

## Cedar Lake Aquatic Ecosystem Restoration Feasibility Study, Cedar Lake, Indiana

### Frequently Asked Questions November 2016

#### 1. *Why is dredging only occurring in specific locations?*

The locations and the quantity of material that are proposed to be dredged were determined through a complete and thorough evaluation of various dredging scenarios. Sediment samples were collected throughout the lake, both at the surface of the lake bed and extending below the surface. The sediment samples revealed that the most unsuitable, highly mobile, and nutrient-rich sediments were located in the central and southern basins as well as at the upper most areas of the lake bottom. This is why it is proposed that a large surface area be dredged, but only at a depth of one to two feet.

Other dredging measures were evaluated such as “hotspot” dredging, but these measures were found to be less beneficial than the dredging measure that is being proposed. Meaning that these dredging scenarios produced less benefit to the Cedar Lake ecosystem and restoration of the lake-bottom than the dredging scenario that was selected.

#### 2. *Will the water clarity improve in the Lake?*

It is unknown what the exact clarity of the water will be after the proposed measures are implemented, since water clarity can vary over time due to factors such as storms, runoff, wave conditions, temperature, etc. Some of the proposed restoration measures specifically target turbidity, which is being caused primarily by re-suspension of sediments and the presence of algae. While the clarity of the water is not expected to reach its historical extent, it is expected that with implementation of the proposed measures future water clarity would be improved.

#### 3. *What does alum do and why is it being proposed?*

Alum will be implemented to address the remaining sediments in the lake, once the highly mobile and nutrient-rich sediments at the surface of the lake bottom are dredged and removed. Alum, when added to lake water removes nutrients (e.g., phosphates) through precipitation, forming a heavier than water particulate known as a floc. This floc then settles to the lake bottom to create a barrier that impedes sediment phosphorus release.

The application of alum is being proposed because the combination of dredging and alum was found to provide the greatest benefits for the least cost. To achieve the same level of benefits with dredging alone, nearly all of the unsuitable sediments would need to be removed from the lake bottom, which is a significant cost and is not cost-effective. Instead, the dredging and implementation of alum will help create a sustainable ecosystem.

#### 4. *What is the longevity or effectiveness of alum?*

Studies have shown alum to be 80-100% effective at reducing internal nutrient loadings when applied appropriately. The proposed alum treatment (i.e., treatment of 400 acres to a depth of 20cm) for this project is expected to be effective and not require a second treatment through

the planning period of analysis which is 50 years. In general, alum treatment is only effective on sediments that are present in the lake at the time of treatment; it cannot address future sediments or nutrients that enter the lake after treatment. However, analyses has shown that if current watershed practices aimed at minimizing sediment and nutrient loadings are maintained, the proposed alum treatment is expected to have long-term effectiveness.

*5. Is the no wake zone temporary or permanent? Is it 400 feet around the entire Lake? Will additional enforcement be necessary?*

The 400 ft no wake zone would need to be in place at the very least until the aquatic plants have been successfully established, which in general is estimated to be at least 5 years. Once the aquatic plants are established, the extent of the no wake zone may be reevaluated and possibly reduced in some areas of the lake. The no wake zone is important to allow for the successful establishment of the emergent (i.e., those that extend above the water surface and in depths less than 1 ft) and submergent aquatic plants (i.e., those typically below the water surface and in depths 1-4 ft) that are proposed as part of the project.

The 400 ft no wake zone will be evaluated during the design phase of the project and may be altered slightly in areas where plants are not located as far away from the shore. For example, the submergent plants are proposed to occur in areas where water depths are between 1-4 ft. Areas of the lake where the depths greater than 4 ft are closer to the shore may not require the 400 ft no wake zone. However, for planning purposes, a 400 ft length was selected as a base recommendation.

Additional resources may be needed to enforce the 400 ft no wake zone, but will be left to the discretion of the Town of Cedar Lake and the Indiana Department of Natural Resources.

*6. Will the horsepower or size of boats on Cedar Lake be restricted?*

No. Two scales of what are called institutional controls were evaluated in the draft report. One was the 400 ft no wake zone and the other was limiting all motor boat engines to less than 10 horsepower. Limiting motor boat engines was modeled and found only to provide a small additional benefit over the 400 ft no wake zone institutional control; therefore, it was not included as part of the proposed project.

*7. Will residents and visitors still be able to swim and utilize the beach areas where planting occurs?*

Yes, residents and visitors should still be able to swim and utilize the public beach areas. During the design phase, designated public swim areas, such as beach areas, or public boat landings will be identified and avoided for planting of aquatic plants. However, aquatic plants will be established along the lakefront and adjacent to these public swim areas and public boat landings, so the aquatic plants could potentially spread into these areas on their own in the future.

The establishment of aquatic plants within the lake is a vital component of the restoration project and necessary for its long-term success. Benefits of the aquatic plants include habitat for fish, food for waterfowl, production of oxygen, uptake of nutrients, and shoreline protection (i.e., act as a natural wave break). Historically, the lake contained extensive aquatic plants along

the lakeshore (as shown in historic photographs) and residents were still able to enjoy water-related recreation. Overall, some compromise will be required regarding the aquatic plants and their establishment along the lakefront.

*8. Would the acquisition of lands for the sediment disposal facility (SDF) and Founders Creek be temporary or permanent?*

The acquisition would be permanent, and is to be completed by the nonfederal sponsor, the Town of Cedar Lake. The land for the SDF once closed would be graded and then revert back to the Town of Cedar Lake to be used at their discretion.

*9. Will there be odors associated with the dredging and the SDF?*

At least during dredging, the SDF will probably smell “swampy.” Sediment tends to be anaerobic (low or no oxygen) when it’s buried, and when it’s dug up and exposed to air, those smelly compounds are released. This can include musty smells, rotten egg smells, swampy smells and similar odors. These odors do not represent a health issue or threat, but could be perceived as a nuisance. The sediments are “clean” and do not contain environmental contaminants that are expected to impact air quality in the area and during dredging. As the sediment is exposed to sunshine and fresh air, the smells will dissipate.

*10. Where is the funding coming from for this project?*

The proposed project will be cost-shared meaning it requires both federal and nonfederal funds. In regards to federal funds, they are appropriated by Congress and the administration. The Chicago District, U.S. Army Corps of Engineers would submit a budget request for project funds. Budget requests for project funds are ranked and prioritized against similar projects across the nation.

Currently, enough federal funds are available to pay for completion of the feasibility phase of the project. Once complete, additional federal and nonfederal funds would be required to initiate design and implementation of the project, if the project is approved.

The non-federal share of project funds will be the responsibility of the non-federal sponsor, the Town of Cedar Lake, in cooperation with local and regional entities including the Cedar Lake Enhancement Association, CLEA. The Town is investigating all funding options, including state, regional and non-profit grants and in-kind services. Through an agreement with the State, funding has already been invested in the land for the Sediment Disposal Facility (SDF) which is a portion of the non-federal sponsor’s responsibility.

*11. Will there be any fishing controls when the restoration is complete?*

Any fishing controls that would need to be implemented would be decided in conjunction with the Indiana Department of Natural Resources. Reintroduced sport fish (such as Yellow Perch, Walleye, Bowfin, Largemouth Bass, Rockbass, Black Crappie, etc.) would be small, and would likely not be targeted by anglers until they are of a harvestable size. Other reintroduced species (such as Least Darter, Brook Silverside, Central Mudminnow, Golden Shiner, etc.) are not species typically targeted by anglers.

*12. Are there any long-term health concerns regarding the chemicals that will be applied to the lake?*

Both aluminum sulfate (i.e., alum) and rotenone are regulated by the U.S. Environmental Protection Agency.

In regards to alum, there are no known long-term health effects associated with exposure. Alum is actually used at most water treatment facilities as a clarifier prior to the filtration process for public drinking water supplies. Additionally, the form of aluminum in lake water after alum treatment (i.e., aluminum hydroxide) is the active ingredient in over-the-counter antacids. Precautions would be taken when applying the alum such as wearing protective clothing for the applicators and closing the lake to public access for a few days following treatment.

In regards to rotenone, the USEPA controls its use in partnership with state agencies, and re-registered it for use in fish management in 2007. In their re-registration assessment, the USEPA concluded that using rotenone according to product label instructions does not pose unreasonable risk to human health or the environment. However, the USEPA does recommend precautionary measures such as wearing protective clothing for the applicators and closing water bodies treated with rotenone to swimming for a few days following treatment.

*13. What will happen to the remains of the fish after the piscicide is applied?*

Two things could happen to the remains of the fish once the piscicide has been applied to the lake: they will either float to the surface or sink to the bottom of the lake. Floating remains will be collected and disposed of in a land fill. Many of the remains that sink to the bottom of the lake will likely be removed when dredging occurs.

*14. How can we prevent residents from killing the aquatic plants in front of their property?*

The Indiana Department of Natural Resources (IDNR) requires permits for the mechanical, chemical, physical, or biological control of aquatic plants in public waters of the state. The only exception that would apply to Cedar Lake is the treatment of a public lake by a property owner in the immediate vicinity of a boat landing or bathing beach on or adjacent to their property. In this case, the property owner may control aquatic plants if the area to be controlled does not exceed (1) 25 ft along the legally established, average, or normal shoreline, (2) a water depth of 6 ft, and (3) a total surface area of 625 sq ft (per IC 14-22-9-10 – Control of Aquatic Vegetation). Anything beyond this requires a permit from the IDNR.

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*15. Will hunters still be allowed to use the area while the restoration is occurring?*

Hunting is regulated by the Indiana Department of Natural Resources; therefore, any changes to regulations regarding Cedar Lake would be left to their discretion.

*16. In regards to the no wake zone and the associated buoys, will they be supplied as part of the project and who will be responsible for the upkeep?*

Costs for the additional buoys to mark the extended 400 ft no wake zone are included in the total costs for the proposed project. The non-federal sponsor, Town of Cedar Lake, is responsible for the operation and maintenance of the project once construction is complete, and therefore would be responsible for the removal and installation of buoys prior to and after ice conditions and replacement of damaged buoys as necessary.

*17. Can a temporary speed limit for motorboats and personal watercraft be enforced during the construction of the restoration project?*

At this time, no temporary speed limits are being considered. Specific speed limits within a lake are set by the Indiana Department of Natural Resources and if needed, will be coordinated with them. Speed limits currently on Cedar Lake exist within the no wake zone which limits watercraft and vessels to idle speed (e.g., slowest possible speed, not exceeding five miles per hour). Additionally, all boats must operate at 10 miles per hour or less between sunset and sunrise.

*18. Will the water level of the lake be controlled to protect and aid restoration features, especially during the summer months when lake levels are lower?*

While modifying lake levels was not a specific consideration, the proposed project does include the reconnection of Founders Creek to Cedar Lake, a historic tributary and water source for the lake. This additional water source will likely provide benefits during summer months when lake levels are typically at their lowest.

*19. Will there be any agents policing the people/businesses surrounding the lake that are sources for pollutants entering the lake?*

The Indiana Department of Environmental Management (IDEM) is responsible for ensuring compliance with environmental laws and rules. In addition, the Town of Cedar Lake's Stormwater Management Ordinance includes a number of protections for the lake. The Ordinance established methods for managing the quantity and quality of stormwater entering into the drainage system. The Ordinance covers prohibited discharges and connections and applies to all discharges entering the stormwater drainage system under the control of Cedar Lake, regardless of whether the discharge originates from developed or undeveloped lands, and regardless of whether the discharge it generated from an active construction site or a stabilized site. The Town's MS4 program incorporates a number of Lake protection elements including Public Education and Outreach, Public Involvement, and an extensive Illicit Discharge Detection and Elimination program.

*20. Will the proposed project address external sediment loadings to the lake?*

Reducing external sediment loadings was not a specific consideration of this project; however, the Town of Cedar Lake and the Cedar Lake Enhancement Association (CLEA) have taken significant steps to address shoreline erosion and reduce sediment loadings to the lake. More specifically, during the process of constructing new storm sewers in neighborhoods adjacent to the lake, the Town of Cedar Lake has included storm water quality structures that remove sediment from storm water before the storm water is discharged into Cedar Lake. Additionally, since 2006, CLEA has completed thirteen (13) projects related to lakeshore and stream bank stabilization, with four (4) projects that are in progress. These watershed practices aimed at minimizing sediment and nutrient loadings are critical to the long-term success of the project and restoration of Cedar Lake.

*21. Concern has been expressed about debris located within the lake and along the shoreline, will it be removed as part of the project?*

The project does not include the removal of debris, unless it would impact the implementation of one of the measures. For example, if debris is encountered during dredging it would be removed so that dredging could continue within the areas where it is designated.

*22. Has a project of this size and scope ever been completed and considered successful?*

One such example is Clear Lake, a natural glacial lake located in Cerro Gordo County, Clear Lake, Iowa with a surface area of 3,625 acres and a watershed area of 8,454 acres. Approximately \$17 million in local, state, and federal money has been invested in the restoration of Clear Lake. While restoration is still underway, improvements in water clarity and decreases in excessive nutrient levels, suspended solids and algae blooms have already been achieved. For additional information please refer to the CLEAR (Clear Lake Enhancement and Restoration) website, <http://www.clearproject.net/>.

*23. The lake is believed to have natural springs. Are these areas a cause of silt? How will they be affected as part of the project?*

Excessive silt within the lake has primarily come from surface water runoff within the watershed and not groundwater fed springs. It is believed that natural springs do exist within the lake; however, when covered with sediments they are less able to flow. Where present, flow through the natural springs may be increased if they fall within those areas that have been designated for dredging as part of the proposed project.