



# Determination of Heavy Metals in Tibbetts Brook

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## Background

Heavy metals are the major concern for aquatic environment because of their toxicity, persistency and tendency to accumulate in organisms. The most important sources for these metals are industrial and domestic wastes as well as agricultural runoff. The fate of heavy metals in an aquatic environment is affected by processes such as precipitation and dissolution. These processes are also affected by factors such as pH, temperature and dissolved oxygen. Tibbetts Brook runs from Westchester county to the Bronx, where it serves as an important watershed.

## Goal

The goal of this study was to determine the heavy metal pollution in the Tibbetts, the study examined the concentrations four heavy metals: iron (Fe), manganese (Mn), chromium (Cr) and zinc (Zn) in various locations throughout the brook.

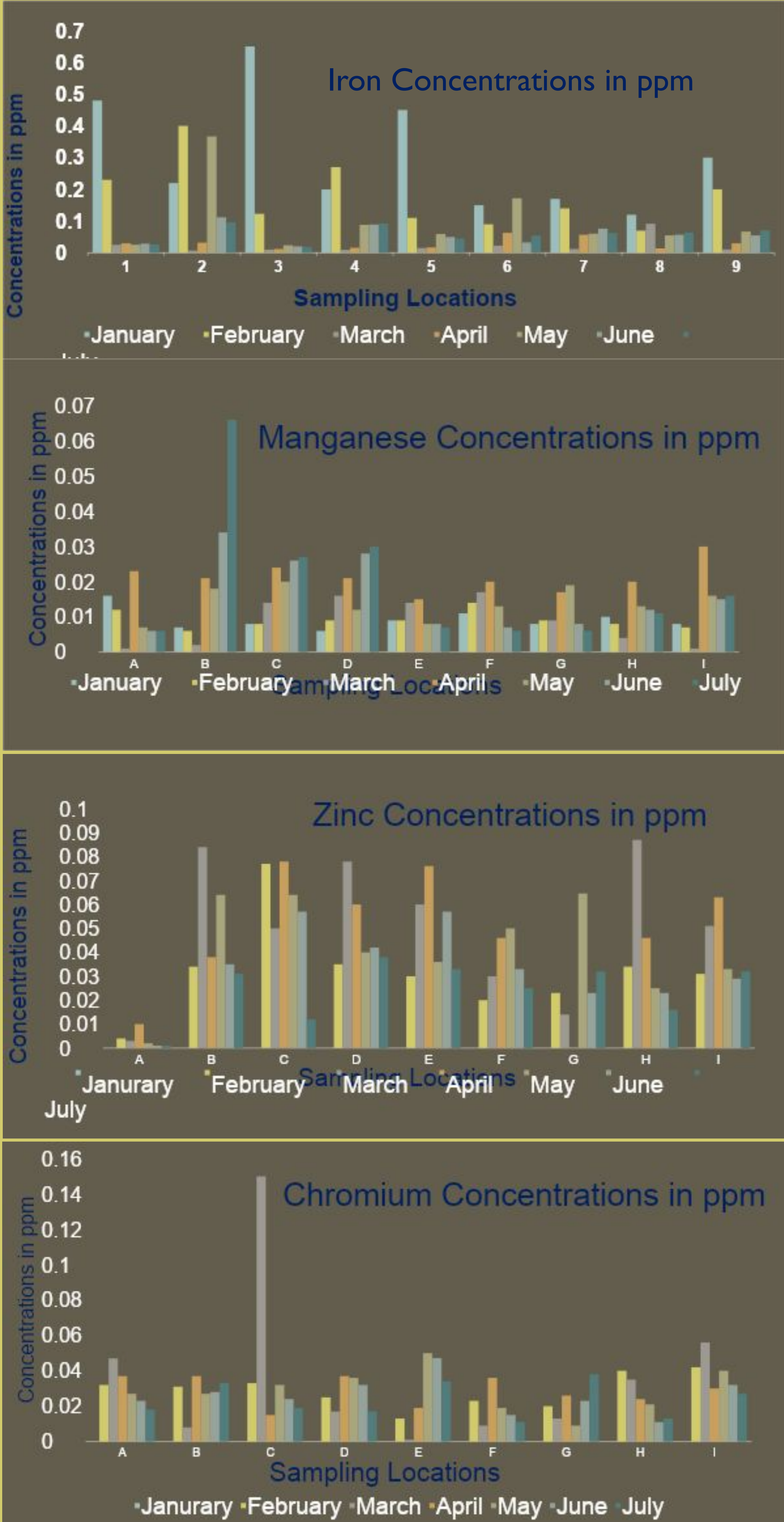


## Materials & Methods

Water samples were collected every two weeks from nine different locations since January 2019. Atomic absorption spectroscopy was used to determine the concentrations of the heavy metals in the samples. The collected water samples were digested with nitric acid. Stock solutions of each element were used as standards for each element found in the collected water samples.



## Results



## Conclusion

The project highlights the importance of environmental science, by determining how human activities affect natural habitats.

There are several human activities polluting the brook; element levels, pH and temperature. Heavy metal concentrations varied in different locations and months.

## References

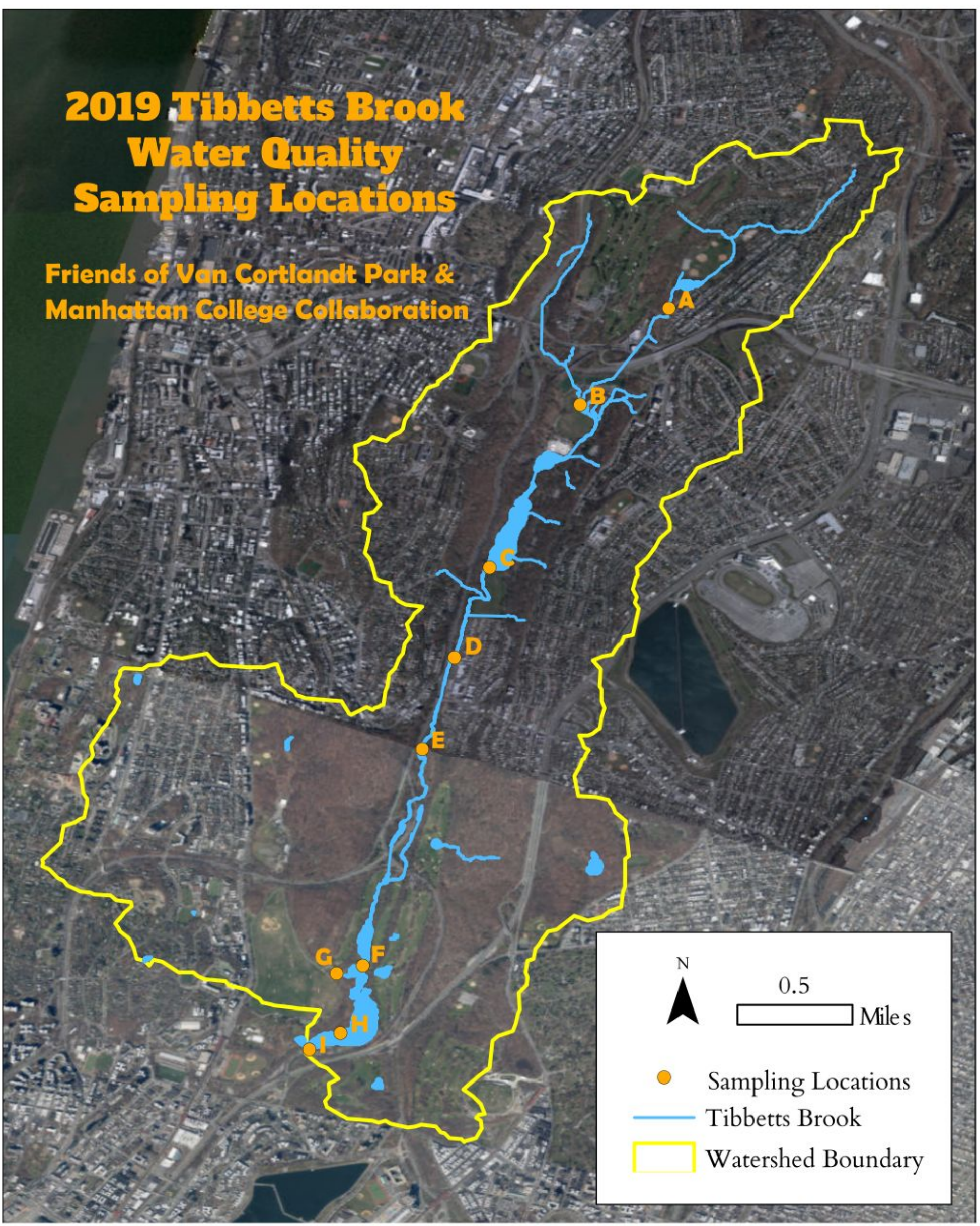
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## Acknowledgements

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Friends of Van Cortlandt Park



- A - Rumsey Ave and Summerfield Str in Yonkers. Coordinates: 40.935520, -73.870311
- B - Northern Tibbetts Brook Park, under walking bridge. Coordinates: 40.929499, -73.875819
- C - Southern end of Tibbetts Brook Park Lake. Coordinates: 40.919334, -73.881494
- D - Alan B. Shepard Jr. Place entrance to South County Trail. Coordinates: 40.913718, -73.883731
- E - Border of Bronx and Yonkers. Coordinates: 40.907970, -73.885654
- F - Van Cortlandt Park birding bridge. Coordinates: 40.894439, -73.889609
- G - Tributary from West, under Parade Ground. Coordinates: 40.894105, -73.890947
- H - Western side of Van Cortlandt Lake. Coordinates: 40.890283, -73.890768
- I - Eastern side of Van Cortlandt Lake, by stormwater outfall. Coordinates: 40.889158, -73.892859

(Sampling Locations)