Harbor Monitoring Platform

Directed by: Sam Janis New York Harbor Foundation Restoration Program Manager

The Urban Assembly New York Harbor School

MBRP

2014-2015

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What is a HMP?

- A harbor monitoring platform is one single place where you can gather water quality data and view what is going on down below the water using the camera.

Rationale

- Water is a very important substance in our lives and has been for a very long time.
- The importance in this project is to restore our water back to once it was and restore oysters to the harbor.
- This project is attempting to help restore the harbor to once it was to do this the placement of additional live oysters in the form of nursery would have to be done

What's on the platform?

- What we will use to gather data will be is:
- YSI *Inc*.EX2O2 Water Quality Monitoring Sonde.
- To study water currents SonTek Argonaut-SR multi-beam Doppler water velocity monitoring sensor.
- The type of camera that will be used is a Wild Goose Imaging Clean Sweep 2 pan-tilt-zoom with self-cleaning.

Sondes: EXO1 EXO2

Cable connector, battery valve, and expansion port for an additional sensor

EXO2 sonde contains 6 universal sensor ports plus a central port for an anti-fouling wiper

Battery Compartment

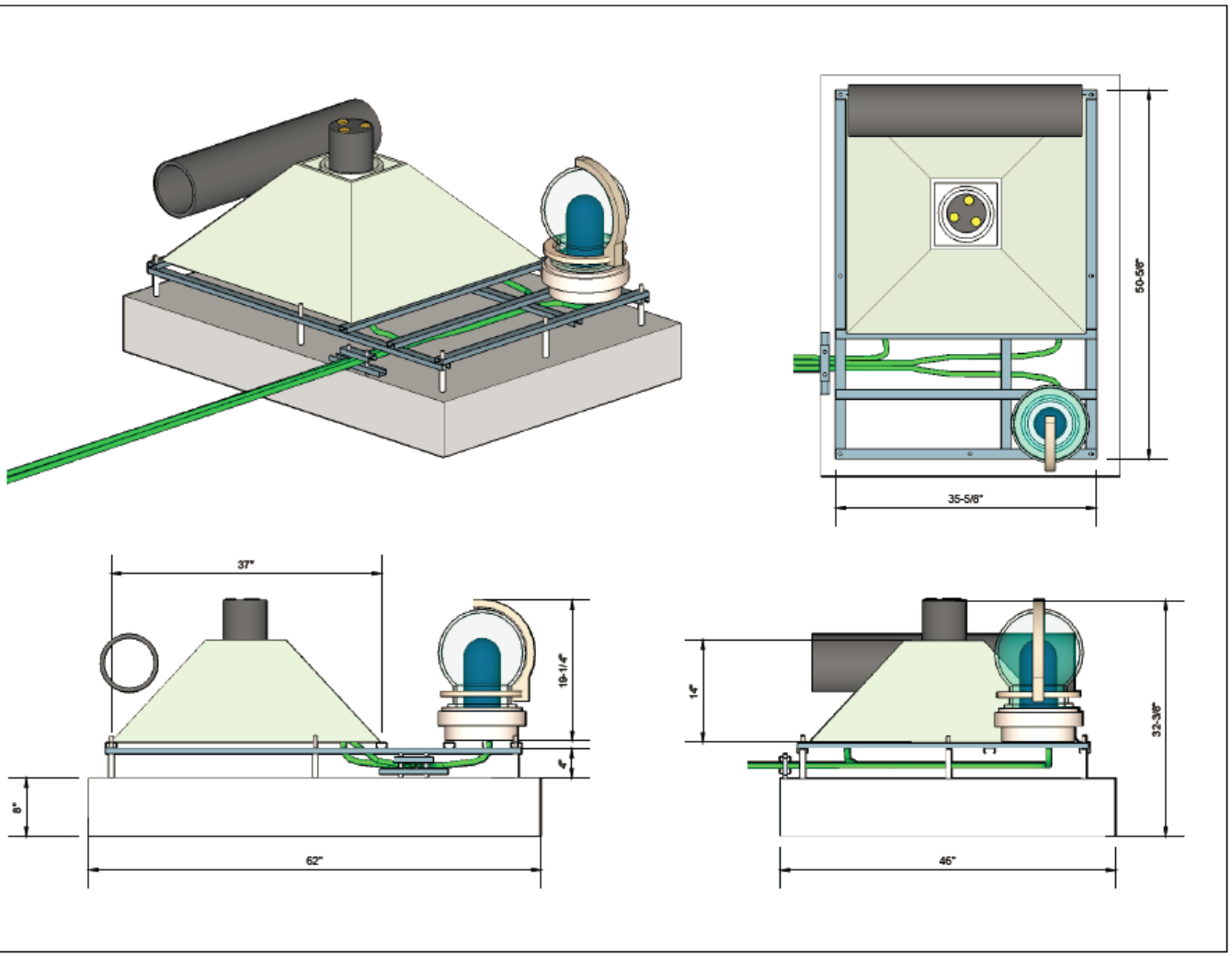
Cutaway: Reinforced internal structure

Wiper keeps sensors clear of biofouling

Welded Titanium Housing

EXO1 sonde contains 4 universal sensor ports


SonTek



Wild Goose Imaging
View into the Blue

CLIENT
Harbor School
10 South St.
New York, NY 10004
Tel: 718.361.7100

PROJECT
Harbor School
Science Platform
& Video System

DRAWN BY
BDC

DATE
09.15.13

Materials
- 1/2" SS Stainless
Steel All-Thread
- 13/16 x 1-5/8
Stainless Steel Strut
- Concrete

Science Platform
Sensing Equipment
& PTZ Camera

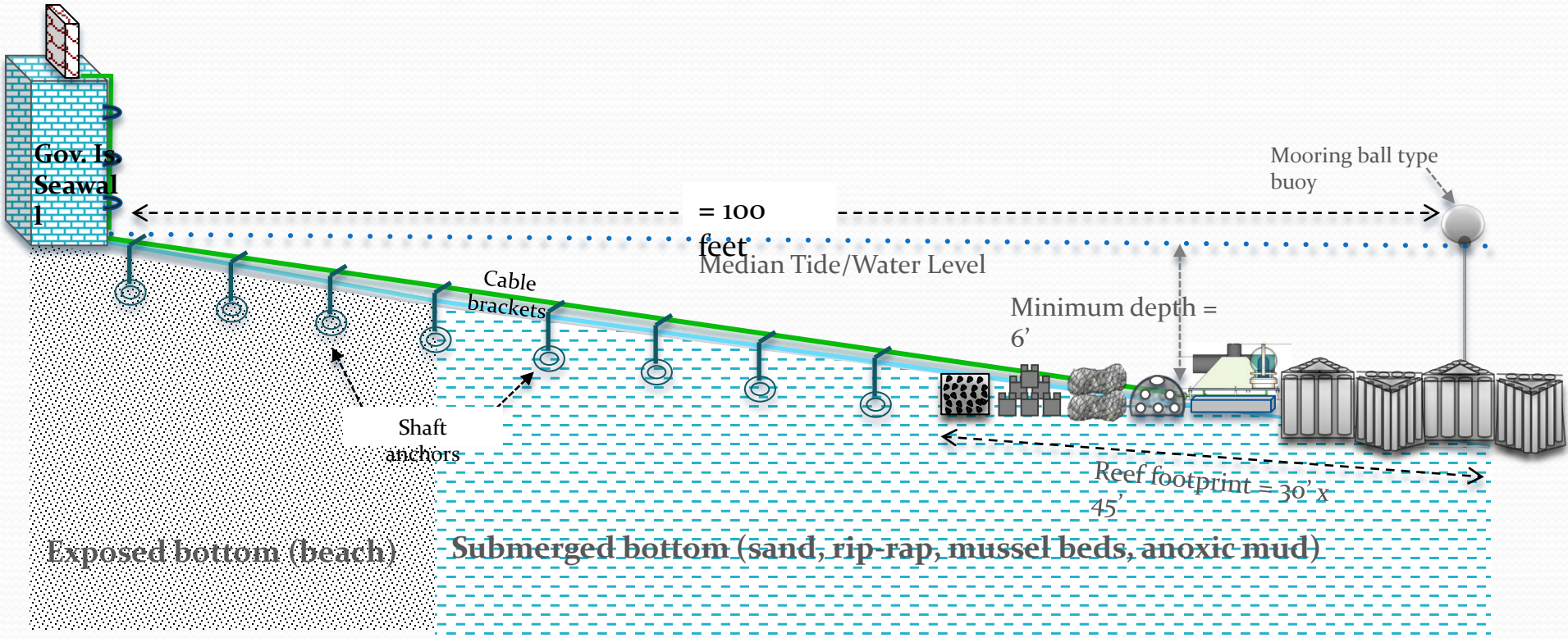
A.02

Installing the Harbor Motoring Platform

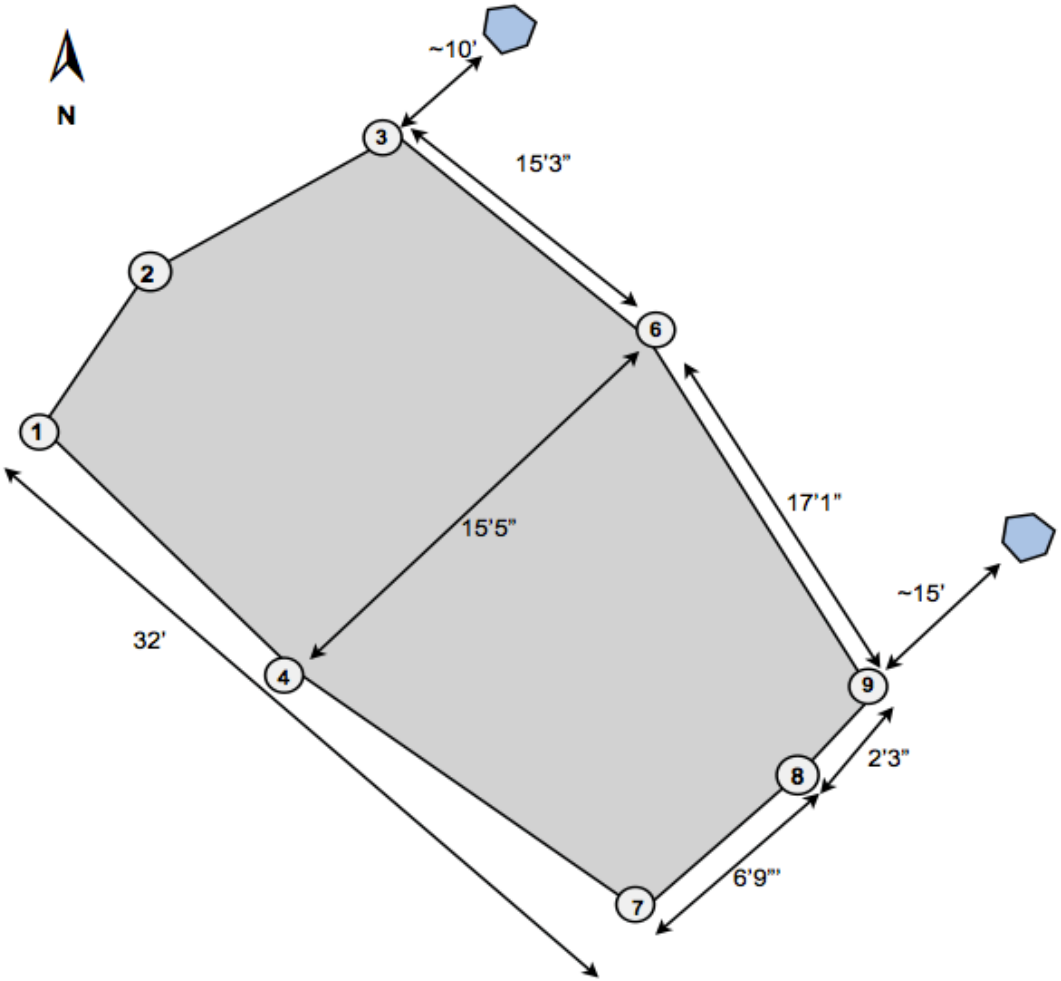
- • Transport concrete slabs from the back of the school to experiment location
- • Use a pulley to lift concrete slabs up from the ground and place in the truck.
- • Drive the concrete slabs over to the Yankee Pier and place the balloons on them
- • Use the boat with the Crain to lower the blocks into the water to a location where so they can remain afloat In the water and are easier to move.
- • Once the concrete slabs are lowered into the selected spot in the oyster reef, connect the existing cords to the Wild Goose Imaging HD54-PTZ-Clean Sweep 2 pan-tilt-zoom self-cleaning underwater camera system.
- • The EXO2 Water Quality Monitoring Sonde and Xylem Inc. SonTek Argonaut-SR multi-beam Doppler water velocity-monitoring sensor.
- • The YSI MUST BE CONNECTED UNDERWATER. This will make calibrating easier and is suggested by YSI Inc.

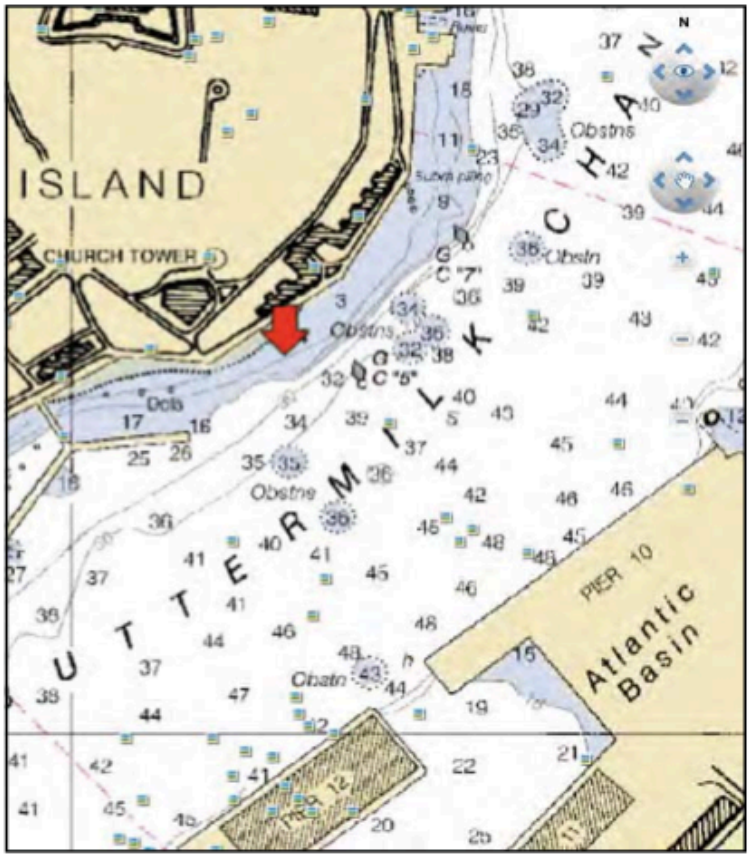
Procedures for switching out YSI from Science Platform

- • A scuba diver will go out first to bring up the take out YSI From under the water to be pulled on the boat
- • The boat must drive out from the sea wall else at the beach, and to oyster reef with the Science Platform
- • The scuba diver must be told to retrieve the YSI and bring the YSI to the boat.
- • Once the scuba diver is out of the water, they will give the YSI to people on the boat and then switch the YSI
- • The YSI must be disconnected from the cord and put in its storing case until the next time it is needed
- • The undeployed YSI will be l be connected to the cord and with it storage casing taken off be ready to be brought down underwater
- • Lastly, the scuba diver will bring the YSI underwater and put it back into its casing.


Gov. Is. Seawall
= 100 feet
Mooring ball type buoy
Median Tide/Water Level
Minimum depth = 6'
Cable brackets
Shaft anchors
Reef footprint = 30' x 45'
Exposed bottom (beach)
Submerged bottom (sand, rip-rap, mussel beds, anoxic mud)

Governors Island Oyster Reef: Reef Footprint and Actual Location





Installed Oyster Reef
R Reference Anchor
1 Shaft Anchors
Mooring Anchor

Oyster Restoration Research Project, 01/18/2011.

Governors Island Oyster Reef.

Not drawn to scale.

Orientation is approximate.

Calibration set up

- For correct results, carefully rinse the EXO calibration cup with filtered water, and then rinse with a small amount of the calibration Standard for the sensor you are going to calibrate. Once done throw away the standard rinse, and refill the calibration cup with fresh calibration standard to the fill line. For the smaller sensors fill it to the second, for the bigger ones fill it to the first. And last tighten the calibration cup you can do this for the following Conductivity PH and Turbidity

Calibrating pH

- To calibrate pH Select the 3-point option to calibrate the pH probe using the three calibration standards. The 3-point calibration method assures maximum accuracy because you're using all calibrations solutions. Pour the correct amount of pH solution starting with pH 4.00 the 7.00 and then the 10.00

Calibrating conductivity

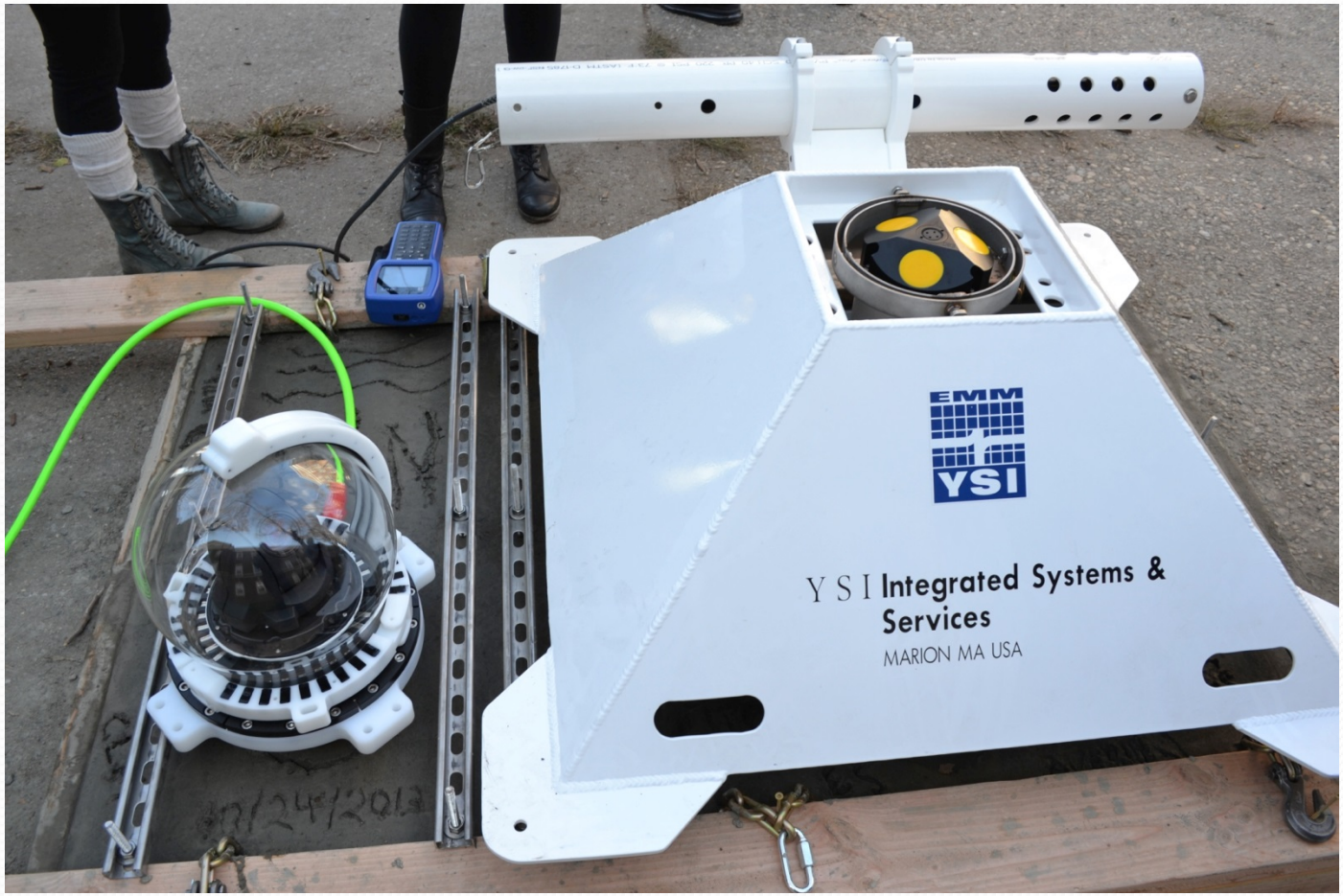
- Place the correct amount of conductivity solution in an EXO calibration cup and carefully submerge the probe into the solution; Make sure the standard is above the vent holes on the conductivity sensor. Rotate and move the sonde up and down to remove any bubbles from the cup. In the Calibrate menu, select Conductivity, and then a second menu will appear offering the options for calibrating conductivity. Enter the value of the standard used during calibration. Once done then Click “Start Calibration”. Look at the readings under the categories Current and Pending data, once stable, clicks apply to accept the calibration.

Calibrating Dissolved Oxygen

- Place the sonde with sensor into either saturated air or saturated water making sure there are no water droplets on DO sensor. Place sensor into calibration cup containing about 1/8 inch of water with the sonde vented by the loose threads of the cup. Do not seal the cup to the sonde. In the Calibrate menu, select ODO and then select ODO %. Click the one point calibration and enter the standard value. Click “start calibration “look the readings under Current and Pending data points Once stable click apply to accept the calibration.

Observations and results

- Building the platform is possible with the right materials and measurements. In order to accommodate all parts of the platform experiment must be 35-5/8” wide and wise 50-5/8”long. A 100’ long cord must reach from the platform to the data station is.


EMM
YSI
YSI Integrated Systems & Services
MARION MA USA