

Maria Dulin

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Final Action Plan Report: Save the Lake

For as long as I can remember, I have always had a passion for science: learning the how and why things work, and protecting the earth around me. It is because of these passions which have been inherently present in my life since a young age that recently I have found my love for environmental science. When I attended the Brown Environmental Leadership Lab (BELL) Rhode Island session last summer, my passions multiplied. My desire to make a difference in the everyday world around me was something that I could not stop thinking about.

We had one session on the pollution of waterways from rainwater runoff. During the session I could think of nothing but the lake in my neighborhood back home, and all the evidence of contamination I had witnessed without ever really realizing it. I decided in that lesson that my Action Plan would be to track this contamination, and raise awareness in my home community of the dangers of contamination due to rainwater runoff.

This issue of contamination stems from the houses which sit on a hill directly above the lake. When it rains, the rainwater streams down the hill and drains into the lake, transporting sediments, lawn fertilizers, animal feces, and many other contaminants from the neighborhood above. The lake is central to our neighborhood community since people fish year round, and in the summer families and children swim in it almost every day. For us to be oblivious to this contamination from runoff is not only naïve, but dangerous.

Originally, my plan was more about raising awareness and educating those back home of the dangers of rainwater runoff, but the end goal was and still is to make changes in my neighborhood such as planting riparian buffer zones and rain gardens to slow the runoff and

contaminants rushing into the lake. However, I soon realized that without concrete evidence, I would get nowhere in my efforts.

I began to take samples of the lake water at different temperatures and when there were varying degrees of precipitation from July 2015 to January 2016 and tested Dissolved Oxygen, and presence of Nitrates, Phosphates, pH, and Coliform. The results were recorded in a chart and the data was categorized into four different categories: rain, no rain, warm air temperatures, and cold air temperatures. The averages of data for rain and warm air temperatures was greater than the averages of all the data together. The averages of data for no rain and cold temperatures was less than the average of all the data together.

	Air Temp °C	Water Temp °C	Dissolved Oxygen	Nitrate	pH	Phosphate
Total Averages	14.76	16.55	52% saturation	2.05 ppm	8.05	1.3 ppm
Rain Data Averages	16.2	17.9	55.4% saturation	2 ppm	8.25	1.4 ppm
No Rain Data Averages	12.6	14.5	47.6% saturation	2 ppm	7.75	1 ppm
Warm Air Temps Avg.	21.16	22.5	62.4% saturation	2.9 ppm	8.2	1.6 ppm
Cold Air Temps Avg.	8.36	10.6	42.5% saturation	1.2 ppm	7.9	1 ppm

During the course of the investigation, I decided to turn my experiment into my science fair experiment for my school. Later, several students including myself were chosen to bring our projects to the Chester County Science Research Competition, a local science fair for middle and high schools in our area. From here, I was honored to advance to the Delaware Valley Science Fair. After undergoing rounds of judging and interviews, I placed second in the 12th grade

Environmental Science Category, in addition to receiving the award for Women in Geosciences and the NOAA “Taking the Pulse of the Planet” award. It was an absolute honor to see that the efforts I had taken to make my community at home a better place were recognized not only on the small scale of my neighborhood, but in a much larger context as well.

My project has been so much more than wading knee deep into lake water in order to test for contaminants. It has brought to my attention how sensitive our planet is, in both good and bad ways. This is bad for obvious reasons: the smallest of environmental mishaps could lead to disastrous endings. However in the same way, it is beneficial. If people become aware of what is going on in the world around them, and take time to see how their actions impact the environment, so much change can be made and we would be in a much better place environmentally. It has definitely been beneficial for me to have completed this much of my action plan on my own, because it has solidified in me a passion that I am sure to pursue for the rest of my life. I was unsure of what I wanted to do in college, but now I am confident that where I am – studying environmental science at Northeastern University – is where I should be. I am definitely aware however that in order to advance my project and make concrete changes such as planting the buffer zones and rain gardens, I will need to present my data with confidence, and employ help from the chairs in my neighborhood community and residents as well. Since I will not be at home for an extended period of time until next summer, I will have to delay planting the buffer zones until I am home and can dedicate enough time, and work into them to ensure they will be successful.

I think this Action Plan has had a very considerable effect on those around me as well. It has brought to light an issue that was literally in our backyard, and has given us a chance to change it. My family has been very supportive and are interested in making more

environmentally friendly decisions. Their efforts range from not using fertilizers on our lawn to using reusable water bottles and many other small changes in our daily life. I wholeheartedly believe that I have inspired those around me through my plan because I showed them how small changes really can make a huge difference, which will inevitably turn into big changes, especially in regards to the environment and making sure it is around for future generations.

The biggest challenge I faced with my Action Plan was skeptics. Many people struggle to believe that their single acts will make a difference or completely ignore the issue all together. I was told, “Global warming is a myth, stop dedicating time to the environment,” “Environmental degradation is real, but I’m not going to be around long enough to see the effects, so why work to change it?” These attitudes were the hardest to overcome, because arguing is not the answer, rather you have to respect each other and learn to take down these misconceptions. I learned how to effectively communicate in this way at BELL and have used so many of the skills from the public speaking lessons to make my statement heard.

A single belief has driven me from the start to take this Action Plan and run: the belief that I could change the world, and in doing so, make it a better place for myself, my community, and future generations to come. I encourage everyone working on an Action Plan to choose something which you are passionate about. The more passion you put into it, the better your Action Plan becomes, and thus you fulfill your purpose of making the world a better place.