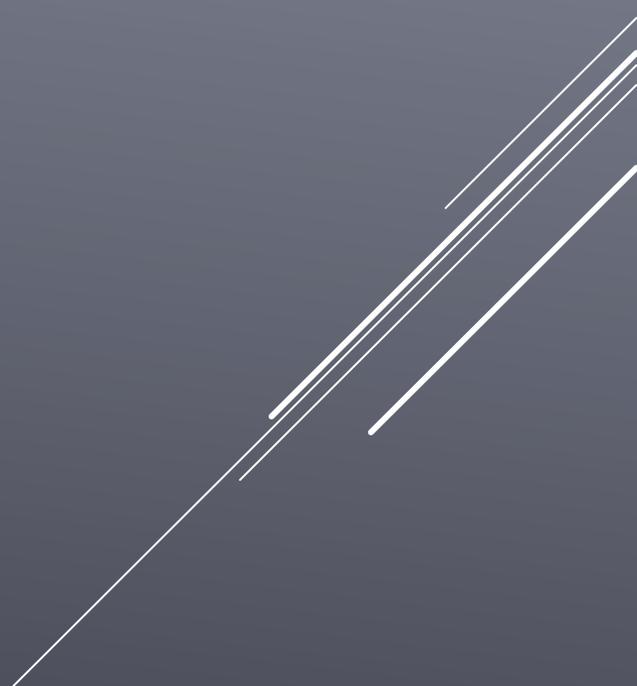


# MANAGING A CITIZEN SCIENCE PROGRAM: THE HARBOR S.E.A.L'S

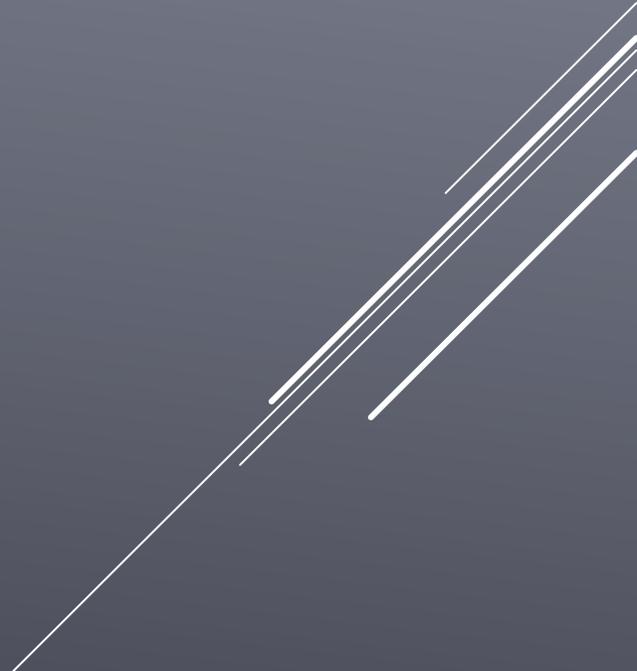
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# ABSTRACT

- ▶ There are many tasks to complete when managing the New York Harbor sea, estuary air and land (SEALs) program, a citizen science monitoring program hosted by the Marine Biology Department of the New York Harbor School, funded by the Environmental Protection Agency (E.P.A).
  - ▶ Daily tasks include helping to organize the sampling equipment (YSI Sensor, Dissolved Oxygen test kits, test strips) checking to see if any assistance is required, check that procedures are being done correctly and efficiently, and set up dates to celebrate important events and sampling.
  - ▶ Over the course of three years, the Harbor SEALs have managed to successfully (but not without a few flaws) sample four different points along the New York Estuary and collect data to submit to the E.P.A, successfully train over thirty high school students in water quality testing and work readiness, and host the 4<sup>th</sup> annual NYHS Science Symposium.
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# INTRODUCTION

- ▶ Organization is key when managing the Harbor SEALs program. Everything must be recorded in order to maintain efficiency with data collection and training of the students.
  - ▶ The Harbor SEALs main task is sampling water quality at four different points along the New York Harbor at least 24 times in order to monitor its health and ability to sustain a healthy marine ecosystem. Multiple tests are used to sample the quality of the water, including; Dissolved oxygen (Winkler Method, YSI sensor), pH (YSI sensor, test strips, Hana combo sensors), Nitrogen (photometer, test strips), turbidity (turbidity tube) and temperature.
  - ▶ Assisting with the organization of the 4<sup>th</sup> annual New York Harbor School Science Symposium is
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# MATERIALS

Item	Quantity	Purpose
Computer	1	Keep track of volunteers and materials; Create slideshows; Create word documents; Send important emails
Flash Drive	1	Back up computer files
Printer	1	Print handouts; Make copies; Scan Important files
Paper	N/A	Create handouts
Clipboard	1	Surface for writing data while mobile
Folder	1	Store extra papers; Keep papers organized
Attendance Sheet	1	Keep track of volunteer hours; Receive Snack for Volunteers; Maintain even group sizes

# PROCEDURES

- ▶ Start Up: In order to start the SEAL's program, underclassmen are interviewed and tested to see if they reach the standards for participation and will be able to keep up in a group. A slide show presentation (See annex 1) explaining what we do in the SEALs was created and shown to the underclassmen, followed by up interviews with the students as a final entry process, and to assist student in preparation for these interviews, documents were created to give tips for being interviewed, (See annex 2). Another document was created for the interviewers to fill out while they were interviewing the students to record information (See annex 3). Once everyone has been interviewed and passes, we go on to training.
- ▶ Training: To train the tenth graders, senior and junior SEALs members demonstrate first how basic nutrient tests are conducted by using expired test strips located in the expired test strip container in the lab. Once the tests have been physically demonstrated, new volunteers are asked to perform the tests on their own under observation. Once test strip nutrient sampling is mastered, the interns are introduced to the more advanced gear, such as Hana combo sensors, YSI sensors, and the Winkler method of testing dissolved oxygen. The same process of teach and apply is used here.

- ▶ Work Based Learning (WBL): For the WBL, all students must turn in Permission Slip, SIF1 (Contact Information and Work Hours [Annex 4]), SIF2 (Learning Goals and Student Consent [Annex 5]). Finally, show I9 documentation to Mauricio for recommendation in order to complete the Applicant Gateway online application, and wait for a conformation. While at the on boarding session, you will need your I9 documentation and also your photo ID and here they will virtually sign off the intern confirming their information, and then they will wait to receive an email with an EIS number and a confirmation to start working. EIS numbers must be present on all time sheets or they will not be accepted and the intern will not be paid.
- ▶ Sampling: Before every sampling, the project manager checks in with other interns to see if there are any problems or need help with getting the sampling equipment in order. Before every sampling, all materials are assembled and if something is missing it is reported to project manager and sent to the person in charge of fixing the situation. At 2:30 every meeting, lunches are picked up. Once the team is assembled, all participants separate into their assigned groups assigned in order to begin sampling. Each group has one or two seniors, one to two juniors and two new volunteers, whether they are a freshman or a sophomore does not matter. The two groups going into Manhattan must contain students that demonstrate skill and efficient behavior in order to ensure that once the location is reached, they begin sampling quickly and efficiently in order to collect the needed data to make the 5:30 boat back to Governors Island. All groups must rinse equipment, put the equipment away, turn in data sheets to the data quality manager and make sure that all the sample vials are in labeled baggies and stored in the freezer for later nutrient sampling.

# RESULTS

- ▶ After three years of sampling the four locations, we have managed to successfully train over 30 high school students in water quality sampling
  - ▶ Successfully complete the Harbor SEALs first EPA grant project
  - ▶ Put eleven students in paid internships affiliated with the Harbor SEALs Citizen Science Program
  - ▶ Prepare over 30 students with work ready skills
  - ▶ Host the 4<sup>th</sup> annual NYHS Science Symposium
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# CONCLUSION

- ▶ Without having a project manager to oversee the many different tasks that are necessary to run the program, it isn't impossible, but it is more efficient and saves time for the supervising teacher to complete more mandatory tasks.
  - ▶ Now that it has been proven that the Harbor SEALs can successfully train high school students in water quality and other scientific and work ready techniques, they can move on to more projects that take longer or use more efficient was of sampling.
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