



This project was reviewed by the Town Council in January 2019; which was approved and then subsequently approved by the voters at the ballot in April 2019.

Waterfront Reconstruction Project Shoreline View



The waterfront area at Wasserman Park is the only official public swimming area within the Town of Merrimack for our residents and unfortunately it's not a very nice setting at this point due to significant erosion over the years.

In addition to the aesthetics of the beach, the exposed root system from these giant pine trees in the middle of the beach have created a significant safety hazard for beach users. The roots extend all the way to the water and so people utilizing the beach have to climb over the roots to get to the docks.

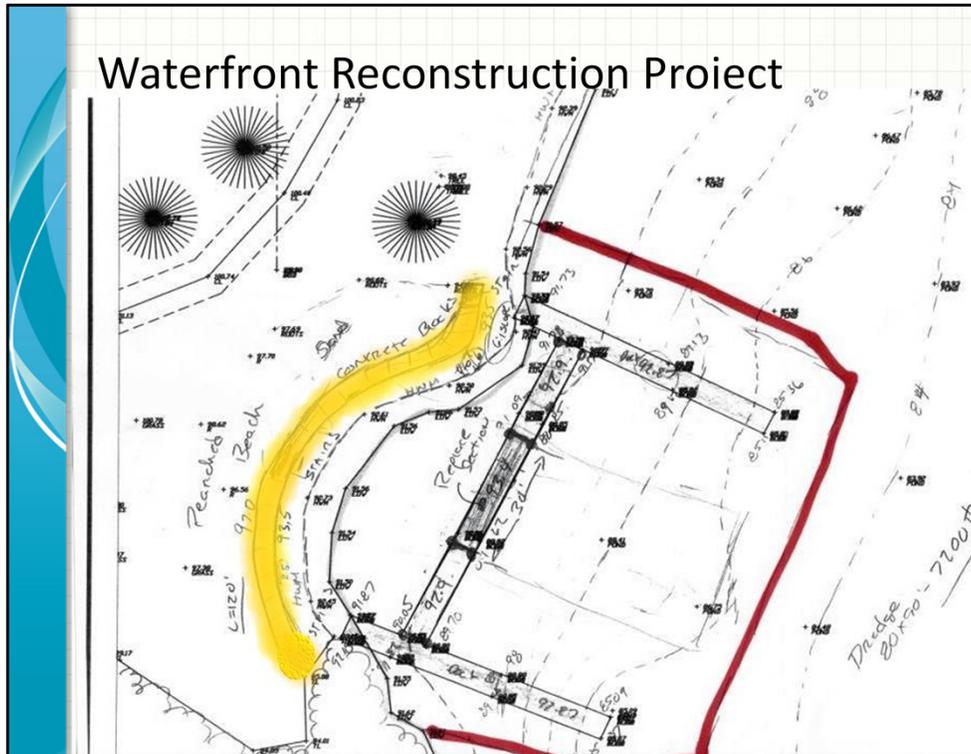
With this project we are trying to solve both the erosion and the safety issue while providing better recreation access to the lake for our residents.

Waterfront Reconstruction Project Shoreline View – front of docks



Prior to 2015; we used to only see around 30 people per day using the waterfront on the weekends since they had to walk from the upper parking lots. In 2015, the waterfront parking lot was established (for Merrimack residents only); which significantly increased the number of people using the waterfront. During the last 3 summers, we have been averaging 100 patrons per day on the weekends. On weekdays, the Parks & Recreation Department Summer camp are the primary users of the beach and we average approximately 200 people per day using the waterfront.

With that said, many residents have told us that they don't come to our beach anymore because of its present conditions and instead choose to visit Baboosic Lake in Amherst even though they have to pay to get in there. Amherst only allows Non-Residents to visit on weekdays and not on weekends or holidays.



There are two components to this project: A Land Based Portion and a Water Based Project

The first component of this project is the land based portion of the project to address the erosion and safety issues that exist on our beach. As you can see from the pictures which were taken last summer, there is hardly any sand on our beach anymore since it has all washed into the lake.

For the land Portion of the project – it consists of several steps:

- First we must reluctantly remove the two pine trees and their root system from the center of the beach. In addition to the tripping hazard caused by all of the exposed tree roots; all the pine needles contribute heavily the organics in the front section of the dock (which makes it all but unusable).
- We are prohibited by State Law from simply dumping new sand on the beach. State Law only allows for 10 cubic yards of sand (we would need 80 cubic yards to cover all the tree roots). In addition, before the State will grant permission for 10 yards of new sand you have to establish a way to prevent the new sand from going into the water. The only way that we can do that is remove the tree and its roots and regrade the beach. The trees are no longer holding the embankment which is why the beach needs to be rebuilt.
- We would then establish a 210 foot grass lined swale above the beach area to divert the water that is coming down the hill and move it away from the swimming area.
- We will then build a perched beach to address not only the slope of the area but will also address future erosion of the sand so that it doesn't wash into the lake as it does now. This is represented by the yellow line on this chart.
- Once the perched beach is established, 80 cubic yards of sand are added to the beach to complete the land portion of the project to restore the beach.

Waterfront Reconstruction Project Proposal to Establish a Perched Beach



What is a perched beach? A perched beach is a beach area that is elevated at least 12 inches above the high watermark. Similar to a garden terrace, there is a retaining wall set along the water's edge with steps allowing easy access to the water; often there is a retaining wall on the uphill side as well to provide a level beach area.

A “perched beach” must have little or no slope and must be located entirely out of the water, above and landward of the existing undisturbed natural shoreline. Narrow access steps to the water (and the docks) may be incorporated into the design. All sand must be placed above the high water mark and out of the water. The construction of a beach in a perched position helps prevent the future erosion into the lake. A perched beach requires less maintenance, which is a benefit to the landowner

Waterfront Reconstruction Project Front section of the water

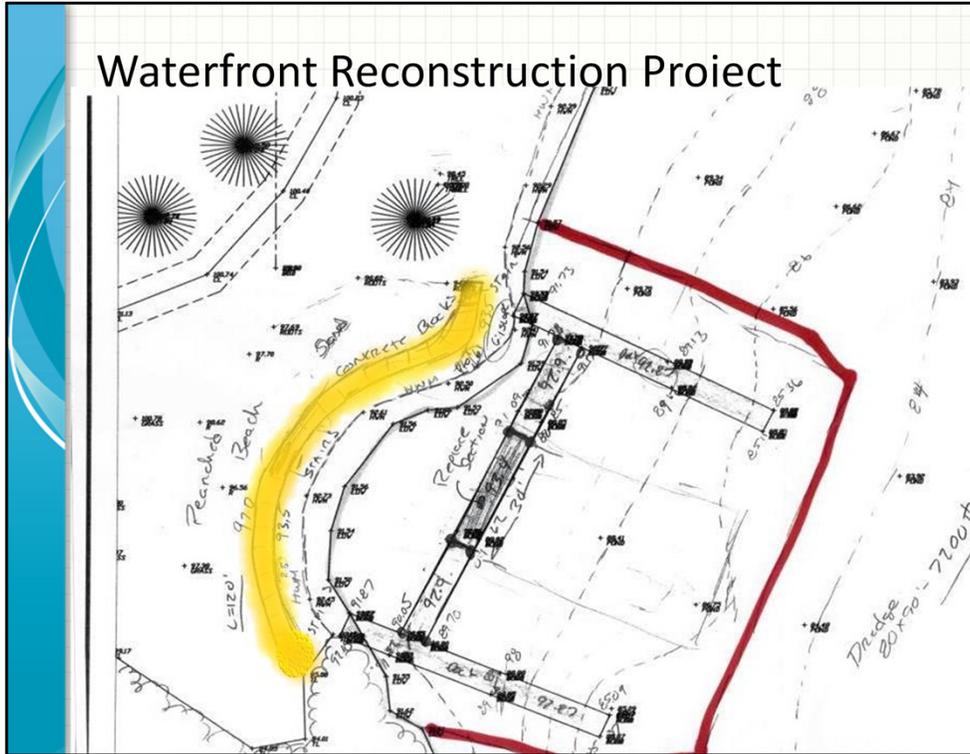


The front section of the swimming area in a “normal summer” starts at about 1 foot deep at the beginning of the summer. This sits on top of several inches of muck which is caused by erosion into the lake and poor water circulation. By the end of the summer this front section of the water is down to about 5”; which makes the front section unusable for the most of the summer.

What little water is here sits on top of several inches of mud so when you step in it you sink in. There are actually markings on the dock showing the lake depth in this front section used to be 2 feet deep. Over the last few years; the water depth has dropped every year and this summer it was down to just a few inches of water as it is filled with mud and organics.

This front swimming area used to be very popular with parents of young children because they could get into the lake without them worrying it would get too deep for them It was also very useful to my staff when teaching beginner swimming lessons to young children but it has gotten almost no usage over the last few couple of years due to conditions.

Waterfront Reconstruction Project



Water Based Portion of Project

The second portion of the project which is dealing with the existing conditions in the lake itself. What we are doing is reclaiming what we've lost over the years due to the erosion.

- The way that we do this is that we start by installing a temporary cofferdam around the swimming area (marked in red on the map). It will be 80 feet x 90 feet in length.
- Once the temporary cofferdam is build; the entire area dredged of all the mud and organics that have accumulated over the years and is restored to a much nicer resource for our residents to utilize.
- Once the excavation is complete the cofferdam is removed and the swimming area is restored.

Waterfront Reconstruction Project Cost Estimates

| Item Description | Unit | Est Qty | DOT Weight Ave. Price | Cost Estimate |
|--|------|---------|-----------------------|--------------------|
| NHDES Wetlands Permitting | | | | \$2,210.00 |
| NHDES Shoreland Permit | | | | \$200.00 |
| Excavation Muck | CY | 350 | \$10.00 | \$3,500.00 |
| Common Excavation | CY | 300 | \$12.00 | \$3,600.00 |
| Fine Grading | UNIT | 1 | \$2,000.00 | \$2,000.00 |
| Sand | CY | 80 | \$34.00 | \$2,720.00 |
| Cofferdams (Temporary) | UNIT | 1 | \$18,000.00 | \$18,000.00 |
| Erosion Control Compost Socks for perimeter Berm | LF | 140 | \$8.00 | \$1,120.00 |
| Grass Lined Swale | LF | 300 | \$15.00 | \$4,500.00 |
| Silt Fence | LF | 40 | \$10.00 | \$400.00 |
| Retaining Walls | LF | 150 | | \$35,000.00 |
| Mobilization | Unit | 1 | \$5,000.00 | \$5,000.00 |
| Alterations & Additions as needed | \$ | 1 | \$5,000.00 | \$5,000.00 |
| Tree Removal | \$ | 2 | \$1,000.00 | \$2,000.00 |
| Contingency – 10% | | | | \$6,775.00 |
| ESTIMATED TOTAL PROJECT COST | | | | \$92,025.00 |

The total cost for this project as described is \$92,025 which was rounded up to \$95,000 in the budget which was approved by the Voters in April 2019.

Frequently asked questions?

Why do we need to undertake this project at all?

The Parks & Recreation Department exists to provide quality recreational programs and events along with safe and well maintained recreational facilities. Our waterfront has significant erosion and safety issues that are deterring residents from using it. Without this projects, the conditions will only continue to deteriorate.

Is there any way to do this project without removing the large pine tree and root system?

We believe this is the most cost effective solution to this problem. As was mentioned in an earlier slide, the State of NH would only allow us to add 10 yards of sand 1x every 6 years but only if we could prevent it from going in the lake (which we can't and we would need 80 yards of sand to sufficiently cover the root system.

The pine trees are obviously no longer holding the embankment in place anymore. It was suggested by to create a boardwalk system over the root system. We do not think this would be a viable option as the embankment is going to continue to deteriorate under any boardwalk which would expose event more tree roots and eventually would cause upheaval of the boardwalk. In addition, in order to cover all the tree roots, we would need to cover a large portion of the beach which would be expensive to build and even more expensive to try and maintain.

When will the project begin?

The Town Engineer in the Public Works Department is currently working on the engineering specifications for the permits that we need to complete in order to gain State approval. We are currently hoping that this project will get underway in Late Fall 2019, but depending on when we get our permits it could be Spring 2020. In either case, the plan is for the project to be completed before Summer 2020 season.

Who do I contact if I have questions?

Please contact Matt Casparius, Director of Parks & Recreation at 603-882-1046 or by email at mcasparius@merrimacknh.gov