EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

NOTE: The data below represents sediment samples that were collected on May 14, 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, barium, chromium, copper, iron, manganese, and vanadium. 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 Dredge Area 8A 0-12 inches**		**Schoolfield Dredge Area 8A 12-18 inches**		**Schoolfield Dredge Area 8B 0-12 inches**	
Sample Information								
Sample ID	-		EDEN-SFDA-8A-0012-SD-20140514		EDEN-SFDA-8A-1218-SD-20140514		EDEN-SFDA-8B-0012-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		16:40		16:40		17:00	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	22000	mg/kg	5700	mg/kg	11000	mg/kg
Antimony	2[a]	mg/kg	2UJ	mg/kg	1.4UJ	mg/kg	2.2UJ	mg/kg
Arsenic	9.8	mg/kg	5	mg/kg	1.1J	mg/kg	4.3U	mg/kg
Barium	60[b]	mg/kg	180J-	mg/kg	55J-	mg/kg	95J-	mg/kg
Beryllium	-	-	1.2	mg/kg	0.33J	mg/kg	0.6J	mg/kg
Boron	-	-	20U	mg/kg	14U	mg/kg	22U	mg/kg
Cadmium	0.99	mg/kg	0.17	mg/kg	0.036J	mg/kg	0.076J	mg/kg
Calcium	-	-	2100	mg/kg	610	mg/kg	1200	mg/kg
Chromium	43.4	mg/kg	40J+	mg/kg	15J+	mg/kg	22J+	mg/kg
Cobalt	50	mg/kg	15	mg/kg	5.4	mg/kg	7.6	mg/kg
Copper	31.6	mg/kg	26	mg/kg	6.8	mg/kg	12	mg/kg
Iron	6,800 (bkg)	mg/kg	32000	mg/kg	10000	mg/kg	17000	mg/kg
Lead	35.8	mg/kg	18J-	mg/kg	5.6J-	mg/kg	9.3J-	mg/kg
Magnesium	-	-	4100J-	mg/kg	1700J-	mg/kg	2500J-	mg/kg
Manganese	460[c]	mg/kg	780J-	mg/kg	150J-	mg/kg	370J-	mg/kg
Mercury	0.18	mg/kg	0.039J	mg/kg	0.015J	mg/kg	0.028J	mg/kg
Molybdenum	-	-	0.85J	mg/kg	1.4U	mg/kg	2.2U	mg/kg
Nickel	22.7	mg/kg	17	mg/kg	6	mg/kg	9.3	mg/kg
Potassium	-	-	3000J-	mg/kg	1200J-	mg/kg	1900J-	mg/kg
Selenium	2[d]	mg/kg	1	mg/kg	0.69U	mg/kg	1.1U	mg/kg
Silver	0.733	mg/kg	0.2U	mg/kg	0.14U	mg/kg	0.22U	mg/kg
Sodium	-	-	400U	mg/kg	280U	mg/kg	430U	mg/kg
Thallium	-	mg/kg	0.39	mg/kg	0.11J	mg/kg	0.18J	mg/kg
Vanadium	57[c]	mg/kg	61	mg/kg	20	mg/kg	32	mg/kg
Zinc	121	mg/kg	75J-	mg/kg	24J-	mg/kg	40J-	mg/kg

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SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 8A 0-12 inches		Schoolfield Dredge Area 8A 12-18 inches		Schoolfield Dredge Area 8B 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-8A-0012-SD-20140514		EDEN-SFDA-8A-1218-SD-20140514		EDEN-SFDA-8B-0012-SD-20140514	
Physical Properties								
Percent Ash	-	-			ND	%	--	--

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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 8B 12-18 inches		Schoolfield Dredge Area 8C 0-12 inches		Schoolfield Dredge Area 8C 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-8B-1218-SD-20140514		EDEN-SFDA-8C-0012-SD-20140514		EDEN-SFDA-8C-1218-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		17:00		17:10		17:10	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	18000	mg/kg	2900	mg/kg	1400	mg/kg
Antimony	2[a]	mg/kg	3.5UJ	mg/kg	1.1UJ	mg/kg	1.3UJ	mg/kg
Arsenic	9.8	mg/kg	4.7J	mg/kg	1.3J	mg/kg	1.4J	mg/kg
Barium	60[b]	mg/kg	200J-	mg/kg	28J-	mg/kg	11J-	mg/kg
Beryllium	-	-	1.1J	mg/kg	0.21J	mg/kg	0.13J	mg/kg
Boron	-	-	35U	mg/kg	11U	mg/kg	13U	mg/kg
Cadmium	0.99	mg/kg	0.22	mg/kg	0.019J	mg/kg	0.066U	mg/kg
Calcium	-	-	4900	mg/kg	340	mg/kg	190	mg/kg
Chromium	43.4	mg/kg	35J+	mg/kg	9.7J+	mg/kg	9.6J+	mg/kg
Cobalt	50	mg/kg	16	mg/kg	3.4	mg/kg	1.9	mg/kg
Copper	31.6	mg/kg	26	mg/kg	3.5	mg/kg	3.3U	mg/kg
Iron	6,800 (bkg)	mg/kg	31000	mg/kg	6600	mg/kg	4600	mg/kg
Lead	35.8	mg/kg	17J-	mg/kg	3J-	mg/kg	2.2J-	mg/kg
Magnesium	-	-	4100J-	mg/kg	830J-	mg/kg	300J-	mg/kg
Manganese	460[c]	mg/kg	1100J-	mg/kg	90J-	mg/kg	52J-	mg/kg
Mercury	0.18	mg/kg	0.061J	mg/kg	0.022U	mg/kg	0.024U	mg/kg
Molybdenum	-	-	3.5U	mg/kg	1.1U	mg/kg	1.3U	mg/kg
Nickel	22.7	mg/kg	17	mg/kg	4.6U	mg/kg	5.3U	mg/kg
Potassium	-	-	2900J-	mg/kg	640J-	mg/kg	250J-	mg/kg
Selenium	2[d]	mg/kg	1.1J	mg/kg	0.57U	mg/kg	0.66U	mg/kg
Silver	0.733	mg/kg	0.35U	mg/kg	0.11U	mg/kg	0.13U	mg/kg
Sodium	-	-	700U	mg/kg	230U	mg/kg	270U	mg/kg
Thallium	-	mg/kg	0.35	mg/kg	0.07J	mg/kg	0.13U	mg/kg
Vanadium	57[c]	mg/kg	57	mg/kg	14	mg/kg	7.6	mg/kg
Zinc	121	mg/kg	78J-	mg/kg	14J-	mg/kg	7.6J-	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 8B 12-18 inches		Schoolfield Dredge Area 8C 0-12 inches		Schoolfield Dredge Area 8C 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-8B-1218-SD-20140514		EDEN-SFDA-8C-0012-SD-20140514		EDEN-SFDA-8C-1218-SD-20140514	
Physical Properties								
Percent Ash	-	-	ND	%	--	--	ND	%

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.

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[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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 7A 0-12 inches		Schoolfield Dredge Area 7A 0-12 inches		Schoolfield Dredge Area 7A 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-7A-0012-SD-20140514		EDEN-SFDA-7A-0012-SD-20140514-DUP		EDEN-SFDA-7A-1218-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		15:45		15:50		15:45	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	21000	mg/kg	21000	mg/kg	16000	mg/kg
Antimony	2[a]	mg/kg	2.3UJ	mg/kg	2.1UJ	mg/kg	1.6UJ	mg/kg
Arsenic	9.8	mg/kg	4.6	mg/kg	5.1	mg/kg	3.3	mg/kg
Barium	60[b]	mg/kg	180J-	mg/kg	170J-	mg/kg	140J-	mg/kg
Beryllium	-	-	1.2	mg/kg	1.2	mg/kg	0.89	mg/kg
Boron	-	-	23U	mg/kg	21U	mg/kg	16U	mg/kg
Cadmium	0.99	mg/kg	0.19	mg/kg	0.15	mg/kg	0.12	mg/kg
Calcium	-	-	2000	mg/kg	2100	mg/kg	1200	mg/kg
Chromium	43.4	mg/kg	39J+	mg/kg	39J+	mg/kg	31J+	mg/kg
Cobalt	50	mg/kg	15	mg/kg	15	mg/kg	12	mg/kg
Copper	31.6	mg/kg	26	mg/kg	26	mg/kg	20	mg/kg
Iron	6,800 (bkg)	mg/kg	31000	mg/kg	33000	mg/kg	24000	mg/kg
Lead	35.8	mg/kg	18J-	mg/kg	18J-	mg/kg	13J-	mg/kg
Magnesium	-	-	3900J-	mg/kg	4000J-	mg/kg	3400J-	mg/kg
Manganese	460[c]	mg/kg	770J-	mg/kg	1100J-	mg/kg	440J-	mg/kg
Mercury	0.18	mg/kg	0.052	mg/kg	0.049	mg/kg	0.036	mg/kg
Molybdenum	-	-	0.76J	mg/kg	0.78J	mg/kg	0.71J	mg/kg
Nickel	22.7	mg/kg	17	mg/kg	17	mg/kg	14	mg/kg
Potassium	-	-	2900J-	mg/kg	3000J-	mg/kg	2500J-	mg/kg
Selenium	2[d]	mg/kg	0.87J	mg/kg	0.81J	mg/kg	0.53J	mg/kg
Silver	0.733	mg/kg	0.23U	mg/kg	0.21U	mg/kg	0.16U	mg/kg
Sodium	-	-	460U	mg/kg	430U	mg/kg	320U	mg/kg
Thallium	-	mg/kg	0.37	mg/kg	0.36	mg/kg	0.28	mg/kg
Vanadium	57[c]	mg/kg	61	mg/kg	61	mg/kg	48	mg/kg
Zinc	121	mg/kg	74J-	mg/kg	75J-	mg/kg	57J-	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 7A 0-12 inches		Schoolfield Dredge Area 7A 0-12 inches		Schoolfield Dredge Area 7A 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-7A-0012-SD-20140514		EDEN-SFDA-7A-0012-SD-20140514-DUP		EDEN-SFDA-7A-1218-SD-20140514	
Physical Properties								
Percent Ash	-	-	--	--	--	--	ND	%

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.

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[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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 7B 0-12 inches		Schoolfield Dredge Area 7B 12-18 inches		Schoolfield Dredge Area 7C 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-7B-0012-SD-20140514		EDEN-SFDA-7B-1218-SD-20140514		EDEN-SFDA-7C-0012-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		16:05		16:05		16:20	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	12000	mg/kg	12000	mg/kg	3500	mg/kg
Antimony	2[a]	mg/kg	2UJ	mg/kg	1.8UJ	mg/kg	1.5UJ	mg/kg
Arsenic	9.8	mg/kg	2.7J	mg/kg	2.5J	mg/kg	1.1J	mg/kg
Barium	60[b]	mg/kg	110J-	mg/kg	110J-	mg/kg	37J-	mg/kg
Beryllium	-	-	0.71J	mg/kg	0.63J	mg/kg	0.27J	mg/kg
Boron	-	-	20U	mg/kg	18U	mg/kg	15U	mg/kg
Cadmium	0.99	mg/kg	0.095J	mg/kg	0.072J	mg/kg	0.029J	mg/kg
Calcium	-	-	1400	mg/kg	1300	mg/kg	470	mg/kg
Chromium	43.4	mg/kg	25J+	mg/kg	25J+	mg/kg	13J+	mg/kg
Cobalt	50	mg/kg	9	mg/kg	9	mg/kg	4.6	mg/kg
Copper	31.6	mg/kg	14	mg/kg	14	mg/kg	4.1	mg/kg
Iron	6,800 (bkg)	mg/kg	19000	mg/kg	19000	mg/kg	7600	mg/kg
Lead	35.8	mg/kg	9.5J-	mg/kg	9.6J-	mg/kg	3.8J-	mg/kg
Magnesium	-	-	2700J-	mg/kg	2800J-	mg/kg	1000J-	mg/kg
Manganese	460[c]	mg/kg	420J-	mg/kg	440J-	mg/kg	120J-	mg/kg
Mercury	0.18	mg/kg	0.029J	mg/kg	0.026J	mg/kg	0.03U	mg/kg
Molybdenum	-	-	2U	mg/kg	1.8U	mg/kg	1.5U	mg/kg
Nickel	22.7	mg/kg	11	mg/kg	11	mg/kg	6.1U	mg/kg
Potassium	-	-	2000J-	mg/kg	2100J-	mg/kg	730J-	mg/kg
Selenium	2[d]	mg/kg	0.6J	mg/kg	0.92U	mg/kg	0.76U	mg/kg
Silver	0.733	mg/kg	0.2U	mg/kg	0.18U	mg/kg	0.15U	mg/kg
Sodium	-	-	400U	mg/kg	370U	mg/kg	310U	mg/kg
Thallium	-	mg/kg	0.25	mg/kg	0.2	mg/kg	0.072J	mg/kg
Vanadium	57[c]	mg/kg	37	mg/kg	37	mg/kg	14	mg/kg
Zinc	121	mg/kg	45J-	mg/kg	44J-	mg/kg	17J-	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 7B 0-12 inches		Schoolfield Dredge Area 7B 12-18 inches		Schoolfield Dredge Area 7C 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-7B-0012-SD-20140514		EDEN-SFDA-7B-1218-SD-20140514		EDEN-SFDA-7C-0012-SD-20140514	
Physical Properties								
Percent Ash	-	-	--	--	ND	%	--	--

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.

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[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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 7C 12-18 inches		Schoolfield Dredge Area 6A 0-12 inches		Schoolfield Dredge Area 6A 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-7C-1218-SD-20140514		EDEN-SFDA-6A-0012-SD-20140514		EDEN-SFDA-6A-1218-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		16:20		12:10		12:10	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	1900	mg/kg	18000	mg/kg	15000	mg/kg
Antimony	2[a]	mg/kg	1.2UJ	mg/kg	2UJ	mg/kg	1.5UJ	mg/kg
Arsenic	9.8	mg/kg	1.4J	mg/kg	4.9	mg/kg	3.1	mg/kg
Barium	60[b]	mg/kg	17J-	mg/kg	160J-	mg/kg	140J-	mg/kg
Beryllium	-	-	0.17J	mg/kg	1.1	mg/kg	0.79	mg/kg
Boron	-	-	12U	mg/kg	20U	mg/kg	15U	mg/kg
Cadmium	0.99	mg/kg	0.058U	mg/kg	0.13	mg/kg	0.11	mg/kg
Calcium	-	-	310	mg/kg	2000	mg/kg	1700	mg/kg
Chromium	43.4	mg/kg	21J+	mg/kg	35J+	mg/kg	30J+	mg/kg
Cobalt	50	mg/kg	2.6	mg/kg	13	mg/kg	12	mg/kg
Copper	31.6	mg/kg	2.2J	mg/kg	23	mg/kg	18	mg/kg
Iron	6,800 (bkg)	mg/kg	6000	mg/kg	28000	mg/kg	23000	mg/kg
Lead	35.8	mg/kg	2.6J-	mg/kg	15J-	mg/kg	12J-	mg/kg
Magnesium	-	-	480J-	mg/kg	3700J-	mg/kg	3600J-	mg/kg
Manganese	460[c]	mg/kg	53J-	mg/kg	700J-	mg/kg	500J-	mg/kg
Mercury	0.18	mg/kg	0.027U	mg/kg	0.055	mg/kg	0.028J	mg/kg
Molybdenum	-	-	1.2U	mg/kg	0.72J	mg/kg	0.6J	mg/kg
Nickel	22.7	mg/kg	4.7U	mg/kg	15	mg/kg	14	mg/kg
Potassium	-	-	350J-	mg/kg	2700J-	mg/kg	2700J-	mg/kg
Selenium	2[d]	mg/kg	0.58U	mg/kg	1	mg/kg	0.51J	mg/kg
Silver	0.733	mg/kg	0.12U	mg/kg	0.2U	mg/kg	0.15U	mg/kg
Sodium	-	-	230U	mg/kg	400U	mg/kg	300U	mg/kg
Thallium	-	mg/kg	0.038J	mg/kg	0.35	mg/kg	0.26	mg/kg
Vanadium	57[c]	mg/kg	14	mg/kg	54	mg/kg	45	mg/kg
Zinc	121	mg/kg	10J-	mg/kg	64J-	mg/kg	55J-	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 7C 12-18 inches		Schoolfield Dredge Area 6A 0-12 inches		Schoolfield Dredge Area 6A 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-7C-1218-SD-20140514		EDEN-SFDA-6A-0012-SD-20140514		EDEN-SFDA-6A-1218-SD-20140514	
Physical Properties								
Percent Ash	-	-	ND	%	--	--	ND	%

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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 6B 0-12 inches		Schoolfield Dredge Area 6B 12-18 inches		Schoolfield Dredge Area 6C 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-6B-0012-SD-20140514		EDEN-SFDA-6B-1218-SD-20140514		EDEN-SFDA-6C-0012-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		12:20		12:20		12:35	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	6400	mg/kg	10000	mg/kg	24000	mg/kg
Antimony	2[a]	mg/kg	1.3UJ	mg/kg	1.7UJ	mg/kg	1.5UJ	mg/kg
Arsenic	9.8	mg/kg	1.9J	mg/kg	2.5J	mg/kg	4.5	mg/kg
Barium	60[b]	mg/kg	72J-	mg/kg	83J-	mg/kg	140J-	mg/kg
Beryllium	-	-	0.39J	mg/kg	0.55J	mg/kg	1.1	mg/kg
Boron	-	-	13U	mg/kg	17U	mg/kg	15U	mg/kg
Cadmium	0.99	mg/kg	0.036J	mg/kg	0.065J	mg/kg	0.047J	mg/kg
Calcium	-	-	800	mg/kg	1100	mg/kg	1500	mg/kg
Chromium	43.4	mg/kg	17J+	mg/kg	21J+	mg/kg	36J+	mg/kg
Cobalt	50	mg/kg	6.3	mg/kg	7.2	mg/kg	13	mg/kg
Copper	31.6	mg/kg	7.2	mg/kg	12	mg/kg	22	mg/kg
Iron	6,800 (bkg)	mg/kg	12000	mg/kg	16000	mg/kg	35000	mg/kg
Lead	35.8	mg/kg	8J-	mg/kg	8.6J-	mg/kg	15J-	mg/kg
Magnesium	-	-	2200J-	mg/kg	2000J-	mg/kg	3200J-	mg/kg
Manganese	460[c]	mg/kg	200J-	mg/kg	380J-	mg/kg	570J-	mg/kg
Mercury	0.18	mg/kg	0.028U	mg/kg	0.018J	mg/kg	0.037	mg/kg
Molybdenum	-	-	1.3U	mg/kg	1.7U	mg/kg	0.72J	mg/kg
Nickel	22.7	mg/kg	7.1	mg/kg	8.7	mg/kg	14	mg/kg
Potassium	-	-	1700J-	mg/kg	1500J-	mg/kg	2300J-	mg/kg
Selenium	2[d]	mg/kg	0.67U	mg/kg	0.83U	mg/kg	0.64J	mg/kg
Silver	0.733	mg/kg	0.13U	mg/kg	0.17U	mg/kg	0.15U	mg/kg
Sodium	-	-	270U	mg/kg	330U	mg/kg	300U	mg/kg
Thallium	-	mg/kg	0.15	mg/kg	0.16J	mg/kg	0.37	mg/kg
Vanadium	57[c]	mg/kg	21	mg/kg	31	mg/kg	65	mg/kg
Zinc	121	mg/kg	29J-	mg/kg	36J-	mg/kg	48J-	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 6B 0-12 inches		Schoolfield Dredge Area 6B 12-18 inches		Schoolfield Dredge Area 6C 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-6B-0012-SD-20140514		EDEN-SFDA-6B-1218-SD-20140514		EDEN-SFDA-6C-0012-SD-20140514	
Physical Properties								
Percent Ash	-	-	--	--	ND	%	--	--

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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 6C 12-18 inches		Schoolfield Dredge Area 5A 0-12 inches		Schoolfield Dredge Area 5A 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-6C-1218-SD-20140514		EDEN-SFDA-5A-0012-SD-20140514		EDEN-SFDA-5A-1218-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		12:35		14:30		14:30	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	19000	mg/kg	18000	mg/kg	17000	mg/kg
Antimony	2[a]	mg/kg	1.2UJ	mg/kg	2UJ	mg/kg	1.6UJ	mg/kg
Arsenic	9.8	mg/kg	2.7	mg/kg	3.2J	mg/kg	2.7J	mg/kg
Barium	60[b]	mg/kg	120J-	mg/kg	140J-	mg/kg	130J-	mg/kg
Beryllium	-	-	0.91	mg/kg	1	mg/kg	0.91	mg/kg
Boron	-	-	12U	mg/kg	20U	mg/kg	16U	mg/kg
Cadmium	0.99	mg/kg	0.042J	mg/kg	0.13	mg/kg	0.12	mg/kg
Calcium	-	-	1200	mg/kg	1300	mg/kg	970	mg/kg
Chromium	43.4	mg/kg	31J+	mg/kg	33	mg/kg	31	mg/kg
Cobalt	50	mg/kg	12	mg/kg	12	mg/kg	12	mg/kg
Copper	31.6	mg/kg	18	mg/kg	21	mg/kg	22	mg/kg
Iron	6,800 (bkg)	mg/kg	26000	mg/kg	27000	mg/kg	25000	mg/kg
Lead	35.8	mg/kg	13J-	mg/kg	14	mg/kg	13	mg/kg
Magnesium	-	-	3200J-	mg/kg	3600	mg/kg	3500	mg/kg
Manganese	460[c]	mg/kg	410J-	mg/kg	550	mg/kg	460	mg/kg
Mercury	0.18	mg/kg	0.037	mg/kg	0.032J	mg/kg	0.039	mg/kg
Molybdenum	-	-	0.52J	mg/kg	0.82J	mg/kg	0.65J	mg/kg
Nickel	22.7	mg/kg	13	mg/kg	14	mg/kg	13	mg/kg
Potassium	-	-	2300J-	mg/kg	2600	mg/kg	2700	mg/kg
Selenium	2[d]	mg/kg	0.47J	mg/kg	0.76J	mg/kg	0.68J	mg/kg
Silver	0.733	mg/kg	0.12U	mg/kg	0.2U	mg/kg	0.084J	mg/kg
Sodium	-	-	240U	mg/kg	400U	mg/kg	310U	mg/kg
Thallium	-	mg/kg	0.29	mg/kg	0.29	mg/kg	0.28	mg/kg
Vanadium	57[c]	mg/kg	52	mg/kg	53	mg/kg	49	mg/kg
Zinc	121	mg/kg	44J-	mg/kg	63	mg/kg	62	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 6C 12-18 inches		Schoolfield Dredge Area 5A 0-12 inches		Schoolfield Dredge Area 5A 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-6C-1218-SD-20140514		EDEN-SFDA-5A-0012-SD-20140514		EDEN-SFDA-5A-1218-SD-20140514	
Physical Properties								
Percent Ash	-	-	ND	%	--	--	ND	%

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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 5B 0-12 inches		Schoolfield Dredge Area 5B 0-12 inches		Schoolfield Dredge Area 5B 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-5B-0012-SD-20140514		EDEN-SFDA-5B-0012-SD-20140514-DUP		EDEN-SFDA-5B-1218-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		14:50		14:55		14:50	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	2700	mg/kg	3200	mg/kg	7500	mg/kg
Antimony	2[a]	mg/kg	1.3UJ	mg/kg	1.3UJ	mg/kg	1.6UJ	mg/kg
Arsenic	9.8	mg/kg	2.5U	mg/kg	1.4J	mg/kg	1.7J	mg/kg
Barium	60[b]	mg/kg	25J-	mg/kg	33J-	mg/kg	65J-	mg/kg
Beryllium	-	-	0.19J	mg/kg	0.22J	mg/kg	0.41J	mg/kg
Boron	-	-	13U	mg/kg	13U	mg/kg	16U	mg/kg
Cadmium	0.99	mg/kg	0.019J	mg/kg	0.02J	mg/kg	0.042J	mg/kg
Calcium	-	-	350	mg/kg	410	mg/kg	750	mg/kg
Chromium	43.4	mg/kg	9.8	mg/kg	11	mg/kg	17	mg/kg
Cobalt	50	mg/kg	2.6	mg/kg	3.1	mg/kg	6.1	mg/kg
Copper	31.6	mg/kg	3.1J	mg/kg	4	mg/kg	8.3	mg/kg
Iron	6,800 (bkg)	mg/kg	5500	mg/kg	6200	mg/kg	12000	mg/kg
Lead	35.8	mg/kg	3.1	mg/kg	3.1	mg/kg	6	mg/kg
Magnesium	-	-	820	mg/kg	900	mg/kg	1800	mg/kg
Manganese	460[c]	mg/kg	81	mg/kg	96	mg/kg	240	mg/kg
Mercury	0.18	mg/kg	0.022U	mg/kg	0.023U	mg/kg	0.013J	mg/kg
Molybdenum	-	-	1.3U	mg/kg	1.3U	mg/kg	1.6U	mg/kg
Nickel	22.7	mg/kg	3J	mg/kg	3.6J	mg/kg	6.8	mg/kg
Potassium	-	-	580	mg/kg	670	mg/kg	1300	mg/kg
Selenium	2[d]	mg/kg	0.63U	mg/kg	0.63U	mg/kg	0.81U	mg/kg
Silver	0.733	mg/kg	0.13U	mg/kg	0.13U	mg/kg	0.16U	mg/kg
Sodium	-	-	250U	mg/kg	250U	mg/kg	330U	mg/kg
Thallium	-	mg/kg	0.05J	mg/kg	0.062J	mg/kg	0.12J	mg/kg
Vanadium	57[c]	mg/kg	11	mg/kg	13	mg/kg	23	mg/kg
Zinc	121	mg/kg	12	mg/kg	14	mg/kg	28	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 5B 0-12 inches		Schoolfield Dredge Area 5B 0-12 inches		Schoolfield Dredge Area 5B 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-5B-0012-SD-20140514		EDEN-SFDA-5B-0012-SD-20140514-DUP		EDEN-SFDA-5B-1218-SD-20140514	
Physical Properties								
Percent Ash	-	-	--	--	--	--	ND	%

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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 5B 12-18 inches		Schoolfield Dredge Area 5C 0-12 inches		Schoolfield Dredge Area 5C 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-5B-1218-SD-20140514-DUP		EDEN-SFDA-5C-0012-SD-20140514		EDEN-SFDA-5C-1218-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		14:55		15:20		15:20	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	12000	mg/kg	3000	mg/kg	1700	mg/kg
Antimony	2[a]	mg/kg	1.3UJ	mg/kg	1.2UJ	mg/kg	1.4UJ	mg/kg
Arsenic	9.8	mg/kg	2.4J	mg/kg	1.1J	mg/kg	2.7U	mg/kg
Barium	60[b]	mg/kg	95J-	mg/kg	35J-	mg/kg	17J-	mg/kg
Beryllium	-	-	0.66	mg/kg	0.23J	mg/kg	0.11J	mg/kg
Boron	-	-	13U	mg/kg	12U	mg/kg	14U	mg/kg
Cadmium	0.99	mg/kg	0.075	mg/kg	0.021J	mg/kg	0.068U	mg/kg
Calcium	-	-	920	mg/kg	360	mg/kg	230	mg/kg
Chromium	43.4	mg/kg	24	mg/kg	11	mg/kg	7.1	mg/kg
Cobalt	50	mg/kg	8.1	mg/kg	3.9	mg/kg	2	mg/kg
Copper	31.6	mg/kg	13	mg/kg	3.8	mg/kg	2.1J	mg/kg
Iron	6,800 (bkg)	mg/kg	18000	mg/kg	6400	mg/kg	3600	mg/kg
Lead	35.8	mg/kg	9.7	mg/kg	3.4	mg/kg	2.1	mg/kg
Magnesium	-	-	2400	mg/kg	1100	mg/kg	540	mg/kg
Manganese	460[c]	mg/kg	340	mg/kg	91	mg/kg	54	mg/kg
Mercury	0.18	mg/kg	0.012J	mg/kg	0.027U	mg/kg	0.025U	mg/kg
Molybdenum	-	-	1.3U	mg/kg	1.2U	mg/kg	1.4U	mg/kg
Nickel	22.7	mg/kg	9.5	mg/kg	3.8J	mg/kg	2.1J	mg/kg
Potassium	-	-	1900	mg/kg	840	mg/kg	400	mg/kg
Selenium	2[d]	mg/kg	0.46J	mg/kg	0.59U	mg/kg	0.68U	mg/kg
Silver	0.733	mg/kg	0.13U	mg/kg	0.12U	mg/kg	0.14U	mg/kg
Sodium	-	-	270U	mg/kg	240U	mg/kg	270U	mg/kg
Thallium	-	mg/kg	0.18	mg/kg	0.07J	mg/kg	0.14U	mg/kg
Vanadium	57[c]	mg/kg	35	mg/kg	13	mg/kg	7.2	mg/kg
Zinc	121	mg/kg	42	mg/kg	15	mg/kg	8.7	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 5B 12-18 inches		Schoolfield Dredge Area 5C 0-12 inches		Schoolfield Dredge Area 5C 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-5B-1218-SD-20140514-DUP		EDEN-SFDA-5C-0012-SD-20140514		EDEN-SFDA-5C-1218-SD-20140514	
Physical Properties								
Percent Ash	-	-	ND	%	--	--	ND	%

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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 4A 0-12 inches		Schoolfield Dredge Area 4A 0-12 inches		Schoolfield Dredge Area 4A 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-4A-0012-SD-20140514		EDEN-SFDA-4A-0012-SD-20140514-DUP		EDEN-SFDA-4A-1218-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		10:25		10:30		10:25	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	22000	mg/kg	17000	mg/kg	13000	mg/kg
Antimony	2[a]	mg/kg	1.6UJ	mg/kg	1.7UJ	mg/kg	1.2UJ	mg/kg
Arsenic	9.8	mg/kg	4.4	mg/kg	4	mg/kg	2.6	mg/kg
Barium	60[b]	mg/kg	180	mg/kg	150	mg/kg	110	mg/kg
Beryllium	-	-	1.2	mg/kg	1	mg/kg	0.72	mg/kg
Boron	-	-	16U	mg/kg	17U	mg/kg	12U	mg/kg
Cadmium	0.99	mg/kg	0.17	mg/kg	0.12	mg/kg	0.091	mg/kg
Calcium	-	-	1800	mg/kg	1400	mg/kg	940	mg/kg
Chromium	43.4	mg/kg	40	mg/kg	33	mg/kg	25	mg/kg
Cobalt	50	mg/kg	15	mg/kg	12	mg/kg	9.2	mg/kg
Copper	31.6	mg/kg	26	mg/kg	21	mg/kg	15	mg/kg
Iron	6,800 (bkg)	mg/kg	33000	mg/kg	26000	mg/kg	20000	mg/kg
Lead	35.8	mg/kg	16	mg/kg	13	mg/kg	10	mg/kg
Magnesium	-	-	4200J+	mg/kg	3800J+	mg/kg	2800J+	mg/kg
Manganese	460[c]	mg/kg	780J+	mg/kg	570J+	mg/kg	410J+	mg/kg
Mercury	0.18	mg/kg	0.045	mg/kg	0.045	mg/kg	0.025	mg/kg
Molybdenum	-	-	0.67J	mg/kg	0.54J	mg/kg	0.39J	mg/kg
Nickel	22.7	mg/kg	18	mg/kg	15	mg/kg	11	mg/kg
Potassium	-	-	3100J+	mg/kg	2800J+	mg/kg	2100J+	mg/kg
Selenium	2[d]	mg/kg	1.1	mg/kg	0.91	mg/kg	0.49J	mg/kg
Silver	0.733	mg/kg	0.16U	mg/kg	0.17U	mg/kg	0.12U	mg/kg
Sodium	-	-	330U	mg/kg	340U	mg/kg	250U	mg/kg
Thallium	-	mg/kg	0.35	mg/kg	0.31	mg/kg	0.21	mg/kg
Vanadium	57[c]	mg/kg	63	mg/kg	50	mg/kg	38	mg/kg
Zinc	121	mg/kg	75J+	mg/kg	62J+	mg/kg	47J+	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 4A 0-12 inches		Schoolfield Dredge Area 4A 0-12 inches		Schoolfield Dredge Area 4A 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-4A-0012-SD-20140514		EDEN-SFDA-4A-0012-SD-20140514-DUP		EDEN-SFDA-4A-1218-SD-20140514	
Physical Properties								
Percent Ash	-	-	--	--	--	--	ND	%

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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 4B 0-12 inches		Schoolfield Dredge Area 4B 12-18 inches		Schoolfield Dredge Area 3A 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-4B-0012-SD-20140514		EDEN-SFDA-4B-1218-SD-20140514		EDEN-SFDA-3A-0012-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		11:15		11:15		10:20	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	2900	mg/kg	8500	mg/kg	11000	mg/kg
Antimony	2[a]	mg/kg	1.2UJ	mg/kg	1.4UJ	mg/kg	1.9UJ	mg/kg
Arsenic	9.8	mg/kg	0.74J	mg/kg	1.4J	mg/kg	3.4J	mg/kg
Barium	60[b]	mg/kg	29J-	mg/kg	66J-	mg/kg	100	mg/kg
Beryllium	-	-	0.21J	mg/kg	0.52J	mg/kg	0.68J	mg/kg
Boron	-	-	12U	mg/kg	14U	mg/kg	19U	mg/kg
Cadmium	0.99	mg/kg	0.02J	mg/kg	0.056J	mg/kg	0.076J	mg/kg
Calcium	-	-	340	mg/kg	610	mg/kg	910	mg/kg
Chromium	43.4	mg/kg	11	mg/kg	19	mg/kg	22	mg/kg
Cobalt	50	mg/kg	3.1	mg/kg	6.8	mg/kg	8.1	mg/kg
Copper	31.6	mg/kg	3.6	mg/kg	9.7	mg/kg	13	mg/kg
Iron	6,800 (bkg)	mg/kg	6200	mg/kg	14000	mg/kg	17000	mg/kg
Lead	35.8	mg/kg	3	mg/kg	7	mg/kg	8.2	mg/kg
Magnesium	-	-	920	mg/kg	1900	mg/kg	2600J+	mg/kg
Manganese	460[c]	mg/kg	83	mg/kg	280	mg/kg	350J+	mg/kg
Mercury	0.18	mg/kg	0.025U	mg/kg	0.02J	mg/kg	0.037J	mg/kg
Molybdenum	-	-	1.2U	mg/kg	1.4U	mg/kg	1.9U	mg/kg
Nickel	22.7	mg/kg	3.2J	mg/kg	7.1	mg/kg	9.7	mg/kg
Potassium	-	-	710	mg/kg	1300	mg/kg	2000J+	mg/kg
Selenium	2[d]	mg/kg	0.62U	mg/kg	0.68U	mg/kg	0.66J	mg/kg
Silver	0.733	mg/kg	0.12U	mg/kg	0.14U	mg/kg	0.19U	mg/kg
Sodium	-	-	250U	mg/kg	270U	mg/kg	380U	mg/kg
Thallium	-	mg/kg	0.065J	mg/kg	0.14	mg/kg	0.22	mg/kg
Vanadium	57[c]	mg/kg	13	mg/kg	26	mg/kg	33	mg/kg
Zinc	121	mg/kg	14	mg/kg	31	mg/kg	41J+	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 4B 0-12 inches		Schoolfield Dredge Area 4B 12-18 inches		Schoolfield Dredge Area 3A 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-4B-0012-SD-20140514		EDEN-SFDA-4B-1218-SD-20140514		EDEN-SFDA-3A-0012-SD-20140514	
Physical Properties								
Percent Ash	-	-	--	--	ND	%	--	--

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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 3A 12-18 inches		Schoolfield Dredge Area 2A 0-12 inches		Schoolfield Dredge Area 2A 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-3A-1218-SD-20140514		EDEN-SFDA-2A-0012-SD-20140514		EDEN-SFDA-2A-1218-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		10:20		09:10		09:10	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	22000	mg/kg	15000	mg/kg	11000	mg/kg
Antimony	2[a]	mg/kg	1.9UJ	mg/kg	1.9UJ	mg/kg	1.5UJ	mg/kg
Arsenic	9.8	mg/kg	5	mg/kg	4.5	mg/kg	3.2	mg/kg
Barium	60[b]	mg/kg	170	mg/kg	120	mg/kg	94	mg/kg
Beryllium	-	-	1.2	mg/kg	0.82	mg/kg	0.6J	mg/kg
Boron	-	-	19U	mg/kg	19U	mg/kg	15U	mg/kg
Cadmium	0.99	mg/kg	0.17	mg/kg	0.11	mg/kg	0.068J	mg/kg
Calcium	-	-	1400	mg/kg	800	mg/kg	550	mg/kg
Chromium	43.4	mg/kg	41	mg/kg	28	mg/kg	22	mg/kg
Cobalt	50	mg/kg	15	mg/kg	10	mg/kg	8	mg/kg
Copper	31.6	mg/kg	25	mg/kg	19	mg/kg	13	mg/kg
Iron	6,800 (bkg)	mg/kg	33000	mg/kg	22000	mg/kg	17000	mg/kg
Lead	35.8	mg/kg	18	mg/kg	12	mg/kg	9.2	mg/kg
Magnesium	-	-	4100J+	mg/kg	3000J+	mg/kg	2800J+	mg/kg
Manganese	460[c]	mg/kg	700J+	mg/kg	350J+	mg/kg	260J+	mg/kg
Mercury	0.18	mg/kg	0.046	mg/kg	0.037	mg/kg	0.023J	mg/kg
Molybdenum	-	-	0.68J	mg/kg	0.59J	mg/kg	1.5U	mg/kg
Nickel	22.7	mg/kg	17	mg/kg	12	mg/kg	9.4	mg/kg
Potassium	-	-	3000J+	mg/kg	2300J+	mg/kg	2200J+	mg/kg
Selenium	2[d]	mg/kg	0.82J	mg/kg	0.64J	mg/kg	0.77U	mg/kg
Silver	0.733	mg/kg	0.1J	mg/kg	0.19U	mg/kg	0.15U	mg/kg
Sodium	-	-	390U	mg/kg	370U	mg/kg	310U	mg/kg
Thallium	-	mg/kg	0.36	mg/kg	0.28	mg/kg	0.18	mg/kg
Vanadium	57[c]	mg/kg	62	mg/kg	44	mg/kg	33	mg/kg
Zinc	121	mg/kg	75J+	mg/kg	54J+	mg/kg	40J+	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 3A 12-18 inches		Schoolfield Dredge Area 2A 0-12 inches		Schoolfield Dredge Area 2A 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-3A-1218-SD-20140514		EDEN-SFDA-2A-0012-SD-20140514		EDEN-SFDA-2A-1218-SD-20140514	
Physical Properties								
Percent Ash	-	-	ND	%	--	--		%

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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 4C 0-12 inches		Schoolfield Dredge Area 4C 12-18 inches		Schoolfield Dredge Area 3B 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-4C-0012-SD-20140514		EDEN-SFDA-4C-1218-SD-20140514		EDEN-SFDA-3B-0012-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		11:25		11:25		10:40	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	2400	mg/kg	3200	mg/kg	3700	mg/kg
Antimony	2[a]	mg/kg	1.3UJ	mg/kg	1.1UJ	mg/kg	1.2UJ	mg/kg
Arsenic	9.8	mg/kg	2.5U	mg/kg	1J	mg/kg	1.3J	mg/kg
Barium	60[b]	mg/kg	27J-	mg/kg	27J-	mg/kg	39	mg/kg
Beryllium	-	-	0.22J	mg/kg	0.23J	mg/kg	0.26J	mg/kg
Boron	-	-	13U	mg/kg	11U	mg/kg	12U	mg/kg
Cadmium	0.99	mg/kg	0.019J	mg/kg	0.017J	mg/kg	0.023J	mg/kg
Calcium	-	-	270	mg/kg	340	mg/kg	480	mg/kg
Chromium	43.4	mg/kg	13	mg/kg	12	mg/kg	12	mg/kg
Cobalt	50	mg/kg	3	mg/kg	3.7	mg/kg	3.9	mg/kg
Copper	31.6	mg/kg	3.1J	mg/kg	3.7	mg/kg	4.8	mg/kg
Iron	6,800 (bkg)	mg/kg	5800	mg/kg	7100	mg/kg	7500	mg/kg
Lead	35.8	mg/kg	2.4	mg/kg	3.5	mg/kg	3.4	mg/kg
Magnesium	-	-	800	mg/kg	740	mg/kg	1100J+	mg/kg
Manganese	460[c]	mg/kg	78	mg/kg	200	mg/kg	130J+	mg/kg
Mercury	0.18	mg/kg	0.026U	mg/kg	0.024U	mg/kg	0.026U	mg/kg
Molybdenum	-	-	1.3U	mg/kg	1.1U	mg/kg	1.2U	mg/kg
Nickel	22.7	mg/kg	2.9J	mg/kg	3.2J	mg/kg	4J	mg/kg
Potassium	-	-	620	mg/kg	550	mg/kg	870J+	mg/kg
Selenium	2[d]	mg/kg	0.64U	mg/kg	0.53U	mg/kg	0.59U	mg/kg
Silver	0.733	mg/kg	0.13U	mg/kg	0.11U	mg/kg	0.12U	mg/kg
Sodium	-	-	250U	mg/kg	210U	mg/kg	240U	mg/kg
Thallium	-	mg/kg	0.052J	mg/kg	0.056J	mg/kg	0.082J	mg/kg
Vanadium	57[c]	mg/kg	10	mg/kg	13	mg/kg	15	mg/kg
Zinc	121	mg/kg	12	mg/kg	14	mg/kg	16J+	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 4C 0-12 inches		Schoolfield Dredge Area 4C 12-18 inches		Schoolfield Dredge Area 3B 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-4C-0012-SD-20140514		EDEN-SFDA-4C-1218-SD-20140514		EDEN-SFDA-3B-0012-SD-20140514	
Physical Properties								
Percent Ash	-	-	--	--	ND	%	--	--

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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 3B 12-18 inches		Schoolfield Dredge Area 3C 0-12 inches		Schoolfield Dredge Area 3C 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-3B-1218-SD-20140514		EDEN-SFDA-3C-0012-SD-20140514		EDEN-SFDA-3C-1218-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		10:40		10:55		10:55	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	19000	mg/kg	12000	mg/kg	7900	mg/kg
Antimony	2[a]	mg/kg	1.7UJ	mg/kg	1.4UJ	mg/kg	1.4UJ	mg/kg
Arsenic	9.8	mg/kg	4.8	mg/kg	3.2	mg/kg	2.1J	mg/kg
Barium	60[b]	mg/kg	140	mg/kg	87	mg/kg	67	mg/kg
Beryllium	-	-	1	mg/kg	0.67	mg/kg	0.5J	mg/kg
Boron	-	-	17U	mg/kg	14U	mg/kg	14U	mg/kg
Cadmium	0.99	mg/kg	0.12	mg/kg	0.067J	mg/kg	0.051J	mg/kg
Calcium	-	-	1500	mg/kg	770	mg/kg	620	mg/kg
Chromium	43.4	mg/kg	35	mg/kg	23	mg/kg	20	mg/kg
Cobalt	50	mg/kg	13	mg/kg	8.3	mg/kg	6.7	mg/kg
Copper	31.6	mg/kg	23	mg/kg	14	mg/kg	9.5	mg/kg
Iron	6,800 (bkg)	mg/kg	29000	mg/kg	18000	mg/kg	13000	mg/kg
Lead	35.8	mg/kg	15	mg/kg	10	mg/kg	6.7	mg/kg
Magnesium	-	-	3200J+	mg/kg	2000J+	mg/kg	1700J+	mg/kg
Manganese	460[c]	mg/kg	790J+	mg/kg	410J+	mg/kg	260J+	mg/kg
Mercury	0.18	mg/kg	0.059	mg/kg	0.027J	mg/kg	0.015J	mg/kg
Molybdenum	-	-	0.69J	mg/kg	0.45J	mg/kg	1.4U	mg/kg
Nickel	22.7	mg/kg	14	mg/kg	9.1	mg/kg	7.1	mg/kg
Potassium	-	-	2300J+	mg/kg	1400J+	mg/kg	1200J+	mg/kg
Selenium	2[d]	mg/kg	0.76J	mg/kg	0.5J	mg/kg	0.72U	mg/kg
Silver	0.733	mg/kg	0.17U	mg/kg	0.14U	mg/kg	0.14U	mg/kg
Sodium	-	-	340U	mg/kg	270U	mg/kg	290U	mg/kg
Thallium	-	mg/kg	0.27	mg/kg	0.17	mg/kg	0.13J	mg/kg
Vanadium	57[c]	mg/kg	55	mg/kg	36	mg/kg	27	mg/kg
Zinc	121	mg/kg	61J+	mg/kg	40J+	mg/kg	29J+	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 3B 12-18 inches		Schoolfield Dredge Area 3C 0-12 inches		Schoolfield Dredge Area 3C 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-3B-1218-SD-20140514		EDEN-SFDA-3C-0012-SD-20140514		EDEN-SFDA-3C-1218-SD-20140514	
Physical Properties								
Percent Ash	-	-	ND	%	--	--	ND	%

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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 1A 0-12 inches		Schoolfield Dredge Area 1A 12-18 inches		Schoolfield Dredge Area 1B 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-1A-0012-SD-20140514		EDEN-SFDA-1A-1218-SD-20140514		EDEN-SFDA-1B-0012-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		08:50		08:50		09:30	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	17000	mg/kg	24000	mg/kg	5000	mg/kg
Antimony	2[a]	mg/kg	2UJ	mg/kg	1.6UJ	mg/kg	1.2UJ	mg/kg
Arsenic	9.8	mg/kg	3.4J	mg/kg	5.6	mg/kg	3.5	mg/kg
Barium	60[b]	mg/kg	140J-	mg/kg	160	mg/kg	57	mg/kg
Beryllium	-	-	1	mg/kg	1.2	mg/kg	0.44J	mg/kg
Boron	-	-	20U	mg/kg	16U	mg/kg	12U	mg/kg
Cadmium	0.99	mg/kg	0.15	mg/kg	0.17	mg/kg	0.043J	mg/kg
Calcium	-	-	1100	mg/kg	1300	mg/kg	530	mg/kg
Chromium	43.4	mg/kg	33	mg/kg	41	mg/kg	11	mg/kg
Cobalt	50	mg/kg	12	mg/kg	14	mg/kg	3.9	mg/kg
Copper	31.6	mg/kg	22	mg/kg	46	mg/kg	8.2	mg/kg
Iron	6,800 (bkg)	mg/kg	26000	mg/kg	33000	mg/kg	7900	mg/kg
Lead	35.8	mg/kg	15	mg/kg	23	mg/kg	4.2	mg/kg
Magnesium	-	-	3400	mg/kg	3700J+	mg/kg	1100J+	mg/kg
Manganese	460[c]	mg/kg	410	mg/kg	610J+	mg/kg	150J+	mg/kg
Mercury	0.18	mg/kg	0.043	mg/kg	0.06	mg/kg	0.013J	mg/kg
Molybdenum	-	-	0.78J	mg/kg	1J	mg/kg	1.2U	mg/kg
Nickel	22.7	mg/kg	13	mg/kg	16	mg/kg	5.1	mg/kg
Potassium	-	-	2500	mg/kg	2800J+	mg/kg	800J+	mg/kg
Selenium	2[d]	mg/kg	0.89J	mg/kg	0.89	mg/kg	0.74	mg/kg
Silver	0.733	mg/kg	0.2U	mg/kg	0.3	mg/kg	0.12U	mg/kg
Sodium	-	-	390U	mg/kg	160J	mg/kg	240U	mg/kg
Thallium	-	mg/kg	0.32	mg/kg	0.36	mg/kg	0.13	mg/kg
Vanadium	57[c]	mg/kg	53	mg/kg	65	mg/kg	17	mg/kg
Zinc	121	mg/kg	61	mg/kg	84J+	mg/kg	18J+	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 1A 0-12 inches		Schoolfield Dredge Area 1A 12-18 inches		Schoolfield Dredge Area 1B 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-1A-0012-SD-20140514		EDEN-SFDA-1A-1218-SD-20140514		EDEN-SFDA-1B-0012-SD-20140514	
Physical Properties								
Percent Ash	-	-	--	--	ND	%	--	--

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.

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[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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 1B 12-18 inches		Schoolfield Dredge Area 2B 0-12 inches		Schoolfield Dredge Area 2B 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-1B-1218-SD-20140514		EDEN-SFDA-2B-0012-SD-20140514		EDEN-SFDA-2B-1218-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		09:30		09:25		09:25	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	22000	mg/kg	18000	mg/kg	3900	mg/kg
Antimony	2[a]	mg/kg	1.8UJ	mg/kg	1.9UJ	mg/kg	1.4UJ	mg/kg
Arsenic	9.8	mg/kg	4.1	mg/kg	5.3	mg/kg	1.4J	mg/kg
Barium	60[b]	mg/kg	160	mg/kg	140	mg/kg	33	mg/kg
Beryllium	-	-	1.2	mg/kg	1.1	mg/kg	0.24J	mg/kg
Boron	-	-	18U	mg/kg	19U	mg/kg	14U	mg/kg
Cadmium	0.99	mg/kg	0.12	mg/kg	0.12	mg/kg	0.028J	mg/kg
Calcium	-	-	1400	mg/kg	1300	mg/kg	360	mg/kg
Chromium	43.4	mg/kg	40	mg/kg	33	mg/kg	12	mg/kg
Cobalt	50	mg/kg	15	mg/kg	12	mg/kg	3.5	mg/kg
Copper	31.6	mg/kg	25	mg/kg	23	mg/kg	4.6	mg/kg
Iron	6,800 (bkg)	mg/kg	33000	mg/kg	27000	mg/kg	6900	mg/kg
Lead	35.8	mg/kg	17	mg/kg	17	mg/kg	3.4	mg/kg
Magnesium	-	-	4000J+	mg/kg	3100J+	mg/kg	900J+	mg/kg
Manganese	460[c]	mg/kg	750J+	mg/kg	690J+	mg/kg	120J+	mg/kg
Mercury	0.18	mg/kg	0.052	mg/kg	0.049	mg/kg	0.031	mg/kg
Molybdenum	-	-	0.73J	mg/kg	0.71J	mg/kg	1.4U	mg/kg
Nickel	22.7	mg/kg	17	mg/kg	14	mg/kg	3.7J	mg/kg
Potassium	-	-	2900J+	mg/kg	2200J+	mg/kg	640J+	mg/kg
Selenium	2[d]	mg/kg	0.85J	mg/kg	1.1	mg/kg	0.7U	mg/kg
Silver	0.733	mg/kg	0.18U	mg/kg	0.18J	mg/kg	0.14U	mg/kg
Sodium	-	-	370U	mg/kg	380U	mg/kg	280U	mg/kg
Thallium	-	mg/kg	0.31	mg/kg	0.29	mg/kg	0.07J	mg/kg
Vanadium	57[c]	mg/kg	62	mg/kg	54	mg/kg	14	mg/kg
Zinc	121	mg/kg	73J+	mg/kg	60J+	mg/kg	16J+	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 1B 12-18 inches		Schoolfield Dredge Area 2B 0-12 inches		Schoolfield Dredge Area 2B 12-18 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-1B-1218-SD-20140514		EDEN-SFDA-2B-0012-SD-20140514		EDEN-SFDA-2B-1218-SD-20140514	
Physical Properties								
Percent Ash	-	-	ND	%	--	--	ND	%

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.

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[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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 2C 0-12 inches		Schoolfield Dredge Area 2C 12-18 inches		Schoolfield Dredge Area 1C 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-2C-0012-SD-20140514		EDEN-SFDA-2C-1218-SD-20140514		EDEN-SFDA-1C-0012-SD-20140514	
Date	-		05/14/2014		05/14/2014		05/14/2014	
Time	-		09:55		09:55		10:00	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	3200	mg/kg	26000	mg/kg	5100	mg/kg
Antimony	2[a]	mg/kg	1.3UJ	mg/kg	1.8UJ	mg/kg	1.3UJ	mg/kg
Arsenic	9.8	mg/kg	1.6J	mg/kg	5.8	mg/kg	2.3J	mg/kg
Barium	60[b]	mg/kg	33	mg/kg	190	mg/kg	48	mg/kg
Beryllium	-	-	0.24J	mg/kg	1.4	mg/kg	0.38J	mg/kg
Boron	-	-	13U	mg/kg	18U	mg/kg	13U	mg/kg
Cadmium	0.99	mg/kg	0.029J	mg/kg	0.2	mg/kg	0.032J	mg/kg
Calcium	-	-	350	mg/kg	1800	mg/kg	600	mg/kg
Chromium	43.4	mg/kg	12	mg/kg	46	mg/kg	14	mg/kg
Cobalt	50	mg/kg	3.4	mg/kg	18	mg/kg	5.5	mg/kg
Copper	31.6	mg/kg	4	mg/kg	31	mg/kg	6.2	mg/kg
Iron	6,800 (bkg)	mg/kg	6400	mg/kg	39000	mg/kg	12000	mg/kg
Lead	35.8	mg/kg	3.2	mg/kg	21	mg/kg	4.4	mg/kg
Magnesium	-	-	860J+	mg/kg	4400J+	mg/kg	1300J+	mg/kg
Manganese	460[c]	mg/kg	130J+	mg/kg	970J+	mg/kg	610J+	mg/kg
Mercury	0.18	mg/kg	0.022U	mg/kg	0.06	mg/kg	0.012J	mg/kg
Molybdenum	-	-	1.3U	mg/kg	0.97J	mg/kg	1.3U	mg/kg
Nickel	22.7	mg/kg	3.5J	mg/kg	19	mg/kg	5.3	mg/kg
Potassium	-	-	630J+	mg/kg	3000J+	mg/kg	910J+	mg/kg
Selenium	2[d]	mg/kg	0.65U	mg/kg	1.1	mg/kg	0.65U	mg/kg
Silver	0.733	mg/kg	0.13U	mg/kg	0.11J	mg/kg	0.13U	mg/kg
Sodium	-	-	260U	mg/kg	370U	mg/kg	260U	mg/kg
Thallium	-	mg/kg	0.057J	mg/kg	0.4	mg/kg	0.096J	mg/kg
Vanadium	57[c]	mg/kg	12	mg/kg	75	mg/kg	18	mg/kg
Zinc	121	mg/kg	14J+	mg/kg	85J+	mg/kg	21J+	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 2C 0-12 inches		Schoolfield Dredge Area 2C 12-18 inches		Schoolfield Dredge Area 1C 0-12 inches	
Sample Information								
Sample ID	-		EDEN-SFDA-2C-0012-SD-20140514		EDEN-SFDA-2C-1218-SD-20140514		EDEN-SFDA-1C-0012-SD-20140514	
Physical Properties								
Percent Ash	-	-	--	--	ND	%	--	--

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.

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[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 possiblelow 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.

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 1C 12-18 inches	
Sample Information				
Sample ID	-		EDEN-SFDA-1C-1218-SD-20140514	
Date	-		05/14/2014	
Time	-		10:00	
Status	-		Validation Complete	
Type	-		Sediment	
Total Metals				
Aluminum	3,200 (bkg)	mg/kg	1500	mg/kg
Antimony	2[a]	mg/kg	1.2UJ	mg/kg
Arsenic	9.8	mg/kg	2.5U	mg/kg
Barium	60[b]	mg/kg	12	mg/kg
Beryllium	-	-	0.16J	mg/kg
Boron	-	-	12U	mg/kg
Cadmium	0.99	mg/kg	0.016J	mg/kg
Calcium	-	-	200	mg/kg
Chromium	43.4	mg/kg	15	mg/kg
Cobalt	50	mg/kg	2.4	mg/kg
Copper	31.6	mg/kg	2.5J	mg/kg
Iron	6,800 (bkg)	mg/kg	4600	mg/kg
Lead	35.8	mg/kg	1.8	mg/kg
Magnesium	-	-	320J+	mg/kg
Manganese	460[c]	mg/kg	50J+	mg/kg
Mercury	0.18	mg/kg	0.022U	mg/kg
Molybdenum	-	-	1.2U	mg/kg
Nickel	22.7	mg/kg	1.7J	mg/kg
Potassium	-	-	250J+	mg/kg
Selenium	2[d]	mg/kg	0.62U	mg/kg
Silver	0.733	mg/kg	0.12U	mg/kg
Sodium	-	-	250U	mg/kg
Thallium	-	mg/kg	0.12U	mg/kg
Vanadium	57[c]	mg/kg	10	mg/kg
Zinc	121	mg/kg	7.7J+	mg/kg

EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment[2]		Schoolfield Dredge Area 1C 12-18 inches	
Sample Information				
Sample ID	-		EDEN-SFDA-1C-1218-SD-20140514	
Physical Properties				
Percent Ash	-	-	ND	%

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.

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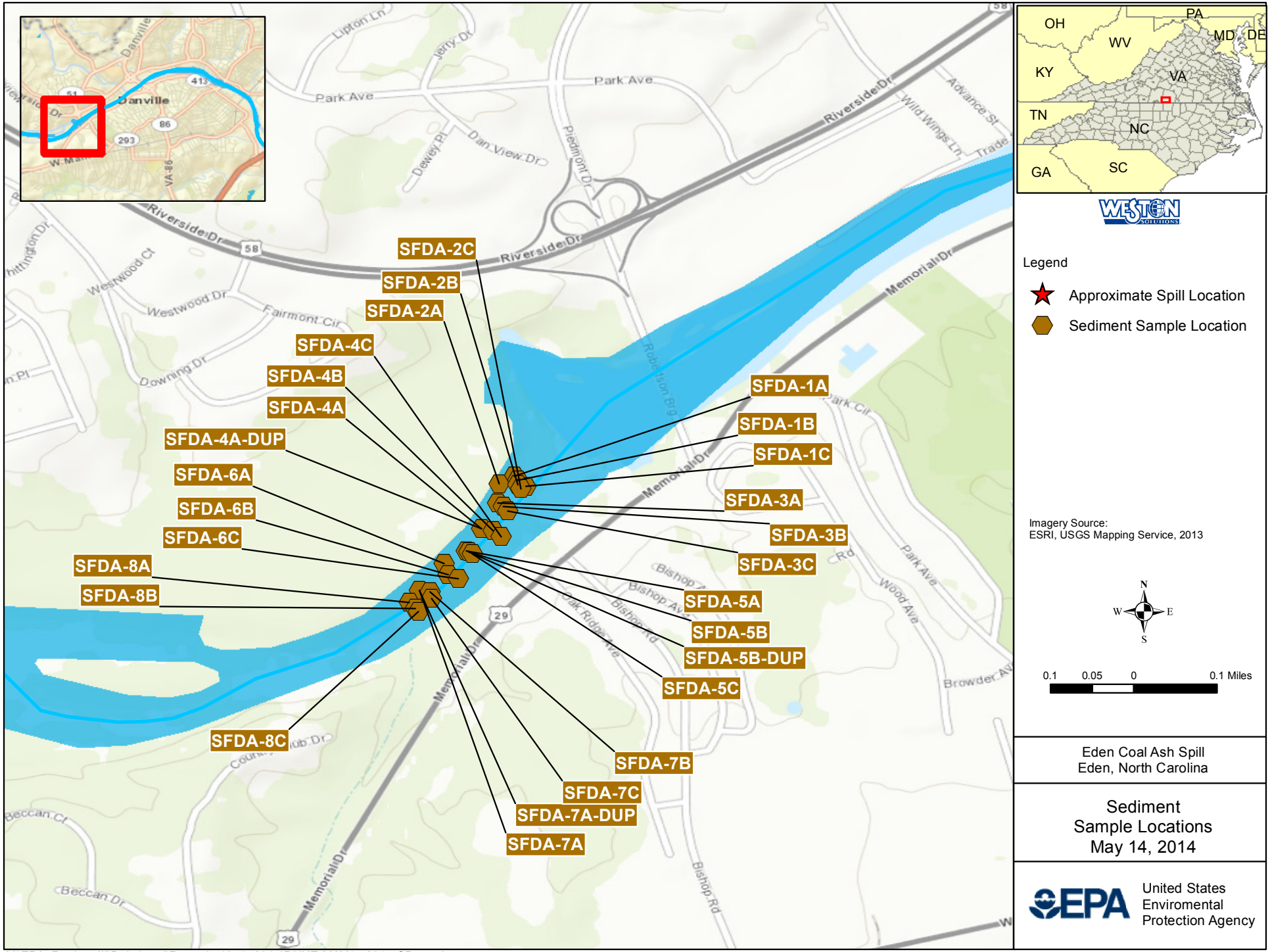
[e] Cadmium from diet

[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 possiblelow 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.



Eden Coal Ash Spill
Eden, North Carolina

Sediment
Sample Locations
May 14, 2014

United States
Enviromental
Protection Agency

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