

EDEN NORTH CAROLINA COAL ASH SPILL SEDIMENT RESULTS

NOTE: The data below represents sediment samples that were collected on April 23, 2014 by EPA START Team 1. Sediment sample measurements are in milligrams per kilogram (mg/kg). The data is being compared to ecological risk screening levels (ERSLs) to protect aquatic life in the sediments of the Dan River. Specific qualifiers and footnotes are listed below the summary table. These samples were collected at various locations along the river (refer to map for generalized locations). The detected concentrations in sediment are all below the ERSLs with the exception of aluminum, barium, and iron. There were no exceedances of human health screening criteria for sediment. When chemical concentrations exceed the screening values it doesn't mean there will be adverse health or ecological effects, but recommends further investigation may be needed.

Analyte	Ecological Screening Standards for Sediment ²		Danville WTP Clarifier		Transect EPA 04 Left Descending		Transect EPA 05 Left Descending	
Sample Information								
Sample ID	-		EDEN-DWTP-CLA-SD-20140423		EDEN-EPA04-L-SD-20140423		EDEN-EPA05-L-SD-20140423	
Date	-		04/23/2014		04/23/2014		04/23/2014	
Time	-		1340		0800		0925	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	-	-	6,000	mg/kg	8,000	mg/kg
Antimony	2 ^a	mg/kg	-	-	1.4UJ	mg/kg	mg/kg	mg/kg
Arsenic	9.8	mg/kg	-	-	1.1J	mg/kg	mg/kg	mg/kg
Barium	60 ^b	mg/kg	-	-	55	mg/kg	83	mg/kg
Beryllium	-	-	-	-	0.35J	mg/kg	mg/kg	mg/kg
Boron	-	-	-	-	14U	mg/kg	mg/kg	mg/kg
Cadmium	0.99	mg/kg	-	-	0.033J	mg/kg	mg/kg	mg/kg
Calcium	-	-	-	-	520	mg/kg	mg/kg	mg/kg
Chromium	43.4	mg/kg	-	-	15	mg/kg	mg/kg	mg/kg
Cobalt	50	mg/kg	-	-	5.8	mg/kg	mg/kg	mg/kg
Copper	31.6	mg/kg	-	-	7.2	mg/kg	mg/kg	mg/kg
Iron	6,800 (bkg)	mg/kg	-	-	10,000	mg/kg	13,000	mg/kg
Lead	35.8	mg/kg	-	-	6.3	mg/kg	7.8	mg/kg
Magnesium	-	-	-	-	1,700	mg/kg	2,400	mg/kg
Manganese	460 ^c	mg/kg	-	-	130	mg/kg	290	mg/kg
Mercury	0.18	mg/kg	-	-	0.028U	mg/kg	0.013J	mg/kg
Molybdenum	-	-	-	-	1.4U	mg/kg	1.5U	mg/kg
Nickel	22.7	mg/kg	-	-	6.7	mg/kg	8.3	mg/kg
Potassium	-	-	-	-	1,300	mg/kg	1,900	mg/kg
Selenium	2 ^d	mg/kg	-	-	0.69U	mg/kg	0.67J	mg/kg
Silver	0.733	mg/kg	-	-	0.14U	mg/kg	0.16U	mg/kg
Sodium	-	-	-	-	280U	mg/kg	300U	mg/kg
Thallium	-	mg/kg	-	-	0.065J	mg/kg	0.22	mg/kg
Vanadium	57 ^c	mg/kg	-	-	19	mg/kg	24	mg/kg
Zinc	121	mg/kg	-	-	29	mg/kg	34	mg/kg

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Date	-	04/23/2014	04/23/2014	04/23/2014
Time	-	1340	0800	0925
Status	-	Validation Complete	Validation Complete	Validation Complete
Type	-	Sediment	Sediment	Sediment
Physical Properties				
Percent Ash	-	9	1	3

Notes

² MacDonald, D.D.; Ingersoll, C.G.; Smorong, D.E.; Lindskoog, R.A.; Sloane, G; and T. Biernacki. 2003. Development and Evaluation of Numerical Sediment Quality Assessment Guidelines for Florida Inland Waters. Florida Department of Environmental Protection, Tallahassee, FL. Development and Evaluation of Numerical Sediment Quality Assessment Guidelines for Florida Inland Waters.

^a The screening value for antimony is from Long, Edward R., and Lee G. Morgan. 1991. The Potential for Biological Effects of Sediment-Sorbed Contaminants Tested in the National Status and Trends Program. NOAA Technical Memorandum NOS OMA 52.

^b The screening value for barium was the probable effect level (PEL) instead of the threshold effect level (TEL) because the TEL was below background

^c Sediment screening values for manganese and vanadium come from the NOAA SQuIRT.

<http://response.restoration.noaa.gov/sites/default/files/SQuiRTs.pdf>

^d The screening value for selenium is from Region 3 after Lemley, A.D. 2002. Selenium assessment in aquatic ecosystems. US Forest Service, Blacksburg, VA.

^e Cadmium from diet

^f Chromium (VI)

^g Methyl Mercury

^h Thallium Chloride

% Percent

EPA U.S. Environmental Protection Agency

J Value is estimated

J+ Value is estimated with a possible high bias

J- Value is estimated with a possible low bias

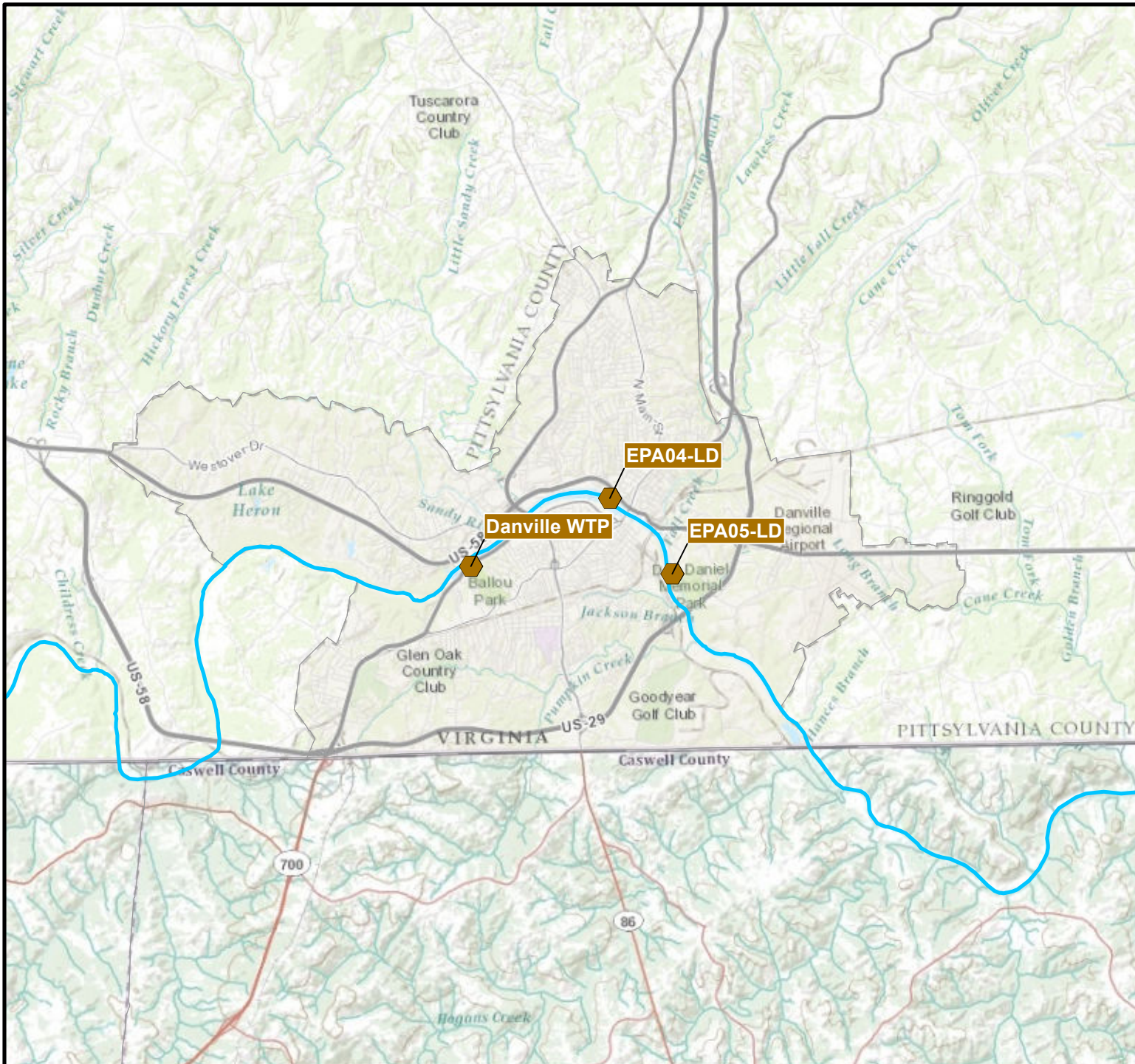
mg/kg milligrams per kilogram

ND No fly ash detected at a PLM reporting limit of 1 percent




PLM Polarized light microscopy

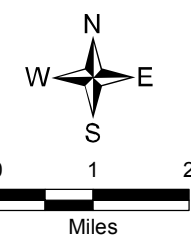
U Analyte was not detected at the listed reporting limit.

UJ Analyte was not detected at the listed reporting limit, which is an estimated quantitation.



Legend

-  Approximate Spill Location
-  Sediment Sample Location
-  Dan River



Map Source: ArcGIS Online World Map Topo, 2014

Sediment Sample Locations
April 23, 2014

