



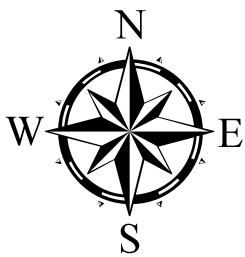
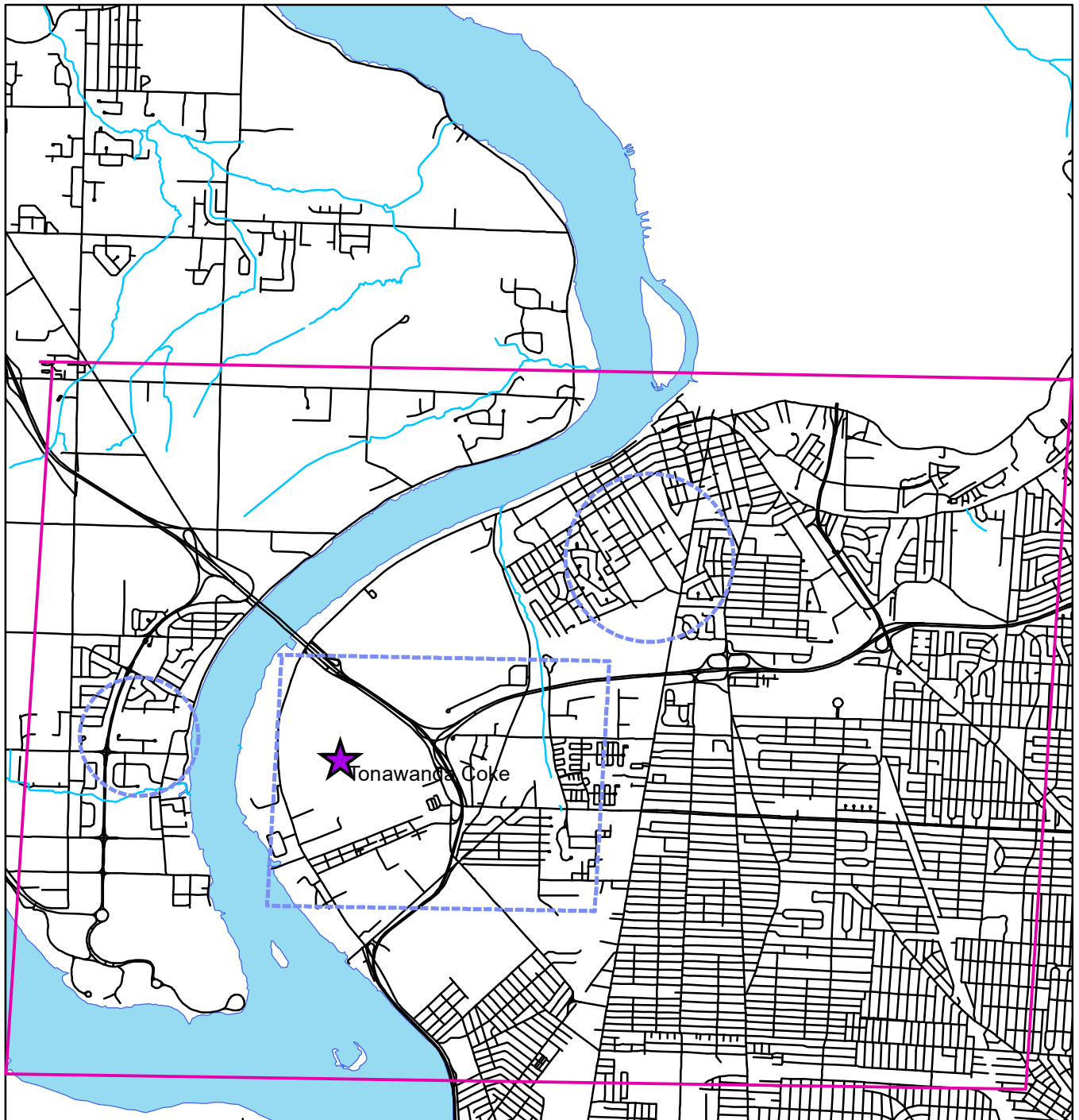
University at Buffalo
The State University of New York

Tonawanda Coke Soil Study

Phase 1 maps

Each caption refers to the map on the next page

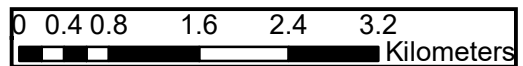
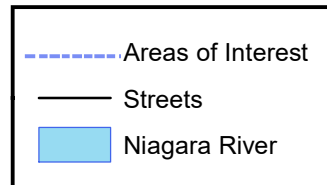
A map showing the Tonawanda Coke Soil Study area. The Tonawanda Coke Plant is marked with a star. The solid pink line indicates the boundary of the study area, where soil samples have been taken. Dashed blue lines indicate areas of interest that researchers are investigating more closely based on preliminary results from soil samples taken in 2017. Areas of interest are tentative and subject to further investigation. Credit: Dr. Tammy Milillo / Tonawanda Coke Soil Study



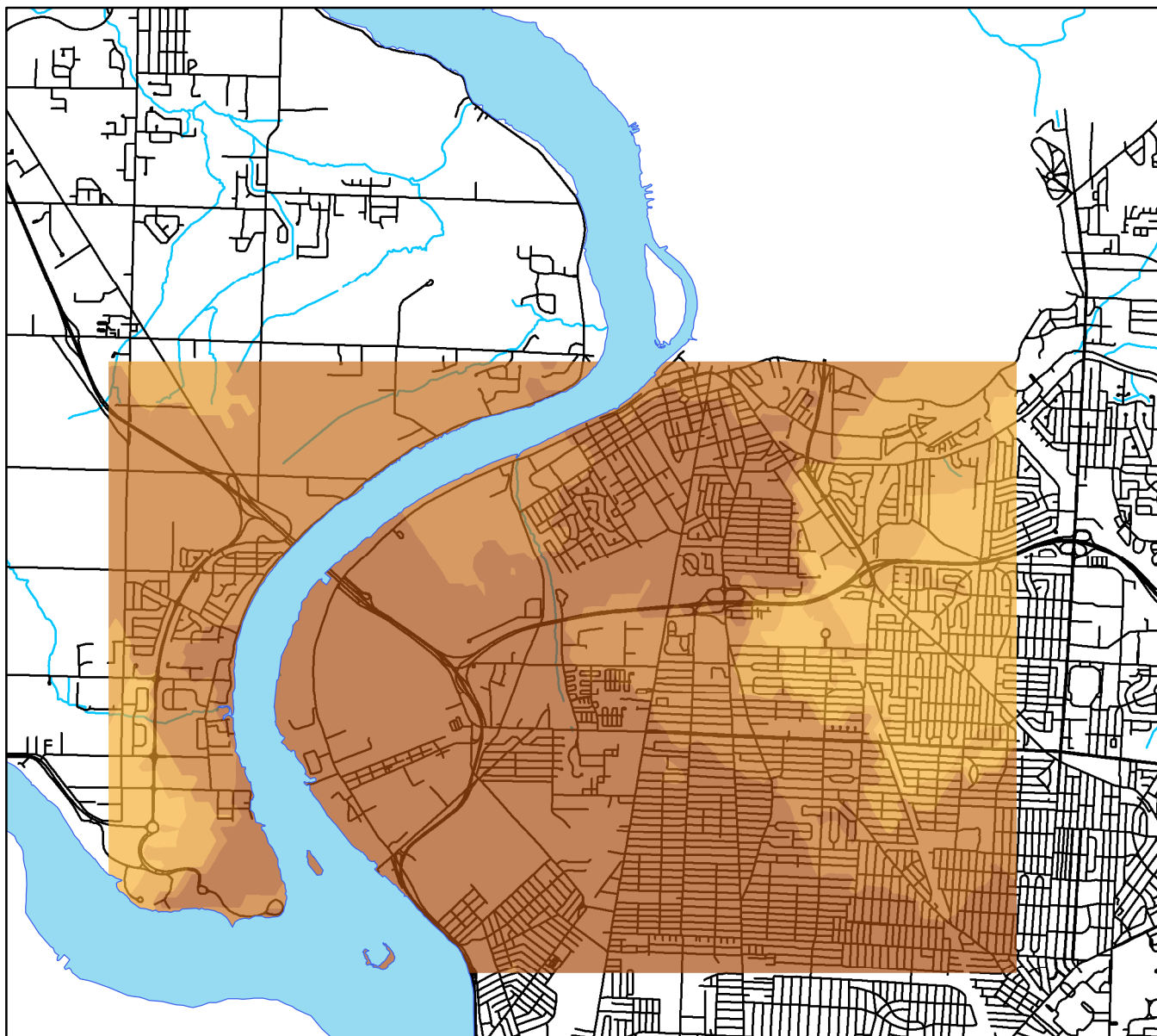
Created by
 Tammy M. Milillo
 University at Buffalo, SUNY
 Department of Chemistry

June, 2018

TCC Soil Study
 11/30/2018



Map of Benzo[a]pyrene (BAP) equivalents in mg/kg. The map shows the modeled surface, as the color darkens, the predicted concentration of BAP equivalents increases. BAP equivalents are a measure used by the EPA to evaluate polycyclic aromatic hydrocarbon (PAH) concentrations. The TCC soil study used an SCO of 1 mg/kg for BAP equivalents. Intervals below the SCO are of no immediate concern to residents. Intervals which contain values above the SCO do not directly correlate to risk. Credit: Dr. Tammy Milillo / Tonawanda Coke Soil Study



Kriging

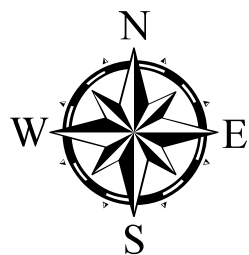
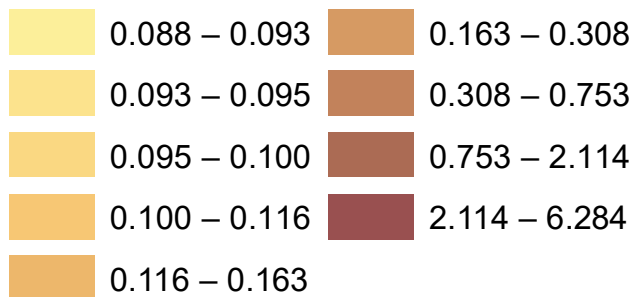
Prediction Map

Phase 1 BAP_Equivalent_mg_Kg_6in

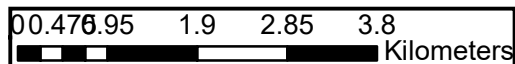
Filled Contours

0.073 – 0.088

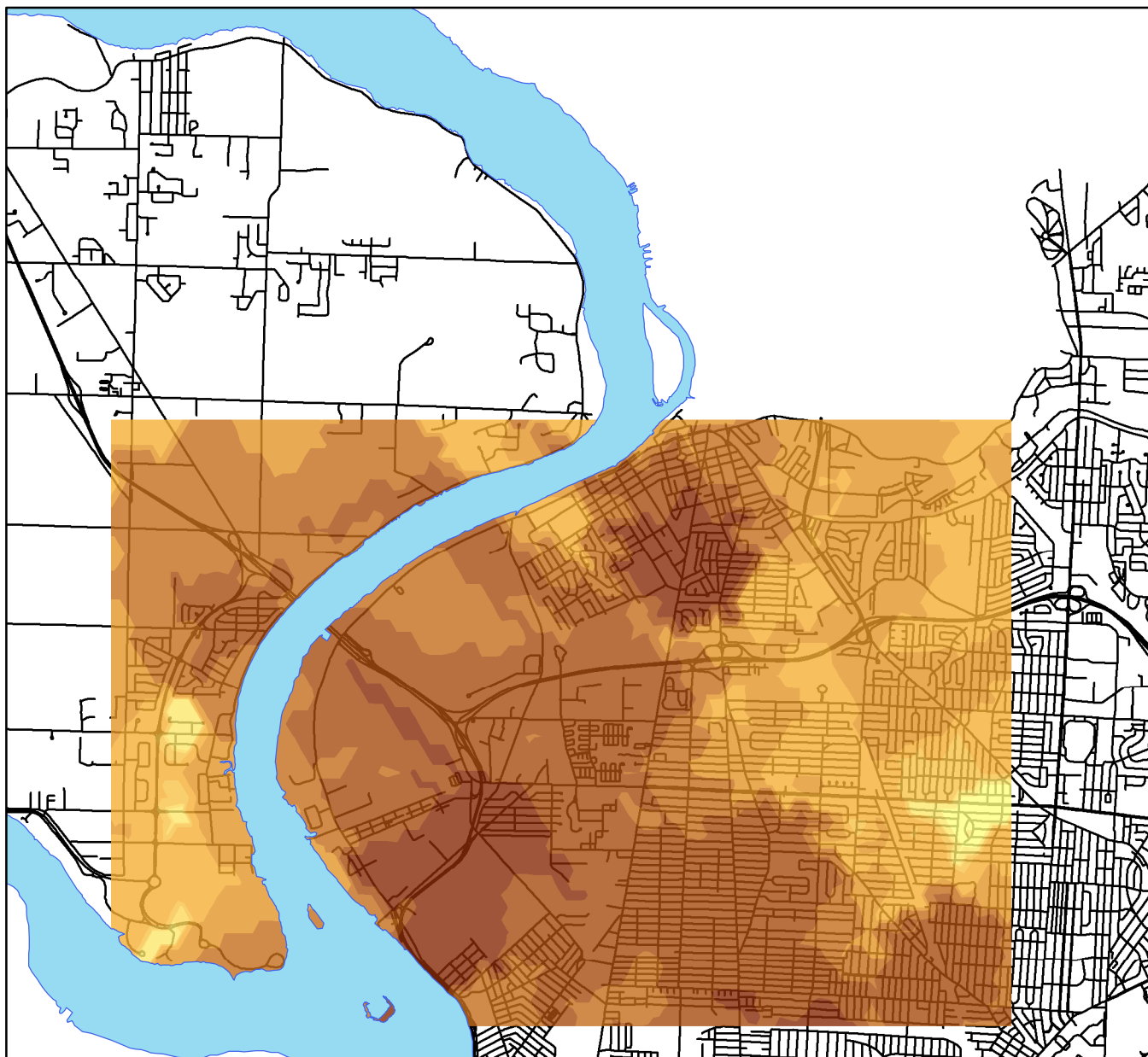
BAP Equivalent SCO 1



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 TCC Soil Study
 December 3, 2018



Map of Benzo[a]pyrene (BAP) equivalents in mg/kg. The map shows the modeled surface, as the color darkens, the predicted concentration of BAP equivalents increases. Samples taken on the Tonawanda Coke property are included. BAP equivalents are a measure used by the EPA to evaluate polycyclic aromatic hydrocarbon (PAH) concentrations. The TCC soil study used an SCO of 1 mg/kg for BAP equivalents. Intervals below the SCO are of no immediate concern to residents. Intervals which contain values above the SCO do not directly correlate to risk. Credit: Dr. Tammy Milillo / Tonawanda Coke Soil Study

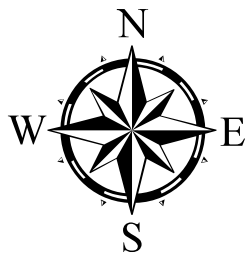


Kriging with TCC

Prediction Map

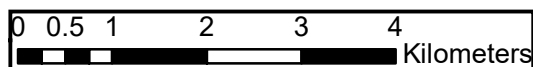
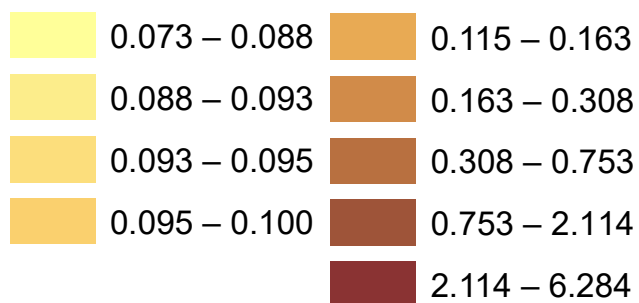
Phase 1 BAP_Equivalent_mg_Kg_6in

BAP Equivalent SCO 1

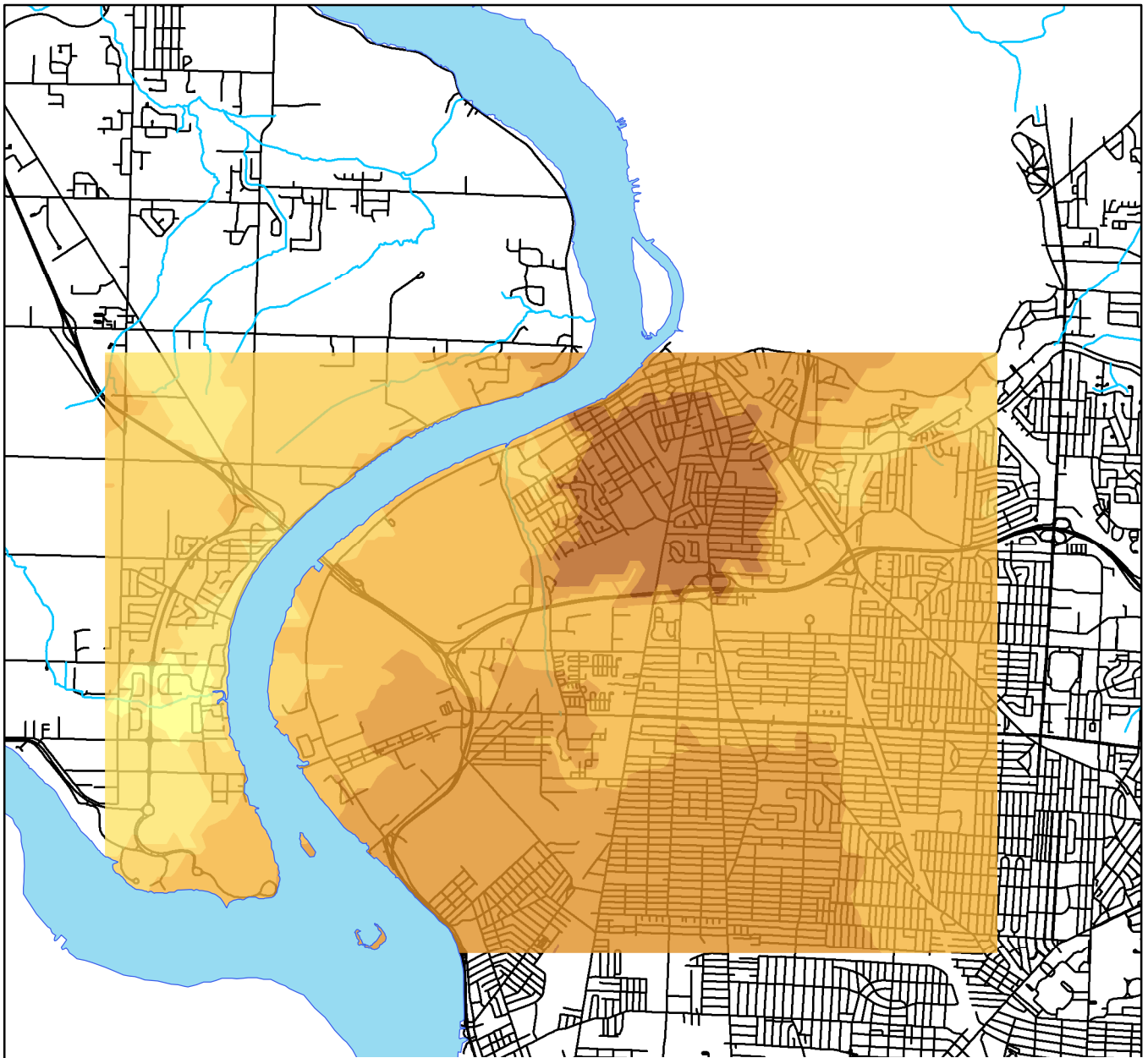


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 December 3, 2018

Filled Contours



Map of lead in mg/kg. The map shows the modeled surface, as the color darkens, the predicted concentration of lead increases. The TCC soil study used an SCO of 200 mg/kg for lead. Intervals below the SCO are of no immediate concern to residents. Intervals which contain values above the SCO do not directly correlate to risk. Credit: Dr. Tammy Milillo / Tonawanda Coke Soil Study

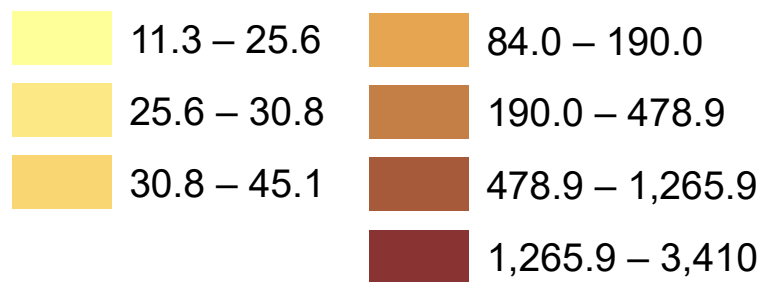


Kriging

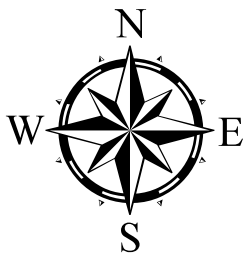
Prediction Map

Lead_Total_mg_Kg_6in

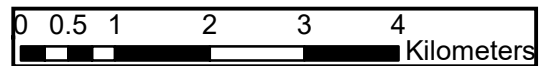
Filled Contours



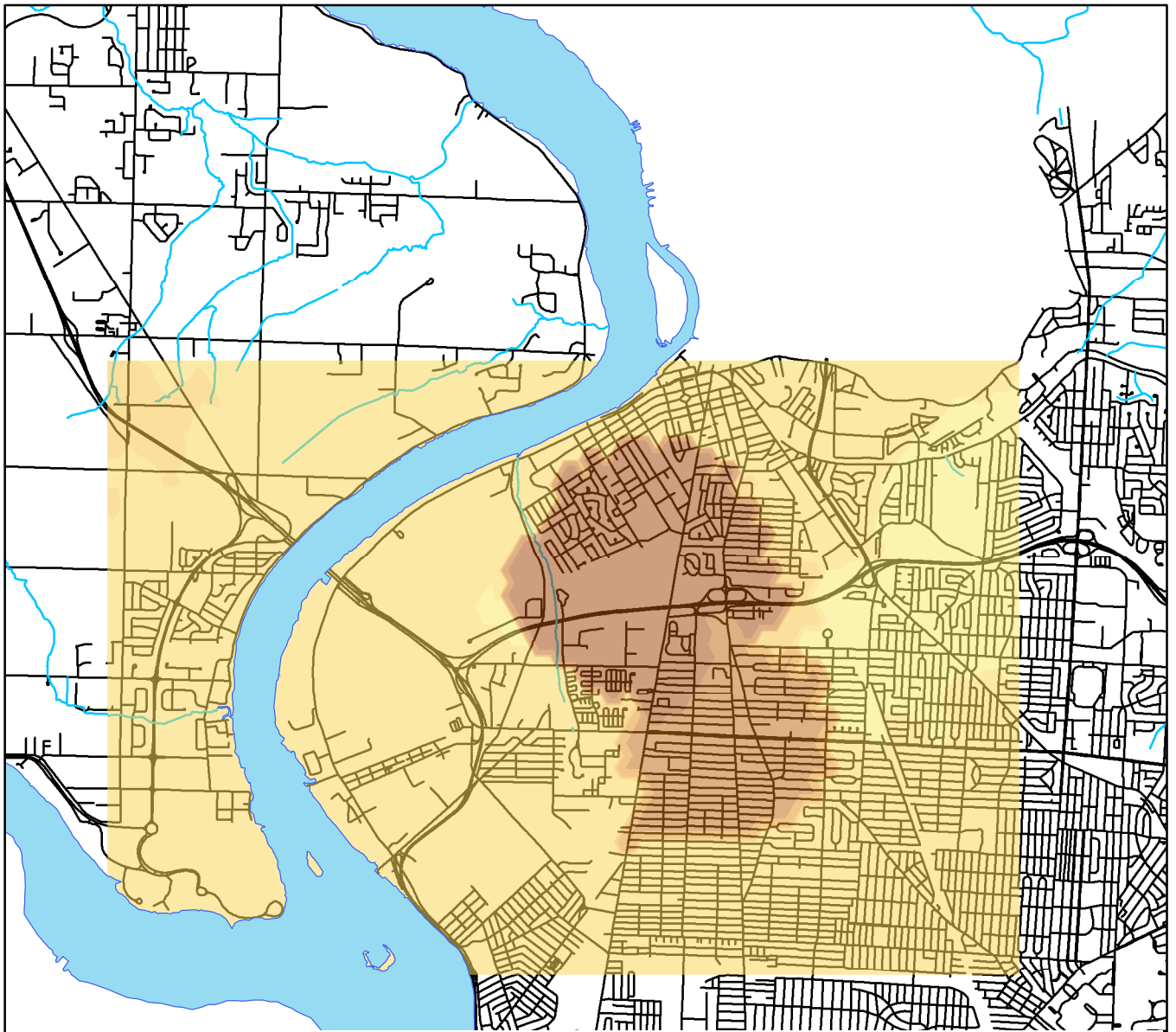
Lead, SCO 200



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Map of Aroclor 1016 in $\mu\text{g}/\text{kg}$. The map shows the modeled surface, as the color darkens, the predicted concentration of Aroclor 1016 increases. The TCC soil study used an SCO of 9000 $\mu\text{g}/\text{kg}$ for Aroclor 1016. Intervals below the SCO are of no immediate concern to residents. Intervals which contain values above the SCO do not directly correlate to risk. Credit: Dr. Tammy Milillo / Tonawanda Coke Soil Study



Kriging

39.15 – 40.10

203.50 – 585.37

Prediction Map

40.10 – 43.25

585.37 – 1,852.26

Aroclor_1016_ug_Kg_6in

43.25 – 53.71

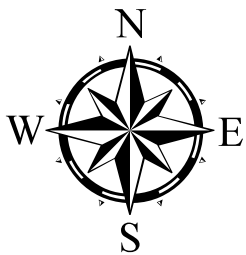
1,852.26 – 6,055.39

Filled Contours

36.00 – 39.15

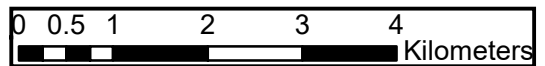
88.40 – 203.50

6,055.39 – 20,000.00

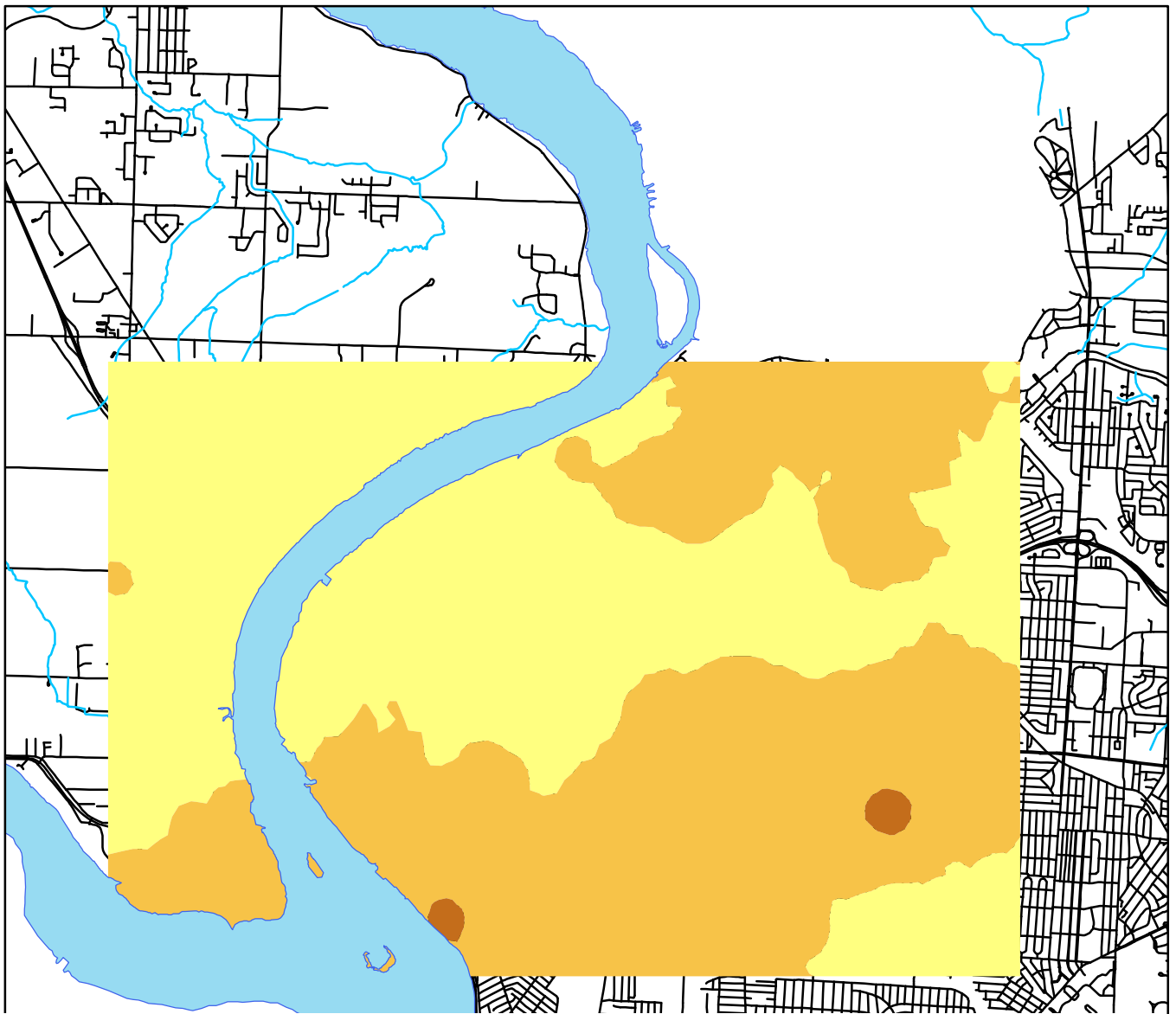


Archlor 1016 SCO 9000

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 December 3, 2018



Map of arsenic in mg/kg. The map shows the modeled surface, as the color darkens, the predicted concentration of arsenic increases. The TCC soil study used an SCO of 8 mg/kg for arsenic. Intervals below the SCO are of no immediate concern to residents. Intervals which contain values above the SCO do not directly correlate to risk. Credit: Dr. Tammy Milillo / Tonawanda Coke Soil Study



Kriging

Prediction Map

Arsenic_Total_mg_Kg_6in

Filled Contours

3 – 8

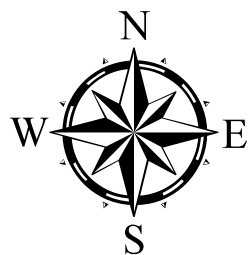
8 – 16



16 – 32



32 – 43.2



Arsenic SCO 8

Created by

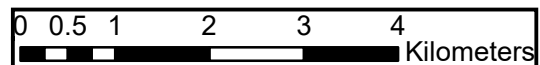
Tammy M. Milillo

University at Buffalo, SUNY

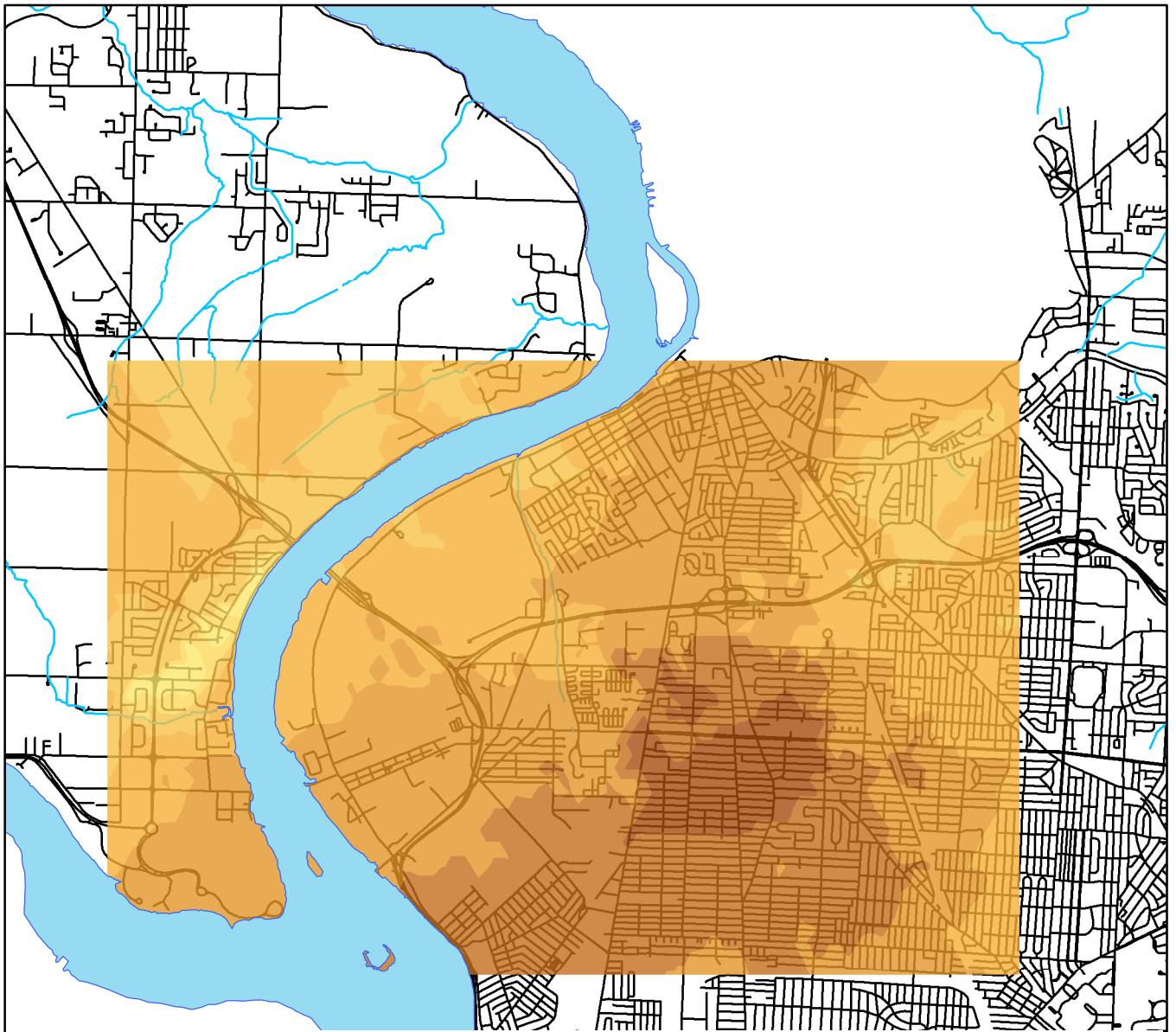
Department of Chemistry

TCC Soil Study

December 3, 2018



Map of mercury in mg/kg. The map shows the modeled surface, as the color darkens, the predicted concentration of mercury increases. The TCC soil study used an SCO of 0.1 mg/kg for mercury. Intervals below the SCO are of no immediate concern to residents. Intervals which contain values above the SCO do not directly correlate to risk. Credit: Dr. Tammy Milillo / Tonawanda Coke Soil Study

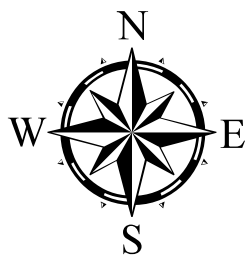
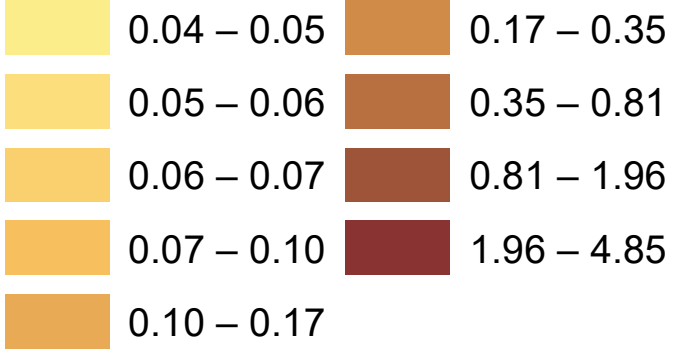


Kriging

Prediction Map

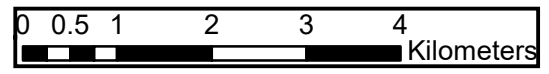
Mercury_Total_mg_Kg_6in

Filled Contours

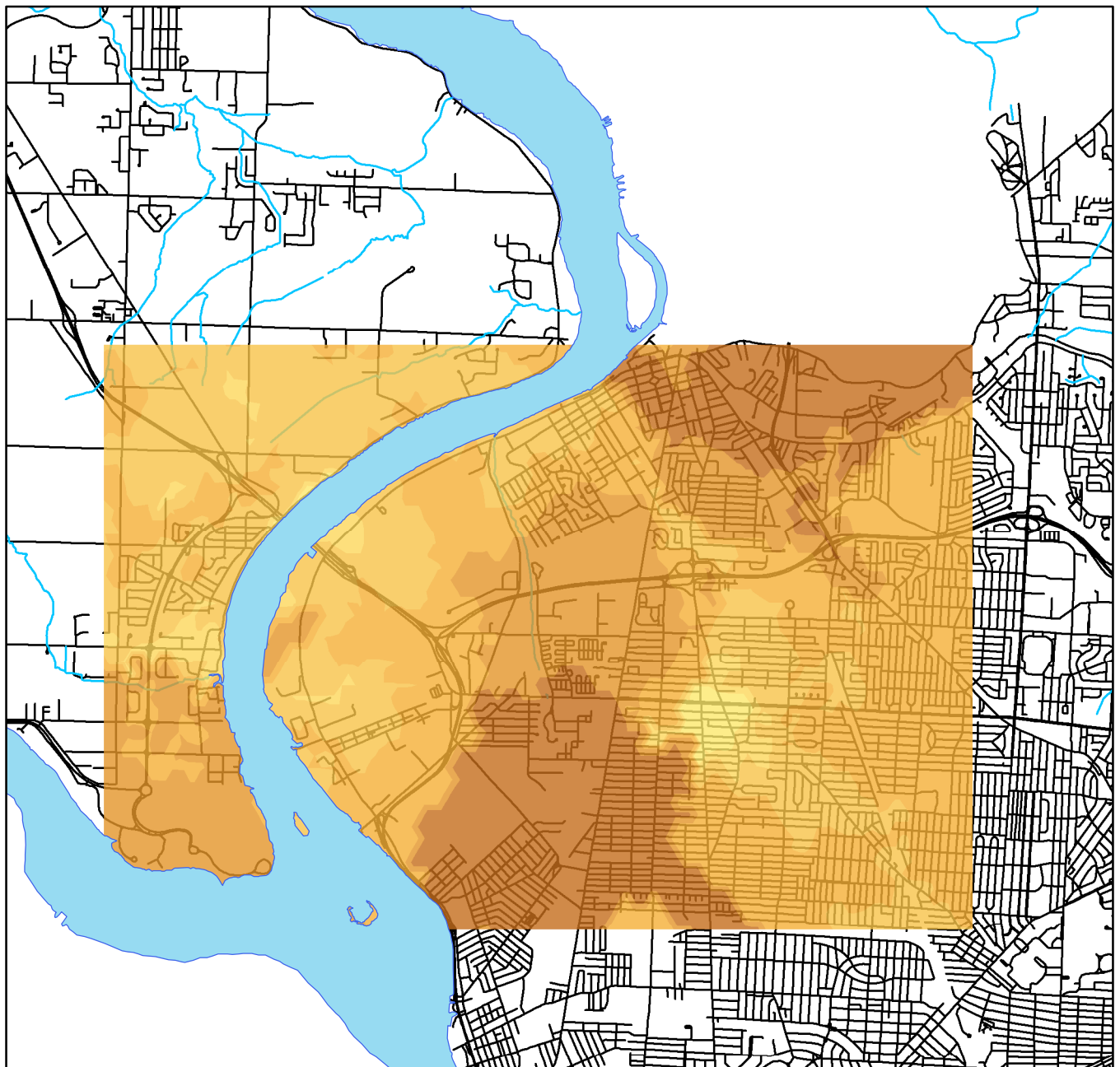


Mercury SCO 0.1

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 TCC Soil Study
 December 3, 2018



Map of cyanide in mg/kg. The map shows the modeled surface, as the color darkens, the predicted concentration of cyanide increases. The TCC soil study used an SCO of 27 mg/kg for cyanide. Intervals below the SCO are of no immediate concern to residents. Intervals which contain values above the SCO do not directly correlate to risk. Cyanide is not a suspected contaminant from Tonawanda Coke, but it may provide necessary information for distinguishing Tonawanda Coke Corporation impact compared to other industries in the area. Credit: Dr. Tammy Milillo / Tonawanda Coke Soil Study

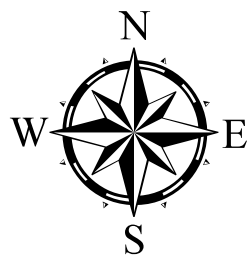
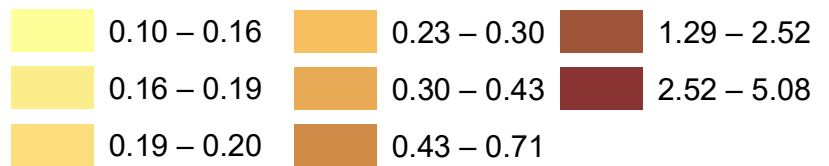


Kriging

Prediction Map

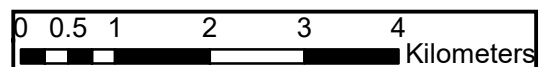
Cyanide_Total_mg_Kg_6in

Filled Contours

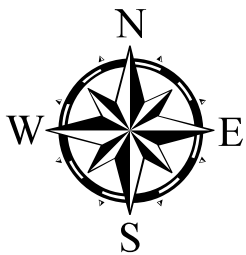
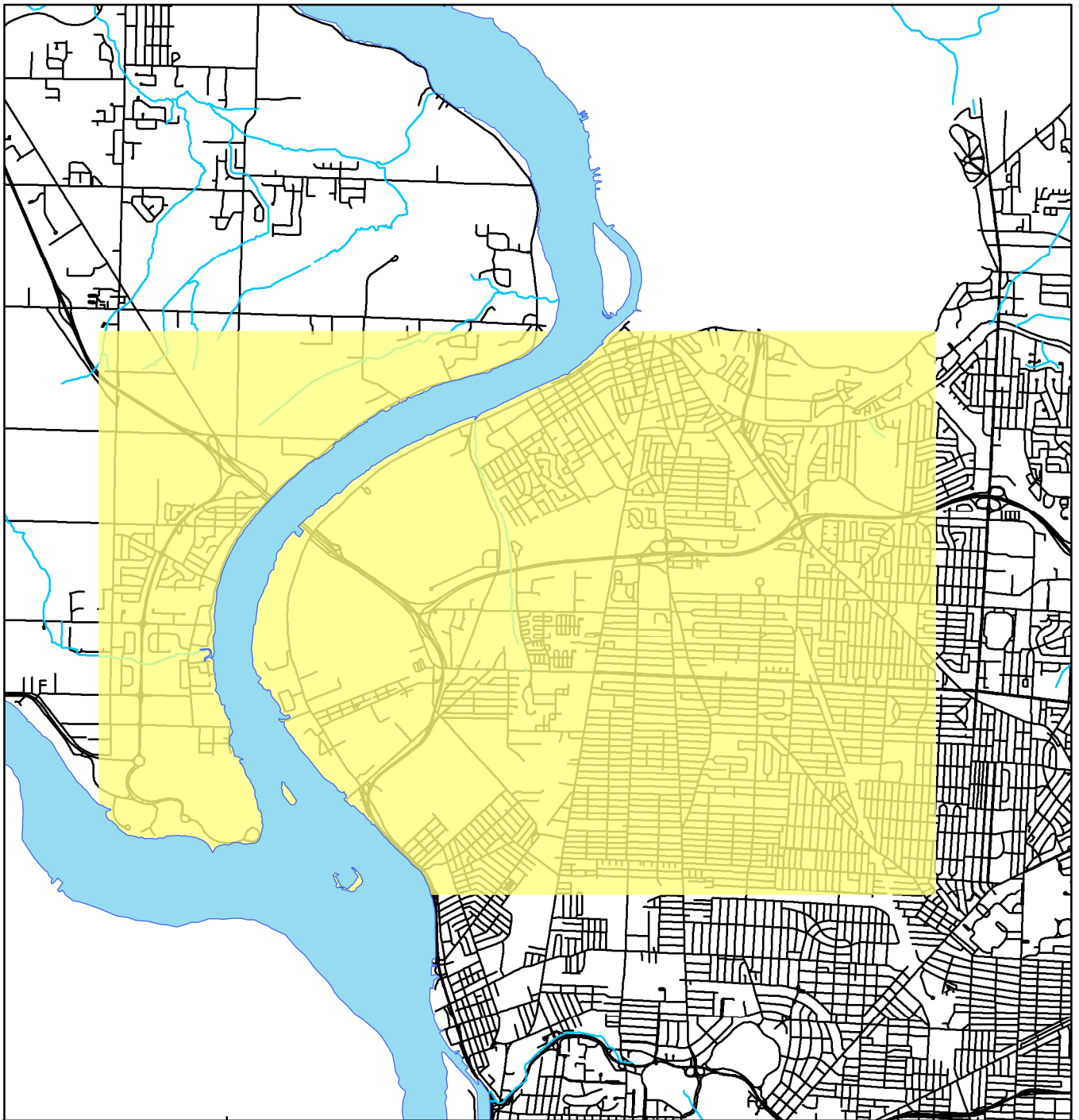


Cyanide SCO 27

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 TCC Soil Study
 December 3, 2018



Map of Hexachlorobenzene in $\mu\text{g}/\text{kg}$. The map shows the modeled surface, as the color darkens, the predicted concentration of hexachlorobenzene increases. The TCC soil study used an SCO of $330 \mu\text{g}/\text{kg}$ for hexachlorobenzene. Intervals below the SCO are of no immediate concern to residents. Intervals which contain values above the SCO do not directly correlate to risk. This map is an example of a surface generated by chemical concentrations that are either not detected or significantly below any SCO value.
Credit: Dr. Tammy Milillo / Tonawanda Coke Soil Study



Hexachlorobenzene SCO 330

Created by
 Tammy M. Milillo
 University at Buffalo, SUNY
 Department of Chemistry
 TCC Soil Study
 December 3, 2018

Kriging Prediction Map

Filled Contours

Hexachlorobenzene_ug_Kg_6in

- 70 – 330
- 330 – 660
- 660 – 960

