

THIN-LAYER PLACEMENT PROJECT SHEET



Ninigret Pond

October 2023

Location: Ninigret Pond

Type: Habitat restoration

Area: 20 acres

City: Charlestown

County: Washington

Main Agencies: Rhode Island CRMC, USFWS, Save the Bay, Salt Ponds Coalition, RIDEM, US Fish and Wildlife Service, Audubon Society of Rhode Island, Salt Marsh Habitat and Avian Restoration Program, EPA

State/Province: Rhode Island

Country: United States



Taken from <https://rb.gy/my4xf>.

Background

Ninigret Pond, also known as Charlestown Pond, is the largest of the nine salt ponds located in southern Rhode Island. The coastal lagoon is located inside the Ninigret National Wildlife Refuge, which is managed by the US Fish and Wildlife Service. The pond is fed by several small streams and is located at low-lying ground, which causes it to be vulnerable to storm surge flooding.

The Ninigret Pond Salt Marsh Restoration and Enhancement Project was developed in partnership with multiple sources including the USFWS, Rhode Island Coastal Resources Management Council, and a Hurricane Sandy Disaster Relief Grant. The site contained areas that were exposed to prolonged flooding, vegetation die-off, subsidence, and marsh edge erosion. The project aimed to improve salt marsh resilience to sea level rise, increase high marsh dominance, and enhance marsh habitat for native species.

Project Description

During the winter of 2016 to 2017, a thin-layer placement (TLP) project was conducted on salt marshes at Ninigret Pond. The added sediment was dredged from the Breachway Channel located east of the salt pond. The dredged channel benefitted from tidal flushing improvement and increase in boat safety. The dredged material was a fine grain material mostly composed of sand and less than 12% of silt and clay with minimal organic matter. Approximately, 68,000 cubic yards (cy) of dredged sediment were deposited on 20-acres of marsh land. The thickness of the material that was placed ranged between 0 and 12 inches and its purpose was to aid the marsh keeping pace with sea level rise. The excess sediment was placed at nearby beaches at Ninigret Pond for beach nourishment. Runnels were excavated into the surface to allow water to flow from the treatment areas into already existing ditches and creeks. During the spring of 2017 to 2018, around 46,850 native plants were planted by volunteers across all treatment areas. The post-restoration planting was deemed

successful as the site conditions at the new elevations were suitable for a mosaic of embryonic marsh building species.

Findings

Please read Laying it on thick: Ecosystem effects of sediment placement on a microtidal Rhode Island salt marsh, which discusses a recent research effort conducted to provide details of the ecosystem effects of dredged material placement on Ninigret Pond: <https://www.frontiersin.org/articles/10.3389/fenvs.2022.939870/full>

References

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- Raposa, K., K. Wasson, J. Nelson, M. Fountain, J. West, C. Endris, and A. Woolfolk. 2020. "Guidance for thin-layer sediment placement as a strategy to enhance tidal marsh resilience to sea-level rise." Published in collaboration with the National Estuarine Research Reserve System Science Collaborative.
- Salisbury, A., Stolt, M. H., & Surabian, D. (2017). Simulated upland placement of estuarine dredged materials. *Geoderma*, 308, 226–234. <https://doi.org/10.1016/j.geoderma.2017.04.005>
- Wiberg, N. (2020). *Improving Community Resiliency through Salt Marsh Elevation Enhancement*. Connecticut Association of Flood Managers.

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Information on thin layer placement (TLP) case studies has been compiled as part of a DOTS/EWN project to provide a source of information, knowledge, and experience on TLP of sediment or dredged material in aquatic environments. The Thin Layer Placement Website and Map-Portal are funded by the US Army Engineer Research and Development Center (ERDC). POCs for the Thin Layer Placement Website and Map-Portal are:

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