

Salt Marsh Restoration at Savin Hill Cove

By: Danielle Hughes and William Baker

EEOS Capstone class, Fall 2011,

Dr. Anamarija Frankic

<http://faculty.umb.edu/anamarija.frankic/eeos476/ProjectSites/SavinHillCoveRestoration/eeos476savinhillcoverestoration.htm>



Observing the Cove







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GIS Map of the Savin Hill Cove







DORCHESTER
VIETNAM
VETERANS
MEMORIAL



Small, illegible text listing names of veterans.

CUB SCOUT
JACK 28
SALUTE TO VETERAN
PRESENT

will live forever!



The Cove at Flood
Tide











Researched Site History

Some used in the bottom of this Chart

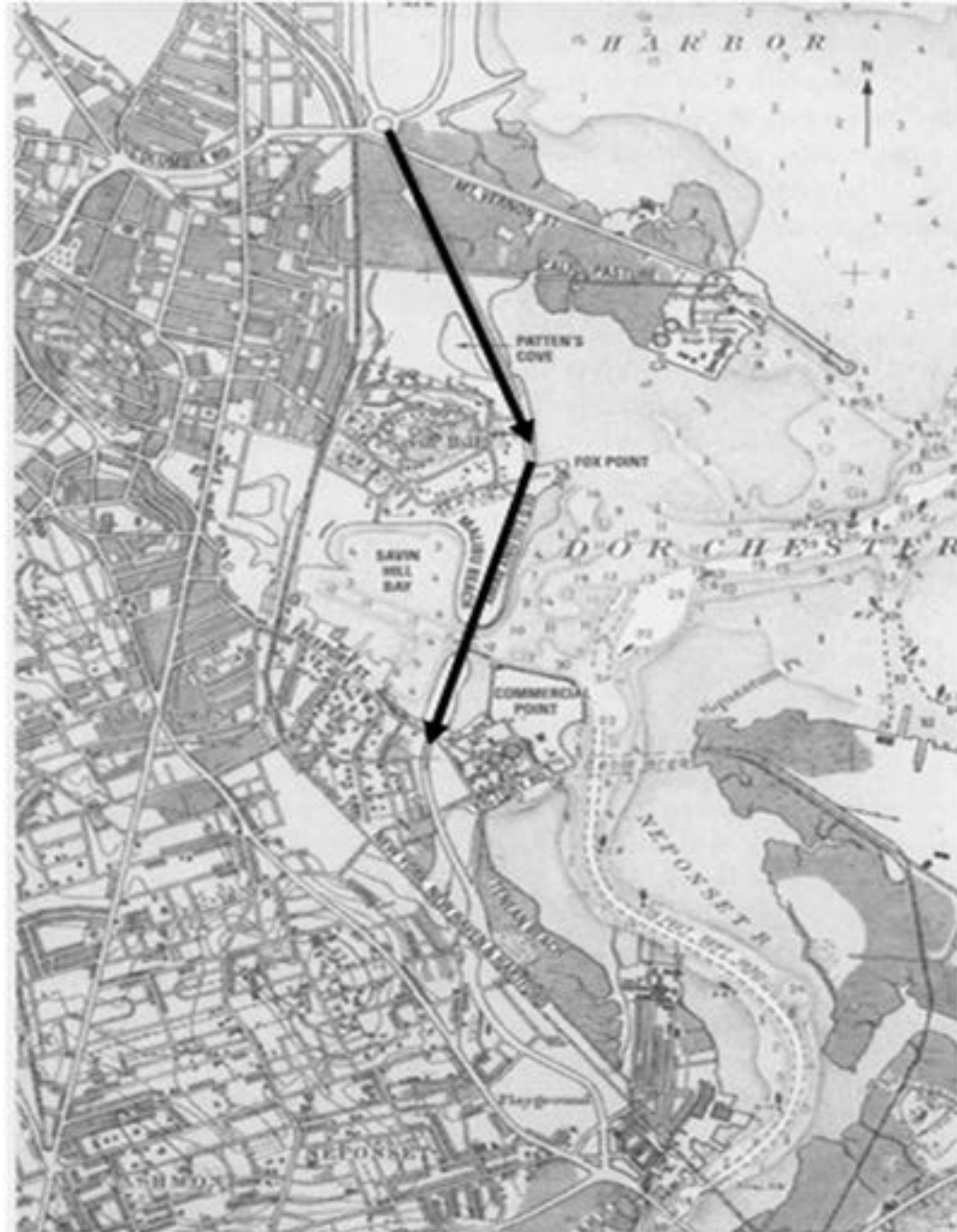
Color	Meaning	Color	Meaning
Red	Shoals	Blue	Shoals
Yellow	Shoals	Green	Shoals
White	Shoals	Black	Shoals
Blue	Shoals	Red	Shoals
Green	Shoals	Yellow	Shoals
Black	Shoals	White	Shoals
Blue	Shoals	Green	Shoals
Red	Shoals	Yellow	Shoals
White	Shoals	Black	Shoals

Colored materials used their qualities are represented by the following

THICK	U.S. Coast Survey	Meaning
Black	20' XXV 10'	20' 10'
Blue	15' 10'	15' 10'
Green	10' 10'	10' 10'
Yellow	5' 10'	5' 10'
White	1' 10'	1' 10'
Black	1' 10'	1' 10'
Blue	1' 10'	1' 10'
Green	1' 10'	1' 10'
Yellow	1' 10'	1' 10'
White	1' 10'	1' 10'

U.S. Coast Survey, Boston Harbor, Massachusetts ([Washington], 1857).

Map of U.S. Coastal Survey, Boston Harbor 1857



Map is from Seashole's gaining ground.

Figure 3 Is a map highlighting the Old Colony parkway construction In the early 20th century.



Plans to create
the "bump" in
Savin Hill Cove

PROPOSED FILL AT SAVIN HILL COVE
 DORCHESTER BAY OF BOSTON HARBOR
 DECEMBER 30, 1955.
 Application by Metropolitan District
 Commission - Construction Division
 No. 5.32 N-6 SHEET 1 of 1 Acc. 36,768

NO. 5841
 APPROVED BY DEPARTMENT OF PUBLIC WORKS
 APRIL 23, 1956
 John W. [Signature]
 [Signature]
 [Signature]
 COMMISSIONER OF PUBLIC WORKS
 ASSOCIATE COMMISSIONER
 DIRECTOR DIVISION OF WATERWAYS

Site Issues



A photograph showing a concrete curb on a gravel path. The curb is a light-colored, rectangular block. The path is composed of grey gravel and is surrounded by green grass and some dry leaves. Several pieces of trash are scattered on the gravel, including a dark brown object, a small white object, a piece of orange material, and a crumpled white plastic bag. The word "Trash" is overlaid in white text on the lower part of the image.

Trash





Old Rotting Docks









Figure 9

Docks



Google Earth map

Figure 9 is a GIS map of the broken down docks at the site which appear to be on UMASS property when looking at the above parcel map.

Figure 10

Savin Hill Cove Property line



Google Earth map

Figure 10 is a GIS Map of the broken down docks. In red is the approximate UMASS/ Savin Hill Yacht club property line, highlighting that indeed these docks are on UMASS's property.





Flooding







Stormwater runoff
pollution






Public Access









A scenic view of a cove. In the foreground, there is a dense field of tall, golden-brown grasses. A small, rocky path leads through the grass on the left side. In the middle ground, a large body of blue water stretches across the frame. In the background, a shoreline features several large, reddish-brown brick buildings. To the right, several sailboats are visible on the water. The sky is blue with some light clouds.

Beauty In the Cove





Phragmites australis
Common reed




Spartina alterniflora
Smooth Cordgrass

Limonium latifolium
Sea Lavender

Salicornia virginica
Pickleweed





Rhus typhina
Staghorn Sumac























A photograph of a cove with ducks and tall grasses. The water is blue and rippled. In the foreground, there are tall, thin grasses in shades of green and yellow. Three ducks are swimming in the water, and one is visible further away in the upper part of the frame. The text "Life in the Cove" is overlaid on the left side of the image.

Life in the Cove

Results

Oysters

We found 3 Native oysters (*Crassostrea virginica*), and 21 European oysters (*Ostrea edulis*), in two different channels in Savin Hill Cove.



Methods:

Observe

Research

Collect Data









Channel where the oysters
were found









Crassostrea virginica
Native oyster






Shrimp inside European oyster shell





A close-up photograph of a person's hand holding a single, dark brown, textured clam shell. The shell is roughly oval-shaped with a prominent hinge on the left side. The background is a sandy beach with some small pebbles and shadows. The lighting is bright, highlighting the texture of the shell and the skin of the hand.

Hard clam
Mercenaria mercenaria



Ilyanassa obsoleta
Mud snail



Mytilus edulis
Blue mussel



A photograph of a rocky intertidal zone. The ground is covered with small, multi-colored pebbles and larger, flat, greyish-brown rocks. Several large, bright green, leafy seaweeds are scattered across the rocks. Numerous periwinkles, which are small, dark-shelled mollusks, are clustered together on the rocks and seaweed. The scene is brightly lit, suggesting a sunny day.


Littorina littorea
periwinkles

Ulva lactuca
Sea Lettuce



Water flow clears silty sediment creating a channel for the oysters



A close-up photograph of a European oyster shell (Ostrea edulis) resting on a colorful, patterned fabric glove. The shell is light-colored with a textured, concentric growth pattern and a prominent hinge on the left side. The glove is made of a knitted fabric with a vibrant, multi-colored pattern. The background is a dark, pebbly surface, likely a beach or rocky shore, with some small green plants visible in the lower-left corner.

Ostrea edulis
European oysters

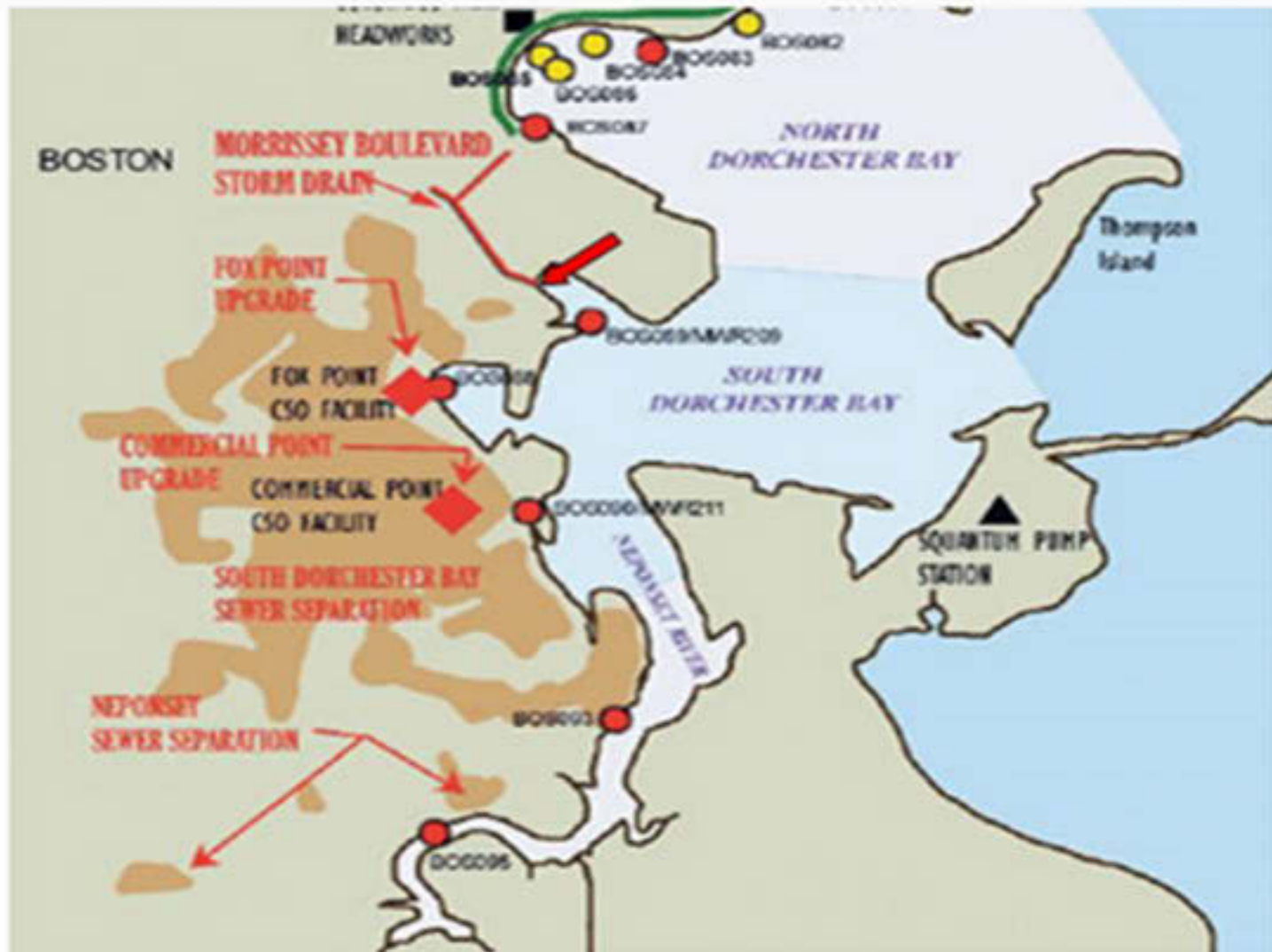








Results: MWRA map of CSO's

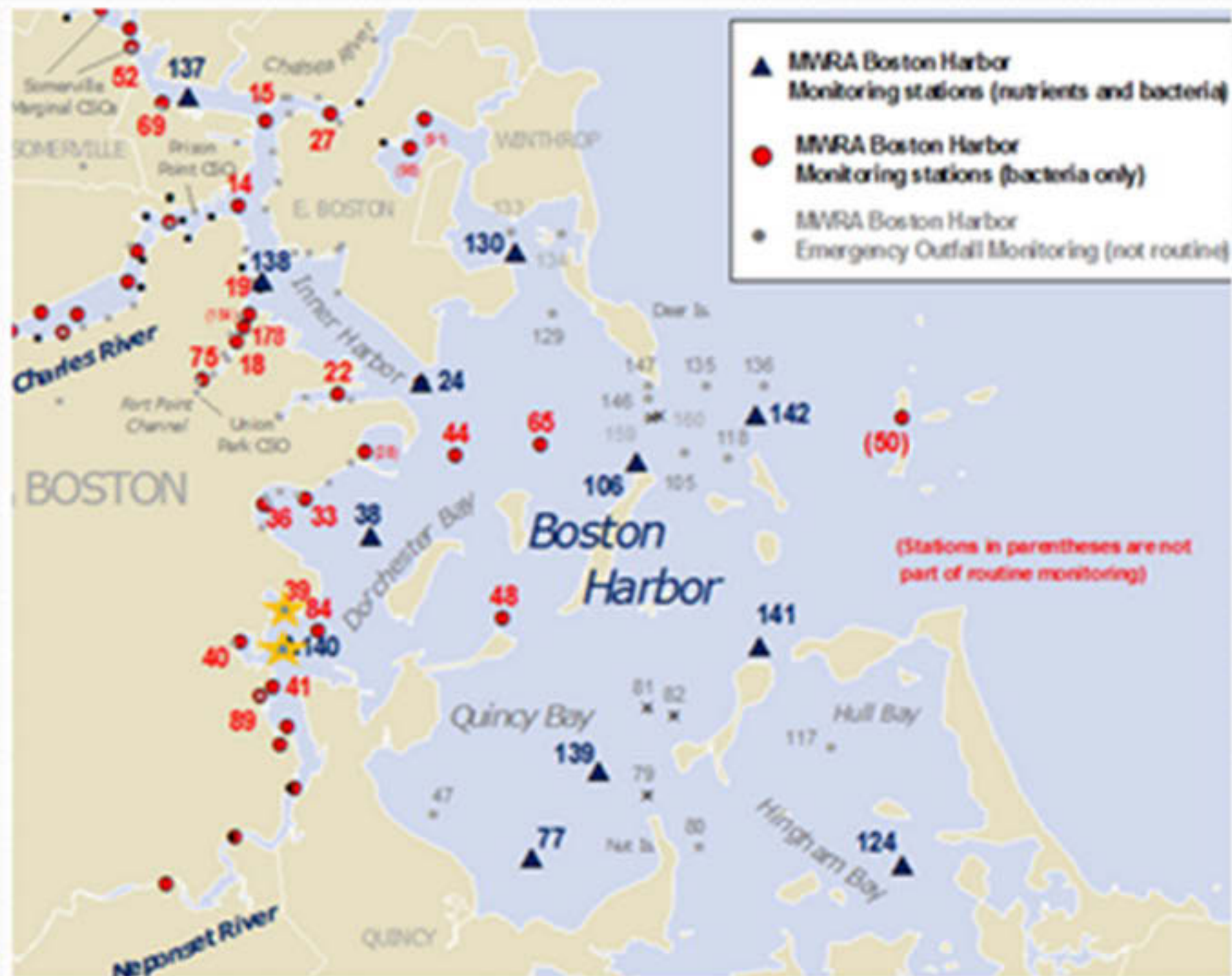


LEGEND

- CSO Outfall Closed
- CSO Outfall To be Closed
- CSO Outfall To Remain
- ▲ Existing Pump Station
- ◆ Existing CSO Treatment Facility
- Existing Headworks
- Existing Conduit/Pipeline/Connection
- ◆ Decommissioned CSO Facility
- Conduit/Pipeline/Connection Project
- Sewer Separation Area

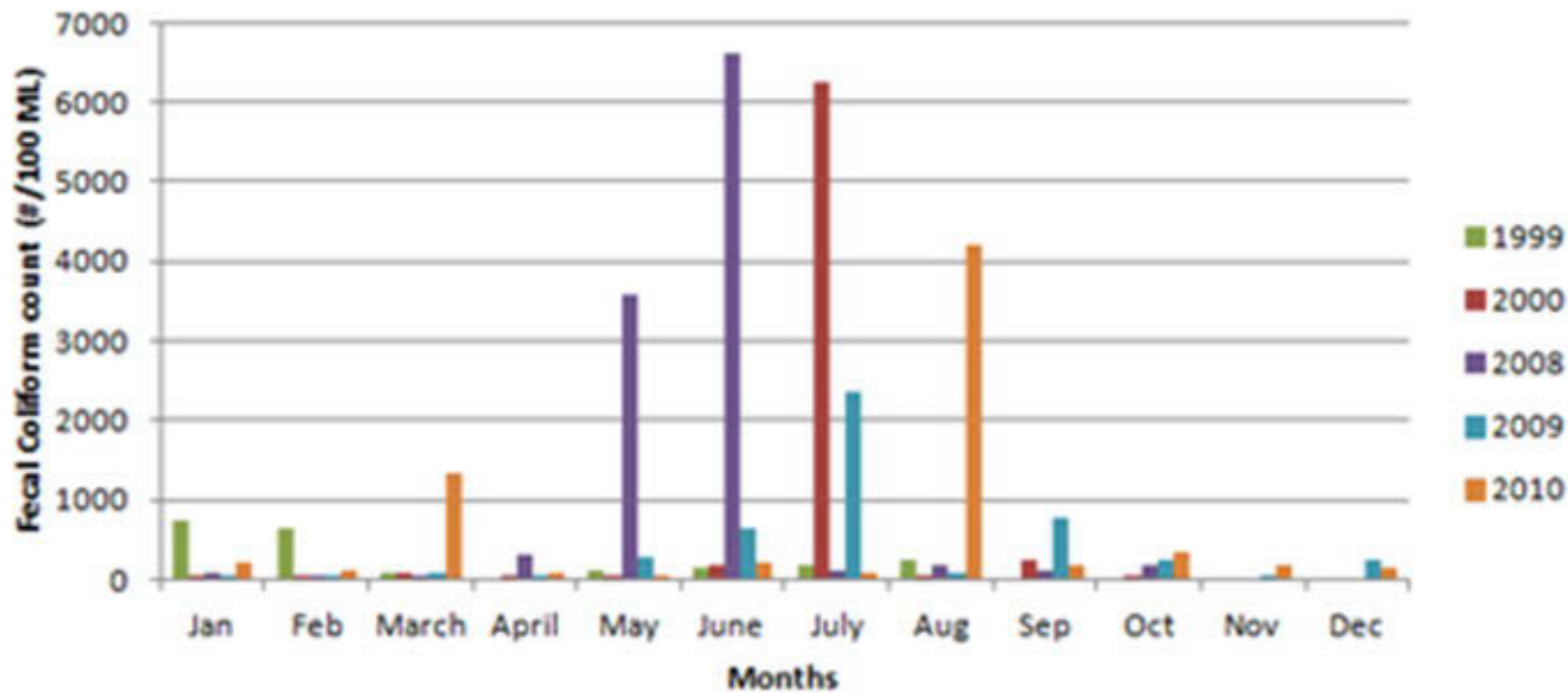
Figure 5 is a map from the MWRA of CSO's in the Dorchester Bay area.

MWRA Map of Monitoring sites

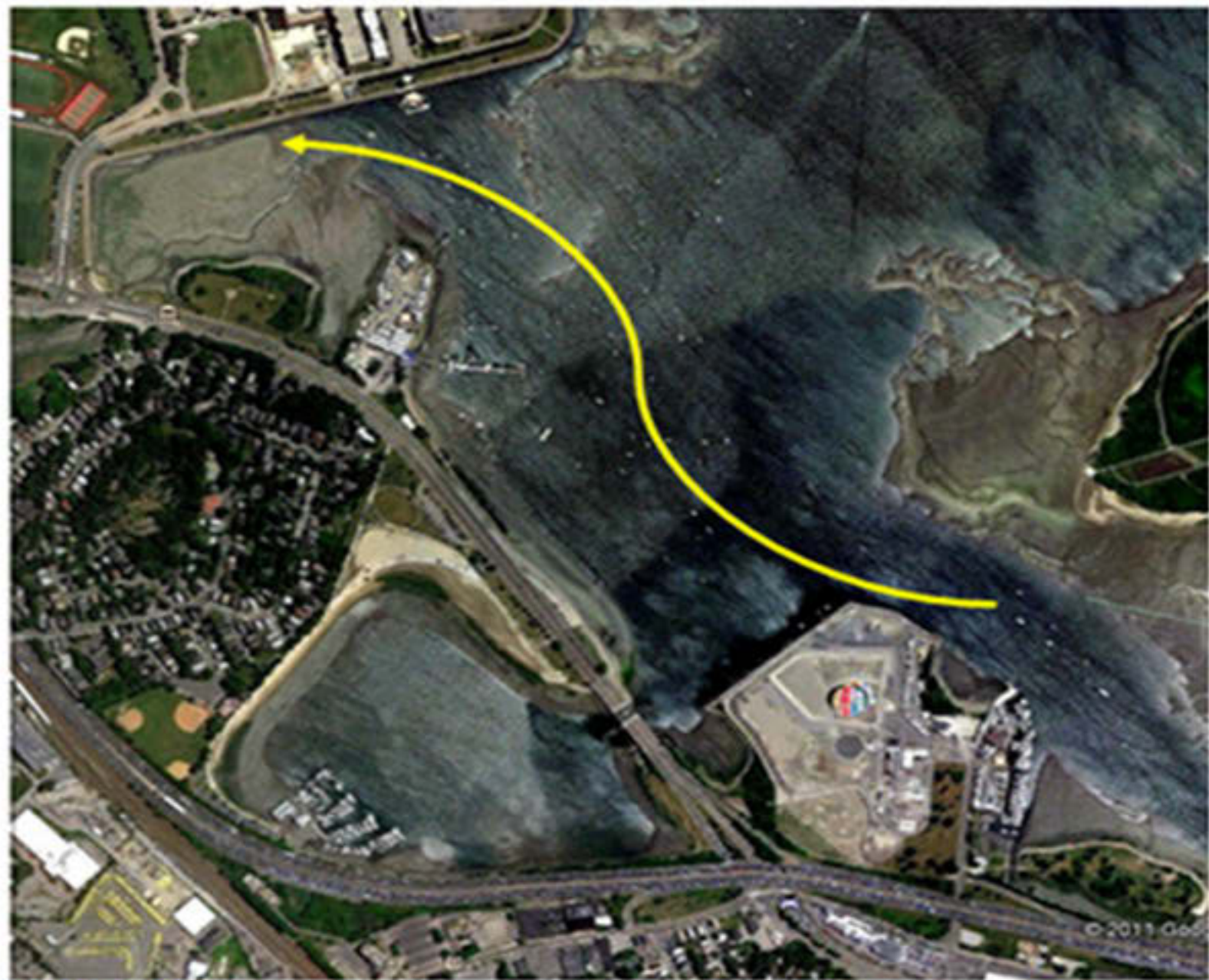


Results: Graph of MWRA Data

Monthly average Fecal Coliform Count Compared by year



Results: Sediment Transport from Neponset River



Google Earth

Figure 4 is a GIS map of the showing the sediment path from the Neponset river collecting in the Savin Hill Cove.

Lower Neponset River Restoration: USGS PCB Data, Initial Sampling Round

Legend for Main Map

📍 Dam Locations

🌳 Open Space

🌊 Neponset Watershed

PCB Sediment Grabs

Multiples of Soil Standard

🟢 0 - 1

🟡 1 - 3

🟠 3 - 5

🔴 5 - 20

Legend for Inset Maps

PCB Core Samples

Multiples of Soil Standard

🟢 0 - 1

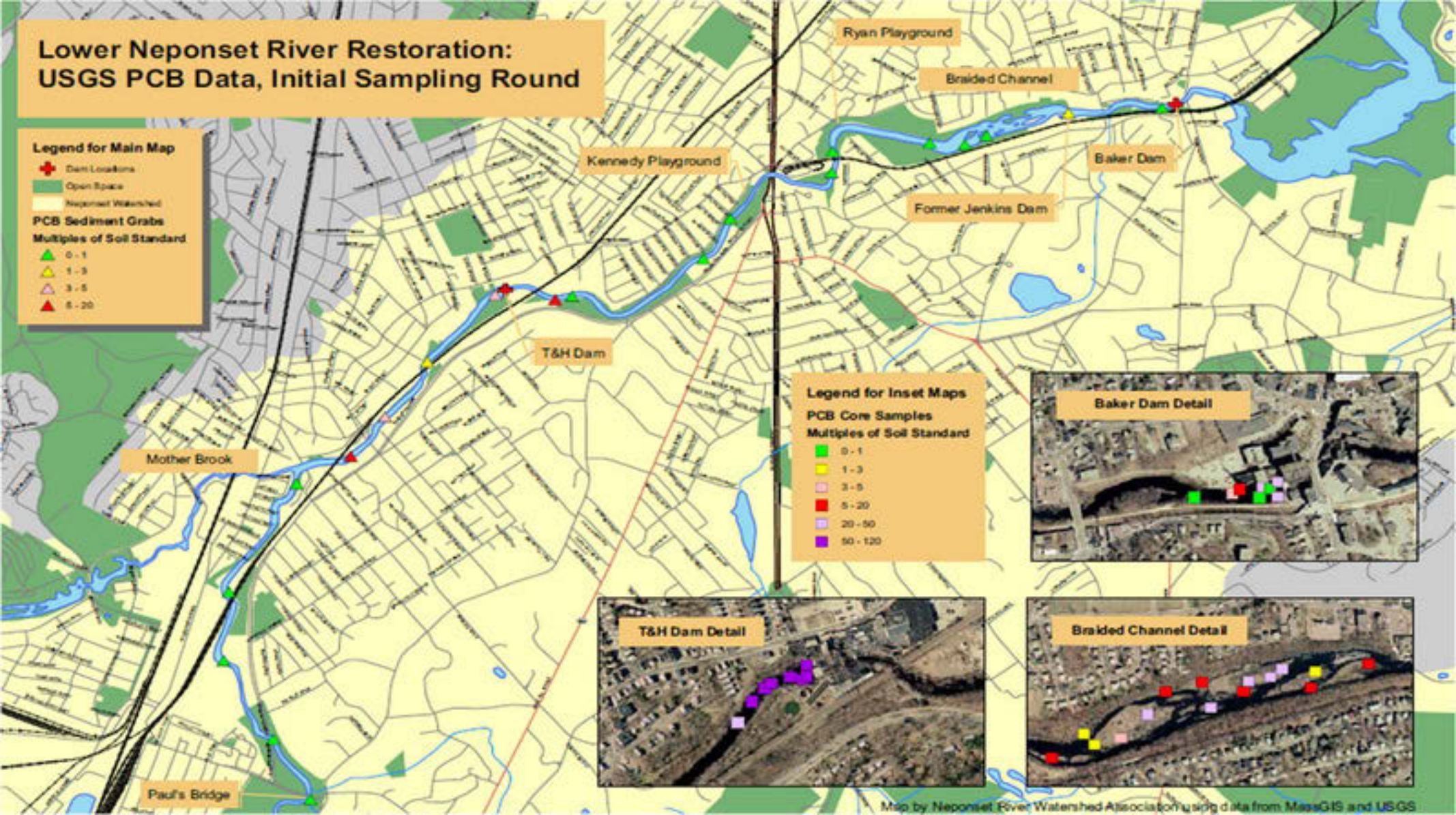
🟡 1 - 3

🟠 3 - 5

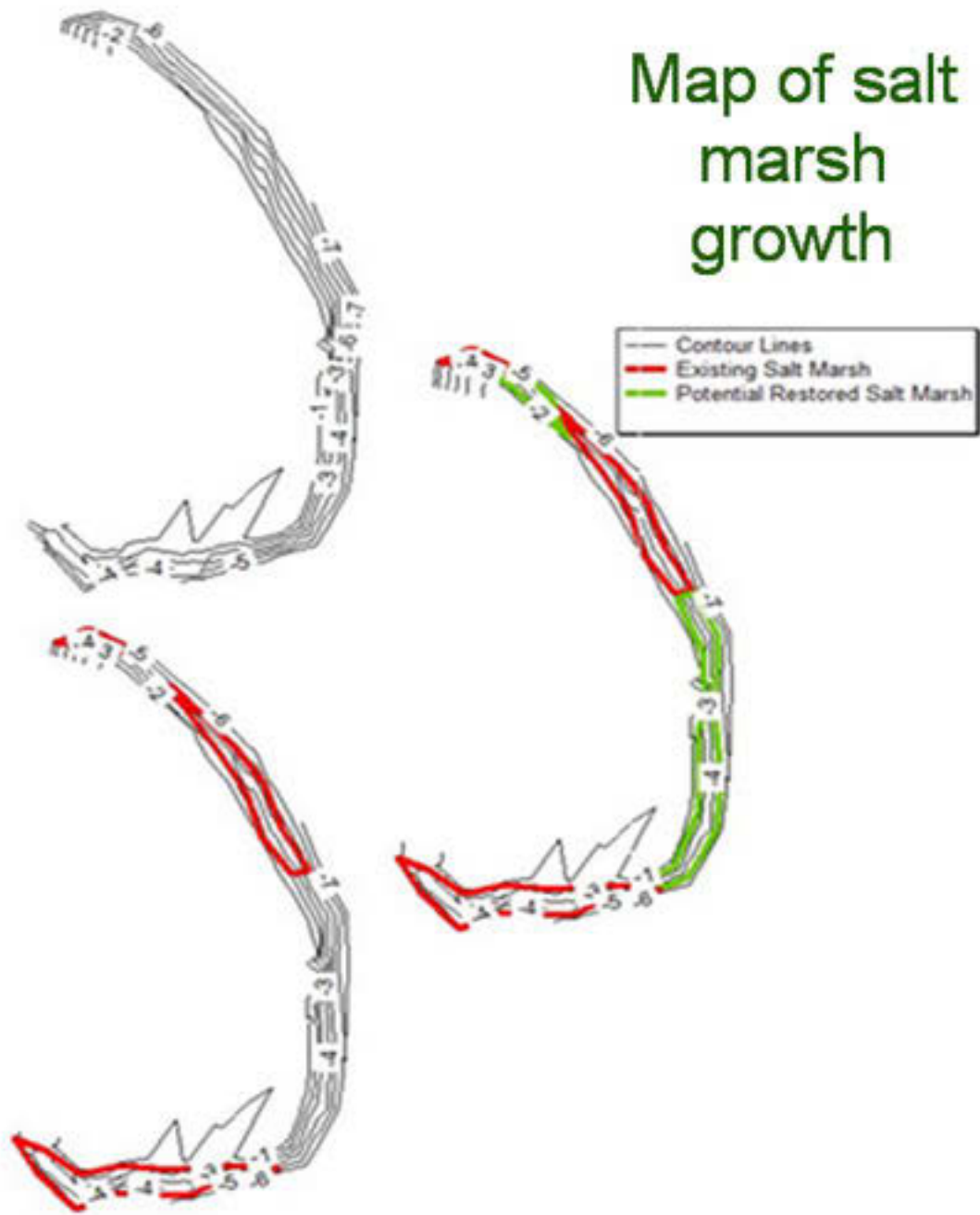
🔴 5 - 20

🟣 20 - 50

🟤 50 - 120



Map of salt marsh growth



Map made by Timothy Maguire

Figure 20 is a contour map highlighting current and potential areas of salt marsh growth.





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Imagine this old dock
could be a floating salt
marsh!!







Living Labs





Students can monitor and collect baseline data







Vision of the future

Picture taken by Danielle Hughes and merged
with a picture from www.lftantillo.com.



The End

Picture taken by Danielle Hughes

Acknowledgments

We would like to thank everyone who helped guide us through this project. Thank you for giving us your time and your knowledge, it was a gift. Without you this project would not have moved along so effortlessly, and hopefully someday because of the knowledge you shared we will be able to restore the Savin Hill Cove into a clean, beautiful marsh.

- Susan Redlich, former manager of the MA-Corporate Wetlands Restoration Partnership, at UMASS-Boston Urban Harbors Institute.
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- Timothy Maguire, Development of a salt marsh restoration site selection method for urban harbors.
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- Brian DeGasperis, coastal ecologist for the trustees of reservations
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