

**ENVIRONMENTAL ASSESSMENT**

**RED LAKE DAM FISHWAY  
LOWER RED LAKE  
CLEARWATER COUNTY, MINNESOTA**

**ST. PAUL DISTRICT  
U.S. ARMY CORPS OF ENGINEERS  
APRIL 2006**



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FINDING OF NO SIGNIFICANT IMPACT

CORRESPONDENCE

SECTION 404(b)(1) EVALUATION



## **1.0 APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS**

An environmental assessment has been conducted for the proposed actions, and a discussion of the impacts follows. As specified by Section 122 of the 1970 Rivers and Harbors Act, the categories of impacts listed in table EA-1 were reviewed and considered in arriving at the final determination. In accordance with Corps of Engineers regulations (33 CFR 323.4(a)(2)), a Section 404(b)(1) evaluation has been prepared and is included as attachment 1 of this environmental assessment. A Finding of No Significant Impact may be signed after the public review period has elapsed, any issues have been resolved, and water quality certification has been received.

This assessment was prepared and the proposed work designed to comply with all applicable environmental laws and regulations, including the following: National Environmental Policy Act of 1969; Executive Order 11514, Protection and Enhancement of Environmental Quality (as amended in Executive Order 11991); Executive Order 11593, Protection and Enhancement of the Cultural Environment; Executive Order 11990, Protection of Wetlands; Clean Air Act of 1977; Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations; Clean Water Act of 1977; Endangered Species Act of 1973; Fish and Wildlife Coordination Act; National Historic Preservation Act; and 40 CFR 1500-1508, Council on Environmental Quality, Regulations for Implementing Procedural Provisions of the National Environmental Policy Act of 1969.

## **2.0 INTRODUCTION**

### **2.1 PROJECT LOCATION**

The Red Lake Dam control structure is located at the outlet of Lower Red Lake (Section 28, R36W, T152N) in the northeastern part of Clearwater County, Minnesota, approximately 18 miles northwest of Red Lake, Minnesota, and 188.4 river miles above the mouth of Red Lake River (figure 1). The drainage area upstream of the dam is 1,951 square miles. Upper and Lower Red Lakes have an area of about 440 square miles at elevation 1174.0 feet above mean sea level (ft msl). The Red Lake River basin covers about 6,000 square miles over all of Red Lake County and parts of Koochiching, Beltrami, Clearwater, Marshall, Pennington, Polk, Mahnomon and Itasca Counties, Minnesota.

### **2.2 PROJECT BACKGROUND**

Much of the project background is derived from *A Red Lake Project History 1909-2002*, which was prepared by the St. Paul District, U.S. Army Corps of Engineers. This document should be referenced for more detailed project history information.

In 1951, the Corps of Engineers replaced the stoplogs with slide gates in an existing Bureau of Indian Affairs (BIA) dam. The Corps gained control of the dam and also channelized portions of the Red Lake River both within and outside the Red Lake Indian Reservation. No land was acquired from the Indians to perform this work. Instead, the Red Lake Band of Chippewa Indians allowed the Corps to enter the reservation and construct the Red Lake and

Clearwater Rivers project under conditions set forth in tribal council resolutions. These resolutions, written between 1947 and 1949, stipulated that, among other things, no costs for construction, repair, or maintenance would be charged to the Red Lake Band of Chippewa Indians; the Tribe would not be liable for any damages that might be caused by such improvements; and the Tribe reserved the right to present a claim against the United States for any damages resulting from the project.

The combination of the conversion to slide gates and the increased head differential resulting from the channelization of the river increased the velocity of the water leaving the lake, which caused fish to congregate below the dam. Since 1951, the Red Lake Band has expressed concern regarding the congregation of fish below the dam and the apparent inability of the fish to swim upstream through the structure.

The Corps placed a temporary Denil-style fishway at the dam in 1954. At that time, most fishway technology had been developed for salmonids in the western part of the United States, and it was not recognized that a Denil-style fishway would be ineffective for most species in the Red Lake River. In 1956, the fishway was determined ineffective and was removed.

A discussion of a fishway was included in a 1975 environmental impact statement for the dam. It was concluded that, "A physical device, such as a channel or fishtrap which would allow fish to return to the lake may be necessary to alleviate this concern of the tribal members."

In 1995, the U.S. Fish and Wildlife Service (USFWS) completed the Red Lake Dam Fish Study. In this study, the USFWS confirmed that, "fish do pass through the dam gates during all seasons and under various discharges. More fish passed through the dam at higher discharge rates. Due to the hydraulic conditions of the stilling basin, the dam also serves as a barrier for the upstream migration of fish into the Red Lakes."

In 1997, the Corps contracted with Stanley Consultants to investigate "alternatives to reduce the permanent out-migration of fish from Lower Red Lake through the dam into the Red Lake River." The alternatives focused on the prevention of all life stages of all fish species from passing down through the Red Lake dam and the restoration/enhancement of the upstream passage of all life stages of all fish species through the dam into Red Lake. Numerous alternatives were examined; nine were selected for comparison of costs and operation and maintenance requirements. A bypass-channel style fishway similar to the one proposed here was included in the evaluation.

In 2000, a verbal agreement was reached with the tribal council to attempt to stop fish emigration by placing stoplogs in front of the dam's slide gates. In June 2002, the Red Lake Department of Natural Resources (DNR) informed the Corps that this approach was not working. Not enough stoplogs were placed in front of the slide gates to stop fish from going through the dam. Additional stoplogs could not be added without negatively affecting discharge rates.

Since 2001, the St. Paul District has been steadily working toward a design for a fishway; however, budget limitations slowed progress. In summer 2004, the district began making

significant progress toward designing and constructing a fishway. Concerns with the possible but unconfirmed existence of carp in the Red Lake River below the dam have led to the inclusion of a fish trap in the design of the project. This trap would prevent carp from entering the lake but would allow the Tribe to transport desirable fish species over the dam. Details of the current design are in the “Summary of Alternatives” section (section 4.0) of this assessment.

### **2.3 PROJECT PURPOSE**

The Red Lake/Clearwater River project is a multipurpose project, with flood control, and water supply as primary purposes. Operation of the project is intended to reduce flood damages and improve farm drainage along the Red Lake and Clearwater Rivers, to augment streamflow during dry periods to help meet downstream requirements for water supply, to enhance the Red Lake fishery, and, originally, to reduce pollution from downstream urban areas by dilution of effluents. Although not a congressionally-authorized project purpose, low-flow augmentation provided by the project benefits hydroelectric power generation at Thief River Falls, Minnesota.

The purpose of the fish passage project is to mitigate for the negative impacts of the Red Lake Dam related to the movement of fish.

### **2.4 PROJECT AUTHORITY**

The proposed project would be constructed under the authority provided in Section 905(b) of the Water Resources Development Act of 1986 (33 U.S.C. 2283).

## **3.0 AFFECTED ENVIRONMENT**

### **3.1 SOCIAL AND ECONOMIC ENVIRONMENT**

#### **3.1.1 GENERAL**

Red Lake reservoir is located almost entirely within Beltrami County. The outlet structure and a small portion of the reservoir are located in northwest Clearwater County. Population figures for these counties taken from recent census surveys are presented in table 1.

Table 1. Population of counties in Red Lakes project vicinity.

<i>County</i>	<i>1980</i>	<i>1990</i>	<i>2000</i>	<i>Percent Change (1990-2000)</i>
Beltrami	30,982	34,384	39,650	15.3
Clearwater	8,761	8,309	8,423	1.4
Total	39,743	42,693	48,073	12.6

Table 2 displays employment data by industry for Beltrami and Clearwater Counties. Major industries in terms of employment in the area include educational, health and social services; retail trade; and manufacturing. Unemployment is generally higher in the these counties when compared with the State of Minnesota (table 3).

Income among these counties is significantly lower than State levels. Table 4 shows that median household incomes in 1999 were about 33 percent lower than the State level. The number of people below poverty levels for these counties was also significantly higher than State levels.

Table 2. Employment by industry, Red Lakes project vicinity.

Industry	Beltrami County		Clearwater County	
	Number	Percent	Number	Percent
Agricultural Services, Forestry, Fishing and Mining	689	3.8	298	8.3
Construction	1,244	6.9	397	11.1
Manufacturing	1,717	9.5	376	10.5
Wholesale Trade	406	2.2	62	1.7
Retail Trade	2,248	12.4	410	11.5
Transportation and Warehousing, and Utilities	677	3.7	215	6.0
Information	388	2.1	39	1.1
Finance, Insurance, Real Estate, and Rental and Leasing	724	4.0	87	2.4
Professional, Scientific, Management, Administrative, and Waste Management Services	836	4.6	107	3.0
Educational, Health and Social Services	5,151	28.5	994	27.8
Arts, Entertainment, Recreation, Accommodation and Food Services	2,039	11.3	246	6.9
Other Services (except public administration)	896	5.0	155	4.3
Public administration	1,070	5.9	188	5.3

Table 3. 2000 Unemployment rate, Red Lakes project vicinity.

Area	Rate (percent)
Beltrami County	4.9
Clearwater County	6.3
Minnesota	2.9

Table 4. 1999 Median household income and family poverty rate, Red Lakes project vicinity.

County/State	Income	% Families Below Poverty Line
Beltrami County	33,392	12.9
Clearwater County	30,517	11.0
Minnesota	47,111	5.1

### 3.1.2 TRIBAL

The Red Lake Band of Chippewa Indians tribal headquarters is in Red Lake. The Red Lake Band was the first group to organize in Minnesota under a written constitution in 1918 when a general council was established as the governing body. Red Lake Reservation is a closed reservation and, therefore, was not open to homestead entries, and the land has not been allotted to individual tribal members. All land is held in common by all the members of the Band.

The tribe resides on 636,954 acres of aboriginal land that is held in trust by the U.S. Government. The band owns scattered tracts of land extending up to the Canadian border including most of the Northwest Angle. It amounts to an additional 156,690 acres for a total of 825,654 acres, a land base larger than the State of Rhode Island.

Tribal enrollment is about 9,800 members; approximately 6,300 members live on the reservation. Red Lake is locally governed by an 11-member tribal council elected to 4r-year terms of office. The council is the legislative body of the band and operates under a constitution and bylaws approved by the U.S. Secretary of the Interior and the BIA. Three council members are elected at-large, and eight are elected from the four reservation districts. The Red Lake Band has its own tribal court and police force.

The Red Lake Band owns and operates a large mini-mall and trading post, and the fishery industry may resume in 2006. The Red Lake Band has altered 9,000 acres of wetlands now suitable for propagation of wild rice, trapping and duck hunting. The band operates three casinos, located in Thief River Falls, Red Lake and Warroad, Minnesota. Proceeds from the casinos have alleviated unemployment by 20 percent.

The Red Lakes commercial fishery has historically been a major source of employment on the reservation. In 1997, the Red Lake commercial fishing industry instituted a moratorium on the commercial harvest of walleye. Efforts to restore harvestable stocks of walleye to the Red Lakes are underway; it is anticipated that limited sustainable harvest will be allowed in 2006. Hunting is important to the economic subsistence of the Red Lake Tribe. Fish, moose, deer and wildfowl make up more than 50 percent of the Red Lake Band's diet.

The Red Lake tribal economy depends centrally on the nongovernmental employment afforded by fish and other natural resources. In this context, the integrity and viability of the ecosystem are crucial to the viability of the Red Lake economy and society.

### 3.1.3 RECREATION

The portion of Upper Red Lake outside tribal reservation boundaries has historically provided an excellent sport fishery for walleye. An economically viable tourist and resort industry exists on the northern and eastern shores of Upper Red Lake. Several resorts are present near Waskish, Minnesota, as is a State forest campground with access to Upper Red Lake. These facilities provide a variety of recreational opportunities including fishing, water-skiing,

swimming, camping, hunting, hiking and other outdoor interests. Because of the large tracts of land in public ownership in the region, recreational use of the area has expanded in recent years. Snowmobiling and all-terrain vehicle trail riding are increasing on these public lands.

The Red Lake River provides recreational fishing, canoeing and tubing opportunities. That portion of the Red Lake River outside the Red Lake Tribal Reservation is designated as a canoe and boating route by the Minnesota DNR. In the vicinity of Red Lake Falls, Minnesota, a tubing concession exists. The ability of tubers/canoe users to successfully float the river is dependent on river discharges.

The riverbanks and downstream shorelines adjacent to the Red Lake dam structure are frequently used as recreational/subsistence fishing sites by tribal members. Subsistence fishing practiced at the dam constitutes both a cultural activity and a means of providing food for tribal members. Because the dam serves as a barrier to upstream migration of river fishes, numerous species and large numbers of fish are consistently present in the spillway area of the dam. In combination with the relatively easy access to the river provided by the concrete spillway walls and riprapped banks, the Red Lake Dam structure is an attractive site for fishing enthusiasts.

### **3.2 NATURAL RESOURCES**

*Aquatic Resources* - Upper and Lower Red Lakes, covering approximately 284,000 acres at regulated pool (elevation 1174.0 ft msl), are the most conspicuous aquatic features of the project area. The Red Lakes are located in the Northern Minnesota Wetlands lake ecoregion. Both Lower and Upper Red Lakes are approximately elliptical in shape with major east-west axes of about 23 and 21 miles and minor north-south axes of about 12 and 10 miles, respectively.

Lower and Upper Red Lakes are relatively shallow with maximum depths of 32 and 18 feet, respectively. Mean depths of Lower and Upper Red Lakes are 22.4 and 12.9 feet, respectively. Both lakes, but more so Upper Red Lake, have bowl shaped basins. The estimated area of the littoral zones comprises approximately 3 percent of the overall surface area of both lakes.

The limnological conditions in both lakes are governed by the large surface areas and shallow water depths, which promote extensive mixing and continual circulation of the lake waters. In situ water quality monitoring from 1990 through 1994 by the Red Lake DNR confirmed the vertical instability of the water columns of both lakes. The lakes generally do not stratify except for very short periods. Both Upper and Lower Red Lakes are classified as eutrophic using Carlson's Trophic State Index (TSI). Direct precipitation and evaporation are a large part of the annual water budget of the Red Lakes. As a result, atmospheric and internal nutrient loading processes have a greater impact on water quality than nutrient inputs from tributaries.

Aquatic vascular plants are present in near shore areas on the north, south and west of Red Lakes where bands of bulrush (*Scirpus spp.*) and scattered beds of pondweeds (*Potamogeton spp.*) are found in water depths of less than 4 feet. Aquatic vegetation is generally absent in the

shallow water areas on the east shore, possibly as a result of the effects of wind and wave action discussed previously.

Table 5. Pertinent morphometric features of Upper and Lower Red Lakes.

Feature	Upper Red Lake	Lower Red Lake	Red Lakes (combined)
Drainage area (acres)	498,000	474,000	972,000
Surface area (acres)	119,537	164,777	284,314
Drainage area/Surface area	4.2	2.9	3.4
Volume (acre-feet)	1,544,646	3,698,625	5,243,271
Mean Depth (feet)	12.9	22.4	n/a
Mean Annual Discharge (acre-feet)	1,833,000	366,600	n/a
Hydraulic Residence Time (years)	9	10.2	n/a
Length of Shoreline (feet)	313,732	368,512	682,244
Area of Littoral Zone (acres)	5,346	4,538	9,884

Almost all the surface water entering Lower Red Lake enters on the south and east shores of the lake. The majority of flow enters via the Blackduck River, whose watershed includes areas drained by the North and South Branches of the Cormorant and Blackduck Rivers.

From its source at the outlet of Lower Red Lake, the Red Lake River flows approximately 196 miles to its confluence with the Red River of the North. The Red Lake River has two principal tributaries, the Thief River and the Clearwater River. From source to mouth, the Red Lake River has a total fall of about 345 feet.

Channelization, impoundment and agricultural drainage have greatly affected the physical habitat characteristics of the Red Lake River. The extensive channel straightening and deepening completed as part of the project reduced the structural diversity of the Red Lake River, reducing aquatic habitat diversity. The Red Lake River was deepened and widened between miles 154.3 and 178.5, and also in a 3.2-mile reach below the outlet structure. The river was also straightened, with numerous cutoffs, above mile 162.6 at the River Valley Bridge. Channel cross sections are typically 74 feet wide from mile 154 to 166, 76 to 85 feet wide from mile 166 to 179, and 113 feet wide from mile 185 to 188, with side slopes excavated 1 on 1. Channel bottoms were deepened and flattened over all channelized reaches.

A concrete weir semi-impounds the river from river mile 178.8 to the outlet structure on Red Lake. The concrete weir was constructed to impound water and maintain marsh conditions upstream. Upstream of the weir to the end of the channelized reach 3.2 miles below the dam on lower Red Lake, the Red Lake River forms a relatively shallow, low gradient, meandering channel through extensive marshlands. A bank or shoreline is not apparent in this reach. Below

the rock weir, the gradient increases and the river channel becomes more clearly defined and contained between natural riverbanks and dredge spoil dikes.

Operation of the dam at Red Lake imposes a regulated discharge regime on the river, primarily affecting streamflow by attenuating flood peaks and augmenting low flows. This operation produces seasonal patterns of discharge below the dam, which vary from "natural" seasonal patterns and thus impact the quality and quantity of habitat available for use. Regulation of the Red Lake Dam for flood control has caused major changes in the hydrologic regime of the Red Lake River. Instead of high or peak flows in April like most rivers in the Red River basin (including the lower Red Lake River), average flows are lowest in April and peak in June. During dry years, such as 1988, flows have remained nearly constant at a minimum flow release.

The amount and quality of riverine habitat are greatly affected by river discharge. Habitat conditions such as current velocity, water depth, bottom substrate, cover and water temperature are all flow-dependent habitat characteristics directly influenced by river discharge. Warm and cool-water streams have diverse fish and invertebrate assemblages that have diverse habitat needs; therefore, available habitat is an important predictor of population size. All forms of riverine life and human recreational use of the river are affected by discharge-related conditions. The combination of flood control operation and destruction of physical habitat features as a result of channelization has resulted in reduced productivity in the Red Lake River downstream of the dam.

**Wetlands** - The region's wetlands are dominated by vast expanses of peatlands of both bog and fen types (Glaser 1987). Peatland is defined as an ecosystem with a waterlogged substrate and at least 30 centimeters (cm) of peat (Glaser 1987). Additionally, thousands of acres of freshwater marsh associated with floodplain areas of the region's lakes and rivers also exist. The Zah Gheeng Marsh, just west of the outlet and dam on Lower Red Lake, is representative of the floating mat/alkaline bog wetlands found throughout the region. A variety of emergent bog meadow species, including northern reedgrass, aquatic mosses, sedges, cotton-grass, twig-rush and pitcher plants are present in the Zah Gheeng. However, large floating mats of cattails, sedges and *Phragmites spp.* are present. The abundance of these floating mats tends to limit the interspersed, in terms of open water areas, in the Zah Gheeng marsh. The floating mat/bog areas that have been established in the Zah Gheeng area are relatively unproductive. In discussions with wetland specialists with the Red Lake DNR, increased interspersed in the form of open water areas as well as increased flow through the marsh would be desirable.

The immediate project area has been highly disturbed by the construction and operation of the existing dam and the State highway. Much of the site is used as a parking lot. The embankments adjacent to the dam are covered with riprap protection and kept free of vegetation. Much of the area where the fishway would be constructed is wetland, with most of the vegetation being *Phragmites spp.* and some cattail, willow, and other species (see plate 1).

**Fish and Wildlife Resources** - The forests, wetlands, rivers and lakes of the Red Lake region provide habitat for an abundance of fish and wildlife species. Although agricultural practices, forestry and changing land uses have disturbed some habitat in the region, much of the

area (particularly within the Red Lake Reservation) remains relatively undisturbed. As a result, species such as moose, otter, fisher, gray wolf and snowshoe hare can be found in the region. Important aquatic mammals that inhabit the region's remaining wetlands include muskrat, mink, beaver and otter.

The Minnesota DNR completed a biological survey of the flora and fauna of the Red Lake River in 1976 and 1977 (Renard, Hanson and Enblom 1983). Despite the intense agricultural use of lands adjacent to the river, the water environment and riparian habitat afforded by the river corridor support a diverse wildlife resource. During the Minnesota DNR survey, 79 species of birds, 8 species of mammals, 2 species of reptiles and 2 species of amphibians were observed. Listings of the reptile, amphibian, mammal, and bird species found in the region are provided in Renard, Hanson and Enblom (1983).

Electrofishing surveys of the Red Lake River by the Minnesota DNR revealed the presence of 38 fish species representing 13 families (Renard, Hanson and Enblom 1983). Important game species observed included channel catfish, largemouth bass, black crappie, sauger and walleye. Carp, freshwater drum, white sucker, redhorse, bullhead and a variety of minnow species were also collected during this survey. A complete listing of fish species collected is provided in Renard, Hanson and Enblom (1983). The Minnesota DNR survey did not include sites within the Red Lake Reservation. The USFWS completed electroshock surveys immediately downstream of the dam in 1994, 1995 and 1999. One species, the lake whitefish, which had not previously been collected by the Minnesota DNR was found.

Surveys completed by Dawley (1947) and the Minnesota DNR (Renard, Hanson and Enblom 1983) documented the presence of 8 to 10 species of freshwater mussels in the Red Lake River. Overall, the two surveys agreed closely, indicating that over the time span between surveys the integrity of the aquatic environment had remained relatively stable.

Because of its importance in the tribal commercial fishery, the principal species of interest in Red Lakes is the walleye. Other species of importance to the commercial fishery include yellow perch, lake whitefish, northern pike, freshwater drum and goldeye. The harvest of walleye from Red Lakes was excessive in some years and not sustainable as evidenced by population crash in the 1990's. The Red Lake commercial fishing industry instituted a moratorium on commercial harvest of walleye in 1997. Efforts to restore harvestable stocks of walleye to the Red Lakes are nearly completed and have been a major success.

***Threatened and Endangered Species*** - Three species listed by the Department of the Interior, USFWS, as threatened or endangered, the bald eagle (*Haliaeetus leucocephalus*), the gray wolf (*Canis lupus*), and the Canada lynx (*Lynx canadensis*), may inhabit the project area.

The bald eagle and gray wolf are permanent inhabitants of the region. The bald eagle nests and roosts in large dominant trees along Red Lake and is commonly observed soaring over shoreline areas in search of food. The gray wolf frequents forested habitats in the region, but because of its reclusive nature is rarely observed. The Canada lynx likely only enters northern Minnesota during periods when snowshoe hare numbers in Canada are high. At times, it is likely that no Canada lynx are found in Minnesota.

### **3.3 CULTURAL RESOURCES**

As of May 1, 2005, no National Register of Historic Places-listed properties are in or near the proposed fish passage area at Red Lake Dam. National Register-eligible mound and habitation site 21CE28 is located on a raised terrace at least 50 feet (15 meters) north of the fish passage construction area. The two mounds of site 21CE28 are approximately 300 feet (91 meters) north of the fish passage construction area and thus well outside of the area of potential effect. Red Lake Dam itself will not be directly affected by fish passage construction.

Previous cultural resource surveys and testing in the project vicinity were conducted between 1983 and 1991 in connection with replacing bridge 4613 and its approaches where Highways 1 and 89 cross the Red Lake River and the subsequent removal of 600 feet of the old Highway 1 roadbed (Peterson and Yourd 1984, 1987; Peterson et al. 1988, 1994; Peterson and Olmanson 1992). Except for site 21CE28, no prehistoric archeological sites were reported for the project vicinity. In 1994, archeologists from the Leech Lake Heritage Sites Program monitored excavation of holes to place posts for a fence and a double row of trees around the two mounds on behalf of the Red Lake Band (Kluth and Kluth 1994). No human remains were encountered.

## **4.0 SUMMARY OF ALTERNATIVES**

### **4.1 NO ACTION**

The no-action alternative would consist of not constructing the fish passage. Many non-structural alternatives have been attempted or investigated in the past, and it is likely that the tribe will continue to request that action be taken to correct this problem. Fish would continue to congregate below the dam in large numbers. As is evident from the history of this project, the inability of fish to move upstream through the dam would continue to be an issue between the Tribe and the Corps into the foreseeable future.

### **4.2 ALTERNATIVES ELIMINATED DURING PLANNING**

The main issue is with fish leaving Red Lake through the dam and being unable to reenter the lake. A number of alternatives have been investigated over the last few years to prevent fish from leaving Red Lake. However, it has become apparent that it is not possible to prevent all life stages of all species from leaving the lake. Therefore, the only remaining alternatives with a reasonable chance of success are those that allow fish to reenter the lake.

Two alternative designs have been eliminated from further consideration. One is a typical bypass-channel fishway that would be in operation at all times and would allow the passage of most life stages of most species. This alternative was eliminated from consideration because of the increased potential for common carp to enter Lower Red Lake.

The second alternative fish passage design consisted of a half of a bypass-channel fishway leading up into a fish trap that would receive water via a pipe from the lake. This

alternative would eliminate the concern of carp entering Lower Red Lake, and walleye would have to be manually returned to the lake over the dam. This alternative was eliminated because of its inability to operate as a true fishway, if in the future carp introduction through the fishway becomes less of a concern, and because of the added effort to manually return desirable species to the lake.

### **4.3 SELECTED ALTERNATIVE**

The selected alternative consists of a typical bypass-channel fishway; however, with a fish trap installed in place of one of the pools (figure 2). The trap would consist of a 10-foot cubic concrete box with a stoplog inlet. The top stoplog would have a rack placed over it to prevent carp from jumping out of the trap and into Red Lake. Fish would move up the fishway and remain in the fish trap where they would be removed with a net. The fishway would be operated to maintain at least 2 feet of head over the inlet stoplogs at all times. Removing the stoplogs in the trap would allow the fishway to operate as a typical fishway allowing full upstream movement into Red Lake.

Excess material excavated during construction will be placed in an existing rock quarry located about one mile north of the project site. Use of this site negates the need to conduct an archeological survey or 404(b)(1) evaluation for the placement of excess material.

## **5.0 ENVIRONMENTAL EFFECTS**

### **5.1 SOCIAL AND ECONOMIC EFFECTS**

#### **5.1.1 COMMUNITY COHESION**

The no-action alternative would have no effect on community cohesion. The proposed project would have a minor positive effect on community cohesion, resulting from the sense of accomplishment that would be felt with the resolution of this long-standing issue.

#### **5.1.2 CONTROVERSY**

The no-action alternative would have a minor long-term negative effect on controversy. Tribal members would continue to feel that the Federal Government is not recognizing their concerns and honoring the tribal resolutions that permitted construction of the project.

The proposed project would have a minor long-term positive effect on controversy. Because it would resolve this long-standing issue between the Corps and the Red Lake Band. While other issues would remain, the relationship between the Corps and the Red Lake Band would be greatly improved.

#### **5.1.3 BUSINESS ACTIVITY**

The no-action alternative would have no effect on business activity. The proposed action would have a minor positive long-term impact on business activity because the project would

help support the fishing industry of the Red Lake Nation. The fishing industry accounted for a major portion of the income generated by tribal members prior to the decline of walleye in the 1990's. It is probable that the Tribe will resume its fishing industry in the future, and the fish trap will be used to support fish propagation for stocking in Red Lake and other lakes within the reservation.

#### 5.1.4 FOOD SUPPLY

The no-action alternative would have no effect on the food supply of the Red Lake Nation. The proposed action would have a minor positive long-term effect on food supply. Tribal members rely on natural food sources such as wild rice, game and fish for a major portion of their diet. The fish trap would be used to support hatchery operations and increase the production of game fish in Red Lake and other lakes on the reservation.

#### 5.1.5 ENVIRONMENTAL JUSTICE

Environmental justice is a national goal and is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The proposed project would be constructed on public lands; no private lands would be acquired. Public involvement, via distribution of information concerning the proposed project, has and will continue to be an integral part of planning for this project to ensure that concerns of all people will be fully considered in the decision making process.

### 5.2 NATURAL RESOURCE EFFECTS

#### 5.2.1 WETLAND HABITAT

The no-action alternative would have no effect on wetland habitat. The proposed project would have a minor long-term negative effect on wetland habitat. The fishway would be constructed through a small wetland at the project site. About 1 acre of wetland habitat would be excavated for the construction of the project. Nearly all that wetland habitat was previously disturbed during construction and repair projects on the dam, embankment, and highway. The environmental benefits gained by construction of the project would outweigh the negative effects of the wetland habitat loss.

#### 5.2.2 BIOLOGICAL PRODUCTIVITY

The no-action alternative would have no effect on biological productivity. The proposed project would have a minor positive long-term effect on biological productivity as a result of the Red Lake DNR's use of the fish trap to capture walleye for egg stripping. The eggs would be hatched and the fish stocked to increase the production of walleyes in Lower Red Lake and other surrounding lakes.

### 5.2.3 THREATENED AND ENDANGERED SPECIES

The proposed project site is developed, near a highway, and frequently disturbed by human activity. No trees are available for eagle nesting near the site, and the habitat is a type not typically frequented by grey wolves or Canada lynx. For these reasons, it is the St. Paul District's determination that the proposed project would have no effect on any federally threatened or endangered species or their critical habitats.

### 5.2.4 NON-INDIGENOUS SPECIES

Currently, the only obvious ecological benefit of the Red Lake Dam is as an obstruction to the movement of non-indigenous fish species into Lower Red Lake. Allowing these species full access to the lake would be the only ecological cost of a fully-functional fishway. A fish trap was included in the design of the proposed project to prevent access by non-indigenous fish.

Common carp (*Cyprinus carpio*) occur in the Red Lake River as far upstream as the dam at Thief River Falls, approximately 40 linear miles from Red Lake Dam. The occurrence of common carp has never been recorded farther upstream; however, it does seem likely that carp could be present above Thief River Falls. If common carp were to establish a population in the Red Lakes, it is believed they would cause irreparable damage to the relatively simple ecosystem found there. Their introduction could lead to a decline in water clarity, vegetation, and sport fishery production. No other known non-indigenous fish species are in the Red Lake River.

Approximately 10 miles downstream from Red Lake Dam is a concrete weir that was constructed for marsh water level restoration. Under normal and low-flow conditions, this weir is an effective barrier to upstream fish movement. However, it has been shown that the weir is submerged under high-flow conditions and would be passable by fish. Therefore, it cannot be presumed that the weir is an effective barrier against the upstream movement of carp.

It is possible that the Red Lake Dam does not currently act as an effective barrier to carp. On several occasions, people have seen white suckers and northern pike occasionally swim upstream through the gates and into Red Lake under normal flow conditions. Under high flows, where the head differential across the dam is low, velocity through the gates would be lower and may facilitate fish passage. While no carp are known to have passed through the gates, the swimming ability of carp is equal to or slightly better than that of the white sucker (Castro-Santos and Haro, 2000; Bell, 1986). However, the stoplogs in front of the gates to prevent out-migration may further inhibit immigration through the dam.

It is important to note that a fishway can be considered effective if it improves the ability of the targeted fish species to move from one water body to another. Conversely, an effective fish barrier must stop the movement of all individuals of an undesirable species from passing. It may only require a few individuals to start a reproducing population of non-indigenous fish in a new habitat. Therefore, it is possible for an obstruction to act as a fish barrier for desirable species, such as walleye, and concurrently as an ineffective barrier for nondesirable species, such as carp, as is the case with Red Lake Dam. This point is noted because it could be argued that, if

the dam is not an effective carp barrier, it is not a barrier to desirable species either. Based on the argument presented here, the fallacy of this reasoning is demonstrated.

Bait bucket transfer is another means by which carp may enter the Red Lakes. In the past 5 to 10 years, Upper Red Lake has supported an excellent crappie fishery, and live bait is commonly used when angling for this species. A study conducted in Minnesota and North Dakota found that of baitfish samples collected from 21 retailers, 28.5 percent contained a nonbait species, brook stickleback (*Culaea inconstans*) (Ludwig and Leitch, 1996). In a study by Litvak and Mandrak (1993) it was discovered that 41 percent of anglers released their live bait into angling waters after use. Considering the high number of anglers using Upper Red Lake, it is a near certainty that nonbait species have been released there. While the previously mentioned study did not find carp in bait samples, juvenile carp are commonly found in the same waters where baitfish are collected. Therefore, it seems probable that carp are sold with baitfish, but the frequency at which this occurs has not been determined.

While the evidence presented here is circumstantial, it does appear that the risk that carp may be able to enter the Red Lakes under current conditions is significant. It also appears that the increased risk of introduction incrementally attributable to the proposed project is small or insignificant in relation to the existing risks.

### **5.3 CULTURAL RESOURCE EFFECTS**

Mound and habitation site 21CE28 is the only National Register eligible property in the vicinity of the proposed fish passage at Red Lake Dam. No National Register listed historic properties are within a 1-mile radius of the dam. Red Lake Dam itself was determined not eligible for the National Register because of extensive modifications and structural changes, which have compromised the integrity of the original 1932 dam.

Cultural resource surveys and testing in 1983, 1986, 1986 and 1991 of the Red Lake Dam vicinity in connection with replacement of the Highway 1 and 89 bridge over the dam with a new structure 200 feet downstream did not encounter any prehistoric or historic archeological sites except for mound and habitation site 21CE28. Construction monitoring of removal of a portion of the old Highway 1 roadbed north of site 21CE28 in 1993 and installation of a fence and double row of trees around the mounds at site 21CE28 in 1994 did not uncover any human burials.

Construction and operation of the proposed fish passage around the north side of the Red Lake Dam should have no effect on archeological site 21CE28.

This project is being coordinated with the Red Lake Band and the Minnesota State Historic Preservation Office.

### **6.0 CUMULATIVE IMPACTS**

The resource that would primarily be affected by the proposed action is the walleye populations in Upper and Lower Red Lakes and in other lakes found on the reservation. The

improvement of this resource as viewed by the Red Lake Nation would have many positive social and economic effects as already stated. The decline of the walleye population that took place in the early 1990's resulted in a major rehabilitation project. Fishing on the Red Lakes was halted and the Red Lake DNR began a major stocking program to restore the walleye fishery. The program was a major success and the walleye population is nearly fully recovered. Sport fishing on Lower Red Lake is expected to resume in 2006. This recovery effort in conjunction with the proposed project will lead to a positive cumulative impact on the walleye fishery in Red Lake. Also, an effort is being planned to reintroduce lake sturgeon (*Acipenser fulvescens*) into Red Lake and the Red Lake River. The fishway may add a positive cumulative effect in this effort by allowing upstream passage for this species, and the fishway channel may be suitable as spawning habitat for the fish.

## **7.0 SUMMARY**

The Red Lake Nation has expressed concern regarding fish passage at the Red Lake Dam for more than 50 years. The proposed project has been designed with the best science available to ensure that it will be effective in passing or capturing most life stages of most species of fish found in Red Lake. If the project were constructed, it would relieve much of the concern the Red Lake Nation has expressed regarding the dam. The proposed project would have a minor negative effect on wetlands in the project area, but that negative effect would be offset by the positive environmental effects. The project would have a positive effect on community cohesion, controversy, business activity, food supply, and biological productivity. Finally, construction of the proposed project would improve the working relationship between the Corps of Engineers and the Red Lake Nation.

## **REFERENCES CITED**

- Bell, M.C. 1986. Fisheries Handbook of Engineering Requirements and Biological Criteria. U.S. Army Corps of Engineers. Portland, Oregon. 290 pp.
- Castro-Santos, T. and A. Haro. 2000. Sprinting performance of upstream migratory fishes. Proceedings of Symposia from the International Congresses on the Biology of Fish. (URL: <http://www-heb.pac.dfo-mpo.gc.ca/congress/2000/Papers/migrationpdf/castro-santos.pdf>).
- Glaser, P.H. 1987. *The ecology of patterned boreal peatlands of northern Minnesota: a community profile*. U.S. Fish and Wildlife Service Report 85(7.14). 98 pp.
- Kluth, Rose, and David Kluth. 1994. *A Report of the Work Conducted for MnDOT on Red Lake Reservation in Conjunction with the Preservation of the Herberg Site (21CE28)*. Leech Lake Heritage Sites Program, Cass Lake, Minnesota. Prepared for Red Lake Reservation. Report CE-94-01 on file, State Historic Preservation Office, Minnesota Historical Society, St. Paul.
- Litvak, M.K. and N.E. Mandrak. 1993. Ecology of freshwater baitfish use in Canada and the United States. Fisheries 18(12):6-12.

- Ludwig, H.R. and J.A. Leitch. 1996. Interbasin transfer of aquatic biota via anglers' bait buckets. *Fisheries* 21(7):14-18.
- Peterson, Leslie D., and Thor Olmanson. 1992. *Final Archaeological Reconnaissance and Site 21-CE-28 Evaluation Testing*. Report CE-92-01 on file, State Historic Preservation Office, Minnesota Historical Society, St. Paul.
- Peterson, Leslie D., Kent A. Skaar, and Wanda Watson Radford. 1994. *The Minnesota Trunk Highway Archaeological Reconnaissance Study Annual Report—1993*. Page 91. Report THY-94-01 on file, State Historic Preservation Office, Minnesota Historical Society, St. Paul.
- Peterson, L. D., and William J. Yourd. 1984. *Minnesota Trunk Highway Archaeological Reconnaissance Survey Annual Report—1983*. Pages 86-88. Report THY-84-01 on file, State Historic Preservation Office, Minnesota Historical Society, St. Paul.
- Peterson, L. D., and William Y. Yourd. 1987. *Minnesota Trunk Highway Archaeological Reconnaissance Survey Annual Report—1986*. Pages 50-54. Report THY-87-01 on file, State Historic Preservation Office, Minnesota Historical Society, St. Paul.
- Peterson, Leslie, William Yourd and Leroy Gonsior. 1988. *Minnesota Trunk Highway Archaeological Reconnaissance Survey Annual Report—1987*. Pages 45-54. Report THY-88-01 on file, State Historic Preservation Office, Minnesota Historical Society, St. Paul.
- Renard, P.A., S.R. Hanson and J.W. Enblom. 1983. *Biological survey of the Red Lake River*. Minnesota Department of Natural Resources Special Publication No. 134.
- Stanley Consultants. May 1998. *Design Alternatives Report, Red Lake Dam Fish Out-Migration Prevention and Fish Passage Alternatives*
- U.S. Army Corps of Engineers, St. Paul District. 2002. *A Red Lake Project History 1909-2002*.
- U.S. Army Corps of Engineers, St. Paul District. 1995. *Environmental Assessment, Modifications to Red Lake Dam and Red Lake Reservoir Water Control Manual*.
- U.S. Army Corps of Engineers, St. Paul District. 1975. *Final Environmental Impact Statement, Operation and Maintenance Activities, Red Lake and Clearwater River Projects, Minnesota*.

Table EA-1. Environmental Assessment Matrix.

Section 122 of the River and Harbor and Flood Control Act of 1970 (Public Law 91-611)

PARAMETER	MAGNITUDE OF PROBABLE EFFECTS													
	NO-ACTION ALTERNATIVE						SELECTED ALTERNATIVE							
	BENEFICIAL			NO EFFECT	ADVERSE			BENEFICIAL			NO EFFECT	ADVERSE		
	SIGNIFICANT	SUBSTANTIAL	MINOR		MINOR	SUBSTANTIAL	SIGNIFICANT	SIGNIFICANT	SUBSTANTIAL	MINOR		MINOR	SUBSTANTIAL	SIGNIFICANT
<b>A. SOCIAL EFFECTS</b>														
1. Noise Levels				X							X			
2. Aesthetic Values				X							X			
3. Recreational Opportunities				X							X			
4. Transportation				X							X			
5. Public Health and Safety				X							X			
6. Community Cohesion (Sense of Unity)				X						X				
7. Community Growth and Development				X							X			
8. Business and Home Relocations				X							X			
9. Existing/Potential Land Use				X							X			
10. Controversy					X						X			
<b>B. ECONOMIC EFFECTS</b>														
1. Property Values				X							X			
2. Tax Revenue				X							X			
3. Public Facilities and Services				X							X			
4. Regional Growth				X							X			
5. Employment				X							X			
6. Business Activity				X						X				
7. Farmland/Food Supply				X						X				
8. Commercial Navigation				X							X			
9. Flooding Effects				X							X			
10. Energy Needs and Resources				X							X			
<b>C. NATURAL RESOURCE EFFECTS</b>														
1. Air Quality				X							X			
2. Terrestrial Habitat				X							X			
3. Wetlands				X								X		
4. Aquatic Habitat				X							X			
5. Habitat Diversity and Interspersion				X							X			
6. Biological Productivity				X						X				
7. Surface Water Quality				X							X			
8. Water Supply				X							X			
9. Groundwater				X							X			
10. Soils				X							X			
11. Threatened or Endangered Species				X							X			
<b>D. CULTURAL RESOURCE EFFECTS</b>														
1. Historic Architectural Values				X							X			
2. Prehistoric and Historic Archeological Values				X							X			

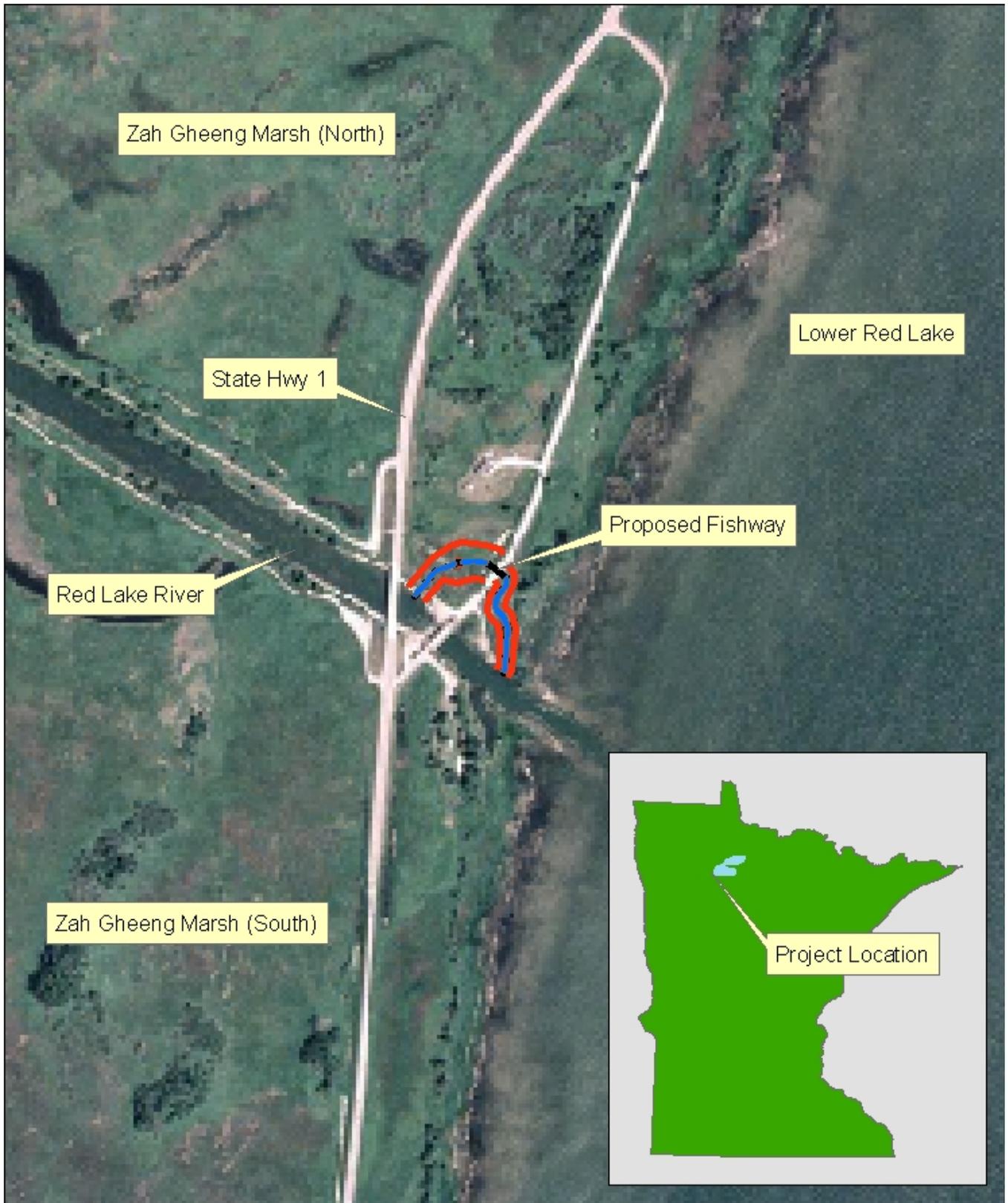


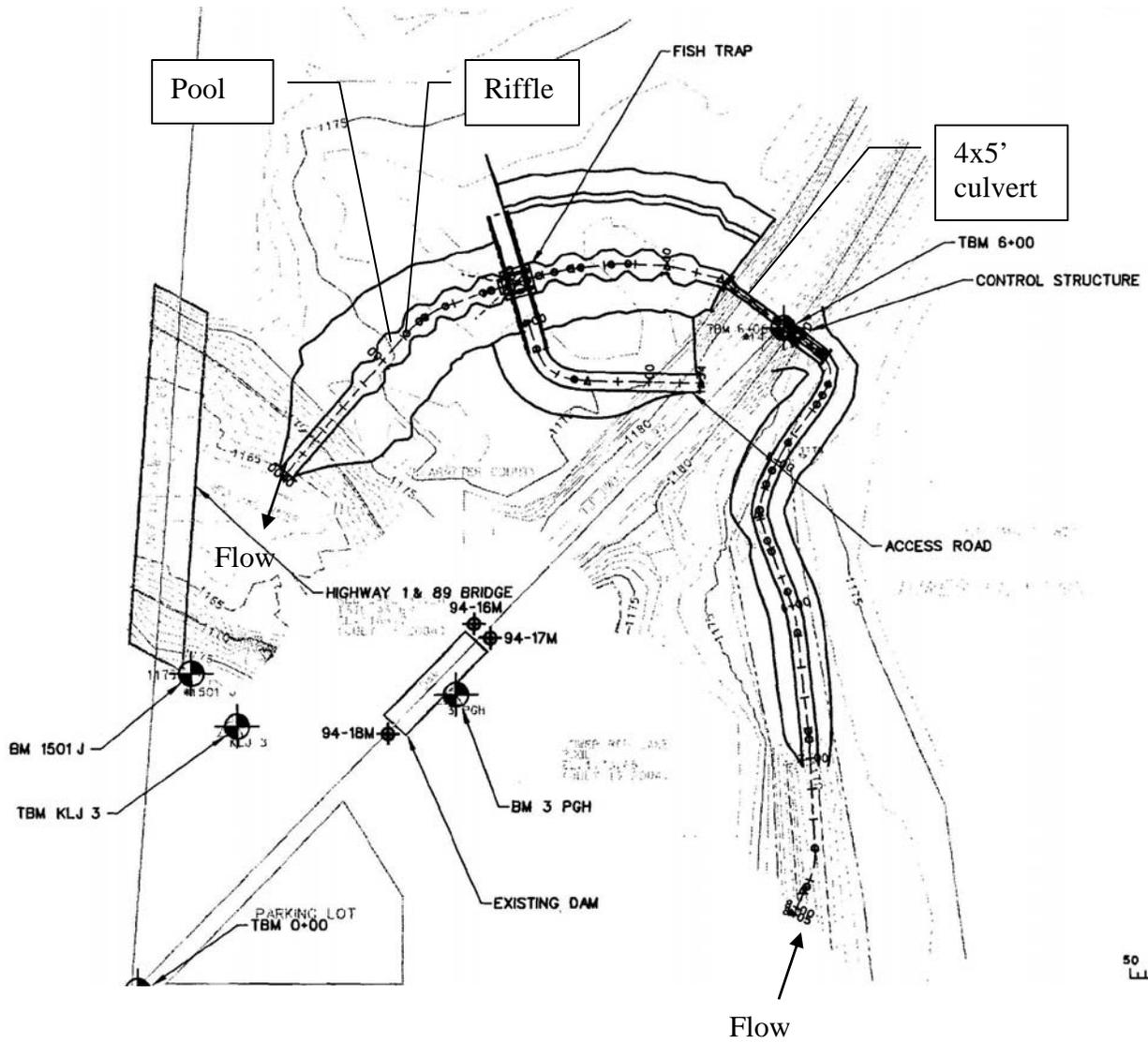
Figure 1. Red Lake Fishway Project Location - 2005



0 500 1,000 2,000 Feet



Figure 2. Plan View Design Drawing of Proposed Fishway



**Plate 1. Fishway Construction Site**



Planning, Programs and Project Management Division  
Environmental and Economic Analysis Branch

### FINDING OF NO SIGNIFICANT IMPACT

In accordance with the National Environmental Policy Act of 1969, the St. Paul District, Corps of Engineers, has assessed the environmental impacts for the following proposed project:

RED LAKE DAM FISHWAY  
LOWER RED LAKE  
CLEARWATER COUNTY, MINNESOTA

This Finding of No Significant Impact is based on the following factors: the proposed project would have a minor negative long-term effect on wetlands; minor long-term positive effects on community cohesion, controversy, business activity, food supply, and biological productivity; and no impact on threatened and endangered species or the cultural environment.

The environmental review process indicates that the proposed action does not constitute a major Federal action significantly affecting the quality of the environment. Therefore, an environmental impact statement will not be prepared.

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Date

Michael F. Pfenning  
Colonel, Corps of Engineers  
District Engineer



## **CORRESPONDENCE**



Copies of the Environmental Assessment and 404(b)(1) Evaluation were mailed to the following addresses for review and comment (a public notice was release to announce availability for review):

Mr. Dan Stinnett  
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Bloomington, MN 55425

Ms. Charlotte W. Cohn  
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Hon. Floyd Jourdain Jr., Chairman  
Red Lake Band of Chippewa  
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Mr. Allen Pemberton,  
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Mr. Herb Nelson  
Bureau of Indian Affairs  
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MINNESOTA HISTORICAL SOCIETY

**State Historic Preservation Office**

June 29, 2005

Mr. Terry Birkenstock  
Chief, Environmental & Economic Analysis Branch  
U.S. Army Corps of Engineers  
190 5<sup>th</sup> Street East  
St. Paul, MN 55101-1638

Re: Proposed Fish Passage at Red Lake Dam  
T152 R36 S28 NW, Clearwater County  
SHPO Number: 2005-1974

Dear Mr. Birkenstock:

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800).

Based on the material you provided, we conclude that the project will have no adverse effect on historic properties, including site 21CE0028.

Please note that the above finding is conditioned on the implementation of protective measures to ensure that the site area is avoided.

Contact us at 651-296-5462 with questions or concerns.

Sincerely,

Britta L. Bloomberg  
Deputy State Historic Preservation Officer



## SECTION 404(b)(1) EVALUATION

### RED LAKE DAM FISHWAY LOWER RED LAKE CLEARWATER COUNTY, MINNESOTA

#### I. PROJECT DESCRIPTION

For a more detailed description of the project background and design than presented here, please refer to the environmental assessment (EA).

**A. Location:** The Red Lake Dam control structure is located at the outlet of Lower Red Lake in the northeastern part of Clearwater County, Minnesota, approximately 18 miles northwest of Red Lake, Minnesota, and 188.4 river miles above the mouth of Red Lake River (Section 28, R36W, T152N).

**B. General Description:** The Red Lake Dam was constructed under the conditions set forth in tribal council resolutions between 1947 and 1949. A tribal council resolution from 1947 regarding the project states, in part, “The Tribe reserves the right to present a claim against the United States for any damages that may be caused by such improvements.” Since 1951, when the Corps of Engineers completed work on the dam, the Red Lake Band has expressed concern regarding the congregation of fish below the dam and the inability of fish to reenter Red Lake.

In the past few years, the St. Paul District has been working with the Red Lake Department of Natural Resources to devise an acceptable solution to this problem. Three alternatives were identified: (1) no action, (2) bypass fishway without fish trap, (3) bypass fishway with fishtrap. The no action alternative is not acceptable because it would not meet the project purpose, as evidenced by the history of this problem. The bypass fishway without a fish trap is unacceptable because it would not provide the ability to exclude undesirable fish species from the lake.

The selected alternative consists of a typical bypass channel fishway; however, a fish trap would be installed in place of one of the pools (figure 2 of the EA). The trap would consist of a 10-foot cubic concrete box with a stoplog inlet. The top stoplog would have a rack placed over it to prevent carp from jumping out of the trap and into Red Lake. Fish would move up the fishway and remain in the fish trap where they would be removed with a net. The fishway would be operated to maintain at least 2 feet of head over the inlet stoplogs at all times.

The project would be constructed on some wetland habitat. There is no practical alternative that would decrease the impacts to wetlands. The construction area is small and the alignment of the fishway channel cannot be modified to measurably decrease the acreage of impacted wetlands. No mitigation for wetland impacts will be pursued, as it is policy not to mitigate for wetland loss caused by the construction of habitat restoration projects. In these cases, the project itself is considered to be mitigation.

Construction of the project may require the temporary placement of two cofferdams.

**C. Purpose and Authority:** The Red Lake/Clearwater River project is a multipurpose project, with flood control and water supply as primary purposes. Operation of the project is intended to reduce flood damages and improve farm drainage along the Red Lake and Clearwater Rivers, to augment stream flow during dry periods to help meet downstream requirements for water supply, to enhance the Red Lake fishery, and originally to reduce pollution from downstream urban areas by dilution of effluents. Although not a congressionally-authorized project purpose, low-flow augmentation provided by the project benefits hydroelectric power generation at Thief River Falls, Minnesota.

The purpose of the fish passage project is to mitigate for the negative impact of the Red Lake Dam on fish movement.

The proposed project would be constructed under the authority provided in Section 905(b) of the Water Resources Development Act of 1986 (33 U.S.C. 2283).

#### **D. General Description of Dredged or Fill Material**

1. **General Characteristics of Material:** The fill material would consist of rock riprap and road base, topsoil, random fill, poured concrete, and possibly sand or sheetpile for temporary cofferdams.

2. **Quantity of Material:** About 1,900 cubic yards of riprap, 900 cubic yards of random fill, 170 cubic yards of topsoil, and 25 cubic yards of road base.

3. **Source of Material:** All material would be gained on-site from the project footprint and/or from an approved existing quarry.

**E. Description of the Proposed Discharge Sites:** The proposed project would be constructed in the area immediately north of and on either side of the Red Lake Dam. Some of this area is wetland habitat ranging from ephemeral to deep aquatic. About 1 acre of wetland habitat would be disturbed by excavation and/or filling. The area downstream of the dam is between the dam and State Highway 1 and has been repeatedly disturbed during road, bridge, and dam construction and maintenance. The lakeside project area is deep aquatic and emergent aquatic habitat. Some excavation will be required there to better define the existing channel leading to the lake from the fishway. The project would likely be constructed during summer and fall 2006.

**F. Description of Disposal Method:** Excavation and filling would be conducted with mechanical construction equipment.

## **II. FACTUAL DETERMINATIONS**

### **A. Physical Substrate Determinations**

1. **Substrate Elevation and Slope:** The fishway channel and levees would be constructed with a 1 vertical on 3 horizontal slope. Much of the channel would be excavated below the existing ground level, while much of the levees would be constructed at an elevation above the existing ground line.

2. **Substrate Changes:** The existing substrate is primarily silt and sand. The channel would be lined with riprap, and the levees would be covered with topsoil. The cofferdams would be constructed with sand or sheetpile but would be removed following construction.

3. **Dredged/Fill Material Movement:** Some minor movement of material would occur during construction; however, most of the project would be constructed in dry conditions, which would prevent any movement of material. Following construction, no material movement is anticipated.

4. **Physical Effects on Benthos:** Benthic substrate would be excavated and replaced with riprap and concrete materials. Benthic aquatic organisms within the footprint of the project would be destroyed. Following project construction, benthic organisms would quickly colonize the new substrate.

5. **Actions Taken to Minimize Impacts:** To minimize impacts to substrate, best management practices would be used during construction.

## **B. Water Circulation and Fluctuation Determination**

1. **Water:** The proposed project would cause a minor, temporary decrease in water clarity during construction but with no long-term effects. The proposed project would have no effect on salinity, water chemistry, color, odor, taste, dissolved oxygen levels, nutrients, eutrophication, or temperature.

2. **Current Patterns and Circulation:** The proposed project would have a minor effect on current velocity and patterns by redirecting a portion of the flow around the dam while the fishway is in operation. This effect would be beneficial by providing negotiable water velocities and patterns for the upstream movement of fish.

The proposed project would have no effect on stratification, the hydrologic regime, or normal water level fluctuations.

3. **Actions Taken to Minimize Impacts:** The project is designed to have a positive impact on current patterns and flow around the dam; therefore, no special actions would be taken to minimize these effects.

C. **Suspended Particulate/Turbidity Determination:** Suspended particulates and turbidity would experience a minor increase during the construction and removal of the cofferdams. The chemical or physical properties of the water column would not be affected.

Because of the small scale and minimal impacts the proposed project would have on suspended particulates and turbidity, no special actions would be taken to minimize impacts.

**D. Contaminant Determinations:** Only clean fill materials from approved sources would be used to construct the proposed project.

**E. Aquatic Ecosystem and Organism Determination**

1. **Effects on Plankton:** The proposed project would have no measurable effect on plankton.

2. **Effects on Benthos:** Benthos located within the project footprint would be destroyed during construction. After construction is complete, benthos would quickly colonize the substrate. Benthos adapted to riffle conditions would colonize the fishway below the dam, whereas a community similar to what exists now would colonize the channel on the lake side of the dam.

3. **Effects on Nekton:** Nekton would temporarily be displaced from the project areas that are currently capable of supporting it. Nekton, specifically species considered desirable by the Tribe such as walleye and northern pike, would receive a long-term minor benefit from the project. This benefit would be attributable to the transport of individuals of these species into suitable habitats during upstream migrations.

4. **Effects on Wildlife:** The proposed project would have a minimal effect on wildlife. The project area currently supports very limited numbers of smaller species of wildlife due to its small size and its location near a roadway and dam.

5. **Effects on Aquatic Food Web:** The project would have a minor effect on the aquatic food web of Red Lake or the Red Lake River.

6. **Effects on Special Aquatic Sites:** The area affected by the project would be about 1 acre. Much of that area is wetland. The proposed project would require the conversion of half the area to a landcover type other than wetland. The other half of the project area would be modified to include a deeper channel, which would be deep aquatic wetland habitat. The proposed project would not be constructed on a sanctuary or refuge.

7. **Threatened and Endangered Species:** The proposed project would have no effect on any federally listed threatened or endangered species or their critical habitats.

8. **Actions Taken to Minimize Impacts:** No special actions would be taken to minimize impacts to aquatic ecosystems or organisms.

**F. Proposed Disposal Site Determinations**

1. **Mixing Zone:** The proposed project would have a minimal mixing zone during construction, and the cofferdams would help limit the movement of suspended material.

**2. Compliance with Applicable Water Quality Standards:** Water quality standards would not be violated because of project-related activities. Short-term increases in turbidity would occur during construction. No long-term water quality impacts would occur.

**3. Potential Effects on Human Use Characteristics:** The project might have a positive indirect effect on recreational and commercial fisheries because of the use of the trap to capture walleye to support the Red Lake Department of Natural Resources' fish hatchery. The proposed actions would have no adverse effects on municipal or private water supplies, navigation, aesthetics, parks, or national historic monuments or similar preserves

**G. Cumulative Effects on the Aquatic Ecosystem:** The resource that would primarily be affected by the proposed action is the walleye populations in Upper and Lower Red Lakes and in other lakes found on the Reservation. The improvement of this resource, as viewed by the Red Lake Nation, would have many positive social and economic effects as already stated. The decline of the walleye population that took place in the early 1990's resulted in a major rehabilitation project. Fishing on the Red Lakes was halted, and the Red Lake Department of Natural Resources began a major stocking program to restore the walleye fishery. The program was a major success and the walleye population is nearly fully recovered. Sport fishing on Lower Red Lake is expected to resume in 2006. This recovery effort in conjunction with the proposed project would lead to a positive cumulative impact to the walleye fishery on Red Lake.

#### **H. Secondary Effects on the Aquatic Ecosystem**

No significant secondary effects on the aquatic ecosystem would be expected from the proposed action.

### **III. FINDING OF COMPLIANCE WITH RESTRICTIONS ON DISCHARGE**

1. No significant adaptations of the guidelines were made relative to this evaluation.
2. The proposed fill activity would comply with the Section 404(b)(1) guidelines of the Clean Water Act. The placement of fill is required to provide the desired benefits.
3. No practical and feasible alternatives to the placement of fill in the proposed sites would meet the objectives and goals of this project.
4. The proposed fill activity would comply with State water quality standards. The disposal operation would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.
5. The proposed project would not harm any endangered species or their critical habitat.
6. The proposed fill activities would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing. The proposed activities would not adversely affect plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and other wildlife would not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity, and stability and on recreational, aesthetic, and economic values would not occur.
7. To minimize the potential for adverse impacts, best management practices would be used during construction to minimize erosion.
8. On the basis of this evaluation, I specify that the proposed disposal site complies with the requirements of the guidelines for discharge of fill material.

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Date

Michael F. Pfenning  
Colonel, Corps of Engineers  
District Engineer