



Making Pollution Visible Again: Community and University Partnerships to Engage Residents in Visualizing and Taking Action Against Water Pollution in Chelsea, Massachusetts



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INTRODUCTION

Chelsea, Massachusetts is a low-income community, and most residents are racial and ethnic minorities who do not speak English as a first language. Corporations have exploited Chelsea by blocking access to the city's waterfront and discharging industrial waste into the Mystic River and Chelsea Creek.

I joined an environmental justice project organized by Wylie and Perovich in collaboration with GreenRoots, a community activist organization in Chelsea. This project seeks to involve people in environmental health research in their own communities, thereby empowering them to participate in experiments designed to show exposure to water contaminants. I worked with the GreenRoots Eco-Youth Crew as they set out to build and test thermal fishing bobs that are used to measure and map pollution data along their waterfront.

I researched and mapped National Pollutant Discharge Eliminations System (NPDES) permits from the Environmental Protection Agency (EPA) that allow oil and mineral storage companies to discharge toxic waste. I then reported my findings to the high school students in the Eco-Youth Crew. I took field notes in weekly meetings and data collection trips with the students; interviewed project researchers and others who have studied Chelsea, and had conversations with GreenRoots staff. I learned how the students understood the pollution in their community and how they responded to pollution by creating and conducting their own experiments to spread awareness of the issues on their own.



GreenRoots and Eco-Youth Crew at a community organizing event.

OBJECTIVES

- To create an action blueprint for communities that are vulnerable to water problems
- To locate the water pollution in Chelsea
- To study how Environmental Justice (EJ) communities understand pollution
- To strengthen university and community partnerships in the fight for clean water

METHODS

Community Based Participatory Research (CBPR)



Main Purpose

Conduct research on Chelsea, Massachusetts through primary and secondary data sources to understand the problems that are most important to the Eco-Youth Crew and the Chelsea community.

Examples

- Surveying all companies that have NPDES permits
- Examining EPA website and data accuracy
- Interviews with health experts

Teacher

Main Purpose

Assist the Eco-Youth Crew in understanding how to find and navigate information from the EPA website on their own, and assist the Eco-Youth Crew with their own project ideas.

Examples

- Giving lessons to students on the EPA
- Making worksheets for the students
- Guiding students through understanding data I compiled

Observer

Main Purpose

Examine how the Eco-Youth Crew evolves in their understanding of pollution, how it affects their community, and how the Eco-Youth Crew formulates their own experiment to showcase for the community.

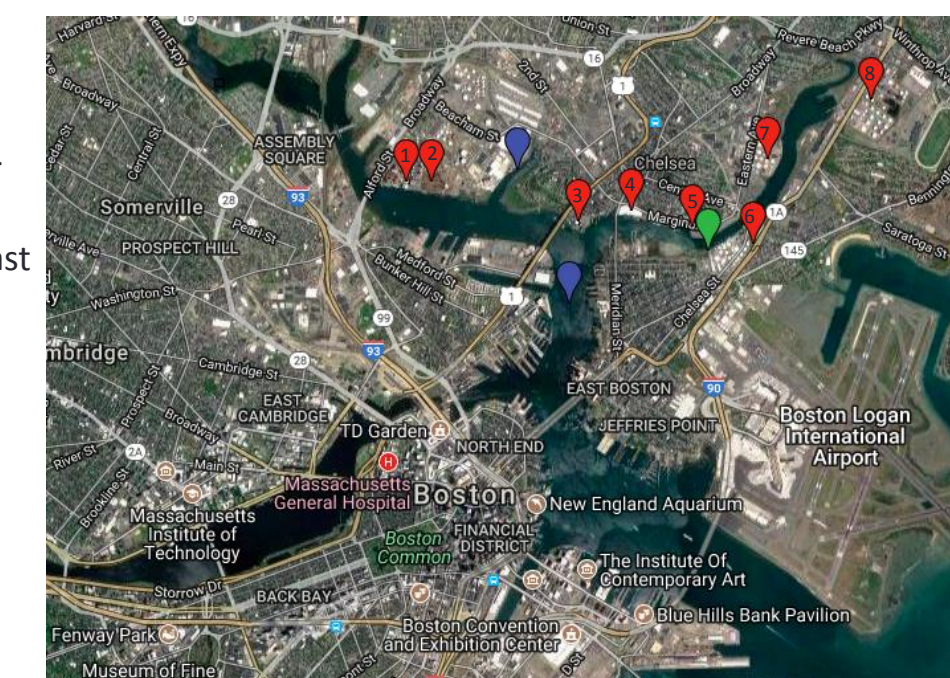
Examples

- Field Notes on every visit with to GreenRoots
- Conduct pre and post interviews with Eco-Youth Crew about how they define pollution
- Observe how students formulate their own experiment.

RESULTS

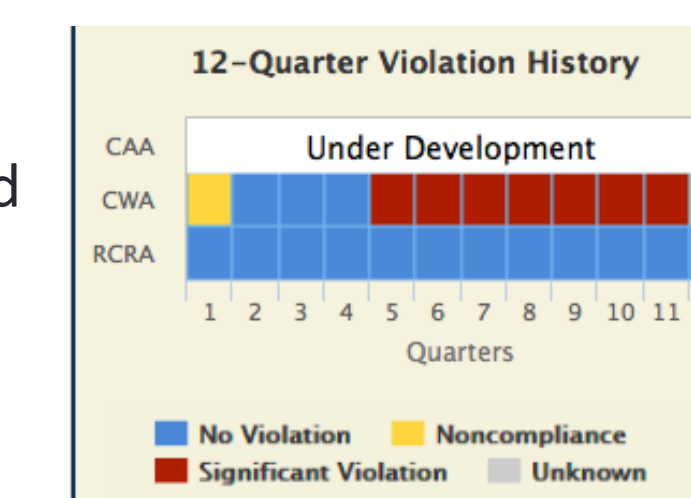
The results are compiled from information gathered through [investigating](#) Chelsea, [teaching](#) the information to the Eco-Youth Crew, and [observing](#) how the Eco-Youth Crew evolved in their understanding of pollution. The results form a holistic narrative that represents the style of how Community Based Participatory Research is conducted.

Red Markers
1. Eversource Power Plant
2. Schnitzer Northeast
3. Global Petroleum
4. Eastern Minerals
5. Green Roots
6. Sunoco Logistics
7. Gulf Oil
8. Irving Oil



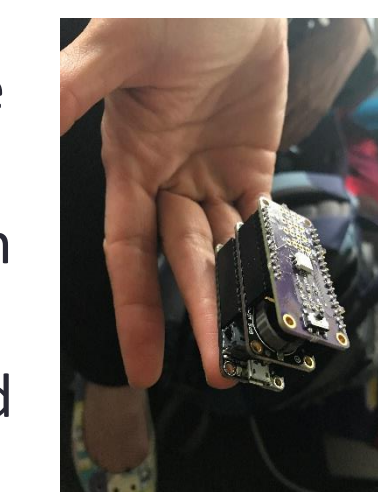
A map depicting the Boston, Cambridge, and Chelsea area. Marked in red are all of the corporations that have received NPDES permits from the EPA to allow them to discharge waste in the Mystic River.

A chart from the EPA Enforcement and Compliance History Online (ECHO) database for Sunoco Logistics (6) for the past 12 quarters.



Evidence of corporations that block access to waterfronts. From left to right—Eastern Minerals, the Oil tanks of Sunoco Logistics, and private property near Global Petroleum.

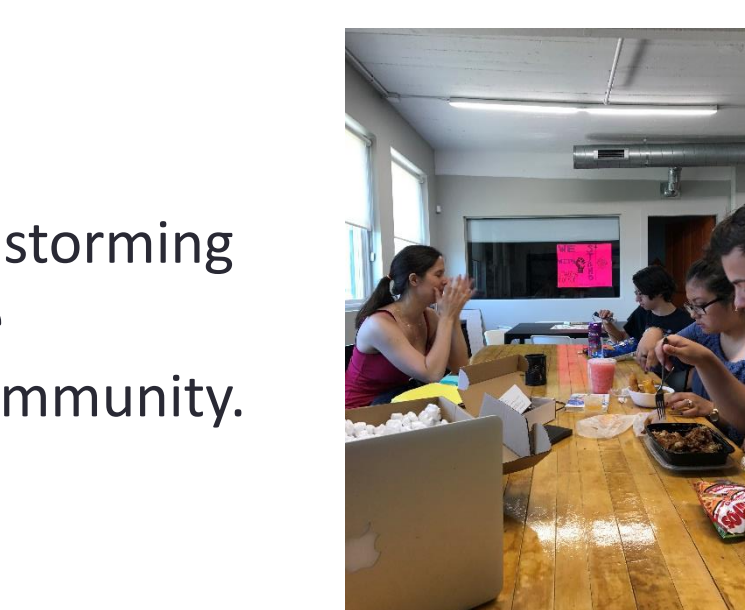
Created by MIT's, Laura Perovich, the Arduino is used in the fishing bobs. It is put into a plastic bottle and thrown into the water. The fishing bobs are able to collect GPS data, pH data, and temperature in the Mystic River.



From left to right:
David E. Ortiz
Brandon Gerson
Abraham Sara Wylie
Stephanie Cristian



A trip with the students to the Mystic River to use the fishing bobs and collect data on the locations near the corporations listed from the map I made for the NPDES permits.



Guiding the students through brainstorming for new project ideas that will raise awareness on pollution for their community.

“What is pollution?”



In post interviews with the Eco-Youth Crew, “trash” plays a reduced role, and the collective definition of pollution is more holistic, referring to new senses like “noise” and “smell”

DISCUSSION

Through these experiences, the problems of Chelsea, the vitality of the community, and how complicated it is to map and measure water pollution were discovered. It was found that Chelsea exhibits forms of procedural, social, and geographical inequities that complicate the community's ability to call for action. Grassroots organizations have the power to foster healthy relationships between researchers, and community members. This is important because in order to achieve environmental justice in communities like Chelsea, we must understand how researchers can be successfully equipped to understand the needs of a community. These relationships provide the community with additional resources and social capital, thus allowing the community to understand how to navigate through these inequities, and to become autonomous in calling for environmental action in their community.

Environmental Justice is important to UWIN's agenda of finding solutions for sustainable urban water because fixing the problems of people and communities that need the most assistance will require feats of innovation and teamwork between scientists and residents. This innovation will spur new ideas that will make moving towards a sustainable future easier, efficient, and cost-effective. Once we figure out how to fix the problems for our most vulnerable citizens, fixing the problems will be easier for communities that have more funds to capitalize on the innovative infrastructure and ideas created by projects that are dedicated to helping the poor. This research also empowers the most affected communities to fight for clean water themselves, saving resources for continuous efforts in the future.

Next steps for this project include utilizing CBPR techniques with other universities and EJ communities. This will help to address water pollution on a broader scale. By forming these relationships, we open the door to solving the most crucial problems most important to communities in need.

ACKNOWLEDGMENTS

First and foremost, I would like to thank *Roseann Bongiovanni*, the Executive Director of GreenRoots for allowing me access to the organization. *Madeleine Scammel* Ph.D, Vice-Chair of GreenRoots for providing health information on Chelsea, Massachusetts. The *Eco-Youth Crew* for their outstanding dedication to the projects and the research. *Adela Gonzalez* for assisting with the Eco-Youth Crew. *Mariana Sarango* for her assistance and feedback on my project. I would like to thank *Sara Wylie* and *Laura Perovich* for allowing me to participate in their joint study with the Eco-Youth Crew. Last, but not least, I would like to thank *Sharon Harlan* for giving me the opportunity to come to Boston and guiding me through my research with the entire UWIN team.

This work was funded by the NSF Sustainability Research Network (SRN) Cooperative Agreement 1444758