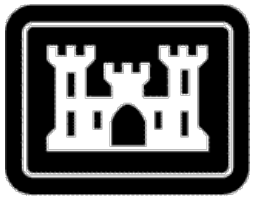
CEDAR LAKE AQUATIC ECOSYSTEM RESTORATION FEASIBILITY STUDY

CEDAR LAKE, INDIANA

APPENDIX N
DRAFT FONSI

U.S. Army Corps of Engineers
Chicago District



July 2016

DRAFT FINDING OF NO SIGNIFICANT IMPACT
Cedar Lake Aquatic Ecosystem Restoration

Background

This study was initiated by request of the Cedar Lake Enhancement Association (CLEA) under Section 206 of the Water Resources Development Act (WRDA) to evaluate the feasibility of an aquatic ecosystem restoration project at Cedar Lake. However, while developing the feasibility study, it was realized that to appropriately restore the ecological function of Cedar Lake, a larger investment than the per project limit of the Section 206 authority was required. At the time the decision was made, the Section 206 authority per project limit was $5 million Federal total investment. Therefore, Section 3065 of WRDA 2007 specifically authorized this project and authorized appropriations of $11,050,000 for the planning, design and construction of a feasible project. This project must be justified and supported by a detailed investigation indicating that the proposed actions are technically feasible and environmentally acceptable, and that they provide cost-effective ecosystem restoration benefits. Due to the level of investment required, the Town of Cedar Lake replaced CLEA as the prospective non-Federal sponsor for the project.

Historically, Cedar Lake supported a biologically diverse ecosystem with native flora and fauna characteristic of northern glacial lakes. Since the late nineteenth century, modifications to Cedar Lake and the contributing watershed have resulted in adverse effects to the lake's fringe wetland habitat, littoral zone habitat, lake-bottom substrates, and native aquatic species diversity and abundance. In the past 100 years, these changes have accelerated lake succession, resulting in a shallower less diverse aquatic ecosystem. Currently, the lake does not provide the ecosystem functions it historically did, and restoration efforts are needed to improve and restore native species richness and abundance. These improvements would allow the lake to support a healthy sustainable aquatic community of native organisms.

The overall problem with the Cedar Lake study area is the holistic decrease in biodiversity including species richness, ecosystem complexity and genetic variations. Biodiversity was decreased in response to the loss of lacustrine processes, land use change, and watershed fragmentation; collectively a reduction in abiotic complexity. Specific problems include:

- Fragmentation of Cedar Lake from its tributaries
    - Founders Creek no longer flows into Cedar Lake, but instead flows into Cedar Creek, the outlet for Cedar Lake
    - Cedar Creek, outlet of Cedar Lake, has weir which has fragmented aquatic species movement from the creek to the lake
- Lowering of the lake level
    - Depth of the lake was lowered from approximately 40 feet to 20 feet in the 1870's
- Removal of fringe wetland and littoral zone aquatic plant communities
    - Historic records and photos of Cedar Lake show significant fringe and littoral zone aquatic vegetation; however, less than 1% of the lake is now covered by aquatic vegetation (excluding Cedar Lake Marsh)
- Modification of tributary stream habitat
    - Tributary streams have been channelized and stream banks have been lined with riprap
- Modification of the native fish community
    - Past stocking events have attempted to create a sport fishery; however, the lake has been invaded by non-native species such as Common Carp (*Cyprinus carpio*) and White Perch (*Morone americana*)

Brief Summary of Findings

Three-hundred ninety-six (396) plans were generated from the 14 measures input into the IWR-Planning software. The software identified that 59 plans were cost effective, which means that no one plan provided the same benefits as another plan that was less costly. Ten (10) plans were revealed as "best buys", which are deemed the most cost efficient of the 6 plans generated. Alternative Plan 5 was identified as the NER Plan; however, the non-Federal sponsor requested consideration of Alternative Plan 6 for implementation as a Locally Preferred Plan (LPP). The LPP includes all measure that are part of the NER Plan as well as an increase in the amount of physical substrate restoration to be conducted. Therefore, Alternative 6 is the Preferred Plan.

The LPP/Preferred Plan

The LPP is the Preferred Plan, which is Alternative Plan 6. This plan consists of restoring lacustrine habitat. The LPP also includes fish community management which was determined to be crucial for the sustainable establishment of aquatic macrophytes and reduction of turbidity within Cedar Lake. However, it has been determined that the reduction of non-native fish species through the one-time application of Rotenone (i.e., piscicide) should not be included in the NER Plan. Therefore, this measure will be carried out by the non-Federal sponsor and the Indiana Department of Natural Resources prior to the implementation of the components of the LPP described below.

Physical Substrate Restoration – This measure would help restore spawning habitat for lacustrine species, aid in restoration of littoral zone vegetation, and help restore profundal zone habitat that would provide thermal refuge for fish as well as aquatic macroinvertebrates and provide an ambush point for large predatory fish. Nutrient rich sediments in the central and south basins would be removed using mechanical dredging. A total of 263,000 cubic yards over 163 acres would be dredged to a depth of 1 ft below the existing lake bed.

Chemical Substrate Restoration – Aluminum sulfate (alum) and sodium aluminate (aluminate) would be used to treat areas of Cedar Lake with ASP concentrations greater than 30 mg/kg, so as to solidify the lake-bed sediments which are easily disturbed and suspended in the water column thereby creating turbid conditions, as well as to create an inert lake-bottom. A total area of 400 acres would be treated.

Tributary Restoration – This measure would provide a source of recolonization for fishes and aquatic macroinvertebrates, as well as a greenway for migratory birds and herpetofauna. Approximately 950 linear ft of Founders Creek would be rerouted back to its historic channel and connection to Cedar Lake. The restored channel would encompass a 100 ft riparian stream corridor consisting of native prairie and woodland plants to combat erosion, provide habitat, and shade the creek.

Littoral Macrophyte Restoration – This measure would provide spawning habitat for native fishes such as Bowfin, Northern Pike, and Yellow Perch which either build nests or lay their eggs on or among submerged vegetation. Restored littoral zone vegetation would also provide foraging habitat for juveniles of these species. Littoral zone vegetation would also provide habitat structure for aquatic macroinvertebrates such as Odonates (i.e., damselflys and dragonflys) to lay their eggs upon, support their emerging larvae, and provide perches for foraging adults. Approximately 35 acres, corresponding to areas with less than 1 ft of depth, would be established with emergent plants and an additional 95 acres with depths up to 4 ft would be established with submergent plants.

Institutional Controls – This measure would reduce the effects of propeller induced waves on aquatic plants, disturbance to aquatic macroinvertebrate assemblages colonizing the littoral zone, forced detachments of aquatic macroinvertebrates from lake-bed substrates, shoreline erosion, and sediment resuspension. The existing No Wake zone along the perimeter of Cedar Lake would be extended from 200 ft to 400 ft from the shoreline.

Fish Community Management – This measure would restore the historic glacial lake fish assemblage within Cedar Lake. After the restoration of littoral zone and fringe wetland aquatic plants, fish species would be reintroduced to begin constructing the glacial lake fish assemblage.

Discussion of Environmental Compliance

The LPP/Preferred Plan presented is in compliance with appropriate statutes, executive orders and memoranda including the Endangered Species Act of 1973 as amended; the Fish and Wildlife Coordination Act of 1934 as amended; E.O. 12898 (Environmental Justice); E.O. 11990 (Protection of Wetlands); E.O. 11988 (Floodplain Management); and the River and Harbors Act of 1899 as amended; the Clean Air Act of 1970 as amended and the National Environmental Policy Act of 1969 as amended.

Endangered Species Act and Fish and Wildlife Coordination Act

Preliminary consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act is documented in a letter dated 20 November 2007. The USFWS concurs that LPP/Preferred Plan would not have direct or indirect effects to Federally listed species. Coordination will continue with the USFWS through the National Environmental Policy Act (NEPA) process.

Section 401 and 404 of the Clean Water Act

Section 401 Water Quality Certification is being sought for the dredging, effluent discharge, alum treatment and the reroute of Founder's Creek portions of the preferred alternative plan. Coordination with the Indiana Department of Environmental Management is continuing. Currently, there are no major issues that would indicate 401 Certification would not be granted.

A Section 404(b)(1) evaluation was completed in accordance with Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR Part 230). Details of the evaluation are contained in *Appendix G - 404(b)(1) Evaluation.* Since USACE does not issue permits under Section 404 for projects implemented under the Civil Works Program, however, a detailed draft 404(b)(1) analysis was completed and attached to the Integrated Feasibility Study and Environmental Assessment that shows the project would be in compliance.

Section 106 of the National Historic Preservation Act

Consultation with The Indiana Historic Preservation officer (SHPO) under Section 106 is documented in a letter dated 13 August 2007. A Phase I archeological survey was completed on the site of the proposed sediment dewatering facility (SDF) as outlined in *Appendix K – Phase I.* The SHPO concurred that the proposed alternative does not present significant adverse effects to archaeological and historic properties.

Clean Air Act

The Clean Air Act (42 U.S.C. §7401 et seq.), as amended in 1977 and 1990 was established to protect and enhance the quality of the nation's air resources to promote public health and welfare and the productive capacity of its population. The Indiana Department of Environmental Management (IDEM) lists nonattainment area designations for counties in Indiana that do not meet the National Ambient Air Quality Standards (NAAQS). Lake County, Indiana, is listed as nonattainment for ozone and fine particulates (PM-2.5). Nonattainment areas are regions within the country where the concentration of one or more criteria pollutants exceeds the level set as the federal air quality standards. The proposed action would cause temporary increases dust and exhaust emissions from machinery and equipment during construction. These impacts would be minimal due to implementation of emission and dust controls required by the USACE, State of Indiana, and local laws and regulations. Construction and operation of the project would not result in significant or long- term adverse impacts to air quality. The project would involve only a de minimis discharge of airborne pollutants, and is therefore in compliance with the Clean Air Act General Conformity Rule.

Environmental Justice EO 12898

The LPP/Preferred Plan is not expected to disproportionately affect in a negative manner the low income and/or minority populations. In fact, the preferred alternative would improve the quality of the lake so that that the total public can enjoy clean and healthy recreational activities.

Public Interest

An Environmental Assessment was prepared for the project and sent to Federal, State and local agencies along with the general public for review. A 30-day Public Review period was held from 7 July 2016 to 8 August 2016 for the Environmental Assessment. Responses received included:

Conclusion

In accordance with the National Environmental Policy Act of 1969 and Section 122 of the River and Harbor and Flood Control Act of 1970, the USACE has assessed the environmental impacts associated with this project. The purpose of this Environmental Assessment (EA) is to evaluate the impacts that would be associated with the restoration of Cedar Lake. The project has been determined to be in full compliance with the appropriate statutes, executive orders and USACE regulations.

The assessment process indicates that this project would not cause significant effects on the quality of the human environment. The assessment process indicates that this project would have only beneficial impacts upon the ecological, biological, social, or physical resources of this area, and would provide environmental benefits to the Lake Michigan region and the Great Lakes as a whole. The findings indicate that the proposed action is not a major Federal action significantly affecting the quality of the human environment. Therefore, I have determined that an Environmental Impact Statement (EIS) is not required.

Christopher T. Drew
Colonel, U.S. Army Corps of Engineers District
Commander

Date: _____