



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

REPLY TO
ATTENTION OF

Technical Services Division
Design Branch

Illinois Department of Natural Resources
Office of Water Resources
Lake Michigan Management Section
160 North LaSalle, Suite S-700
Chicago, Illinois 60601

Dear Sir or Madam:

The purpose of this letter is to state compliance with the Illinois Coastal Zone Management procedures for the Rosewood Park Section 506 Ecosystem Restoration project located in Highland Park, IL. The Rosewood Park project consists of the removal of an existing concrete pier and three steel sheet pile groins currently on Rosewood Beach. The existing features will be replaced with three new steel sheet pile groins and four, rubble mound breakwater structures in conjunction with beach fill. In addition, bluff restoration will occur via the removal of invasive species and planting of native communities. The proposed activity complies with Illinois' approved coastal management program and will be conducted in a manner consistent with such policies.

Construction of the project will take place on Park District of Highland Park property and will be administered by the U.S. Army Corps of Engineers, Chicago District. Construction is expected to commence in spring 2014, pending permit approval by the IDNR. The contract duration is five years, with the first two years dedicated to physical construction, and the remaining three years focused on monitoring and the establishment of native plantings. Any questions regarding this determination may be directed to Arun Heer at (312) 846-5519, or e-mail: arun.k.heer@usace.army.mil.

Sincerely,

Joseph J. Schmidt, P.E.
Chief, Design Branch

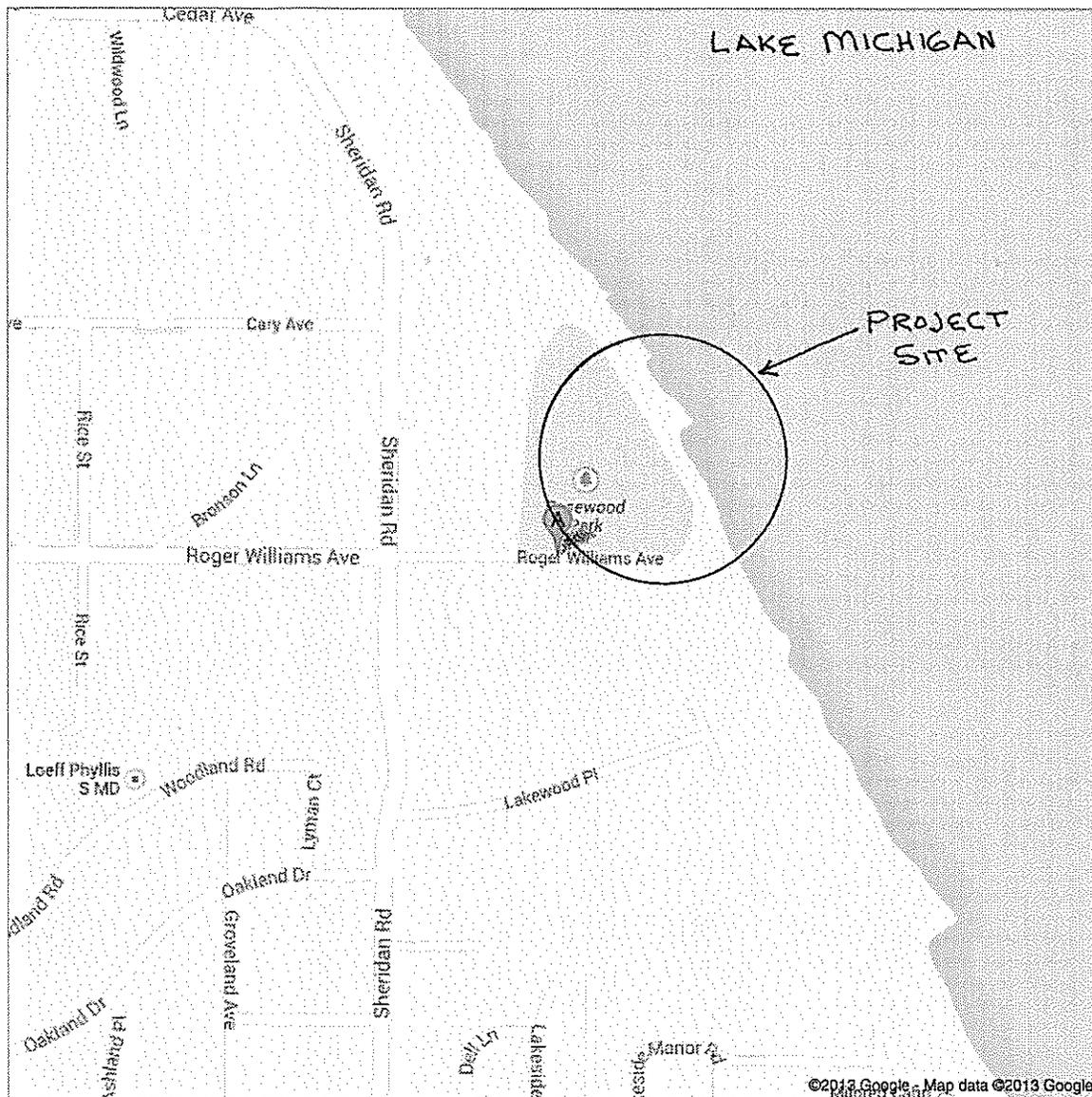
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OFFICE OF WATER RESOURCES
DIVISION OF RESOURCE MANAGEMENT



Address 45 Roger Williams Ave
Highland Park, IL 60035



LOCATION MAP

PRELIMINARY SECTION 404(B)(1) EVALUATION

Rosewood Park Section 506 Lake County, Illinois

October 2012

I. Project Description

a. Location

Rosewood Park, located in Lake County, provides prime habitat for a number of sensitive plant and animal species. The study area includes approximately 7 acres and is located in Lake County, Illinois. Rosewood Park was acquired by the Park District of Highland Park as two separate parcels purchased in 1928 and 1945. The project is near Rosewood Drive and Sheridan Road and consists of one ravine, the bluff along the coastline, the savanna habitat atop the bluff, the dune and beach habitat, and the littoral zone of Lake Michigan. The site has been heavily impacted by anthropogenic activities due to increased urbanization of this northern suburb of Chicago; however, restoration of the site will aid in the preservation of beach, bluff, ravine, and wet oak savanna habitat.

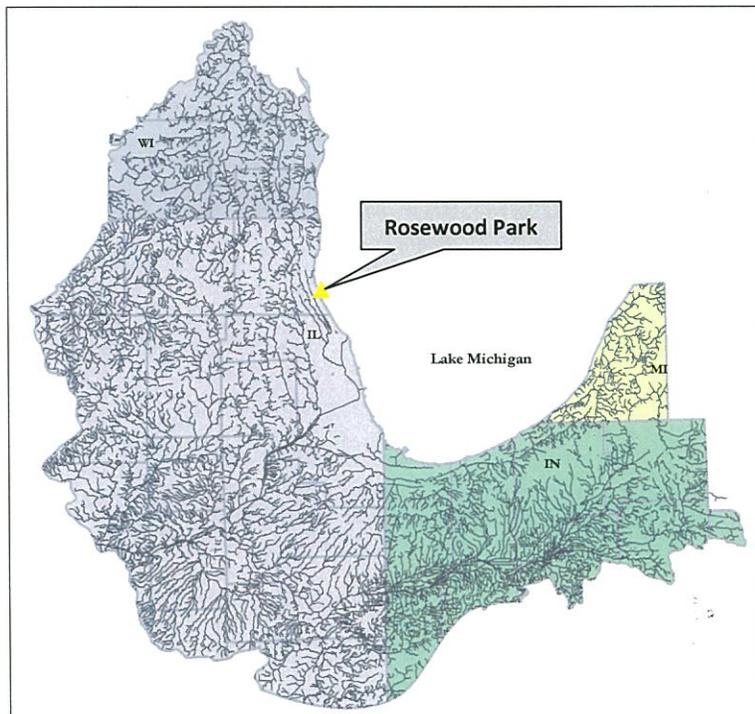


Figure 1 – Rosewood Park regional location.



Figure 2– Rosewood Park project location.

b. General Description

The recommended plan includes the following measures:

- Restoration of ravine stream habitat. This measure seeks to restore the ravine stream and its connectivity to Lake Michigan. Currently the downstream end of the stream flows through an approximately 220 foot box culvert before emptying into Lake Michigan. This culvert contains no natural habitat structure and impedes the upstream dispersal of lacustrine aquatic species, especially during low flow. In addition, aggradation of the stream is also occurring upstream due to the presence of this structure. Also, the upstream dispersal of aquatic species is inhibited by the presence of four concrete weirs which were originally placed within the stream in an effort to reduce instream flow during storm surges. Finally, an asphalt parking lot adjacent to the ravine mouth would be removed and replaced with a porous concrete parking lot. The asphalt parking lot provides an influx of polluted runoff (runoff containing dirt, grease, oil, road salt, and sand) into the lake and ravine stream during a storm. Rebuilding the parking lot using porous concrete would decrease the total amount of runoff leaving the site, promote infiltration of runoff into the ground, reduce the amount of pollutants,

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being carried to the lake and ravine stream, and aid with reducing peak runoff velocity and volume.

- Restoration of lacustrine habitat. This measure seeks to restore lacustrine habitat along the eastern boundary of Rosewood Park. Steel groynes were originally placed along the shoreline to act as wavebreaks and reduce shoreline erosion; however, these features inhibit natural lacustrine processes. This measure seeks to restore these natural processes through the removal of the groynes and the placement of beach cells.
- This measure seeks to restore approximately 1.10 acres of beach and dune habitat along the eastern boundary of Rosewood Park. Natural beach processes have been inhibited by the presence of manmade structures and shoreline armoring. In the dunes, excessive foot traffic has led to the loss of natural dune topography and the trampling of while degraded habitat has led to the presence of invasive and non-native species. Removal of the asphalt walkway and replacement with a natural boardwalk would reduce the risk of potential toxins leaching into the surrounding environment. Asphalt contains polycyclic aromatic hydrocarbons (PAHs) and alkyl PAHs that can move into the ecosystem from the breakdown of asphalt. Since asphalt contains so many toxic and carcinogenic compounds and since leaching of harmful PAH compounds has been documented even in water pipe use, asphalt should be kept out of rivers, stream, and other natural waters to the extent possible.
- Restoration of native plant communities throughout the site. Approximately 6.15 acres of the project area will be eradicated of invasive and non-native vegetation via herbicide application and hand removal. Woody species will also be thinned in areas having dense canopy to allow sunlight to infiltrate the understory, hence allowing the growth of a rich herbaceous layer. In all, 1.74 acres of lake bluff, 2.27 acres of ravine, and 1.83 acres of savanna habitat will be restored with native vegetation indicative of these plant communities.

c. Authority and Purpose

This study is authorized under Section 506 of the Water Resources Development Act (WRDA) of 2000. Authority is given to plan, design, and construct projects to restore the fishery, ecosystem, and beneficial uses of the Great Lakes. Projects are justified by ecosystem benefits alone, while considering affects to public health, safety, economic benefits, recreational or any combination of these.

The Park District of Highland Park (PDHP) has requested that the Chicago District, US Army Corps of Engineers (USACE) initiate a Feasibility Study (FS) under the Section 506 Great Lakes Fishery and Ecosystem Restoration authority to ascertain the feasibility of restoration features to ensure ecological integrity within Rosewood Park. This FS has evaluated the feasibility and environmental effects of restoring: ravine stream hydrology and hydraulics, natural lacustrine

processes, beach & dune habitat, bluff habitat, and savanna habitat. The scope of this study addresses the issues of altered hydrology and hydraulics, native plant community preservation, lacustrine processes, invasive species, connectivity, and native species richness. This FS assessed and identified problems and opportunities, identified and evaluated measures, and recommends and designs the most cost effective feasible solution to the ecological problems that would be associated with disturbance of the site.

Rosewood Park was once the estate of U.S. clothier Julius Rosenwald, part owner and leader of Sears, Roebuck and Company. Famed landscape architect Jens Jensen was hired by Rosenwald to landscape the estate. Today, a reflecting pool, the surrounding at Upper Rosewood, and carriage bridge are all that remain of his work at the site.

Rosewood Park was acquired by the PDHP as two separate parcels. Upper Rosewood Park, which lies on top of the lake bluff, was obtained in 1928 and contains a majority of the remains of Jens Jensen's landscape design. Lower Rosewood is comprised of beach habitat extending approximately 65 feet from the bluff to Lake Michigan and was obtained by the PDHP in 1945. Topography of the site is a direct result of the Lake Michigan Lobe of the Wisconsin glaciations, and the waxing and waning of those glaciers. Remnants of these geologic events are five moraines, including the Highland Park Moraine which Rosewood Park resides upon.

d. Proposed Fill Material

1) General Characteristics

Fill material consists of:

- Wavebreaks, consisting of limestone riprap and cobble, would be constructed in Lake Michigan. Riprap and cobble would be appropriately sized and would create the main structure of the wavebreaks. The created shoreline protection structures would provide shield beach and bluff habitat from further erosion, as well as promote more natural lacustrine processes (e.g. sediment transport). In total, approximately 4 beach cells would be created.

Fill materials used to establish the beach cells will be free from the presence of environmental contaminants and will contain less than 5% fines.

- Two cobble riffles would be constructed within the daylighted portion of stream to create instream habitat for aquatic species. The riffles would be constructed of glacially derived cobble and boulder.

Fill materials used to create the riffles will be free from the presence of environmental contaminants and will contain less than 5% fines.

- Sand would be used to nourish the beach as well as fill the wavebreaks to the required 120%.

Fill materials used to nourish the beach habitat will be free from the presence of environmental contaminants.

2) Quantity

The four nearshore wavebreaks would require a total of 12,736 tons of armor stone, 3,639 tons of filter stone, 8,005 tons of bedding stone, and 2,183 tons of cobble. The four nearshore wavebreaks would require an approximate total of 17,800 tons of riprap and glacial cobble for construction. That is approximately 6,640.75 tons of material per structure.

The two cobble riffles constructed within the daylighted portion of stream would require approximately 80 cubic yards of glacial cobble and boulder per riffle. That is approximately 160 cubic yards of material total.

The sand amendment used in the restoration of the beach and dune habitat, as well as the backfill for the wavebreak structures will require approximately ~~61,800 tons~~ of sand total for construction.

3) Source

Limestone riprap and cobble substrate for the wavebreak construction will be clean, inert materials obtained from a commercial supplier.

Glacially derived cobble and boulder for the riffle construction will be clean, inert materials obtained from a commercial supplier.

Substrate for the proposed beach nourishment will be clean, inert materials obtained from a commercial supplier.

e. Proposed Discharge Site

1) Location

The proposed wavebreak construction would occur in southwestern Lake Michigan along the nearshore area adjacent to Rosewood Park. The proposed riffle construction would occur within the stream mouth (to be daylighted portion) or Ravine 3L. Finally, beach nourishment would occur along the beach and dune area of Rosewood Park. The project study area location is within Highland Park, Sections 25, 31 and 36, Township 43 North, Range 12 East in Lake County, Illinois.

2) Size, Type, and Habitat

A total of approximately 1.68 acres would be affected by the fill. This would include approximately 0.08 acres for riffle construction, 0.5 acres for nearshore breakwater construction, and 1.1 acres for beach nourishment.

3) Timing and Duration of Discharge

Construction of project features in Rosewood Park may begin as early as fall 2013 and may end as early as spring 2014. Placement of the wavebreaks is expected to require 4 - 6 weeks construction duration, while riffle construction is expected to require 1-2 weeks construction duration. Beach nourishment is expected to require 1 - 2 weeks construction duration.

f. Placement Method

Riprap and cobble used in the construction of the nearshore breakwaters and riffles will likely be brought to the project site by barge and will be placed into position using light weight machinery and finely adjusted by hand or with handheld tools.

Substrate used for the beach nourishment will likely be brought to the project site by truck and will be placed using light weight grading machinery.

II. Factual Determinations

a. Physical Substrate Determinations

1) Substrate Elevation and Slope

The ordinary high water mark for Lake Michigan is 581.5 feet (International Great Lakes Datum 1985). Breakwater structures will be constructed approximately 150 feet lakeward of the OHW at Rosewood Park.

Stream bottom elevations in the project area range from 582 ft to 592 ft NAVD83. There is appreciable slope to induce critical flow over the to be constructed riffle crests.

2) Sediment Type

Not applicable. Sediment is not being moved around or removed from the site.

3) Material Movement

No significant movement of fill material used in the construction of the riprap breakwaters is expected after completion of construction. The breakwaters would allow natural lacustrine processes to occur (e.g. sediment transport) while preventing further erosion of beach, dune, and

bluff habitat. Stone selected for construction of the breakwaters has been sized to withstand wave impacts and lacustrine currents.

There would be no significant movement of fill material after construction. Placement of cobble riffles within the daylighted portion of the ravine stream will encourage sand/sediment accretion upstream of the riffles and direct water flow to the center of the restored channel. Stone selected for establishment of cobble riffles are sized to withstand flood stage hydraulics.

4) Physical Effects on Benthos

Existing benthos directly beneath where the riprap/boulder/cobble would be placed would temporarily be covered, but the area is so small it would have insignificant effects on the macroinvertebrate population. Effects to the benthic invertebrate assemblage would be positive through the enhancement of riverine hydraulics, which would greatly increase species richness. These minor impacts are necessary to create improved conditions for benthic invertebrates. There are no significant adverse effects expected.

5) Other Effects

There would be no other significant substrate impacts.

6) Actions Taken to Minimize Impacts

No special measures would be taken to minimize the temporary or long-term impacts on physical substrates associated with the proposed activity since this project is both beneficial to ecology and water quality.

b. Water Circulation, Fluctuation, and Salinity Determinations

1) Water

The proposed fill activity would have no significant negative impacts to water chemistry, water clarity, color, odor, taste, dissolved gas levels, nutrients, or increased eutrophication as a result. Improvements in water clarity, color, dissolved oxygen levels, and levels of eutrophication will be noted in the long-term after placement of the wavebreaks in Lake Michigan and the riffles in Ravine 3L.

2) Current Patterns and Circulation

Long-term reduction in the volume of littoral sediment transport has occurred along the bluff coast. In the 1950s the USACE computed a maximum littoral transport rate along the bluff coast of 57,000-cyd/year (USACE 1953). Dredge records for sand captured at Wilmette Harbor near the south down drift end of the bluff coast suggest that the present-day bluff coast littoral transport is

one third or less of what it was in the early 1950s. Only along the southern part of Illinois Beach State Park are present-day littoral transport volumes of about 80,000-cyd/year at or near what likely occurred in the natural setting. This volume of littoral transport is dependent on a sediment supply from erosion along the northern part of the state park shore as well as beach nourishment supplied to the state park shore. Through time, the Illinois coast has experienced considerable reduction in the volume of littoral sediment in transport. Construction of perpendicular structures such as jetties, piers, and small boat harbors formed total or near-total barriers to littoral transport, resulting in the segmentation of a continuous littoral cell into a series of cells. Construction of the nearshore wavebreaks will promote a more natural littoral transport as well as provide habitat for fish and aquatic macroinvertebrates. There are no significant adverse effects expected.

Originally formed by the erosive forces of storm water interacting with the bluffs, the ravine within the project area is the natural pathway by which tributary storm water runoff reaches Lake Michigan. It should be recognized that many of the ravines are still in the process of forming and as a result are naturally unstable. The alterations to the hydrologic system due to urbanization; however, have resulted in accelerated erosion and degradation of the ravine system. As a result of the development, the overall volume and peak discharges of storm water runoff have increased due to an increase in impervious surface and the introduction of storm sewer networks, respectively. Construction of boulder/cobble riffles within the ravine mouth (i.e. daylighted portion) will be constructed to encourage runoff to flow towards the center of the stream, creating high quality riffle/pool complexes and thusly reducing bank erosion to a natural rate. The volume of water flowing through the ravine would not be altered and the hydrologic regime would not be significantly altered by the proposed activity. There are no significant adverse effects expected.

3) Normal Water Level Fluctuations

The proposed fill activity would have no significant impact on normal water level fluctuations upstream or downstream of Ravine 3L.

4) Salinity Gradients

Not applicable to freshwater environments.

5) Actions Taken to Minimize Impacts

No special measures would be taken to minimize the temporary impacts on water circulation and fluctuation associated with the proposed activity.

c. Suspended Particulate/Turbidity Determinations

1) Expected Changes in Suspended Particulates and Turbidity in Vicinity of Fill

There would be minor increases in suspended particulates and turbidity levels in the immediate area of the proposed fill activity during construction, most likely of which are less than any given summer thunderstorm.

2) Effects on Chemical and Physical Properties of Water Column

There would be negligible effects to light penetration or dissolved oxygen levels during construction. There are no known toxic metals, organics, or pathogens in the construction area. The placement of clean fill will not introduce metal, organic, or pathogens to the project area. Aesthetics would be improved in the long-term after instream habitat heterogeneity is established in the channel.

3) Effects on Biota

Only beneficial effects on aquatic biota are expected to result from the restoration activities and minor increase in turbidity or suspended particulates associated with the proposed fill and sediment movement activity is most likely less than that of summer thunderstorm event.

4) Actions Taken to Minimize Impacts

Erosion control fabric and cover cropping the newly graded banks would be taken to minimize the temporary turbidity impacts associated with the proposed activity.

d. Contaminant Determination

The proposed fill material would not introduce any new contaminants into Lake Michigan or Ravine 3L, or release any significant amounts of existing contaminants (if any are present) through bottom disturbance in the construction zone.

e. Aquatic Ecosystem and Organism Determinations

1) Effects on Plankton

Only beneficial affects to planktonic organisms are expected.

2) Effects on Benthos

Existing benthos directly beneath where the riprap/boulder/cobble would be placed would temporarily be covered, but the area is so small it would have insignificant effects on the macroinvertebrate population. Effects to the benthic invertebrate assemblage would be positive through the enhancement of riverine hydraulics, which would greatly increase species richness. These minor impacts are necessary to create improved conditions for benthic invertebrates. There are no significant adverse effects expected.

3) Effects on Nekton

Fish eggs and larvae would not be smothered by the proposed fill activity since the anticipated construction activities will occur during non-reproductive or rearing seasons. Fish and other free-swimming organisms will tend to avoid the construction area; the construction area will be used again by those organisms soon after construction ends and overall species richness is expected to increase.

4) Effects on Aquatic Food Web

Beneficial improvements to the food web are expected, due to expected increases in macroinvertebrate richness and abundance.

5) Effects on Aquatic Sites

- a) Sanctuaries and Refuges – none present; no significant impact
- b) Wetlands – increase in hydrophytic vegetation
- c) Mud Flats – none present; no significant impact
- d) Vegetated Shallows – increase in submergent aquatic macrophytes
- e) Coral Reefs – not applicable to freshwater environments
- f) Riffle and Pool Complexes – would increase along the ravine mouth

6) Threatened and Endangered Species

Based on the nature and objectives of this project, to restore habitat, lacustrine littoral habitat, ravine hydraulics and native vegetation communities indicative of Rosewood Park, the US Army Corps of Engineers and the U.S. Fish and Wildlife Service has coordinated that the proposed ecological restoration project would not *affect* any Federal or State listed species. There is great potential for restoring habitat for these species that may or might use if present, or are attracted to the areas after restoration activities are complete. A 5-year monitoring plan that was developed in conjunction with the Feasibility Study and Integrated Environmental Assessment would take note if this were the case.

7) Other Wildlife

No other wildlife would be significantly impacted by the proposed activity.

8) Actions Taken to Minimize Impacts

General construction scheduling and sequencing would minimize impacts to reproducing macroinvertebrates and fishes.

f. Proposed Discharge Site Determinations

1) Mixing Zone Determination

A mixing zone is not applicable to this project as no violation of applicable water quality standards is expected during construction.

2) Determination of Compliance with Applicable Water Quality Standards

The proposed activity would not cause significant or long-term degradation of water quality within Lake Michigan or Ravine 3L and would comply with all applicable water quality standards.

3) Potential Effects on Human use Characteristics

No significant impacts to municipal and private water supplies, water-related recreation, aesthetics, recreational, or commercial fisheries are expected. No known National Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves are present. There are no significant adverse effects expected.

g. Cumulative Effects on the Aquatic Ecosystem

The proposed project would restore aquatic habitat structure and function. There are no significant adverse effects expected.

h. Secondary Effects on the Aquatic Ecosystem

No significant impacts on the Lake Michigan or Ravine 3L ecosystem are expected as a result of the proposed activity.

III. Findings of Compliance with the Restrictions on Discharge

a. No adaptation of the Section 404(b)(1) guidelines was made for this evaluation.

b. No practical alternatives are available that produce fewer adverse aquatic impacts than the proposed plan.

c. The proposed project would comply with applicable water quality standards.

d. The project is in compliance with applicable Toxic Effluent Standards under Section 307 of the Clean Water Act; with the Endangered Species Act of 1973; with the National Historic Preservation Act of 1966; and with the Marine Protection, Research, and Sanctuaries Act of 1972.

e. The proposed fill activity would have no significant adverse impact on human health or welfare, including municipal and private water supplies, recreational and commercial fisheries, plankton,

fish, shellfish, or wildlife communities (including community diversity, productivity, and stability), special aquatic sites, or recreational, aesthetic, and economic values.

f. Typical erosion control measures would be taken to minimize construction impacts other than selection of the least environmentally damaging construction alternative.

g. On the basis of the Guidelines, the proposed site for the discharge of fill material is specified as complying with the requirements of these guidelines with the inclusion of appropriate and practical conditions to minimize pollution or adverse impacts to the aquatic ecosystem.