FIGURE 2-1
Aerial View of Subject Property
Ruth Burnett Sport Fish Hatchery EA

Contents

Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
ADNR/OHA	Alaska Department of Natural Resources, Office of History and Archaeology
ADNR/OHMP	Alaska Department of Natural Resources, Office of Habitat Management and Permitting
ADOL	Alaska Department of Labor
ADOT&PF	Alaska Department of Transportation & Public Facilities
AFB	Air Force Base
AFS	Air Force Station
AK	Alaska
ALCOM	Alaskan Command
APE	area of potential effect
avg	Average
bgs	below ground surface
BMP	best management practice
Btu	British thermal unit
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CO	carbon monoxide
dB	Decibel

dBA	decibel (A-weighted scale)
DNL	Day-Night Average Noise Level
EA	Environmental Assessment
EAC	Early Action Compact
EFH	essential fish habitat
E.O.	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FCVB	Fairbanks Convention and Visitors Bureau
FEMA	Federal Emergency Management Agency
FFY	Federal Fiscal Year
FHWA	Federal Highway Administration
FICON	Federal Interagency Committee on Noise
FMATS	Fairbanks Metropolitan Area Transportation System
FNSB	Fairbanks North Star Borough
Fort Richardson	Fort Richardson Army Base
FR	Federal Register
gpm	gallons per minute
GVEA	Golden Valley Electric Association
HVAC	heating, ventilating, or air conditioning
max	maximum
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
MMBtu/hr	million British thermal units per hour
NAAQS	National Ambient Air Quality Standards
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act
NFRAP	No Further Remedial Action Planned
NH4	ammonium

NOAA	U.S. Department of Commerce, National Oceanic and Atmospheric Administration
NOAA Fisheries	National Marine Fisheries Service of the National Oceanic and Atmospheric Administration
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
OHA	Office of History and Archaeology
OSHA	Occupational Safety and Health Administration
PCSRF	Pacific Coastal Salmon Recovery Fund
$PM_{2.5}$	particulate matter less than 2.5 micrometers in aerodynamic diameter
PM_{10}	particulate matter less than 10 micrometers in aerodynamic diameter
ppm	parts per million
PVC	Polyvinyl chloride
RFFA	reasonably foreseeable future action
RTS	Research and Technical Services
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
Sport Fish Division	Alaska Department of Fish and Game, Sport Fish Division
TMDL	total maximum daily load
TSS	total suspended solids
UAF	University of Alaska Fairbanks
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Department of the Interior, Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound

CHAPTER 1

Purpose and Need

1.1 Background

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, 2005a). ADF&G is proposing the construction of the Ruth Burnett Sport Fish Hatchery in Fairbanks, Alaska (Proposed Action) (Figure 1-1). This project is being developed in cooperation with the State of Alaska Department of Transportation & Public Facilities (ADOT&PF) and the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration (NOAA Fisheries).

The ADF&G Sport Fish Division (the Sport Fish Division) was established in the early 1950s with the responsibility of overseeing Alaska's developing sport fisheries. Fish production and stocking quickly became one of their primary goals. As the interest in recreational fishing in Alaska has grown, so has the Sport Fish Division's responsibilities. Growth in Alaska's tourism (including participants from both in and out of state) has produced an economically important recreational 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 (U.S. Fish and Wildlife Service [USFWS] et al., 2003; ADF&G, 2007). Since the 1950s, the Sport Fish Division's efforts to supplement recreational fisheries have mushroomed from stocking thousands of fish in waterbodies in urban areas and along a few major road systems (Milton, personal communication [pers. comm.], 2006) to stocking millions of fish in hundreds of lakes and streams throughout the state (Milton, 2004).

1.2 Purpose and Need

The Sport Fish Division plays an important role in the ADF&G mission by maintaining healthy, sustainable fisheries while providing diverse and dependable fishing opportunities (ADF&G, Division of Sport Fish, 2003). Enhancing fishing opportunities by stocking new and existing fisheries helps to protect wild stock populations from the increased pressures of recreational fishing. The hatchery would provide sport fish to augment the state's recreational fisheries.

There are three Sport Fish Regions in Alaska: Southeast (Region I), Southcentral (Region II), and Interior (Region III), as well as two organizational regions (Habitat and Research and Technical Services [RTS]). In recent years, the two fish hatcheries located on Elmendorf Air Force Base (AFB) and the Fort Richardson Army Base (Fort Richardson) produced fish for stocking in the Southcentral and Interior regions. However, the Sport Fish Division's goal of

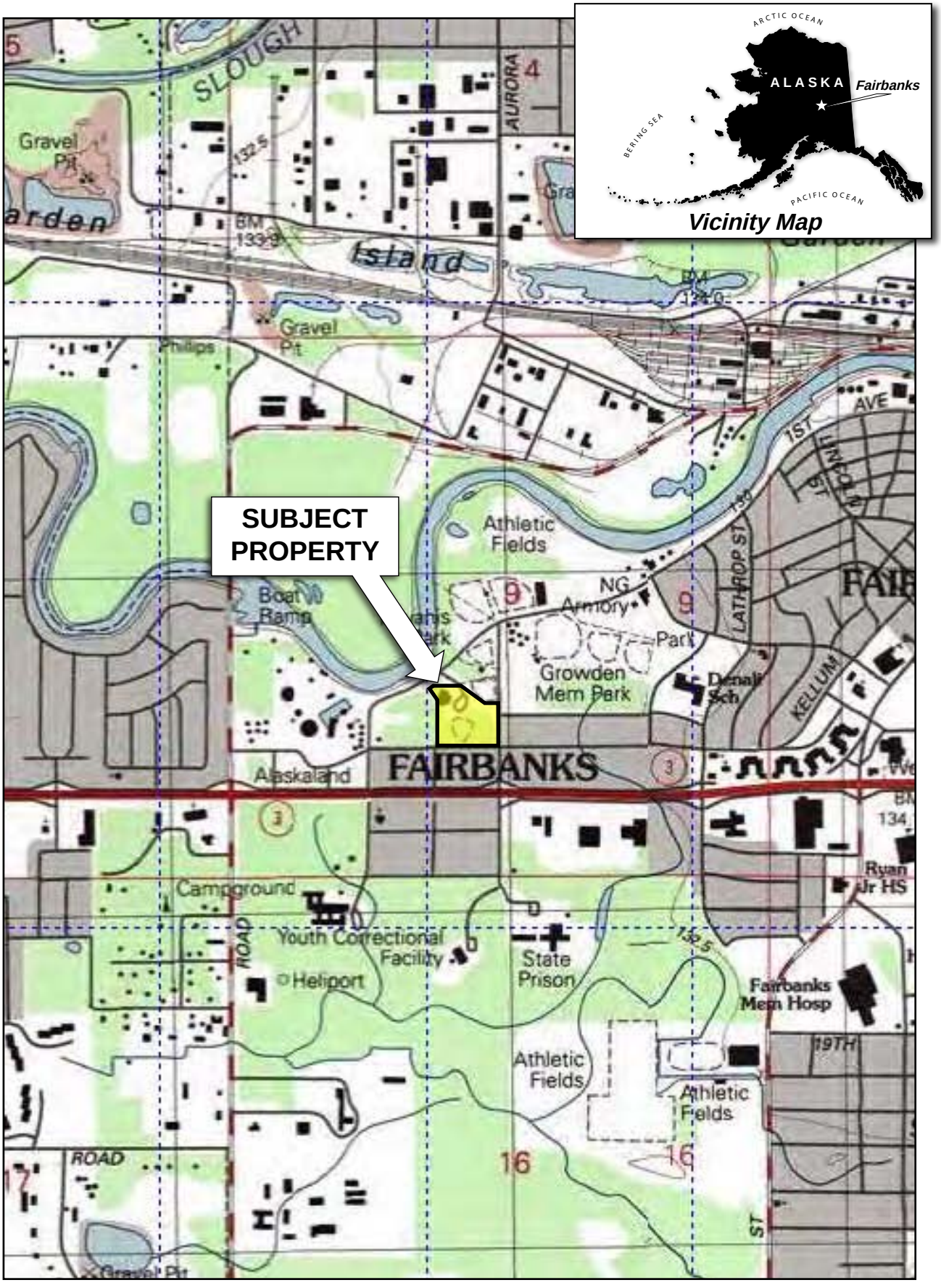


FIGURE 1-1
Subject Property Location
Ruth Burnett Sport Fish Hatchery EA

maintaining the health of wild stock and enhancing recreational fishing faces serious challenges. These include:

- Increased numbers of recreational anglers are straining the sustainability of the wild stock fisheries. For example, with projected increases in military operations and personnel at Fort Wainwright, Fort Greeley, and Eielson AFB, ADF&G anticipates a doubling of angler demand in the Interior within 10 years. Interior Alaska anglers must depend on hatchery-stocked waterbodies, since anadromous sport fisheries are limited. Hatchery-raised fish are stocked into lakes in Interior Alaska as a conservation measure to protect wild stocks and existing sport fisheries.

- The capability of producing adequate numbers and appropriate sizes of hatchery-reared fish for Interior Alaska sport fisheries has decreased. The two Anchorage hatcheries are the only sources of enhanced sport fish for Interior Alaska. They were built prior to 1970 to produce rainbow trout for military personnel stationed at the Fort Richardson and Elmendorf military bases. These hatcheries have a number of handicaps related to their age, their design, and the technology used; the limited amount of rearing space and water available; the locations of the facilities; and, most critically, the loss of free sources of waste heat energy for heating the hatchery water to accelerate fish growth and ripen the brood stock. Substantial financial support and an interruption of some or all of the existing hatcheries' production activities would be required to correct these problems. In the meantime, increasing angler effort on Interior Alaska streams will result in higher mortality of wild salmon stocks.

Working with ADF&G, the Alaska State Legislature recognized the need for additional fish production just to meet angler demand for existing fisheries. It authorized funding for two new sport fish hatcheries—one in Fairbanks and the other in Anchorage. With a more technologically advanced design and operating plan, the proposed hatcheries would avoid the problems that have hindered production at the existing facilities and provide a reliable source of sport fish.

In addition to the State funding described above, a federal grant from the Pacific Coastal Salmon Recovery Fund also has been awarded to the State of Alaska for these fish hatchery projects. Established by Congress in 2000, Salmon Recovery Fund grants are administered by NOAA and used as part of a coast-wide strategy to restore and conserve Pacific salmon resources from Alaska to California. This grant will support the design and construction of the Ruth Burnett Sport Fish Hatchery.

New hatchery facilities at Fairbanks would provide reared stock for regional fisheries, relieve fishing pressure on wild stocks, facilitate fisheries education, and provide area-wide economic benefits to Interior Alaska, the Fairbanks North Star Borough (FNSB), and the City of Fairbanks. Such facilities, which would ensure an adequate and reliable source of sport fish for the Interior Region, are necessary to meet current and future demands on Alaska's sport fish resources. In addition, the facilities would:

- Provide space for an information and educational center for residents, students, and visitors to Fairbanks focused on Alaska sport fisheries and aquatic resources. There are more than 35 schools in a 50-mile radius of Fairbanks that would be able to use this educational resource. University of Alaska Fairbanks (UAF) has indicated a willingness

to partner with ADF&G for research into freshwater fish propagation and stocking methods in Interior Alaska. The hatchery would also create a new tourist destination for visitors to Interior Alaska. The educational opportunities offered by the hatchery would benefit Fairbanks and hatchery visitors, providing an opportunity to promote recreational fishing, and encouraging more educated fisheries users by increasing their knowledge of fisheries biology.

Create a new source of community and economic benefit for Fairbanks and the greater FNSB. For example, ADF&G currently stocks 130 lakes within Interior Alaska. A 1995 economic study placed the net economic value of the five largest stocked fisheries in the Fairbanks/Delta Junction area at $5 million annually (Duffield, 2001). Expanding ADF&G's stocked waters program in the Interior should increase the value of local fishery resources to local economies. FNSB estimates a $21 million to $33 million cumulative economic gain to the Fairbanks community resulting from the construction and operation of a fish hatchery (Dodge, 2004).

- Foster recreational and economic benefit for Fairbanks and Interior Alaska communities
- Enhance sport fishing, an important economic resource for Alaska. This would increase revenues from fishing licenses. In addition, improvements to sport fishing might increase the number of anglers in Interior Alaska, thereby benefiting tourism industries in local communities.
- Ensure future generations healthy fish populations through fisheries enhancement and new harvest opportunities
- Meet angler demand by modernizing an aged and resource limited hatchery infrastructure
- Emphasize Alaska's sustainable recreational fisheries and aquatic resources (CH2M HILL, 2006a)

CHAPTER 2

Description of Proposed Action and Alternatives

2.1 Proposed Action

The Ruth Burnett Sport Fish Hatchery would use modern fish production techniques to efficiently produce sport fish to augment the numbers and varieties of fish provided to anglers in the Sport Fish Division's Interior Region. Six species of fish would be raised for release, including Arctic char, Chinook salmon, coho salmon, Arctic grayling, lake trout, and rainbow trout. In addition to its primary fish-production role, the hatchery would provide areas for research and educational outreach activities.

The design solution consists of a stand-alone fish hatchery located on a 5.2-acre site south of 2nd Avenue, west of Wilbur Street, and north of Hilton Avenue in Fairbanks, Alaska. (See Figure 2-1.) A sewage treatment facility, now demolished, previously occupied the site. The front and main entrance of the hatchery building would face east, onto Wilbur Street. Hatchery facilities would include areas for water processing; fish rearing; offices and administration; research, shop and maintenance activities; loading docks; feed storage; and an interpretive visitor center (FNSB, 2006a).

2.2 Site Selection

This section explains why the proposed Fairbanks site was selected as the best available location for the proposed sport fish hatchery. It identifies other locations that were considered but not carried forward for detailed analysis, discusses the selection of Fairbanks as the preferred location, and presents the reasons why the Chena Riverbend Development Area was selected for the proposed facility site within Fairbanks.

2.2.1 Alternatives Considered but Not Carried Forward

Besides Fairbanks, four Interior locations were considered as potential sites for the Proposed Action (Fish, pers. comm., 2006a):

- Clear Air Force Station (AFS)
- Delta Junction
- North Pole
- Fort Wainwright Army Post

These four locations were not considered as viable alternatives to Fairbanks because they met fewer of the selection criteria shown in Table 2-1.

TABLE 2-1
Factors Considered When Selecting Site of Proposed Action

Factor	Clear AFS	Delta Junction	North Pole	Fort Wainwright Army Post	Fairbanks
Quantity and quality of source water	Adequate	Adequate	Unknown	No	Adequate
Heat Source	Military power plant	Boilers	Boilers	Military power plant	Aurora Energy Chena Power Plant/ boilers
Operating costs compared to Fairbanks	Lower	Higher	Higher	Higher	--
Access to transportation network	Periphery	Periphery	Periphery	Periphery	Hub
Available workforce and support services	Insufficient	Insufficient	Insufficient	Insufficient	Adequate
Reliable electrical power supply	Yes	Yes	Yes	Yes	Yes
Potential involvement of UAF researchers	Less likely	Less likely	Less likely	Less likely	Very Likely
Tourist access	No	Minimal	Minimal	No	Yes
Sufficient non-residential land available	Yes	No	No	No	Yes

2.2.2 Selection of Fairbanks as the Preferred Location

Water supply is the most important consideration in determining a hatchery site. Having an uninterrupted supply of water that is or can be treated to a suitable quality and appropriate temperature for rearing fish is critical to the success of any fish hatchery. Water treatment technologies are incorporated into hatchery design to reduce water volume and heating energy requirements, but the need for a reliable volume of water remains paramount. The Fairbanks, Clear AFS, and Delta Junction locations met this key criterion.

Operating costs associated with the removal of iron and manganese from the intake water at the Fairbanks site would not be incurred at the Clear AFS location. Other criteria in the selection decision, however, outweighed this factor. As the second-largest population center in the state, FNSB is the regional supply and service hub for Interior Alaska. It offers a diversity of services, including federal, state, borough, and city government; communication; transportation; financial; manufacturing; and regional medical services. Fairbanks hosts an average of 325,000 tourists per year, mostly in the summer.

Fairbanks was selected for the new hatchery because of its central location in Alaska's Interior (Region III), the local residents' desire for the fish hatchery, the economic impact on the Fairbanks community, its proximity to the UAF (with the resulting research opportunities). Infrastructure elements (such as a transportation network, available workforce and support services, a reliable grid power supply, and municipal service options for sewer and solid waste disposal), viable options for heat source, and the number of Interior Alaska fish stocking locations near Fairbanks also played an important role in the selection process.

2.2.3 Potential Hatchery Sites within the Fairbanks North Star Borough

FNSB owns land from Pioneer Park to the Army National Guard facility (north of Crosson Avenue and north of Hilton Avenue) in an area referred to as the Chena Riverbend Development. This land includes Pioneer Park, the Carlson Center (an entertainment, sports, and meeting facility), Growden Park, various league baseball fields, FNSB parklands, a snow storage site, bike and walking paths, and the riverfront.

Within Fairbanks, a site within the Chena Riverbend Development was selected for the Proposed Action because it met the following criteria:

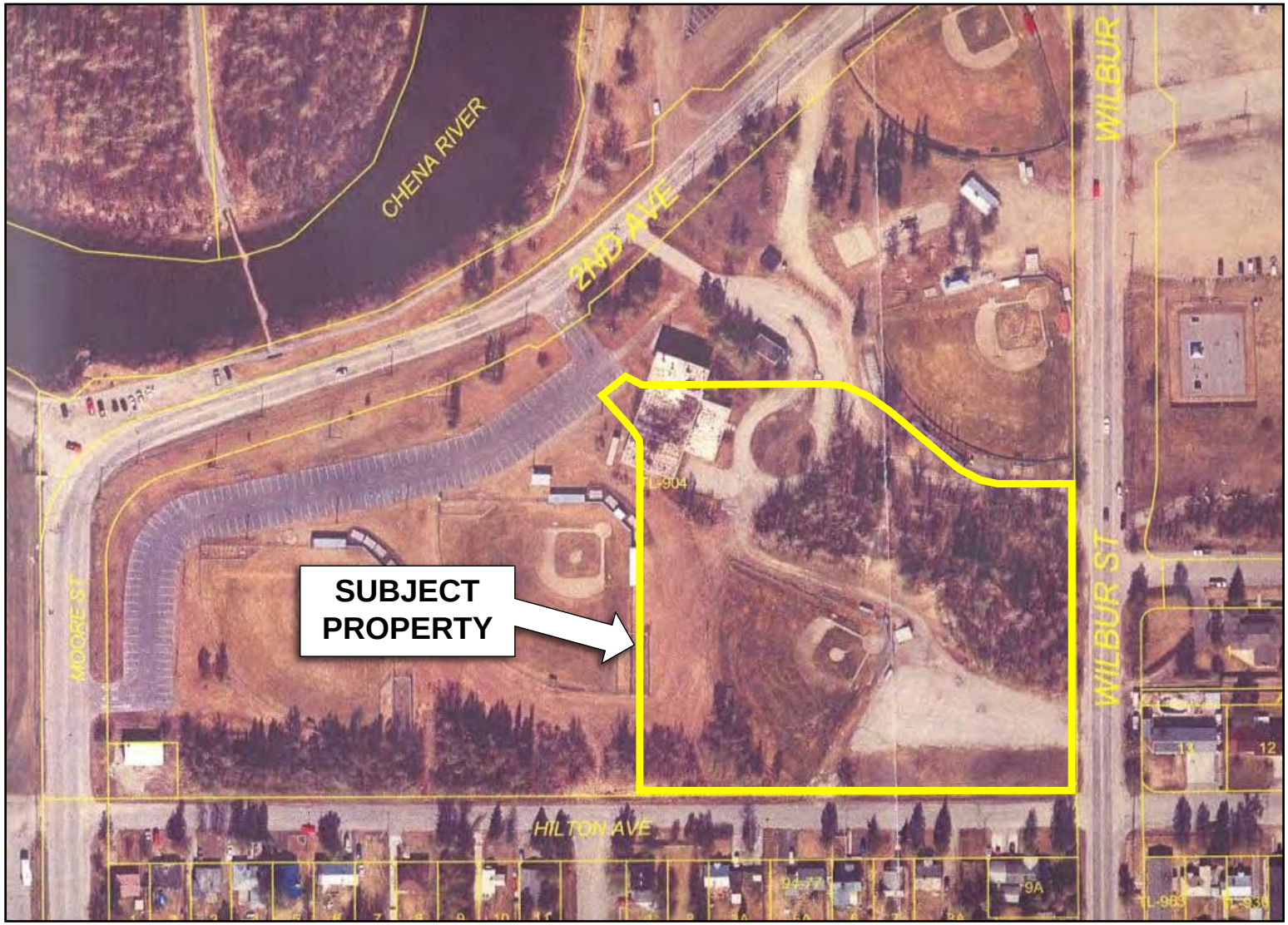
- It is an available parcel of land sized 5 acres or larger near the Chena River
- FNSB agreed to lease this property to ADF&G for $1.00 per year
- Sufficient groundwater is available
- Power and other utility infrastructure is in place
- It is close to UAF
- It is in the downtown area
- It is expected to complement the experience of Pioneer Park visitors, a nearby tourist attraction

Because of constraints on available land, decisions on the hatchery site were made in the context of all other projects proposed for the Chena Riverbend Development. (See Figure 2-1.)

2.3 Facility Design and Operation Considerations

Considerations related to the design and operation of the hatchery facility include the following:

- Capital and operational costs
- Process water volume, source, and treatment
- Heat source
- Effluent treatment and discharge
- Fish production components
- Research components
- Outreach components



North

FIGURE 2-1
Aerial View of Subject Property
Ruth Burnett Sport Fish Hatchery EA

2.3.1 Capital and Operational Costs

The cost of this facility is estimated to be $34.5 million. The funds would be acquired from the following sources:

- Fairbanks Hatchery bond allocation ($15 million)
- Contingency funds leveraged from Anchorage Hatchery bond allocation ($9.1 million)
- Federal Pacific Coastal Salmon Recovery Fund (PCSRF) Funds, received ($6.4 million)
- Federal PCSRF Funds, pending ($4 million)

The project life is estimated to be 25 years.

2.3.2 Process Water Volume, Source, and Treatment

In selection of a water source and water use strategy for the hatchery, a key factor is the flow and temperature requirements for the fish being cultured. Fish growth rates vary greatly based on the temperature of the water in which they are reared (the process water). Within a certain acceptable range, specific to each species of fish, warmer water temperatures increase fish metabolism, which in turn allows for higher feed rates and accelerated growth. Control of water temperature is one of the most common and effective methods of accelerating and decelerating fish growth in order to meet with specific production requirements and fish release timelines.

In hatchery design, bio-programming is the process by which the fish production plan (bio-plan) is defined and then used to determine the criteria around which the hatchery facilities are to be designed and built. Bio-programming for the hatchery began during preparation of the conceptual design. During this process, both temperature and flow requirements were set for each fish stock to provide the necessary control and flexibility to meet the conceptual production goals.

Based on the analysis performed, a well water source was selected as the best overall alternative for a stable, secure, reliable, easily controllable water supply for the proposed hatchery. The order-of-magnitude analysis of treatment system capital costs also supports the use of well water (CH2M HILL, 2006b). It is anticipated that multiple wells would be located on the project site.

2.3.3 Heat Source

Of the temperature control strategies presented, the one recommended involves splitting the treated well water into two streams, one of which would be heated, to develop both hot and cold supply piping to the culture systems. Each of these supplies would be provided in continuously flowing distribution manifolds, ensuring that both hot and cold process water were available on demand throughout the facility (CH2M HILL, 2006b).

The preferred heating alternative is gas-fired boilers due to the lower capital cost realized by not constructing a waste heat pipeline from the Aurora Energy Chena Power Plant. Given considerable project budget limitations, it would allow more initial capital investment to be dedicated to hatchery production in support of program goals. While not the least expensive in terms of net present value analysis, it is the favored alternative when all other factors

such as water quality, pipeline construction risk, reliability, and potential for source water contamination are considered (CH2M HILL, 2006b).

2.3.4 Effluent Treatment and Discharge

Concerns about effluent discharge into the Chena River focus on water quality and temperature. After treatment of the effluent to meet ADEC and U.S. Environmental Protection Agency (EPA) water quality standards, it would be discharged to the Chena River approximately 800 feet north of the proposed hatchery, between the existing Chena River footbridge and the Carlson Center parking lot. Contaminants collected on the filters would be removed during backwash events, and the backwash would be directed to Golden Heart Utilities.

2.3.5 Fish Production Components

Six species of fish would be raised for release, including Arctic char, Chinook salmon, coho salmon, Arctic grayling, lake trout, and rainbow trout. Each species would be raised in designated numbers, as defined by weight, for release into target fisheries across the Interior Sport Fish Region. At the Elmendorf AFB and Fort Richardson hatcheries, with the current space and heating limitations, production is geared towards raising large quantities of fish for release during early life stages (pre-catchable sizes).

Most of the activity would take place in the rearing area, where fish would be grouped by species and life stage. The fish-rearing component of the hatchery is a working area primarily filled with water tanks varying in size from approximately 0.6 to 9 meters (2 to 30 feet) in diameter. Each tank or series of tanks would have dedicated areas for the necessary equipment to support the rearing requirements.

All the activities and structures that are involved in the rearing process would be designed to maximize efficiency and maintain a safely controlled environment for the fish. All aspects of the design would support the overall functions of fish production. These functions include:

- Fish-safe, low maintenance materials
- Specialized water conditioning systems
- An environmental monitoring and alarm system
- A layout designed to ease fish movement between life stage tanks and logically accommodate the people and processes necessary to operate the hatchery

2.3.6 Research Components

In addition to areas devoted to the activities and processes involved in raising fish, the facility design also includes space for a research laboratory and office area. This space would be used for research by ADF&G personnel, with potential for cooperative research with UAF students and faculty.

2.3.7 Outreach Components.

The facility design includes visitor viewing/interpretive areas and visitor parking. As part of the Riverfront Development project area, the hatchery would be an integral part of a centralized plan to offer community education, recreation, and tourism opportunities. The

visitor area would be adjacent to the office space and would be composed of both hatchery viewing and interpretive components. Plans for the interpretive area include a variety of educational displays emphasizing the aquatic resources of the Interior Region.

2.4 No Action Alternative

Under the No Action Alternative, a sport fish hatchery would not be constructed and operated at any location in Interior Alaska. Without implementation of a hatchery under the Proposed Action, adequate numbers and sizes of fish to protect sport fisheries in Interior Alaska would not be provided. In the meantime, increasing angler effort on Interior Alaska streams would result in higher mortality of wild salmon stocks. Consequently, stocking program goals would not be met during a period of growing pressure on wild stocks. ADF&G would be severely constrained in meeting its mission "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, 2005a).

If the No Action Alternative were selected, the goals of the PCSRF would not be met in Interior Alaska. Congress established the Salmon Recovery Fund at the request of the Pacific state governors to supplement existing federal-state-tribal-local partnerships in salmon recovery and conservation, and to promote efficiencies and effectiveness in recovery efforts through enhanced sharing and pooling of capabilities, expertise, and information (PCSRF, 2006a). Alaska, along with the other Pacific Coastal states and Columbia River tribes, has received Congressional PCSRF appropriations from NOAA Fisheries each year since FY2000. Funds are used for salmon recovery and conservation projects carried out by local governments, tribes, state agencies, public partners, watershed councils, soil and water conservation districts, and other organizations and entities. As with the Proposed Action, the Salmon Recovery Fund is used to leverage and supplement funding from state and local sources. Under Congressional direction, NOAA Fisheries works with PCSRF grantees to define performance indicators used to measure progress toward PCSRF goals. The major goals (PCSRF, 2006b) against which the performance of the Salmon Recovery Fund can be measured are as follows:

- Enhance the availability and quality of salmon and steelhead habitat
- Improve the status of Endangered Species Act- (ESA) listed salmon and steelhead
- Address habitat limiting factors for ESA-listed salmon and steelhead
- Improve management practices to maintain healthy salmon populations and prevent decline of ESA-listed salmon
- Ensure overall sustainability of naturally-spawning Pacific salmon and steelhead

Under the No Action Alternative, efforts to conserve and restore Interior Alaskan wild salmon stocks would fall short of these goals, and the federal grant monies described in Chapter 1, *Purpose and Need*, would be returned.

The environmental consequences of implementing the No Action Alternative would be identical to the consequences of maintaining the *status quo* (that is, no change in existing

hatchery production, partnering opportunities with UAF for research on fish propagation and stocking, and no hatchery-related educational outreach in Interior Alaska). The No Action Alternative thus serves as a baseline against which the potential effects of the Proposed Action are evaluated in this environmental assessment (EA). Table 2-2 compares major construction and operations differences between the Proposed Action and the No Action Alternative.

TABLE 2-2
Comparison of Construction and Operations Differences Related to the Proposed Action and the No Action Alternative

	Proposed Action	**No Action Alternative**
Proposed Construction of Sport Fish Hatchery in Fairbanks	Yes	No new construction
Proposed Operations of Sport Fish Hatchery in Fairbanks		
Rearing sport fish	Yes	No new operations
Stocking sport fish in the Interior Region	Yes	No new operations
Providing opportunities for partnering with UAF to research freshwater fish propagation and stocking methods in Interior Alaska	Yes	No new operations
Providing education and information about sport fisheries and aquatic resources to residents, students, and visitors	Yes	No new operations

CHAPTER 3

Affected Environment

This chapter describes the environment of the areas to be affected by the Proposed Action and the No Action Alternative. Table 3-1 provides information about those environmental resources that have been analyzed but are not discussed further in this EA.

TABLE 3-1
Environmental Resources Analyzed but Not Discussed Further in this Environmental Assessment

Resource	Description
Geology	The project site, which is located on an interior bend of the Chena River, is seismically active (CH2M HILL, 2004a). However, the potential for landslides, debris flows, swelling or collapsible soils, or other damaging geologic hazards is low. The Proposed Action would not affect geological features in the project area.
Soils and Permafrost	In general, a few meters of water-deposited silt and organic silt overlie alluvial sand and gravel in the project area. The Fairbanks area is known to have discontinuous perennially frozen ground (permafrost). No permafrost was encountered during drilling within the potential building foundation area. However, ADF&G encountered permafrost during nearby well drilling at a depth of 40 to 120 feet (CH2M HILL, 2006c). The hatchery would be designed for these conditions. The Proposed Action would not alter the characteristics of soils or permafrost in the project area.
Wetlands	Since there are no wetlands within the project area, the Proposed Action would not affect wetlands.
Floodplain	The site of the proposed hatchery is within the 500-year floodplain (Federal Emergency Management Agency [FEMA], 1992), but the facility would be protected from the 100-year flood by the Chena River flood control system. The proposed hatchery would not be at risk from flooding.
Vegetation	The proposed project site, formerly occupied by a sewage treatment facility, has been previously disturbed and is sparsely vegetated. Several sports fields and large parking areas are adjacent (CH2M HILL, 2006c). No rare, threatened, or endangered plant species are present. The Proposed Action would not adversely affect any plant community.
Birds	Migratory species, mainly around from spring to fall, dominate the bird populations in the region. Birds that are common to the area include those associated with waterbodies (for example, gulls, ducks, swans, geese), raptors (for example, falcons, eagle, hawks, owls), songbirds (for example, sparrows, chickadees, thrushes, warblers), upland birds (for example, grouse, ptarmigan), and other birds (for example, common raven) (NORTECH et al., 2004). Many of these migratory birds are protected by the Migratory Bird Treaty Act of 1918 (Title 16 of the U.S. Code [USC] Sections 703-712). The Proposed Action would not affect birds in the project area.
Wildlife	Common mammals in the Fairbanks area include moose, black and brown bears (rare within the city limits), red fox, lynx, snowshoe hare, beaver, and other small mammals (weasels, muskrat, mice, voles) (NORTECH et al., 2004). However, the Proposed Action, which would be in an already disturbed area, would not be heavily used by wildlife. Therefore, the Proposed Action would not affect wildlife in the project area.

TABLE 3-1
Environmental Resources Analyzed but Not Discussed Further in this Environmental Assessment

Resource	Description
Socio-cultural	No negative effects on any socio-cultural components of the population surrounding the Proposed Action are expected. Beneficial socio-cultural effects of the proposed hatchery are discussed in *Chapter 1, Purpose and Need*. The Proposed Action would not adversely affect the socio-cultural environment in the project area. Sport fish produced by the proposed hatchery would substantially augment existing wild and hatchery-grown stocks, which by themselves cannot support the growing sport fishing demand in Interior Alaska on a sustainable basis. Because it would add substantially to the annual production of the two existing Anchorage-based hatcheries, which are currently used to stock 130 lakes within Interior Alaska in addition to Southcentral Alaskan waters, the proposed Fairbanks hatchery would greatly increase the availability of sport fish in both regions. Because it would add to the reasonably foreseeable future production of the existing hatcheries and substantially increase the aggregate quantity of sport fish stock, the Proposed Action would contribute to a beneficial cumulative impact.
Economic	Beneficial economic effects of the proposed hatchery are discussed in *Chapter 1, Purpose and Need*. Hatchery operating expenses are estimated at $1.6 million per year (Dodge, 2004). A large portion of this would flow into the local economy through wages and purchases. The Proposed Action is a planned component of the Chena Riverbend Project and would be constructed in coordination with the Wilbur Street and Second Avenue Project and the Chena River Pedestrian Path. Together with these reasonably foreseeable future actions (RFFAs), the proposed hatchery would help to revitalize Downtown Fairbanks and have concomitant beneficial effects on land use, recreation, and the management of the lower Chena River and its aquatic resources, producing a beneficial long-term cumulative impact on the local and regional economy.
Energy Consumption and Conservation	The Proposed Action would not appreciably alter the existing level of energy consumption in the project area.
Hazardous Materials	It is not expected that operation of the Proposed Action would generate hazardous materials in the project area.

The following sections describe the baseline (present) conditions in the area of the Proposed Action of those environmental resources that are not listed in Table 3-1. These environmental resources, which have been selected for further analysis because of their relevance to the Proposed Action, are:

- Air quality
- Water volume, quality, and temperature
- Fish and aquatic habitat
- Land ownership and land use
- Cultural resources
- Noise
- Visual/aesthetics

3.1 Air Quality

3.1.1 Climate

Fairbanks is located in Interior Alaska and is far removed from the moderating influence of Alaskan coastal waters. As a result, the area has a continental climate that is characterized by large daily and annual temperature ranges; low humidity; and relatively light and irregular precipitation. Because of its low elevations, the Fairbanks area experiences extreme cold in the winter and high summertime temperatures. In addition, temperature inversions are frequent in winter. These generally occur under clear skies, light winds, and extremely low surface temperatures. However, locations only a few hundred feet above the surface can be significantly warmer (Alaska Climate Research Center, Geophysical Institute, University of Alaska Fairbanks, 2006).

The average annual precipitation reported at Fairbanks International Airport over the period between September 1949 and December 2005 was 10.5 inches. Average annual snowfall was 67.1 inches. Average annual maximum and minimum temperatures were 36.9 and 17.0 degrees Fahrenheit (°F), respectively. The highest monthly average maximum temperature of 72.3°F occurred in July and the lowest monthly average minimum temperature of -18.7°F occurred in January (Western Regional Climate Center, 2006).

3.1.2 Existing Air Quality

Air quality is federally regulated through ambient air quality standards and enforcement of emission limits for individual sources of air pollution. The federal Clean Air Act requires the EPA to identify National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare. The resulting NAAQS have been adopted by the State of Alaska and are presented in Table 3-2.

TABLE 3-2
National Ambient Air Quality Standards

Pollutant	Primary Standards	Averaging Times	Secondary Standards
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour(1)	None
	35 ppm (40 mg/m^3)	1-hour(1)	None
Lead	1.5 µg/m^3	Quarterly Average	Same as Primary
Nitrogen Dioxide	0.053 ppm (100 µg/m^3)	Annual (Arithmetic Mean)	Same as Primary
Particulate Matter (PM_{10})	Revoked(2)	Annual(2)(Arithmetic Mean)	
	150 µg/m^3	24-hour(3)	
Particulate Matter ($PM_{2.5}$)	15.0 µg/m^3	Annual(4)(Arithmetic Mean)	Same as Primary
	35 µg/m^3	24-hour(5)	
Ozone	0.08 ppm	8-hour(6)	Same as Primary

TABLE 3-2
National Ambient Air Quality Standards

Pollutant	Primary Standards	Averaging Times	Secondary Standards
	0.12 ppm	1-hour[7] (Applies only in limited areas)	Same as Primary
Sulfur Oxides	0.03 ppm	Annual (Arithmetic Mean)	-------
	0.14 ppm	24-hour[1]	-------
	-------	3-hour[1]	0.5 ppm (1300 µg/m^3)

[1]Not to be exceeded more than once per year.

[2]Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the agency revoked the annual PM10 standard in 2006 (effective December 17, 2006).

[3]Not to be exceeded more than once per year on average over 3 years.

[4]To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3.

[5]To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).

[6]To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

[7](a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is < 1.

(b) As of June 15, 2005 EPA revoked the 1-hour ozone standard in all areas except the fourteen 8-hour ozone nonattainment Early Action Compact (EAC) Areas.

Notes:

µg/m^3 = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter
$PM_{2.5}$ = particulate matter less than 2.5 micrometers in aerodynamic diameter
PM_{10} = particulate matter less than 10 micrometers in aerodynamic diameter
ppm = parts per million

Source: EPA, 2006

Wintertime inversions over Fairbanks, in combination with the region's low-lying terrain, result in periods of stagnant air during which air pollutants from vehicles and woodstoves are trapped. Consequently, Fairbanks residents and visitors experience periods of diminished air quality during the winter. Prior to 1999, the Fairbanks area typically had violations of the carbon monoxide (CO) NAAQS during long winter inversions and was considered a nonattainment area for CO. On June 21, 2004, after emission levels of CO had met the NAAQS for approximately 5 years, the State of Alaska submitted a CO maintenance plan for the Fairbanks nonattainment area and simultaneously requested designation to attainment for CO.

On July 27, 2004, EPA promulgated a direct final rule approving the maintenance plan and the designation as attainment for CO effective September 27, 2004 (69 Federal Register [FR] 44601). An area designated as attaining the standard while under an approved maintenance

plan is called a maintenance area. A maintenance area is subject to many of the same federal requirements as a nonattainment area until it is shown that the area will remain in attainment status. The Fairbanks area has not recorded a violation of the primary or secondary CO NAAQS since 1999 and is in attainment of the NAAQS for all other criteria pollutants.

During summers, Fairbanks occasionally experiences smoky periods caused by wildfires in the surrounding region. The smoky periods range from less than a day to several weeks, with their duration and severity depending on the characteristics and locations of the wildfires and on prevailing winds and precipitation.

3.2 Water Volume, Quality, and Temperature

3.2.1 Chena River

The Proposed Action would be located in the lower portion of the Chena River watershed. In this environmental assessment document, the lower Chena River is defined as that portion of the Chena River watershed downstream from the Chena River Flood Control Project. The Chena River originates in the White Mountains, about 90 miles east of Fairbanks, and empties into the glacial Tanana River less than 6 miles downstream from the proposed hatchery site. The Chena River is a large, unsilted, rapid-runoff stream (Tack, 1980). Five major tributaries feed it: the North Fork, South Fork, West Fork, Middle (East Fork), and the Little Chena River. The Chena River flows through the center of Fairbanks.

3.2.1.1 Water Volume

The average monthly discharge of the Chena River at Fairbanks ranges from 264 cubic feet per second (cfs) in March to 2,510 cfs in June based on the 58 year U.S. Geological Survey (USGS) gaging station 15514000 record (USGS, 2006). The historical lowest monthly flow is 120 cfs reported in February 1953 and March 1958. The historical highest monthly flow is 10,250 cfs reported in May 1948.

The Chena River flood control project, completed in 1979 at river mile 45, allows the river to flow freely at normal discharge levels, which allows free movement of fish as well as boat traffic. During periods of high water, floodgates are lowered and water is diverted into a cleared floodplain area that leads to the Tanana River. Floodwater can then bypass Fairbanks, mitigating the impacts of extreme high water events. The flood control structure includes a fish pass that allows the movement of fish when the gates are lowered (U.S. Army Corps of Engineers [USACE], 2006).

3.2.1.2 Water Quality

Water quality in the lower Chena River is influenced by land use activities in the watershed. The lower Chena River flows through the communities of Fairbanks and North Pole where residential and commercial development encroaches on floodplain and riparian habitats. Nonpoint source pollution from the application of lawn and garden fertilizer and pesticide products is a source of chronic low-level contamination entering the river.

Runoff from paved roadways and parking areas results in hydrocarbon contamination. Several highway bridge crossings and a railroad bridge cross the river. Each of these

crossings introduces low levels of contaminants to the river and the potential for more serious contamination from highway accidents or a railroad tanker derailment at the bridge crossing.

There is a buried river crossing of the Trans Alaska Pipeline System (TAPS) upstream of the Proposed Action. In addition, the Fort Knox Gold Mine is located in the headwaters of the Little Chena River drainage. The designs of both of these large projects have addressed water quality issues and incorporated mitigation measures.

Some gravel roads in the Chena River floodplain have been flooded, introducing sediment into the river.

The Alaska Department of Environmental Conservation (ADEC) has listed the Chena River as a Category 5 water. This means that it does not attain standards specified in Alaska's Water Quality Standards (18 Alaska Administrative Code [AAC] 70) and in Section 303(d) of the federal Clean Water Act (Title 33 of the U.S. Code [USC] Section 1251 et seq.). Pollutants impair one or more designated uses, and the Chena River must meet a total maximum daily load (TMDL) requirement. Since 1990, the Chena River has been on the Section 303(d) list for sediment and turbidity. The main pollutants are petroleum hydrocarbons, oil and grease, and sediment. The main pollutant source is urban runoff (ADEC, 2006).

3.2.1.3 Water Temperature

The most stringent temperature limits imposed by ADEC on effluents to fresh water are for spawning areas and egg and fry incubation areas (13 degrees Celsius [°C] or 55°F), followed by those for rearing areas and migration routes (15°C or 59°F). In addition, thermal limits may not exceed 20°C (68°F) at any time (18 AAC 70). These temperature limits would apply to the proposed hatchery's effluent outfall to the Chena River. During the summer, the temperature of the Chena River sometimes exceeds 15°C (59°F) (CH2M HILL, 2006b).

Water discharges from the Aurora Energy Chena Power Plant have altered the thermal characteristics of the Chena River downstream of the plant. Thermal differences are most pronounced during the winter months, when annual stream flows in the river are lowest and temperature differentials between discharge waters and the receiving water are greatest. During the winter months, areas downstream of the plant remain ice-free while adjacent areas of the river are ice-covered (Armstrong, 1973). Ice-free water has been observed during very cold winter temperatures downstream from the Peger Road bridge. In January 2007, large patches of ice-free water were viewed and photographed more than 100 yards downstream from the University Avenue bridge (Garcia, pers. comm., 2007).

3.2.2 Groundwater

Groundwater will be the primary source of water for the hatchery which will use a recirculation system to minimize groundwater consumption. Estimated groundwater pumpage will be about 1,200 gallons per minute (gpm) and will come from 1 or more 16-inch production wells.

3.2.2.1 Regional

The regional groundwater conditions in the hatchery are described as follows by Poole, Billings, and Staft [2004]):

> Groundwater in the lower portion of the Chena River watershed is contained in unconsolidated Chena and Tanana River alluvium overlying crystalline bedrock. During the Chena Lakes Flood Control Project design, the U.S. Army Corps of Engineers estimated that the hydraulic conductivity of aquifer alluvium was 1,000 ft/day. The maximum alluvium thickness drilled during exploration is 616 feet near the Chena River dam; however, seismic surveys have estimated thicknesses of up to 800 feet…For a thickness of 600 feet, transmissivity of the aquifer is 600,000 square feet per day.
>
> Fairbanks receives 11.22 inches of rain and snow annually, most of which is run-off or lost to evapotranspiration, hence, precipitation is not a major recharge source of the Fairbanks underground aquifer. The Tanana River, and to a minor extent, the Chena River, are the main sources of recharge to the aquifer. Generally, the aquifer is considered unconfined, however, seasonal icing and permafrost may create a temporary and discontinuous confining layer. Under normal conditions, the water table in the Tanana River is higher than that in the Chena River and groundwater flow is in a northwest direction, corresponding to flood plain slope. During spring snow melt and heavy periods of rainstorms, the Chena River is high and the Tanana is low, so both rivers contribute to aquifer recharge.

3.2.2.2 Hatchery Site

During October to December 2004, the ADF&G evaluated the aquifer beneath the baseball fields approximately 100 meters west of the proposed Ruth Burnett Sport Fish Hatchery location. ADF&G retained G.F. Back Drilling Company (G.F Back) to drill and develop a test well and an adjacent monitoring well to conduct a drawdown test. G.F. Back retained PDC, Inc. Consulting Engineers (PDC) to monitor water levels and collect water quality samples during the test (PDC, 2005).

G.F. Back drilled, installed, and developed an 8-inch well between October 18 and 26, 2004. The well was drilled using 8-inch casing and an air rotary drill rig. Boring logs provided indicate that a mixture of sand and gravel was encountered from the surface down to a depth of 196 feet. An 8-inch stainless steel slotted screen with 0.030-inch openings was installed from a depth of 176 feet to 196 feet below the ground surface.

A 2.5-inch observation well was also drilled and installed east of the 8-inch well. The well was drilled using 6-inch casing and an air rotary drill rig. A 2.5-inch PVC well was installed as the 6-inch casing was removed. The boring logs provided indicate the observation well was completed with a slotted 0.032-inch well screen from a depth 186 to 196 feet.

In 2006, M-W Drilling and CH2M HILL installed an 8-inch observation well and a 16-inch test production well at the proposed hatchery site. An upper water-bearing zone was observed from approximately 12 feet below ground surface (bgs) to a depth of 60 feet bgs. Finer grained material was encountered from 60 to about 140 feet bgs. Course sand and gravel with significant water was encountered from 140 to total depth of 225 feet for the

8-inch observation well and 200 feet for the 16-inch test production well. Both wells were completed in this lower water-bearing zone.

The test well was pumped at a rate of 1,500 gpm with only 54 feet of drawdown while the observation well (30 feet distant) exhibited only 5 feet of drawdown. Long-term constant rate testing of the 16-inch test production well is planned for spring 2007. The results of the short pumping test of the 16-inch well indicate that there is substantial leakage/recharge through the finer grained material overlying the lower water-bearing zone as indicated by the rate of drawdown approaching zero after only a short pumping time.

3.3 Fish and Aquatic Habitat

3.3.1 Fish Populations

The Chena River provides habitat for 13 species of fish including 2 species of anadromous salmon and 11 freshwater fish species (Table 3-3).

The Chena River supports a run of Chinook salmon and a summer run of chum salmon. Adult Chinook salmon enter the Chena River between late June and the second week of July and the run ends in late July or early August. Salmon entering the Chena River migrate over 900 miles upstream from the Bering Sea following the Yukon River, the Tanana River, and finally the Chena River to spawning areas located upstream of the proposed project site (ADF&G, Division of Sport Fish, 2004a). Salmon counts are conducted from the Moose Creek Dam flood control structure. In 2005, 534 Chinook salmon and 1,785 chum salmon were counted. The high water conditions in 2005 reduced visibility and limited the observers' ability to count salmon moving upstream. In 2004, under more favorable conditions, 9,894 Chinook salmon were counted (ADF&G, Division of Sport Fish, 2005a).

TABLE 3-3
Fish Species in the Chena River

Anadromous	Freshwater
Chinook salmon (*Oncohynchus tshawytscha*)	Arctic lamprey (*Lampetra japonica*)
Chum salmon (*Oncorhynchus keta*)	Arctic grayling (*Thymallus arcticus*)
	Burbot (*Lota lota*)
	Humpback whitefish (*Coregonus clupeaformis*)
	Least cisco (*Coregonus sardinella*)
	Lake chub (*Couesius plumbeus*)
	Longnose sucker (*Catostomus catostomus*)
	Northern pike (*Esox lucius*)
	Round whitefish (*Prosopium cylindraceum*)
	Slimy sculpin (*Cottus cognatus*)
	Sheefish (*Stenodus leucichtys*)

Source: ADF&G, Division of Sport Fish, 2004a

To maintain a Chinook salmon run on the Chena River, a biological escapement goal of between 2,800 and 5,700 fish has been set (ADF&G, 2004a). The harvest levels in fisheries along the 900 miles of river and environmental conditions encountered by various year classes of fish are important factors that influence escapement of salmon to the Chena River. The lower 45 miles of the Chena River, from the flood control structure downstream to the mouth, are open to salmon fishing with a one salmon over 20-inch limit. Since initiation of estimates in 1977, sport fishing harvest levels have ranged from less than 50 to more than 375 Chinook salmon per year (ADF&G, Division of Sport Fish, 2005b). In 2004, statewide harvest survey information estimated that sport fishers on the lower Chena River harvested 762 Chinook salmon and 28 chum salmon (ADF&G, Division of Sport Fish, 2004b).

The Chena River contains a rich assemblage of freshwater fish. Arctic grayling, burbot, northern pike, sheefish, and whitefish support various levels of sport fishing effort while the remaining species are important ecologically and as forage for piscivorous species such as northern pike, burbot, sheefish, and grayling.

Arctic grayling is the most important species in terms of angler effort. The Chena River supports a world-class catch-and-release grayling fishery. In 1991, catch and release restrictions were placed on Chena River grayling to protect grayling populations and maintain high quality fishing opportunities. In 1980, prior to the catch-and-release restrictions, an annual harvest of 41,825 grayling was reported from the Chena River (Mills, 1981). The reach of the Chena River nearest the proposed hatchery site is a grayling spawning area (McLean, pers. comm., 2006) and is discussed further in *Section 3.3.2, Aquatic Habitat*.

In 2004, 3,689 anglers made 6,983 trips and fished 11,320 days on the upper Chena River and 4,949 anglers made 13,940 trips and fished 20,165 days on the lower river (ADF&G, Division of Sport Fish, 2004b).

3.3.2 Aquatic Habitat

Aquatic habitat in the lower Chena River is influenced by water quality, which is discussed in *Section 3.2.1, Chena River*. Thermal discharge from the Aurora Energy Chena Power Plant, which is upstream from the outfall of the Proposed Action, has had no documented adverse impacts on the indigenous and anadromous populations of aquatic life in the Chena River (EPA, 2002). As part of the National Pollutant Discharge Elimination System (NPDES) permitting process for the Aurora Energy Chena Power Plant, ADF&G determined that the area of the Chena River where the discharge from the plant occurs is not an anadromous fish spawning area. However, that area "does support rearing and migratory anadromous fish species (chum and Chinook salmon) and resident fish spawning (arctic grayling). There are also burbot spawning and overwintering areas near the mouth of the Chena River. While fish migration does occur in this area, observations of resident fish populations by ADF&G have shown no adverse affects on fish due to the increased temperatures in the vicinity of the [Aurora Energy Chena Power Plant] outfall" (EPA, 2002).

Essential Fish Habitat (EFH) for adult Chinook and chum salmon is defined as the general distribution area for this life stage, located in fresh water whenever there are spawning substrates consisting of gravel from April through September (NMFS, 2005). By this definition, EFH exists in the lower Chena River. While there are no salmon spawning areas

in the lower Chena River, the lower Chena is used by returning salmon migrating to spawning areas upstream (Johnson and Weiss, 2006).

The presence of arctic grayling spawning grounds in the reach of the lower Chena River that would receive effluent discharge from the proposed hatchery is considered to be the key habitat consideration relating to the Proposed Action (McLean, pers. comm., 2006). Grayling spawn in the reach of the river where the outfall is proposed during an approximately 3- to 4-week period, typically in May. Spawning is triggered by temperature and begins when the river water warms to about 4°C. The fry hatch and leave the spawning grounds within roughly 10 days to 3 weeks after spawning starts. Although the spawning period usually occurs in May, it can vary from year to year, depending on seasonal factors such as the timing of spring breakup (the melting and movement of ice on the Chena River) (Ridder, 2000).

3.3.3 Stocked Waters Program

The stocked waters program is critical for maintaining angling opportunities and harvesting sport fish in Alaska waters. In the ADF&G management plan for stocked waters, 134 lakes and ponds and 1 stream are identified (ADF&G, 2005c). The plan identifies 54 waterbodies in the Lower Tanana River Management Area (Fairbanks), 53 waterbodies in the Upper Tanana Management Area (Delta Junction), and 28 waterbodies in the Upper Copper/Upper Susitna Management Area (Glennallen).

In 2000, an estimated 25,200 anglers fished in the Tanana Valley, generating an estimated 121,785 angler-days of effort (Walker et al., 2003). Of this total, an estimated 55,091 angler-days (45 percent of the effort) were directed toward stocked fish. The estimated harvest of stocked and wild fish in the Tanana Valley in 2000 was 66,123 and 20,890, respectively (Walker et al., 2003). Between 1998 and 2002, an average of 733,000 fish have been stocked annually in waters of the Tanana Valley (ADF&G, Division of Sport Fish, unpublished data). Since 1990, stocked fish have contributed 51 to 81 percent of the total estimated harvest of all game fish in the Tanana Valley and 33 to 45 percent of the total estimated fishing effort (Skaugstad, 2002). In 2000, about 25 percent of the total harvest of wild and stocked fish in the Tanana Valley was attributed to just two stocked species: rainbow trout and landlocked coho salmon (Walker et al., 2003).

The stocked waters program creates new fishing opportunities for species that do not occur in Interior Alaska (rainbow trout and Arctic char). In the coastal regions of Alaska, substantial sport fishing effort and harvest focus on marine and anadromous fish. However, in Interior Alaska, fishing effort is focused on freshwater species occurring in stream and lake systems. The Alaska Statewide Harvest Survey (ADF&G, Division of Sport Fish, 2004b) indicated an 11.8 percent increase in the number of days fished and a 9.9 percent increase in fish harvested between 2003 and 2004.

As the demand for sport fishing opportunities increases, it will be important to relieve harvest pressure on naturally occurring stocks of game fish (Arctic grayling), which can sustain only limited levels of harvest (ADF&G, Division of Sport Fish, 2005e). The stocked waters program provides this relief.

The general stocking plan is a comprehensive list of the species, life stage, stocking frequency, and maximum number of fish that can be stocked for all lakes in the program

(ADF&G, Division of Sport Fish, 2005c). In general, stocking sites are selected to maximize benefits to sport anglers. Resident species are usually stocked in landlocked lakes near population centers. Regulations in Title 5 of the Alaska Administrative Code control all movement of fish and fish eggs in the state. Policies also address fish genetics, disease concerns, lake stocking, and management of the resultant fisheries. The lake stocking policy requires that each lake be classified into one of five categories, depending on the degree that the lake is isolated from other waterbodies. Class 1 is assigned to lakes that are completely isolated and Class 5 is assigned to lakes with completely open outlets where fish can pass freely into and out of the system. Classes 2, 3, and 4 are intermediate categories, depending upon the nature of the connection to the system. The stocking products used at a given site are determined by the lake classification. The public must be able to access the water body before stocking can occur.

For lake stocking programs in general, the water in a lake must be deep enough for over-winter survival of fish. This allows fish stocked in one season to be available for anglers the following year. The ADF&G Division of Sport Fish has successfully established fisheries in shallow lake systems not suitable for over-wintering fish by stocking catchable fish early in the season. Examples of successful fisheries using this approach include Ballaine Lake near Fairbanks and Lost Lake in the Quartz Lake State Recreation Area near Delta Junction.

In 2001 and 2002, the rainbow trout in Quartz Lake were evaluated. Quartz Lake is important because angler effort and harvest are greater at this 1,500-acre lake than in any other lake in Interior Alaska. The study found that fingerling rainbow trout survival was less than 1 percent from the time of stocking in late summer to the following open-water season. Predation and inadequate growth after stocking in late summer were presented as reasons for the poor survival rate (Fish and Skaugstad, 2004). The study also found that catchable-size rainbow trout were supporting the fishery. Another recommendation of the study was to plant subcatchable fish (40 to 60 grams and 4 to 6 inches) early in the open-water season. This stocking strategy was determined to be the best alternative for supporting the popular rainbow trout fishery. Currently, the fishery in Quartz Lake is being maintained by reallocating catchable fish from other locations.

3.3.4 Subsistence

Subsistence salmon fishing activity within the Yukon River drainage occurs either from a fish camp or home village from late May to early October. These activities are highly dependent upon ice conditions in the river. Drift gill nets, set gill nets, and fish wheels are used to harvest salmon. Set gill nets are the primary gear type utilized throughout the drainage and fish wheels are found in the Upper Yukon Area including the Tanana River (Yukon River Panel, 2006). Salmon returning to the Yukon River are a vital food source for Native people in northern Alaska. More than 1,500 households in over 60 communities participate in Yukon River subsistence salmon fisheries (USFWS, 2006). In 2005, the subsistence salmon harvest included 53,400 Chinook, 88,300 summer chum, 89,400 fall chum and 26,000 coho salmon (Mull, 2006).

3.4 Land Ownership and Land Use

3.4.1 Zoning

The Proposed Action would be implemented on land owned by the FNSB and zoned as Light Industrial with Special Limitations (LISL). Recreational land adjacent to the site of the proposed hatchery (see *Section 3.4.2, Recreation*) is zoned for Outdoor Recreation (OR). The 5.2-acre tract proposed for the new hatchery has been rezoned from OR specifically for this purpose, with the rezoning scheduled for completion on January 11, 2007 (Zimmerman, pers. comm., 2006).

3.4.2 Recreation

The project area includes the Carlson Center (5,500-seat capacity), two adult recreation baseball fields, a pedestrian path, and supporting parking lots. Pioneer Park, a large picnic area, two playgrounds, other ball fields, a skateboard park, and the curling club are nearby. Currently, several thousand people use the area each year (FNSB, 2005a).

The Chena River provides year-round recreational opportunities. "In the summer, boaters and kayakers travel the Chena under the Cushman Bridge. During the winter, dog-sled teams, skiers, snow machines, and vehicles use the frozen Chena River and Noyes Slough."

In Interior Alaska, it is anticipated that fishing effort and harvest would increase because the population would increase. Economic factors contributing to population growth include:

- Expansion and development of military facilities, including Fort Wainwright and the Missile Defense System near Delta Junction
- The development of mines and mineral resources, including the Pogo Mine in the Goodpaster River Drainage, the Fort Knox Mine, and the True North Gold Mine north of Fairbanks
- The potential construction of a natural gas pipeline
- Continued rapid commercial and residential construction activity
- Employment opportunities with various branches of state, local and federal government

Statewide harvest information consistently shows a higher percentage of Alaska resident anglers participating in fisheries in the Interior (Jennings et al., 2004). Visitors to the state often choose to fish in coastal areas with the potential of catching marine and anadromous fish (for example, salmon and halibut). Residents of Interior Alaska want to fish close to home, and would participate in stocked lake fisheries to the extent that they are available.

Improvements to public lake access are funded through the Sport Fish Access Program. Improvements such as docks, signs indicating stocked waters, and boat launch areas are included in the program. Icehouse rental programs are conducted in cooperation with the Alaska Department of Natural Resources, Division of Parks, and the FNSB Parks and Recreation Department.

3.5 Cultural Resources

Based on a literature review, archaeological compliance survey and consultation for the proposed Ruth Burnett Sport Fish Hatchery, visitor's center and parking lot, there are 32 cultural resource sites, all historic, that have been previously documented within 1 mile of the area of potential effect (APE) (Alaska Department of Natural Resources [ADNR], Office of History and Archaeology [OHA] 2006). The APE is limited to the parcel of land, bordered on the south by Hilton Avenue and on the east by Wilbur Street, on which the proposed facilities would be constructed (Figure 2-1). These cultural resource sites are primarily located at Pioneer Park and are associated with early mining activities and settlement of Fairbanks. Five of these historic cultural resources have been determined eligible for, or are listed on, the National Register of Historic Places (NRHP) (ADNR, OHA 2006; National Park Service [NPS] 2006). None of the 32 cultural resource sites is within the APE. In addition, no historic or prehistoric deposits were located during the survey nor were any historic properties identified in the APE.

3.6 Noise

Noise is defined as unwanted sound. Sound is a physical phenomenon consisting of minute vibrations, which travel through a medium, such as air, and are sensed by the human ear. The actual impact of noise is a function of loudness, frequency, content, time of day during which noise occurs, and duration of the noise. The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, or dissatisfaction
- Interference with activities such as speech, sleep, or learning
- Physiological effects such as startling and hearing loss

Existing land in the vicinity of the Proposed Action consists of baseball parks, residential neighborhoods, and open space. The main sources of existing noise are baseball fields and surface transportation vehicles. The baseball season begins in early May and is completed by the end of September. During the summer baseball season, the long daylight hours allow the ball fields to be used well into the evening. Sounds typically associated with baseball games include cheering spectators and vehicle engine noise. Late-night baseball is an Alaskan neighborhood tradition and generally not considered unusual or intrusive.

3.7 Visual/Aesthetics

The proposed hatchery would be sited on the southeast corner of a large open tract dedicated to outdoor recreation, including three baseball fields. The proposed site is visible from other locations within the Chena Riverbend Development area, including the immediate neighborhood, the baseball fields, and the walking and bicycling trail along the Chena River. The surrounding neighborhood is residential in character.

3.8 Transportation

The Proposed Action involves two aspects of transportation: local and regional. The first is the level and pattern of existing vehicle traffic in the neighborhood surrounding the proposed hatchery site, and whether it will change as a result of building and operating the facility. The second is the regional highway system and its existing traffic, and whether the Proposed Action will affect use of this regional system. The following discussion briefly describes existing conditions for the local and regional transportation patterns. The question of how the Proposed Action might affect these patterns is discussed in Section 4.8.

The Fairbanks North Star Borough Transportation Department operates the Metropolitan Area Commuter System and Van Tran paratransit services (FNSB, 2007). Two public transit routes, the red and yellow bus lines, use Wilbur Street between Airport Way and the Carlson Center; both pass the site of the Proposed Action on its east side, where the entrance and parking lot are planned. These bus lines and the Van Tran service would provide direct public access to the proposed hatchery. During frequent site visits throughout 2006, the study team observed that daytime vehicle traffic in neighborhood streets surrounding the proposed hatchery site is light. Local traffic consists mostly of private and commercial vehicle trips on Wilbur Street to and from busy Airport Way, Fairbanks's main east-west arterial, located one city block to the south. Because Wilbur Street provides access to the Carlson Center from Airport Way, traffic adjacent to the proposed hatchery site is heavier during sports and other events at the Carlson Center.

As elsewhere in Alaska, outdoor recreation in the Interior is closely tied to the regional highway system. In Interior Alaska, this system consists primarily of the Parks, Richardson, Steese, and Elliott highways, all of which directly or indirectly connect to Fairbanks. A recent study of the feasibility of paving and making other improvements to the Steese Highway suggested that such an investment would be a cost-effective way to encourage tourism and recreational activity in the Interior and accommodate the growing number of Alaskan, out-of-state, and international tourists who visit the region for sport fishing (ADOT&PF, 2006a).

To stock Interior lakes, ADF&G staff currently make approximately 12 to 16 trips per year to transport fish from Anchorage hatcheries to the Interior, typically from mid-May until early September. Occasionally, fish are stocked under the ice during March. Fish are transported on the Glenn, Richardson, and Parks highways, as many lakes are stocked not only near Fairbanks, but also in the Glennallen and Delta Junction areas. In addition to stocking priorities, considerations such as highway construction or anticipated traffic delays affect the routes drivers select. Fish transported long distances from Anchorage to the Interior are typically moved in large tractor-trailers or water trucks that carry four to six tanks of fish each.

3.9 Public Health and Safety

A Phase I environmental site assessment in compliance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 USC 9601) was conducted at the site of the Proposed Action in May and July 2006 (CH2M HILL, 2006d). A geotechnical investigation was also conducted at the proposed hatchery site (CH2M HILL,

2006c). The results of these investigations indicated that there were no known contaminants at the site that would present a risk to public health or safety. No other types of hazard to public health or safety are known to be present at the proposed hatchery site.

CHAPTER 4

Environmental Consequences

The Proposed Action would be constructed on an open, previously disturbed site in an urban neighborhood with adjoining sports fields and parking lots. No adverse direct or indirect effects of the Proposed Action or of the No Action Alternative on physical, biological, or human resources are predicted. Short-term, construction-related impacts at the site would be mitigated through ADOT&PF best management practices and construction standards to minimize stormwater runoff, noise, fugitive dust, and other typical effects of construction. The Proposed Action would contribute to a beneficial, long-term cumulative impact on outdoor recreation, tourism, and the local and regional economies.

This chapter provides additional information related to the following resources:

- Air quality
- Water volume, quality, and temperature
- Fish and aquatic habitat
- Land ownership and land use
- Cultural resources
- Noise
- Visual/aesthetics
- Transportation
- Public health and safety

This chapter also describes:

- Construction-related impacts
- Mitigation measures
- Cumulative impacts

4.1 Air Quality

4.1.1 No Action Alternative

Under the No Action Alternative, there would be no air quality impacts from construction or operation of a new fish hatchery in Fairbanks.

4.1.2 Proposed Action

Atmospheric emissions from the Proposed Action will produce three kinds of air quality impacts: construction impacts, stationary source impacts, and mobile source impacts. Construction impacts are discussed in *Section 4.8, Construction-Related Impacts*.

4.1.2.1 Stationary Source Impacts

The only stationary source proposed to be operated at the hatchery site is a natural gas-fired boiler to heat the building and to heat process water. A boiler rated at approximately

16.2 million British thermal units per hour (MMBtu/hr) will be required to meet these heating needs. Table 4-1 presents an estimate of air pollutants that would be released to the atmosphere under the assumption that the boiler is operated at capacity year-round (worst-case scenario).

TABLE 4-1
Natural Gas-Fired Boiler Emissions from the Proposed Fairbanks Fish Hatchery

Pollutant	Boiler Emissions (tons/year)	Permitting Threshold (tons/year)
Oxides of Nitrogen (NO_X)	3.5	40
Carbon Monoxide (CO)	5.8	100
Particulate Matter (PM_{10})	0.53	10
Sulfur Dioxide (SO_2)	0.04	40
Volatile Organic Compounds (VOCs)	0.38	Not Applicable

Stationary source emissions from the proposed fish hatchery would be regulated under the federal Clean Air Act through a Minor Permit program delegated to the State of Alaska and administered by ADEC under 18 AAC 50. Minor Permits cover stationary sources, such as the proposed hatchery, which are not large enough to fit Clean Air Act Title V, Prevention of Significant Deterioration, or New Source Review requirements. Emissions thresholds for the Minor Permit program are shown in Table 4-1. Worst-case levels of air pollutants that would be released by the Proposed Action are substantially below the thresholds for a Minor Permit and would not approach or exceed any NAAQS threshold. For this EA, NAAQS regulatory thresholds are the criteria for air quality impacts. Therefore, it is concluded that operation of the proposed hatchery would not produce an adverse effect on air quality.

4.1.2.2 Mobile Source Impacts

Mobile sources associated with daily operation of the proposed hatchery would be vehicles carrying employees to and from the facility and vehicles carrying visitors to the facility for educational, recreational, and tourism activities. Anticipated maximum vehicle trips associated with operating the proposed hatchery were estimated for employees and visitors. Probable emissions from these vehicle trips, estimated using vehicle emission rates from EPA's MOBILE6 computer program with the vehicle distribution for the Fairbanks area, are shown in Table 4-2. These quantities are inconsequential with respect to the area burden and would not approach or exceed any NAAQS threshold. For this EA, NAAQS thresholds are the criteria for air quality impacts. Therefore, it is concluded that mobile sources associated with daily operation of the proposed hatchery would not produce an adverse effect on air quality from carbon monoxide or any other pollutant. Supporting documentation for carbon monoxide is provided in the General Conformity Technical Memorandum presented in *Appendix A*.

TABLE 4-2
Vehicle Emissions Associated with Operation of the Proposed Fairbanks Fish Hatchery

Pollutant	Vehicle Emissions (tons/year)
Oxides of Nitrogen (NO_X)	0.53
Carbon Monoxide (CO)	1.82
Particulate Matter (PM_{10})	0.01
Sulfur Dioxide ($SO_{2)}$	0.00
Volatile Organic Compounds (VOCs)	0.07

4.1.2.3 General Conformity Review for Carbon Monoxide

The proposed fish hatchery would be federally funded in part and would be constructed within the Fairbanks air quality maintenance area for CO. As a result, a general conformity review for CO is required to demonstrate that the Proposed Action would conform to the State Implementation Plan (40 Code of Federal Regulations [CFR] Part 51 and 18 AAC 50.725).

A general conformity review first involves determining if the proposed action is exempt. The quantity of CO released during the highest CO emission year is compared with the threshold of 100 tons of CO per year, above which a proposed facility requires further review. The analysis must consider construction year(s) as well as operating years and include direct emissions as well as indirect emissions that would result from the proposed action.

The worst-case year related to the Proposed Action was determined to be the first year of operation (2009), with total combined stationary and mobile source emissions of CO estimated to be 7.7 tons during that year. This amount is well below the CO threshold of 100 tons per year. Therefore, the Proposed Action would not require further general conformity review. Supporting documentation is provided in the General Conformity Technical Memorandum presented in *Appendix A*.

4.2 Water Volume, Quality, and Temperature

4.2.1 No Action Alternative

Under the No Action alternative, there would be no impacts on water volume, quality, or temperature.

4.2.2 Proposed Action

The following sections examine the potential of the Proposed Action to affect the volume, quality, and temperature of surface water and groundwater.

4.2.2.1 Water Volume

Groundwater from one or more hatchery wells would be used as the water source for the proposed hatchery. As indicated in *Sections 3.2.2.1* and *3.2.2.2*, the hatchery wells would be

completed in the extensive regional aquifer that receives its recharge from the Chena and Tanana rivers. However, because almost all of the estimated 1,200 gpm of pumped groundwater would be returned to the Chena River, the volume of water flowing in the river would not be reduced to a measurable extent.

In September 2004, ADF&G conducted an aquifer investigation at a test well located approximately 500 feet away from the proposed hatchery site (*Section 3.2.2.2*). The findings of that investigation are documented in a report titled *Baseball Field Aquifer Evaluation* dated January 2005 (ADF&G, 2005d). Concurrently, UAF Department of Geology and Geophysics students with full access to the well logs conducted a separate analysis of the drawdown effects. Their results were presented in a report titled *Hydrological Analysis of the Fairbanks Sport Fish Hatchery Site Using a Steady-state Flow Model* (UAF, 2005). These reports analyze the drawdown effect from a 48-hour pump test on a well 200 feet deep with a continuous water removal rate closer to 650-gpm *versus* the 500-gpm test model. Chemical analysis of the water was conducted at three periods during the drawdown test, and water samples from the Chena River were collected and analyzed. The investigation was performed to determine the chemical nature and the capacity of the deep aquifer to sustain continuous pumping for a hatchery facility that would require up to 1,500 gpm at peak use. To determine drawdown effects in the area, four other deep well sites were monitored and water levels recorded. The actual drawdown well was not monitored, but modeling indicated that the drawdown at the well site during pumping was consistent with the drawdown rates at the other wells.

The removal of water had small measurable effects upon the wells that were monitored. The change of water level at these sites was less than 1 foot. At the end of the test, the water levels at all of the wells quickly returned to the static levels noted prior to the test. These findings are consistent with observations from the local water utility, Golden Valley Electric Association (GVEA), which pumps wells at 5,000 gpm with a change in water level of 10 feet. GVEA staff noted that at the test well levels, which represent the proposed hatchery's drawdown rate, the effects on the aquifer would be "barely noticeable" (Garcia, pers. comm., 2007). Both reports concluded that the local groundwater reservoir has a high capacity, the aquifer level stabilizes very quickly, and that on the basis of the test results, the proposed hatchery well would meet the needs of the project without a negative impact on the aquifer.

The proposed hatchery would use groundwater drawn from the lower of two aquifers underlying the site. The groundwater extracted would be supplied from the lower aquifer (most likely tied to the Tanana River) and also (it is assumed) from "leakage" from the upper aquifer, which is tied to the Chena River and also recharged, to a lesser extent, by surface infiltration from winter snow melt and rain events. The groundwater supplied from the upper aquifer must travel downward through 60 to 80 feet of finer-grained material. Change to the upper aquifer was not observed during the well test discussed above, but since the upper aquifer is tied to the Chena River, it is concluded that the proposed hatchery well would extract water from the river. It is unlikely, however, that the proposed hatchery well would produce a measurable reduction in flow from the Chena.

The proposed hatchery would use a water recirculation system. This system would markedly reduce the volume of water discharged to the Chena River in comparison with a flow-through system. It is estimated that the outfall discharge to the Chena River from the

proposed hatchery would be 1,100 gallons per minute (approximately 2.5 cubic feet per second [cfs]). For the Chena River, the monthly mean stream flow for March, which is the lowest flow month, is 264 cfs (USGS, 2006). Therefore, the discharge volume from the proposed hatchery would contribute less than 1 percent to the river during the average lowest flow month. The historical lowest monthly flow (58 years of record) in the Chena River is 120 cfs reported in February 1953 and March 1958. The proposed discharge represents 2 percent of the lowest monthly flows on record. Therefore, the Proposed Action is not likely to measurably affect the volume of water in the Chena River.

It is important to note that Chena River water flow is not static, but is a dynamic water system that experiences daily and seasonal flow changes. During any given year, the river will exhibit natural flow changes that far exceed the proposed volume of hatchery effluent. These flow changes will reflect the warming and cooling of air temperatures within a day and over longer periods, and the variability of flow from these factors does not include rain events, which would produce still further variations in flow. The references above to 1 percent and 2 percent river volume changes from hatchery effluent are based on the average Chena River flow recorded by USGS for flow volume over a 58-year period. The range of flows in March varies from as high as 445 cfs (166,000 gpm) to as low as 120 cfs (44,847 gpm). As a percentage of flow during the river's coldest and most water-limited period of the year, a hatchery effluent flow of 1,000 gpm would represent a flow contribution of 0.6 percent and 2.0 percent, respectively. However, even during the winter months, there is an influx of water not conveyed down the river channel that manifests itself as ice-free areas in the upper reaches of the Chena. It is believed that the ice-free areas result from upwelling groundwater of an unknown volume. It also is likely that there are areas in the Chena where the porosity of the stream bottom allows the surface water to re-enter the shallow aquifer for a net surface water volume loss. During the higher water flow months, flow can exceed 4,000 cfs (1,494,920), relegating the hatchery water volume addition to 0.07 percent. This dynamic of natural events shows that flow changes are the norm year round, and that the addition of the hatchery water would be negligible.

4.2.2.2 Water Quality

Intake water used for rearing sport fish at the proposed hatchery would be withdrawn from a groundwater well, circulated through the hatchery rearing system, and discharged as an effluent stream to the lower Chena River. One production test well and a monitoring well were drilled at the site of the proposed hatchery to establish if the quantity and quality of available groundwater would be adequate for operational purposes. Results of the sample analyses indicate that a water treatment system would be required to remove iron, manganese, hydrogen sulfide, and carbon dioxide from the groundwater intake stream before the intake water is used in the rearing pens. The removed constituents would be discharged along with sanitary wastewater to the City of Fairbanks sewage disposal system (ADF&G, 2005b and CH2M HILL et al., 2005). It is likely that radon would be removed through the aeration process and captured in carbon filters (Garcia, pers. comm., 2007). The filters would be disposed of in accordance with FNSB solid waste management standards.

Effluent from the hatchery rearing pens would be carried by pipe to an outfall location on the bed of the lower Chena River. The primary water quality consideration regarding the effluent stream would be any potential for contamination of Chena River water by wastes and bacteria. 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). A copy of the general permit under which Alaskan sport fish hatcheries currently operate is presented in *Appendix B*.

The proposed hatchery would use water pumped from the lower aquifer discussed in *Section 4.2.2.1*. The initial quality of water from the deep aquifer is so poor that it would kill fish placed in it within minutes. It is high in iron, manganese, sulfur dioxide, low in oxygen, and unfit for fish. Although the lower aquifer is not considered a confined aquifer, seasonal icing and permafrost can create temporary and discontinuous confining layers. The differences in water quality from the aquifer in contrast to surface water are great, and those differences are reflected in the test results from samples collected in September 2004. For example, for two substances of concern to fish culture, iron and manganese, the differences in aquifer versus surface water contents were: iron, 5.37 parts per million (ppm) versus 1.37 ppm, and manganese, 0.5 ppm versus 0.39 ppm. To allow successful rearing of fish in the hatchery, the intake water would undergo multiple treatment regimes to remove iron, manganese, and sulfur dioxide, and to increase the oxygen content. The targets for water treatment at the proposed hatchery for the two substances of concern discussed above are less than 0.1 ppm for iron and 0.01 ppm for manganese. Those treatment levels have been consistently achieved at the Aurora Power Plant pilot hatchery in Fairbanks, and fish have been successfully reared in the treated water.

4.2.2.3 Water Temperature

Throughout the year, the hatchery process water would be adjusted to control the growth rate of the fish stock. Therefore, the temperature of the effluent discharged to the Chena River would vary and often differ greatly from that of the receiving water. The degree of difference would depend on the process water temperature and on seasonal variations in the temperature of the Chena River. Effluent from the proposed hatchery would range from several degrees cooler than the Chena River (in the summer) to about 8°C (17°F) warmer than the Chena River (in the early spring). The hatchery process water that is not recirculated (approximately 1,100 gallons per minute) would be discharged to the Chena River directly across Second Avenue from the fish hatchery, between the footbridge and the Carlson Center parking lot. Prior to discharge, the hatchery effluent would be treated to meet ADEC and EPA permit standards. The maximum discharge temperature would be approximately 11.2 degrees Celsius and would occur in June. The minimum discharge temperature would be approximately 8.8 degrees Celsius and would occur in November and December. In addition to the ADEC/EPA discharge permit, an ADNR Title 41 Habitat permit would be required for construction of the effluent outfall. Finally, solids collected on the filters would be removed during backwash events, and the backwash would be discharged to Golden Heart Utilities' sewer system.

As noted in *Section 3.2.1.3, Water Temperature*, ADEC limits the maximum temperature of effluents to waterbodies used by migrating fish to 15°C (59°F) (18 AAC 70). It is expected that the hatchery outfall temperature would not exceed a monthly average of 12.8°C (55°F) and would not exceed the threshold level of 15°C (59°F) at any time. During warm summers, the temperature of the Chena River can rise above 15°C (59°F). At those times, the effluent from the proposed hatchery would provide an influx of slightly cooler water.

Although surface water and much of the subsurface water of the Chena River freeze during winter, variable open-water conditions occur even during the coldest months. In the stretch of the Chena upstream and downstream of the Peger Road Bridge and near the pedestrian bridge, ADF&G monitoring during the winter of 2006-2007 found that surface water temperatures were above 33 degrees F (Garcia, pers. comm., 2007). It is not expected, therefore, that the hatchery effluent would adversely affect ice conditions in the Chena River.

4.3 Fish and Aquatic Habitat

As noted in *Section 3.3.2, Aquatic Habitat,* EFH for adult Chinook and chum salmon is defined as the general distribution area for this life stage, located in fresh water whenever there are spawning substrates consisting of gravel from April through September (NMFS, 2005). By this definition, EFH exists in the lower Chena River. While there are no salmon spawning areas in the lower Chena River, the lower Chena is used by returning salmon migrating to spawning areas upstream (Johnson and Weiss, 2006). The lower Chena also is used by arctic grayling for spawning (Ridder, 2000). *Section 4.3.2* examines impact pathways by which the Proposed Action could affect fish and aquatic habitat and concludes, on the basis of supporting information discussed and cited, that adverse impacts on these resources are not expected.

4.3.1 No Action Alternative

The No Action Alternative would have no impact on fish or aquatic habitat.

4.3.2 Proposed Action

4.3.2.1 Water Source

Well water is the water source for the proposed hatchery. Use of well water would preclude impacts on fish from water withdrawal directly from the lower Chena River system. Benefits from use of well water would include a stable, secure, reliable, easily controlled water supply to the proposed hatchery. The use of water wells would eliminate the potential for fish habitat impacts from changes in stream flow. See *Section 4.2.2.1, Water Volume*.

4.3.2.2 Water Discharge

An Alaska Title 41 Fish Habitat Permit from the ADNR Office of Habitat Management and Permitting (OHMP) would be required for installation of the hatchery outfall discharge pipe. The proposed outfall location in the lower Chena River is a grayling spawning area. To comply with Alaska Water Quality Standards for Freshwater Aquatic Life, the allowable discharge temperature at the outfall location must not exceed 13°C (55°F). If the temperature is expected to exceed this threshold, a site-specific mitigation plan and mixing zone design will be required for approval by ADNR/OHMP under the Title 41 Fish Habitat Permit (McLean, pers. comm., 2006).

The ADNR/OHMP Title 41 Fish Habitat Permit would address construction in or near the Chena River that could result in riverbank disturbance or degradation. Clearing and slotting the riverbank to lay the outfall pipe would not be a major concern, provided the riverbank

was filled, re-leveled, and reseeded in accordance with State of Alaska Best Management Practices to ensure that construction-related siltation is transient (McLean, pers. comm., 2006,).

The Fish Habitat Permit would specify that construction in the Chena River must avoid a 3- to 4-week sensitive period during which arctic grayling spawn in the reach of the river where the outfall is proposed. The spawning period typically occurs in May, with minor variations from year to year depending on the timing of breakup. Spawning is triggered by temperature and begins when the river water warms to about 4°C. The fry hatch and leave the spawning grounds within 10 days to 3 weeks after spawning starts. The Title 41 Fish Habitat Permit required for installation of the proposed outfall pipe would prohibit construction activity in the Chena River during May (McLean, pers. comm., 2006).

With respect to the Aurora Energy Chena River Power Plant, which is upstream from the proposed hatchery site, no adverse impact on the indigenous and anadromous populations of aquatic life in the Chena River has been documented from past thermal discharge from the facility (EPA, 2002). It is likely that the effluent discharge from the proposed hatchery would not alter water quality in the lower Chena River or use of this section of the river by anadromous or resident freshwater fish populations.

As required for compliance with Section 10 of the Rivers and Harbors Act of 1999, administered by the U.S. Army Corps of Engineers (USACE), the outfall pipe would be designed and installed in a manner that ensures the pipe would not interfere with recreational boat navigation on the Chena River, and that consequently a Section 10 permit would not be required. The main point is that the outfall pipe must lay flat on the riverbed. The USACE Alaska District would be consulted for advice on this topic during the design and permitting phase of the project.

Water Volume

See *Section 4.2.2.1, Water Volume*. Changes to the volume of water in the Chena River would too small to affect the river's fish or aquatic habitat.

Water Quality/Fish Pathogen Issues

Although considered wastewater from a regulatory standpoint, 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 screened prior to release to remove settleable solids, and it would have a balance of pH, oxygen, and other water chemistry characteristics that would be safe for fish. Treatment would include a 90-micron drum filter to remove solids from the discharge waters. An ultraviolet unit downstream of the drum filter is under consideration. Final treatment design would evolve with the final design of the hatchery (Fish, pers. comm., 2006b). Fish eggs used in the hatchery would adhere to fish pathology guidelines and be specific-pathogen free. Tissue samples for disease screening of fish population that would be used to provide eggs for the hatchery are currently being collected. Iron, manganese, uneaten fish food, and fish wastes would be separated out and sent in a separate concentrated waste stream via the city sewer system to the Golden Heart Utilities sewage treatment plant.

ADF&G recognizes the potential for release of pathogens from the rearing stocks within the proposed hatchery to wild stocks in the Chena River. This possibility has been studied, and

very strict biosecurity measures would be adhered to in the facility. All eggs brought into the hatchery would come from disease-free brood stocks or, if wild stocks, the donor fish would be screened for disease. All eggs and equipment coming into the facility would be disinfected, and wild stock eggs would be kept separate until cleared by the ADF&G Pathology Department. To the greatest feasible extent, various species of fish would be separated into smaller lots and kept separate. Water exchange between differing fish species would be prohibited. Because fish culture activities occur within an indoor controlled space, disease from outside sources would be unlikely under the proposed biosecurity protocols. Water recirculating within the culture systems would undergo ultraviolet and ozone disinfection before being returned to the tanks. If at anytime disease were found, the diseased lot of fish would be destroyed immediately, and all equipment associated with that fish lot disinfected. The possibility of a serious pathogen release would be almost non-existent.

Water Temperature

As with the water quality of the hatchery effluent, the temperature of the effluent would also be optimal to promote fish health and growth: in the low to mid-50°F range. The release of this comparatively warm water, even in the lowest river-flow periods, has been calculated to warm the Chena River less than 0.2°F above the 33°F measured by ADF&G for the past three years in the proposed receiving section of the river. The temperature of water released from the hatchery would not pose a barrier to fish movement or adversely affect fish growth or spawning.

As noted in *Section 3.2.1.3, Water Temperature,* the temperature of the water in the Chena River downstream of the Aurora Energy Chena Power Plant has been altered by water discharges from the plant (Foster Wheeler Environmental Corporation, 2001). It is likely that fish species that prefer warmer water, such as longnose sucker and lake chub (*Couesius plumbeus*), are attracted to thermal discharge areas, while fish species such as Arctic grayling (*Thymallus arcticus*), that are known to prefer cooler water, may avoid such warm water areas. According to the Aurora Plant's NPDES permit, "while fish migration does occur in this area, observations of resident fish populations by ADF&G have shown no adverse affects on fish due to the increased temperatures in the vicinity of the outfall" from the power plant (EPA, 2002). On the basis of this finding, adverse impacts on fish due to water temperature changes from hatchery discharge are not expected.

Annual salmon migrations into the Chena River system (federally recognized EFH) start in late June, peak in mid-July, and are over by early August (ADF&G, Division of Sport Fish, 2005f). Out-migration of juvenile salmon occurs early in the open-water season. The timing of migration occurs during periods of higher stream flows. During the open-water summer months, the thermal characteristics of the receiving water and discharge waters are most similar.

It is not anticipated that effluent discharged from the proposed hatchery would change fish migrations and fish use of the lower Chena River and therefore adversely affect salmon EFH.

Biodiversity and/or Ecosystem Function

The Proposed Action would not affect the lower Chena River's biodiversity and/or ecosystem functions such as benthic productivity or predator-prey relationships, because

the effluent stream from the proposed hatchery would be controlled to meet Alaska Water Quality Standards for Aquatic Life (18 AAC 70).

Other Effects on Fish Populations in the Chena River

Since the hatchery would not release fish to the Chena River and the facility would not be located on the river, accidental releases of hatchery fish to the Chena River could not occur.

4.3.2.3 Stocking Lakes

The output of the proposed hatchery would result in a slightly lower number of fish released than at present, but they would be generally larger at release as compared with fish currently supplied by Anchorage hatcheries. The total number of lakes stocked is not expected to change from the present number. Because most Interior lakes freeze to the bottom in winter, most of the fish stocked in the lakes do not survive the winter. It is advantageous to anglers, therefore, to stock the lakes each year with larger, more catchable fish. The Proposed Action would make this possible (Garcia, pers. comm., 2007).

Lakes are selected for stocking after considering fish genetics and fish disease impacts on wild fish populations. In general stocking occurs in landlocked lakes with provision for public access. Interior Alaskan lakes that would be stocked under the Proposed Action have already been identified and are already included in the existing fish-stocking program supplied by Anchorage hatcheries. If additional fish are available through increased hatchery capacity, new waterbodies might be added to the stocked waters program. Acceptable candidates would include sites with public access, water deep enough to allow overwintering survival, and no inlet or outlet streams. Potential sites include gravel pits and the proposed Tanana Lakes Recreation area south of Fairbanks (Skaugstad, pers. comm., 2006).

The proposed hatchery would benefit sport fishing in Interior Alaska by producing the preferred size class of fish for stocking when the potential for survival and growth is greatest. Anchorage-based hatcheries are operating at full capacity and can supply only a small percentage of these preferred fish. The proposed Action would provide larger fish and improve fishing success at Quartz Lake and other stocked lakes in Interior Alaska. Annually, about 988,000 fish would be used to stock nearly 130 lakes in Interior Alaska (Garcia, pers. comm., 2007). By supporting the stocked lakes program, fish production from the proposed hatchery would encourage more anglers to use the stocked lake fisheries. Increased use of stocked lakes would divert fishing effort, reducing angler pressure on wild fish populations.

Completion of the Ruth Burnett Sport Fish Hatchery in Fairbanks would allow the relocation from Anchorage of an Interior Alaskan fish-stocking program that is already mature. Most of lakes in the Interior Alaska stocking program have been stocked for over 20 years, and almost all lakes presently in the program have been consistently stocked for more than five years. The number of recipient lakes varies between 135 and 145 annually, depending on historic angler demand and stocking performance. The number of fish stocked in these lakes annually has been about 1 million for more than a decade. The Proposed Action, therefore, would not entail a new introduction of fish into Interior Alaska, but rather a shift of the production facilities from Anchorage-area hatcheries to the proposed Ruth Burnett Sport Fish Hatchery in Fairbanks. The target production of fish from

the new facility would be 987,000 fish, slightly reduced from the historic and existing target number of 1million. The overall biomass of the fish produced, however, would be doubled, that is, generally larger, more catchable fish would be released.

The new hatchery would incubate and rear six species of fish belonging to the salmon family. These fish would be released as three different life stages: fingerling (4 grams), sub-catchable (10-20 grams), and catchable (120-180 grams) and would remain land-locked. No release of anadromous fish is planned. The size of the plantings would vary from 135,000 fish to as few as 300, depending on waterbody size and angler effort. Typically, the larger the number of fish stocked, the smaller the size of the fish at stocking. Only a small percentage of the smaller fish survive to catchable size, approximately 5 percent. Many of the planted lakes have no outlets, and those that do are stocked with fish that are pre-treated at the hatchery to prevent them from reproducing. The number of sport fish that are stocked into a lake is calculated to maintain a desired population structure and abundance. The goal is to stock only enough fish to compensate for natural mortality and the number that is harvested by anglers. Each year, on a rotating basis, five of the stocked waterbodies are studied by ADF&G to assess changes in aquatic life that might be related to ADF&G fish stocking activities. The decision to continue stocking into a waterbody is based upon findings from the assessment. Historical data indicate that continued stocking of these lakes will have little effect on naturally occurring aquatic and terrestrial species and communities.

4.4 Land Ownership and Land Use

4.4.1 No Action Alternative

The No Action Alternative would have no impacts on land ownership and land use.

4.4.2 Proposed Action

4.4.2.1 Zoning

The area of the Proposed Action has been rezoned from OR to LISL.

4.4.2.2 Recreation

Ball fields on the corner of Wilbur and Second Streets would not be affected by the project. The one exception is the ball field (practice field) on the southwest corner of the proposed project site, which would be removed. The FNSB has plans to build ball fields elsewhere in the city to provide additional capacity. (Johnson, pers. comm., 2006)

Impacts from the stocked lakes program might include increased motorboat, all-terrain vehicle (ATV), and snow machine traffic at high-use recreational fishing sites. ADF&G expects that the increased boat traffic from the stocked lake program would be restricted to the largest four stocked lakes. Most other lakes that are stocked are too small for motor craft and support mainly shore side fishing or small non-motorized skiffs, canoes, kayaks, or float rings. The present number of angler-boat user days is very low, based on observation by ADF&G staff, and even a doubling of angler-boat user days would likely result in minimal additional impact. The exception is the 4th of July holiday, when angler access points and facilities are typically overloaded. Vehicle traffic to and from lake access points is by major highways designed to accommodate higher-than-normal traffic flows. Angler access points

include boat ramps, shoreside trails, piers, and permanent floats, though not all of these types of facilities are available in the Fairbanks area.

ADF&G participates in an Angler Access Program that is federally funded through the Dingell-Johnson/ Wallop-Breaux Act. This program provides useful information on the relationship among the fish stocking program, angler use, and accessibility to vehicles and boats. Each year, Alaska receives grants through the USFWS that are reserved for projects that facilitate anglers' ability to catch sport fish. ADF&G biologists monitor not only biological effects, if any, of fish stocking, but also observe fishing trends and the ability of anglers to access lakes with stocked fish. ADF&G biologists maintain contact with fishing and boating clubs, as well as the general public, who often point out the need for better angler access. These observations are consolidated into a list of potential access projects that is submitted to the ADF&G Access Program Coordinator, who prioritizes the projects and puts them into a long-term plan.

Successful Access Program projects undergo a National Environmental Policy Act (NEPA) process that provides several opportunities for public input. Generally, from start to finish, these projects take 3 to 5 years to complete. The scope of the project generally dictates the level of NEPA analysis. If the proposed work is a rehabilitation of an existing project, that project might qualify for a Categorical Exclusion. If the proposed project is new or an expansion of an existing facility, it will generally require an environmental assessment. If the project rises to a requirement for an environmental impact statement, indicating that significant adverse impacts might result, it is not pursued.

A recent example of an Access Program project involved the access road to Birch Creek off the Steese Highway between Fairbanks and Circle. The observed peak use was 15 vehicles per day during a holiday. The average use, however, was much lower than that. Statewide angler surveys show that the angler use of this site from 1993 to 2000, through an annual cycle, increased from 117 anglers in 1993 to 253 anglers in 1999, then fell to 181 anglers in 2000. This averages less than one angler per day visiting the site. However, on the basis of peak use, the project qualified for access improvements. These improvements included constructing a small gravel parking area off the main highway, adding a latrine, and hardening the boat launch area with concrete planks so that vehicles would no longer become stuck in loose gravel and mud. This example was a cooperative project between ADF&G and ADOT&PF. Nearly all Access Program projects are partnerships between ADF&G, local city and municipal governments, and state agencies.

4.5 Cultural Resources

4.5.1 No Action Alternative

The No Action Alternative would not affect cultural resources.

4.5.2 Proposed Action

None of the 32 cultural resource sites, all historic, that have been previously documented within 1 mile of the APE are located within the APE. No historic or prehistoric deposits were located in the APE nor were any historic properties eligible for the NRHP identified in the APE during the literature reviews, field survey, and consultation. Therefore, the

Proposed Action would have no impact on known cultural resources or historic properties in the APE.

4.6 Noise

Noise is defined as unwanted or excessive sound. A noise analysis was conducted to evaluate the noise effects of the No Action Alternative and the Proposed Action.

4.6.1 No Action Alternative

The No Action Alternative would not change noise levels.

4.6.2 Proposed Action

The two sources of noise with potential to affect the vicinity of the Proposed Action would be the air handling system within the building and hatchery-related vehicular activities. Mechanical equipment is the source noise for the Proposed Action.

One source of potential noise generated by the hatchery building would be the ventilation equipment serving the facility. To reduce the transmission of this noise to surrounding areas, all mechanical equipment would be located inside the building envelope. In addition, some equipment might be provided with additional sound attenuating features as required to minimize radiated noise. The resulting sound level is expected to be similar to a typical grocery store or a university building.

Mitigation of air handling noise would include the following actions:

- The inlet would be ducted with fans located inside the building.
- At the building inlets and outlets, air velocity would be slowed to minimize pressure drop and noise.
- No noise-producing heating, ventilating, or air conditioning (HVAC) equipment would be located in a direct line of sight from the neighborhoods. All equipment would be inside an insulated fan room.
- Exhaust discharge would be oriented away from neighborhoods. There would be no fan on the outside of the building.

It is not anticipated that activities associated with operation of the proposed hatchery would cause vehicular noise levels greater than are normal at present. Usage of the proposed hatchery site would be mostly limited to daytime hours, and the highest noise level increases around the site during these periods would be caused by vehicular activities, including deliveries to the hatchery, seasonal fish transport activity, visitor vehicle parking, and bus idling. Slightly increased noise levels above present ambient levels would be expected in summer due to the additional visitor traffic, although building setbacks and landscaping would be mitigating factors. Appreciable noise level increases are not expected to occur during winter months because the highest intensity visitor use of the proposed hatchery would be during the summer.

4.7 Visual/Aesthetics

4.7.1 No Action Alternative

The No Action Alternative would not affect the visual/aesthetics of the area.

4.7.2 Proposed Action

The proposed project site borders ball fields, which would remain undisturbed. Art and architecture would be used to make the building attractive. The height and colors of the building would be softened, making the building more compatible with the residential neighborhood south and east of the proposed project site. The building would be approximately the same height as the existing baseball backstops. The area would be landscaped. Adjacent existing parking facilities and playgrounds would be incorporated into the design to maintain continuity.

The proposed design elements equal or exceed the required standards for General Light Industrial Districts. On January 11, 2007, the FNSB Assembly approved rezoning of the property to LISL (see Table 4-3). No adverse visual/aesthetics impacts are anticipated.

TABLE 4-3
General Light Industrial District Standard and the Light Industrial with Special Limitations (LISL) Zoning for the Proposed Fairbanks Fish Hatchery

	Required	Special Limitations
Setbacks/ Dimensions	Front Yard = 20 feet	Front Yard = 30 feet
	Rear and Side Yards = 0 feet	Rear and Side Yards = 15 feet
	Building Height = No limit	Building Height = Varies from 15 to 30 Feet
Parking Spaces	Residential = 1	Residential = 1
	Office = 8	Office = 14
	Visitor Center = 30	Visitor Center = 37+ 5 Bus/RV
		A minimum of 50 vehicle parking spaces and 5 bus /recreational vehicle parking spaces shall be provided.
Landscaping	Per City of Fairbanks ordinance	Landscaping is planned with double the quantity of plantings required by the City of Fairbanks landscape ordinance. See attached rendering of the site plan showing the landscaping plan concept. The landscaping shall be complete prior to final payment for the construction contractor and shall be maintained thereafter.

TABLE 4-3
General Light Industrial District Standard and the Light Industrial with Special Limitations (LISL) Zoning for the Proposed Fairbanks Fish Hatchery

Required	Special Limitations
Other Special Limitations	The use of the property shall be limited to a fish hatchery and accessory uses to include: a. Visitors Center b. Educational/Research Activities c. 1 Dwelling unit (an apartment within the hatchery building for on-site staff) d. Other similar and compatible uses as determined by the director of Community Planning Development as shown on approved site plan. Heavy commercial vehicle (with backup safety sounding devices) hours of operation shall be limited to 8:00 a.m. to 4:30 p.m. September 15 through May 15. From May 15 to September 15 stocking trucks may occasionally operate from 6:00 a.m. to 12:00 a.m.

Source: CH2M HILL, 2006e.

4.8 Transportation

At the local level, the presence and operation of the proposed Ruth Burnett Sport Fish Hatchery would not noticeably increase the volume of north-south traffic on Wilbur Street or in the surrounding neighborhood. With the proposed hatchery operating, most introductions of Fairbanks-reared fish into Interior lakes would occur mid-May through early September. During early summer, two or three stocking trips would occur per week. During mid-summer, the frequency to trips would likely be reduced to one trip per week or less, and during late summer, at most two times per week. This schedule is roughly the same frequency of stocking activity that ADF&G currently maintains with fish transported from Anchorage-area hatcheries. Thus, the Proposed Action would introduce up to three north-south round trips per week onto Wilbur Street along the city block between Airport Way and the proposed hatchery during the summer. This small increase would not be a noticeable change from present conditions.

Trucks that would be used to transport fish from the proposed hatchery would carry one to three tanks and would be much smaller and quieter than the large freight haulers presently used to transport fish from Anchorage-area hatcheries to Interior lakes (see *Section 3.8*, *Transportation*). It is considered unlikely that the occasional passage of these trucks on Wilbur Street would create a safety hazard or nuisance concern.

On a regional basis, ADF&G does not anticipate a marked change in total fishing effort in the Alaskan Interior as a result of the proposed hatchery, even with the planned general increase in the size of fish that would be used to stock lakes (Garcia, pers. comm., 2007). The goal of the stocking program with the proposed hatchery operating would be to disperse the regional fishing effort and relieve fishing pressure on wild stocks. As explained in Section 4.4.2.2, *Recreation*, the total number of fish used to stock the lakes would remain unchanged.

As a result of the hatchery, it is likely that regional traffic due to recreational fishing would become more widely distributed and would concentrate less on lakes that now support the heaviest fishing effort. It does not seem likely, however, that a change in the average size of stocked fish would indirectly produce an impact on traffic patterns in Alaska's Interior, because existing traffic levels are light and could accommodate variations in traffic load, even during the summer recreational season (ADOT&PF, 2006a).

ADF&G is cognizant of angler effects on the recreation infrastructure and participates in a federally funded Angler Access Program that surveys access points, facilities, and trails to fishing areas to assess and decide if it is necessary to take actions to mitigate impacts caused by recreational angler use. The Access Program is a funding vehicle for providing public access and minimizing its impact. The Access Program works with other agencies, local government, and interested public groups to plan and design public use facilities and areas that balance public recreational needs with the protection and sustainability of the resource, while supporting other public uses and private rights. Because the proposed hatchery would lead to a dispersal of fishing effort and relieve heavy-use waterbodies, it should slightly offset and thus mitigate existing adverse recreational impacts (such as vegetation removal and streambank erosion) on Interior lakes.

4.9 Public Health and Safety

It is unlikely that the construction and operation of the proposed Ruth Burnett Sport Fish hatchery would create a hazard to public health or safety. Risks associated with the proposed facility would be comparable to those associated with the construction and operation of a small commercial business. Contractors building the facility will be required to conduct onsite safety briefings and to follow ADOT&PF best management practices. The facility will generate north-south traffic on Wilbur Street along the city block between the hatchery and Airport Way. This traffic increase will be produced by hatchery employees, visitors, and the occasional truck passage to haul fish for stocking during the summer. As the main thoroughfare between Airport Way and the Carlson Center, Wilbur Street already exhibits traffic increases during events at the center, most of which are on evenings and weekends. Daytime traffic associated with the hatchery would be light, because the total number of staff, visitors, and fish transports per day or per week would be too small to transform existing conditions.

4.10 Construction-Related Impacts

In an urban environment, construction is a typical activity. Construction of the proposed hatchery would cause temporary impacts from grading, noise, and fugitive dust. These impacts would be mitigated by the onsite contractors in compliance with ADOT&PF best management practices and standard operating procedures, as summarized in Table 4-4.

TABLE 4-4
Construction-Related Impacts and Potential Mitigation Measures

Element	Impacts	Mitigation
Soils and Permafrost	Disturbance associated with drilling and building construction.	Nonfrost-susceptible fill would likely be imported.
Air Quality	The potential exists for suspended dust particles to be released into the air from exposed soils and materials and the transportation of structural fill to the project site.	Air pollutants will be released during construction of the proposed hatchery. They will be released in exhaust from heavy equipment and construction vehicles, such as bulldozers and dump trucks, and from vehicles transporting workers to and from the site. In addition, dust will become airborne as a result of site preparation. An estimate of the airborne emissions likely to occur during construction was prepared as part of the general conformity review described in *Section 4.1.2.3*. The results are presented in Table 4-5. Supporting documentation is provided in the General Conformity Technical Memorandum presented in *Appendix A*. For modeling purposes, construction emissions were assumed to occur within a single year, although the facility is expected to be constructed during parts of 2007 and 2008. Emissions from both on-road and off-road mobile sources are regulated by federal laws affecting their manufacture. In addition, the *Fairbanks CO Maintenance Plan* addresses emissions from on-road mobile sources. The quantities of pollutants that would be released in equipment and vehicle exhaust during construction of the proposed hatchery are too small to warrant further mitigation. In addition to mobile source emissions, construction activity will create fugitive dust, primarily as a result of site preparation, including excavation and backfilling, at the building site. On dry and windy summer days, fugitive dust would be minimized by watering affected areas, covering loads, washing wheels to prevent tracking dust off-site, and cleaning up spilled soils, as needed.
Water Quality	Sedimentation effects from stormwater runoff	Measures would be implemented to limit soil movements, dust, erosion, transport of construction materials, and runoff into the Chena River, including best management practices and a Storm Water Pollution Prevention Plan.
Fish and Aquatic Habitat		The ADNR/OHMP Title 41 Fish Habitat Permit would address construction in or near the Chena River that could result in riverbank disturbance or degradation. Clearing and slotting the riverbank to lay the outfall pipe will not be a major concern, provided the riverbank is filled, re-leveled, and seeded in accordance with State of Alaska Best Management Practices to ensure that construction-related siltation is transient.

TABLE 4-4
Construction-Related Impacts and Potential Mitigation Measures

Element	Impacts	Mitigation
		The Fish Habitat Permit will specify that construction in the Chena River must avoid a 3- to 4-week sensitive period during which arctic grayling spawn in the reach of the river where the outfall is proposed. Spawning is triggered by temperature and begins when the river water warms to about 4°C. The fry hatch and leave the spawning grounds within 10 days to 3 weeks after spawning starts. The spawning period typically occurs in May, but varies from year to year, depending on the timing of breakup. The rule of thumb to be followed is to avoid any construction involving the Chena River during May. The Title 41 Fish Habitat Permit will most likely contain a stipulation to this effect.
Vegetation	Areas that are trenched and refilled can be invaded by invasive, non-native species.	Disturbed sites would be revegetated to ADOT&PF Best Management Practices standards.
Birds and Wildlife	Temporary disturbance within the boundaries of the project area (for example, from noise and construction activity) and displacement of individual small mammals from construction and landscaping.	No mitigation is proposed because the impacts are unavoidable and would displace only a small number of individual animals that might be present at the site. Measures would be taken to minimize the potential for migratory birds to nest in the construction area. If nesting migratory birds were encountered, the USFWS would be contacted.
Economic	Short-term economic benefits by creating jobs in the construction industry and secondary jobs in a variety of support industries such as freight, material supply, food, and lodging.	No mitigation is needed, because the economic effects of the Proposed Action would be beneficial.
Transportation	Increase in traffic during the construction period and short-term delays on Wilbur or Hilton Street might occur.	Application of common construction management practices, such as posted notices and road warning signs.
Cultural Resources	Earth-moving activities might potentially uncover and disturb archeological, historical, or cultural remains deposits.	If archaeological or historical materials are discovered during construction of the Proposed Action, associated facilities, or utilities, activities in the vicinity of the find would be immediately halted and the SHPO would be notified of the find to avoid damaging potentially important historic properties.
Noise	Noise from heavy equipment operation.	Best management practices (BMPs) related to construction and equipment would be used to mitigate noise level changes from construction activities.
Hazardous Materials	Community impacts with regard to pollution or soil/air/water/hazardous material contaminants are expected to be non-existent or negligible.	The contractor would be required to develop the site in accordance with an approved demolition and construction work plan. If hazardous materials were encountered during construction, the Contractor would follow appropriate notification and mitigation procedures.

Table 4-5 shows estimates of airborne emissions likely to occur during construction. These estimates were prepared as part of the general conformity review described in *Section 4.1.2.3*. The General Conformity Technical Memorandum presented in *Appendix A* provides supporting documentation.

TABLE 4-5
Proposed Fairbanks Sport Fish Hatchery Construction Emissions (tons/year)

Type	Carbon Monoxide (CO)	Volatile Organic Compounds (VOCs)	Oxides of Nitrogen (NO_X)	Sulfur Dioxide (SO_2)	Particulate Matter (PM_{10})
Equipment Emissions - Building and Site Preparation	1.74	0.29	3.88	0.00	0.25
On-Road Hauling Vehicle Emissions	0.143	0.072	0.074	0.072	0.072
Site Grading Fugitive Dust Emissions					1.690
Worker Commute Emissions	0.980	0.0428	0.087	0.00054	0.0017
Asphalt Emissions		0.0026			
TOTAL	2.86	0.41	4.04	0.08	2.01

4.11 Mitigation Measures

Potential mitigation measures related to construction of the Proposed Action are discussed in *Section 4.8, Construction-Related Impacts*. Potential mitigation measures related to the operation of the Proposed Action are included, as appropriate, in Sections 4.1 through 4.7.

4.12 Cumulative Impacts

This section examines whether cumulative impacts would result from the Proposed Action, construction and operation of the Ruth Burnett Sport Fish Hatchery. Because the No Action alternative would produce no direct or indirect adverse impacts, it would not contribute to an adverse cumulative effect.

The proposed hatchery would contribute mainly three types of releases to the environment: airborne emissions, waterborne effluents, and fish. The analysis concludes that airborne emissions and waterborne effluents produced by the proposed hatchery would not increase the cumulative level of environmental contaminants to air and water or alter fish habitat in the Chena River. Sport fish production from the proposed hatchery would contribute to a long-term, beneficial cumulative effect on outdoor recreation and tourism, with consequent benefits to the local and regional economy.

It is important to note that the Proposed Action would be the transposition of a fish stocking program that is already mature. The total number of personnel would increase only slightly, with some of the staff associated with the Interior stocking program transferring from

Anchorage to Fairbanks. A major change in personnel numbers or in the complement of mobile source impacts that would follow with them is not expected. Stocking trips would be shorter in duration, because they would no longer originate in Anchorage. The number of stocking locations is not expected to increase. The hatchery output would result in a slightly lower number of fish released than at present, but they would be generally larger at release as compared with fish currently supplied by Anchorage hatcheries.

4.12.1 Introduction

Cumulative impacts, also called cumulative effects, are defined by federal regulation (40 CFR 1508.7) 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.

In June 2006, NOAA Fisheries issued *Guidance for Performing Cumulative Effects Assessments for NOAA Fisheries Service Environmental Impact Statements and Assessments* (NOAA Fisheries, 2006). The NOAA Fisheries guidance incorporates and builds on previous guidance in a cumulative effects assessment handbook issued by the President's Council on Environmental Quality (CEQ, 1997), additional recommendations by the EPA (1999), and a memorandum issued to the heads of federal agencies by CEQ Chairman James L. Connaughton on the consideration of past actions in cumulative effects analysis (Connaughton, 2005).

The cumulative impact assessment prepared for this EA follows the NOAA Fisheries guidance (NOAA Fisheries, 2006). This approach is an extension of the basic NEPA process that evaluates direct impacts, indirect impacts, and cumulative impacts of combined actions relative to thresholds of concern for physical, biological, and socioeconomic resource components and for ecosystems encompassing those components. The organizational system used here follows the Stand-Alone Approach described in Section 7.2 and Table 7-2 of NOAA Fisheries (2006).

4.12.2 Boundaries

The geographic scope of the cumulative impact assessment varies with the type of resource component. For physical resource components, the assessment boundary is defined as the City of Fairbanks, with a specific focus on the U.S. Census Bureau Tract 2 area, which is bounded, generally, by the Chena River on the north; Cowles Street and Lathrop Street on the east; the Robert Mitchell Expressway on the south; and Peger Road on the west.

The geographic scope of biological and socioeconomic resource components that could be affected by the Proposed Action are broader and less precise, because juvenile sport fish produced by the hatchery would be used to stock various streams and lakes in Interior Alaska, depending on annual needs assessments and priorities determined by the ADF&G Sport Fish Division to augment recreational fisheries. For the purposes of this analysis, therefore, the FNSB boundary is used to denote the geographic extent of cumulative impacts on biological and socioeconomic resource components.

The temporal boundaries for this cumulative impact assessment extend from the environmental reference point of 1900, just before the start of the gold rush that led to the settlement and construction of Fairbanks (City of Fairbanks, 2006), to 2032, 25 years beyond the baseline year of 2007. The environmental reference point, 1900, approximates a past year when the Fairbanks environment was pristine or in an ecologically sustainable condition (EPA, 1999).

4.12.3 Past, Present, and Reasonably Foreseeable Future Actions

The assessment of cumulative impacts associated with the proposed Ruth Burnett Sport Fish Hatchery must take into account the lasting influence of relevant past actions (Connaughton, 2005), the effects of ongoing present actions, and the probable impacts of reasonably foreseeable future actions (RFFAs).

4.12.3.1 Past Actions

Since 1900, the environmental reference point, the City of Fairbanks has grown to its present population of about 30,000 (City of Fairbanks, 2006). Important past actions that will continue to influence Fairbanks in future years have included:

- The 1902 gold rush and the City's incorporation in 1903
- Establishment of the University of Alaska's main campus at Fairbanks in 1917
- Completion of the Alaska Railroad to its Fairbanks terminus in 1923
- Construction of the Army's Ladd Field, later Fort Wainwright, in 1940
- Completion of the Alaska Highway in 1942
- Completion of the George Parks Highway connecting Fairbanks to Anchorage in 1971
- Construction of the Trans Alaska Pipeline, 1975 to 1977

All of these past actions, incrementally and in combination, have led to the settlement and population growth of Fairbanks and the corresponding economic development of the city and region, resulting in impacts on land use; air and water quality; and fish, wildlife, and their habitats; and in social and economic changes consistent with urbanization and light industrial development. Of particular relevance to the Proposed Action, local and regional population growth, along with an expanding tourism industry, have produced an increasing trend in harvest pressure on sport fish populations throughout Interior Alaska.

4.12.3.2 Present Actions

Examples of present actions that will continue to provide employment and make important social and economic contributions to Fairbanks and the surrounding region in future years include:

- The continuing presence of the University of Alaska's main campus in Fairbanks
- Military operations at the Army's Fort Wainwright, including Ladd Army Airfield
- The Alaska Railroad Corporation's daily operation and maintenance activities
- Alyeska Pipeline Service Company's operation and maintenance of the Trans Alaska Pipeline System
- Operation of the Fort Knox Mine, a large open-pit gold mine about 26 miles northeast of Fairbanks

UAF, with 9,000 to 10,000 students, over 900 faculty members, and a staff of nearly 3,000, provides a stabilizing influence on Fairbanks both socially and economically (UAF, 2006). Similarly, the Army's long-term presence at Fort Wainwright, on the city's eastern boundary, is an important cultural and economic factor, because military families have been an integral part of the community since Ladd Field served as a major Lend-Lease warplane staging site in the years before America entered World War II. The Army's ongoing transformation program has brought a Stryker Brigade, presently deployed overseas, to Fort Wainwright, and Aviation Task Force 49, a Kiowa helicopter unit, is presently being transferred to the Post.

The State of Alaska purchased the Alaska Railroad from the federal government in 1985, and the operations of the state-owned corporation are self-supporting (Tuck and Killorin, 2004). The Alaska Railroad maintains a major rail yard in Fairbanks, and a new Fairbanks passenger terminal was recently opened. Several Fairbanks-based facilities of Alyeska Pipeline Service Company provide major logistic support for operating and maintaining the northern portion of the Trans Alaska Pipeline System, including spill response capability. Finally, the Fort Knox Mine, owned and operated by Kinross Gold Corporation, began operating in 1994 and is located primarily on state-owned and Mental Health Trust lands. In 2005, the mine and mill produced the equivalent of 329,320 ounces of gold, and in 2002, the most recent year for which employment data are available, Fort Knox had 388 employees (Kinross Gold Corporation, 2007).

These past and present actions form the background of activity to which RFFAs and the Proposed Action would contribute to produce cumulative impacts on the affected resource components.

4.12.3.3 Reasonably Foreseeable Future Actions

Along with the Proposed Action and past and present actions such as those described above, RFFAs planned locally in Fairbanks and regionally in Interior Alaska are likely to contribute to cumulative impacts.

RFFAs in Fairbanks

Locally, three RFFAs would interact with the Proposed Action:

- Chena Riverbend Project
- Wilbur Street and Second Avenue Project
- Chena River Pedestrian Path

Chena Riverbend Project

The Chena Riverbend Project is a major economic development project planned by FNSB. The Conceptual Plan is "to develop a community centerpiece highlighting the Chena River. This 101-acre project will ultimately enhance existing facilities along or adjacent to the Chena River, expand on tourism opportunities and promote the economic growth of our community" (FNSB, 2005b). The project will include the proposed Ruth Burnett Sport Fish Hatchery, along with office and apartment buildings, a hotel, shops, a senior home, and a tennis facility. Development activities will use existing infrastructure elements such as public roads, parking facilities, natural gas, sewage and water service, and electrical power (FNSB, 2005a). "When complete the area will serve as the western anchor for downtown and as a tourist draw" (FNSB, 2005a).

A major benefit of the Chena Riverbend Project is the preservation of undeveloped sites in other locations that would not be used for creation of the proposed facilities. Guided by its Comprehensive Plan and its Comprehensive Economic Development Strategy, FNSB has established and is implementing a policy to promote Smart Growth principles and preserve undeveloped sites for future generations (FNSB, 2005a).

Wilbur Street and Second Avenue Project

The Fairbanks Metropolitan Area Transportation System (FMATS) is an ongoing cooperative planning effort between the State of Alaska, FNSB, and the cities of Fairbanks and North Pole. FMATS has committed to upgrade Wilbur Street (Airport Way to Second Avenue) and Second Avenue (Wilbur Street to Stewart Street). The project will include shoulders for on-street parking, bike lanes, curbs, gutters, and sidewalks (ADOT&PF, 2006b). Phases of the project include:

- Phase 2 (Design) = Federal Fiscal Year (FFY)07 = $250,000
- Phase 3 (ROW) = FFY07 = $306,000
- Phase 4 (Construction) = FFY08 = $4,250,000

The planned upgrade "stems from the lack of roadway shoulders and pedestrian facilities on a portion of Second Avenue; lack of turn lanes and marked pedestrian crossings at the Wilbur Street/Second Avenue intersection; and the lack of parking and pedestrian facilities on Wilbur Street" (ADOT&PF, Northern Region Preconstruction, 2006).

The Wilbur Street and Second Avenue Project is expected, on a preliminary basis, to include the following environmental impacts: "short-term construction impacts of noise, inconvenience to motorists, etc., and the permanent impact of property loss (approximately 0.125 hectares [0.31 acres] total) to several private and quasi-public landowners" (ADOT&PF, Northern Region Preconstruction, 2006).

Chena River Pedestrian Path

In 1977, a pedestrian and bicycle path was constructed along a portion of the Chena River in Fairbanks. Through the Trails and Recreational Access for Alaska program, FMATS has committed to redevelop the path and bring it up to current standards in the Chena Riverbend area (FNSB, 2005a). In FFY06, the project was in Phase 4 (Construction), with a budget of $575,000 (ADOT&PF, 2006b). "The completed pedestrian path rehabilitation project would enhance and improve the Riverbend Concept Area, Pioneer Park, and the Carlson Center" (FNSB, 2006b).

RFFAs in Interior Alaska

Regionally in Interior Alaska, it is anticipated that fishing effort and harvest would increase because the population would increase. Economic factors contributing to population growth include:

- Expansion and development of military facilities, including Fort Wainwright and the Missile Defense System near Delta Junction
- The development of mines and mineral resources, including the Pogo Mine in the Goodpaster River Drainage, the Fort Knox Mine, and the True North Gold Mine north of Fairbanks

- The potential construction of a natural gas pipeline
- Continued rapid commercial and residential construction activity
- Employment opportunities with various branches of state, local and federal government

Statewide harvest information consistently shows a higher percentage of Alaska resident anglers participating in fisheries in the Interior (Jennings et al., 2004). Visitors to the state often choose to fish in coastal areas with the potential of catching marine and anadromous fish (for example, salmon and halibut). Residents of Interior Alaska want to fish close to home, and would participate in stocked lake fisheries to the extent that they are available.

4.12.4 Baseline Characterization

The baseline (present-day) condition of each environmental resource component deemed relevant to the Proposed Action is discussed in Sections 3.1 through 3.7. The Proposed Action would produce three main kinds of output to the environment: airborne emissions, waterborne effluents, and fish. To the extent that these outputs would add to, or interact with, similar outputs from past, present, and reasonably foreseeable future actions, cumulative effects could occur. The environmental components most likely to be affected by these outputs are air quality, water quality, fish and aquatic habitat, sport fish availability, and outdoor recreation and tourism. Table 4-6 summarizes the relevant baseline characteristics of each.

TABLE 4-6
Baseline Characterization of Resource Components Relevant to the Cumulative Impact Assessment

Relevant Resource Component	Baseline Characteristics
Air Quality	Fairbanks has two main types of air quality problems: elevated ambient levels of CO trapped by persistent inversions in the winter, and variable periods of smoky conditions from wildfires during some summers. In 2004, the EPA redesignated the Fairbanks CO nonattainment area to attainment after approving the *Fairbanks CO Maintenance Plan* (69 FR 44601).
Water Quality of the lower Chena River	ADEC has listed the Chena River as a Category 5 water. This means that it does not attain standards specified in Alaska's Water Quality Standards (18 AAC 70) and in Section 303(d) of the federal Clean Water Act (33 USC 1251 et seq.). Pollutants impair one or more designated uses, and the Chena River must meet a TMDL requirement. Since 1990, the Chena River has been on the Section 303(d) list for sediment and turbidity. The main pollutants are petroleum hydrocarbons, oil and grease, and sediment. The main pollutant contribution to the Chena River is nonpoint source urban runoff (ADEC, 2006).
Fish and Aquatic Habitat	The Chena River supports a world-class catch-and-release arctic grayling fishery, runs of Chinook and chum salmon, and a rich assemblage of freshwater fish including burbot, northern pike, sheefish, and whitefish. There is no EFH in the lower Chena River (Davis, pers. comm., 2006). However, arctic grayling spawning grounds in the reach of the Chena River that would receive effluent discharge from the proposed hatchery are the key habitat consideration relating to the Proposed Action (McLean, pers. comm., 2006). Although there are no salmon spawning areas in the lower Chena River, the lower Chena is used by returning salmon migrating to spawning areas upstream.

TABLE 4-6
Baseline Characterization of Resource Components Relevant to the Cumulative Impact Assessment

Relevant Resource Component	Baseline Characteristics
Sport Fish Availability	Existing wild stocks cannot support the growing sport fishing demand in Interior Alaska on a sustainable basis. Since 1990, stocked fish have contributed 51 to 81 percent of the total estimated harvest of all game fish in the Tanana Valley and 33 to 45 percent of the total estimated fishing effort (Skaugstad, 2002). ADF&G currently stocks 130 lakes within Interior Alaska, using fish produced by two Anchorage-based hatcheries. The Alaska Statewide Harvest Survey (ADF&G, Division of Sport Fish, 2004b) indicated an 11.8 percent increase in the number of days fished and a 9.9 percent increase in fish harvested between 2003 and 2004. The increasing trend in demand for sport fish availability, driven by regional population growth and efforts to expand commercial tourism, is imposing increasing harvest pressures on naturally occurring stocks of game fish, particularly arctic grayling, which can sustain only limited levels of harvest (ADF&G, Division of Sport Fish, 2005e).
Outdoor Recreation and Tourism	The State of Alaska, FNSB, and the City of Fairbanks are making a concerted effort to expand outdoor recreation and commercial tourism in Interior Alaska. Recreational fishing plays an important role in this effort and is important to the regional economy (Hickok, pers. comm., 2006). Interior Alaska anglers must depend on hatchery-stocked waters, because wild stocks of anadromous and freshwater sport fish are limited. Increasing numbers of recreational anglers are straining the sustainability of wild stocks and hatchery-enhanced fisheries. The present capability of producing adequate numbers and appropriate sizes of hatchery-reared fish to support Interior Alaska sport fisheries is limited, because the two existing Anchorage-based hatcheries, now aging, must also supply stock to Southcentral Alaska and are operating at full capacity. The ADF&G Division of Sport Fish anticipates a doubling of angler demand in Interior Alaska within 10 years. The lack of capacity to meet that demand would ultimately impose a limiting factor on the outdoor recreation and tourism sectors of the regional economy.

4.12.5 Cumulative Impacts

The cumulative impact assessment concludes that the contribution of regulated airborne and waterborne contaminants generated by construction and operation of the proposed hatchery would not produce adverse cumulative effects on air and water quality, respectively. On the other hand, enhanced production from the proposed hatchery would increase the supply of sport fish for stocking waterbodies throughout Interior Alaska, including important destinations for outdoor recreation and tourism, adding to the output, now at full capacity, of the two existing Anchorage-based hatcheries.

Section 1.4.2 of the NOAA Fisheries guidance (NOAA Fisheries, 2006) states that "the level of cumulative effects analysis needed in an EA is commensurate with the degree of direct and indirect effects posed by the proposed Federal action or alternatives considered."

As the preceding discussions in *Chapter 4, Environmental Consequences* make clear, no adverse impact on any environmental resource component would result from the Proposed Action. Table 4-7 summarizes the proposed hatchery's probable contributions to cumulative

impacts on air quality, water quality, fish and aquatic habitat, sport fish availability, and outdoor recreation and tourism.

TABLE 4-7
Cumulative Impacts Associated with the Proposed Action

Relevant Resource Component	Probable Cumulative Impact
Air Quality	The Proposed Action would meet air quality standards and would not diminish air quality in the project area (*Section 4.1*). Operation of the proposed hatchery would add a small increment to airborne emissions from existing facilities built in the past, such as coal-fired power plants within the City of Fairbanks and at Fort Wainwright, from present residential and commercial buildings, and from local RFFAs such as the Chena Riverbend Project (*Section 4.10.3.3*). The incremental emission contribution of the proposed hatchery would be well below thresholds requiring a Minor Stationary Source Permit under 18 AAC 50 (see Table 4-1) and would be too small to produce a measurable change in the air quality of the Fairbanks area.
Water Quality of the Lower Chena River	The regulated and monitored effluent outfall from the proposed hatchery to the lower Chena River would meet State of Alaska Water Quality Standards for Freshwater Aquatic Life (18 AAC 70) and would not produce an adverse impact on water quality (*Section 4.2*). Urban runoff from past and present development actions has impaired the water quality of the Chena River to below the standards specified in 18 AAC 70 and in Section 303(d) of the Clean Water Act (33 USC 1251 et seq.). RFFAs such as those summarized in *Section 4.10.3.3* will make further incremental contributions, but under current regulations they will be mitigated more stringently than were past actions. The incremental contribution of the Proposed Action would not alter the baseline water quality of the lower Chena River.
Fish and Aquatic Habitat	Effluent from fish culture activities within the proposed hatchery would be regulated by ADEC under a Wastewater General Permit for Fish Hatcheries that places limits on hatchery effluent constituents. Compliance with the general permit, including its record-keeping and reporting requirements, will ensure that the effluent meets Alaska Water Quality Standards for Freshwater Aquatic Life (18 AAC 70). The ADNR/OHMP Title 41 Fish Habitat Permit required for installation of the proposed outfall pipe would prohibit construction activity in the Chena River during May, the grayling spawning period.
Sport Fish Availability	Sport fish produced by the proposed hatchery would substantially augment existing wild and hatchery-grown stocks, which by themselves cannot support the growing sport fishing demand in Interior Alaska on a sustainable basis. Because it would add substantially to the annual production of the two existing Anchorage-based hatcheries, which is currently used to stock 130 lakes within Interior Alaska in addition to Southcentral Alaskan waters, the proposed Fairbanks hatchery would substantially increase the availability of sport fish in both regions. Because it would add to the reasonably foreseeable future production of the existing hatcheries and substantially increase the aggregate quantity of sport fish stock, the Proposed Action would produce a long-term beneficial cumulative impact.

TABLE 4-7
Cumulative Impacts Associated with the Proposed Action

Relevant Resource Component	Probable Cumulative Impact
Outdoor Recreation and Tourism	By expanding the ADF&G stocked waters program in Interior Alaska, the Proposed Action would increase the region's capacity to support growing outdoor recreation and tourism demands. FNSB estimates that a $21 million to $33 million cumulative gain to the Fairbanks economy would result from construction and operation of the proposed fish hatchery (Dodge, 2004). Acting in combination with other RFFAs by the State of Alaska, FNSB, and the City of Fairbanks to expand outdoor recreation and commercial tourism in Interior Alaska, the Proposed Action would produce a long-term beneficial cumulative impact.
Local and Regional Economy	The Proposed Action is a planned component of the Chena Riverbend Project and would be constructed in coordination with the Wilbur Street and Second Avenue Project and the Chena River Pedestrian Path (*Section 4.10.3.3*). Together with these RFFAs, the proposed hatchery would help to revitalize Downtown Fairbanks and have concomitant beneficial effects on land use, recreation, and the management of the lower Chena River and its aquatic resources, producing a beneficial long-term cumulative impact on the local and regional economy.

In conclusion, the Proposed Action would not contribute to an adverse cumulative impact. It would, however, offer long-term, beneficial contributions to cumulative effects on sport fish availability, outdoor recreation and tourism, and the local and regional economy of Fairbanks and Interior Alaska.

CHAPTER 5

Consultation and Coordination

For the preparation of this report, representatives of various governmental agencies and Tribes were consulted and a range of issues was considered.

5.1 Executive Order 11990, Protection of Wetlands

Wetlands are defined as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (USACE, 1987). Executive Order (E.O.) 11990, *Protection of Wetlands*, states that no federally approved project shall occur in wetlands unless there is no practical alternative to constructing in the wetlands. ADF&G analyzed alternative locations to avoid taking wetlands (CH2M HILL, 2004a). There are no wetlands in the project area for the Proposed Action (EPA Region 10, 2006).

5.2 Alaska Coastal Zone Management Program

Fairbanks is not within an Alaska Coastal Zone Management district (ADF&G, 2004). Therefore, the Proposed Action would not affect either water or land within the Alaska Coastal Zone Management Program.

5.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (16 USC 703-712, as amended) implements, the various international conventions between Canada, Japan, Mexico and the former Soviet Union for protecting migratory birds. Taking, killing, possessing, transporting, and importing migratory birds, their eggs, parts, and nests are unlawful under this act.

5.4 Threatened and Endangered Species

Activity threatening the continued existence of a federally designated endangered or threatened species is prohibited under the Endangered Species Act of 1973 (16 USC 1531), as amended. Wildlife or plant 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 site of the Proposed Action (Bright, pers. comm., 2006). It was determined that the Proposed Action would have no effect on threatened and endangered plants and animals and their habitats. No consultation with the USFWS is necessary pursuant to Section 7 of the Act.

Wildlife or plant species listed as threatened or endangered under Alaska's Endangered Species legislation (5 AAC 93.020) are not known to occur in or near the site of the Proposed

Action. Therefore, it was determined that the Proposed Action would have no effect on state-sensitive species.

5.5 Executive Order 12898, Environmental Justice

E.O., 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to identify and address disproportionately high and adverse impacts on minority and low-income populations. The 2000 US Census revealed that 10.5 percent of the City of Fairbanks population was below the poverty level.

The Proposed Action would be located within FNSB Census Tract 2, which is bounded, generally, by the Chena River on the north, Cowles Street and Lathrop Street on the east, the Robert Mitchell Expressway on the south, and Peger Road on the west. The neighborhoods within Census Tract 2 are not dominated by minorities (U.S. Census Bureau, 2000). However, on a scale of 1 to 19 (with 1 being the highest income earned) Census Tract 2 is ranked 15 out of 19 related to median household income and 16 out of 19 related to per capita income compared to other tracts within the FNSB (U.S. Census Bureau, 2000). Therefore, the inhabitants of Census Tract 2 would qualify as a minority or low-income population.

Because there would be no appreciable adverse impacts on the environment, minority and low-income populations would not bear a disproportionate share of negative environmental consequences resulting from the Proposed Action.

5.6 Executive Order 13045, Environmental Health Risks and Safety Risks for Children

E.O. 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires an analysis of risks that may disproportionately affect children. This E.O. defines environmental health and safety risks as "risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest." The safety and health of children would not be disproportionately negatively affected by the Proposed Action.

5.7 Section 106 of the National Historic Preservation Act

Projects that are federally funded, licensed, or permitted must consider the effects of the proposed project on cultural resources (Section 106 of the National Historic Preservation Act [16 USC 470], as amended).

As this undertaking will require federal funding and federal or state permits, the ADF&G is required to comply with Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR 800.

Based on the results of the Alaska Heritage Resources Survey and literature reviews, field survey, and consultation, the Section 106 Report prepared for the Proposed Action (Stephen R. Braund & Associates, 2006) recommended that a finding of "No historic properties

affected" (36 CFR Part 800.4[d][1]) be given for the proposed Ruth Burnett Sport Fish Hatchery and associated facilities because no cultural resources were located in the project APE as defined in 36 CFR 800.11(i). In addition, the report recommended that the proposed undertaking be given clearance to proceed. In the event that ADF&G or its contractor(s) discover archaeological or historical materials during construction of the proposed fish hatchery, associated facilities, or utilities, ADF&G or its contractor(s) should immediately halt activities in the vicinity of the find and notify the SHPO of the find in order to avoid damaging potentially important historic properties.

Appendix C contains copies of an August 14, 2006, letter from ADF&G Division of Sport Fish to SHPO; an August 31, 2006, letter from SHPO to the ADF&G Division of Sport Fish; and a September 6, 2006, letter from ADF&G Division of Sport Fish to SHPO.

5.8 Tanana Chiefs Council Consultation on Cultural Resources

Stephen R. Braund & Associates, sent the Tanana Chiefs Council a consultation letter on behalf of ADF&G Division of Sport Fish related to cultural resources potentially associated with the Proposed Action. (See *Appendix C, Consultation and Coordination* for a copy of a July 24, 2006, letter from Stephen R. Braund & Associates to the Tanana Chiefs Conference recommending "that Native consultation be carried out prior to initiation of construction in order to protect important cultural resources that may be present in the proposed project area.")

CHAPTER 6

List of Preparers

This NEPA document was prepared by the team members listed in Table 6-1.

TABLE 6-1
Those Responsible for Preparing this Environmental Assessment

Name	Education	Area of Responsibility
Kath Althen/CH2M HILL (Anchorage)	*M.A., Economics, University of Washington* *B.A., Economics, University of Colorado*	Editor, Economics
Stephen Braund/ Stephen R. Braund & Associates (Anchorage)	*M.A. Anthropology, University of Alaska Fairbanks*	Cultural Resources
Matt Flynn/CH2M HILL (Anchorage)	*B.A., Natural Sciences and Mathematics, Alaska Pacific University, Anchorage* *M.S., Hydrology, New Mexico Institute of Mining and Technology, Socorro*	Groundwater
Elizabeth Grover/ Stephen R. Braund & Associates (Anchorage)	*M.A. Anthropology, University of Alaska Fairbanks*	Cultural Resources
Carl Hemming (Fairbanks)	*B.S., University of Alaska Fairbanks*	Fish, Birds, Wildlife, Vegetation
Jennifer Hepner/CH2M HILL (Anchorage)	*B.S., Civil Engineering, University of Idaho* *Engineer-In-Training: Idaho*	Noise
Eric D. Hilsinger/ Stephen R. Braund & Associates (Anchorage)	*M.A. Anthropology, University of Alaska Fairbanks*	Cultural Resources
Cory Hinds/CH2M HILL (Anchorage)	*B.S. Engineering, Swarthmore College, Swarthmore, Pennsylvania* *M.S. Civil Engineering, University of California – Los Angeles (UCLA)*	Floodplain
Andrea Hunter (Fairbanks)	*M.W.R., Master of Water Resources, University of New Mexico* *B.S., Environmental Science/Biology, Northern Arizona University*	Socio-cultural, Land Ownership and Land Use, Transportation, Public Health and Safety
Ed Powell/CH2M HILL HILL (Anchorage)	*B.S., Civil Engineering, University of Washington* *B.S., Naval Science, United States Naval Academy*	Air Quality
Marko Radonich/CH2M HILL (Anchorage)	*B.A., University of Alaska, Anchorage*	EA Project Manager

TABLE 6-1
Those Responsible for Preparing this Environmental Assessment

Name	Education	Area of Responsibility
Jeff Randall/CH2M HILL (Seattle)	*Ph.D., Groundwater Hydrology, University of Arizona, Tucson* *M.S., Groundwater Hydrology, University of Arizona, Tucson* *B.S., Geology, Indiana University, Bloomington*	Groundwater
Stacy Ré/CH2M HILL (Anchorage)	*B.S., Biology, Elon University, North Carolina*	Geology, Soils and Permafrost, Water Quality and Temperature, Wetlands, Energy Consumption and Conservation, Hazardous Materials, Visual/Aesthetics
Robert (Robin) Senner/ CH2M HILL (Anchorage)	*Ph.D., Public Policy, University of Texas at Austin* *B.A., Biology, Yale University*	Cumulative Impacts
Tom Wolf/CH2M HILL (Anchorage)	*M.S., Arctic Engineering, University Of Alaska* *B.S., Civil Engineering, Oregon State University*	Lead Consultant

CHAPTER 7

Distribution of Draft Environmental Assessment

To provide full and honest notification and disclosure of the environmental impacts of the Proposed Action and the No Action Alternative, the Draft EA was sent to the agencies and organizations listed below.

- USFWS
- EPA
- USACE
- ADNR/OHMP
- Fairbanks North Star Borough
- City of Fairbanks

CHAPTER 8

Comments and Responses on the Draft EA

The Draft EA was released for a 35-day public review period that began March 30, 2007, and ended May 3, 2007. A notice of its availability was published in the *Fairbanks Daily News-Miner* with information on how and where to obtain a copy. In addition, NOAA Fisheries (the Agency) issued a corresponding press release to the Alaska news media and placed a copy of the Draft EA and an announcement on the Agency's Alaska Region website. The Agency invited the public to review the proposed action and the Draft EA and provide comments by mail or email. No public comments were received during this period.

The preparation of this EA occurred over a 2-year period where considerable consultation and public outreach were conducted. Site selection was undertaken in full consultation with the State of Alaska Department of Transportation & Public Facilities, the State of Alaska Department of Fish & Game, and the Fairbanks North Star Borough. In addition, a public meeting was held in Fairbanks on May 30, 2006, to present the proposed project and to receive comments from the public, especially those who live in the adjoining neighborhoods. Over 75 members of the public and local agencies attended the meeting. Issues raised included increased noise and light pollution, concerns over potential odors, and increased traffic flow on neighboring streets. All of these issues and concerns were specifically addressed prior to release of the Draft EA and they are documented in the EA itself.

CHAPTER 9

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Appendix A
General Conformity Technical Memorandum

General Conformity Review, Ruth Burnett Sport Fish Hatchery, Fairbanks, Alaska

PREPARED FOR: Environmental Coordinator

PREPARED BY: Ed Powell/CH2M HILL
Laurel Redenbaugh/CH2M HILL

DATE: November 19, 2006

The Ruth Burnett Sport Fish Hatchery, proposed to be constructed in Fairbanks, Alaska, will be in part federally funded and will be located in the Fairbanks carbon monoxide (CO) maintenance area. As a result, a general conformity review is required to demonstrate the proposed action conforms to the State Implementation Plan (SIP) (40 CFR Part 91, Subpart B, and 18 AAC 50.725). General conformity applies to all federal actions not addressed by the transportation conformity rule.

A general conformity review first involves determining if the proposed action is exempt. The quantity of CO released during the highest CO emission year is compared to the threshold of 100 tons of CO per year requiring further review. The analysis must consider both construction year(s) as well as operating years and include both direct emissions as well as indirect emissions as a result of the proposed action.

Description of the Proposed Action

The proposed action involves constructing a 47,000 square foot building to house a fish hatchery located on a 5.12-acre site south of 2nd Avenue, east of Wilbur Street, and north of Hilton Avenue in Fairbanks, Alaska. The hatchery facilities will include areas for water processing, fish rearing, offices and administration, research, shop and maintenance activities, loading docks, feed storage, and visitor education.

Construction of the facility is expected to occur in the 2007 and 2008 construction seasons. Site preparation and actual construction is assumed to be typical for the Fairbanks area with no unique aspects with respect to the release of CO. CO will be released by construction equipment and vehicles, and from vehicles transporting workers to-and-from the site. Emissions of CO as a result of operating the facility will include emissions from a natural gas-fired boiler for heating both the building and process water, and from vehicles transporting employees and visitors to-and-from the facility.

Construction Emissions

Air Quality emissions resulting from construction were estimated using Environmental Protection Agency (EPA) emission factors whenever possible. For all vehicle emissions, except for non-road equipment, emissions factors were developed

using EPA's MOBILE6 computer program. The MOBILE6 input file describing vehicle ages and types for the Fairbanks area, was obtained from the State of Alaska Department of Environmental Conservation, Division of Air Quality. Winter temperatures were used as a worst-case scenario for emissions of CO.

Equipment emissions for building and site preparation were calculated using EPA's NONROAD Emissions program with the following assumptions:

- The year 2007 was used as the worst case year
- Estimated equipment and hours of usage based on the type and scope of the project
- 100 percent load was used as a worst case assumption

On-road hauling vehicle emission calculations assumed the number and length of trips based the estimated amounts of materials to be moved on and off site. Each load was assumed to be 20 cubic yards. It was assumed that the material hauling offsite and the material hauling onsite would be independent of each other as the worst-case scenario.

Emissions of CO as a result of workers commuting were calculated using MOBILE6 emissions factors with the following assumptions:

- 20 Construction Workers
- working 22 days per month for 6 months
- 20 mile round trip commute

Asphalt emission calculations assumed 2 acres would be paved and using the California Air Resource Board URBEMIS program emissions factor.

All construction emissions were assumed to occur in one year as a conservative approach. Total estimated emissions as a result of constructing the facility are presented in Table 1.

TABLE 1
Total Construction Emissions (ton/year)

	Carbon Monoxide (CO)	Volatile Organic Compounds (VOCs)	Oxides of Nitrogen (NOX)	Sulfur Dioxide (SO2)	Particulate Matter (PM-10)
Equip. Emissions - Building and Site Preparation	1.74	0.29	3.88	0.00	0.25
On-Road Hauling Vehicle Emissions	0.143	0.072	0.074	0.072	0.072
Site Grading Fugitive Dust Emissions					1.690
Worker Commute Emissions	0.980	0.0428	0.087	0.00054	0.0017
Asphalt Emissions		0.0026			
TOTAL	**2.86**	**0.41**	**4.04**	**0.08**	**2.01**

Operation Emissions

Operation of the facility will result in releasing air pollutant emissions from the natural gas boiler as well as from employee and visitor vehicles. Emissions from the natural gas-fired boiler were estimated using EPA's AP-42 emission factors and assume the boiler is operated at capacity for 365 days per year. This results in releasing the emissions listed in Table 2.

TABLE 2
Total Boiler Emissions

Pollutant	tons/year
Oxides of Nitrogen (NO_X)	3.5
Carbon Monoxide (CO)	5.8
Particulate Matter (PM-10)	0.53
Sulfur Dioxide ($SO_{2)}$	0.04
Volatile Organic Compounds (VOCs)	0.38

Emissions as a result of employees commuting were estimated using MOBILE6 emission factors with the following assumptions.

- 7 workers a day
- Working everyday
- 30 mile round-trip commute

Emissions as a result of visitors to the facility were estimated using MOBILE6 emission factors with the following assumptions.

- 10 Buses or RVs and 20 cars a day
- 300 days a year
- 10 total miles were added to their travel route to visit the facility

Estimated emissions as a result of operating the facility are presented in Table 3.

TABLE 3
Total Operating Emissions (tons/year)

	Carbon Monoxide (CO)	Oxides of Nitrogen (NOX)	Volatile Organic Compounds (VOCs)	Particulate Matter (PM-10)	Sulfur Dioxide (SO2)
Vehicle Emissions	1.49	0.53	0.07	0.01	0.00
Boiler PTE	5.84	3.48	0.38	0.53	0.04
Total	**7.33**	**4.01**	**0.45**	**0.54**	**0.04**

Conclusion

The worse year for emissions of CO is expected to be the first year of operation during which 7.3 tons of CO are estimated to be released. This is well below the CO threshold of 100 tons per year and no further action is required by general conformity regulation.

Appendix B
Wastewater General Permit for Fish Hatcheries

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WASTEWATER GENERAL PERMIT FOR
FISH HATCHERIES

PERMIT No. 9640DB005-201

This General Waste Disposal permit is issued to persons responsible for the disposal of wastewater from fish hatcheries. This permit applies to fish hatcheries that have a fish food budget of greater than 30,000 pounds per annum and discharge wastewaters to waters of the State. This permit also has provisions for domestic waste discharge and for fish carcass disposal.

This permit is subject to the conditions and stipulations contained in Appendices A, B, and C which are incorporated herein by reference. All disposals made under the authority of this permit, regardless of size, are subject to the conditions and stipulations contained herein. This permit requires a person to submit a Notice of Intent (NOI) to dispose.

The Department will require a person to apply for an individual permit when 1) notification of intent to conduct activities under this general permit is not made; 2) the activity does not meet the conditions of this general permit, contributes to pollution, or causes an adverse impact on public health or water quality; 3) a change occurs in the availability of technology or practices for the control or abatement of pollutants contained in the discharge.

This permit is issued under provisions of Alaska Statutes 46.03, the Alaska Administrative Code as amended or revised, and other applicable State laws and regulations, including standards of the Alaska Coastal Management Program under 6 AAC 80 for activities in the coastal zone.

This permit is effective on issuance and expires March XX, XXXX unless superseded before that time by a state certified U.S. Environmental Protection Agency National Pollutant Discharge Elimination System permit or upon issuance of an amended general permit. This permit may be terminated or modified in accordance with AS 46.03.120.

_____ _____

Date Issued

Pete McGee, Technical Engineer
Air and Water Quality

APPENDIX A--OPERATION

I. NOTICE OF DISPOSAL

A. Applicants wishing to conduct disposal activities under this permit must submit a Notice of Disposal (NOI) to the Department at least thirty (30) days prior to the disposal activity. The contact information for the Department is listed in the Reporting section of this permit. This notification must be a written notice of intent to operate under this permit. This notification must include the following information:

1. applicant's name, position, company, address, and phone number;

2. name and address of the owner of the property and written authorization by the property owner for conduct of the proposed activity, and name and address(es) of the operator(s)[1] of the treatment works;

3. topographic map showing the exact location of the facility and the discharge point(s), and the direction and ultimate termination of the flow after discharge;

4. average and maximum daily flow rates of all discharges;

5. description of the treatment process of the domestic and non-domestic wastewater that includes a flow schematic;

6. list of pollutants known to be present in the domestic and non-domestic wastewaters;

7. list of any medications, drugs, disease control chemicals and disinfectants used within the hatchery along with method of application and intended treatment dosage that will be discharge to the waters of the State along with the Manufactures Material Safety Data Sheets (MSDSs) for these products;

8. engineering plans stamped by a Professional Engineer if currently available for all wastewater discharges;

[1]Notifications must be made to the Department if changes in operator name(s) and address(es) occur during the life of the permitted activity.

9. monitoring plan for facilities with multiple discharge points of hatchery wastes as required in Part III.A.1. if applicable;

10. bottom sampling plan required in Part III.A.3. if applicable;

11. mixing zone application required in Part III.A.2. if applicable;

12. a fish carcass disposal plan required in Part III.4. if applicable;

B. Applicants must have written approval from the Department before conducting disposal activities under this permit. The Department will, in its discretion, deny use of the permit, attach or waive conditions to the approval as necessary.

C. Authorizations approved under General Permit 9240-DB006 will carry over to this permit and are authorized for the period of time approved in the original approval letter. Any other specific conditions required in the initial approval letter still apply.

D. Notices of Intent previously approved under General Permits 9240-DB006 and A fee of $200 must be paid for each Notice of Disposal submitted.

II. APPLICATION COMPLIANCE

The Permittee shall comply with all parts of the permit application submittal except as specified otherwise in this permit or outlined in the Department's approval.

III. SITE OPERATION

A. Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering waters of the State.

B. The Permittee shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures.

C. There shall be no discharge of floating solids, garbage, grease, foam, oily waste or wastewater containing a visible sheen or which may produce a film, sheen or coloration on surface waters.

D. The discharge shall not cause contamination of surface or groundwaters, and shall

not cause a violation of the Alaska Water Quality Standards (18 AAC 70).

E. The disposal shall not cause adverse effects on aquatic or terrestrial plant or animal life, their reproduction, or habitat.

IV. LIMITATIONS AND MONITORING

A. Unless otherwise specified in this permit, during the period beginning on the effective date to the expiration date, the Permittee is authorized to discharge in accordance with the following limitations and monitoring requirements below:

1. HATCHERY WASTES--RACEWAY REARING

Effluent Characteristics	Effluent Limitation		Monitoring Requirements[2] Frequency	Sample Type[3]
	Monthly ave.	Daily max.		
Flow (gpd)	report		monthly	estimate/meter
Total Suspended[4]	5.0	15.0	monthly(normal)[5]	composite
Solids (mg/l)			monthly(cleaning)[6]	composite
Settleable Solids[3]		0.2	monthly(normal)[5]	composite
(ml/l)			monthly(cleaning)[6]	composite
pH[7] (range)	6.5 - 8.5		monthly	grab

[1]Seasonal sampling will be required for facilities with raceway rearing, samples will be collected in the months of May through October.

[2]For facilities with multiple discharge points of hatchery wastes, the applicant will submit a monitoring plan to this Department for approval with their Notice of Disposal. This plan will consist of a method (equation) for calculating a weighted discharge value for the parameters Total Suspended Solids (TSS) and Settleable Solids, this weighted value will be based upon the quantity of fish diet fed per water discharge outfall and will be representative of the total volume of solids discharged from the facility.

[4]Sampling location for facilities with settling ponds will be at the outlet of the pond. Sampling location for facilities without settling ponds will be at the most downstream point of the wastewater handling system that is reasonably accessible to facility personnel. Net difference values may be used to meet these parameter limitations if influent and effluent sampling is conducted and reported.

[5]Samples shall be taken monthly during "normal" hatchery operations. The TSS samples shall consist of at least four (4) grab samples taken at approximately two hour intervals during hatchery operating hours which will result in a composite sample representative of the discharge during normal operations.

[6]Samples shall be taken monthly during the "cleaning" operations.

1. For discharges directly from raceways, sampling shall occur during raceway cleaning operations. The TSS samples shall consist of at least four (4) grab samples taken at evenly spaced intervals during the cleaning period which will result in a composite sample representative of the discharge during the cleaning operations. Two (2) settleable solids grab samples shall be collected at least one (1) hour apart which will result in a composite sample representative of the discharge during cleaning operations.
2. For discharges from settling ponds the TSS and Settleable Solid samples shall be taken immediately following the cleaning of raceways and shall consist of a single grab sample.

[7]An alternative criteria of no variation greater than 0.5 standard pH units from natural conditions may be used to meet this effluent limitation if influent and effluent sampling is conducted and reported.

2. DOMESTIC WASTES, for discharges to surface water of the State, either marine or fresh.

Effluent[8] Characteristic	Effluent Limitation		Monitoring Requirements Frequency	Sample Type
	Monthly ave.	Daily max.		
Flow(gpd)	shall not exceed design capacity		quarterly	estimate/ meter
BOD_5[9] (mg/l)	30	60	quarterly	grab
Total Suspended[8] Solids(mg/l)	30	60	quarterly	grab
Fecal Coliform[10] (FC/100ml)			quarterly	grab
marine water	14	43		
fresh water	20	40		
Chlorine Residual[11] (µg/l)	non-detectable[12]		quarterly	grab
pH[13](range)	6.5 --- 8.5		quarterly	grab

[8]Analysis for the effluent parameters listed below shall be performed in accordance with Standard Methods for the Examination of Water & Wastewater (American Public Health Association).

[9]Secondary effluent treatment standards for these parameters may be waived at the Department's discretion in accordance with 18 AAC 72.040(d), in no case will the Department permit domestic wastewater to be discharged with less than primary treatment, that is without settling by a septic tank. Written approval by the Department is required for this waiver.

[10]The applicant shall apply to the Department for a mixing zone for fecal coliform bacteria in accordance with 18 AAC 70.032 when the discharge is to surface waters of the State, either fresh or marine, if disinfection of the effluent is not part of the treatment system.

[11]For those facilities that disinfect with chlorine.

[12]Based upon amperometric or DPD methods.

[13]An alternative criteria of no variation greater than 0.5 standard pH units from natural conditions may be used to meet this effluent limitation if influent and effluent sampling is conducted and reported.

3. PEN REARING

a. Facilities that pen rear fish shall conduct bottom sampling for fish and/or food waste below the pens for the life of this permit. A bottom sampling plan will be submitted to the Department for approval as part of the Notice of Disposal, this plan will consist of a minimum of five sampling points sampled twice per year, before and after pen rearing season. Samples will be analyzed for accumulations and any observable affects upon benthic community. A summary report will be submitted to this Department by December 31 of each year discussing the results of this bottom sampling program. Any relevant information gathered as a result of dive or video surveys conducted at the facility will be included in this report.

b. If as a result of the first two years of this sampling program no persistent accumulations are evident on a yearly basis, the bottom sampling program may be discontinued upon application by the Permittee and review by this Department. Written approval of the Department is required for this waiver.

c. A Zone of Deposit (ZOD) is authorized by this permit in accordance with 18 AAC 70.033 for facilities that practice net pen rearing. The ZOD will be for persistent accumulations on the bottom of fish waste and/or food resulting from the rearing activity. The limits of the ZOD will be specified by the Department following a review of the information submitted by the Permittee as part of the bottom sampling program.

d. Exemption from the bottom monitoring requirement will be considered on a case-by-case basis where hydrologic conditions, previous observations or data can support a determination by this Department that no persistent accumulations will occur.

4. FISH CARCASS DISPOSAL

A fish carcass disposal plan will be submitted with the Notice of Disposal, this plan will consist of a bathymetric or topographic map showing the discharge location, a narrative description concerning tides and currents in the area of discharge with supporting data, and an estimate of the maximum poundage discharged on any given day and the number of days the discharge is anticipated to occur per season.

a. WHOLE CARCASS DISPOSAL

1. MARINE WATER

i. The discharge must take place while the vessel is underway in marine water at least 50 fathoms deep and which is suitable for dispersing the carcasses. Waiver of the depth requirement for specific sites may be granted upon written approval of the Regional Administrator. The waiver request must contain adequate information to justify a decision by this Department, including but not limited to bathymetric data, average and maximum current speeds (estimates may be used) and any historical information concerning impacts from seafood wastes.

ii. Approval of each discharge site must be obtained from ADEC before the carcasses are dumped.

iii. The skipper of the discharge vessel must fill out a log of each discharge occurrence, approximate location, date, and approximate weight of waste discharged, this log will be maintained at the hatchery.

2. FRESH WATER

i. No discharges will be authorized to fresh waters within one mile upstream of any drinking water source.

ii. Freshwater discharge of carcasses will be considered based on site specific circumstances if there is no persistent accumulation of carcasses.

iii. Approval of each discharge site must be obtained from ADEC before the carcasses are dumped.

iv. A log must be kept of each discharge occurrence, approximate location, date, and approximate weight of waste discharged.

b. GROUND FISH WASTES DISPOSAL, this section will apply to facilities that construct an outfall pipe and discharge directly from the facility.

1. MARINE WATER

i. Ground fish wastes may be discharged only if they do not exceed 0.5 inches in any dimension.

ii. The discharge must take place in marine water which is suitable for dispersing the fish waste. Specific sites will be approved if dispersal is demonstrated to be adequate based upon local flushing currents, tidal action, bottom topography and confining land forms.

iii. Approval of each discharge site and outfall location must be obtained from ADEC prior to construction of the outfall pipe.

iv. The operator of the facility must maintain a daily log of each discharge occurrence and approximate weight of fish waste discharged.

v. A bottom sampling plan will be submitted to the Department for approval as part of the Notice of Disposal if fish grinding is currently used at the facility, this plan will consist of a minimum of three sampling points sampled twice per year, before and after carcass disposal season. Samples will be analyzed for fish waste accumulations and any observable affects upon benthic community. A summary report will be submitted to this Department by December 31 of each year discussing the results of this bottom sampling program. Any relevant information gathered as a result of dive or video surveys conducted at the facility will be included in this report. If in the future the disposal of ground fish carcasses is considered at a facility notification of this Department is required and the appropriate part of this section of the permit will become applicable.

vi. A Zone of Deposit (ZOD) is authorized by this permit in accordance with 18 AAC 70.033 for facilities that discharge ground fish via an outfall pipe. The ZOD will be for persistent accumulations on the bottom of ground fish waste. The limits of the ZOD will be specified by the Department following a review of the information submitted by the Permittee as part of the bottom sampling program.

2. FRESH WATER

i. Ground fish wastes may be discharged only if they do not exceed 0.5 inches in any dimension.

ii. No discharges will be authorized to fresh waters within one mile upstream of any drinking water source.

iii. Freshwater discharge of ground fish wastes will be considered based on site specific circumstances if it can be demonstrated to the Department satisfaction that there will be no persistent bottom nor incidential shoreline accumulations of fish wastes, or floating wastes on the water surface.

iv. Approval of each discharge site must be obtained from ADEC prior to construction of the outfall pipe.

v. A daily log must be kept of each discharge occurrence, approximate weight of fish waste discharged and any observed shoreline accumulations.

5. DRUGS, CHEMICALS, MEDICATIONS and Other Products

a. The discharge of tri-n-butyl tin is not authorized.

b. Only drugs, medications and disease control chemicals which are approved for hatchery use by the United States Food and Drug Administration (USFDA) or the United States Environmental Protection Agency (EPA) shall be used. Their use shall comply with the permitted uses and application practices given on the product labels.

c. The discharge of any drugs, chemicals or medications in toxic amounts to waters of the State is prohibited.

d. Should it be determined that such products are being discharged in toxic amounts, or are having a significant negative impact upon the receiving environment, this permit shall be modified to include appropriate limitations or other requirements.

e. Research use of chemicals must have prior written approval from the Alaska Department of Fish and Game, FRED Division, Fish Pathology Section.

B. If the Permittee monitors any effluent characteristic identified in this permit more frequently than required, the results of such monitoring shall be included in the calculation and the values reported in the monitoring report (Part IV.). Such increased frequency shall also be indicated.

C. Test procedures for the analysis of pollutants shall conform to methods cited in 18 AAC 70.020. The Permittee may substitute alternative methods of monitoring or analysis upon receipt of written approval from the Department.

D. All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed, calibration and maintenance of instrumentation, recordings from continuous monitoring instrumentation, and any addition or modification of the facility, shall be retained at the facility for observation by the Department for three years. Upon request from the Department, the Permittee shall submit certified copies of such records.

V. REPORTING

Monitoring results, as required, shall be summarized and reported to the Department within 45 days after the monthly sampling period ends or 15 days after the receipt of test results from the laboratory, whichever is sooner. Monitoring shall begin at the commencement of discharge. Reporting shall be done on the form provided in Appendix C, or on a similar form which provides the same information in the same format as Appendix C. Signed copies of these and all other reports required herein shall be submitted to the Department at the following address for the Public Service Area Office having jurisdiction over the disposal.

Alaska Department of Environmental Conservation
Anchorage/Western Public Service Office
555 Cordova Street
Anchorage, Alaska 99501
(907) 269-7505
FAX: 269-7506

Alaska Department of Environmental Conservation
Mat-Su Public Service Area Office
P.O. Box 871064
Wasilla, Alaska 99687
(907) 376-5038
FAX: 376-2382

Alaska Department of Environmental Conservation
Kenai Public Service Area Office
35390 Kalifornsky Beach Rd., Suite #11
Soldotna, Alaska 99669
(907) 262-5210
FAX: 262-2294

Alaska Department of Environmental Conservation
Northern Public Service Area Office
610 University Ave.
Fairbanks, Alaska 99709-3643
(907) 451-2177
FAX: 451-2187

Alaska Department of Environmental Conservation
Southeast Public Service Area Office
410 Willoughby Ave, Suite #105
Juneau, Alaska 99801-1795
(907) 465-5355
FAX: 465-5362

B. The permittee shall maintain on-site a log of all uses of medications, drugs, disease control chemicals, and disinfectants. This log will be made available for inspection by Department personal and shall be retained at the facility for three years. Upon request from the Department, the Permittee shall submit certified copies of such records. This log shall include the following:

1. Person responsible for the administration of the chemicals.

2. The trade name and purpose of the applied chemical.

3. Date, time, and pond or raceway being treated or disinfected.

4. Pond or raceway treatment concentration of the active ingredient, duration of treatment, and amount in gallons or pounds of the chemical used.

C. The permittee shall maintain on-site a log showing the method, date(s), location(s) and approximate weight of fish carcasses disposed of (as appropriate).

D. Knowingly making a false statement, by the Permittee, the operator, or other employees, including contractors, on any report or test may result in the imposition of criminal penalties as provided for under AS 46.03.790.

E. All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed, calibration and maintenance of instrumentation, recordings from continuous monitoring instrumentation, laboratory quality control summaries, and any addition to or modification of the facility, shall be retained at the facility or the business office for observation by the Department for three years. Upon request from the Department, the Permittee shall submit certified copies of such records.

VI. MANAGEMENT REQUIREMENTS

All disposals authorized herein shall be consistent with the terms and conditions of this permit and approved plans. The disposal of any pollutant not identified in this permit, at a concentration which exceeds the Alaska Water Quality Standards, shall constitute noncompliance with this permit.

A. Noncompliance Notification

1. If for any reason the Permittee does not comply with, or will be unable to comply with, any effluent limitation specified in this permit or applicable Water Quality Standards under 18 AAC 70, the Permittee shall immediately stop discharging and report the noncompliance to the Department within 24 hours of becoming aware of such conditions. This report shall be by telephone, fax, or in the absence of both, by mail.

2. A written follow-up report shall be sent to the appropriate Public Service Area Office within seven days of the reported event. The written report shall contain, but not be limited to:

   a. times and dates on which the event occurred;

   b. a detailed description of the event, including quantities and types of materials involved;

   c. details of any damage to the receiving environment;

d. details of actions taken or to be taken to correct the causes of the event; and

e. details of actions taken or to be taken to correct any damage resulting from the event.

XII. EXCLUSION FROM THE GENERAL PERMIT

Any permittee authorized by this permit may request to be excluded from the coverage of this general permit by applying for an individual permit. The owner shall submit an application together with the reasons supporting the request to the Department no later than 60 days before the proposed discharges.

XIII. INDIVIDUAL PERMIT

When an individual permit is issued to a Permittee otherwise subject to this general permit, the applicability of this general permit to that Permittee is automatically terminated on the effective date of the individual permit.

IX. INCLUSION UNDER THE GENERAL PERMIT

Persons with existing individual permits may operate under this general permit by so requesting and making written notification as outlined under I.A. Notice of Disposal. Applicability of this permit will commence on the effective date of the written approval given under I.B. of this permit. The existing individual permit will be automatically terminated on the same date.

X. TERMINATION OF ACTIVITIES UNDER A GENERAL PERMIT

The Department will, in its discretion, require a person with a general permit to terminate operation under the general permit, and/or apply for an individual permit when situations including, but not limited to, the following occur:

A. the disposal does not meet the conditions of the general permit;

B. the disposal contributes to pollution or causes an adverse impact on public health or water quality; or

C. a change occurs in the availability of technology or practices for the control or abatement of pollution contained in the disposal.

APPENDIX B--GENERAL CONDITIONS

I. ACCESS AND INSPECTION

The Department's representatives shall be allowed access to the permittee's facilities to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit and State laws and regulations.

II. AVAILABILITY OF RECORDS

Except for information related to confidential processes or methods of manufacture, all records and reports submitted in accordance with the terms of this permit shall be available for public inspection at the Department listed on page 11 of this permit.

III. LOCATION OF PERMIT AND APPLICATION

The permittee shall maintain a copy of this permit and facility plans at the disposal facility or, if that is not feasible, at the permittee's or operator's place of business.

IV. CIVIL AND CRIMINAL LIABILITY

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond his control, including but not limited to accidents, equipment breakdowns, or labor disputes.

V. ADVERSE IMPACTS

The permittee shall take all necessary means to minimize any adverse impact to the receiving waters or lands resulting from a violation or noncompliance with any limitations specified in this permit, including any additional monitoring needed to determine the nature and impact of the activity in noncompliance. The permittee shall clean-up and restore all areas adversely impacted by the noncompliance.

VI. CULTURAL AND PALEONTOLOGICAL RESOURCES

Should cultural or paleontological resources be discovered as a result of this activity, work which would disturb such resources are to be stopped, and the Office of History and Archaeology, Division of Parks and Outdoor Recreation, Department of Natural Resources, is to be notified immediately (907)561-2020.

VII. OTHER LEGAL OBLIGATIONS

This permit does not relieve the Permittee from the duty to obtain any other necessary permits from the Department or from other local, state, or federal agencies, and to comply

with the requirements contained in any such permits. All activities conducted and all plans implemented by the Permittee pursuant to the terms of this permit shall comply with all applicable local, state, and federal laws and regulations.

VIII. POLLUTION PREVENTION

In order to prevent and minimize present and future pollution, when making management decisions that effect waste generation, the Permittee shall consider the following order of priority options as outlined in AS 46.06.021:

1. waste source reduction,
2. recycling of waste,
3. waste treatment, and
4. waste disposal.

IX. APPLICATIONS FOR PERMIT RENEWAL, AMENDMENT OR PLAN APPROVAL

Application for a renewal of or amendment to a permit will be treated in the same manner as the initial application, except that public notice or hearing will not be required for applications for renewal or amendment. Application for renewal or amendment or plan approval must be made no later than 30 days before the expiration of the permit or the planned effective date of the amendment or change.

X. TRANSFERS

Should operation of the facility be contracted or a change in contractors be made, the new contractor shall be notified of the existence of the permit and its conditions. A copy of the request shall be forwarded to the Department listed on page 11 of this permit.

XI. TERMINATION

This permit terminates upon the expiration date. The Department has the authority to terminate a permit upon 30 days written notice if the Department finds that there has been a violation of the conditions of the permit.

DISCHARGE MONITORING REPORT - APPENDIX C--1

MONTHLY MONITORING---HATCHERY WASTE/RACEWAY REARING

PERMIT NUMBER: 9640-DB005

COMPANY NAME/ADDRESS/PHONE NO FACILITY NAME/LOCATION	SAMPLE PERIOD FROM: / / TO: / /

PARAMETER		CONCENTRATION			UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		Minimum	Average	Maximum			
	Sample Result						
NORMAL	Permitted						
	Sample Result						
Flow	Permitted		report		gpd	monthly	estimate/meter
	Sample Result						
Total Suspended Solids	Permitted		5.0	15.0	mg/l	monthly	composite
	Sample Result						
Settleable Solids	Permitted			0.2	ml/l	monthly	composite
	Sample Result						
pH	Permitted	6.5		8.5	std. units	monthly	grab
	Sample Result						
	Permitted						
	Sample Result						
CLEANING	Permitted						
	Sample Result						
Total Suspended Solids	Permitted		5.0	15.0	mg/l	monthly	composite
	Sample Result						
Settleable Solids	Permitted			0.2	ml/l	monthly	composite
	Sample Result						
	Permitted						
	Sample Result						
	Permitted						
	Sample Result						
	Permitted						

Type or Print Name and Title of Principal Executive Officer or Authorized Agent:

DATE: SIGNATURE:_____

DISCHARGE MONITORING REPORT - APPENDIX C--2

MONTHLY MONITORING---DOMESTIC WASTE

PERMIT NUMBER: 9640-DB005

COMPANY NAME/ADDRESS/PHONE NO FACILITY NAME/LOCATION	SAMPLE PERIOD FROM: / / TO: / /

PARAMETER		CONCENTRATION			UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		Minimum	Average	Maximum			
Flow	Sample Result						
	Permitted			design capacity	gpd	quarterly	estimate /meter
Biochemical Oxygen Demand (5-day)	Sample Result						
	Permitted		30	60	mg/l	quarterly	grab
Total Suspended Solids	Sample Result						
	Permitted		30	60	mg/l	quarterly	grab
Fecal Coliform Bacteria Marine Water	Sample Result						
	Permitted		14	43	FC/100 ml	quarterly	grab
Fecal Coliform Bacteria Fresh Water	Sample Result						
	Permitted		20	40	FC/100 ml	quarterly	grab
pH	Sample Result						
	Permitted	6.5		8.5	std. units	quarterly	grab
Chlorine Residual	Sample Result						
	Permitted			non-detect	µg/l	quarterly	grab
	Sample Result						
	Permitted						
	Sample Result						
	Permitted						
	Sample Result						
	Permitted						
	Sample Result						
	Permitted						
	Sample Result						
	Permitted						

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Water, Wastewater Discharge Program
Phone: ANCHORAGE (907) 269-3059, Fax: (907) 269-7508; FAIRBANKS (907) 451-2130, Fax: (907) 451-2187; JUNEAU (907) 465-5300, Fax: (907) 465-5274

NONCOMPLIANCE NOTIFICATION

GENERAL INFORMATION

PERMIT #: 0123DB005

APPLICANT/COMPANY:	FACILITY NAME	FACILITY LOCATION:
PERSON REPORTING	PHONE NUMBER OF PERSON REPORTING	REPORTED HOW? (e.g. by phone)

DATE/TIME EVENT WAS NOTICED	**DATE/TIME REPORTED**	**NAME OF DEC STAFF CONTACTED**

VERBAL NOTIFICATION MUST BE MADE TO ADEC WITHIN 24 HOURS OF DISCOVERY

INCIDENT DETAILS (attach additional sheets, lab reports and photos as necessary)

ESTIMATED QUANTITY INVOLVED (volume or weight)

CAUSE OF EVENT (be specific)

PERMIT CONDITION DEVIATION (Identify each permit condition exceeded during the event).

Parameter (e.g. BOD, pH)	**Permit Limit**		**Exceedance (sample result)**	**Sample date**

CORRECTIVE ACTIONS
Attach a description of corrective actions taken to restore the system to normal operation and to minimize or eliminate chances of recurrence.

ENVIRONMENTAL DAMAGE. ☐ YES ☐ NO ☐ UNKNOWN (If yes, provide details below).

ACTUAL/POTENTIAL IMPACT ON ENVIRONMENT/PUBLIC HEALTH (describe in detail)

ACTIONS TAKEN TO REDUCE OR ELIMINATE ACTUAL/POTENTAIL IMPACT ON ENVIRONMENT/PUBLIC HEALTH [(describe in detail) (e.g. Supplied drinking water to nearby well owners and informed well owners not to drink from wells until further notice)].

COMMENTS

Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.

NAME:_____ SIGNATURE:_____ DATE:_____

FORMS MUST BE SENT TO DEC WITHIN 7 DAYS OF THE EVENT.

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Water, Wastewater Discharge Program
Phone: ANCHORAGE (907) 269-3059, Fax: (907) 269-7508; FAIRBANKS (907) 451-2130, Fax: (907) 451-2187; JUNEAU (907) 465-5300, Fax: (907) 465-5274

ACCIDENTAL DISCHARGE / SPILL NOTIFICATION

GENERAL INFORMATION

PERMIT #:0123DB005

APPLICANT/COMPANY:	FACILITY NAME:	FACILITY LOCATION
PERSON REPORTING	PHONE NUMBER OF PERSON REPORTING	REPORTED HOW? (e.g. by phone)
DATE/TIME OF SPILL	**DATE/TIME REPORTED**	**NAME OF DEC STAFF CONTACTED**

VERBAL NOTIFICATION MUST BE MADE TO ADEC WITHIN 24 HOURS OF DISCOVERY OF SPILL.

INCIDENT DETAILS (attach additional sheets, lab reports and photos as necessary)

PRODUCT SPILLED (e.g. sewage, propylene glycol, etc)	SOURCE OF SPILL

QUANTITY SPILLED (volume or weight)	**QUANTITY CONTAINED**	**QUANTITY RECOVERED**	QUANTITY DISPOSED

CAUSE OF SPILL (be specific)

CLEANUP ACTIONS (describe in detail)

DISPOSAL METHODS AND LOCATION (describe in detail)

STATUS OF CLEANUP ACTIONS (If clean up has not begun, provide estimated time to begin and complete clean up and reasons for the delay)

ENVIRONMENTAL DAMAGE. ☐ YES ☐ NO ☐ UNKNOWN If yes, provide details below.	**SURFACE AREA AFFECTED (square feet)**	**SURFACE TYPE (e.g. tundra, land covered with snow, etc)**

ACTUAL/POTENTIAL IMPACT ON ENVIRONMENT/PUBLIC HEALTH (describe in detail)

COMMENTS

Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.

NAME:_____ SIGNATURE:_____
DATE:_____

FORMS MUST BE SENT TO DEC WITHIN 7 DAYS OF THE EVENT.

Appendix C
Consultation and Coordination

APPENDIX C

Consultation and Coordination

- August 14, 2006, letter from the Alaska Department of Fish & Game (ADF&G) Division of Sport Fish to the State Historic Preservation Office (SHPO)
- August 31, 2006, letter from SHPO to the ADF&G Division of Sport Fish
- September 6, 2006, letter from ADF&G, Division of Sport Fish to SHPO with attached *Alaska Department of Fish and Game, Division of Sport Fish, Proposed Ruth Burnett Sport Fish Hatchery, Fairbanks, Alaska, Section 106 Report* (Stephen R. Braund & Associates, 2006)
- July 24, 2006, letter from Stephen R. Braund & Associates to the Tanana Chiefs Conference

Stephen R. Braund & Associates

P.O. Box 1480, Anchorage, Alaska 99510
907-276-8222 (Phone); 907-276-6117 (Fax)
srba@alaska.net

VIA FACSIMILE

24 July 2006

Bob Sattler
Tanana Chiefs Conference
122 First Avenue, Ste 600
Fairbanks, Alaska 99701
Phone: 907-452-8251 ext. 3250
Fax: 907-459-3955
Number of Pages (including this cover sheet): 2

Re: Consultation for the Ruth Burnett Sport Fish Hatchery, Fairbanks, Alaska

Dear Mr. Sattler:

Stephen R. Braund & Associates, under contract with CH2M Hill, is currently conducting a Section 106 assessment for the Ruth Burnett Sport Fish Hatchery in Fairbanks, Alaska. We would appreciate any comments you might have regarding cultural resources in the proposed project area. The proposed Ruth Burnett Sport Fish Hatchery is to be located at the northeast corner of Wilbur Street and Hilton Avenue, in the NW¼ of the SW¼ of Section 9, Township 1S, Range 1W, Prime Meridian, Fairbanks on the Fairbanks D-2 U.S.G.S. quadrangle. The present site is the Chena baseball field and was recently a dog park as well. The enclosed map (based on U.S.G.S. 1:63,360 Quadrangles Fairbanks D-2) depicts the location of the proposed development.

SRB&A conducted a literature review in July, 2006. SRB&A reviewed the Alaska Heritage Resource Survey files maintained by the Alaska Department of Natural Resources, Office of History and Archaeology for the project area in July, 2006 as well. There are no documented cultural resources in the project area. SRB&A conducted archaeological survey and testing in the proposed project area on July 7, 2006.

SRB&A has recommended that Native consultation be carried out prior to initiation of construction in order to protect important cultural resources that may be present in the proposed project area. Therefore, SRB&A would like to discuss cultural resources in the project area with yourself or anyone else you believe is knowledgeable.

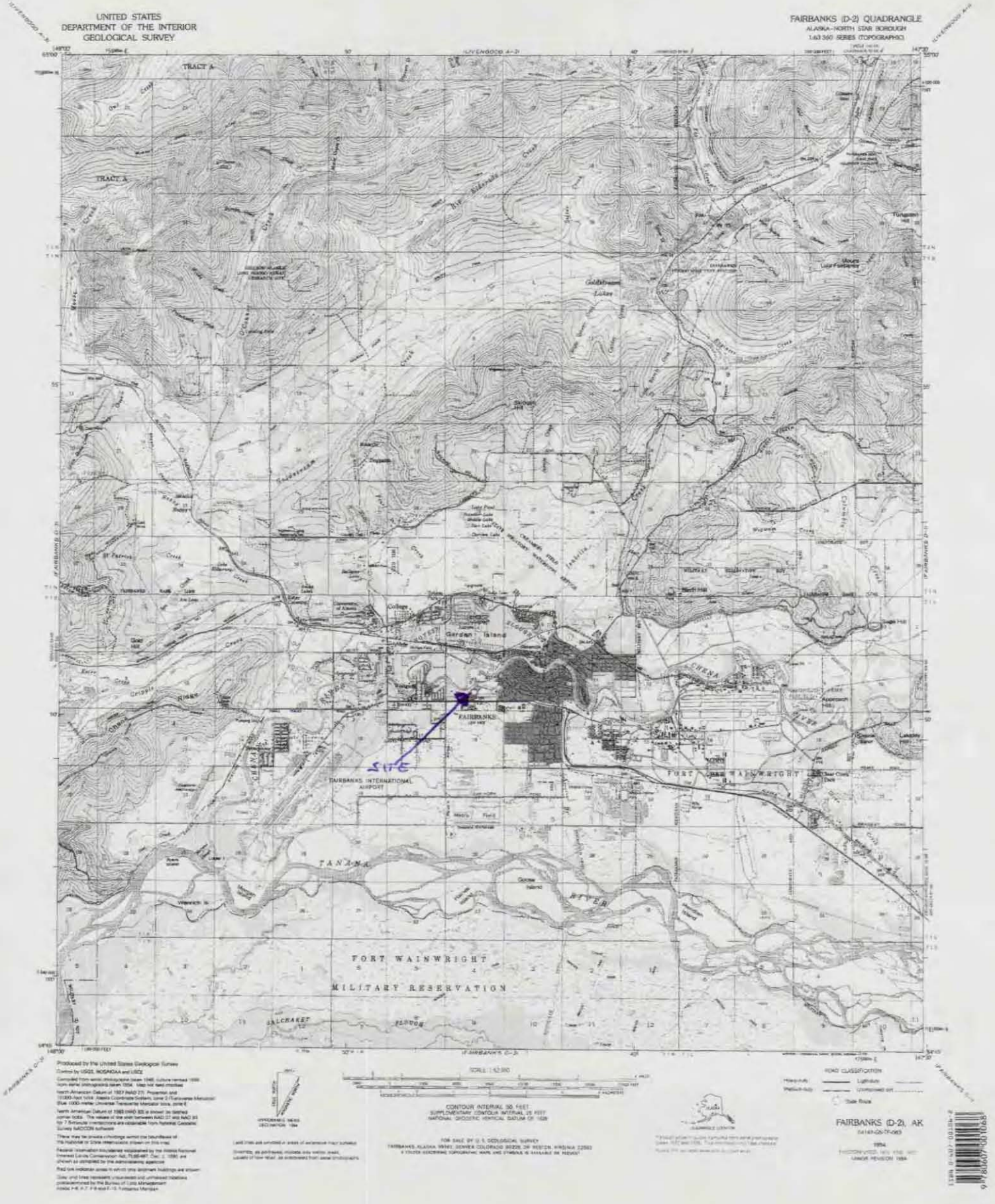
We would appreciate a response from you regarding cultural resources at these localities as soon as possible, and no later than **August 23, 2006**.

Thank you for your assistance. If you have any questions, please contact us.

Sincerely,

Erik D. Hilsinger

Enclosures


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
FAIRBANKS (D-2) QUADRANGLE
ALASKA—NORTH STAR BOROUGH
1:63 360 SERIES (TOPOGRAPHIC)
TRACT A
TRACT A
Gordon Island
FAIRBANKS
SITE
FAIRBANKS INTERNATIONAL AIRPORT
FORT WAINWRIGHT
MILITARY RESERVATION
TANANA
RIVER
CHENA
RIVER
FLOOD
SLOUGH
FAIRBANKS (D-2)
FAIRBANKS (D-2), AK
1954

STATE OF ALASKA

FRANK MURKOWSKI, GOVERNOR

DEPARTMENT OF FISH AND GAME

DIVISION OF SPORTFISH

P.O. Box 115526
Juneau, Alaska 99811-5526
PHONE: (907) 465-4180
FAX: (907) 465-2772

August 14, 2006

Ms. Judy Bittner
State Historic Preservation Officer
Department of Natural Resources
Office of History and Archaeology
550 West 7th Avenue, Suite 1310
Anchorage, Alaska 99501-3565

Dear Ms. Bittner:

The State of Alaska Department of Fish and Game (ADF&G), Division of Sport Fish is currently proposing to construct the Ruth Burnett Sport Fish Hatchery in the community of Fairbanks, Alaska. As this undertaking will require federal funding and/or federal and state permits, this department is required to comply with Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR 800.

The location of the proposed facilities is on land owned by the Fairbanks North Star Borough in Township 1S, Range 1W, Section 9 on the Fairbanks D-2 1:63,360 Quadrangle. The enclosed vicinity map (based on U.S.G.S. 1:63,360 Quadrangle Fairbanks D-2) and site layout, which depict the location of the project and its components, assist in delineating the Area of Potential Effect (APE) of the planned projects [36 CFR Part 800.11(d)(1)]. As a point of correction please note that the green building designated "OLT Treatment Building" has been removed and the area is now considered green field.

Based on information from the Alaska Heritage Resource Survey (AHRS) and a review of available literature, the proposed undertaking is not located near cultural resource sites. The site is located at the northeast corner of the intersection of Wilbur Street and Hilton Avenue ¼ mile from Pioneer Park and a mile from the core of downtown Fairbanks. No known cultural resources are located within the APE. CH2M Hill has contracted with Stephen R. Braund & Associates (SRB&A) to identify cultural resources in the APE, evaluate the impacts of the undertaking on the cultural resources in the APE, and recommend steps to be taken prior to construction that will ensure the protection of these resources. SRB&A completed a literature search and review of AHRS files in July 2006 and conducted a field survey, including subsurface testing, on July 7, 2006. On July 25, 2006, SRB&A initiated Native consultation with the Tanana Chiefs Conference on behalf of ADF&G Division of Sport Fish.

If you have any questions, please contact me at 465-4235.

Sincerely,

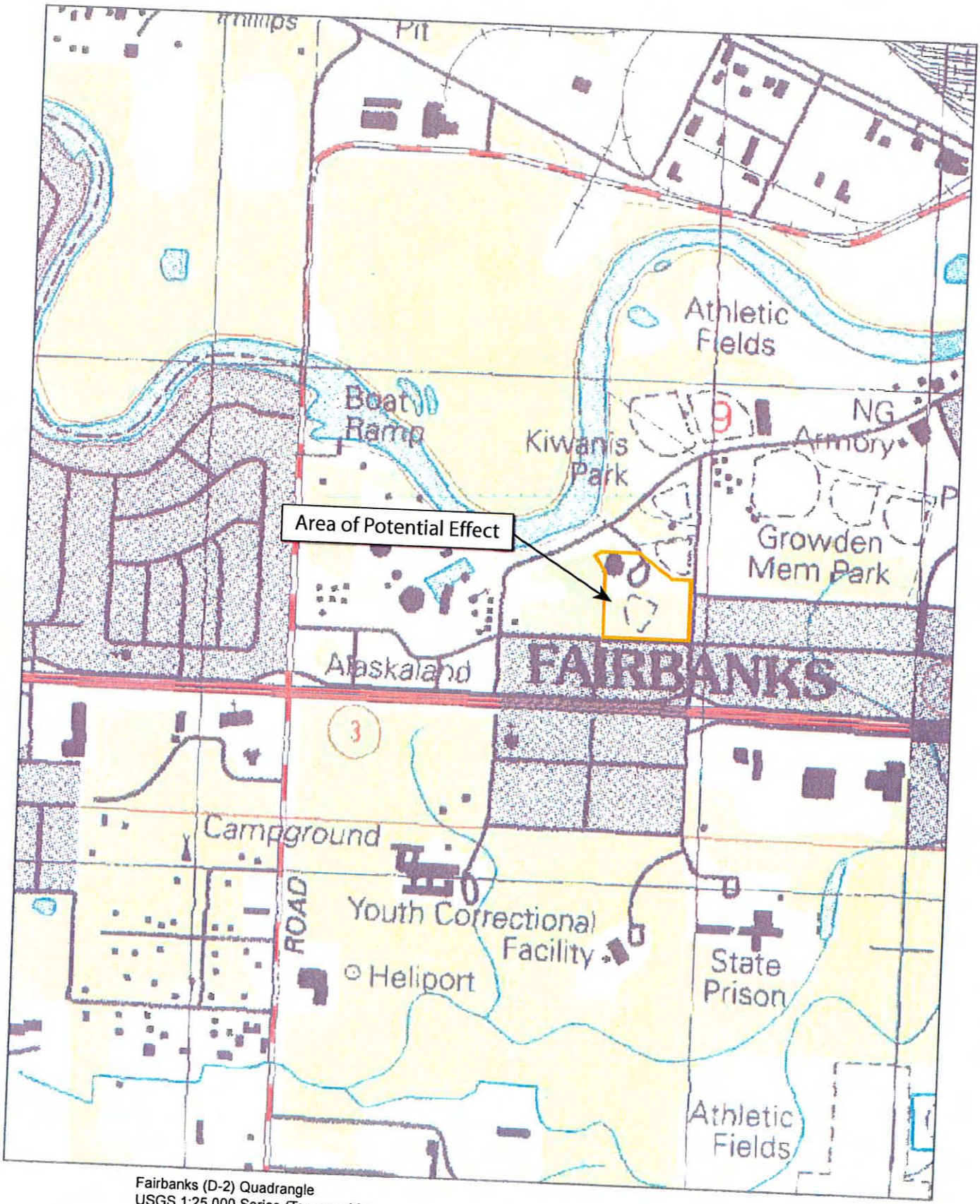
Gordon P. Garcia

Project Manager
P.O. Box 1125526
Juneau, Alaska 99802-5526

Phone: (907) 465-4235
Fax: (907) 465-2772

cc: Stephen Braund

Attachment 1 Project Location Map
Attachment 2 Preliminary Survey Sketch



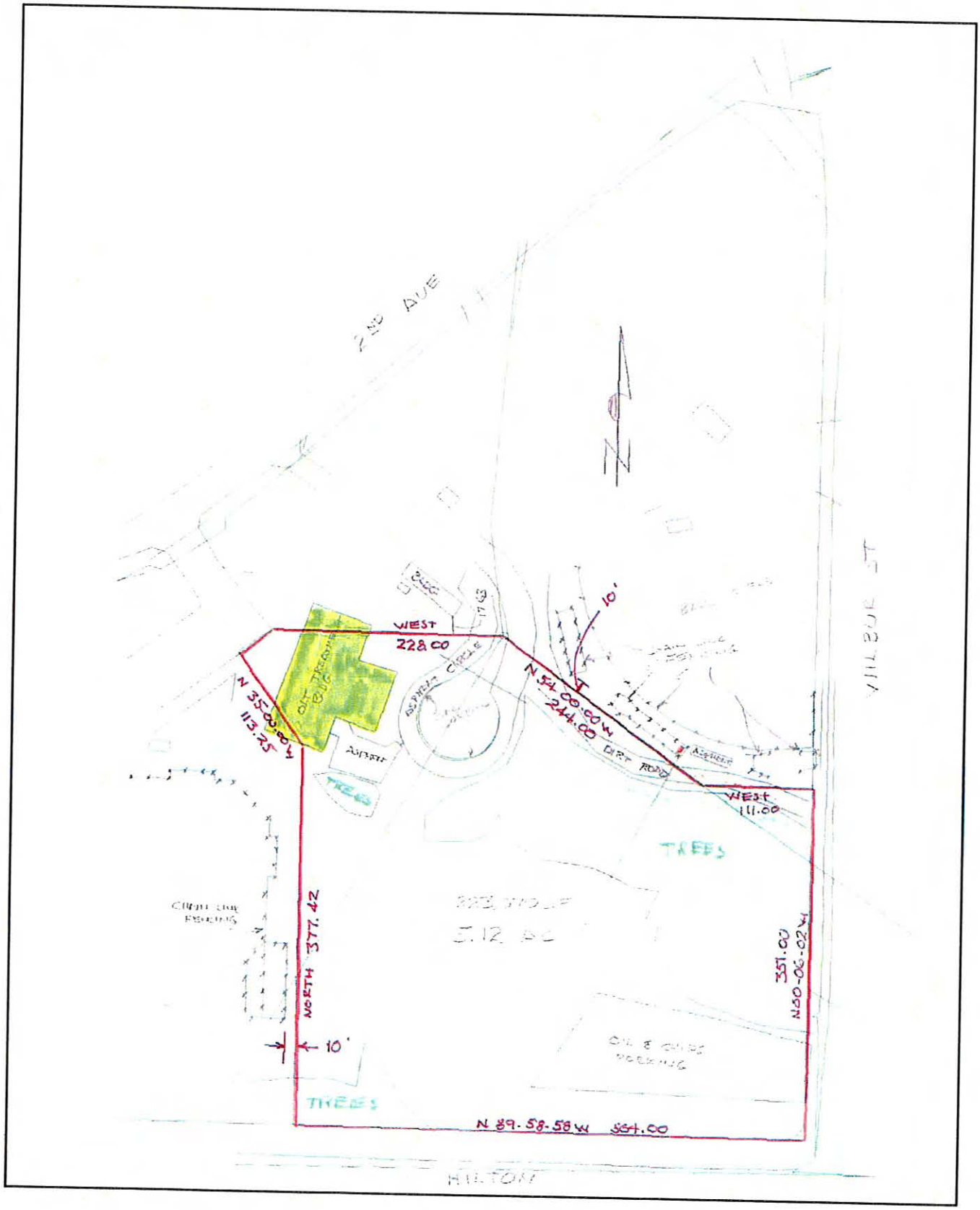
Fairbanks (D-2) Quadrangle
USGS 1:25,000 Series (Topographic)
Fairbanks Meridian
Township 1 South, Range 1 West
Section 9
Map not to scale

North

Attachment 1
Project Location Map
Ruth Burnett Sport Fish Hatchery

336573 WB032006004ANC boundary_map.ai 07/28/06 sc

CH2MHILL



North

Map not to scale

Attachment 2
Preliminary Survey Sketch
Ruth Burnett Sport Fish Hatchery

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF PARKS AND OUTDOOR RECREATION
OFFICE OF HISTORY AND ARCHAEOLOGY

FRANK H. MURKOWSKI, GOVERNOR

550 W 7th Ave, SUITE 1310
ANCHORAGE, ALASKA 99501-3565
PHONE: (907) 269-8721
FAX: (907) 269-8908

August 31, 2006

File No.: 3130-2R ADFG

SUBJECT: Construction of Ruth Burnett Sport Fish Hatchery, Fairbanks

Gordon Garcia
Division of Sportfish
Dept. of Fish and Game
P.O. Box 115526
Juneau, AK 99811-5526

Dear Mr. Garcia,

We have received your letter of 8/14/06 regarding the proposed construction of the Ruth Burnett Sport Fish Hatchery in Fairbanks, Alaska. According to your letter, CH2M Hill has contracted Stephen R. Braund & Associates to conduct an archaeological survey of the proposed project area. Therefore, once the State Historic Preservation Office has received the ensuing archaeological report, our review and compliance staff will have the information necessary to make recommendations under Section 106 of the National Historic Preservation Act.

Our office looks forward to working with the Division of Sportfish and CH2M Hill regarding the construction of the Ruth Burnett Sport Fish Hatchery.

Sincerely,

Judith E. Bittner
State Historic Preservation Officer

JEB:mmg

STATE OF ALASKA

FRANK MURKOWSKI, GOVERNOR

DEPARTMENT OF FISH AND GAME

DIVISION OF SPORTFISH

P.O. Box 115526
Juneau, Alaska 99811-5526
PHONE: (907) 465-4180
FAX: (907) 465-2772

September 6, 2006

Ms. Judy Bittner
State Historic Preservation Officer
Department of Natural Resources
Office of History and Archaeology
550 West 7th Avenue, Suite 1310
Anchorage, Alaska 99501-3565

Dear Ms. Bittner:

The State of Alaska Department of Fish and Game (ADF&G), Division of Sport Fish is currently proposing to construct the Ruth Burnett Sport Fish Hatchery in the community of Fairbanks, Alaska. As this undertaking will require federal and/or state permits, this department is required to comply with Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR 800.

The location of the proposed facilities is on land owned by the Fairbanks North Star Borough in Township 1S, Range 1W, Section 9 on the Fairbanks D-2 1:63,360 Quadrangle. The enclosed vicinity map (based on U.S.G.S. 1:63,360 Quadrangle Fairbanks D-2) and site layout, which depict the location of the project and its components, assist in delineating the Area of Potential Effect (APE) of the planned projects [36 CFR Part 800.11(d)(1)].

CH2M Hill has contracted with Stephen R. Braund & Associates (SRB&A) to identify cultural resources in the APE, evaluate the impacts of the undertaking on the cultural resources in the APE, and recommend steps to be taken prior to construction that will ensure the protection of these resources. SRB&A completed a literature search and review of AHRS files in July 2006. Based on information from the Alaska Heritage Resource Survey (AHRS) and a review of available literature, the proposed undertaking is not located near cultural resource sites. The site is located at the northeast corner of the intersection of Wilbur Street and Hilton Avenue ¼ mile from Alaskaland and a mile from the core of downtown Fairbanks. No known cultural resources are located within the APE.

SRB&A conducted a cultural resources survey of the APE, including subsurface testing, on July 7, 2006. SRB&A faxed a consultation letter to Tanana Chiefs' Conference on July 24, 2006, and ADF&G Division of Sport Fish mailed a consultation letter to the SHPO on August 14, 2006. The enclosed report *AlaskaDepartment of Fish and Game, Division of Sport Fish Proposed Ruth Burnett Sport Fish Hatchery, Fairbanks, Alaska Section 106 Report* document these findings and ADF&G's implementation of 36 CFR 800.4(b).

Based on the cultural resources survey, AHRS and literature review, and consultation, we are seeking your concurrence on the finding of "no historic properties affected" (36 CFR Part 800 Sec. 800.4 [d1]) by this undertaking.

If you have any questions, please contact me at 465-4235.

Sincerely,

Gordon P. Garcia

Project Manager
P.O. Box 115525
Juneau, Alaska 99811-5525
Phone: (907) 465-4235
Fax: (907) 465-2772
E-mail gordon_garcia@fishgame.state.ak.us

cc: Stephen Braund
Enclosures (2 copies of report)

Concur/Do Not Concur: _____

Judith E. Bittner _____ (Date)
State Historic Preservation Officer