

TABLE 1: SOIL ANALYTICAL SUMMARY - Metals

Perdido Bay Boat Ramp

Sample	Date Analyzed	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Copper	Nickel	Zinc	Mercury
		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
B-10A	10/12/2017	6.8	9.8	0.60 U	20	24	1.2 I	0.12 I	14	6.7	71	0.16
B-10A2	10/12/2017	3.9	6.3	0.47 U	13	18	0.64 I	0.054 I	9.4	4.2	40	0.1
B-10B	10/12/2017	2.2	2.8	0.37 U	7	5.5	0.46 I	0.046 I	4.3	1.9	18	0.037
B-10B2	10/12/2017	3.4	6.8	0.45 U	14	5.9	0.83 I	0.043 U	3.4	5.2	15	0.027 I
B-10C	10/12/2017	1.6	3.3	0.35 U	6.7	11	0.46 I	0.043 I	3.6	2	17	0.037
B-10C2	10/12/2017	4.3	7	0.31 U	16	6.4	0.77 I	0.030 U	3.8	5.8	18	0.022
B-10D	10/12/2017	8.7	12	0.62 U	26	25	1.3 I	0.091 I	18	8.6	84	0.19
B-10D2	10/12/2017	3.3	5.4	0.58 U	8.8	11	0.46 I	0.055 U	6.5	3	34	0.085
B-11A	10/12/2017	8.5	13	0.66 U	28	28	1.3 I	0.11 I	18	9.6	86	0.18
B-11A2	10/12/2017	7.8	11	0.47 U	23	18	1.0 I	0.095 I	12	6.9	62	0.12
B-11B	10/12/2017	9.9	14	0.53 U	29	24	1.1 I	0.076 I	15	8.7	77	1.5
B-11B2	10/12/2017	15	19	0.73 U	44	34	1.9	0.014 I	25	13	120	0.000022
B-11C	10/12/2017	8.5	13	0.61 U	28	11	1.1 I	0.058 U	6.6	9.7	35	0.035 I
B-11C2	10/12/2017	7.42	13.4	0.62 U	28.7	10.7	1.15 I	0.059 U	6.46	8.98	34.9	0.0343 I
Leachability Based on Groundwater Criteria (mg/kg)		*	1600	7.5	38	*	5.2	17	*	130	*	2.1
Leachability Based on Freshwater Surface Water Criteria (mg/kg)		*	NA	NA	4.2	NA	0.5	0.01	NA	NA	NA	0.01
Leachability Based on Marine Surface Water Criteria (mg/kg)		*	NA	14	19	NA	7.4	0.06	*	11	NA	0.03
Direct Exposure Residential (mg/kg)		2.1	120	82	210	400	440	410	150	340	26000	3
Direct Exposure Commercial/Industrial (mg/kg)		12	130000	1700	470	1400	11000	8200	89000	35000	630000	17

Notes:

NA = Not Available

NS = Not Sampled

Bold = Exceeds
Cleanup Target Levels

mg/kg = Milligrams per
kilogram

U = Compound was
analyzed for but not
detected

I = The value is outside laboratory
established criteria

I = The reported value is between
the Laboratory method detection
limit and the laboratory practical
quantitation limit.

* = Leachability value
may be determined

Exceeds Direct
Exposure Residential
Limits

Exceeds Direct
Exposure
Commercial/Industrial
Limits

Exceeds Leachability for
Groundwater Criteria

Exceeds Leachability for
Marine Surface Water
Criteria

Exceeds Leachability
for Freshwater
Surface Water Criteria

TABLE 2. SOIL ANALYTICAL SUMMARY -SEMIVOLATIVE ORGANIC COMPOUNDS BY GCMS

Perdido Bay Boat
Ramp

See notes at end of table

Sample		Laboratory Analyses																		
Sample	Date Analyzed	Acenaphthene	Acenaphthylene	Anthracene	Benzo (a) anthracene	Benzo (a) pyrene	Benzo (b) fluoranthene	Benzo(g,h,i)pyrene	Benzo (k) fluoranthene	Chrysene	Dibenz (a,h) anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd) pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene	TRPH
		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
B-10A	10/12/2017	0.0091U	0.0091U	0.010I	0.022 I	0.030 I	0.051 I	0.018 U	0.0091 U	0.027 I	0.018 U	0.038 I	0.0091 U	0.018 U	0.0091 U	0.0091 U	0.0091 U	0.011 I	0.043 I	320
B-10A2	10/12/2017	0.0015 U	0.0015 U	0.0015 U	0.012	0.015	0.031	0.0031 U	0.0098 I	0.012	0.0031 U	0.03	0.0015 U	0.011	0.0015 U	0.0015 U	0.0015 U	0.0015 U	0.028	150
B-10B	10/12/2017	0.0012 U	0.0012 U	0.0016 I	0.0076 I	0.0091	0.016	0.0057 I	0.0052 I	0.0078 I	0.0024 U	0.0098	0.0012 U	0.0058 I	0.0012 U	0.0012 U	0.0012 U	0.0020 I	0.0092	68
B-10B2	10/12/2017	0.0014 U	0.0014 U	0.0014 U	0.0014 U	0.051	0.0014 U	0.0028 U	0.0014 U	0.0014 U	0.0028 U	0.0038 I	0.0014 U	0.0028 U	0.0014 U	0.0014 U	0.0014 U	0.0014 U	0.0036 I	170
B-10C	10/12/2017	0.0011 U	0.0011 U	0.0011 U	0.0027 I	0.0039 I	0.008	0.0021 U	0.0023 I	0.0022 I	0.0021 U	0.0050 I	0.0011 U	0.0021 U	0.0011 U	0.0011 U	0.0011 U	0.0018 I	0.0060 I	43
B-10C2	10/12/2017	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.026	0.0011 U	0.0021 U	0.0011 U	0.0011 U	0.0021 U	0.0022 I	0.0011 U	0.0021 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0017 I	74
B-10D	10/12/2017	0.0021 U	0.0055 I	0.0055 I	0.025	0.027	0.058	0.023	0.015	0.029	0.0042 U	0.048	0.0021 U	0.02	0.0021 U	0.0021 U	0.0021 U	0.0079 I	0.04	280
B-10D2	10/12/2017	0.0042 I	0.0085 I	0.011 I	0.05	0.045	0.097	0.035	0.031	0.064	0.0039 U	0.12	0.0076 I	0.035	0.0019 I	0.0019 U	0.0019 U	0.067	0.11	200
B-11A	10/12/2017	0.0023 I	0.0021 U	0.0053 I	0.015	0.018	0.038	0.016	0.0086 I	0.011 I	0.0042 U	0.029	0.0021 U	0.013 I	0.0037 I	0.0051 I	0.0029 I	0.0056 I	0.026	290
B-11A2	10/12/2017	0.0016 U	0.0026 I	0.0034 I	0.013	0.0016 U	0.0016 U	0.010 I	0.0016 U	0.015	0.0032 U	0.034	0.0016 U	0.0085 I	0.0016 U	0.0016 U	0.0016 U	0.0041 I	0.027	300
B-11B	10/12/2017	0.0024 I	0.0027 I	0.0046 I	0.012	0.016	0.034	0.014	0.011	0.010 I	0.0034 U	0.029	0.0017 U	0.0093 I	0.0017 U	0.0017 U	0.0017 U	0.0047 I	0.026	220
B-11B2	10/12/2017	0.0028 I	0.0047 I	0.0056 I	0.028	0.0025 U	0.0025 U	0.022	0.0025 U	0.029	0.0049 U	0.036	0.0025 U	0.019	0.0025 U	0.0025 U	0.0025 U	0.0068 I	0.04	290
B-11C	10/12/2017	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.24	0.0055 I	0.0038 U	0.0019 U	0.0019 U	0.0038 U	0.0063 I	0.0019 U	0.0038 U	0.0036 I	0.0053 I	0.0026 I	0.0019 U	0.0035 I	87
B-11C2	10/12/2017	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.348	0.0019 U	0.0038 U	0.0019 U	0.0019 U	0.0038 U	0.00752 I	0.0019 U	0.0038 U	0.00434 I	0.00643 I	0.00267 I	0.0019 U	0.00480 I	83.8
Leachability Based on Groundwater Criteria (mg/kg)		2.1	27	2500	NA	NA	2.4	NA	NA	77	0.7	1200	160	6.6	3.1	8.5	1.2	250	880	340
Direct Exposure Residential (mg/kg)		2400	1800	21000	#	0.1	#	2500	#	#	#	3200	2600	#	200	210	55	2200	2400	460
Direct Exposure Commercial/Industrial (mg/kg)		20000	20000	300000	#	0.7	#	52000	#	#	#	59000	33000	#	1800	2100	300	36000	45000	2700

Notes:

NA = Not Available

NS = Not Sampled

Bold = Exceeds Cleanup

Target Levels

mg/kg = Milligrams per
kilogram

J = The value is outside laboratory established criteria

U = Compound was

I = The reported value is between the Laboratory method detection limit and the laboratory practical quantitation limit.

* = Leachability value may

**Exceeds Direct Exposure
Residential Limits**

= Benzo (a) Pyren equivalent conversion required for concentration limits.

TABLE 2. SOIL ANALYTICAL SUMMARY -SEMIVOLATIVE ORGANIC COMPOUNDS BY GCMS

Perdido Bay Boat
Ramp

See notes at end of table

Sample		Laboratory Analyses																		
Sample	Date Analyzed	Acenaph-thene	Acenaph-thylene	Anthrac-ene	Benzo (a) anthra-cene	Benzo (a) pyrene	Benzo (b) fluoran-thene	Benzo(g,h,i)p-erylene	Benzo (k) fluoran-thene	Chrysene	Dibenz (a,h) anthra-cene	Fluoranthene	Fluorene	Indeno (1,2,3-cd) pyrene	1-Methylnapht-halene	2-Methylnapht-halene	Naphthalene	Phenanthren-e	Pyrene	TRPH
		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
B-10A	10/12/2017	0.0091U	0.0091U	0.010I	0.022 I	0.030 I	0.051 I	0.018 U	0.0091 U	0.027 I	0.018 U	0.038 I	0.0091 U	0.018 U	0.0091 U	0.0091 U	0.0091 U	0.011 I	0.043 I	320
B-10A2	10/12/2017	0.0015 U	0.0015 U	0.0015 U	0.012	0.015	0.031	0.0031 U	0.0098 I	0.012	0.0031 U	0.03	0.0015 U	0.011	0.0015 U	0.0015 U	0.0015 U	0.0015 U	0.028	150
B-10B	10/12/2017	0.0012 U	0.0012 U	0.0016 I	0.0076 I	0.0091	0.016	0.0057 I	0.0052 I	0.0078 I	0.0024 U	0.0098	0.0012 U	0.0058 I	0.0012 U	0.0012 U	0.0012 U	0.0020 I	0.0092	68
B-10B2	10/12/2017	0.0014 U	0.0014 U	0.0014 U	0.0014 U	0.051	0.0014 U	0.0028 U	0.0014 U	0.0014 U	0.0028 U	0.0038 I	0.0014 U	0.0028 U	0.0014 U	0.0014 U	0.0014 U	0.0014 U	0.0036 I	170
B-10C	10/12/2017	0.0011 U	0.0011 U	0.0011 U	0.0027 I	0.0039 I	0.008	0.0021 U	0.0023 I	0.0022 I	0.0021 U	0.0050 I	0.0011 U	0.0021 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0018 I	43
B-10C2	10/12/2017	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.026	0.0011 U	0.0021 U	0.0011 U	0.0011 U	0.0021 U	0.0022 I	0.0011 U	0.0021 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0017 I	74
B-10D	10/12/2017	0.0021 U	0.0055 I	0.0055 I	0.025	0.027	0.058	0.023	0.015	0.029	0.0042 U	0.048	0.0021 U	0.02	0.0021 U	0.0021 U	0.0021 U	0.0079 I	0.04	280
B-10D2	10/12/2017	0.0042 I	0.0085 I	0.011 I	0.05	0.045	0.097	0.035	0.031	0.064	0.0039 U	0.12	0.0076 I	0.035	0.0019 I	0.0019 U	0.0019 U	0.067	0.11	200
B-11A	10/12/2017	0.0023 I	0.0021 U	0.0053 I	0.015	0.018	0.038	0.016	0.0086 I	0.011 I	0.0042 U	0.029	0.0021 U	0.013 I	0.0037 I	0.0051 I	0.0029 I	0.0056 I	0.026	290
B-11A2	10/12/2017	0.0016 U	0.0026 I	0.0034 I	0.013	0.0016 U	0.0016 U	0.010 I	0.0016 U	0.015	0.0032 U	0.034	0.0016 U	0.0085 I	0.0016 U	0.0016 U	0.0016 U	0.0041 I	0.027	300
B-11B	10/12/2017	0.0024 I	0.0027 I	0.0046 I	0.012	0.016	0.034	0.014	0.011	0.010 I	0.0034 U	0.029	0.0017 U	0.0093 I	0.0017 U	0.0017 U	0.0017 U	0.0047 I	0.026	220
B-11B2	10/12/2017	0.0028 I	0.0047 I	0.0056 I	0.028	0.0025 U	0.0025 U	0.022	0.0025 U	0.029	0.0049 U	0.036	0.0025 U	0.019	0.0025 U	0.0025 U	0.0025 U	0.0068 I	0.04	290
B-11C	10/12/2017	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.24	0.0055 I	0.0038 U	0.0019 U	0.0019 U	0.0038 U	0.0063 I	0.0019 U	0.0038 U	0.0036 I	0.0053 I	0.0026 I	0.0019 U	0.0035 I	87
B-11C2	10/12/2017	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.348	0.0019 U	0.0038 U	0.0019 U	0.0019 U	0.0038 U	0.00752 I	0.0019 U	0.0038 U	0.00434 I	0.00643 I	0.00267 I	0.0019 U	0.00480 I	83.8
Leachability Based on Groundwater Criteria (mg/kg)		2.1	27	2500	0.8	8	2.4	32000	24	77	0.7	1200	160	6.6	3.1	8.5	1.2	250	880	340
Leachability Based on Freshwater Surface Water Criteria (mg/kg)		0.3	NA	0.4	NA	NA	NA	NA	NA	NA	NA	1.3	17	NA	10	9.1	2.2	NA	1.3	340
Leachability Based on Marine Surface Water Criteria (mg/kg)		0.3	NA	0.4	NA	NA	NA	NA	NA	NA	NA	1.3	17	NA	10	9.1	2.2	NA	1.3	340
Direct Exposure Residential (mg/kg)		2400	1800	21000	#	0.1	#	2500	#	#	#	3200	2600	#	200	210	55	2200	2400	460
Direct Exposure Commercial/Industrial (mg/kg)		20000	20000	300000	#	0.7	#	52000	#	#	#	59000	33000	#	1800	2100	300	36000	45000	2700

Notes:

NA = Not Available

NS = Not Sampled

Bold = Exceeds Cleanup
Target Levelsmg/kg = Milligrams per
kilogram

J = The value is outside laboratory established criteria

U = Compound was

I = The reported value is between the Laboratory method detection limit and the laboratory practical quantitation limit.

* = Leachability value may

Exceeds Direct Exposure
Residential Limits

= Benzo (a) Pyren equivalent conversion required for concentration limits.

From: [Keith Johnson](#)
To: ["McHale, Tanya"](#)
Cc: ["White, Steven D"](#); ["Chris A. Curb"](#); ["Mitchell, Tyler"](#); ["Robert K. Turpin"](#)
Subject: Perdido Bay Boat Ramp in Heron Bayou, Escambia County
Date: Thursday, October 19, 2017 12:41:00 PM
Attachments: [17-201 Heron"s Bayou Boat Ramp.pdf](#)
[Soil Analytical Summary Perdido Bay Boat Ramp.pdf](#)

Tanya,

First, I appreciate all of the upfront coordination associated with this project. As discussed in the e-mail below, we sampled boring locations B-10 and B-11 as shown in the map appended to the geo-technical report prepared by Larry M Jacobs (attached). The following samples were collected:

Boring B-10

Sample ID B-10A – depth 3-4' below existing grade
Sample ID B-10B – depths 4-5' below existing grade
Sample ID B-10C – depths 5-6' below existing grade
Sample ID B-10D – depths 6-7' below existing grade

Boring B-11

Sample ID B-11A – depths 2-3' below existing grade
Sample ID B-11B – depth 3-4' below existing grade
Sample ID B-11C – depth 4-5' below existing grade

The "2" modifier after each sample ID is the duplicate.

The analytical data is summarized in the attached tables. As you will note, Arsenic is found above the residential direct exposure concentrations in all the samples except one. Arsenic is found above commercial/industrial direct exposure limits in one of the samples. There is a single exceedance of Benzo(a)pyrene in Sample B-11C above residential direct exposure limits. At this point I have made comparisons to leachability based on groundwater criteria and residential/commercial/industrial direct exposure limits. I will further refine the table and make comparisons to leachability to freshwater surface water and marine surface water (since the project adjoins both marine and freshwaters).

I would like to set up another meeting to discuss the results and the regulatory implications associated with the analytical results. Can you please let me know your availability so I can coordinate a meeting?

Again, thank you for your continued cooperation with this project.

Respectfully,

Keith Johnson
Wetland Sciences, Inc.
3308 Gulf Beach Hwy