

MEMORANDUM

DATE December 14, 2020

JOB NO. 2017-0021

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Pleasant Bay Dredge and Disposal Sites

This memo reflects edits to the previous Pleasant Bay dredge and disposal site memo sent November 2, 2020, reflecting comments from the Dredge Advisory Committee (DACD). The memo provides recommendations for dredge methodologies and disposal locations for the five (5) Pleasant Bay navigation channels proposed for dredging. The recommendations provided herein are based on review and consideration of the following information:

- Dredge volumes
- Sediment characteristics
- Type and distribution of wetland resources in the vicinity of the five channels
- Proximity of publicly held lands to the five channels
- Potential access routes for work at disposal/beneficial reuse sites
- Maximum pumping distance of 3,500 ft for a small-scale hydraulic cutter suction dredge (Ellicott 370, 670, or similar) operating without a booster pump. If the Town pursues the purchase of a hydraulic dredge with one or more booster pumps, it will be possible to amend the permits to include additional disposal/beneficial reuse sites that are further away than 3,500 ft.

Quanset Pond – The dredge volume required to meet the channel design (30 ft wide; 650 ft long; -4 ft MLW over dredge depth) is 1,635 cubic yards. Of this material 100 % is considered beach compatible for beneficial reuse on nearby beaches. Dredge disposal sites previously permitted in 1959 are on private and neighborhood association property within existing salt marsh resources. Use of these disposal sites will not meet the performance standards for work in a salt marsh under the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.0), and therefore alternate disposal sites must be identified and permitted.

Assuming use of a small-scale hydraulic cutter suction dredge with a pumping distance of 3,500 ft (without booster), a total of four (4) properties were identified west of the Quanset Pond channel that could be candidate sites for beneficial reuse, either as beach nourishment or coastal bank protection (Figure 1). Three properties are owned privately and the fourth is owned by the neighborhood association. Preliminary calculations suggest that the entire dredge volume available from Quanset Pond could be used to nourish these four beaches. The



maximum pumping distance would be approximately 2,000 ft. Equipment needed for placing the dredge pipe along the beach and final grading could access the site from the upland via parcel 92-59-0 or alternatively from the Town Landing off South Orleans Rd. Permission to use the private properties for dredged material placement will be required. Per Department of Environmental Protection (DEP) Chapter 91 regulations 310 CMR 9.40(4)(a)1, easements for public access below the existing high water line would also be needed from the private property. This requirement may be avoided if the private property owners agree to pay for the sand placed on their beaches.

Mechanical dredging methods could also be used to construct the channel at Quanset Pond. This alternative would involve the use of conventional mechanical equipment operating from a spud barge. Dredged materials would be placed into a spoils barge to dewater and then towed to the public landing at River Rd. where they would be offloaded into temporary cells constructed of highway barriers lined with filter fabric for further dewatering. The material would then be trucked to a previously permitted beneficial reuse site.

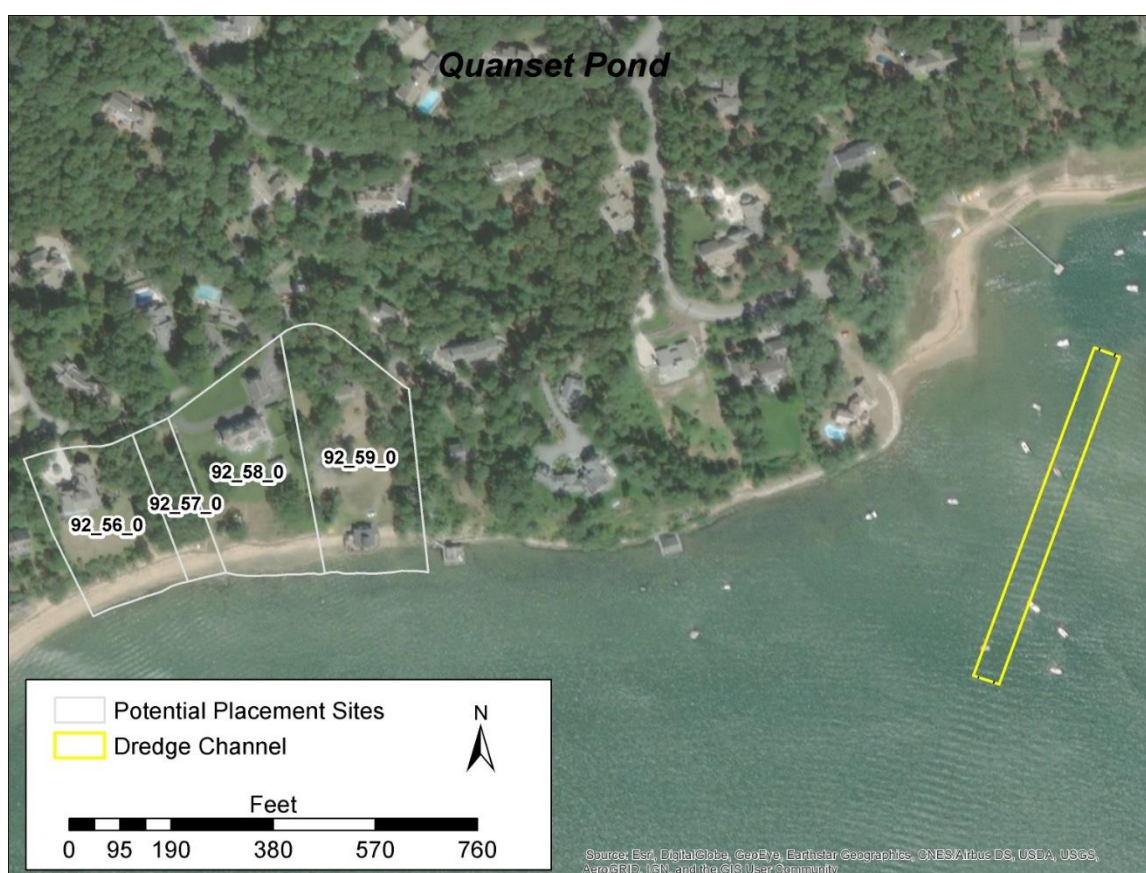


Figure 1. Location of potential beneficial reuse sites for Quanset Pond dredged material.

Recommendations for Quanset Pond:

- *Permit dredging via hydraulic or mechanical means*
- *Permit River Rd. site for dewatering when mechanical dredge is used*
- *Permit beach/bank nourishment at the four (4) parcels shown in Figure 1 when hydraulic dredge is used (permission from property owners is required for this option)*



The Narrows - The dredge volume required to meet the channel design (100 ft wide; 430 ft long; -7 ft MLW over dredge depth) is 3,500 cubic yards. Of this material 100 % is considered beach compatible for beneficial reuse on nearby beaches. Dredge disposal sites previously permitted in 1959 and 1975 are on private property within existing coastal beach, coastal dune and salt marsh resources. Use of the salt marsh disposal sites will not meet the performance standards for work in a salt marsh under the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.0). The beach and dune beneficial reuse sites may also be viable alternatives.

Assuming use of a small-scale hydraulic cutter suction dredge with a pumping distance of 3,500 ft (without booster), a total of seventeen (17) properties were identified that could be candidate sites for beneficial reuse, either as beach nourishment or coastal bank protection (Figure 2). These properties are located west of the channel and are owned privately. The maximum pumping distance would be approximately 3,500 ft. Equipment needed for placing the dredge pipe and final grading for beaches to the west is currently unknown; however, it is possible access could be gained along a lane to the south of parcel 89-11-0 or via Hammatt Road. Permission from the private property owners and easements will be required as discussed above for Quanset Pond.

Mechanical dredging methods could also be used to construct the channel at The Narrows. This alternative would involve the use of conventional mechanical equipment operating from a spud barge. Dredged materials would be placed into a spoils barge to dewater and then towed to the public landing at River Rd. where they would be offloaded into temporary cells constructed of highway barriers lined with filter fabric for further dewatering. The material would then be trucked to a previously permitted beneficial reuse site.

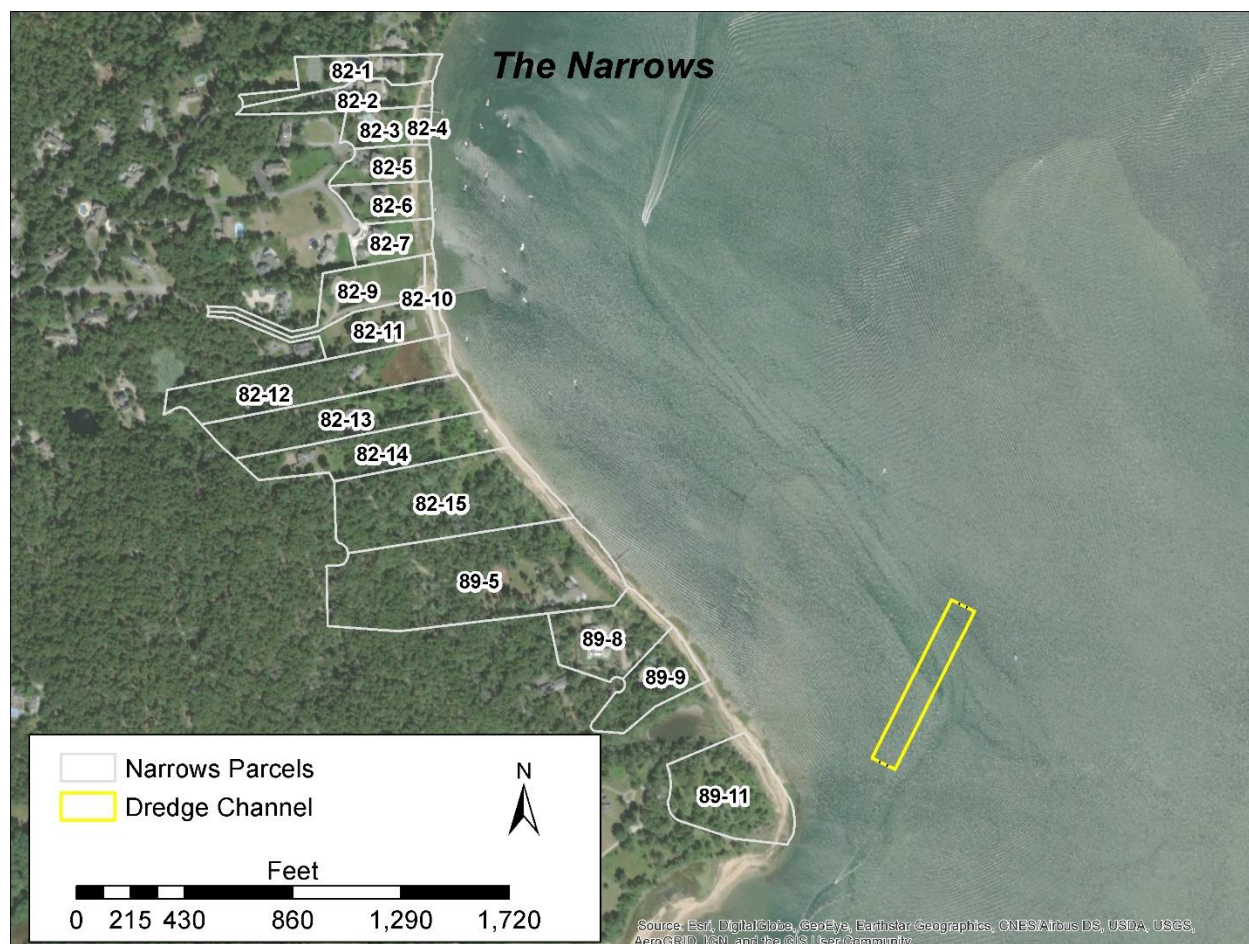


Figure 2. Location of potential beneficial reuse sites for The Narrows dredged material.



Recommendation for The Narrows:

- Permit dredging via hydraulic or mechanical means
- Permit River Rd. site for dewatering when mechanical dredge is used
- Permit beach/bank nourishment at the seventeen (17) parcels shown in Figure 2 when hydraulic dredge is used (permission from property owners is required for this option)

Paw Wah Pond - The dredge volume required to meet the channel design (30 ft wide; 620 ft long; -4 ft MLW over dredge depth) is 2,848 cubic yards. Of this material 100 % is considered beach compatible for beneficial reuse on nearby beaches. Dredge disposal sites previously permitted in 1959 are on Town of Orleans and Orleans Conservation Trust property, within existing salt marsh resources. Use of these disposal sites will not meet the performance standards for work in a salt marsh under the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.0), and therefore alternate disposal sites must be identified and permitted.

Assuming use of a small-scale hydraulic cutter suction dredge with a pumping distance of 3,500 ft (without booster), a total of twelve (12) properties were identified to the north of the Pah Wah channel that could be candidate sites for beneficial reuse, either as beach nourishment or coastal bank protection (Figure 3). The properties are owned by the Town of Orleans, the Orleans Conservation Trust, and by private owners. The maximum pumping distance would be approximately 3,000 ft. Access for equipment needed to place the dredge pipe along the beach and final grading is unknown at this time and will require further investigation.

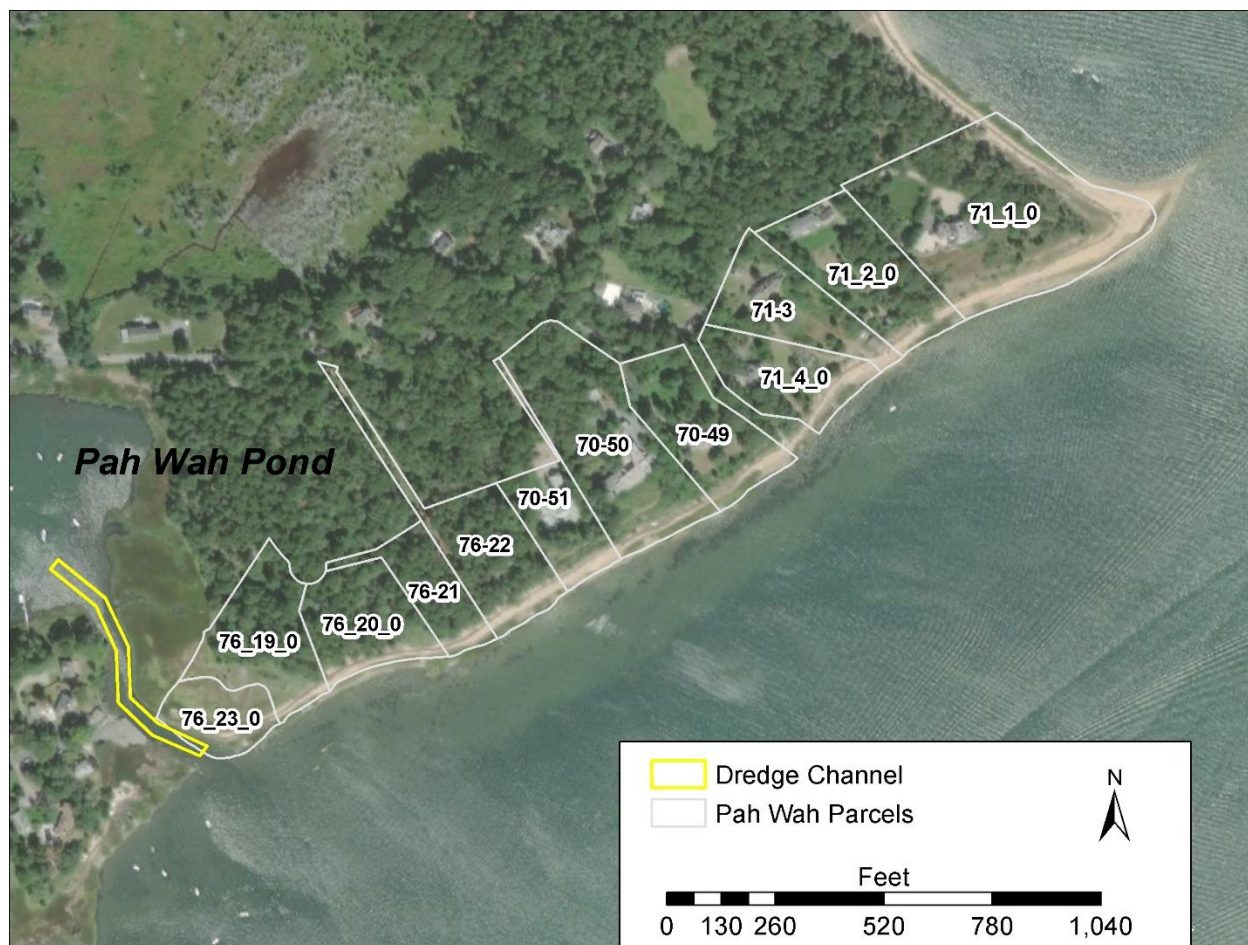


Figure 3. Location of potential beneficial reuse sites for Pah Wah Pond dredged material.



Mechanical dredging methods could also be used to construct the channel at Pah Wah Pond. This alternative would involve the use of conventional mechanical equipment operating from a spud barge. Dredged materials would be placed into a spoils barge to dewater and then towed to the public landing at River Rd. where they would be offloaded into temporary cells constructed of highway barriers lined with filter fabric for further dewatering. The material would then be trucked to a previously permitted beneficial reuse site.

Recommendation for Pah Wah:

- *Permit dredging via hydraulic or mechanical means*
- *Permit River Rd. site for dewatering when mechanical dredge is used*
- *Permit beach/bank nourishment at the twelve (12) parcels shown in Figure 3 when hydraulic dredge is used (permission from property owners is required for this option)*

Arey's Pond - The dredge volume required to meet the channel design (30 ft wide; 2,100 ft long; -4 ft MLW over dredge depth) is 3,033 cubic yards. Of this material 85 % is considered beach compatible and the remaining 15% is too fine for beneficial reuse on nearby beaches. Dredge disposal sites previously permitted in 1959 are on Town of Orleans and private property, within existing salt marsh resources. Use of these disposal sites will not meet the performance standards for work in a salt marsh under the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.0), and therefore alternate disposal sites must be identified and permitted.

Site visits were conducted from the shoreline and from a boat, and aerial photography was reviewed for potential shoreline and upland placement sites. Using the 3,500 ft search radius for a small-scale hydraulic cutter suction dredge without a booster pump, no viable shoreline or upland placement sites were identified for the Arey's Pond dredge channel.

The feasibility of completing the Arey's Pond channel using mechanical dredging equipment was also evaluated. This alternative would involve the use of conventional mechanical equipment operating from a spud barge. Dredged materials would be placed into a spoils barge to dewater and then towed to the public landing at River Rd. where they would be offloaded into temporary cells constructed of highway barriers lined with filter fabric for further dewatering. The material would then be trucked to an upland beneficial reuse site or taken to an approved landfill for use as daily cover.

Recommendation for Arey's Pond:

- *Permit dredging via mechanical means*
- *Permit River Rd. site for dewatering*

Lonnie's Pond – The dredge volume required to meet the channel design (30 ft wide; 1, 850 ft long; -4 ft MLW over dredge depth) is 3,804 cubic yards. Of this material 11 % is considered beach compatible and the remaining 89% is too fine for beneficial reuse on nearby beaches. Dredge disposal sites previously permitted in 1959 are on Town of Orleans and private property, within existing salt marsh resources. Use of these disposal sites will not meet the performance standards for work in a salt marsh under the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.0), and therefore alternate disposal sites must be identified and permitted.

Site visits were conducted from the shoreline and from a boat, and aerial photography was reviewed for potential shoreline and upland placement sites. Using the 3,500 ft search radius for a small-scale hydraulic cutter suction dredge without a booster pump, no viable shoreline or upland placement sites were identified for the Lonnie's Pond dredge channel.



The feasibility of completing the Lonnie's Pond channel using mechanical dredging equipment was also evaluated. This alternative would involve the use of conventional mechanical equipment operating from a spud barge. Dredged materials would be placed into a spoils barge to dewater and then towed to the public landing at River Rd. where they would be offloaded into temporary cells constructed of highway barriers lined with filter fabric for further dewatering. The material would then be trucked to an upland beneficial reuse site or taken to an approved landfill for use as daily cover.

Recommendation for Lonnie's Pond:

- *Permit dredging via mechanical means*
- *Permit River Rd. site for dewatering*