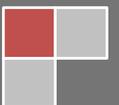


2013

# Montrose – Irving: Chicago Shoreline Project

## Appendix I - Section 404(b)(1) Analysis





# Table of Contents

<b>G1. SECTION 404(B)(1) EVALUATION .....</b>	<b>4</b>
I. PROJECT DESCRIPTION .....	4
a. Location .....	4
b. General Description.....	4
c. Authority and Purpose .....	4
d. Proposed Fill Material .....	5
e. Proposed Discharge Site .....	5
f. Placement Method .....	5
II. FACTUAL DETERMINATIONS.....	6
a. Physical Substrate Determinations .....	6
b. Water Circulation, Fluctuation, and Salinity Determinations .....	6
c. Suspended Particulate/Turbidity Determinations .....	7
d. Contaminant Determination .....	7
e. Aquatic Ecosystem and Organism Determinations .....	7
f. Proposed Discharge Site Determinations .....	9
g. Cumulative Effects on the Aquatic Ecosystem .....	9
h. Secondary Effects on the Aquatic Ecosystem.....	9
III. FINDINGS OF COMPLIANCE WITH RESTRICTIONS ON DISCHARGE .....	9

## **G1. SECTION 404(B)(1) EVALUATION**

### **I. Project Description**

#### **a. Location**

The project area is a section of the western shoreline of Lake Michigan located on the north side of Chicago. The reach runs parallel to Lake Shore Drive on the eastern side between Montrose Avenue and Irving Park Road. This location may be found on the Chicago Loop (Illinois) USGS 7.5' topographic quadrangle map: Sec.16 SW ¼ T40N R14E.

#### **b. General Description**

The locally preferred plan is a two-step limestone wall with rubble mound revetment. Under this alternative the deteriorating revetment would be replaced with a rubble mound revetment and the top two steps of the historic limestone revetment would be restored. This alternative was shown to be effective at protecting the shoreline while preserving the historic nature of the non-operational revetment. Benefits of the recommended alternative include increased flood and erosion protection for the reach.

The project consists of replacing 2,600-feet of deteriorated step-stone revetment at the Lake Michigan shoreline between Montrose Harbor and Irving Park Road. The new structure consists of rubble mound constructed with a combination of new and recycled clean stone placed over the existing structure, which will be demolished in-place, to a top elevation of +10 LWD. The rubble mound structure will extend between 30 and 60 feet lake ward of the toe of the existing structure impacting 2.58-acres of lakebed. Backshore areas will be stabilized with sod and a new bike path/stone access road will be constructed. Other features of the project include construction of a universal access point that will provide transition to the bike path/access stone road at the south end of the project and ADA access and resurfacing the fishing pier at Montrose Harbor. To comply with historic preservation requirements, the top two steps of the existing revetment will be maintained. Please see attached drawings (Attachment 1) and Environmental Assessment (Attachment 2) for more information.

#### **c. Authority and Purpose**

Under resolutions adopted by the Committee on Public Works of the U.S. House (dated December 2, 1971 and April 11, 1974), the U.S. Army Corps of Engineers was directed to study shore erosion problems and erosion control measures for the Illinois shore of Lake Michigan. Section 101(a)(12) of the Water Resources Development Act of 1996 authorized construction of the Chicago Shoreline Project. A project cooperation agreement (PCA) was executed on 17 May 1999, and provided for the non-Federal sponsors (the City of Chicago and the Chicago Park District) to build specific segments of the project.

Shoreline flooding and erosion are commonly occurring problems along the Chicago Shoreline. This project specifically targets problems within a portion of the Chicago Park District's shoreline between Montrose Avenue and Irving Park Road in the Lincoln Park Neighborhood of Chicago, Cook County, Illinois. The existing revetment has deteriorated and needs to be replaced.

## **d. Proposed Fill Material**

### **1) General Characteristics**

Fill material primarily would consist of:

- 38,500 tons of A-stone
- 420 tons of C-stone
- 2,600 tons of bedding stone
- 17,400 tons of toe stone

This material is required to construct the rubble mound structure. 875 tons of additional stone will be required to repair heavily eroded areas of the structure.

### **2) Quantity**

See above section.

### **3) Source**

Commercial sources would be utilized that provides clean inert materials free of fines (<5%), weed seeds and foreign debris.

## **e. Proposed Discharge Site**

### **1) Location**

There would be no discharge of aqueous materials. All solid materials identified in **Section 1** would be placed within the footprint provided in the project design sheets.

### **2) Size, Type, and Habitat**

The littoral zone within the affected has been disturbed from its natural condition by previous shoreline projects and an impaired littoral drift system. Substrate primarily consists of old revetment stone and natural cobbles, gravels, and sands. The affected area is about 2.58-acres.

### **3) Timing and Duration of Discharge**

Start of construction is currently scheduled for Spring 2014, with the construction duration around 400 days.

## **f. Placement Method**

Stone revetment materials would be placed and reworked by cranes and machinery stationed on dry land or on a floating plant.

## **II. Factual Determinations**

### **a. Physical Substrate Determinations**

#### **1) Substrate Elevation and Slope**

The elevation of the lakebed being affected is ranges from 0 to -5 LWD. The slope of the lake bed in general gently slopes down away from the shoreline; however, there are non-conformities and bed forms in the sand that interrupt the general slope.

#### **2) Sediment Type**

Not applicable. Sediment is not being moved around or removed from the site, but the underlying sediment is primarily littoral drift lake sands.

#### **3) Material Movement**

There would be no significant movement of fill material after construction. Stone was properly sized and designed to withstand large storm events that drive erosive wave climates. Minor settlement is expected.

#### **4) Physical Effects on Benthos**

Existing benthos directly beneath where the stone would be placed would temporarily be covered, but the area is relatively small. The riprap placement would have insignificant effects on the macroinvertebrate population, and in the long-term would result in the same community currently present. There are no significant adverse effects expected.

#### **5) Other Effects**

There would be no other significant substrate impacts.

#### **6) Actions Taken to Minimize Impacts**

Special measures would not be taken to minimize the temporary impacts on physical substrates associated with the proposed activity since this project would cause disturbance to an already disturbed area and the disturbance itself is no greater than a severe winter storm. Any areas where upland soil would be disturbed silt fencing and biodegradable erosion control fabric would be used.

### **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.

#### **2) Current Patterns and Circulation**

The littoral drift currents and patters would not be affected from the current condition by this project since the placement of stone is to reestablishing an effective revetment for preventing shoreline erosion. The revetment is being rebuilt in the same footprint of the defunct revetment.

### **3) Normal Water Level Fluctuations**

The proposed fill activity would have no significant impact on normal water level fluctuations.

### **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 that of minor storm driven waves.

### **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 inlake habitat heterogeneity is established in the lake.

### **3) Effects on Biota**

No chronic affects on aquatic biota are expected to result from the reconstruction 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 minor storm driven waves.

### **4) Actions Taken to Minimize Impacts**

Biodegradable erosion control fabric, silt fencing and native plantings would be implemented 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.

## **e. Aquatic Ecosystem and Organism Determinations**

### **1) Effects on Plankton**

No affects to planktonic organisms are expected.

## 2) Effects on Benthos

Existing benthos directly beneath where the riprap would be placed would temporarily be covered, but the area is relatively small. The stone placement would have insignificant effects on the macroinvertebrate population, and in the long-term would result in the same community currently present. There are no significant adverse effects expected.

## 3) Effects on Nekton

Fish eggs and larvae would not be smothered by the proposed fill activity in any significant quantity. Since the anticipated construction activities will occur in an area that does not provide spawning habitat for important fishery or endangered fish species, effects are even less of a concern. Fish and other free-swimming organisms will tend to avoid the construction area; the construction area will be used again by those fishes (smallmouth bass / rockbass) soon after construction ends.

## 4) Effects on Aquatic Food Web

In the long-term, there actually may be beneficial improvements to the food web due to expected increases in macroinvertebrate richness and abundance in response to a more heterogeneous rock substrate.

## 5) Effects on Aquatic Sites

- a) Sanctuaries and Refuges – none present
- b) Wetlands – none present
- c) Mud Flats – none present
- d) Vegetated Shallows – none present
- e) Coral Reefs – none present
- f) Riffle and Pool Complexes – none present

## 6) Threatened and Endangered Species

The project is within the known range of the Federally endangered Indiana Bat (*Myotis soldalis*) and the Karner blue butterfly (*Lycæides melissa samuelis*). Critical habitats for the Indiana Bat and Karner Blue Butterfly do not exist within the project area. The USACE has therefore determined that this project would have “no effect” on Federally listed species or their critical habitats.

This project is within the known range of the State endangered mudpuppy (*Necturus maculosus*) and the State threatened longnose sucker (*Catostomus catostomus*) and lake whitefish (*Coregonus clupeaformis*). Habitat for the mudpuppy, longnose sucker and lake whitefish does exist in the project area. A mudpuppy survey was conducted at the request of IDNR and performed by the Illinois Natural History Survey. No evidence of mudpuppies was found (Appendix 2). It is also the opinion of the USACE that the completed rock revetment project would provide mudpuppy habitat. The Chicago Region Fish Database was queried and there were no records within a 2-mile radius for longnose sucker and lake whitefish. The USACE has therefore determined that the project would have “no effect” on state-listed species or their critical habitats. The State of Illinois has been consulted (letter dated July 22, 2012), and under their new policy, no response equals their concurrence with this determination.

A copy of the draft EA will be sent to the US Fish and Wildlife Service and the Illinois DNR for review. Both agencies are expected to concur with this determination.

## **7) Other Wildlife**

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

## **8) Actions Taken to Minimize Impacts**

Erosion control fabric, silt fencing and native plantings would be implemented to minimize the temporary turbidity impacts associated with the proposed activity.

## **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 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 ultimately have no net change on the affected aquatic ecosystem. Additional mudpuppy habitat may be provided by the completed stone revetment. There are no significant adverse effects expected.

## **h. Secondary Effects on the Aquatic Ecosystem**

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

## **III. Findings of Compliance with 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.*