

EDEN NORTH CAROLINA COAL ASH SPILL SEDIMENT RESULTS

NOTE: The data below represents sediment samples that were collected on May 22, 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 in the dredging area for continued assessment and evaluation (refer to map for generalized locations). The detected concentrations in sediment are all below the ERSLs with the exception of aluminum, antimony, 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		Schoolfield Post-Dredge Area 8A 0-6 inches		Schoolfield Post-Dredge Area 8A 0-6 inches		Schoolfield Post-Dredge Area 8B 0-6 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-8A-0006-SD-20140522		EDEN-SFDA-8A-0006-SD-20140522-DUP		EDEN-SFDA-8B-0006-SD-20140522	
Date	-		05/22/2014		05/22/2014		05/22/2014	
Time	-		09:57		09:57		10:15	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	8700	mg/kg	13000	mg/kg	9400	mg/kg
Antimony	2 ^a	mg/kg	2.2UJ	mg/kg	1.9UJ	mg/kg	1.6UJ	mg/kg
Arsenic	9.8	mg/kg	2J	mg/kg	1.9J	mg/kg	1.7J	mg/kg
Barium	60 ^b	mg/kg	79	mg/kg	110	mg/kg	85	mg/kg
Beryllium	-	-	0.52J	mg/kg	0.74J	mg/kg	0.54J	mg/kg
Boron	-	-	22U	mg/kg	19U	mg/kg	16U	mg/kg
Cadmium	0.99	mg/kg	0.064J	mg/kg	0.097	mg/kg	0.06J	mg/kg
Calcium	-	-	970	mg/kg	1200	mg/kg	1000	mg/kg
Chromium	43.4	mg/kg	18	mg/kg	26	mg/kg	19	mg/kg
Cobalt	50	mg/kg	6.8	mg/kg	9.9	mg/kg	7.1	mg/kg
Copper	31.6	mg/kg	11	mg/kg	16	mg/kg	11	mg/kg
Iron	6,800 (bkg)	mg/kg	14000	mg/kg	20000	mg/kg	15000	mg/kg
Lead	35.8	mg/kg	7.9	mg/kg	11	mg/kg	7.7	mg/kg
Magnesium	-	-	1900J+	mg/kg	2700J+	mg/kg	2100J+	mg/kg
Manganese	460 ^c	mg/kg	300	mg/kg	410	mg/kg	310	mg/kg
Mercury	0.18	mg/kg	0.036J	mg/kg	0.037J	mg/kg	0.036	mg/kg
Molybdenum	-	-	2.2U	mg/kg	1.9U	mg/kg	1.6U	mg/kg
Nickel	22.7	mg/kg	7.4J	mg/kg	11	mg/kg	8.2	mg/kg
Potassium	-	-	1400J+	mg/kg	2000J+	mg/kg	1600J+	mg/kg
Selenium	2 ^d	mg/kg	1.1U	mg/kg	0.57J	mg/kg	0.52J	mg/kg
Silver	0.733	mg/kg	0.22U	mg/kg	0.19U	mg/kg	0.16U	mg/kg
Sodium	-	-	440U	mg/kg	380U	mg/kg	310U	mg/kg
Thallium	-	-	0.16J	mg/kg	0.25	mg/kg	0.2	mg/kg
Vanadium	57 ^e	mg/kg	27	mg/kg	39	mg/kg	29	mg/kg
Zinc	121	mg/kg	33	mg/kg	47	mg/kg	33	mg/kg
Physical Properties								
Percent Ash	-	-	-	-	-	-	-	-

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

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

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.

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Analyte	Ecological Screening Standards for Sediment ²		Schoolfield Post-Dredge Area 8C 0-6 inches	
Sample Information				
Sample ID	-		EDEN-SFDA-8C-0006-SD-20140522	
Date	-		05/22/2014	
Time	-		10:27	
Status	-		Validation Complete	
Type	-		Sediment	
Total Metals				
Aluminum	3,200 (bkg)	mg/kg	4300	mg/kg
Antimony	2 ^a	mg/kg	1.4UJ	mg/kg
Arsenic	9.8	mg/kg	1.2J	mg/kg
Barium	60 ^b	mg/kg	41	mg/kg
Beryllium	-	-	0.36J	mg/kg
Boron	-	-	14U	mg/kg
Cadmium	0.99	mg/kg	0.033J	mg/kg
Calcium	-	-	670	mg/kg
Chromium	43.4	mg/kg	15	mg/kg
Cobalt	50	mg/kg	4.7	mg/kg
Copper	31.6	mg/kg	5.9	mg/kg
Iron	6,800 (bkg)	mg/kg	9000	mg/kg
Lead	35.8	mg/kg	5.5	mg/kg
Magnesium	-	-	990J+	mg/kg
Manganese	460 ^c	mg/kg	200	mg/kg
Mercury	0.18	mg/kg	0.013J	mg/kg
Molybdenum	-	-	1.4U	mg/kg
Nickel	22.7	mg/kg	4.5J	mg/kg
Potassium	-	-	670J+	mg/kg
Selenium	2 ^d	mg/kg	0.71U	mg/kg
Silver	0.733	mg/kg	0.14U	mg/kg
Sodium	-	-	290U	mg/kg
Thallium	-	mg/kg	0.092J	mg/kg
Vanadium	57 ^e	mg/kg	17	mg/kg
Zinc	121	mg/kg	19	mg/kg
Physical Properties				
Percent Ash	-	-	-	-

Notes

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^h Thallium Chloride

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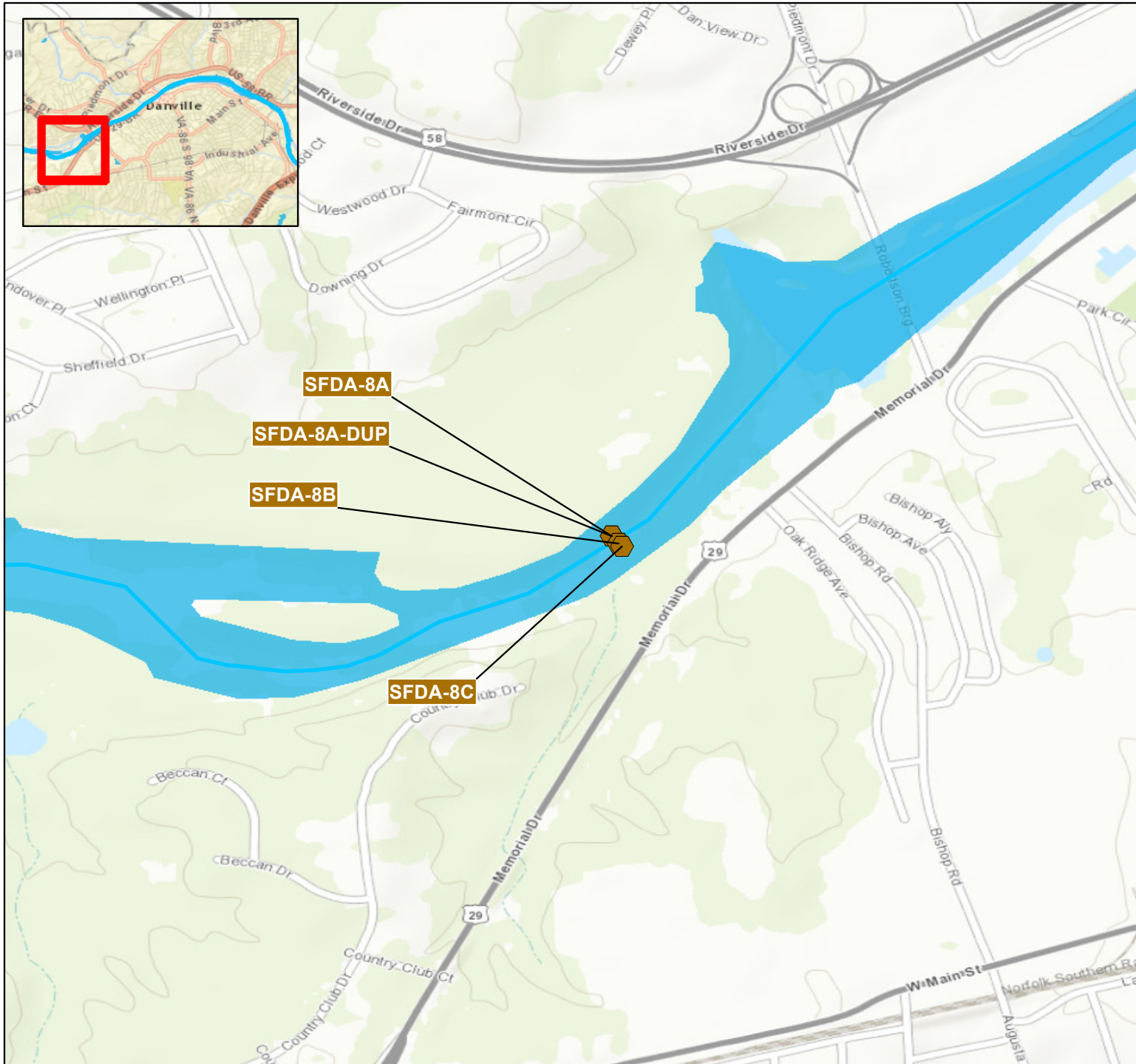
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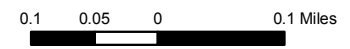
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Legend

-  Sediment Sample Location

Imagery Source:
ESRI, USGS Mapping Service, 2013



Eden Coal Ash Spill
Eden, North Carolina

Sediment
Sample Locations
May 22, 2014

