

## EDEN NORTH CAROLINA COAL ASH SPILL SURFACE WATER RESULTS

NOTE: The data below represents surface water samples that were collected on March 31, 2014 by EPA START (Team 1) sampling teams. Water sample measurements are in milligrams per liter (mg/L) and/or micrograms per liter (µg/L) for these samples. The data is being compared to EPA ecological risk screening levels (ERSLs) to protect aquatic life in the surface water 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 surface water are all below the EPA ERSLS with the exception of iron and lead. EPA typically screens the surface water concentrations using total metals samples, because this is a conservative practice for screening. Because lead was not detected above screening levels in any of the samples of the dissolved fraction of surface water (i.e., samples that were filtered to remove particulates), there is no threat of toxicity from lead to aquatic organisms. 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 Standard for Surface Water Samples <sup>1</sup>		Transect EPA 08 Right Descending		Transect EPA 09 Left Descending		Transect EPA 10 Left Descending	
<b>Sample Information</b>								
Sample ID	-		EDEN-EPA08-R-BW-20140331		EDEN-EPA09-L-BW-20140331		EDEN-EPA10-L-BW-20140331	
Date	-		03/31/2014		03/31/2014		03/31/2014	
Time	-		1200		1505		1710	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Surface Water		Surface Water		Surface Water	
<b>Dissolved metals</b>								
Aluminum	87	µg/L	27.6	µg/L	28.7	µg/L	48	µg/L
Antimony	5.6	µg/L	5U	µg/L	5U	µg/L	5U	µg/L
Arsenic	10	µg/L	0.182J	µg/L	0.225J	µg/L	0.187J	µg/L
Barium	220	µg/L	20.2	µg/L	20.5	µg/L	20.7	µg/L
Beryllium	0.66	µg/L	0.65U	µg/L	0.65U	µg/L	0.65U	µg/L
Boron	0.36	mg/L	0.072J+	mg/L	0.0942U	mg/L	0.05U	mg/L
Cadmium	0.1	µg/L	0.1U	µg/L	0.1U	µg/L	0.1U	µg/L
Calcium	-	-	6,520	µg/L	6,690	µg/L	5,070	µg/L
Chromium	25	µg/L	0.212J	µg/L	0.278J	µg/L	0.188J	µg/L
Cobalt	3	µg/L	0.114J	µg/L	0.124J	µg/L	0.131J	µg/L
Copper	3	µg/L	0.609J	µg/L	1.95J	µg/L	0.819J	µg/L
Iron	1,000	µg/L	582	µg/L	561	µg/L	1,070	µg/L
Lead	0.59	µg/L	0.148J	µg/L	0.171J	µg/L	0.285J	µg/L
Magnesium	-	-	2,690J	µg/L	2,700J	µg/L	2,070J	µg/L
Manganese	200	µg/L	15	µg/L	14.6	µg/L	38.8	µg/L
Mercury	0.000012	mg/L	0.0002U	mg/L	0.0002U	mg/L	0.0002U	mg/L
Molybdenum	800	µg/L	5U	µg/L	5U	µg/L	5U	µg/L
Nickel	17	µg/L	0.186J	µg/L	0.22J	µg/L	5U	µg/L
Potassium	53,000	µg/L	5,000U	µg/L	5,000U	µg/L	5,000U	µg/L
Selenium	5	µg/L	4.5U	µg/L	4.5U	µg/L	4.5U	µg/L
Silver	0.06	µg/L	0.05U	µg/L	0.05U	µg/L	0.05U	µg/L
Sodium	680,000	µg/L	6,480	µg/L	6,770	µg/L	4,930J	µg/L
Thallium	0.24	µg/L	0.2U	µg/L	0.2U	µg/L	0.2U	µg/L
Vanadium	27	µg/L	0.755J	µg/L	0.768J	µg/L	0.748J	µg/L
Zinc	39	µg/L	10U	µg/L	10U	µg/L	10U	µg/L

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Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Surface Water		Surface Water		Surface Water	
<b>Total Dissolved Solids</b>								
Total Dissolved Solids	-	-	75	mg/L	64	mg/L	63	mg/L
<b>Total Suspended Solids</b>								
Total Suspended Solids	-	-	13.5	mg/L	17	mg/L	7	mg/L
<b>Total Metals</b>								
Aluminum	2,000	µg/L	469	µg/L	469	µg/L	315	µg/L
Antimony	5.6	µg/L	5U	µg/L	5U	µg/L	5U	µg/L
Arsenic	10	µg/L	4.5U	µg/L	4.5U	µg/L	4.5U	µg/L
Barium	220	µg/L	27	µg/L	26.6	µg/L	24.1	µg/L
Beryllium	0.66	µg/L	0.65U	µg/L	0.65U	µg/L	0.65U	µg/L
Boron	0.36	mg/L	0.0794J+	mg/L	0.0895U	mg/L	0.05U	mg/L
Cadmium	2	µg/L	0.1U	µg/L	0.1U	µg/L	0.1U	µg/L
Calcium	-	-	6,850	µg/L	7,200	µg/L	5,190	µg/L
Chromium	29	µg/L	2.5U	µg/L	2.5U	µg/L	2.5U	µg/L
Cobalt	24	µg/L	0.542J	µg/L	0.539J	µg/L	0.343J	µg/L
Copper	3	µg/L	2U	µg/L	2U	µg/L	2U	µg/L
Iron	2,300	µg/L	1,330	µg/L	1,350	µg/L	1,370	µg/L
Lead	0.6	µg/L	0.693	µg/L	0.612	µg/L	0.432J	µg/L
Magnesium	-	-	2,810J	µg/L	2,870J	µg/L	2,090J	µg/L
Manganese	200	µg/L	55.6	µg/L	51.2	µg/L	81.4	µg/L
Mercury	0.000012	mg/L	0.0002U	mg/L	0.0002U	mg/L	0.0002U	mg/L
Molybdenum	-	-	5U	µg/L	5U	µg/L	5U	µg/L
Nickel	17	µg/L	0.662J	µg/L	0.666J	µg/L	0.419J	µg/L
Potassium	53,000	µg/L	5,000U	µg/L	5,000U	µg/L	5,000U	µg/L
Selenium	5	µg/L	4.5U	µg/L	4.5U	µg/L	4.5U	µg/L
Silver	0.06	µg/L	0.055U	µg/L	0.055U	µg/L	0.055U	µg/L
Sodium	680,000	µg/L	6,720	µg/L	7,220	µg/L	5,060	µg/L
Thallium	0.24	µg/L	0.2U	µg/L	0.2U	µg/L	0.2U	µg/L
Vanadium	27	µg/L	2.58J	µg/L	2.3J	µg/L	1.59J	µg/L
Zinc	39	µg/L	3.17J	µg/L	9.3J	µg/L	3.22J	µg/L
<b>Anions</b>								
Bromide	-	-	1U	mg/L	1U	mg/L	1U	mg/L
Chloride	230	mg/L	9.4	mg/L	10.5	mg/L	4.8	mg/L
Sulfate	-	-	5.81	mg/L	5.91	mg/L	4.31	mg/L

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Type	-		Surface Water		Surface Water		Surface Water	
<b>Wet Chemistry</b>								
Alkalinity, Total (As CaCO <sub>3</sub> )	-	-	22.8	mg/L	23.4	mg/L	23.3	mg/L
Hardness, Calcium/Magnesium (As CaCO <sub>3</sub> )	-	-	28.6	mg/L	29.8	mg/L	21.6	mg/L
Organic Carbon, Dissolved	-	-	2.31	mg/L	3.92	mg/L	4.08	mg/L
pH	6.5 - 9.0		std	7.23J	std	7.2J	std	7.07J

Notes

<sup>1</sup> Value obtained from the GL Tier 2 Values; National Recommended Water Quality Criteria; Suter and Tsao (1996); Reference condition for EcoRegion XI (25 percentile); NCDENR State Standards for surface water

°C degrees Celsius

EPA U.S. Environmental Protection Agency

J Value is estimated

J+ Value is estimated with a possible high bias

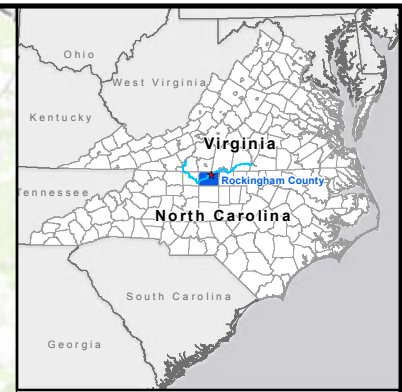
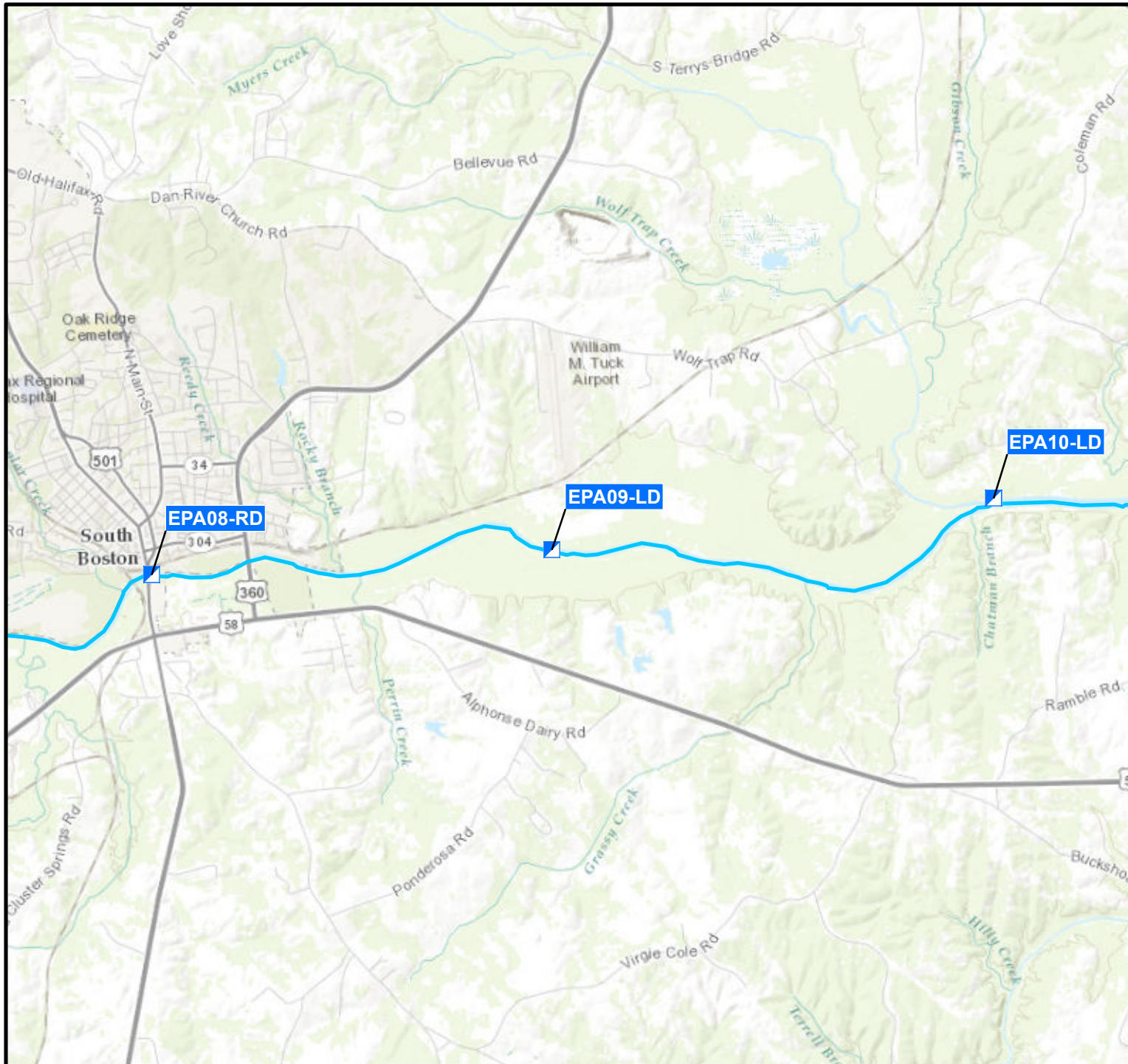
J- Value is estimated with a possible low bias

µg/L micrograms per liter



mg/L milligrams per liter

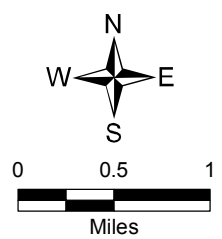
std standard

U Analyte was not detected at the listed reporting limit.



**Legend**

-  Approximate Spill Location
-  Dan River



Map Source: ArcGIS Online World Map Topo, 2014

**Surface Water  
Sample Locations  
March 31, 2014**

