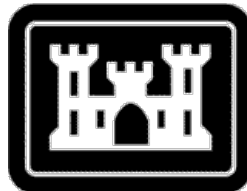


CEDAR LAKE AQUATIC ECOSYSTEM RESTORATION FEASIBILITY STUDY

CEDAR LAKE, INDIANA

APPENDIX O COORDINATION

U.S. Army Corps of Engineers
Chicago District



July 2016

**CEDAR LAKE, INDIANA
CEDAR LAKE AQUATIC ECOSYSTEM RESTORATION
FEASIBILITY STUDY**

APPENDIX O - COORDINATION

July 2016

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**CEDAR LAKE, INDIANA
CEDAR LAKE AQUATIC ECOSYSTEM RESTORATION
FEASIBILITY STUDY**

APPENDIX O - COORDINATION

July 2016

CHAPTER 1 – INTRODUCTION

1.1 General

This appendix will contain a record of all public and agency coordination and will be completed once public and agency review of the Environmental Assessment is completed. Comments and responses will be documented in this appendix.

What is contained here thus far are responses to the NEPA scoping letters and the Fish and Wildlife Coordination Act (FWCA) response.

Attachment 1:
NEPA Scoping Letter and Responses

Environmental Formulation Section

SEE DISTRIBUTION

Dear _____:

The Chicago District is preparing an environmental assessment on impacts of proposed Section 206 ecosystem restoration at Cedar Lake in Lake County, Indiana. The proposed project is seeking to restore the ecological integrity of Cedar Lake. Measures currently being considered are:

- A. sediment removal
- B. nutrient inactivation using aluminum sulfate
- C. increase in dilution/flushing by rerouting Hog-Pen Ditch
- D. creation of in-lake structures
- E. establishment of shoreline aquatic emergent and submergent vegetation
- F. institutional controls
- G. fish community management
- H. reducing upland sediment and nutrient loadings to tributaries

If sediment removal is determined to be a viable option, the project may involve construction of settling ponds, dewatering dredged sediment, trucking sediment to a storage area, and construction of a noise-reduction berm for a wetland park. A map of the project areas is attached.

A phase 1 archaeological survey has been performed. The project would not affect archaeological or historic properties; the Indiana SHPO has been consulted, and is expected to concur with this determination.

This documentation is provided in accordance with the requirements of the National Historic Preservation Act and 36 CFR 800. Please mark your reply to the attention of Keith Ryder; questions may be directed to Mr. Ryder at 312/846-5587 or keith.g.ryder@usace.army.mil. Thank you for your assistance.

Sincerely,

ORIGINAL SIGNED
Susanne J. Davis, P.E.
Chief of Planning Branch

Attachment

DISTRIBUTION

Kickapoo of Oklahoma Bus. Committee
P.O. Box 70
McCloud, OK 74851
ATTN: Mr. Marlon Frye

Kickapoo of Kansas Tribal Council
P.O. Box 271
Horton, KS 66439
ATTN: Ms. Bobbi Darnell, Chairperson

Kickapoo Traditional Tribe of Texas
Box HC 1 9700
Eagle Pass, TX 78853
ATTN: Mr. Juan Garza

Miami Nation in Indiana
P.O. Box 41
Peru, IN 46970
ATTN: John Dunnagan

Miami Tribe of Oklahoma
P.O. Box 1326
Miami, OK 74355
ATTN: Ms. Julie Olds

Midwest SOARRING Foundation
3013 S. Wolf Rd. #192
Westchester, IL 60154
ATTN: Joseph Standing Bear

Citizen Potawatomi Nation
1901 S. Gordon Cooper Dr.
Shawnee, OK 74801
ATTN: Jeremy Finch

Forest County Potawatomi Exec. Council
P.O. Box 340
Crandon, WI 54520
ATTN: Vince Leppart

Huron Potawatomi Tribal Office
2221 One-and-a-half Mile Rd.
Fulton, MI 49052
ATTN: Laura Spur, Director

Pokagon Band of Potawatomi Indians
P.O. Box 180
Dowagiac, MI 49047
ATTN: Mark Parrish

Hannahville Potawatomi Comm. Council
N 14911 Hannahville B1 Rd.
Wilson, MI 49896-9728
ATTN: Mr. Kenneth Meshiguad, Chairman

Prairie Band Potawatomi Tribal Council
16281 Q Rd.
Mayetta, KS 66509
ATTN: Jim Potter

SEE DISTRIBUTION

2 JUL 2007

Dear _____:

The Chicago District would appreciate your agency's comments on impacts of proposed Section 206 ecosystem restoration at Cedar Lake in Lake County, Indiana. . The proposed project is seeking to restore the ecological integrity of Cedar Lake. Measures currently being considered are:

- I. sediment removal
- J. nutrient inactivation using aluminum sulfate
- K. increase in dilution/flushing by rerouting Hog-Pen Ditch
- L. creation of in-lake structures
- M. establishment of shoreline aquatic emergent and submergent vegetation
- N. institutional controls
- O. fish community management
- P. reducing upland sediment and nutrient loadings to tributaries

If sediment removal is determined to be a viable option, the project may involve construction of settling ponds, dewatering dredged sediment, trucking sediment to a storage area, and construction of a noise-reduction berm for a wetland park. A map of the project areas is attached; an environmental assessment will be released in the near future.

I am particularly interested in your comments regarding impacts to wetlands, aquatic habitat, and threatened or endangered species. Please mark your reply to the attention of Keith Ryder; questions may be directed to Mr. Ryder at 312/846-5587 or keith.g.ryder@usace.army.mil . Thank you for your assistance.

Sincerely,

ORIGINAL SIGNED

Susanne J. Davis, P.E.
Chief of Planning Branch

Attachment

DISTRIBUTION

Kenneth Westlake, Chief
Environmental Review Branch
U.S. EPA ME-19J
77 West Jackson
Chicago, IL 60604

U.S. Fish and Wildlife Service
620 S. Walker St.
Bloomington, IN 47403
ATTN: Scott Pruitt

U.S. Fish and Wildlife Service
P.O. Box 2616
Chesterton, IN 46304-2616
ATTN: Elizabeth McCloskey

Kay Whitlock
Christopher Burke Engineering
9575 W. Higgins Rd. Suite 600
Rosemont, Illinois 60018

Indiana Dept. of Environ. Mgt.
8315 Virginia St. Suite 1
Merrillville, IN 46410-9201
ATTN: Bob Simmons

Indiana Dept. of Environ. Mgt.
100 N. Senate
P.O. Box 6015
Indianapolis, IN 46206-6015
ATTN: Marty Maupin

Indiana DNR
Division of Water
402 W. Washington Room W273
Indianapolis, IN 46204
ATTN: Christine Stanifer

Indiana DNR
Division of Water
100 N. Water St.
Michigan City, IN 46360
ATTN: Bob Robertson

2 JUL 2007

Lake Heritage Parks Foundation
P.O. Box 1
Leroy, IN 46355
ATTN: Lawrence Klein
executive director



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 16 2007

REPLY TO THE ATTENTION OF

B-19J

Keith Ryder
Army Corps of Engineers, Chicago District
111 North Canal Street
Chicago, IL 60606-7206

Re: Comments on Scoping Information for a Proposed Ecosystem Restoration Project
at Cedar Lake in Lake County, Indiana

Dear Mr. Ryder:

The U.S. Environmental Protection Agency (U.S. EPA) has received scoping information for the upcoming environmental assessment (EA) regarding a proposed ecosystem restoration project at Cedar Lake in Lake County, Indiana. In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, we are responding with comments.

U.S. EPA recommends that the proposed project include efforts to remove invasive species and establish native plant species in the project area. Additionally, the proposed project should include a monitoring and maintenance program for aquatic and terrestrial species in the project area. Finally, the project proponents should offer project-related educational and participation opportunities to the public (e.g., interpretative signage and stewardship opportunities). The project proponents should document each of these issues in the EA.

Thank you for the opportunity to comment on the scoping documents. We look forward to reviewing the associated EA. If you have any questions, please call Newton Ellens, of my staff, at 312-353-5562.

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth A. Westlake".

Kenneth A. Westlake, Supervisor
NEPA Implementation
Office of Enforcement and Compliance Assurance



Miami Tribe of Oklahoma

P.O. Box 1326 Miami, Oklahoma 74355

Ph: (918) 542-1445 Fax (918) 542-7260



July 10, 2007

Department of the Army
Chicago District, Corps of Engineers
ATTN: Keith Ryder, Environmental Formulation Section
111 North Canal Street
Chicago, Illinois 60606-7206

RE: Proposed Section 206 Ecosystem Restoration at Cedar Lake, Lake County,
Indiana

Dear Sirs,

Aya, kikwesitoole. My name is Julie Olds and I am the Cultural Preservation Officer for the Federally Recognized Miami Tribe of Oklahoma. In this capacity I am the Miami Nation's point of contact for all NAGPRA and Section 106 issues.

The above mentioned project is located within the aboriginal homelands of the Miami Nation. Therefore, it is possible that Miami human remains and/or cultural items falling under the Native American Graves Protection and Repatriation Act (NAGPRA) could be discovered during this project. Should such items be found the Miami Nation requests immediate notification and consultation with the appropriate State Historic Preservation Office or related entity.

Should human remains and/or NAGPRA items be uncovered please contact me at 918-542-1445, or by mail at: P.O. Box 1326, Miami, Oklahoma 74355, to initiate consultation.

Sincerely,

A handwritten signature in blue ink, appearing to read "Julie L. Olds".

Julie L. Olds
Cultural Preservation Officer
Miami Nation

Attachment 2:
FWCA Response Letter

United States Department of the Interior

Fish and Wildlife Service



Bloomington Field Office (ES)
620 South Walker Street
Bloomington, IN 47403-2121
Phone: (812) 334-4261 Fax: (812) 334-4273

November 20, 2007

Mrs. Susanne J. Davis
Chief of Planning Branch
U.S. Army Corps of Engineers
Chicago District
111 North Canal Street
Chicago, Illinois 60606-7206

Attn: Keith Ryder, Environmental Formulation Section

Dear Mrs. Davis:

This responds to your letter of July 2, 2007, requesting our comments on the proposed Section 206 Aquatic Ecosystem Restoration Project at Cedar Lake, Lake County, Indiana.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) and are consistent with the intent of the National Environmental Policy Act of 1969, the Endangered Species Act of 1973, and the U.S. Fish and Wildlife Service's Mitigation Policy.

The proposed project seeks to restore the ecological integrity of the 781 acre natural kettle lake, which suffers from sedimentation, eutrophication, and hydrologic manipulation. The lake is shallow, with an average depth of 8 feet and a current maximum depth of 14 feet (historically the deepest area was in excess of 18 feet), so the lake water is fully mixed and does not stratify (polymictic lake). South of the lake is Cedar Lake Marsh, a wetland complex encompassing about 400 acres; it connects to Cedar Lake through a small stream called Pickerel Creek. The Lake Heritage Park Foundation currently owns 283 acres of the wetland and adjacent upland (Enclosure No. 1) and has been attempting to purchase another 85-90 acres of primarily wetlands; the wetland was purchased as a project of the Indiana Grand Kankakee Marsh Restoration Project, with partial Federal funding under the North American Wetlands Conservation Act (NAWCA).

Sewage flow into the Cedar Lake has already been addressed through improvements in the Town of Cedar Lake sanitary sewer system, including identification and removal of discharges into the lake. Several projects funded by the Indiana Lake and River Enhancement Program (LARE) and Section 319 of the Clean Water Act have addressed erosion of streambanks along inlet streams and lake shoreline erosion problems at several locations.

Despite the sewer system improvements and the LARE and Section 319 projects, the lake sediments remain enriched and are constantly resuspended by wind-induced wave action, with almost the entire lake bottom being available to these forces due to shallow water depths. The turbidity and wave action adversely affect rooted aquatic vegetation and nutrients released from the sediments cause algae blooms. Shorelines, particularly along the north and east sides of the lake, are very subject to erosion because of wind-blown waves; therefore, seawalls dominate in these areas.

The watershed of the lake is quite small in comparison to the size of the lake and there is little water inflow during dry periods, which in turn does not allow for flushing of the lake. Due to the watershed's natural topography and the small drainage area, the retention time of Cedar Lake is quite long, causing inflows of sediments and nutrients, which adversely affect water quality, to remain in the lake and cause habitat degradation. There are 4 very small intermittent inlets into the north basin of the lake and 4 into the south basin. The unnamed intermittent stream in the southwest section of the lake is a bypass channel that was constructed to convey the runoff from a dairy farm around the northwest portion of the large wetland. Another small intermittent stream, Sleepy Hollow Ditch, enters the lake about 0.25 mile north of that bypass ditch and is the stream that received considerable attention under the LARE Program. The exit from the lake, Cedar Creek, is on the southeast side of the middle basin.

In addition, the Cedar Lake fishery is poor and is dominated by white perch (*Morone americana*), a species not native to Indiana. Non-native common carp (*Cyprinus carpio*) and goldfish (*Carassius auratus*) are also present in the lake, with carp or the native rough fish gizzard shad (*Dorosoma cepedianum*) normally being second in abundance to white perch during recent fishery surveys. A total of 18 native fish species have been recorded in the lake since 1976, including white sucker (*Catostomus commersoni*), largemouth bass (*Micropterus salmoides*), northern (*Esox lucius*), and brown bullhead (*Ameiurus nebulosus*). The Indiana Department of Natural Resources (IDNR) has stocked hybrid striped bass (*Morone chrysops x saxatilis*) for various periods in an attempt to increase the predator population; however, they are no longer present.

The Section 206 proposal would address these water quality issues, general aquatic habitat issues, and the poor quality fishery. Measures being considered include sediment removal, nutrient inactivation using aluminum sulfate (alum), increasing water inflow by rerouting Hog-Pen Ditch back into Cedar Lake, establishment of shoreline aquatic vegetation, institutional controls such as enlarged no-wake zones along the shoreline, fish community management, and reducing upland sediment and nutrient loadings to tributaries and areas that drain directly to the lake. Previously proposed but eliminated from further consideration was the creation of in-lake structures to try to reduce the wind and wave fetch along the north/south axis of the lake, a distance of more than 2 miles. Since modeling of various different types and locations of in-lake structures showed no improvement in water quality with the structures, they are not considered cost-effective in addressing the lake's problems.

Sediment sampling was completed in April 2007 and indicated varying depths and quality of the sediments. Chemical analysis of the sediment samples indicated that they all had elevated levels of Priority pollutant metals and of phosphorus; several exceeded RISC (Risk Integrated System of Closure) levels for arsenic and several exceeded RISC levels for lead; 1 site exceeded both arsenic and lead and also exceeded RISC levels for chromium (Matrix Environmental 2007).

It is currently undetermined what depth of material would need to be removed lakewide to reach cleaner, less eutrophic sediments, or if dredging is appropriate given the metals pollution. Considering the size of Cedar Lake, dredging the entire lake would be an expensive undertaking involving the handling of millions of

cubic yards of material; therefore, several scenarios for selective dredging have been proposed. The Town of Cedar Lake has purchased 114 acres of current cropland at Parrish and 155th Avenues southwest of the lake as a possible location to dewater and hold the dredged material.

The application of aluminum sulfate (alum) to bind the nutrients in the sediments has been proposed as an alternative to or in concert with the dredging. Alum treatments have been successfully used on eutrophic lakes for years worldwide to lower phosphorus concentrations and inhibit phosphorus recycling from the sediment. Typically, the cost of treating a lake with alum is considerably less expensive than the removal of nutrient-rich sediments through dredging. Success of nutrient inactivation using alum would in part depend upon any continuing phosphorus loading from the watershed, such as from fertilizer runoff.

The land immediately around Cedar Lake has been developed for over 100 years, with early uses being hotels, cottages, and camps for summer visitors from the Chicago area, and later uses being primarily residential, with commercial areas along the north shore. There is also a large golf course at the southeast corner of the lake. However, the uplands further from the immediate lake have been cropland for many years and are currently being converted to residential developments at a rapid rate, especially along the west side of the lake. This land use conversion may reduce some fertilizer input to the lake, since the cropland has been a major source, but if residential landowners utilize large amounts of fertilizers on their lawns, the nitrogen and phosphorus loading could instead increase.

Therefore, recommendations that include dredging, alum treatments, and the control of watershed nutrient loadings will need to work in concert to ensure the successful and lasting restoration of Cedar Lake.

We have reviewed the dredging options presented on your Website and would support whichever of the 5 options is found to provide the greatest and most efficient benefit to the lake ecosystem. We would also support alternatives involving dredging and alum treatment used in combination if they are found to achieve maximum benefits for the lake. The fishery rehabilitation may also need to be taken into account with dredging if it would be used to help provide better fishery habitat. Concerning dredging impacts on benthos and zooplankton, removal of the highly enriched sediments would have an overall beneficial impact on benthos because of the cleaner sediments that would be exposed, so anything lost to the immediate dredging would quickly recover. Gibbons et al. (1984), in a 4 year study of the restoration of Liberty Lake, Washington, found that suction dredging had no apparent effect upon the zooplankton in the lake.

Two alum treatment options have been proposed, with the difference being the extent of the lake to be treated (224 acres or 83 acres), based upon levels of phosphorus within the sediments. We currently do not have information on the proposed locations for the alum treatment, and recognize plans may change if dredging and alum application are used together in different sections of Cedar Lake.

In numerous aquatic systems, phosphorus dynamics at the sediment-water interface are regulated by oxidation-reduction interactions between iron compounds and adsorbed phosphorus (Mortimer 1971). Aluminum sulfate is used to control these redox-sensitive phosphorus fractions by binding the phosphorus to the alum (James and Barko 2003, Princeton Hydro 2005). On contact with water, alum forms a floc of aluminum hydroxide precipitate; this colloidal amorphous floc has high coagulation and phosphorus adsorption and binding properties. Because the floc is heavier than water, it settles out of the water column to the sediments, where it binds with phosphorus, making it unavailable for biological uptake by algae and phytoplankton. The aluminum-phosphorus bond is extremely strong and the compounds are insoluble in water; phosphorus will not be released from the aluminum even under anoxic conditions.

The pH of the lake directly affects the solubility of aluminum in water, so the success of an alum treatment depends upon pH and the softness or hardness of the water, with particular attention being required so that dissolved aluminum remains below potentially toxic concentrations (James and Barko 2003, Kennedy and Cooke 1982, Princeton Hydro 2005). These same parameters affect how much aluminum sulfate is required to achieve success, so alum bench tests will need to be conducted using samples of water from Cedar Lake (mid depth and bottom depth) to determine both the appropriate dose (the amount needed to effectively inactivate available phosphorus) and the safe dose (the amount below potentially toxic concentrations).

Zooplankton has been shown to be affected by aluminum sulfate treatment. For example, a whole-lake alum treatment of Newman Lake, Washington, showed effects on zooplankton, such as pronounced declines in numbers, biomass, and species diversity, within 2 weeks after the treatment (Schumaker et al. 1993). They believed the effects might be attributed to a combination of physical action of the settling alum floc, removal of and changes in primary food sources, predation by planktivorous fish, and the toxicity of the aluminum ion. However, the declines were only temporary and long-term studies showed no significant decrease in species diversity. Narf (1985 and 1990) and Gibbons et al. (1984) also reported that alum treated lakes showed no long-term negative effects on the diversity or assemblage of benthic fauna and zooplankton; however, rotifers were often found to increase dramatically (Narf 1985, Schumaker et al. 1993).

The zooplankton and benthic fauna of Cedar Lake are undoubtedly being affected by the nutrient load in the sediments and their regular resuspension, by algae blooms, and by predation by fish, particularly by the abundant white perch. Although these species likely would be affected by the alum treatment, the treatment would not be lake-wide so the effects would not be lake-wide. Restoration of the lake water quality and the fishery, including removal of white perch, would greatly benefit the zooplankton and benthic communities. Blue-green algae should decrease and green algae, flagellates, and diatoms should increase.

The shallowness of Cedar Lake and the constant resuspension of the sediments through winds and waves could affect the success of the aluminum sulfate treatment. The wind and wave action could recirculate the settled alum floc to the surface of the lake, which would create aesthetic problems and reduce the effectiveness of the treatment. Princeton Hydro (2005), who studied Honeoye Lake in New York, recommended no alum treatment in sections of the lake less than 8 feet deep because of wind and wave concerns. Otherwise, Welch and Cooke (1999) found that of the 6 polymictic lakes they evaluated for which alum treatment was effective, total phosphorus was reduced by about one-half, which persisted for 5 to 11 years. Chlorophyll a, which was also evaluated in the 6 lakes, initially decreased an average of two-thirds, but was about 40 percent less than the pre-treatment level after 5 to 18 years.

The Town of Cedar Lake has already taken great strides in controlling polluted runoff from entering the lake through its sanitary systems improvements and Section 319 and LARE projects. However, additional storm water controls may be necessary, such as retrofitting existing storm drains with treatment chambers/systems that settle solids and remove total suspended solids (TSS), chemical oxygen demand (COD), hydrocarbons, nutrients, heavy metals, and bacteria. Such systems typically include wetland chambers or special media (e.g. activated carbon, ionic exchange media, peat). Each outfall would have to be individually evaluated to determine what system would be most appropriate, given constraints of space and other factors.

We note from their Website that the Town of Cedar Lake is a MS4 (Municipal Separate Storm Sewer Systems) community and as such is responsible for developing and implementing a storm water management program. We do not know the status of the program other than that the Town began billing property owners in August based on Equivalent Runoff Units of impervious surface. The program provides the Town with an excellent opportunity to pass ordinances to address all aspects of polluted runoff, including sediments, nutrients, hydrocarbons, heavy metals, and bacteria.

At the present time, the east side of the Town of Cedar Lake within the Hog-Pen Ditch/Founders Creek watershed does not drain into Cedar Lake. However, one of your project proposals is to restore the original route of this stream, which at the time of European settlement flowed into Cedar Lake in the middle basin a short distance north of the lake outlet. Your staff indicated to us that modeling of water inflows from Hog-Pen Ditch/Founders Creek showed that it would improve summer water quality in Cedar Lake despite the proximity of the inlet and outlet streams. At the present time, water sometimes does not flow over the outlet weir during summer months, so the lake becomes rather stagnant, with little inflow. It is at times like these that even a small amount of clean water inflow from Hog-Pen Ditch/Founders Creek would benefit the lake. The source of this clean water inflow and any other proposed additional inflow must be free of nutrients, suspended solids, and other pollutants in order to not negatively affect the water quality of the lake. The reintroduction of groundwater flow from Hog-Pen Ditch/Founders Creek is an appropriate clean water inflow source.

The majority of the Hog-Pen Ditch/Founders Creek watershed is within the Town limits of Cedar Lake; the exception is the main channel headwaters, which are protected within Lemon Lake County Park. Downstream from the Park, there are numerous wetlands and woodlands along the main stream channel, which help maintain water quality. Elsewhere in the watershed there are large subdivisions and small residential areas, sometimes interspersed with additional woodlands and wetlands. However, we recently learned that a forested wetland of about 20 acres at the confluence of Hog-Pen Ditch/Founders Creek and Cedar Creek was clearcut. The removal of this protective forest could seriously compromise water quality if the stream were to be re-routed back into Cedar Lake.

If Hog-Pen Ditch/Founders Creek is to be restored to its original channel and once again enter Cedar Lake, the Town will need to guarantee water quality in the system or this alternative will not be viable. Ordinances establishing setbacks and a forested riparian corridor will be necessary in concert with MS4 ordinances controlling runoff. We would request a wooded riparian corridor at least 100 feet wide on each side of the stream, although some existing structures may need to be grandfathered, with particular attention to the stream section between Morse Street and Cedar Lake.

Reducing upland sediment and nutrient loadings to tributaries is one of the proposals being reviewed by your staff. With increasing development of the uplands around Cedar Lake, it is becoming more and more difficult to protect erodible soils with native prairie and woodland plantings. However, this should be undertaken wherever possible, in concert with other MS4 activities. The remnant German Methodist Cemetery Prairie Nature Preserve along US 41 north of 151st Avenue can serve as an example of the native prairie vegetation that used to cover the uplands west of Cedar Lake and held these deep, rich prairie soils against erosion. Elsewhere in the watershed, if woodland soils are present, native trees and shrubs should be planted.

To our knowledge, the last time the Cedar Lake fishery was rehabilitated through the use of rotenone to eliminate rough fish was in 1966; however, the large wetland on the south end of the lake was not treated at that time. We assume that the wetland would also be treated if it is decided to again use rotenone at the lake. If this rotenone treatment is done, we recommend that as much of the fish biomass

as possible be salvaged for processing as cat food or other use rather than simply dumped in a landfill as waste. However, before that could occur it would be necessary to determine that the fish are not contaminated with the same heavy metals found in the sediments; if they are contaminated, proper disposal would be the only option.

We support the reestablishment of a native fishery in Cedar Lake, including those that may now be considered rare within the area due to habitat losses at natural glacial lakes. If the biologists working to restore the fishery believe it is necessary, we would support the placement of gravel or other structure to provide spawning habitat. We also support the planting of shoreline aquatic emergent and submergent vegetation to provide fishery habitat, in addition to possibly lessening lake shoreline erosion.

We are aware of the wind and wave problems along the lake's shoreline, so such plantings likely would not be sustainable in some areas, such as the north shore. However, a shoreline protection project conducted at Potawatomie Park in the northwest section of Cedar Lake utilized a combination of large stones, erosion control blankets, and coconut fiber logs to stabilize the shoreline. The shoreline was then planted with native herbaceous plants and shrubs. This work was done in 1998-99, and our observations in the summer of 2007 showed that it has worked quite well. Native rose mallows (*Hibicus laevis* and/or *palustris*) and shrub willows (*Salix* spp.) were the primary shrubs planted, and they continue to protect the shoreline against the strong waves that can hit this area during periods of south winds (such as the day of our visit, August 14, 2007). No severe erosion was noted in the planted area. Therefore, we suggest that rose mallow, shrub willow, and swamp loosestrife (*Decodon verticillatus*) be planted in areas where rooted herbaceous species might not be able to survive alone due to wave action. Buttonbush (*Cephalanthus occidentalis*) and swamp rose (*Rosa palustris*) could also be planted if they can withstand wave action. Herbaceous species such as arrowhead (*Sagittaria graminea* and/or *latifolia*), pickerel weed (*Pontederia cordata*), and bulrushes (*Scirpus* spp.), or other appropriate native rooted aquatic species could be planted among the shrubs, where wave action should be less severe.

ENDANGERED SPECIES

The proposed project is within the range of the Federally endangered Indiana bat (*Myotis sodalis*) and Karner blue butterfly (*Lycaeides melissa samuelis*) and the threatened Pitcher's thistle (*Cirsium pitcheri*) and Mead's milkweed (*Asclepias meadii*). There is no habitat in the Cedar Lake watershed for the Karner blue butterfly or Pitcher's thistle. There may be suitable summer nursery habitat for the Indiana bat within the general area, such as along Hog-Pen Ditch/Founders Creek and Cedar Creek where forested riparian habitat is present. Mead's milkweed has been reestablished at Biesecker Prairie State Nature Preserve several miles northwest of Cedar Lake and outside the lake's watershed. Although the rich prairie soils on the west uplands above Cedar Lake are suitable for this species, there are no known potential restoration sites at this time.

These endangered species comments constitute informal consultation only. They do not fulfill the requirements of Section 7 of the Endangered Species Act of 1973, as amended.

Thank you for the opportunity to comment on this proposed aquatic ecosystem restoration project. We look forward to working with you and your staff to make this project a reality. For further discussion, please contact Elizabeth McCloskey at (219) 983-9753 or elizabeth_mccloskey@fws.gov.

Sincerely,

Elizabeth S. McCloskey
Acting
for Scott E. Pruitt
Supervisor

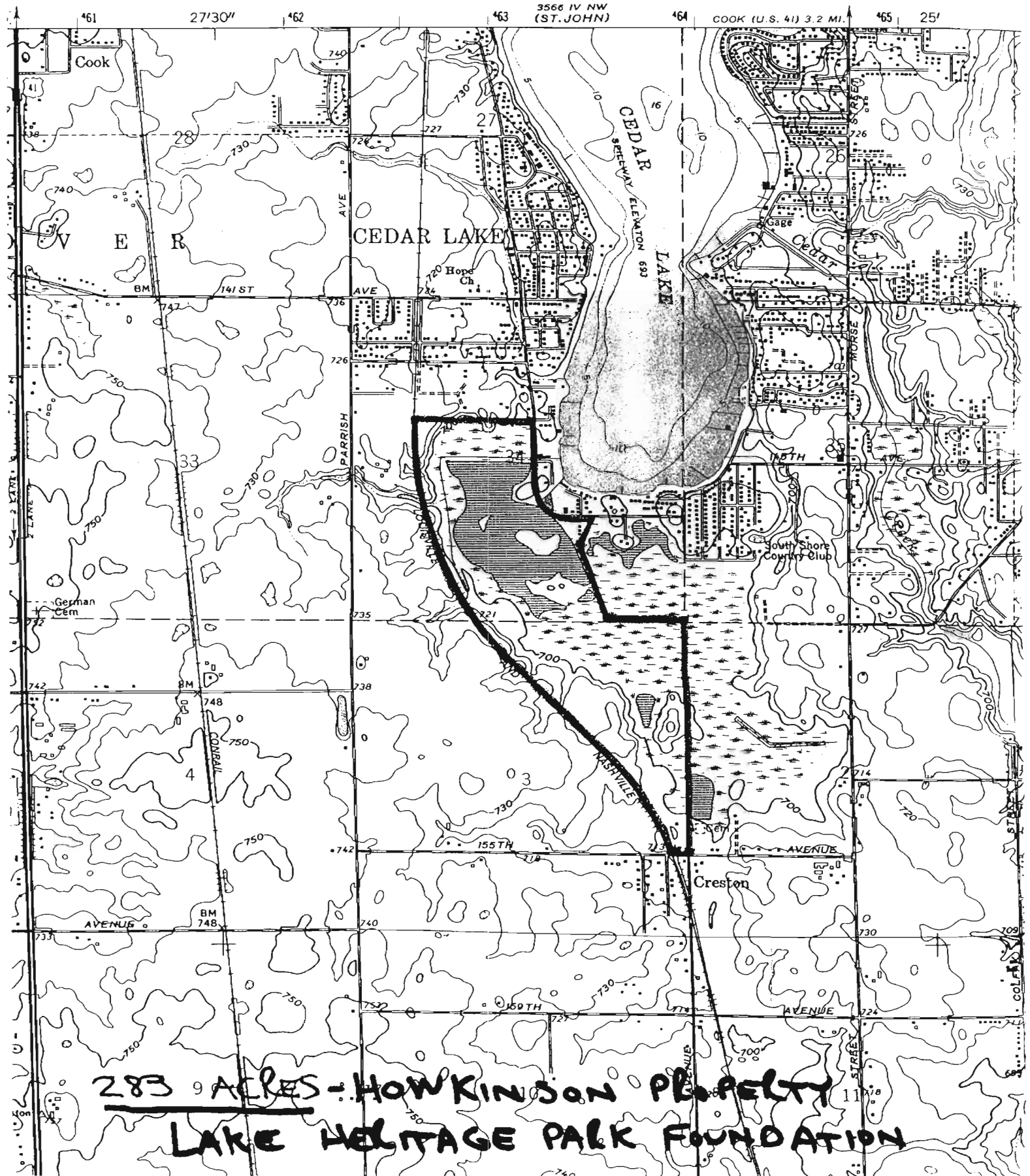
cc: Bob Robertson, Division of Fish and Wildlife, North Judson, IN
Christie Stanifer, Division of Water, Indianapolis, IN
Marty Maupin, IDEM, Office of Water Management, Indianapolis, IN

REFERENCES

- Gibbons, M.V., F.D. Woodwick, W.H. Fund, and H.L. Gibbons. 1984. Effects of multiphase restoration, particularly aluminum sulfate application, on the zooplankton community of a eutrophic lake in eastern Washington. *Journal of Freshwater Ecology* Vol. 2 No. 4:393-404.
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STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
INDIANAPOLIS, INDIANA

LOWELL QUADRANGLE



283 ACRES - HOWKINSON PROPERTY
LAKE HERITAGE PARK FOUNDATION

Attachment 3:

Indiana State Historic Preservation Officer (SHPO) coordination



DEPARTMENT OF THE ARMY
CHICAGO DISTRICT, CORPS OF ENGINEERS
111 NORTH CANAL STREET
CHICAGO, IL 60606-7206

REPLY TO
ATTENTION OF
Environmental Formulation Section

17 JUN 2007

Indiana DNR
Div. of Historic Preservation
402 W. Washington St. Room W274
Indianapolis, IN 46204
ATTN: Dr. Rick Jones

Dear Dr. Jones:

Enclosed for your review is a report on Phase I archaeological survey of the site of settling ponds proposed as part of Section 206 aquatic ecosystem restoration, at Cedar Lake in Lake County, Indiana.

No cultural material other than isolated, non-diagnostic chert fragments was found. My staff has determined that the proposed project would not affect archaeological or historic properties, and that no further investigation is required.

Please mark your reply to the attention of Keith Ryder; questions should be directed to Mr. Ryder at 312-846-5587 or at keith.g.ryder@usace.army.mil. Thank you for your assistance.

Sincerely,


Susanne J. Davis, P.E.
Chief of Planning Branch

Enclosure

Division of Historic Preservation & Archaeology • 402 W. Washington Street, W274 • Indianapolis, IN 46204-2739
Phone 317-232-1646 • Fax 317-232-0693 • dhpa@dnr.IN.gov



June 20, 2007

Susanne Davis
Chicago District, Corps of Engineers
111 North Canal Street
Chicago, Illinois 60606-7206

Federal Agency: Army Corps of Engineers ("ACOE")

Re: Phase I archaeological investigation (Ryder, 6/4/07) concerning a Section 206 aquatic ecosystem restoration (DHPA #2346)

Dear Ms. Davis:

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f) and 36 C.F.R. Part 800, the staff of the Indiana State Historic Preservation Officer ("Indiana SHPO") has conducted an analysis of the materials dated June 7, 2007 and received on June 13, 2007, for the above indicated project in Cedar Lake, Lake County, Indiana.

A complete analysis of the submitted project is not possible, as the information provided is incomplete. Please provide the indicated information to facilitate the identification and analysis of historic properties in the project area:

- 1) Define the area of potential effects¹ and provide a map or a good quality photocopy of a map containing the following:
 - The boundaries of the area of potential effects and the precise location of the project area within those boundaries clearly outlined in dark ink on a copy of the relevant portion of a town, city, county, or U.S. Geological Survey quadrangle map.
 - The names of nearby landmarks clearly labeled (e.g., major streets, roads, highways, railroads, rivers, lakes).
- 2) Give the precise location of any buildings, structures, and objects *within the area of potential effects* (e.g., addresses and a site map with properties keyed to it).
- 3) Give the known or approximate date of construction for buildings, structures, objects, and districts *within the area of potential effects*.
- 4) Submit historical documentation for buildings, structures, objects, and districts *within the area of potential effects*.
- 5) List all sources checked for your historical research of the *area of potential effects*. The Indiana SHPO recommends consulting the 1995 Lake County Interim Report for this information.

¹ Area of potential effects means the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (see 36 C.F.R. § 800.16[d]).

- 6) Provide clear, recent photographs or good quality computer-generated images (not photocopies or aerial photographs), keyed to a site plan, showing any buildings, structures, objects, or land *that could be affected in any way by the project*.

Regarding the archaeological report, please provide the following in a revised report:

- 1) Please provide site numbers and state site forms for all identified sites.
- 2) Please include a description of each site in the report, including estimated site size and criteria used to determine site size estimates.
- 3) Please provide a revised map showing the locations of the documented archaeological sites using the site number as identifier.
- 4) Please include description, including type and raw material, for all recovered chipped stone artifacts and the classification (with appropriate references) used to determine artifact types and/or classes and raw material identification.

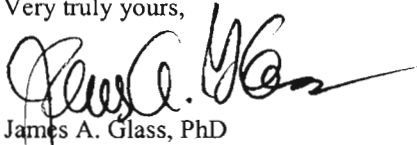
Please note that for future projects, archaeological records searches should be conducted at the Division of Historic Preservation and Archaeology prior to conducting field survey.

Once the above indicated information is received, the Indiana SHPO will resume identification and evaluation procedures for this project. Please keep in mind that additional information may be requested in the future.

A copy of the revised 36 C.F.R. Part 800 that went into effect on August 5, 2004, may be found on the Internet at www.achp.gov for your reference. If you have questions about archaeological issues please contact Melody Pope at (317) 232-1650 or mpope@dnr.IN.gov. If you have questions about buildings or structures please contact Miriam Widenhofer at (317) 233-3883 or at mwidenhofer@dnr.IN.gov, or Holly Tate at (317) 234-3919 or htate@dnr.IN.gov.

Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #2346.

Very truly yours,



James A. Glass, PhD
Deputy State Historic Preservation Officer

JAG:MLW:MKP:mkp

cc: Keith Ryder, US Army Corps of Engineers, Chicago District

DNR Indiana Department of Natural Resources

Division of Historic Preservation & Archaeology 402 W. Washington Street, W274 Indianapolis, IN 462042739
Phone 317-232-1646 • Fax 317-232-0693 • dhpa@dnr.IN.gov

Mitchell E. Daniels, Jr., Governor
Robert E. Carter, Jr., Director



August 13, 2007

Keith Ryder
U.S. Army Corps of Engineers
111 North Canal Street, Suite 600
Chicago, Illinois 60606

Federal Agency: U.S. Army Corps of Engineers ("USACE")

Re: Revised phase I archaeological investigation (Ryder, 7/10/07) concerning a Section 206 aquatic ecosystem restoration (DHPA #2346)

Dear Mr. Ryder:

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f) and 36 C.F.R. Part 800, the staff of the Indiana State Historic Preservation Officer ("Indiana SHPO") has conducted an analysis of the materials dated July 10, 2007 and received on July 16, 2007, for the above indicated project in Cedar Lake, Hanover Township, Lake County, Indiana.

Based upon the documentation available to the staff of the Indiana SHPO, we have not identified any historic buildings, structures, districts, or objects listed in or eligible for inclusion in the National Register of Historic Places within the probable area of potential effects. In terms of archaeological resources, we concur that sites 12La632 and 12La633 do not appear eligible for inclusion in the National Register of Historic Places. Therefore, no further archaeological investigations are necessary.

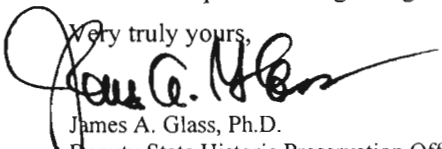
If any archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations.

At this time, it would be appropriate for the USACE to analyze the information that has been gathered from the Indiana SHPO, the general public, and any other consulting parties and make the necessary determinations and findings. Please refer to the following comments for guidance:

- 1) If the USACE believes that a determination of "no historic properties affected" accurately reflects its assessment, then it shall provide documentation of its finding as set forth in 36 C.F.R. §800.11 to the Indiana SHPO, notify all consulting parties, and make the documentation available for public inspection (36 C.F.R. §§ 800.4[d][1] and 800.2[d][2]).
- 2) If, on the other hand, the USACE finds that an historic property may be affected, then it shall notify the Indiana SHPO, the public and all consulting parties of its finding and seek views on effects in accordance with 36 C.F.R. §§ 800.4(d)(2) and 800.2(d)(2). Thereafter, the USACE may proceed to apply the criteria of adverse effect and determine whether the project will result in a "no adverse effect" or an "adverse effect" in accordance with 36 C.F.R. § 800.5.

If you have questions about archaeological issues please contact Cathy Draeger at (317) 234-3791 or cdraeger@dnr.IN.gov. If you have questions about buildings or structures please contact Holly Tate at (317) 234-3919 or htate@dnr.IN.gov. Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #2346.

Very truly yours,


James A. Glass, Ph.D.
Deputy State Historic Preservation Officer

JAG:HAT:CLD:cld

cc: Susanne Davis, Chicago District, Corps of Engineers

Attachment 4:

Federal Aviation Administration (FAA) coordination letter



DEPARTMENT OF THE ARMY
CHICAGO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
231 SOUTH LASALLE STREET SUITE 1500
CHICAGO IL 60604-1437

REPLY TO
ATTENTION OF:

13 NOV 2014

Planning, Programs and
Project Management Division

Ben Bobb A. Beauchamp, Environmental Program Manager
Federal Aviation Administration
Chicago Airports District Office, CHI-ADO-600
2300 East Devon Avenue
Des Plaines, Illinois 60018

Dear Mr. Beauchamp:

The U.S. Army Corps of Engineers (USACE) is currently considering the feasibility of an ecosystem restoration project, for Cedar Lake, Indiana, which, if constructed, would restore aquatic habitat and aquatic species within the 781 acre glacially formed Cedar Lake, Lake County, Indiana. The proposed USACE project outlined in the Cedar Lake Aquatic Ecosystem Restoration Draft Integrated Feasibility Report and Environmental Assessment dated November 2014. The project was specifically authorized in 2007.

In accordance with the 2002 Memorandum of Agreement (MOA) between the FAA and numerous agencies, we have initiated a review of the Cedar Lake Ecosystem Restoration Study. Utilizing the guidelines presented in FAA Advisory Circular (AC) 150/5200-33B, we reviewed the potential for attracting hazardous wildlife near public-use airports through implementation of the proposed project. Airports within the vicinity of Cedar Lake were identified using ArcGIS. One airport, Sutton's Field, and one hospital heliport, St. Anthony Hospital, were identified as servicing aircraft within a 5 mile radius of the Cedar Lake project area (Attachment 1); however, both locations were identified as being for private-use only. Neither the FAA nor the State of Indiana affords any protection of airspace for private-use airports, only public-use airports are regulated. Therefore, no further coordination as specified by the MOA is necessary.

Following is a summary of the components of the proposed ecosystem restoration project and an evaluation of their potential for attracting potentially hazardous wildlife. The recommended plan for implementation consists of six restoration measures as summarized below:

- *Sediment removal* which would consist of dredging over 163 acres to a depth of 1.0 foot below the existing lake bed; removing a total of 263,000 cubic yards of sediment.

- *Nutrient inactivation* which would consist of applying a single dosage of aluminum sulfate (alum) and sodium aluminate (aluminate) across 400 acres of the lake.
- *Dilution and Flushing* which would consist of rerouting approximately 1,400 linear feet of Founder's Creek back to its historic channel that inlets into Cedar Lake.
- *Littoral macrophyte restoration* which would consist of planting native emergent vegetation over 35 acres and native submergent vegetation over 95 acres of Cedar Lake.
- *Institutional controls* which would consist of extending the current "no-wake" zone from 200 feet to 400 feet.
- *Fish community management* which would consist of applying rotenone (piscicide) to Cedar Lake to remove all fish species followed by stocking of the lake with a native glacial lake fish assemblage.

Plant community restoration (*Littoral macrophyte restoration*) and fish community restoration (*Fish community management*) could potentially increase abundances of existing waterbird populations within the vicinity of Cedar Lake. Small song bird populations could also potentially increase as a result of rerouting Founder's Creek and restoring the riparian zone. Decreases in blackbirds and starlings are predicted since these species thrive in manmade habitats. However, an evaluation of project features to attract hazardous wildlife was not completed as these airfields are not regulated by the FAA and not subject to the 2002 MOA.

The USACE has coordinated with the Indiana Department of Transportation – Aviation Division and confirmed that Sutton's Field and St. Anthony Hospital are private-use airfields that are not regulated by the FAA or the State of Indiana. Therefore, no further action is required by USACE under the 2002 MOA. If you have any additional questions, please contact Mr. Imad Samara, Project Manager at (312) 846-5560 or Ms. Susanne J. Davis, Chief, Planning Branch at (312) 846-5580.

Respectfully,


Susanne J. Davis, P.E.
Chief, Planning Branch

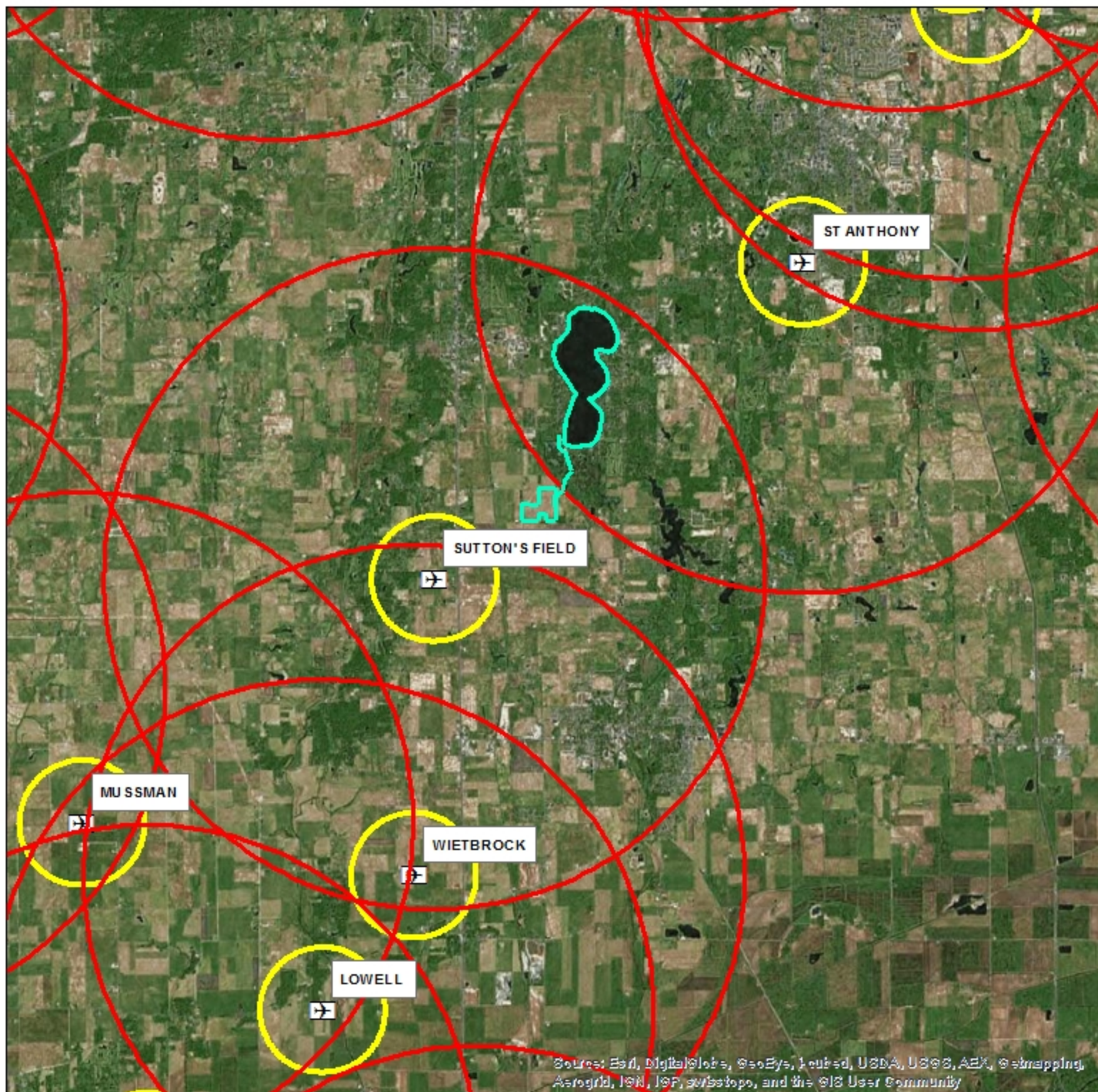
Enclosure

CF: Ms. Judy Loven, State Director
USDA APHIS Wildlife Service



Cedar Lake - Airports

U.S. ARMY CORPS OF ENGINEERS
CHICAGO DISTRICT



Source: Esri, DigitalGlobe, GeoEye, Jeppesen, USDA, USGS, AER, GeoMapping, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

Legend

-  Project Boundary
-  5 Mile
-  5,000 Feet
-  Airports

Location Map

