December 9, 2002

Mr. Steve Anschutz
U.S. Fish and Wildlife Service
Ecological Services Office
203 W. Second Street
Federal Building, 2nd Floor
Grand Island, Nebraska 68801

SUBJECT: BIOLOGICAL ASSESSMENT FOR LICENSE RENEWAL AT FORT CALHOUN STATION, UNIT 1, AND REQUEST FOR INFORMAL CONSULTATION (TAC NO. MB3402)

Dear Mr. Anschutz:

The NRC staff has prepared the enclosed biological assessment to evaluate whether the proposed renewal of the Fort Calhoun Station, Unit 1, operating license for a period of an additional 20 years would have adverse effects on listed species. This biological assessment covers the area of the Fort Calhoun Station, located in Washington County, Nebraska, on the southwestern bank of the Missouri River at River Mile 646 and the 7-mile-long transmission line corridor connecting to a substation west of Blair, Nebraska.

There are five threatened or endangered species; the pallid sturgeon, bald eagle, western prairie fringed orchid, piping plover, and least tern addressed in the attached biological assessment. The staff has determined that the proposed action is not a major construction activity and that it may affect, but is not likely to adversely affect, the pallid sturgeon and the bald eagle. It will have no effect on the remaining three species. No designated critical habitat for any of these five listed species is located near the proposed action. We are placing this biological assessment in our project files and are requesting your concurrence with our determination.

In reaching our conclusion, the NRC staff relied on the geographical information system data base information provided by the Nebraska Natural Heritage Programs and on research performed by the NRC staff and contractors, and a current listing of species provided by the Nebraska field office of the Fish and Wildlife Service.

If you have any questions regarding this biological assessment or the staff's request, please contact the license renewal project manager, Jack Cushing, by telephone at (301) 415-1424 or by e-mail at jxc9@nrc.gov.

Sincerely,

/***RA***/

Pao-Tsin Kuo, Program Director
License Renewal and Environmental Impacts
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No.: 50-285

Enclosure: As Stated

cc w/encl: See next page

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BIOLOGICAL ASSESSMENT OF THE POTENTIAL IMPACTS TO THREATENED AND ENDANGERED SPECIES RESULTING FROM AN ADDITIONAL 20 YEARS OF OPERATION OF THE FORT CALHOUN STATION, UNIT 1, NUCLEAR POWER PLANT

Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

December 2002

I. INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC) is considering an application for renewal of the operating license for the Omaha Public Power District (OPPD) Fort Calhoun Station, Unit 1, (FCS) nuclear power plant for an additional 20 years. The purpose of this assessment is to provide information to the U.S. Fish and Wildlife Service (FWS) concerning the potential impacts of continued operation of FCS, Unit 1, on threatened and endangered species; the pallid sturgeon (*Scaphirhynchus albus)*, bald eagle (*Haliaeetus leucocephalus*), western prairie fringed orchid (*Platanthera praeclara*), piping plover (*Charadrius melodus*), and the least tern (*Sterna antillarum*). The assessment summarizes pertinent project information and existing data and discusses the potential consequences of the proposed action on these species. Based on life history information, habitats in the project area and along Line 74S/74, operational characteristics of the plant, existing data for impingement and entrainment, and known thermal plume characteristics, the staff concludes that continued operation of FCS during the proposed 20-year license renewal period may affect, but is not likely to adversely affect, either the pallid sturgeon or bald eagle and will have no effect on the western prairie fringed orchid, piping plover, or the least tern.

II. PROJECT DESCRIPTION

The proposed action includes the continued operation and maintenance of FCS on the Missouri River in eastern Nebraska, approximately 31 kilometers (km) (19 miles [mi]) north-northwest of downtown Omaha (Figure 1), under a renewed license from the NRC. FCS began commercial operation on August 9, 1973, and is currently licensed to operate through August 9, 2013 (OPPD 2002). NRC regulations (10 CFR Part 54) allow license renewal for periods of up to 20 years, which would extend the operation of FCS through August 9, 2033. All facilities associated with this action were constructed during the early 1970s and no new construction would be performed as part of the license renewal action (OPPD 2002).

III. DESCRIPTION OF PROJECT AREA

FCS is a nuclear-powered steam electric generating facility operated by OPPD. The facility is located in Washington County, Nebraska, on the southwestern bank of the Missouri River at River Kilometer (RK) 1040 (River Mile [RM] 646), approximately 266 km (165 mi) downstream of Gavins Point Dam. It is approximately 31 km (19 mi) north-northwest of downtown Omaha, Nebraska, and approximately 16 km (10 mi) north of the Omaha metropolitan area. The nearest municipality to the site is Blair, Nebraska, approximately 4.8 km (3 mi) northwest (upstream) (Figure 1) (OPPD 2002).

The FCS site consists of approximately 267 hectares (ha) (660 acres [ac])situated between U.S. Highway 75 and the Missouri River. Of this total, 55 ha (135 ac) are occupied by plant facilities or maintained as part of plant operations with an additional 140 ha (345 ac) used for cropland (corn and soybeans). The remaining 73 ha (180 ac) consist of a railroad spur, natural vegetation, and drainage courses. Areas of natural vegetation on the site consist mostly of highly disturbed woodlands and shrubland on the steeper slopes in the southern portion of the site and riparian woodlands along onsite sloughs bordering the Missouri River (OPPD 2002).

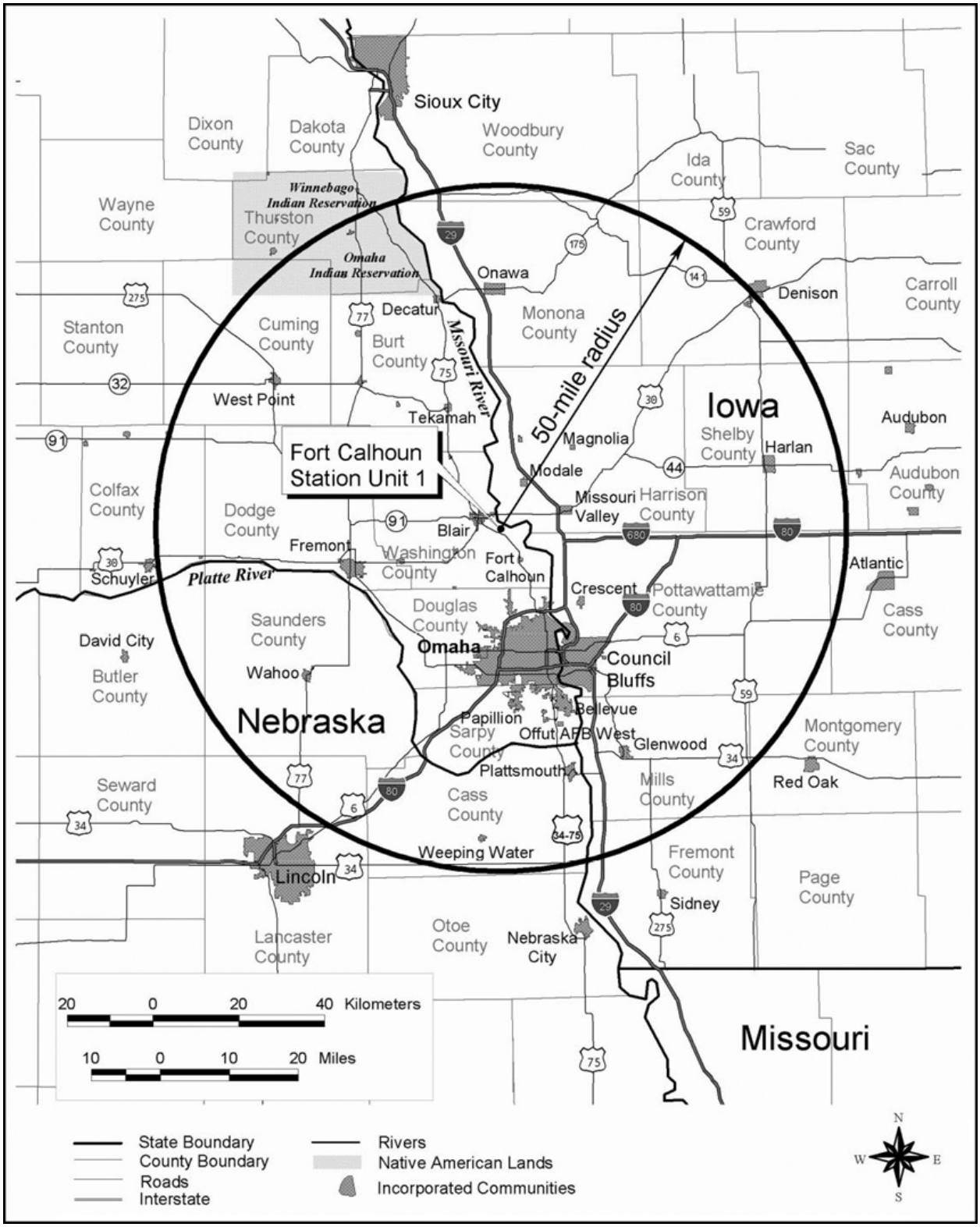

Figure 1. Location of the Fort Calhoun Station, Unit 1, Site

FCS is equipped with a nuclear steam supply system, consisting of a pressurized water reactor and its associated coolant system supplied by Combustion Engineering. The reactor was initially licensed to operate at a maximum power level of 1420 megawatt-thermal. It is currently licensed for a thermal power level of 1500 megawatt-thermal with an electrical power output of 510 megawatts-electrical and a net generating capability of the plant (i.e., electric power supplied to the grid) of 476 megawatts (summer rating). FCS generates approximately 3.6 terawatt-hours of electricity annually (OPPD 2002).

The transmission line of concern for license renewal is that which was constructed between the plant switchyard and the existing transmission system. For FCS, the only transmission line within the scope of review for license renewal is Line 74S/74, which is a 161 kV line that is approximately 11 km (7 mi) long and proceeds from the FCS Substation westward to Substation 1226, approximately 4 km (3 mi) west of Blair, Nebraska. This line is composed of two segments. Line 74S is a 1 km (0.5 mi) long, single-circuit line on a 15 m (50 ft) wide right-of-way. Line 74 is a 10 km (6.5 mi) long double-circuit line on a 100 ft right-of-way. Line 74S/74 was originally constructed in 1969 and provided a connection to the transmission grid once the plant became operational. The line was entirely reconstructed in 1999 to single steel poles and to the 1997 National Electrical Safety Code requirements that were in effect at the time.

Leaving the FCS Substation, Line 74S/74 traverses (for approximately 1.6 km or 1 mi) disturbed shrublands and woodlands, primarily on the hilly upland terrain of the Missouri River bluffs in the vicinity of U.S. Highway 75. For the remaining 9.7 km (6 mi) to the Blair Substation, this line is routed across agricultural cropland. The line crosses several small intermittent streams, but no other surface waters or wetlands are crossed. Land use adjacent to the right-of-way has undergone little change since initial construction; however, some additional development has occurred along U.S. Highway 30 near the line crossing, and new rural residential development has occurred along the north side of the line for approximately 1.2 km (0.75 mi) in the bluff area just west of U.S. Highway 75 (OPPD 2002).

FCS uses a once-through, non-contact system for cooling that withdraws water from an intake structure on the shoreline of the Missouri River and discharges to the river through a discharge tunnel 12.2 m (40 ft) downstream from the intake structure. The intake structure is contained within a reinforced concrete building that extends approximately 24.4 m (80 ft) along the riverbank at RK 1039 (RM 646). Maximum cooling water withdrawal for the plant during normal operation is approximately 371,000 gal/min (827 ft^3/s or 534 million gal/d) (OPPD 2002).

Average Missouri River flow rates measured at the gaging station in Omaha for the period between 1967 and 2000 provide an approximation of flow conditions at the FCS site. During the summer, the lowest monthly average flow rate occurs in August and is 1209 m^3/s (42,679 ft^3/s) with a monthly minimum flow rate of 861 m^3/s (30,409 ft^3/s). The maximum water intake at FCS during normal plant operations is 23 m^3/s (827 ft^3/s) and occurs during the summer due to higher river temperatures. This maximum water intake represents approximately two percent of the monthly average and 2.8 percent of the minimum river flow at that time. The lowest average river flows occur during the winter, with a monthly average flow rate of 594 m^3/s (20, 982 ft^3/s) and a monthly minimum flow rate of 313 m^3/s (11,060 ft^3/s) occurring in January. The normal water intake for FCS represents approximately 3.9 percent of the average and seven percent of the minimum river flow during this winter month (OPPD 2002).

At extreme low-flow conditions within the river (i.e., at a river surface elevation of 298 m or 978 ft), the average velocity of intake water through the sluice gates of the facility's intake structure is 0.9 m/s (2.8 ft/s). During low-flow conditions (i.e., at a river surface elevation of 300 m or 983 ft), the estimated approach velocity to the intake structure's traveling screens, located approximately 2.4 m (8 ft) beyond the sluice gates, is 0.34 m/s (1.1 ft/s). At normal river level conditions of approximately 302 m (992 ft), the estimated average approach velocity to the traveling screens is 0.2 m (0.7 ft/s) (OPPD 2002).

The reach of the Missouri River, on which FCS is located, has been modified through its entire length by a system of dikes and revetments designed to provide a continuous navigation channel without the use of locks and dams. The Missouri River at the site is approximately 183 m (600 ft) wide and 4.6 m (15 ft) deep. The banks are stabilized by filling-dams along the east bank and riprap along the west-cutting bank where plant facilities are located. The river bottomlands at the plant site are approximately 16 km (10 mi) wide. Agriculture is the predominant land use outside of incorporated areas in the upland region beyond the Missouri River bottomlands. The Platte River joins the Missouri River approximately 56 km (35 mi) south of the FCS site. There are two small streams on or adjacent to the site — Fish and Long Creeks (OPPD 2002).

IV. DESCRIPTION OF SPECIES IN PROJECT AREA

A. Pallid Sturgeon

The pallid sturgeon (*Scaphirhynchus albus*) was originally listed as endangered throughout its entire range by the FWS in 1990 due to a rapidly declining population (55 FR 36641 [FWS 1990]). The species continues to decline and is nearly extirpated from large segments of its former range and is only occasionally observed (FWS 2000).

The pallid sturgeon's historic range encompassed 5633 river km (3500 river mi) and was comprised of the Yellowstone, Missouri, middle and lower Mississippi Rivers, and the lower reaches of their major tributaries (i.e., the Platte, Kansas, and Yellowstone Rivers) (55 FR 36641 [FWS 1990]; FWS 2000). It is one of the largest fish species in the Missouri River, and grows to a length of over 1.8 m (6 ft), attains a weight of 45 kg (100 lbs), and has a lifespan of 60 years (55 FR 36641 [FWS 1990]; FWS 2000; FWS 2002a). This slow-growing and late-maturing species has a flattened, shovel-shaped snout, bony plate, and a long, reptile-like tail (FWS 2002a).

A sharp decline in pallid sturgeon observations occurred after the 1960s and over the entire range of the species, especially from the Gavins Point Dam to the Missouri River's headwaters. This decline continues and is largely a result of habitat modification, either directly (e.g., reduction of habitat diversity) or indirectly (e.g., alteration of food sources). Commercial fishing of a closely related species, the shovelnose sturgeon (*Scaphirhynchus platorynchus*), may also negatively impact the pallid sturgeon and this potential threat continues as the value of sturgeon roe increases (Davis 2000). Over the entire species' range, an average of 50 observations per year of the pallid sturgeon occurred in the 1960s with a subsequent decreasing trend. An average of 21 observations per year was noted in the 1970s and an average of seven observations per year in the 1980s (55 FR 36641 [FWS 1990]).

This represents an approximate 86 percent decline in observations of the pallid sturgeon over its entire range in 30 years.

Since 1980, the most frequent observations of this species were in the Missouri River. Relatively more frequent observations of the pallid sturgeon have been made near the mouth of the Platte River close to Plattsmouth, Nebraska (about 56 km or 35 mi downstream of FCS). Approximately 10 percent of the 872 observations of pallid sturgeon through 1998 have been made in the Missouri River below Gavins Point Dam (FWS 2000).

The pallid sturgeon feeds on snails, small fish, aquatic insects and plants, and other food resources from the river bottom. It requires large, turbid, and free-flowing habitat within rivers with a rocky or sandy substrate. The pallid sturgeon inhabits areas with swift-moving water (55 FR 36641 [FWS 1990]); bottom velocity in occupied areas range from 0.0 to 1.37 m/s (0 to 4.5 ft/s). The species inhabits areas with water temperatures between 0 °C (32 °F) and 30 °C (86 °F) (FWS 2000).

Macrohabitat requirements of the pallid sturgeon include floodplains, backwaters, chutes, sloughs, islands, sandbars, and main channel waters (FWS 2000). The average home range size of adults is estimated to be approximately 78.5 km (48.8 mi) in the upper Missouri River. Differences in movement patterns are influenced by seasonal factors (i.e., temperature and discharge) as well as differences between spawning and non-spawning years. Because the pallid sturgeon is a large fish, it is capable of moving large distances as it seeks favorable habitat. This produces a maximum home range of approximately 319 km (198 mi) with the pallid sturgeon capable of moving up to 21 km (13 mi) a day (FWS 2000).

Pallid sturgeon spawning is thought to be similar to that of other sturgeon species. Based on behavior of the closely related shovelnose sturgeon and some recent observations of successful pallid sturgeon spawning, it is believed that spawning occurs over rock, rubble, or gravel substrate in the main channel of the Missouri River and its major tributaries such as the Platte River. The optimum temperature for pallid sturgeon spawning is estimated to range from 16 to 18.3 °C (60 to 65 °F) (FWS 2000). Spawning occurs during the spring and early summer in the Missouri River; in the middle Missouri River area, spawning is thought to occur primarily in May and June. Sturgeon spawn multiple times during this spring or early-summer period. They release their eggs at intervals in deep channels or rapids without further parental attendance. The eggs are demersal and adhesive and, therefore, not likely to drift downstream.

Larvae become buoyant or active immediately after hatching and may drift downstream. The behavior of young pallid sturgeon is poorly understood; however, recent research points to a downstream movement of larvae that begins immediately at hatching and continues for up to 13 days (FWS 2000). Scientists have used this information, in combination with water velocities, to estimate that larval pallid sturgeon may drift in the water column for a distance of 64 to 644 km (40 to 400 mi).

Recent pallid sturgeon recovery efforts include augmentation of its populations by releases of hatchery-reared fish. Despite such efforts, pallid sturgeon observations remain infrequent or rare. Similarly, evidence of successful reproduction and recruitment throughout its range is rare. However, recent collections of three pallid sturgeon larvae from the lower Missouri River indicate that suitable spawning habitat and hydrologic conditions remain in the lower Missouri

River below Gavins Point Dam or in the Platte River. Although collection efforts in the Missouri River have yielded these few pallid sturgeon larvae, their relative number to other species of collected larvae suggest that spawning success and larval abundance for the pallid sturgeon remains low (FWS 2000).

The Natural Heritage Program documented one occurrence of the pallid sturgeon in the Missouri River for Washington County, upstream of FCS, in 1985. Other occurrences have been documented further upstream (i.e., Burt County, two occurrences, one in 1995 and one in 1996) and downstream (i.e., Douglas County, one occurrence in 1992; Sarpy and Cass Counties, six occurrences, one each occurring in 1984, 1987, 1991, 1995, 2000, and 2001). All of these occurrences are within an 80.5 km (50 mi) radius of the FCS site (NGPC 2001). No pallid sturgeon have been observed at nearby DeSoto National Wildlife Refuge (FWS 2001).

Human activities have modified or eliminated most of the habitat and ecosystem conditions in the Missouri River to which the pallid sturgeon is adapted. The Missouri River underwent extensive modification resulting in 36 percent of its habitat inundated with reservoirs, 40 percent channelized, and 24 percent altered due to dam operations (FWS 2000). The FCS site is located within a reach of the Missouri River that has been channelized, with a relatively uniform width and swift current. This channel degradation results in a reduction of sediment and organic matter, flow modifications, and channel narrowing. These conditions result in unfavorable habitat for the pallid sturgeon. With the current overall water management regime of the Missouri River (i.e., without increased flows and with warmer water temperatures, between June and July), it is believed that the cues for spawning are no longer present (FWS 2000).

B. Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) was originally listed as endangered by the FWS in 1978, but population increases prompted downlisting to threatened status in 1995. Recovery goals for the species have generally been met or exceeded within the species range. In addition, population trends indicate that the bald eagle has recovered and is no longer in danger of extinction, nor is it likely to become in danger of extinction within the foreseeable future throughout all or a significant portion of its range. As a result, the bald eagle was proposed for delisting in 1999 (64 FR 36453 [FWS 1999]).

The bald eagle commonly nested along the Missouri River in Nebraska in the late 1800s (Nebraska Game and Parks Commission [NGPC] Undated a). Although bald eagles have built and attended many nests in Nebraska since the mid-1980s, few young have been successfully fledged. The wintering population of bald eagles in Nebraska is variable and has ranged from about 400 in 1984 to 1300 in 1992.

Bald eagles usually occur near large bodies of water, especially rivers, lakes, and reservoirs that provide a reliable food source and isolation from human disturbance. Large trees and snags along shorelines are used as perches and nest sites. During the fall and spring migrations, when most water is ice-free and milder weather conditions predominate, bald eagles may be seen along virtually any waterway or impoundment in Nebraska (NGPC Undated a). During the wintering period (December 15 to February 20), bald eagles

usually concentrate in areas where water remains free of ice and food is available. Bald eagles feed on fish and waterfowl.

The bald eagle is a common visitor to DeSoto National Wildlife Refuge, approximately 3km (2 mi) to the east of FCS, in the spring and fall, but has never successfully nested there (FWS 2001). Bald eagles nest along the Missouri River, and there is some potential for occurrence of nests along the river in Washington County. However, no bald eagle nests exist on the FCS site, and none are known to occur in the vicinity (OPPD 2002). Bald eagles were observed in the vicinity of the FCS during field surveys conducted in 1975 (OPPD 2002). Small numbers of migrants or winter visitors are occasionally observed on and near the site along the Missouri River and perch in the large cottonwoods that are present in floodplain areas. Occurrence of bald eagles along Line 74S/74 has not been documented and is not expected because that line does not cross the Missouri River or any other water bodies where bald eagle activities would occur. Further, the line crosses predominantly agricultural land and is near U.S. Highway 75 and residential development.

C. Other Species

Other Federally listed species that occur in eastern Nebraska are the western prairie fringed orchid, piping plover, and least tern. None of these species are likely to occur in the vicinity of the FCS site, as discussed below.

Western Prairie Fringed Orchid

The western prairie fringed orchid (*Platanthera praeclara*) is Federally listed as threatened. The species is a component of the North American tallgrass prairie and is found most often on unplowed calcareous prairies and sedge meadows (FWS 1996). It is dependent on sites with near-surface groundwater and consistently high soil moisture. The orchid will colonize disturbed prairies, but will persist only if the site reverts to prairie (NGPC Undated b). Its historic range in Nebraska included most of the eastern portion of the State. Current known populations of the western prairie fringed orchid in Nebraska are small and occur in Lancaster County near Lincoln, eastern Seward County, Hall County near Grand Island, and in several widely scattered populations in east-central Cherry County (NGPC Undated b).

The main cause of the decline in populations of the western prairie fringed orchid is loss of habitat (NGPC Undated b). Drainage projects, stream channelization, and irrigation withdrawals from shallow aquifers have depleted groundwater and reduce habitat suitability for this species. Agricultural practices such as annual tilling, overgrazing, and annual cutting during the growing season threaten existing populations.

Although the western prairie fringed orchid historically occurred in Washington County, no populations are known to occur in the county at present (FWS 1996). It is unlikely that the species occurs on or near the FCS site or along Line 74S/74 because of the lack of prairie and wetland habitat in these areas.

Piping Plover

The piping plover (*Charadrius melodus*) is Federally listed as threatened in Nebraska. The piping plover breeding habitat consists of open sparsely vegetated areas with alkali or unconsolidated substrates (67 FR 57638 [FWS 2002b]). In the northern Great Plains, piping plovers primarily breed in alkali lakes and wetlands, inland lakes, reservoirs, and rivers. In Nebraska, the piping plover historic breeding range included sandbars and beaches of the Missouri River and its tributaries (NGPC Undated c). Unvegetated sandbars in unchannelized reaches of the Missouri River along the northern border of the State currently provide some nesting habitat. Nesting also occurs along the Niobrara, Platte, and Loup Rivers; these three rivers are designated as critical habitat for this species (67 FR 57638 [FWS 2002b]). There is no designated critical habitat for the piping plover in the vicinity of the FCS site.

Water development, especially the damming and channelization of rivers, has eliminated the natural hydrologic cycles that created and maintained sandbar-nesting habitat. Reductions of annual peak flows have resulted in vegetation encroachment of sandbars and sediment trapped behind dams no longer contribute to downstream sandbar formation (FWS 2000). The result is a reduction in the availability of suitable sandbar nesting habitat for piping plovers.

Suitable sandbar habitat is not found in the FCS reach of the Missouri River. Piping plovers were formerly found at the nearby DeSoto National Wildlife Refuge (FWS 2001), but the last piping plover was seen there in 1977. Suitable habitat in the area has been lost to river channel modifications and regulated water releases from upstream dams.

Least Tern

The least tern (*Sterna antillarum*) is Federally listed as endangered. The historic nesting distribution of the least tern in Nebraska included unvegetated sandbars and beaches along the Missouri River and its tributaries, including the Niobrara, Platte, Loup, and Elkhorn Rivers (NGPC Undated d). This species occurs in habitats similar to those used by the piping plover as described above. Suitable riverine nesting habitats are dry, flat, sparsely vegetated sand and gravel bars that occur in a wide river channel. Like the piping plover, impoundments, river regulation, and channelization projects have greatly reduced or eliminated suitable nesting habitat.

Suitable sandbar habitat for the least tern does not occur in the FCS reach of the Missouri River. Least terns nested at the nearby DeSoto National Wildlife Refuge up to the 1970s, but are now observed only occasionally, even though formerly used nesting habitats at the refuge have been maintained (FWS 2001).

V. EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES

This section presents the anticipated effects of the proposed action on listed species in the vicinity of the FCS site. As discussed above, only the pallid sturgeon and bald eagle potentially occur in the vicinity of the site and are, therefore, the focus of this assessment. No designated critical habitat for these species exists in the area and no impacts to such habitat are anticipated.

A. Pallid Sturgeon

OPPD implemented an impingement and entrainment monitoring plan at the FCS intake during 1974-5. The program monitored fish impingement on FCS traveling screens, fish larvae in the Missouri River, and fish larvae entrained into the plant cooling-water systems. Based on the small percentage of fish larvae entrained, the fish taxa collected, few adult fish impinged, and the high natural mortality of fish during early life stages, the study concluded that impingement and entrainment at FCS would have minimal adverse effects on the fish populations in the stretch of the Missouri River near the FCS site. The Nebraska Department of Environmental Control (NDEC) reviewed and approved this report on January 19, 1977, concluding that the losses due to impingement and entrainment at FCS were within the acceptable range. The OPPD continued to conduct larval impingement and entrainment studies at FCS through 1977 and summarized the results of the entire program, which spanned the period from 1973 to 1977, in a comprehensive report. No adult, juvenile, or larval pallid sturgeon were collected during these impingement and entrainment monitoring studies (OPPD 1978; 2002).

FCS is sited, designed, and operated to minimize potential impacts to aquatic organisms such as the pallid sturgeon. There is scientific concern that the pallid sturgeon cannot reproduce in channelized habitats (Hesse 1995). FCS is located in a river reach that is entirely channelized and it is unlikely that spawning occurs in the vicinity of the facility. In addition, FCS operation withdraws a relatively low percentage of the total river flow during the summer (two percent of the monthly average flow and 2.8 percent of the minimum flow) when larval drift is occurring. The highest percentage of river flow is withdrawn at the FCS site in the winter (OPPD 2002) when neither spawning nor larval drift occurs.

The NGPC noted that the severe alteration of the Missouri River ecosystem has resulted in the near elimination of the pallid sturgeon from the river (NGPC 1992). Despite more recent habitat restoration projects and population augmentation efforts, the pallid sturgeon continues to decline (Krentz 2002; FWS 2000) and occurrences of this fish remain rare (FWS 2000; NGPC 2001). The lack of suitable habitat in the vicinity of the FCS site as a result of previous habitat modification and the rare documented occurrence of the pallid sturgeon, including larvae (FWS 2000), indicate a low potential for impingement or entrainment with the cooling water system associated with FCS.

Based on this review, the staff concludes that the continued operation of FCS for an additional 20 years may affect, but is not likely to adversely affect the pallid sturgeon.

B. Bald Eagle

Bald eagles occur in the vicinity of the FCS site predominantly during spring and fall migrations and during the winter. Continued operation of FCS could affect bald eagles if plant operations resulted in changes to conditions in the Missouri River that affected food availability (i.e., the availability of fish or waterfowl) or if Line 74S/74 presented a hazard to the eagle.

Discharges of heated water to the Missouri River during plant operation result in warmer water in the outfall area, and, during the winter, the resulting open water can attract eagles that would otherwise migrate further south. This additional open water increases food availability for bald eagles during the winter and represents a benefit to eagles.

Only one transmission line (Line 74S/74) is associated with FCS and is within the scope of the license renewal application review. On the basis of its design, location, and surrounding habitats, it is unlikely that the line could adversely affect the bald eagle. Line 74S/74 is an 11 km (7 mi) long 161 kV line that was completely reconstructed in 1999 to National Electrical Safety Code requirements that include configuration standards that reduce the hazard of raptor electrocution. Approximately 1.6 km (1 mi) of the line crosses old-field and woodland habitats of the Missouri River bluff; the remaining 10 km (6 mi) cross agricultural land. The Missouri River bluffs area that is traversed by the line is relatively developed and is traversed by U.S. Highway 75. The line does not cross the Missouri River, or any water body that might attract eagles or serve as travel corridors for the species. In addition, because of the level of disturbance and human activities, habitats along the line are not likely to be used by bald eagles. These conditions greatly reduce or eliminate the probability that bald eagles would accidentally strike the transmission line and be killed or injured.

The NRC assessed the impacts of transmission lines on avian populations in its Generic Environmental Impact Statement (GEIS) on the effects of nuclear power plant license renewal (NRC 1996). In the GEIS, the NRC concluded that mortality resulting from bird collisions with transmission lines associated with license renewal and an additional 20 years of operation would be of small significance. This conclusion was based on (1) the fact that existing literature does not indicate that collision mortality is high enough to result in population-level effects and (2) the lack of known instances where nuclear power plant lines affect large numbers of individuals in local areas. No new and significant information has been identified by the staff that would indicate that bald eagles have been adversely affected by Line 74S/74 and no bald eagle mortalities along Line 74S/74 have been reported by OPPD.

Based on this review, the staff concludes that the continued operation of FCS may affect, but is not likely to adversely affect the bald eagle.

C. Other Species

Because the western prairie fringed orchid, piping plover, and least tern are unlikely to occur in the vicinity of the FCS site or along Line 74S/74 corridor, the continued operation of FCS will have no effect on the western prairie fringed orchid, piping plover, and least tern.

VI. CONCLUSION

OPPD has no plans to conduct major refurbishment or construction activities at FCS for continued operations during the license renewal period; the proposed project is not a major construction activity. The proposed project is not located near designated critical habitat of any of the threatened and endangered species discussed in this assessment. Based on life-history information, habitats in the project area and along associated transmission Line 74S/74, operational characteristics of the plant, existing data for impingement and entrainment, and known thermal plume characteristics, the staff concludes that continued operation of FCS, Unit 1, during the proposed 20-year license renewal period may affect, but is not likely to adversely affect either the pallid sturgeon or bald eagle and will have no effect on the western prairie fringed orchid, piping plover, or the least tern.

VII. REFERENCES

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