

WA.19 Crescent Beach REDI Project

Frequently Asked Questions

Updated 4/27/2021

Questions:

1. WILL SEDIMENT ACCUMULATE BEHIND THE BARRIER ROCK REEFS?

According to the U.S. Army Corps of Engineers' (USACE) Sediment Budget Analysis System (SBAS), there is minimal sediment moving through the project area because there is only a small amount of sediment supplied to the system west of the project area (i.e., the system is "sediment starved"). This is due to the presence of shore protection, jetties, and lower bluff heights over most of the shoreline west of Sodus Bay. Due to the lack of sediment in the project area, and due to taking out the placement of sand in the nearshore environment as a design refinement from the 60% plans, it is not anticipated that a significant amount of sediment will accumulate behind the offshore barrier rock reefs.

2. WILL DEBRIS ACCUMULATE BEHIND THE BARRIER ROCK REEFS?

It is anticipated that some debris may wash through the gaps in the barrier rock reefs and accumulate behind the barrier rock reefs. It is also anticipated that the barrier rock reefs will deflect material from being washed into the nearshore environment. A maintenance plan is being developed to address the removal of debris on an annual to bi-annual basis, which will be strategically scheduled in tandem with the presence of vegetation washed into the nearshore environment.

3. WILL THE REEFS CAUSE GROWTH OF BLUE GREEN ALGAE IN THE NEARSHORE ENVIRONMENT?

It is not anticipated that the design will cause blue green algae blooms in the nearshore environment. The design of the segmented offshore barrier rock reef system includes gaps that maintain circulation and water exchange between the lake and the nearshore environment that exists between the barrier rock reefs and the shoreline. The coastal modeling performed on the design alignment confirms water movement in the nearshore environment.

4. WILL THE ROOT WADS/TREE CROWNS AS PART OF THE PROJECT UTILIZE SALVAGED WOODY MATERIALS? HOW WILL THESE BE SECURED?

Our team will be utilizing locally sourced salvaged woody materials for root wad application that meet the specifications of the project. The trunk end will be lodged at least 1/3 the trunk length into the BRR for stability, and anchored to an armor stone on the root flare side with a wire rope to resist lateral forces.

5. WHAT IS THE ANTICIPATED PROJECT SCHEDULE?

It is anticipated that construction will commence in October, 2021 contingent on weather conditions, Lake Ontario conditions, and environmental permitting, and construction will be completed by the end of 2022.

6. ARE THERE IMPROVEMENTS ALONG PRIVATE PROPERTIES?

The bulk of the physical improvements as part of the Crescent Beach REDI project occur on public-owned land. The design of the offshore system was optimized to reduce impacts to private property, while directly benefitting private properties through the reduction of wind and wave energy that is causing erosion and breaching of the barrier bar, and promoting recreational activities and enhancing ecological systems between the barrier rock reefs and the shoreline. Each property will be protected directly from the dominant northwest and/or northeast wind and wave directions with strategic placement of gaps and barrier rock reef structures, and benefit from the segmented system in whole. Additionally, using this grant funding directly on private property is limited.

7. HOW WERE THE BRRs DESIGNED AND LOCATED?

The structural design of the offshore barrier rock reefs considers placement and geometry to withstand extreme ice, wind, and wave conditions on Lake Ontario. The geotechnical properties of the lake bottom along the BRR alignment were also considered in the design. The width of approximately 70', side slopes of 3:1 facing the shore and 4:1 facing the lake, and material selection with two layers of 3' armor stone tested for conditions in this environment on a layer of bedding stone result in wave energy and velocity reduction even when water levels are over the crest height of 247.3' IGLD85.

The BRRs are placed along the 240' contour. This elevation was selected to balance the performance of the barrier rock reefs with the material quantity to accomplish the goals of this project. At this elevation, waves entering the nearshore from the west-northwest and north-northeast wind directions become depth limited.

At the low water datum (243.3' IGLD85), the BRRs would be exposed 4' over water level. During average water levels experienced between 2017-2020 (approximately 246' IGLD85) the BRRs would be exposed 1.3' over water level. During high water levels (247.3' IGLD85 and higher), the BRRs would be submerged.

Coastal modeling confirms the performance of the BRRs with this configuration during both typical and storm conditions, as well as low and high water conditions.

8. WILL THERE BE A PUBLIC MEETING FOR THIS PROJECT?

A virtual public meeting is scheduled for May 6th, 2021 from 6:00-7:30 to provide residents with an overview of the project and design. Notice of this meeting has been distributed on existing social media platforms, and through the Crescent Beach Association email list, Lake Bluff Cottagers Association email list, direct mailing, the

Wayne County Soil and Water Conservation District website and the Wayne County website.

9. WHY IS AQUATIC VEGETATION PROPOSED IN THE NEARSHORE ENVIRONMENT? WILL UNINTENDED VEGETATION ESTABLISH AS A RESULT OF THE BRRs?

One of the REDI Objectives established at the beginning of the Crescent Beach REDI project is to enhance the local ecosystem and include a natural and nature-based approach to protect the shoreline. The bed of Lake Ontario along the Crescent Beach shoreline is currently exposed directly to the erosive forces of wind and waves, which has prevented the establishment of aquatic vegetation in the nearshore environment. The barrier rock reefs will reduce the current wind and wave energy between the reefs and shoreline to create calmer conditions, similar to Sodus Bay, that will enable the growth of aquatic vegetation where proposed plantings will occur. The presence of aquatic vegetation is vital to establishing and maintaining a balanced ecosystem in the Lake. They form the base for almost all life in the Lake by providing a food source themselves, but also providing a growth medium for aquatic invertebrates, that are important food supplies to juvenile and adult fish, and protective cover from predation for juvenile and bait fish species. Besides fish, there are a number of turtles, ducks, geese, and small mammals that feed on these plants. Aquatic vegetation also contributes to dissolved oxygen levels in the Lake, absorb dissolved nutrients from the water, which reduces the potential for algal blooms, and also absorb pollutants from the water, which are all important to the lacustrine ecosystem.

Fluctuations in the Lake water levels create conditions that will not support vegetation establishment in shallow water environments that have minimal water depth during the growing season. However, shoreline areas that exhibit at least 2-feet of constant water depth will support aquatic vegetation to the extent allowed by the wave energy making in these areas. The barriers have been designed with gaps between them, which will allow similar wave energy to existing conditions into the nearshore environment. These gaps were designed to prevent the development of vegetation in the environment shoreward of the gaps.

The survivability of aquatic vegetation planted behind the barriers is uncertain. Plantings will be monitored to determine their survival and to inform future barrier design projects of their applicability. Aquatic vegetation establishment is limited by the nutrient levels available in the sediment, the depth of light penetration, wave energy, and herbivore consumption. The results of the aquatic plantings could range from inability to survive at all, to establishment and spread throughout appropriate conditions in the nearshore environment. The proposed design strives to strike a balance between open water for recreational purposes supported by the gaps in the barriers, and the ecological benefits that will be realized from aquatic vegetation. The aquatic vegetation will attract more fish and wildlife to the shore, but the gaps in the barriers will maintain large areas in their current condition for public use and enjoyment.