Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: City of Revere
Project Title: Gibson Park Resiliency Project
Award Year (FY): 2022
Grant Award: $ 161,516
Match: $54,007.50
Match Source: City of Revere
One or Two Year Project: One Year
Municipal Department Leading Project: Revere Office of Planning and Development
Project Website URL: https://www.revere.org/business-development/projects-and-initiatives

Community Overview:

- What is the population size of your community and where is it located? The Study Area is the Riverside neighborhood of the City of Revere identified as Block Group 2, Census Tract 1705.02 in Suffolk County with 1,538 residents.
- Do you have any Environmental Justice or other Climate Vulnerable communities? (Think about both those who live and work in your town.) The Riverside neighborhood has the following socioeconomic indicators Median household income of $35,515 (this is 41.4 % of the Massachusetts median); a total minority population of 20.5 %; and Households with language isolation of 2.5 %. This project was identified by residents of the Riverside neighborhood and the City of Revere as a priority issue. During the 2020 Riverfront Master Plan development process, the issues the area faces with respect to rising seas, flooding, and more intense rainfall events was increasingly evident and several conceptual strategies were developed to address those issues.
- Other unique traits of your municipality like who the top employers are, geography, history, etc.: Revere is a city of immigrants, founded on waves of immigration from countries all over the globe. These immigrants have shaped the development of the city and have created a rich cultural heritage unique to Revere. Revere has a younger population profile than many communities in the MAPC region, which suggests that a large number of families and younger individuals are choosing to make Revere their home, along with other individuals who prefer to age in place in Revere.
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- In general, Revere is a working-class community with more affluent residents having jobs in nearby Boston. However, many of the residents hold down lower-level support/service jobs such as landscaping, trades (plumbers, electrician, etc.), house cleaning, etc.

Project Description and Goals:

- Where was the project located? The Riverside neighborhood of City of Revere which is located in the region known as the Massachusetts North Shore. Gibson Park lies on the northern peninsula bordered by the Pines River to the West, a new redevelopment

project and the Saugus River to the North, North Shore Road (Rte 1A) to the East, and the Riverside Neighborhood to the South.

- What climate change impacts did the project address? Land-side flooding associated with the precipitation associated with more frequent and intense storms and storm-surge flooding associated with water-side higher tide events and increasing number and intensity of storm event associated with global climate change. Specifically, the project addressed:
    - Sea Level Rise
    - More intense Rainfall events
    - 2060 Design Storm Events
    - Design Flood Elevation
- What were the specific goals and tasks of the project as stated in your application?

  1) Creating Resiliency – Providing resiliency to the Neighborhood and the Park itself.

  2) Serving the Community – Allowing for activities for all users of the community.

  3) Addressing Historic High-tide Flooding –Provide a solution for the historic high-tide flooding that occurs in the northern end of the Riverside neighborhood along Mills Avenue.

- Did your project meet the goals set forth in your application in terms of: The Gibson Park Resiliency Project is aimed at providing nature-based resiliency measures to an area that has historically faced both tidal and storm flooding events and the proposed designs will be effective and productive at meeting the project goals. .
- Employing nature-based solutions - Yes, project includes blue/green/gray mitigation measures such as living shorelines, shellfish reefs, salt-marsh restoration, creation and enhancement, vegetated berms, etc., and bioswales and raingardens for stormwater management.
- Improving equitable outcomes for and fostering strong partnerships with EJ and other Climate Vulnerable Populations Yes, the initial project has included three outreach meetings to gain the opinions and support of the local climate vulnerable populations and all of these efforts build upon an outreach income that started with the Riverfront Master Plan process. Further outreach had been conducted via the City's effective website.
- Providing regional benefits It is believed that the successful project will be both catalytic and implementable across other climate vulnerable parts of the region. Once this project proves successful, it is fully anticipated that other areas of the region will follow suite.
- Implementing the public involvement and community engagement plan set forth in your application Yes, the City has held three public engagement meetings throughout the conduct of this project to ensure local public participation in the project. Future project work-flow components include conducting future community meeting.

- Finishing the project on time Yes, the project was completed by the project deadline of June 30, 2022

Results and Deliverables:

- Describe, and quantify (where possible) project results (e.g. square footage of habitat restored or created, increase in tree canopy coverage, etc.). Report out on the metrics outlined in your application. The project is a planning/design effort and no actual habitat restoration or resiliency intervention measures have been constructed. The project includes improving the 6.22-acre Gibson Park property, the 1.187-acre Boatworks Property and 1,700 feet of the Mills Avenue alignment. While nothing has been constructed, the design efforts resulted in the following elements that will be implemented in a future phase:
    - **Creating offline subsurface stormwater storage underneath a multi-purpose athletic field.** This will help move stormwater away from the Riverside neighborhood and provide underground storage, particularly at the higher end of the tidal cycle and provide infiltration, helping alleviate flooding issues.
    - **Decentralizing the stormwater management with raingardens and bioswales.** The redevelopment of the park features will include more localized green stormwater management practices, aiming to treat the runoff closer to its source and promote water quality treatment and recharge.
    - **Creating/enhancing two areas of salt marsh along the river's edge, and restabilizing the water's edge.** The entire border between the Pines River and Gibson Park will have a stabilized sill/toe of an oyster/ribbed mussel reef structure to allow the marsh and shoreline to develop naturally to provide some protection. The marsh areas will be developed to enhance habitat and have a place to migrate up in response to rising seas.
    - **Implementing a pile support marsh/water's edge walkway.** This elevated walkway will get people out over the water and the marsh and include interpretive elements to educate visitors on the importance salt marsh habitats play in protecting the shoreline and resisting climate change.
    - **Park improvements, including a new multi-purpose field, pickleball courts, relocated tennis courts and more accessible walking paths.** The redeveloped park will include more diverse and accessible activities and programs for residents and visitors.
    - **Expansion of park amenities to the south to include the former North Shore Boatworks property.** With the City recent acquisition of this property, additional park features such as tennis courts can be relocated to the property and the building will be transformed into a community rowing facility and public space.
    - **Providing additional parking at the former Boatworks property.** In order to provide more access to the upgraded park and the community rowing facility and better control vehicle access, additional parking spaces are being provided.
    - **Rebuilding the dilapidated revetment at the Boatworks property.** Along with the landscape sculpting and other softer berms, this will be a key feature in addressing rising tides and rising seas from surging into the neighborhood as is currently occurring.
    - **Floating Dock system from the revetment to the Pines River.** This will provide ADA compliant access to the watersheet for rowers and kayakers carrying down their equipment.

    - **Reusing excavation materials to create a vegetative berm along Mills Avenue.** By placing the excavated materials in a geotextile, placing them along the western edge of Mills Avenue, and vegetating them, this hybrid green/gray solution will better protect the neighborhood from rising sea levels and storm surge events.
- Provide a brief summary of project deliverables with web links, if available. The following project work-flow components have been completed and delivered: The design and study efforts were intensive in this phase of the project. Work activities included Site Survey and Wetland Delineation, Soil Borings, Sampling and Laboratory Testing, Engineering Design Process, including hydraulic analysis and stormwater management, Landscape Architecture, Regulatory Review, and Engineering Design Report.

Lessons Learned:

- What lessons were learned as a result of the project? Focus on both the technical matter of the project and process-oriented lessons learned. One of the biggest lessons learned in this project was the benefits of the early outreach to the regulators to gain input. Gibson Park and the Riverside neighborhood are surrounded by resource areas, and with several overseeing agencies, performance standards and regulations, it was complicated to find the best path forward. We had large group meeting with several regulatory agencies where we presented initial designed and solicited feedback. The input we received was helpful in helping to refine design schemes and materials that would be more likely to receive favorable review come permitting time.
- What is the best way for other communities to learn from your project/process? There are two good ways to learn from this process, the first being the relatively early outreach to regulators. It needs to be at a stage where there is some substantial design information to discuss impacts and performance standards, but not too far down the road that would result in a radical redesign of the project. The second item to benefit from was targeting the nature based solutions in a process that would minimize the temporary impacts while still providing long term benefits. The example would be the location of the northern salt marsh enhancement, initially the plan involved more work and expansion of the low marsh, however the low marsh appears healthy and stable, whereas higher up the profile is full of invasives and more of an eroded slope. So we focused on removing the invasives and stabilizing that slope to have a longer term benefit.

Partners and Other Support:

- Include a list of all project partners and describe their role in supporting/assisting in the project.

This project resulted from a collaborative effort of multiple disciplines providing valuable input to this process. The key contributors to this report/design effort include:

- The City of Revere – Project oversight and management

- The Commonwealth of Massachusetts' Municipal Vulnerability Program – Project support and oversight
- McAllister Marine Engineering, LLC – Engineering design, reporting, and resiliency designs
- Copley Wolf Design Group – Landscape Architecture, site renderings, material use selection
- LEC Environmental Consultants, Inc. – Wetland resource delineation, environmental permitting consultation
- Hancock Associates – Site survey
- Petersen Engineering – Electrical Design
- RM Ryan - Field work, boring oversight, sample collection
- Sage Envirotech Drilling – Borings
- Thielsch Engineering – geotechnical laboratory analysis
- Netlab – Environmental laboratory analysis

Project Photos:

- In your electronic submission of this report, please attach (as .jpg or .png) a few high-resolution (at least 300 pixels per inch) representative photos of the project. Photos should not show persons who can be easily identified, and avoid inclusion of any copyrighted, trademarked, or branded logos in the images. MVP may use these images on its website or other promotional purposes, so please also let us know if there is someone who should receive credit for taking the photo.

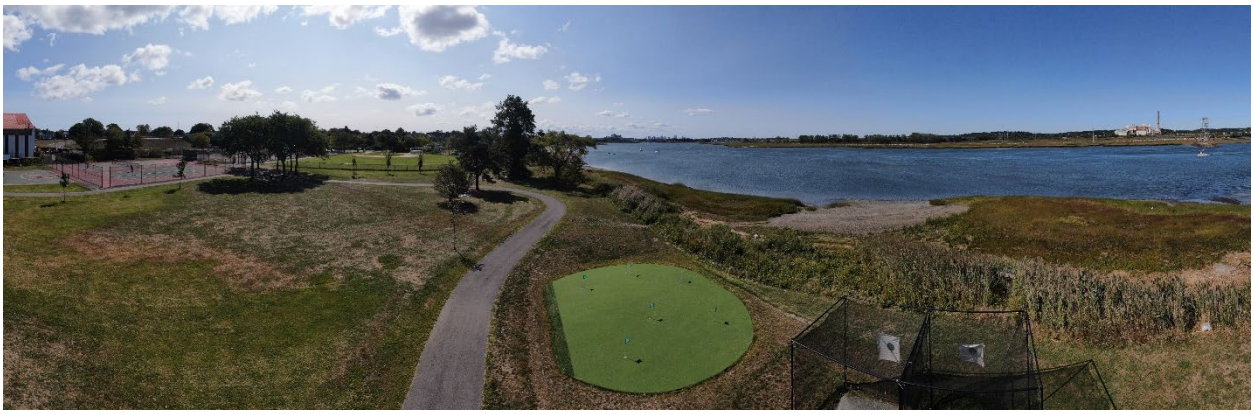

FIGURE 1 - DRONE FOOTAGE OF GIBSON PARK LOOKING SOUTH

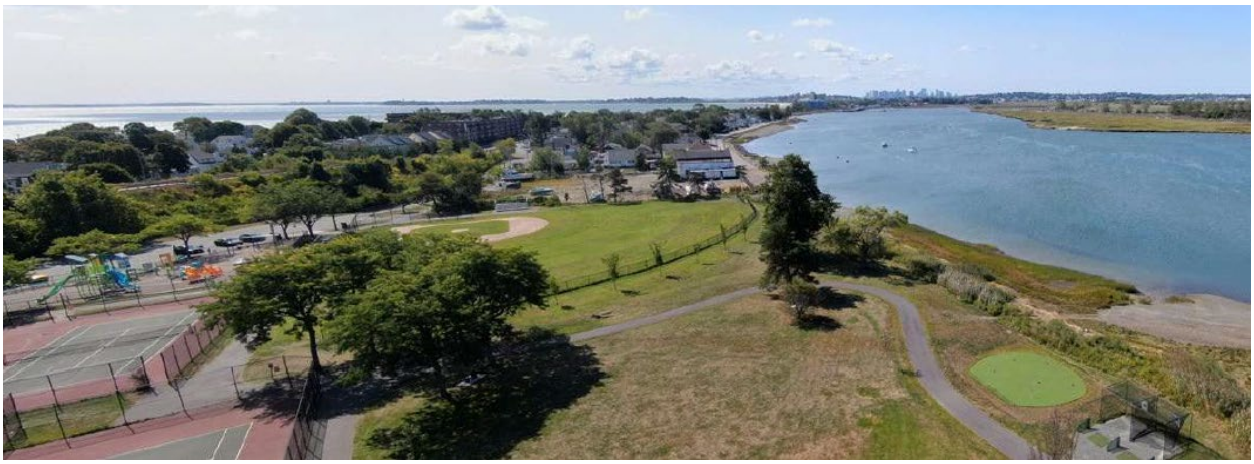

FIGURE 2- DRONE FOOTAGE OF GIBSON PARK LOOKING SOUTH

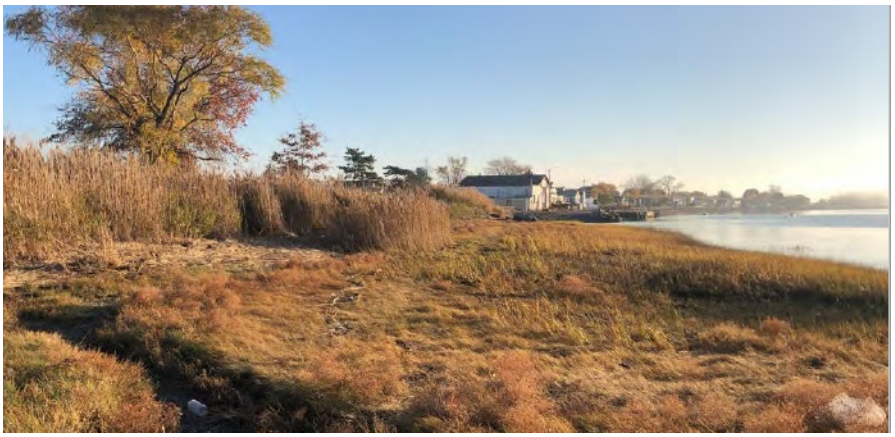

FIGURE 3- GIBSON PARK SHORELINE ALONG PINES RIVER

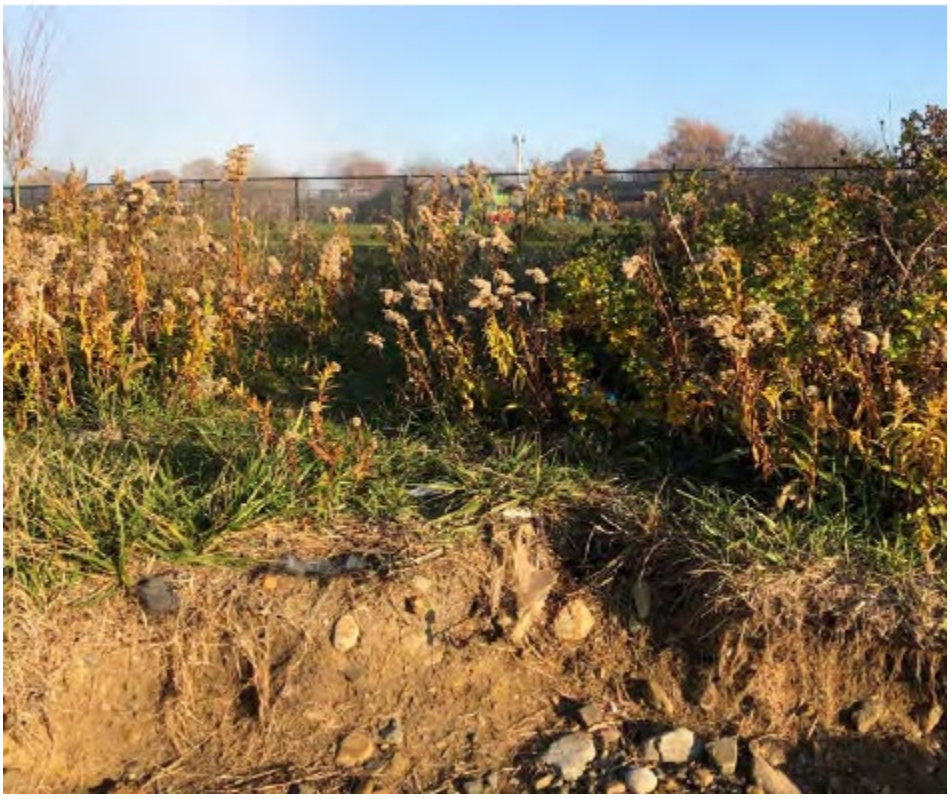

FIGURE 4 - DESTABILIZED SLOPE ALONG PINES RIVER

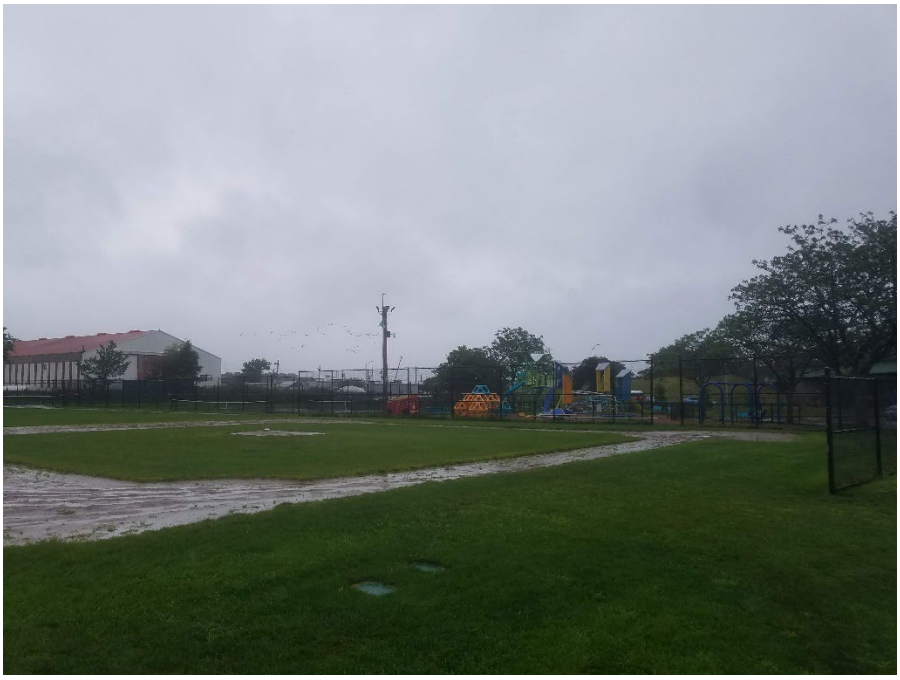

FIGURE 5- GIBSON PARK ATHLETIC FIELD

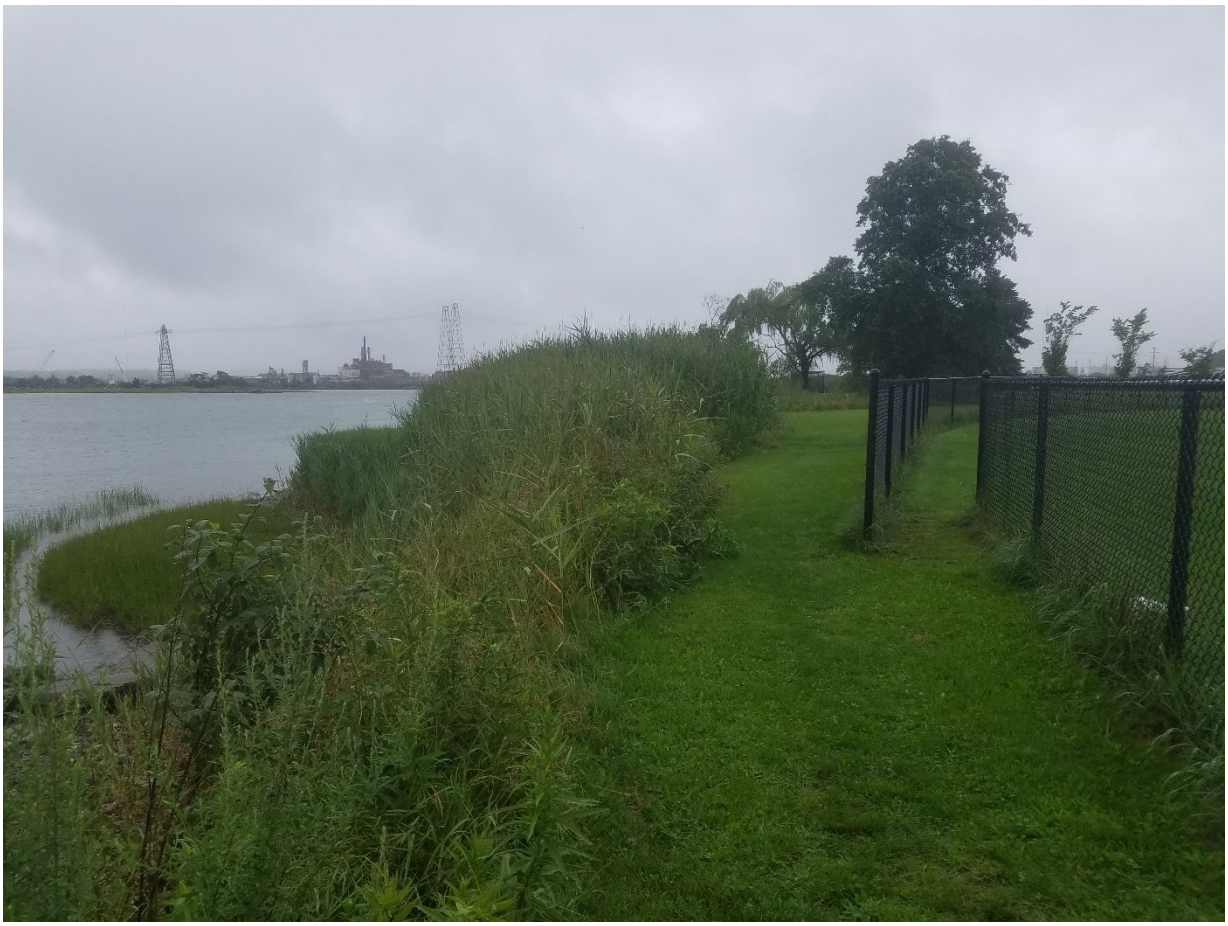

FIGURE 6- GIBSON PARK FIELD AND SHORELINE INTERFACE

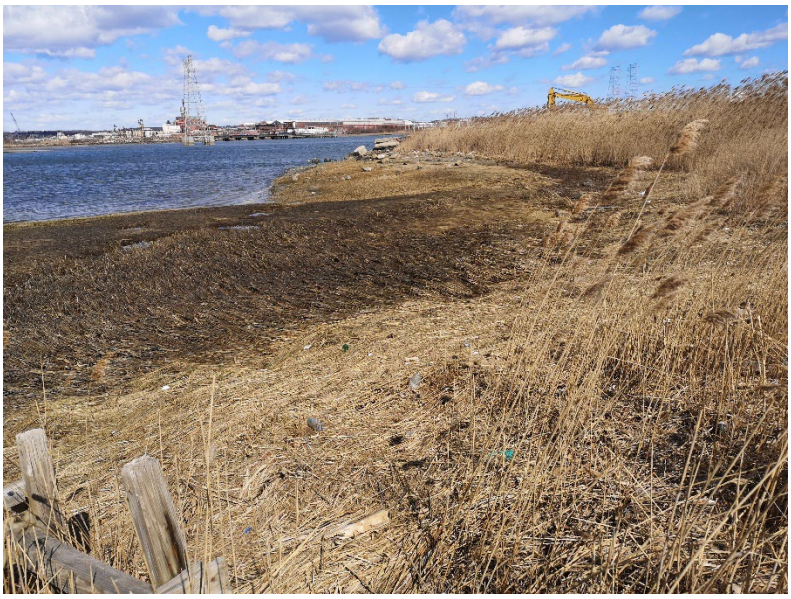

FIGURE 7- PINES RIVER LOW MARSH AREA

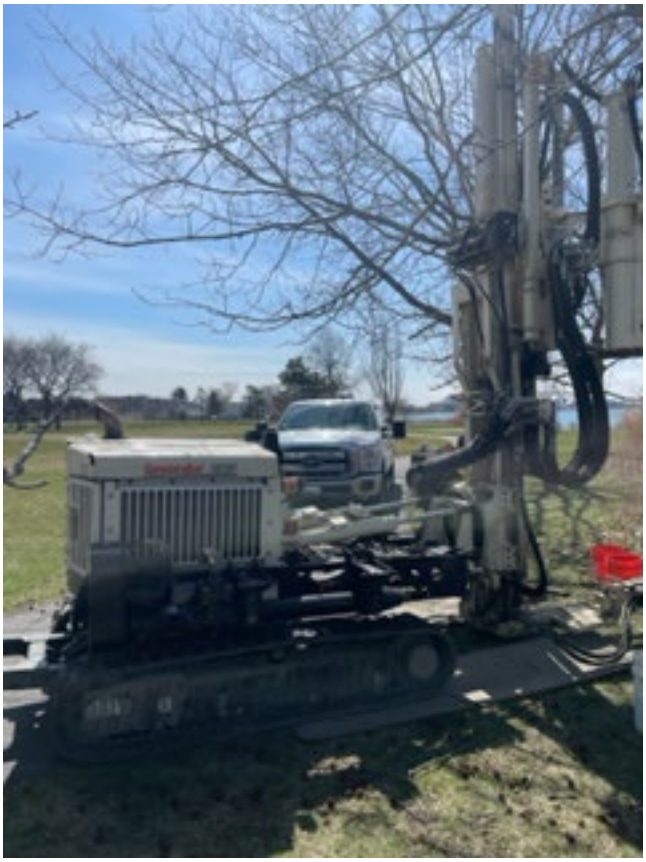

FIGURE 8- GIBSON PARK DRILLING