

Application for Section 401 Water Quality Certification

Project: Euclid Beach/Villa Angela Improvements
Applicant: The Cleveland Metropolitan Park District
Site Address: Euclid Beach/Villa Angela Park, Lake Shore Boulevard, Cleveland, Ohio
KS Project No: 14242-1

Item 7**Proposed Mitigation and Monitoring Plan**

February 3, 2016

Euclid Beach/Villa Angela Park is a public beach providing access to the waters of Lake Erie to communities on the east side of Cleveland. The existing deep water depths and steep beach slopes at Euclid Beach are not desirable conditions for a public swim area. In the past, Cleveland Metroparks has not allowed access to the water at the beach for swimming or wading. In 2015, Cleveland Metroparks completed a project to re-grade an area of the beach to temporarily open a guarded swim area. Without the addition of new structures to limit the wave energy reaching the beach, the beach profile gradually returned to its steep grades in the areas between the existing detached breakwaters. The proposed project is intended to improve conditions for swimming at Euclid Beach by re-grading the beach to a shallower slope and constructing submerged breakwater sills to dissipate the wave energy that naturally reshapes the beach. Following construction, Cleveland Metroparks plans to open an area of the beach in June 2016. The public swim area will be monitored by life guards.

The project has been designed for minimal impacts to nearshore processes and beneficial impacts to nearshore habitats. The existing beach has variable profiles with steep slopes between the breakwaters. By re-grading the beach slope, more areas of shallow nearshore habitat will be created. Approximately 2,115 cubic yards of sand pre-fill will also be added as mitigation and beach nourishment to achieve the desired beach profile. The armor stone submerged sills will also produce more shallow fish habitat in the areas between the existing breakwaters.

In addition to the self-mitigating fill materials planned for use to improve public access at the beach, Cleveland Metroparks proposed the following Sand Monitoring Plan in the U.S. Army Corps of Engineers and Ohio Department of Natural Resources permit applications:

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Sand Monitoring Plan

Cleveland Metroparks

Lakefront Reservation, Euclid Beach/Villa Angela Park

The following beach monitoring shall be performed at Euclid Beach/Villa Angela Park:

1. Pre-construction survey

A pre-construction survey shall be performed within two weeks prior to any work below the Ordinary High Water mark (573.4 feet IGLD 1985) or when weather permits an accurate survey to be performed. The pre-construction survey shall include the area from the toe of the embankment at the upland beach berm to approximately 100 feet lakeward of the existing detached breakwaters. The survey shall include the area from the Euclid Creek extending west approximately 1,500 feet.

2. Post-construction baseline survey

A post-construction survey shall be performed within two weeks of the placement of sand pre-fill and final beach grading or when weather permits an accurate survey to be performed. The post-construction survey shall include the same survey area as the pre-construction survey. The post-construction survey shall include the area from the toe of the embankment at the upland beach berm to approximately 100 feet lakeward of the existing detached breakwaters. The survey shall include the area from the Euclid Creek extending west approximately 1,500 feet. This survey will be used as a baseline for comparing beach profiles and sand quantities for future annual monitoring surveys.

3. Annual monitoring surveys

Annual spring monitoring surveys shall be performed prior to the opening of the beach for swimming each year for 5 years following the construction of the submerged sills. The annual monitoring surveys shall include the same survey area as the post-construction baseline survey. The annual monitoring surveys shall include the area from the toe of the embankment at the upland beach berm to approximately 100 feet lakeward of the existing detached breakwaters. The survey shall include the area from the Euclid Creek extending west approximately 1,500 feet.

In addition to the survey data, Cleveland Metroparks shall monitor beach conditions with annual photographs taken at the time of each monitoring survey. The photographs shall include but are not limited to the following:

- a. One photograph looking southwest along the line of detached breakwaters from the walking path on the Euclid Creek jetty.
- b. One photograph looking southwest along the shoreline from the east end of the beach.
- c. One photograph looking lakeward from the landward end of the beach at a location approximately aligned with the center of the 6th (eastern-most) detached breakwater.

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- d. One photograph looking lakeward from the landward end of the beach at a location approximately aligned with the gap between the 5th and 6th detached breakwaters.
- e. One photograph looking lakeward from the landward end of the beach at a location approximately aligned with the center of the 5th detached breakwater.
- f. One photograph looking lakeward from the landward end of the beach at a location approximately aligned with the gap between the 4th and 5th detached breakwaters.
- g. One photograph looking lakeward from the landward end of the beach at a location approximately aligned with the center of the 4th detached breakwater.
- h. One photograph looking lakeward from the landward end of the beach at a location approximately aligned with the gap between the 3rd and 4th detached breakwaters.
- i. One photograph looking lakeward from the landward end of the beach at a location approximately aligned with the center of the 3rd detached breakwater.
- j. One photograph looking northeast along the shoreline from a location approximately aligned with the center of the 3rd detached breakwater.
- k. One photograph looking southwest along the shoreline from a location approximately aligned with the center of the 3rd detached breakwater.

4. Annual monitoring reports

Annual monitoring reports shall include the following:

- a. A site plan drawing of the entire survey area showing topography and bathymetry with 1-foot contours.
- b. Cross section drawings at 70-foot spacing aligned with the section stationing shown in the permit drawings. The cross section drawings shall depict the beach profile from the post-construction baseline survey and the beach profile from the current annual monitoring survey.
- c. The date of the survey and lake level at the time of the survey shall be noted on the drawings.
- d. Copies of the photographs taken during the annual monitoring survey, as described in Section 3 of this Sand Monitoring Plan.
- e. Verifiable estimates of net sand accretion or erosion in the littoral cell landward of the existing detached breakwaters and between the groin near the center of the 3rd detached breakwater and Euclid Creek jetty.
- f. Estimates of the amount of sand to be re-graded or added to the beach system prior to the opening of the beach for public swimming.

Annual monitoring reports shall be submitted to:

U.S. Army Corps of Engineers
Buffalo District Regulatory Office
1776 Niagara Street
Buffalo, New York 14207

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Ohio Department of Natural Resources
Office of Coastal Management
105 West Shoreline Drive
Sandusky, Ohio 44870

5. Beach maintenance

If an annual monitoring survey determines that sand transport within the littoral cell landward of the detached breakwaters has resulted in unfavorable conditions for a public swim area, Cleveland Metroparks may request authorization to re-grade the beach or add additional sand pre-fill. No grading or beach nourishment shall be performed until written approval is received from the U.S. Army Corps of Engineers and Ohio Department of Natural Resources. All sand used for beach nourishment shall be from an approved upland source. The U.S. Army Corps of Engineers and Ohio Department of Natural Resources shall be notified 5 days prior to any beach maintenance activities requiring grading or placement of additional sand as beach nourishment.

6. Contingency plan

If the annual monitoring surveys demonstrate the beach profile is stable during the first five years of monitoring, additional monitoring surveys shall not be required to be submitted to the U.S. Army Corps of Engineers or Ohio Department of Natural Resources. Annual beach monitoring may still be performed following year five at the option of Cleveland Metroparks. If beach maintenance is proposed following year five, the monitoring survey demonstrating the need for beach maintenance shall be submitted to the U.S. Army Corps of Engineers and Ohio Department of Natural Resources in the form of a monitoring report as described in Section 4 of this Sand Monitoring Plan.

If the annual monitoring surveys demonstrate the need for annual beach maintenance during the first five years, additional monitoring surveys shall be required to be submitted to the U.S. Army Corps of Engineers and Ohio Department of Natural Resources on a year-by-year basis. The U.S. Army Corps of Engineers and Ohio Department of Natural Resources shall make the determination of whether additional annual monitoring is required.

No beach maintenance shall be performed until written approval is received from the U.S. Army Corps of Engineers and Ohio Department of Natural Resources, as required by Section 5 of this Sand Monitoring Plan.

Any modifications to or waiver of the requirements of this Sand Monitoring Plan shall be obtained in writing by coordinating with the U.S. Army Corps of Engineers and Ohio Department of Natural Resources.