

UPDATE AND PHASE 1 RESULTS

TONAWANDA COKE SOIL STUDY

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Overview

- ⦿ Background on the Tonawanda Coke Soil Study
 - History
 - Study Goals
- ⦿ Results
 - Maps generated
 - 3 ROIs identified
 - What this means for residents
- ⦿ Next steps
 - Phase 2 sampling
 - Source apportionment

US vs. Tonawanda Coke Corporation

- ◉ Decided in March, 2013: Appeal Denied Jan 2016
- ◉ Found TCC guilty of violations of US Clean Air Act
- ◉ Fined \$12.5M
- ◉ Additionally, directed \$12.1 M toward follow-up community studies
 - 10 year epidemiology and health (Tonawanda/Grand Island Health Study)
 - 2 year study of neighborhood for deposition of air pollution (Tonawanda Coke Soil Study)
 - Both projects awarded to UB; UB waived all overhead (ca. \$4M) but agreed to provide all services normally funded by overhead



TONAWANDA COKE SOIL STUDY TIMELINE

PHASE 1



Scientists from the U.S. Environmental Protection Agency (EPA) and New York State Department of Environmental Conservation (DEC) reviewed and provided feedback on the study's standard operating procedures.



More than 180 soil samples were taken in Grand Island, the City of Tonawanda, the Town of Tonawanda and North Buffalo. Sampling was done, where possible, in an evenly distributed grid, with the goal of screening for pollutants.



EPA and DEC scientists reviewed and provided feedback on draft maps showing Phase 1 findings.

EPA and DEC scientists identified areas of interest through Phase 1 sampling. These areas of interest are areas where a number of soil samples contained higher levels of selected pollutants than in the directly surrounding region.

Scientists at UB and SUNY Fredonia use advanced analytical and statistical techniques (source apportionment) to study whether pollutants found in soil may have originated from the Tonawanda Coke plant.



Additional soil samples may be taken, depending on results from Phase 2 sampling in 2018.



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Completed Phase of Soil Study

- Phase 1 survey study using geographic grid design
 - Learn where regions of interest are located
 - Learn geographic extent of pollutant deposition
 - Learn what pollutants are distributed in the community
- 182 samples taken, evaluated public data from 65 superfund sites in the test grid area
 - Testing for 169 chemicals at ALS Laboratories, Rochester, NY (NYS DOH Certified)
 - Heavy metals, VOCs, SVOCs, PCBs, Pesticides, PAHs

Definitions

⦿ Contaminant

- Any physical, chemical, biological, or radioactive substance that can adversely affect air, water or soil.

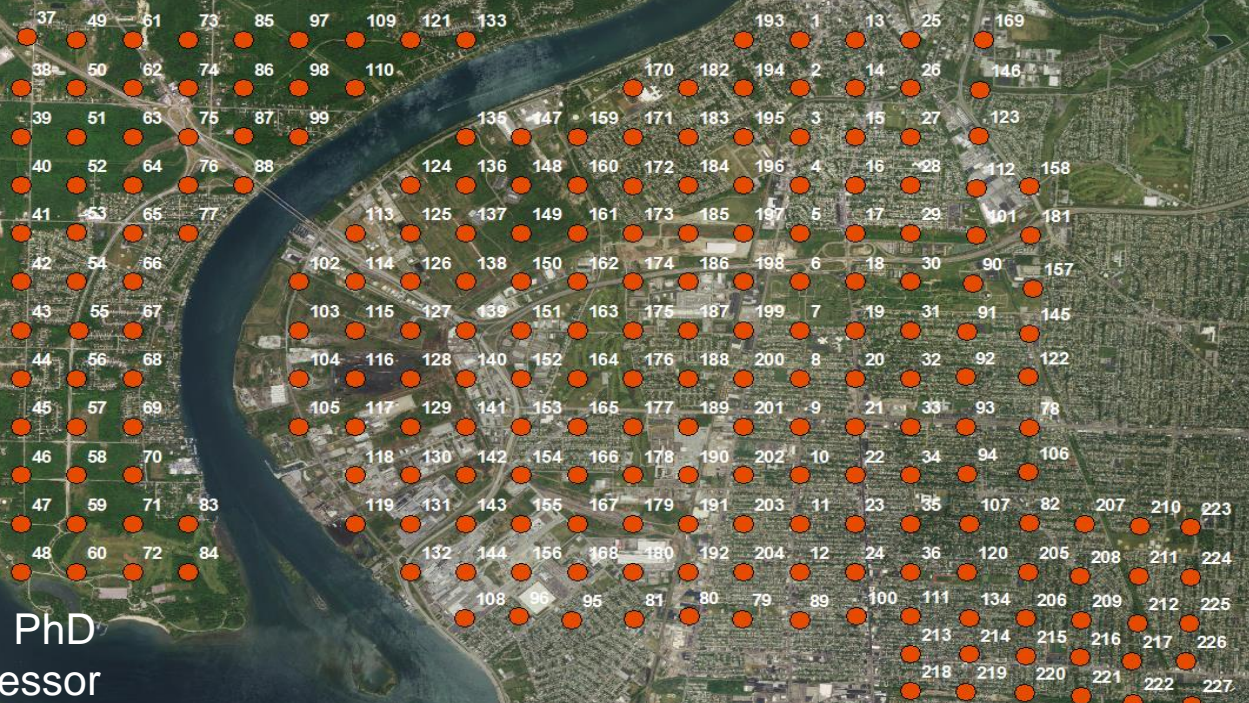
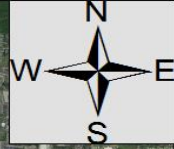
⦿ Region of Interest (ROI)

- A region or area known to have high concentrations of a contaminant

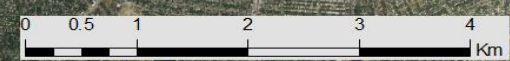
⦿ Soil Cleanup Objective (SCO)

- the concentration of a given contaminant for a specific site that must be achieved under a remedial program for soil.

EPA Terminology Service:
https://iaspub.epa.gov/sor_internet/registry/termreg/searchandretrieve/termsandacrony



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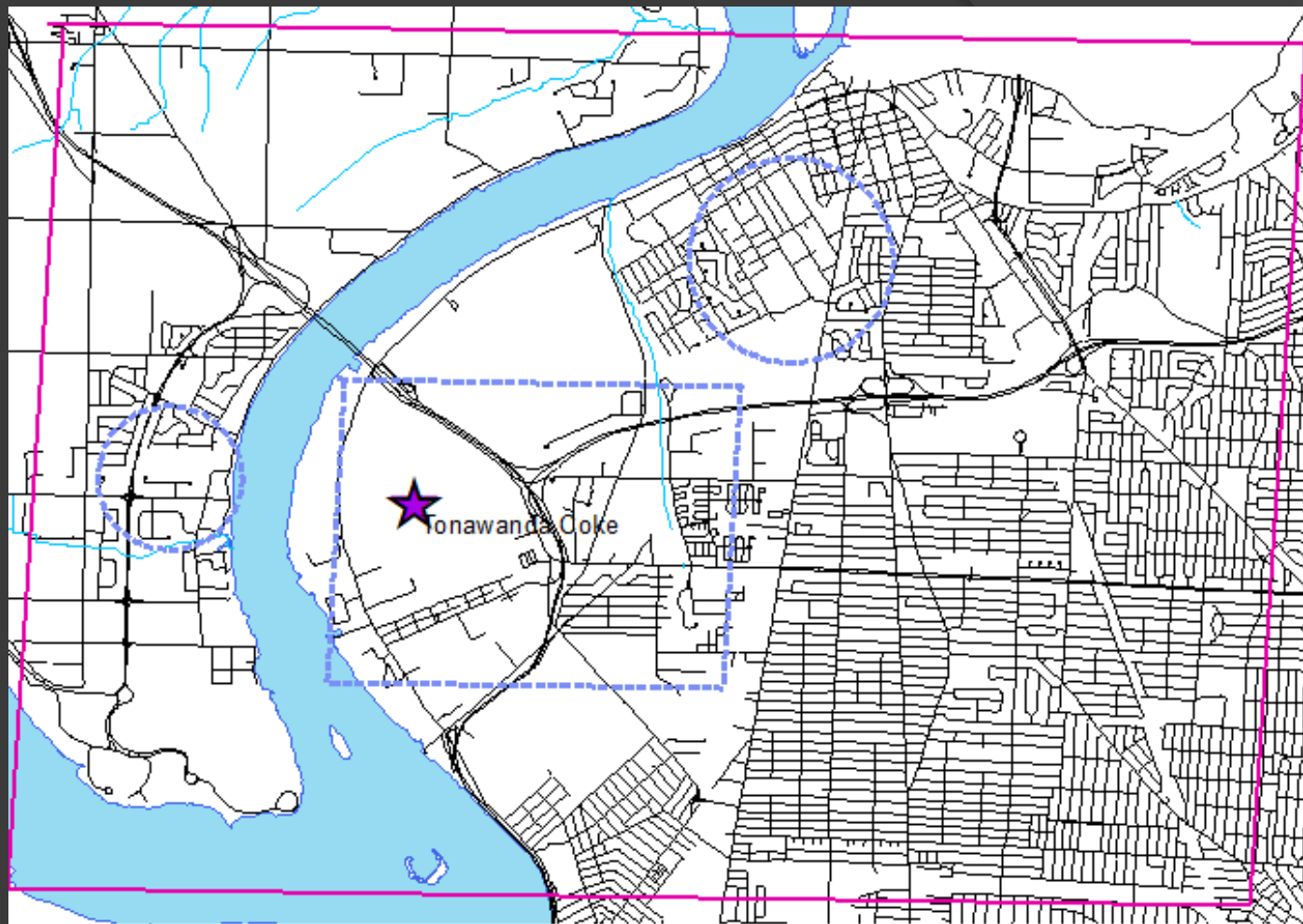


Current Phase of Soil Study

- Phase 2: study the ROIs identified in phase 1 and establish a boundary of any potential contamination
 - Soil and air sampling at Tonawanda Coke
- Innovative methods to identify source(s) of pollutants in soil (including air sample and soil samples from TCC) (UB and Fredonia)
- Community participation and education
- Reporting to community

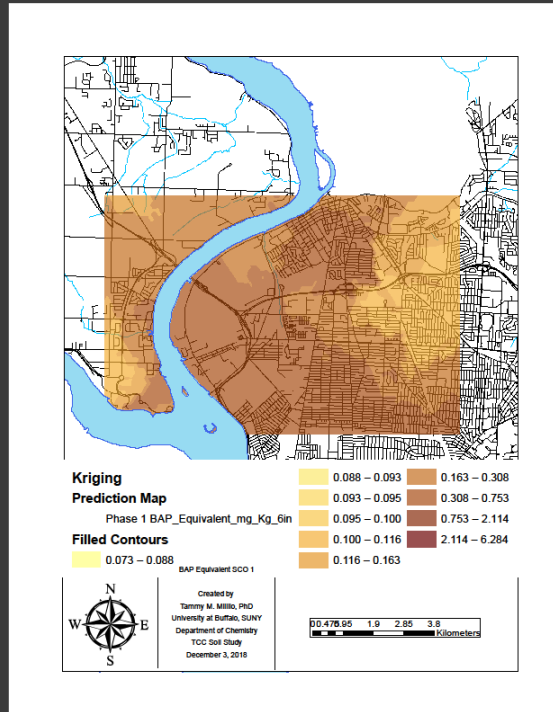
Regions of Interest

- Solid pink outline: Study Boundary
- Purple Star: Tonawanda Coke Plant
- Dashed blue lines: Regions of Interest

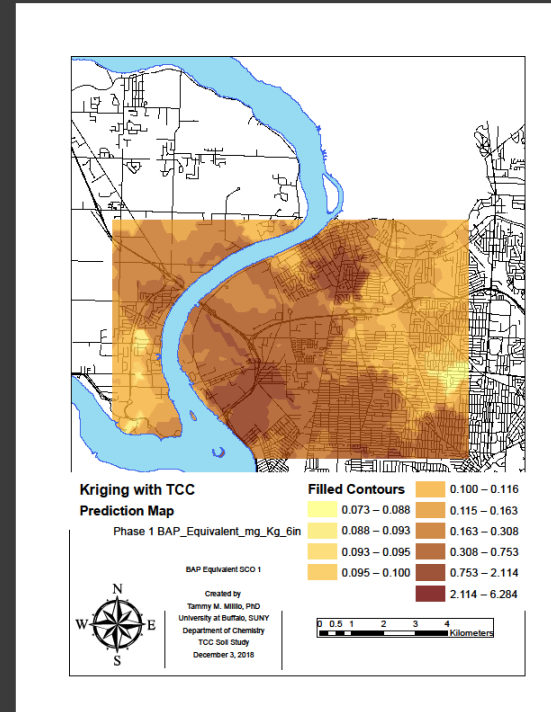


WHAT WAS THE BASIS FOR THE
CHOICES OF THE REGIONS OF
INTEREST?

Benzo(a)Pyrene Equivalents Polycyclic Aromatic Hydrocarbons (PAHs)



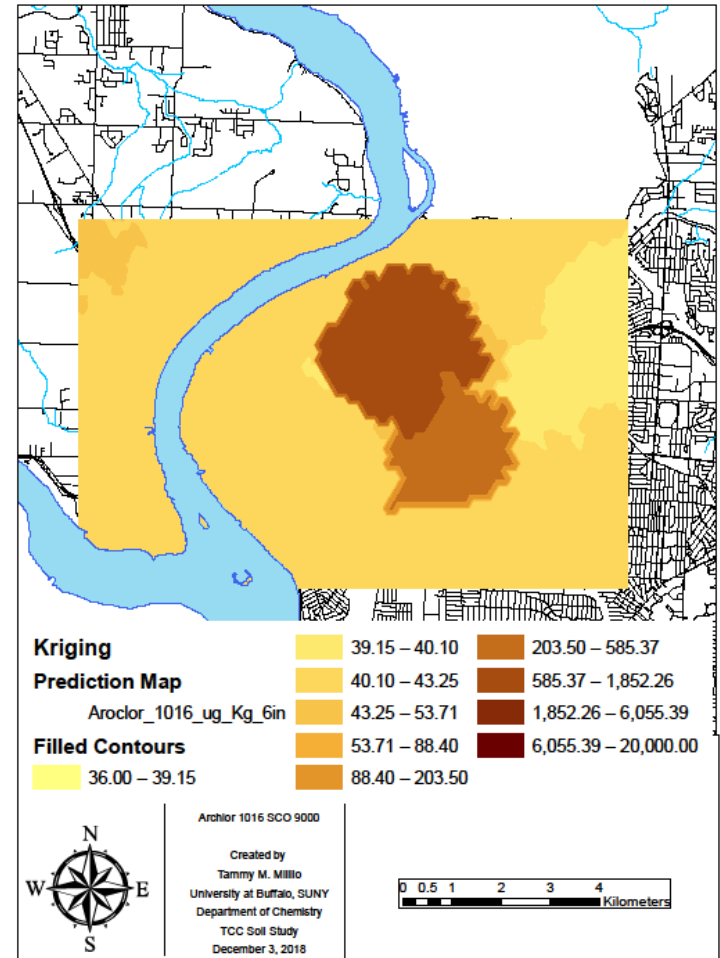
Without Tonawanda Coke



With Tonawanda Coke

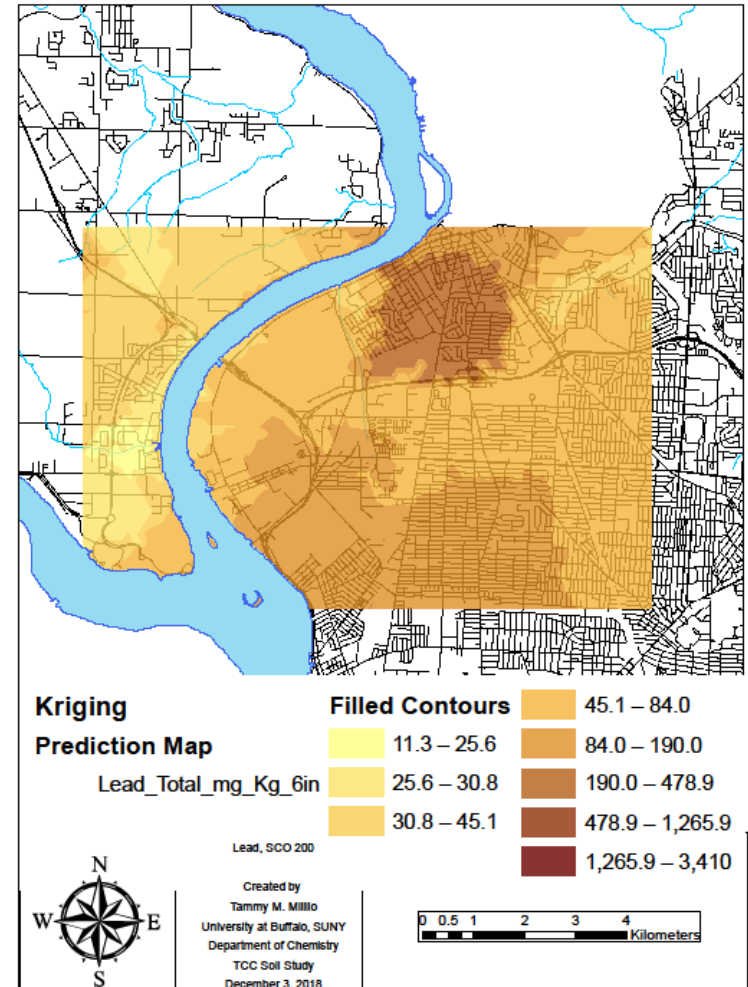
Aroclor 1016

- Polychlorinated Biphenyl (PCB)
- Estimated concentration increases as color darkens
- Localized concentrations were found above SCO



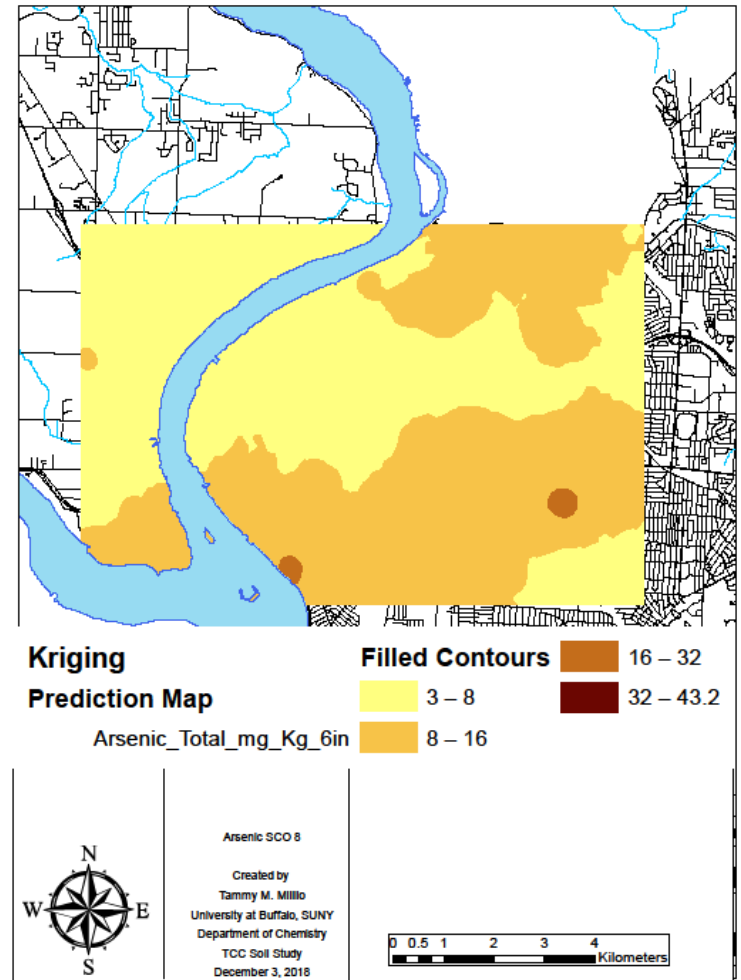
Lead

- Estimated concentration increases as color darkens
- This distribution indicates the same ROI as the PCBs
- Not every sample in the ROI exceeded the SCO level



Arsenic

- More study needed to determine origins of arsenic

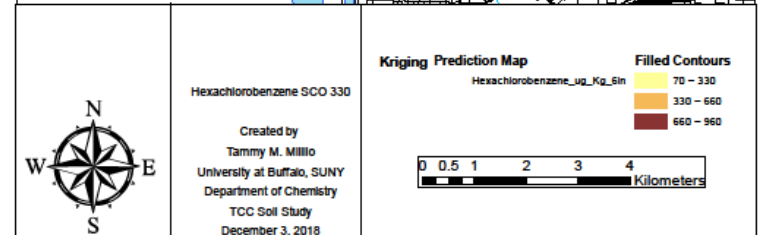
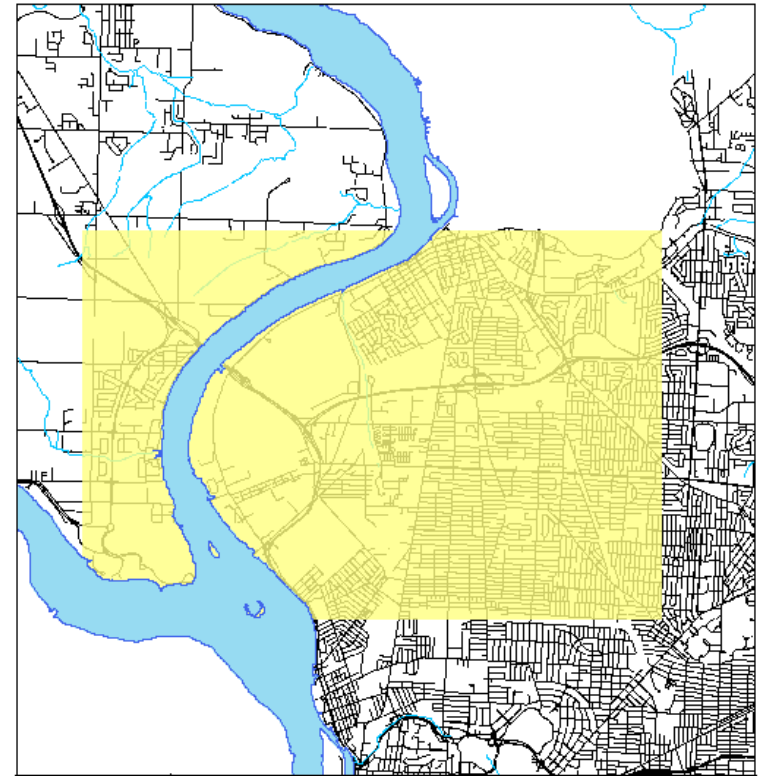


ROI on Grand Island

- ⦿ Only ROI without samples above SCO values
 - Elevated above surrounding samples
 - Next to elementary school
- ⦿ Arsenic detected

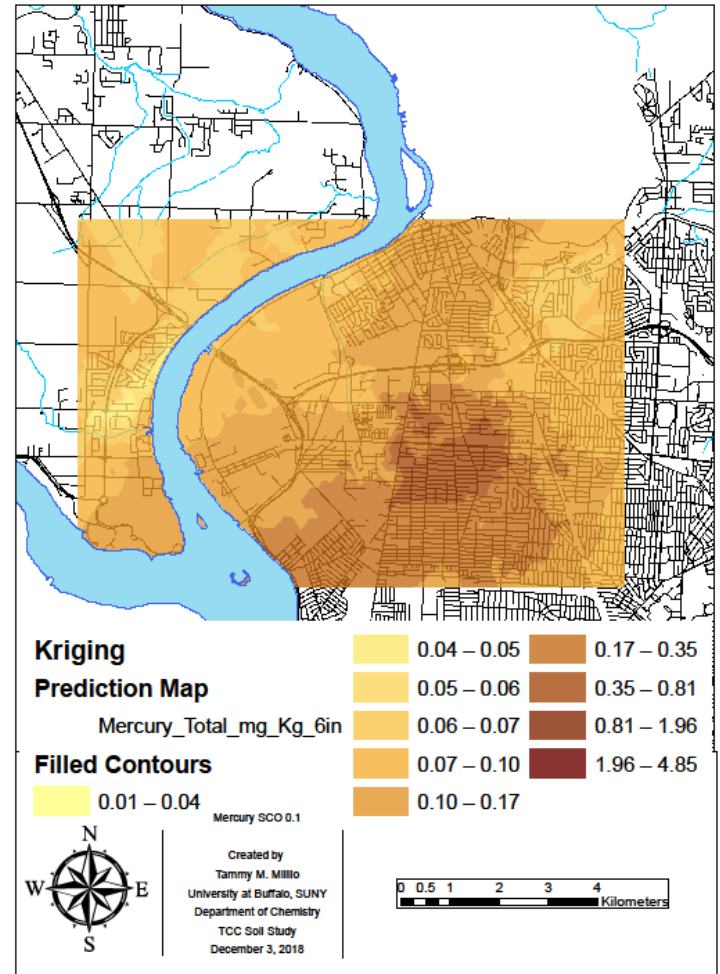
Hexachlorobenzene

- No dark regions were identified
- This chemical was not detected (found)
- This was common: 70 out of the 169 tested compounds



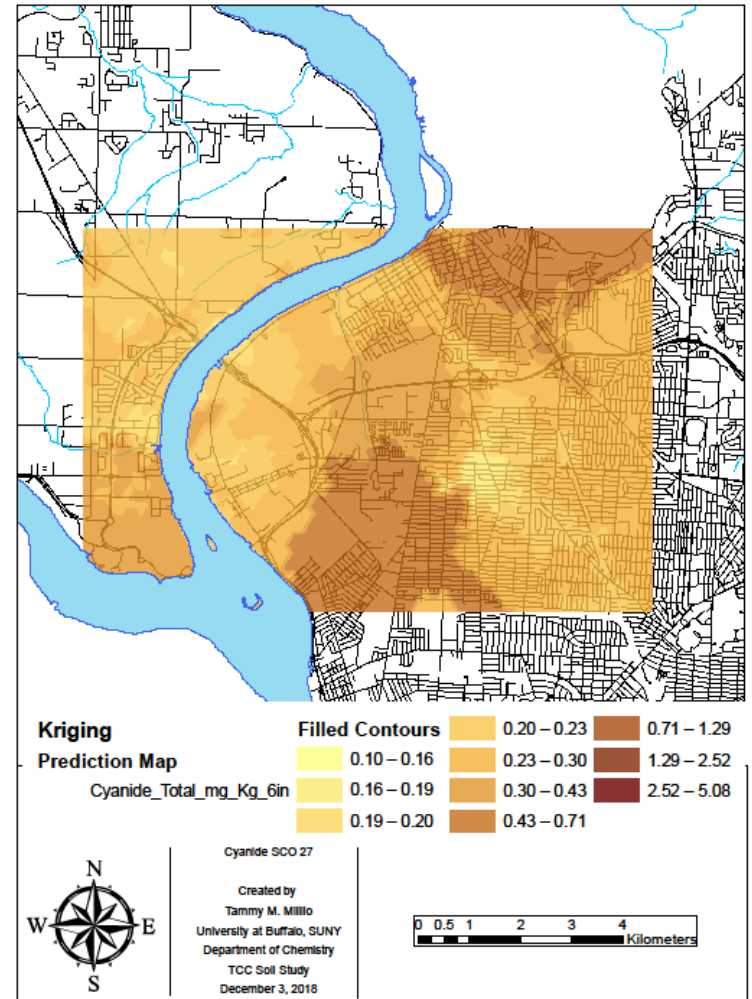
Mercury

- Not a known TCC contaminant
 - Known contaminant from the Huntley plant
- Court Order included determining historic impact of TCC only
 - Source apportionment



Cyanide

- Chemical of concern based on contamination found on TCC site
- Shows elevated levels not above DEC's SCO
- Important for source apportionment analysis



Take Home Message

- ⦿ Large parts of the study area are free from contamination above SCO values
- ⦿ Conservative SCO values used
 - Screening study
- ⦿ Boundaries for ROIs will change with Phase 2
- ⦿ Source apportionment analysis, ordered by Judge, begins now.

Findings from the Tonawanda Coke Soil Study will benefit local communities.

- Results will provide communities with information on:
 - What chemicals are in their soil
 - How widespread any pollution may be
 - Whether pollutants may have originated at the Tonawanda Coke plant
 - Areas with no concern for elevated levels of pollutants
- This knowledge is the first step in understanding whether a clean-up is needed, and where.

Next Steps: Community Involvement

- Community members are encouraged to:
 - Contact local elected officials and encourage them to give permission to use data collected on public sites
 - Reach out to members of the soil study team with questions regarding study findings
- Residents or property owners are asked to
 - Allow access to enter, sample and test soil from owners property
 - Reporting to individual property owners (confidential)
 - Ask follow-up permission to include in analysis
 - Based on the practice used in 18 Mile Creek (Lockport) studies following standard human subject protection procedures

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THANK YOU

