Education on Pollution in Salisbury Pond

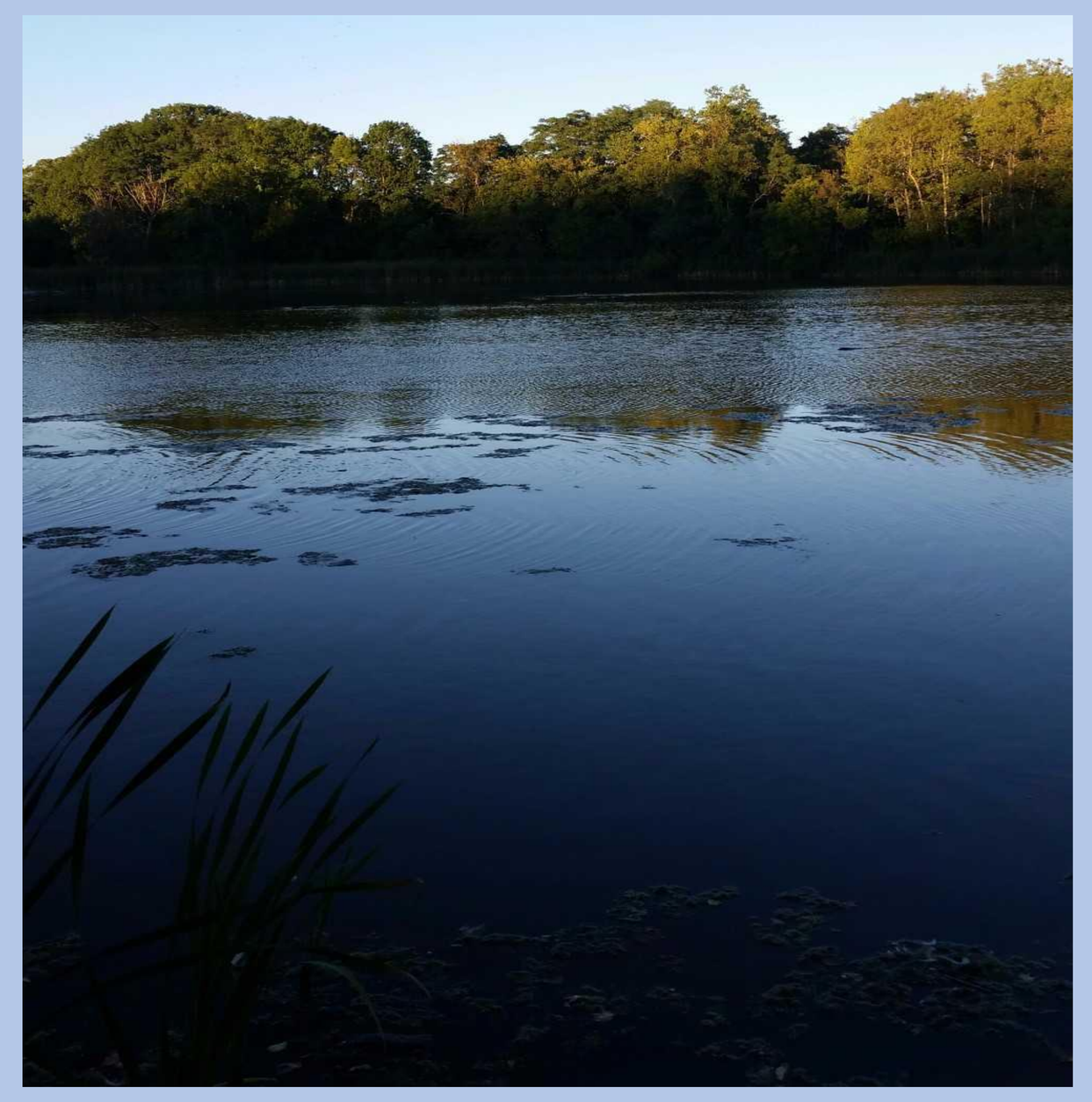
Isabela Chachapoyas Ortiz, Adam Desveaux, Matthew Gulbin
Advisors: Marja Bakermans, David Spanagel
PLA: Kristen Chan

The Problem

Ecosystems in bodies of water such as Salisbury Pond are being damaged by pollutants and sediment buildup, causing extirpation of species in certain regions.

Background

Salisbury Pond in Institute Park, adjacent to the WPI campus, is an important contribution to the wildlife presence and the aesthetic of this part of the city. Sediment has built up at the bottom of the pond over past years, leading to an average depth of just 3 feet.



Salisbury Pond in Institute Park- Worcester, MA

Project Goals

- Educating WPI students on the condition of the pond and how it affects species
- Determining the best solution to remove contaminated sediment from the pond

Dredging Steps to Success:

Set up dredging equipment

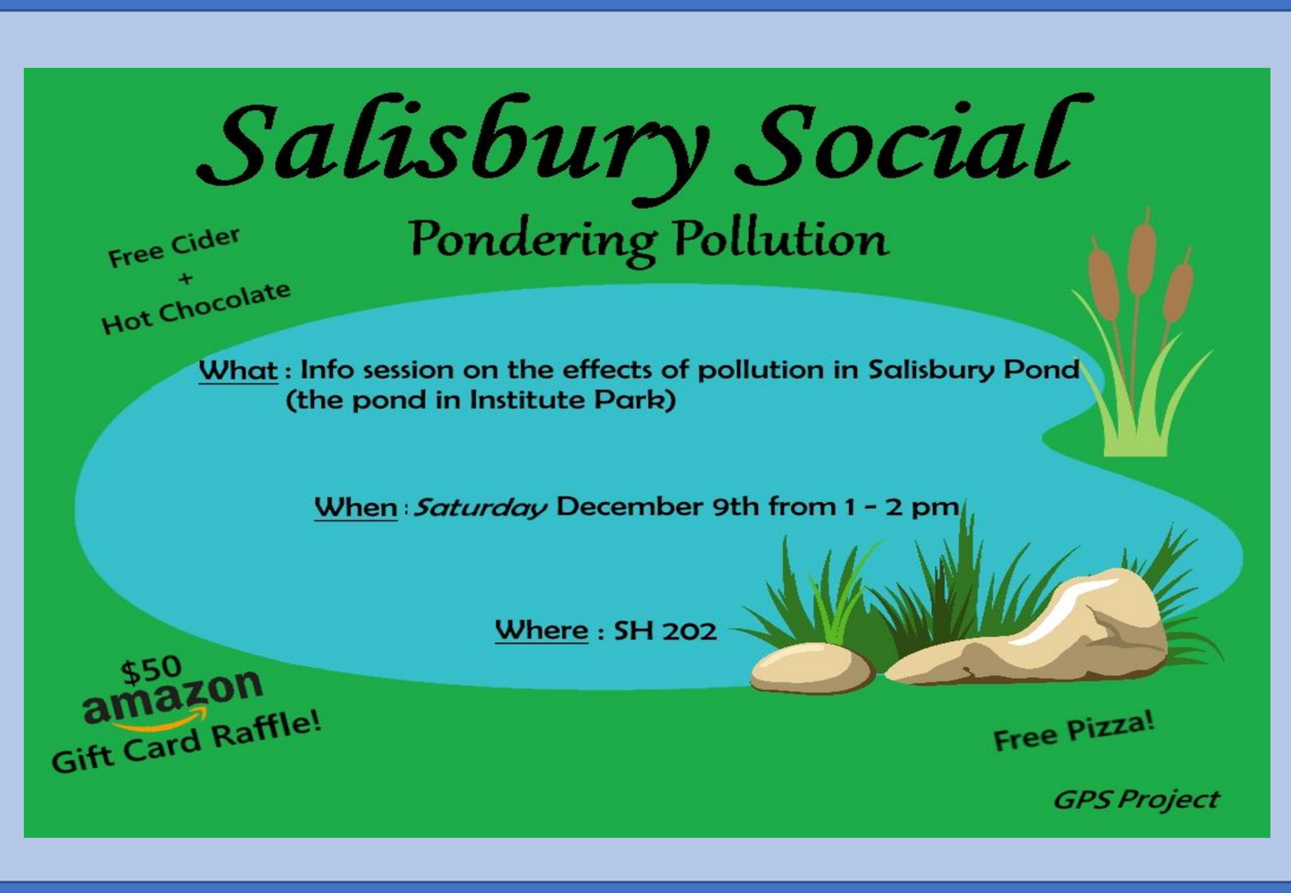
Remove the polluted sediment

Dispose of contaminated sediment safely

Monitor the effects on the pond afterwards

Salisbury Social

- Event hosted at WPI to educate the community
- Presentation about the sediment buildup and its effects on the environment
- Refreshments and raffle for attendees
- December 9, 2017



Pollution Consequences

- Sediment build-up and pesticides affect the biodiversity and health of the pond
  - Sediment in pond is filled with contaminants that can be released in water
- Effects of pesticides
  - Over-growth of plants decreases oxygen levels which affects fish
  - Healthy plants can be affected by other invasive species that are flourishing from proteins

Acknowledgements

We would like to thank Professors Marja Bakermans and David Spanagel for helping us throughout the project, and Kristen Chan, our PLA. Additionally, we would like to thank Paul Levenson, Executive Director of the Friends of Institute Park, and Professors Joseph Cullon, Leonard D. Albano, and Paul P. Mathisen for their valuable contributions of research and information.

References

Capelli, S., Jing, Y., Rao, A., & Teed, T. (2014, December 18). *Effects of Phosphorus in Salisbury Pond* [Scholarly project]. Retrieved November 1, 2017.
City of Worcester, MA (2014). Salisbury Pond Dredging Feasibility Study. Retrieved October 9, 2017, from http://www.worcesterma.gov/uploads/67/8c/678cfce9a2af85a5b3e3009ec2d4914f/salisbury-pond-dredging-feasibility.pdf
Farren, Elizabeth, Hawley, Harmonie, Paonessa, Michael, Plummer, Jeanine D., Mathisen, Paul. (2001). Salisbury Pond Sediment Dredging Feasibility Study. Retrieved October 9, 2017, from https://web.wpi.edu/Pubs/E-project/Scanned/01D156M.pdf
Friends of Institute Park. (2008, June 18). Retrieved September 26, 2017, from: http://www.institutepark.org/
Gustavson, K. E., Burton, G. A., Francingues, N. R., Jr., Reible, D. D., Vorhees, D. J., & Wolfe, J. R. (2008, July 15). Evaluating the Effectiveness of Contaminated-Sediment Dredging. Retrieved from http://pubs.acs.org/doi/pdf/10.1021/es087185a
Ricciardi, F., Kirkjian, D., & Zerilli, T. (2017, June 7). *Bench-Scale Study Results, Salisbury Pond* (Rep.). Retrieved November 1, 2017
Vello, Kevin Anthony, Rojko, Christine Brigid, Bartley, Michael Edward, Plummer, Jeanine D., & Albano, Leonard D. (2002). Evaluation and design of best management practice for Salisbury Pond. Retrieved October 9, 2017, from https://web.wpi.edu/Pubs/Eproject/Scanned/02D025M.pdf
Williams, D. K. (2017, April 25). How Does Water Pollution Affect Fish? Retrieved December 01, 2017, from https://sciencing.com/water-pollution-affect-fish-4565696.html
Images:
https://upload.wikimedia.org/wikipedia/commons/0/0f/Pallieter_%28dredging%29.jpg
https://www.google.com/search?q=dredging&tbs=sur:f,isz:l&tbm=isch&source=lnt&sa=X&ved=0ahUKEwjrtNqbr_XXAhXp5YMKHRcBBTUQpwUIIA&biw=1920&bih=949&dpr=1#imgrc=qErrNcfqtA8xmM:
https://upload.wikimedia.org/wikipedia/commons/8/83/Valhalla_Dredging_Port_of_Redwood_City%2818_of_22%29.jpg
https://pxhere.com/en/photo/1011862
https://upload.wikimedia.org/wikipedia/commons/thumb/1/11/Water_resources%2C_taking_a_water_sample.jpg/1280px-Water_resources%2C_taking_a_water_sample.jpg